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The Provision and Use of Urban Public Spaces for Female Physical Activity in Saudi Arabia

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Table of Contents

LIST OF FIGURES

List of Tables

Abstract

With the development and expansion of the city of Jeddah, the increase in the population and the integration of a variety of social structures has changed. The need for public open spaces has increased and the purpose of visiting these spaces has also changed. In previous studies the focus has been on the visits to public open spaces in the urban context of the city for the recreation of family members. In recent years however, new spaces have been designed for physical activities and especially for walking purposes. The vision 2030 of Saudi Arabia aims to develop open spaces to raise the level of public health of the kingdom by provide a good quality of urban public open spaces. Their design must consider the customs and traditions and adherence to Islamic Law.

This research aims to develop design recommendations for urban designers and landscape architects to improve women physical activity in urban public open spaces in Jeddah; Saudi Arabia. To achieve this aim, a comprehensive review of the literature was undertaken. This literature review focused on factors that associated with use of public open spaces for physical activity

The methodology adopted for this case study is using qualitative exploratory research design as a methodological choice to provide a complex contextual description of how people use urban public spaces and their experiences associated with them. The research strategy is developed through an investigation of spaces as an integration of form and cultural practice. Data has been gathered from semi-structured interviews and observations in open spaces. Thematic analysis is used to analyse the interviews. Interpretive structural modelling method conducts to validate the factors relationships that influence women use of urban public open spaces for physical activity.

The results of this research provide some insight in ways to help improve and develop the existing open spaces to meet women's needs for practicing physical activities in urban public open spaces. The key finding of this research indicates that women visit designed open spaces and non-designed(incidental) spaces that meet their needs. Proximity factors indicate a significant importance of women visitation urban public open spaces. Also, the factor of privacy is also shown to significantly influence how places are used in terms of temporal and spatial dimensions. Other key finding of this research shows that public open spaces often fail to meet the identified needs of women users. Also, it concerns about lacking designed spaces that provide good environment for women use. Therefore, this research enhances knowledge of patterns of usage for public open spaces in countries that follows Islamic law and found some similarities of patterns of use in physical activity purpose when comparing Western studies.

Chapter 1. **Introduction**

1.1 Introduction

Since the turn of the millennium, Saudi Arabia has experienced a surge in feminist movements. new feminist movements have emerged – and gained momentum. These have been Inspired and influenced by Western media and governments, with a focus on ensuring human rights and gender equality (Khalifa, 2001; Le Renard, 2014). As a result, thousands of young women have been allowed to study overseas through the introduction of a programme entitled 'Custodian of the Two Holy Mosques'. As a result, opportunities that were previously only available to the daughters of the wealthy, namely to travel abroad and experience the wider world, have also been extended to many women from low-income families. This movement has resulted in more Saudi women experiencing Western cultures and openness than ever before. Consequently, certain aspects of foreign culture have become more popular in recent year, health in particular, such as going to the gym or walking in public open spaces is a positive effect. These female groups have influenced an entire society through their thinking, clothing and behaviour, as the programme has allowed Saudi women to come into contact with different activities that would not previously have occurred in Saudi Arabia because of social norms. Car driving or exercising in public open spaces are such practices.

To examine the current presence of women in open spaces, it is important to bear in mind the influential legacy of their idealised role in society, embedded in their role since the ancient times until today. During this period, women had a role in everyday life within medieval Islamic society, in either trade or nursing between villages, using different modes of transportation, such as camels and horses. In addition, the significant role of women in wars and invasions is immortalised in the history of Islam.

Today, there is no existing intolerance, contrary to conditions in other Arab countries, which requires the suppression of women and prevents their presence in various spheres of life. Furthermore, King Salman bin Abdulaziz Al Saud's support for the social presence of women in all aspects of life and within the context of Saudi Arabian society is evidence that the country's direction women's rights has shifted.

The modernisation of the Saudi economy, aimed at providing a higher standard of living for the country, has also led to an increased involvement of women in economic, academic and social activities, and changed attitudes towards women's education and occupations. In addition, different influences, such as mass media, are encouraging the growing role of

women in civic life, albeit national educational policies in recent days offer no encouragement in terms of this Saudi feminist phenomenon (Khalifa, 2001).

As a result, Saudi women have greater control over marriage arrangements and decision-making than ever before, and this in turn has led to their greater presence in public places and in roles such as teachers, doctors and engineers (Alajmi, 2001; Ali Qahis, 2008). In contrast to the past, when there was a belief in Saudi society that a woman's future prospects and happiness were dependent on marriage (Alsuwaigh, 1989), today, education and employment have provided new opportunities for single women, giving them greater freedom to express their opinions regarding their choice of husband.

Over recent years, women in Saudi Arabia have organised campaigns for increased freedom, in order to change existing laws and customs that restrict them in this regard, such as not having the right to drive a car, the wearing of a veil, the need for a male relative's permission to take a job or to travel and the separation of males and females in society generally(Le Renard, 2014). Even though Islamic clerics apply these restrictions to women and are supported by conservative groups across the country, greater freedom for women has been encouraged by the royal family. However, these traditional norms have meant that women have refrained from practicing any kinds of sports, or exercise, with the exception of walking in available outdoor locations.

1.2 Characteristics of Saudi Society

Mixed public contact is forbidden by Islamic values and social norms, and women are treated differently from men. Gender segregation is applied strictly in all public spheres in Jeddah, and elsewhere in the country, inspired by the desire to maintain the structure of the family. The separation of women from men is traditionally accepted as a moral imperative in religious terms, including imposing social restrictions on women's dress and their movement in public places (Yamani & Allen, 1996). Municipal places, such as restaurants and mosques, maintain separate sections for families and females, respectively. Saudi sharia law prevents women from driving cars, riding a bicycle or travelling inside or outside the country without written consent from a male guardian, and male family members are expected to ensure that women comply with these social restrictions.

Many factors, such as socio-economics, gender, types of activities and culture, combine to determine people's relationships with urban public open spaces in Saudi. In addition, the behavioural rules that apply in open spaces have evolved in line with urban development and

the expansion of the city (Mandeli, 2011). For example, life in the old city of Jeddah was restricted within the city walls, where squares and plazas formed a natural and protective gathering place for religious and wedding events. As a result of the city expanding, and the removal of the old city wall, the municipality has required developers to introduce or import new open space concepts from Western countries (Alhajaj, 2014). At the present time, urban public open space requirements have expanded to meet the facilities commonly available in open spaces in other countries such as recreation, gathering, celebrating and exercising.

However, this expansion has led to an alteration in social components, with the added threat of ignoring and disrespecting the traditional architectural identity. Moreover, the majority of open spaces have been designed by the city municipality with the aim of fulfilling local residents' needs. This has resulted in these designed spaces following the same programme concepts, without considering the participation of the community. Therefore, park designs usually contain a walkway, a shaded playground, a seating area and a kiosk while simultaneously failing to provide community needs such as toilets, aesthetic factors and sports fields, thus rendering the spaces useless (Addas, 2015).

One possible solution is for the opinions and suggestions of the public, and their space requirements, to be heard and noted, to help designers meet these requirements through varied designs. For example, neighbourhood parks follow a similar design programme (prototype), which has resulted in the failure to fulfil people's needs, because each space has its own condition, context and user needs (Addas, 2015).

Another context specific attribute of the city of Jeddah is that it needs open spaces that can be used even in hot and humid weather, and places where people can adopt their customs and traditions without giving rise to conflict or giving offence. As well as the regular use of open spaces, there are a range of seasonal celebrations in which residents are required to use with public open spaces, such as Ramadan, Eid, the National Day and many other public festivals. The most specific celebration is Ramadan, which is the most significant month of the year for most Arab and Muslim countries. During Ramadan, many people will gather in open spaces, and it is a time, when people have a greater appetite for exercise, generally after the Asr prayer and up to the close of Iftar, perhaps as a means of occupying their minds during the fasting period as mentioned in chapter 6 section 3.4. These routine breaking / customary events, throughout the year, require open spaces to be adaptable and useful, especially when they relate to culture and religion.

Some of the aspects of public provision mentioned above have been neglected in Saudi Arabia, with most of the development indicators showing a lack of policy and environmental planning for open spaces in most of the cities (Mandeli, 2011). Hence, clear open space system strategies could be a solution to a number of issues, including concerns about pollution, the creation of an aesthetically pleasing environment and the development of educational and social issues. Making more open spaces available would also provide opportunities for greater contact between community members and improve facilities for adults and children. Therefore, it is necessary to develop approaches to open space design and planning that are specific to Saudi cities and allow for local sensibilities whilst upholding Islamic values.

Most of the studies regarding responses to open spaces are based on Western culture, and many are European-based (Addas, 2015). For example, the Saudi government has approved the plan 'New Vision for the Future', presented by the Council of Economic and Development Affairs (CED Affairs) (Affairs, 2016), the final stage of which must be completed by 2030. This vision has shown that the happiness and fulfilment of citizens and residents is very important to decision-makers. In addition, good health is a stated aim, and this can be achieved by encouraging people to partake in regular physical activities. The CED Affairs suggest that the project works in partnership with the private sector, to establish additional dedicated facilities and programmes, which in turn will enable citizens and residents to engage in a variety of sports and leisure pursuits. The Saudi vision 2030 has divided to many programmes and make a target to achieve this vision in some part by 2020. The quality life program 2020 scope is to improve the individuals' lifestyle and enhance the quality of life. The programme aims to develop the urban design and environment by providing green spaces, develop cities, and Preserve the Islamic and Saudi cultural patterns in new designs.

1.3 Background to Urban Public Open Spaces in Jeddah

Saudi Arabian cities have a large variety of urban public open spaces, especially in the larger conurbations, but the failure of decision-makers to meet people's needs renders these spaces useless. In addition, in some cases, decision-makers do not have the relevant background in planning and design that is necessary to understand the environment and the impact of the provision of open spaces upon society's health (Alhajaj, 2014). Notably, poor planning and the haphazard distribution of urban public open spaces are problems that Jeddah is currently

facing, because although there are many open spaces in the city, a large proportion of these places are difficult to use because of poor design issues and their general quality. However, there are also some urban public open spaces that are distinctive in design and quality, albeit limited in comparison with the size of the city. As a matter of fact, most public open spaces are designed for aesthetic purposes rather than for functional usage, and in some cases, the neighbourhood's spaces do not meet all the needs or requirements of residents. For example, below is a picture of a park, located in the northern part of Jeddah, known locally as 'Al-Sharq'. This neighbourhood park meets the needs of local children by providing a playground and green area; however, there is no provision of a seating area for family members or guardians, who need to supervise the children whilst they play (Figure 1-1).

Figure 1.3-1 Al-Sharq neighbourhood park.

Furthermore, many of the neighbourhoods have no planned or designed open spaces, even though there are many deliberately leftover plots because of planning. As a result, the city has a variety of urban public open spaces that could be exploited to improve public health. On the other hand, a few exceptions in this regard are very popular with residents. One example is the city storm water drainage channel, which locals use for walking, despite its poor quality and lack of facilities. Additionally, some of the city's open spaces have been transformed by the residents themselves into spaces where families gather, and where children can play on the grass. To enhance this move, the Municipality of Jeddah has added children's playgrounds to these areas and made provision for public services such as kiosks and other facilities. However, this is the exception rather than the rule, and most outdoor

spaces appropriate for recreational use have no design intention beyond being their original leftover plot of land. Nevertheless, it is clear that the people need open spaces and they have a desire to use them (Addas, 2015).

Most of the green spaces that are associated with leisure and health benefits are based upon European and North American design concepts, and so there is a pressing need to identify and incorporate a Saudi solution that provides aesthetically pleasing open spaces that accommodate the opportunity to take exercise. There are many factors to consider whilst undertaking this task, such as rapid urban expansion, increased health problems, the engagement of Western landscape architecture firms and the growth of the landscape design profession; therefore, this study is significant because it will examine the contribution of urban public open space design that encourages physical activity and social cohesion in these spaces, and this will be achieved through an understanding of users' needs.

Decision-makers with diverse backgrounds in health, education and other disciplines must pool their expertise and discuss relevant social issues together, as the current situation shows that these disciplines are isolated, with each expert deciding what happens in their sector, without referring to the other discipline's needs. Similarly, municipalities design outdoor spaces for the public without due consideration of people's desires or sufficient consultation. Recent statistics from the World Health Organisation reflect that women in Saudi Arabia suffer from the highest levels of obesity, diabetes and other chronic diseases, compared to their Western counterparts (WHO, 2015). Consequently, now is the time to find unity between the different decision-makers, to achieve ultimately the Saudi vision by 2030.

1.4 Health Facts

Furthermore, it is worth outlining the evidence that there is a need for exercise spaces in urban public open spaces and their potential to assist with the provision and use of urban public open spaces. According to WHO (2015), the Saudi Arabian community suffers from high blood pressure, obesity and other conditions associated with sedentary lifestyles. The statistics show that blood pressure is raised in 32.9% of males and 28.7% of females. In addition, obesity affects 29.5% of males and 43.5% of females, which illustrates that women have more problems with this issue, with over a third of women in Saudi Arabia said to be struggling with health complications as a direct result of being overweight. Furthermore (Al-Nozha et al., 2005), claim that the obesity problem may be worse than the numbers originally

listed by WHO. This reinforces the fact that there are greater need for exercise spaces to encourage Saudis as a major part of health education policy, by placing the individual in the position of being the primary influence on his or her own actions. For this reason, several health empowerment models are briefly described below, as a trend is in itself good.

Studies show that physical activities have health benefits against diseases such as diabetes (D. Thomas, Elliott, & Naughton, 2006), colorectal cancer, cardio- and cerebrovascular disease (P. T. Williams, 2001), obesity (Shaw, Gennat, O'Rourke, & Del Mar, 2006), osteoporosis, depression (Gast, Frenken, Van Leest, Wendel-Vos, & Bemelmans, 2007) and stress (Barton & Pretty, 2010). At the same time, physical activities have been found to improve mood (Barton & Pretty, 2010), aid fall-related injuries (Gregg, Pereira, & Caspersen, 2000), enhance well-being (Hansmann, Hug, & Seeland, 2007) and improve general health (de Jong, Albin, Skärbäck, Grahn, & Björk, 2012).

There are however some positive aspects of Saudi health. Probably no other nation of such a large geographic expanse and population, in comparable time has achieved so much on such a broad national scale by attaining a relatively high level of care made available to virtually all segments of the population (Almalki, FitzGerald, & Clark, 2011). Moreover, according to the World Health Report (2000), the World Health Organisation ranked the Saudi healthcare system as 26th among the world's health systems, above Canada (ranked 30), Australia (32) the United Arab Emirates (27), Qatar (44) and Kuwait, aligned with changes in disease patterns in Saudi Arabia reflecting similar patterns in the developed world. This shift from communicable to non-communicable diseases is partly a natural outcome of increased life expectancy (72.5 years for men, 74.7 years for women) and partly the result of changes in diet and lifestyle, as there has been a notable increase in the prevalence of chronic diseases such as diabetes, heart disease, cancer and childhood obesity (Al-Turki, 2000).

The diseases and health implications mentioned above may be the result of human behaviour or nutritional patterns that people follow in their lives. In addition, they might be the result of leisure time and sedentary work activities, which can also increase the likelihood of developing these conditions. Sugiyama, Healy, Dunstan, Salmon, and Owen (2008) suggest that sedentary behaviour is an independent risk on health and influence and the level of physical activity, while access to nearby open spaces and natural settings is associated with improved mental health.

Consequently, urban public open spaces may have a positive impact on public health, with their use for exercise reducing many of the illnesses in the community (N. Morris, 2003; Van Hecke et al., 2016) whilst simultaneously helping to reduce the government's health budget (Affairs, 2016). However, this doctoral research is one of very few studies on urban public open spaces in Jeddah, associated in particular with accommodating female public health needs and public health in general. The scope of this study is urban public open spaces that used by women users for physical activity. Additionally, as a part of this study the researcher will explore the pattern of use the urban public open spaces by women and have an opportunity to fill the gap in the knowledge that is base attributed to landscape architecture and the planning of public open spaces.

1.5 Research Aim and Objectives:

The aim of this research is to investigate the provision of urban public open spaces for physical activity and develop design recommendations for urban designers and landscape architects, in order to improve the use of physical activity in urban public open spaces for women in Jeddah; Saudi Arabia.

To achieve this aim, the following objectives will be undertaken and understood:

1- Identify urban public open spaces that provide physical activity for women in Jeddah.

2- Observe and record female activity, to understand their use of the spaces on different days and times of the year in a selected case study.

3- Identify professional practices in urban design and landscape architecture field for designing and managing urban public open spaces.

4- Validate/ emphasise the relationship of the factors that affect women's use of public open spaces for physical activity

5- Formulate design recommendations and guidelines for Saudi practitioners in the public sector.

1.6 Contribution of Knowledge

This research contributes to the urban spaces design studies literature and knowledge by exploring planning, urban design and landscape architecture practices in providing urban public open spaces for physical activity in a Western context. It provides evidence on

provision of urban public open spaces by concentrating on the Saudi cultural context of urban public open spaces.

It is not within this study's scope to address ecological principles such as topography, hydrology, climate change and sustainability, this study will focus on the Saudi Arabian urban context while also applying to the wider Arab and Muslim region.

It will also contribute particularly by helping to improve the use of urban public open spaces for physical activity by women specifically, as well as the development of some design and planning recommendations for future projects that are adequate and effective for physical activities. Moreover, the development of a typology of urban public open spaces in Jeddah for exercising and physical activity should make a useful contribution to academic knowledge. Additionally, developing a new typology of urban open spaces in Jeddah.

1.7 Thesis structure

This thesis consists of eight chapters and can be summarised as follows:

Chapter One presents the main purpose of this research and outlining the research problem, aim, and objectives. This chapter also highlights the gap in knowledge with regard to the women use of urban public open spaces for physical activity in Jeddah and how these spaces are used. It also shows intention for contribution.

Chapter Two presents review of literature, which reveals and identifies key theoretical contexts to the subject of this research. This study draws on research from a range of disciplines that have evaluated urban areas. The evaluation of urban area could be associated with physical activity which have already recognised the importance of meanings associated with specific places by users, as well as the concept of exercising and doing physical activity in the urban public open spaces. This chapter also introduce the factors that influence the use of urban public open spaces for physical activity. In addition, it presents the geographical context of the research and discusses current use and typology of urban public open spaces in Jeddah; Saudi Arabia.

Chapter Three describes the design and development of the research methodology applied in this research. This chapter divided to three main sections. First section describes the research methodology, philosophy, approach, choice, and case study design. Method use in this research presented in the second section by describing the data collection methods that used in this research. Thirdly, the data analysis section presents the analysis method that been used in this research by applying thematic analysis.

Chapter Four presents the analysis of the five case studies and explore the pattern of use urban public open spaces for physical activity. It also illustrates participant finding by developing four main themes and show cognitive map for each theme.

Chapter Five explores the finding of deign the public open spaces from the practitioner's view. This chapter presents five main themes that reflect practitioner's opinion about the use of urban public open spaces for physical activity for women users in design, management, and policies.

Chapter Six discusses the findings of this research. It presents and discusses the key findings from the last two chapters, and explores the essence of the research aims, according to the findings. In addition. It links these findings to the literature and suggests how these findings can be applied to improve the urban public open spaces in Jeddah to meet peoples' needs and desires of physical activity. All the presented findings are linked with the review of literature.

Chapter Seven Presents interpretive structural modelling (ISM) methodology to validate the relationship between factors that have been collected through literature review and data analysis sections. This chapter describes the method and how this conducted method are applied. The end of this chapter the hierarchy model of all factors is presented.

Chapter Eight is the conclusion of this research. It highlights the recommendations to improve the public open spaces in Jeddah. The recommendations have been divided to four categories that aim to improve planning, design, management of urban public open spaces and recommendations to improve municipality planning and design and the contributions, as well as the limitations of this research. It also includes a suggestion for future research.

1.8 Summary

This chapter has highlighted the presence of new forms of urban public open spaces that have been designed for physical activity, outlined women's attitudes and reflected that are unique and characteristics of Saudi society. The new turn government in experience of allowing women to have more rights such as car driving and got a position in public sectors will need to explore and investigate on how women use urban public open spaces for physical activity. Additionally, the characteristic of Saudi Society is different than western societies and based on Islamic Sharia. The current urban public open spaces in Jeddah designed based on western culture which make the spaces conflict with the Saudi culture. Furthermore, this chapter has illustrated the association between health and urban public open spaces. As result of health issues and raise the awareness through the society, the users need for more spaces to exercise and reduce the health issues by physical activity in public

open spaces. After reviewing the facts of the problems that face the Saudi women and identifying the health issues, the researcher therefore suggests that is how urban public open spaces in Jeddah used by women to develop design recommendations for the future spaces.

The following chapter investigates the findings from a literature review on physical activity in urban public open spaces and illustrates the factors that influence women to partake in physical activity in these spaces from the perspective of Western studies, as well as from the limited studies undertaken on the Middle East and North Africa.

Chapter 2. **Reviewing Dominant Paradigms of Urban Space Design Studies**

The literature review will examine the relevant themes, supporting theories and context for each of the research questions, and the study as a whole will attempt to present the similarities and differences between the methods.

2.1 Multiple Meanings of Urban Space

Since the early 1960s, a group of writers and designers, such as Jane Jacobs, Kevin Lynch, Gordon Cullen, Aldo Rossi, Ian McHarg, Christopher Alexander, Jan Gehl and others, have introduced a body of work that would become known as 'urban design'. Carmona (2010) defines urban design using the separate words '*urban'* and '*design'*: '*urban'* describes the characteristics of towns or cities, while '*design'* refers to activities such as sketching, planning, arranging, colouring and pattern-making. For Carmon, 'urban' has a widely inclusive meaning, embracing not only cities and towns, but also villages and hamlets, while '*design'* is as much about effective problem-solving and/or the processes of delivering organising development as about narrow aesthetics or particular physical outcomes. Cuthbert (2007), on the other hand, defines urban design as "*an open system that uses individual architectural elements and ambient space as its basic vocabulary, and that is focused on social interaction and communication in the public realm*."

Many contradictory and overlapping ideas on how to define urban spaces can be found in various disciplines, such as urban geography, urban sociology, urban planning and architecture. Generally, the concept in these various academic disciplines is concerned with space; however, its different uses can be intensified by the methodological styles and epistemological explorations relating to the description of urban space. According to Madanipour (1996), they include descriptive or normative, quantitative or qualitative, empirical or rational, material or mental, objective or subjective, procedural or substantive, and analytic or synthetic. However, Madanipour (2001) does highlight three complementary viewpoints that can help with the comprehension of urban space, namely the phenomenological, the physical and architectural deterministic approach and the social geometry concept.

Urban space is distinct from natural open spaces, in that it can be created and structured in accordance with its intended purpose. Phenomenological approach interprets the environment and explains it in terms of a person-space interface. As discussed in section 2.4.2. Authors working from the phenomenological perspective have criticised those having

a physical perspective for over-valuing objects and material goods while neglecting people's feelings and socio-cultural backgrounds (Madanipow, Hull, & Hesley, 2001). The second perspective, known as the physical and architectural deterministic approach, is a materialist deterministic example which conceptualises space as a collection of artefacts such as buildings, roads and other material objects (this will be explained in section 2.4.1) and in this strand artefacts' have direct effects and shape the experience and emotions of the users. Conversely, social geometry takes a humanistic view and considers urban space as relating to communities rather than the infrastructure of a collection of material objects, and it is the most widely held perspective.

The theoretical dilemmas reflected in these perspectives emphasise the multidimensional nature of urban space, and most planners and designers set out to provide multiple layers of representation that maintain the equilibrium with the physical geometry of urban space and its social and psychological dimensions (Madanipow et al., 2001).

2.2 Defining Public and Open Spaces

Defining the term 'public space' is also the subject of competing perspectives in the literature, and this in turn emphasises the multidimensional nature of public space. For example, the Concise Oxford English Dictionary (2011) defines the term '*public'* as *"concerning the people as a whole*," "*open to or shared by all the people*" and "*a section of the community having a particular interest or in some special connection*" (Stevenson & Waite, 2011). The term is also used in a variety of phrases such as '*general public', 'public opinion', 'public life'* and so on, all of which refer to a large number of people or to society or to the state. Madanipour (2003) suggests three sources of ambiguity when defining the term *'public'*. The first example is when the term is used to refer to society as a homogenous unit. Second, normative interpretations of *'public'* mean that while social anthropologists generally use it to denote human interaction, political theorists adopt a more normative stance, sometimes using it to indicate how human interactions should be conducted. Finally, a third use is connected with whether something is private or public, related to personal and impersonal relationships.

With regards to a definition for open space, it can be described as land and/or water that is physically not covered by buildings and is situated within an urban area (Gold, 1997). According to Gehl (2011), a Danish architect and urban designer, it refers to an outdoor area

that allows for different types of activities, including social or optional activities. Gehl describes optional activities as those taking place *"if there is a wish and time,"* and these may include walking, standing, sitting or sunbathing, while social activities have evolved from necessary and optional activities, which may include greetings, conversation and communal activities, as well as passive activities of watching and listening to other people. E. K. S. Morris (1979), refers to open spaces as unbuilt, i.e. upon ground that has been landscaped, designed and man-made for some leisure, recreational or exercise purpose. However, Jeddah open spaces refer to all spaces that are located in urban context like roads, roundabouts, vacant lands, street middle island, and public lands (Alhajaj, 2014).

2.3 Qualities of Successful Urban Spaces

A group of practitioners and theorists have identified the desirable qualities of successful urban spaces. Six key areas in this regard have been addressed by Kevin Lynch, Allan Jacobs and Donald Appleyard, Bentley, Francis Tibbalds, The Congress of New Urbanisim and Nan Ellin. Each one of them has identified different points of view to get more successful spaces.

Kevin Lynch (1984) identified five dimensions of urban design, in order to measure the performance and quality of the space, namely vitality, sense, fit, access and control. Allan A. Jacobs and Appleyard (1987) suggested seven essential goals necessary to ensure a good environment for urban spaces: liveability, identity and control (so people feel that some part of the environment belong to them individually and collectively), access opportunities, authenticity and meaning, community and public life, urban self-reliance and an environment for all.

Bentley (1985) published the 'Manual for Urban Designers', which detailed an approach emphasising the necessity for environments to be more democratic and enriching, centred on increasing the extent of choice for users. In the work, it is highlighted that such an environment, in essence, should be democratic and focus on providing users with further, more enriching opportunities through enhancing their choices – in terms of both selection and range (Bentley, 1985). This means that built environment should provide to users spaces and variety of environments to maximise the choice level and availability of sites.

As recognised by Carmona, a space's environment has a notable impact on the decisions made by the people using that space, such as in the following regards:

- Permeability, relating to where users can and cannot go.
- Variety, relating to the scope of available use.
- Legibility, relating to the ease with which users are able to comprehend the opportunities offered by the space.
- Robustness, relating to the extent to which a specific purpose can be used for varying uses.
- Visual appropriateness, relating to whether the physical appearance of the area presents users with insights into how the space may be used.
- Richness, relating to users' choice of sensory experience.
- Personalisation, relating to the degree to which users are able to add their own unique touch to the area.

In addition, Francis Tibbalds (2012) suggests ten principles that supporting the urban designers to design in sophisticated way. These principles are place matter most, learning lessons from the past, encouraging a mix of uses and activities, designing on a human scale, encouraging pedestrians' freedom, providing access for all, building legible environments, building lasting environments and controlling change, and joined them all together as the main principles behind a more sophisticated urban design framework.

Throughout the 1990s, in the USA, two sets of ideas were presented in the 'New Urbanism' arena, namely traditional pioneered by neighbourhood development and neo-traditional neighbourhoods, the core idea of which was centred on devising new neighbourhoods that were comparable in nature to more conventional neighbourhoods (e.g. (Duany, Plater-Zyberk, Krieger, & Lennertz, 1991).

In cases where the main underpinning idea was concerned with designing neighbourhoods explicitly associated with transport connections, and with the aim of providing adequate density to facilitate the viability of public transport, the terms 'pedestrian pockets' and 'transit-oriented development' were applied e.g. (Calthorpe, 1993; Calthorpe, mack, & Carlson, 1988).

More officially documented through the implementation of 'New Urbanism', in 1993, a charter sought to advocate and encourage the redesign and alignment of public policy and development practices, with the objective of supporting the following aspects:

- Neighbourhoods with more diverse populations and uses.

- Those communities created in mind of transit and pedestrians, in addition to the car.
- Towns and cities created in adherence with accessible and physically defined community and public spaces.
- Urban spaces with landscape and architectural components embracing the local building practice, climate, ecology and history.

Furthermore, the charter also presented very in-depth and comprehensive points with the aim of guiding development practice, public policy, urban planning and design across three spatial scales: the block, the street and the building, the neighbourhood, the district and the corridor, and the region, comprising the metropolis, city and town (Urbanism, 1993).

Ellin (2013) introduced 'integral Urbanism', requiring five qualities to ensure successful urban spaces: hybridity, connectivity, porosity, authenticity and vulnerability.

- The combined between objects and functions rather than isolated hybrid and connectivity link activity and people together, dealing with people and nature in a symbiotic way. Also included landscapes and buildings rather than obstruction or opposition.
- Porosity maintains the overall core of the individual components that have been combined whilst further enabling mutual access through a more permeable membrane. *'Porosity'* refers to more than just the circulation of people through a city but to a positive condition occurring with varying success and prevalence in urban environments across the city and it could be close to fluidity.
- Authenticity is known to bring together and dynamically interact with and draw inspiration from actual physical and social aspects with consideration to honesty, respect and care, as with all thriving organisms, a city that is authentic in nature and ensures its integrity continuously evolves and changes in line with any new needs and uses presented to it. This comes from a self-adjusting feedback loop, which determines and oversees any failures and successes, strengths and weaknesses.
- Vulnerability warrants the need for users of a space to 'let go of any control, react to what is experienced and to value the process in addition to the outcome, whilst also ensuring continuous reintegration between space and time'.

Furthermore, a study of London's urban environment quality identified eight main factors responsible for attaining good-quality urban spaces and environments: the human scale and compactness, structure legibility and identity, cleanness and safety, urban management,

visual richness, activity and mixed use, public spaces and special places, and moving about and pedestrian friendliness (F Tibbalds, Colbourne, & Williams, 1993). Likewise, Jon Lang (1994) suggests that all environments can be comprehended in terms of four overlapping components, the namely terrestrial, animated, social and cultural environments. Terrestrial and animated factors include the climate and linked local micro-climates, natural environment, geology, topographical features and land forms and sources of food and water, whereas the social and cultural factors concern a settlement's original purposes, patterns of land ownership, the culture of inhabitants, relations with neighbouring populations and the ability to adapt to changing circumstances.

2.4 Urban Design Dimension

The following section discusses the dimension of urban design which deals with daily issues. Carmona (2010) introduced six different dimensions of describing urban public open space design, i.e. morphological, perceptual, social, visual, functional and temporal, in order to provide a better understanding of urban design.

2.4.1 The morphological dimension

The morphological dimension was founded by Camilo Sitte (1843-1903), who advocated the principles of continuous building in 1889. The urban morphology is defined as the study of change in the physical form and shape of settlements over time. This focuses on patterns and processes of growth and change (Carmona, 2010). Three different way of thinking of thought in terms of typo-morphology were identified by Moudon (1994):

- All examine the build structures' volumetric aspects alongside their own associated open spaces in such a way as to define a built landscape form.
- All encompass land and its various divisions as a constituent aspect of type, thus positioning land as the connecting factor between city and building scales.
- All take into account the type of the built landscape as a morphogenetic unit owing to the fact it can be defined over time in terms of its creation and utilisation, and how it evolves and develops.

According to Conzen (1960), settlements can be divided into several key elements, such as land use, building structure, plot patterns and street patterns. In urban design, the urban space has two project levels: urban spaces for the urban block and project, and the city level. Each level should consider different physical attributes in its analysis. For the urban block and

project level, three urban design dimensions have been introduced in order to identify physical attributes such as size, architectural details, landscaping, construction materials and visual appearance.

Krier and Rowe (1979) suggest that urban spaces are the most important elements in the creation of the built environment and can be divided into two categories, solid and void. The former refers to buildings and all physical formations or elements on the ground, whereas the latter considers all open spaces designed or not designed as parks, plazas, squares, courtyards, playgrounds, pathways or streets (Carmona, 2010). At the city level, Krier and Rowe (1979) see the city as basically formed by spatial comprehension in the form of street patterns, parks, playgrounds and other open spaces.

2.4.2 The perceptual dimension

The perceptual dimension is a basic and essential dimension of urban design, and it includes gathering, the experience of place and organising and making sense of information about the environment. Perception refers to a more complex understanding of stimuli (Carmona, 2010). Four types of perception were identified by Ittelson (1978): cognitive, affective, interpretative and evaluative. Psychologist and professionals in urban planning and design have shown increasing interest in environmental experience studies, aimed at illustrating how spatial attributes play various roles in the ways in which individuals respond to their physical surroundings. Through the second half of the twentieth century, three basic theories emerged to explain human perception, namely cognitive, behavioural and ecological theory. Cognitive theory was based on Gestle's theory (Downs & Stea, 1973; Lynch, 1960; Nasar, 1998) , behavioural theory based on transaction list assumptions (Webber, 1964) and ecological theory on people's experiences relating to the urban environment.

Two processes apply in gathering and interpreting environmental stimuli for the perceptual dimension: sensation and perception. Sensation refers to human sensory systems, which are valuable for interpreting an environment, namely vision, hearing, smell and touch, each of which provides more information than others. For example, visual perception is a highly complex phenomenon and relies on space, distance, colour, shape, textural and contrast gradients (Carmona, 2010), whereas touch provides more experience of texture through the feet and hands (Porteous, 2013).

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The way a person creates an environmental image and the way this image is varies individual. Images depicting the space are recognised as an outcome of the numerous processes involved in sorting a huge volume of environmental stimuli filtered by personal experiences and values. As noted by Lynch (1960), environmental images stem from a mutual process taking place between the environment and the observer, with the former highlighting links and differences from which observers choose, arrange and assign meaning to what they see.

Moreover, the place images and their corresponding identities, i.e. 'imageability', are discussed by Lynch (1960) as presenting the potential and likely outcome of a space, providing a clear, strong image in the viewer's mind. Despite the fact that place images are contained within the viewer's mind, insights can be gained through consideration of the external stimuli that have been drawn upon and used as a filter in their creation.

Furthermore, Lynch (1960) argues that environment images need three different aspects. The first one is Identity and it relates to the differentiation between an object and other things. Identity is unique as an individual entity. Next is the structure which refers to the spatial relation between the object and the observer, as well as between the object and other objects. Finally, it is imperative that the object provides the observer with some meaning, whether this is of an emotional or a practical nature.

Cognitive-perception studies and the Gestalt theory

In 1920s Germany, Gestalt theorists were the first group of psychologists concerned with the systematic examination of human perceptions, suggesting that perception, as a process, is holistic in nature, as highlighted by Carmona, Heath, Oc, and Tiesdell (2012). When defining the Gestalt theory, the work of Koffka (2013) outlines that the environment provides a number of stimuli in the form of what is termed a *'behavioural atmosphere'*, as opposed to delivering stimuli for human behaviour. Psychologists belonging to this school of thought present the view that human perceptions can be arranged into figures, with such professionals creating a number of rules and laws believed to affect the perception of form, numbers which are viewed as both valuable and fundamental for environmental design. The laws include those of enclosure, continuity, proximity, similarity and symmetry. Amongst the key aspects inherent in the Gestalt concept is the stress placed on subjective mental responses, otherwise referred to as 'covert' behaviours, in line with visual environmental patterns linked to social and physical action that is not immediately observable, which are viewed as being entirely separate from overt behaviours linked to bodily action that people can directly and sensorially observe. including external physical activities, for example walking, running, dancing (M. A. Alnowaiser, 1996; Bechtel & Churchman, 2003; Tuan, 1975).

In considering the laws of visual organisation, a number of different works conducted by professionals in environmental design have been shaped and steered in line with such concepts, adopting cognitive mapping as an approach to systematic inquiry, and examining the ways in which individuals experience their surroundings. When seeking to map feelings, the most direct source is the work on image maps, recognised as stemming from the 1960 work of Lynch, and its various additions, which have been applied in such a way in order to assess images at the city scale (Nasar, 1998) or regional or national scale (Gould & White, 2012). Overall, such works have directed their investigative efforts towards spatial legibility and symbolic values, both in nature and in human settings (Rofè, 2004). In this regard, it has been noted by Lynch (1960) that there are various lines of agreement across different groups in relation to people's mental image of places and how they would be described. In a comparable vein, as shown in the work of Downs & Stea (1973, cited in Al-Nowaiser, 1982:53), the spatial behaviour of people depends on the spatial environment's map, from the perspective of the individual. Accordingly, an appealing public setting is one that can be

mapped, from a mental viewpoint, and which has three individual elements, namely identity, meaning and structure (Ford, 1999; Lynch, 1960; Rofè, 2004).

In essence, the literature available on the strategy of cognitive mapping provides a clear support of the view that the laws of visual organisation presented by Gestalt are fundamental when it comes to estimating the various elements of the built environment. In addition, the summarisations presented by various scholars (Lynch, 1960; Norberg-Schulz, 2013) in the field are comparable to their statement that order can be achieved through the adoption of the Gestalt cognition-perception principles (J. T. Lang, 1987). In further agreement with their view, in order for a public space or place to be highly imageable, there is a need for it to be recognised as a well-structured and clearly defined system of different elements that are linked to one another.

The behavioural approach and transactional philosophy

The clear objective underpinning the approach of behavioural sciences is centred on the need to explain and rationalise phenomena such as the relationship between space and society, with the aim of providing estimations in relation to activity patterns. Behavioural science, as a concept, is most commonly perceived as encompassing a number of different aspects, namely anthropology, sociology, psychology and, at times, economic and political science. Through such sciences and their development, a notion held by many is that the perceptions of the human environment stem not only from sensory experiences, but also from experiences in perception, with another key influencer being that of the dynamic link between the environment and the observing individual (J. T. Lang, 1987).

When discussing the issue, it is noted by Relph (2008), as one example, that a sense of place and environmental images are not only discerning notions of an objective reality, but also, and more specifically, very deliberate interpretations of what is or is not recognised as the present. This implies that a sense of place is seen to exist in the human interpretation of the setting as opposed to in the physical setting itself (Jorgensen & Stedman, 2001). In this way, it may be stated that behavioural theory can be recognised as a standpoint that highlights overt social behaviour, which may be recognised as the behavioural pattern demonstrated by a person and which ultimately sets the individual aside from the environment. Furthermore, various scholars advocating this method highlight that, despite spatial behaviours being

shaped and influenced by various physical and socio-cultural factors, it remains that psychological needs and personal traits, including links to the community, territoriality and privacy, are viewed as key underpinning determinants (Altman, 1975; Barker & Station, 1968; J. T. Lang, 1987; Sommer, 1969; Webber, 1964).

In consideration of the intellectual foundation providing a base for behavioural perspectives, it is recognised in the study by Lang (1987) that it is centred predominantly on various theoretical models, including the transactional philosophy of Dewey and Bentley (1960), the psychology of Ames, Dewey, and Cantril (1960) and the sociology of Mead (1903). In line with the different assumptions underpinning transactional theory, for example, perception, as a process, is multimodal, active and supervised by both predisposition and experience. The environment's image, as held by the individual observer, is affected and shaped by both present attitudes and motives, as well as past experiences (Lang, 1987: 90).

Tuan (1975) holds the view that a place can be recognised as a sphere of meaning, which further highlights and stresses relationships, links and feelings. In a comparable vein, Relph posits the view that feeling an attachment to a link becomes more prominent with the passing of time, with such a link associated with the interaction between individuals and their environment, as opposed to being established by the physical setting itself or in isolation. In this way, physical aspects, including location, as an example, are not sufficient in establishing a sense of place; rather, interactions between society and space are also required. In line with the behavioural approach in this regard, public space may be acknowledged as being an area far beyond a mere morphological definition of a geographic setting, comprising a definitive physical structure and a number of different textual elements. In actuality, it is a fluid, dynamic and changeable context in terms of memory and social interaction. Accordingly, any interaction with space amongst groups, or in terms of senses or even personal engagement, may be identified as a process that assigns meaning to space and assists further in determining connections for such within the public domain (Lang, 1987).

The ecological theory of perception

Gibson (1966) formulate the ecological theory that examines the relationship between perception and the environment. Ecological theory explains structural elements of social contexts that are essential in understanding the basis of social problems, For instance, in a

structural model of the social ecology, Bronfenbrenner (1977) described the "*ecologies* of *human development*" as a series of concentric, interpenetrating contexts in relation to which individual behaviour exists as both a process and outcome of adaptation. Contexts include the microsystem, comprising immediate environments such as home; the mesosystem, which includes interactions among developmental settings; the ecosystem, which includes institutions such as neighbourhood, and government; and the macrosystem. which refers to societal and institutional norms, reflected, for example, in laws and standing patterns of institutional practice.

Through the ecological theory of perception, it is stated that, with the assistance of sensory arrays, the human mind is able to identify both temporal and spatial data in the external environment. Such data communicate information that may be recognised by the brain, including optic array feedback, which is known to encompass all visual data as perceived by the retina. Subsequently, this adopts a role of internal force, recognised as covert behaviour, which continuously communicates instructions to the human body; these are then interpreted as physical actions, referred to as overt behaviour, encompassing emotionally-centred, verbal and non-verbal conduct, as highlighted in the work of Altman (1976). In line with this particular context, person-space interfaces may be viewed as the outcome of more complex interactions between covert and overt behaviours and the different aspects inherent in the setting, including the economy, changes in the environment, nature and socio-cultural norms (M. Alnowaiser, 1984).

In relation to the intellectual core governing the ecological theory of perception, it is highlighted in the works of Lang (1987) and Bosselmann (2012) that the key foundation stems from the study of James Jerome Gibson (1966), who posits the view that the most appropriate level for explaining perception is ecology as opposed to geometry or physics, as applied in more traditional perception-based theories, including that of the Gestalt theory. In this sense, it is noted by Zhang and Patel (2006) that, for conventional theory, perception may be defined as the processing of the retinal image created as a result of environmental stimuli. On the other hand, as noted by James J Gibson and Gibson (1955), environmental perception is one and the same as perception of the self. In line with the assumptions postulated by ecological theory, the meaning of public space can be seen to stem from clues that are recognised, validated and then committed to memory. Owing to the fact that the observer's own perceptual experiences of such spaces are influenced by sensory processes,

such as the optic array, for example, which are known to differ in line with changing conditions over time, there will be variations in terms of meaning for those who consider them from above (such as when utilising satellites through remote sensing) and those who consider them directly when in the city. Such a perception is also recognised as varying from one person to the next when some regulate and create cities, whilst others actually use the space (Madanipour, 1996).

In conclusion, the built environment's perceptual dimension is seen to stem from a response to a modern functionalism, as well as from the morphological method's abstraction. In line with this viewpoint, when public spaces are being provided through urban design, there is a need for the way in which the visual organisation of the public spaces and their linked artefacts are made legible is taken into consideration, as well as how a spatial context is provided for the public domain when it comes to determining social or group identity. Furthermore, when setting in motion the organisation of a public space, there is a need to ensure that correspondence between the meanings communicated by such spaces and users' behaviours are maximised, in order to ensure that the evocation of spatial meanings is conducive to such a degree that the relationships between them can be served and created by them (Altman & Low, 2012; J. T. Lang, 1987; Madanipour, 1997; Rapoport, 1990).

2.4.3 The social dimension

In general, the social dimension shows understanding of the relationship between people and urban public spaces as spatial aspects (space) (Mandeli, 2011), where the physical environment has a specific effect on human behaviour. J. Wolch and Dear (2014) argue that social relations can be constituted through space or by space or mediated by space. Constituted through space occurs when site attributes affect the settlement form, whereas constituted by space concerns physical environmental facilities or inhibits people's activity. In addition, they argue that mediated by space as the friction of distance facilities or obstructs the development of different social practices.

This section demonstrates four key aspects of the social dimension. The first focuses on theoretical existence, and the second focuses on the interrelated concepts of public life and the public realm. The third discusses and sheds light on the concept of social exclusion, while last one focuses on the characteristics of public spaces that provide social interaction.

The theoretical existence of the social dimension

Social urban theory was presented in the 20th Century as a fundamental aspect of the social theories affected by the Chicago school of sociology (human ecology), which was first introduced earlier on in the century. This particular train of thought focused on urban geography through the works of various authors, including Burgess (1886–1966) and Nels Anderson (1889–1986). In the case of Anderson, his theory of evolution pertaining to urban areas centred on two key paradigms, namely environmentalism and determinism, which examined the ways in which the built environment influenced societal development through directing urban planning and social intervention agencies (Madanipour, 1996).

From the 1950s, urban geography, in terms of its conceptual foundation, was repositioned in line with the introduction of two innovative paradigms, both of which were devised as a response to the criticism assigned to the mainstream paradigms utilised in urban sociology. The two paradigms are behavioural studies and political-economic analyses, both of which encompass the critical interpretation of the link between space and society, with the aim of widening the extent of urban studies through placing emphasis on urban phenomena's subjective and political-economic aspects (Madanipour, 1996). Accordingly, a number of different theoretical frameworks can be recognised as providing intellectual foundations of the social reality approach to urban design and planning, as follows.

Social reality is recognised by some scholars as an interplay between universal mental structures, all of which may be identified through the application of systematic analysis, as highlighted in the various studies carried out by Strauss Lévi-Strauss and Layton (1963), Piaget (2015), and Foucault (2003). The work carried out by Jürgen Habermas (2015) centred on the theories of communicative action, alongside those completed by Weber (2009), as well as the various theories devised in the studies by Parsons (1961) across Western Marxism, are all recognised as relevant in this domain. Importantly, Neo-Marxist urban theories, as discussed in Lefebvre (2017) , D. Harvey (2010) and Castells and Sheridan (1977) , considered the social-scientific interpretation of humanistic Marxism, as well as the role adopted by urban space throughout collective consumption and capital accumulation.

The notion of the public sphere has been highlighted and discussed in various other works, namely those by Arendt (2013) and Jurgen Habermas, Habermas, and Mccarthy (1991), as well as by other academics from the liberal tradition, such as Calhoun (1992). '*Public Sphere*' or '*Public Realm*' are essential to social life and often used interchangeably alongside public spaces and life concepts (Mitchell, 1995). The terms 'public' and 'private' stand clearly in opposition to each other. According to Kamerman and Kahn (2014), the public realm may be considered as an open and visible area, such as a public market place or a relationship, such as public sociability. Private in socialist societies, for example, since their ideology reinforces the socialist aim of abolishing class and social differences, there is no boundary between private space and public space as all open spaces in the urban environment are normally public, and private spheres should meld with public sphere.

'Social exclusion', as a concept supported in the work of Madanipour (2015)Madanipour and (D. Byrne, 2005), is argued as leading to spatial separation and social disintegration in modern-day European cities as a result of economic, political and cultural discrimination.

It has been posited by various scholars (Luckmann & Berger, 1964; Schutz, 1967) that the term 'sociology of knowledge' first came into widespread use in the 1920s, at which point various sociologists in Germany, e.g. Scheler (1874–1928) and Mannheim (1893–1947), published various works on the subject. They claimed that all beliefs, dogma and knowledge are the outcome of various socio-political forces. In this regard, in an effort to establish the link between social context and human thought, there is first a need to garner insight into the various processes and structures of consciousness that form the foundation of and make up social reality. Furthermore, it is not possible to comprehend fully behaviours and social beliefs unless cultural and historical contexts are taken into account (Fathy, 1989). In the phenomenological sociology study completed by Schutz (1967) , emphasis is placed on the structure of the common-sense world, with the idea of knowledge of receipt defined as a critical aspect for people when interacting with other people in a social life capacity.

In the social dimension, the second foundation is structuralist theory, which was a trend in France throughout the 1950s and 1960s. It is an approach concerned with examining phenomena, including those arising in anthropology, as characterised by a contrast in the phenomena's elementary structures in a system of dialectical opposition. This creates the

foundation for semiotics (the study of signs) and further provides the benefit of a socially constructed symbolic meaning of urban forms (Hawkes, 2003).

Social exclusion

In consideration of the social exclusion view, the work of Madanipour (2003a: 183) has provided a valuable contribution, relating the social creation of urban spaces with political economy theories. When it comes to outlining the term 'social exclusion', the scholar stresses that it may be viewed as a socio-spatial phenomenon caused by the lack of social integration, in addition to the modern urban environment's disintegration. It is stated further that the distinction identifiable between public and private spheres requires that boundaries are drawn in relation to various temporal and spatial domains, with the exclusion of others. A number of different populations, for example, are divided as a result of national borders. In much the same way as the public sphere concept, social exclusion is seen to centre on access, whether in terms of resources, to common narratives or to decision-making. In this regard, Carmona (2010) note that, although by definition there should be access to the public realm by all, some settings, whether it is intended or not, are not as accessible to some populations in society. On a wider basis, social exclusion, as an issue, causes a number of different issues to be raised, specifically in regards to theoretical barriers and obstacles, the social control of the built environment, the environment's reproduction and societal reproduction (King & Johns, 1991).

In line with this idea, it is noted by Ruddick (1996) that the city environment has been created in such a way that females are more commonly excluded from the public realm, where their inclusion is witnessed only in a limited role. Social exclusion manifestation can be seen through various examples, including the privatised spaces in modern cities and the rigid spatial segregation on racial criteria in the colonial city. In this same vein, it is noted by Cars, Madanipour, and Allen (1998) that the space of the city is influenced by a number of different boundaries and forms, all of which have their own meanings and configurations. As a result, this has led to the spatial separation of different activities when viewing through the different lenses of age, class, ethnicity, identity, race, and types of occupation, as examples in this regard.

In addition, urban policies and management practices may also be considerations in the social exclusion discussion when it comes to protecting public spaces and regulating urban development. A number of different rules and regulations, and various strategies, aim to ensure certain individuals are excluded from gaining access, or otherwise they are prevented as a result of certain places and groups. This is achieved through a combination of the legal social control of space and the use of physical design strategies for the spatial organisation thereof (Carmona, Heath, Oc, & Tiesdell, 2003; Madanipour, 2015). There is also the potential to link exclusion to public expenditure reduction specifically across social welfare initiatives, as well as in relation to the support for public amenities being privatised, which excludes various groups that had previously been able to benefit from such programmes; this in turn leads to social breakdown (D. Byrne, 2005). Importantly, it is outlined by Kamerman and Kahn (2014) that, in larger cities of capitalist societies, as a direct result of the capitalist production relations and market-focused spatial system that encourage market-focused political values, the colonisation of urban spaces has occurred through a commodified system in such a way in order to serve the interests of economically leading groups (Allen, 1990; Madani-Pour, 1996). Accordingly, exclusion may be recognised as a manifestation of power, which decreases overall access to spaces in such a way as to ensure particular interests are safeguarded, which subsequently means the public character of the public realm is decreased (Akkar, 2005).

There is a need to recognise that, in modern metropolitan areas, there is now much more interest in the public realm being more inclusive, with Starr (1988) suggesting that the clear change witnessed in the balance between public and private has instigated a shift from the public realm being open and transparent to a focus on being on the private domain, which is inaccessible and lacking in transparency. In this way, the desire for exclusiveness and the propensity to decrease the scope of an inclusive society and accessible public sphere are expressed. Accordingly, in an effort to assist designers in creating urban spaces that encourage social integration, there is a need for additional focus to be centred on spatial freedom when it comes to planning and management practices devised in order to regulate the creation of such spaces (Madanipour, 2003).

Public spaces for social interaction

The literature provides overall acceptance of the view that the public space is appropriate when it comes to chance encounters, cultural displays, celebrations and interactions (Mitchell, 1995). Lefebvre and Nicholson-Smith (1991), for instance, considers that all societies across history have influenced their social areas in such a way that satisfies the need for social functioning and economic production (Arefi & Meyers, 2003). Furthermore, it is held by (Garba, 2012) that public space should facilitate commerce, religion, sport and impersonal encounters, with various works having shown that there are a number of different considerations that could affect social interactions in the urban space.

When considering physical factors, the normative theories pertaining to urban planning and design provide a number of statements concerning the way in which urban space organisation influences communications and activities between individuals. In this regard J. T. Lang (1987) use the terms 'sociopetal' and 'sociofugal' when explaining spaces that discourage or encourage social interactions. The former of these spaces refers to those where it is easy to maintain eye contact and to interact in-person, whilst 'sociofugal' spaces may be recognised as those that facilitate the avoidance of interaction.

In this regard, Lang (1987) stated that social interactions arise when there is balance in the social needs of individuals, notably through privacy needs being met. Undefined spaces that fall into neither private nor public spaces are known to dissuade interaction, owing to the fact that communications can be difficult to arrange. In short, as highlighted by the social reality approach, it is possible to define public space as a place where social interaction is facilitated. When examined from the social standpoint, if there is a need to gain insight into public spaces, we can first consider the geometry of social relationships in structuring the city, in addition to assessing the way in which such spaces are created across the more comprehensive context of the societal process (Madanipour, 2003) .

2.4.4 The visual-aesthetic dimension

A number of different observers and critics have called into question whether or not the aesthetic or visual aspects of an urban environment can be valued in and of themselves. When it comes to devising and expanding on the concept of the townscape following the conclusion of World War II, in 1945, the point was made by Gordon Cullen that, as much as

there is an art-based element inherent in architecture, it remains that there is also the presence of an art relationship in which all aspects that contribute to environment creation, such as advertisements, buildings, nature, traffic and trees, for example, are combined in order to achieve drama-release (Broadbent, 1996). Further expanding on the point made by Cullen, the urban environment may be recognised as completely detained through vision, with such a vision responsible for our recollection of emotions, experiences and memories (Cullen, 1995).

In such a regard, it is noted in the work of Bacon (1975) that the city may be recognised as a work of art, with the scholar emphasising that it comprises two individual aspects of "the architecture of movement and the architecture of repose.". In this vein, it is further noted by Rapoport (1990) that the built environment's visual aspects are seen to go along continuously with some degree of valuable experience. In a comparable line of thought, the point is made by Carmona et al. (2010) that there should be aesthetic recognition of the urban setting that is not only visual but is also recognised as an outcome stemming from cognition and perception. Comparably, the study by Bosselmann (2012) suggests that, whether consciously or unconsciously, all people respond to visual clues, understand their value and act accordingly on the knowledge they are given. In consideration of the discussion presented above, it may be suggested that, in line with the visual-aesthetic theory, a public domain could be recognised as a work of art that could be both mentally and visually valued by both observers and its users. This particular section places emphasis on two fundamental considerations: the first of these is seen to comprise both a townscape's and an urban space's aesthetic qualities, whereas the second places emphasis on the design aspects that outline and are present within urban space.

The aesthetic qualities of urban space and townscape

When it comes to categorising urban spaces, this can be carried out in consideration of negative and positive space: while the former is viewed as problematic to conceive and as being without form, the latter is comparatively surrounded and seen as having a distinct shape, as noted by Trancik (1986). Three key aspects may be recognised when it comes to establishing a positive urban space, namely the floor, the surrounding structures and the imaginary area of the sky overhead, which is recognised as needing to be as much as three to four times the height of the tallest building (Carmona, Heath et al., 2010). It may be inferred from this notion that the extent of spatial containment and enclosure, to some degree, relies on the ratio between the space's width to the surrounding buildings' heights. Furthermore, when buildings are positioned in a conscious way, to establish a feeling of spatial containment, it is then possible to create a positive space.

In an effort to harvest more in-depth insights into public spaces' aesthetic qualities, the thoughts presented by Camillo Sitte and Paul Zuker should be considered and taken into account. Having supported the more idealised method surrounding urban space design, in line with aesthetic and visual qualities of European urban spaces and the examination of such, Sitte (1986) presented a number of different artistic principles, such as enclosure, freestanding sculptural mass, the placement of public monuments and/or statuary and the proportional shape of a space to the surrounding buildings (Carmona, Heath et al., 2010). In a similar way, five underpinning forms of artistically relevant urban spaces were presented by Pundt and Zucker (1959): first, the complete enclosed space, which is referred to as the closed square; second, a group of buildings or just one building, making up the dominated square, where the space is arranged in relation to the buildings; third, the nuclear square, which is created in direct regards to a central point; the grouped square, which is recognised as linked, from an aesthetic viewpoint, and which delivers a successive mental image that may be incorporated as part of a greater whole; and, lastly, unlimited space, as showcased by the amorphous square (Carmona, Heath et al., 2010). It is also possible that there is the production of streets and squares' aesthetic qualities through placing emphasis on the continuity principle, as well as enclosure. As emphasised by this principle, a network of public space should be well positioned to establish a number of different townscape effects that comprise shifting views and landscapes, an interaction between vistas and combining streets and buildings in such a way that it is possible for there to be a release of visual drama (Cullen, 1995).

Design principles that define the urban space

From both aesthetic and professional standpoints, the ways in which urban environments are designed are manifold, as are the approaches to treating its urban spaces in such a way that allows a pleasing, positive space to be created. In line with the idea of Cullen (1995) in relation to serial vision, it is possible for the environment to be effectively positioned should there be suitable consideration, by the designer, of the link between the physical space and the human body. Furthermore, it is also emphasised that, owing to the fact that the way in which the urban setting is experienced is dynamic in nature, comprising both time and movement, a setting such as this needs to be designed from a moving individual's perspective (Carmona, 2010; Gehl & Gemzøe, 2001). In addition, Cullen (1995) suggested that an urban environment that is considered to be pleasing from a visual perspective, or that provides a sense of identity, is achievable through the presence of various and different principles, such as inspiring a sense of individual places and the recognition of drama through the provision of identifiable landmarks, unforgettable situations, focal points, enclaves and enclosures and precincts, deflections, colonnades, closed vistas, projections, arcades and irregular spaces, for example (Broadbent, 1996; Carmona, 2010).

In a comparable sense, in the work presented by Lynch (1960), titled 'The Image of the City', the visual consideration of the city is read through highlighting the value of examining the mental images it produces, and which are stored in all citizens' consciousness. More specifically, he seeks further to arrive at legibility and clarity in the cityscape, having established a number of different components that create images of the city itself: districts, edges, landmarks, nodes and paths (Carmona, 2010; Ford, 1999). At the level of the urban block or the project overall, it is stated by Lynch that an urban space's visual-aesthetic qualities stem not only from their spatial configuration, but also from their colour, defining surfaces and texture. More specifically, an urban space's or a physical object's quality, which provide a significant chance of encouraging a clear image in any particular observer, is its imageability, which may be taken to mean anything that relies on the way in which a designer manages and considers its colour, design details and organisation in such a way as to encourage the creation of vividly identified mental images (Broadbent, 1996).

It is critical to recognise that there is much agreement between social-science-focused academics and urban designers in regards to the largely average quality of public spaces in the specific context of post-war urban developments. This may be recognised as owing to built environments' human dimensions being more commonly minimised to aesthetic

criteria that replicate only the mere ambitions and goals of design professionals. The latter seems to have chosen to disregard such spaces' more utilitarian considerations, in addition to their capacity as an approach to social power. As a result, such spaces' designs seem to encourage a negative, depressing regularity through which more conventional architectural principles and urban designs have been neglected (Kallus, 2001). A number of other commentators in this regard, including Punter (1999), have voiced their own views in regards to modern aesthetic control in the UK, emphasising that this is not dissimilar to 'putting lipstick on the gorilla'. In an effort to improve modern developments' visual qualities, some urban professionals (Carmona & Tiesdell, 2007; J Lang, 2005; Madanipour, 2007) suggest that there is a need to establish a relationship between aesthetic qualities and a more wide-ranging, multidimensional urban planning and design approach that actively encourages the quality of urban design whilst simultaneously ensuring meaning in development provision.

2.4.5 The functional dimension

From a conventional perspective, the way in which functional modernist architecture and urban design are defined was considered in the work of Bauhaus, notably through the de Stiji movement in Holland, and to the Rationalism of Le Corbusier, which ended up being inferred to mean cost-efficient, hygienic and effective in terms of the flow of people and traffic flow whilst also opportunely delivering the key needs of life. When coming to examine the 1960s, such a definition was viewed as being very restricted, as voiced by J. Jacobs (1961), with designs centred on what was recognised as an entirely operational criterion then becoming uninteresting and non-responsive to change. At the present time, urban design functionalism has been defined in a far more complicated way than that favoured by Modernists, owing to the fact it has been developed with an emphasis on a significant number of requirements amongst diverse individuals and the tools and approaches potentially applied in satisfying such requirements (Carmona & Tiesdell, 2007). In other words, urban space, as a concept, which has been included as part of urban design discourse throughout the most recent thirty years, is associated with two key concepts, namely the architectural space and the social space. The key differentiation to be made between the two concepts can be seen when examining the treatment of the city as a spatial urban fabric in which the various types are impartial from a functionality perspective, notably going against the opinion that there is a need to take into account the form of the city, as established through function (Kallus, 2001; Carmona, Heath et al., 2010).

Accordingly, this particular section directs attention to the way in which public space functions and what this infers for individuals. In particular, emphasis is directed at two groups of functional requirements: although the preliminary group is centred on the utilisation of public spaces, the second, conversely, focuses on the way in which urban designers can achieve success in the public sphere, notably from a functional standpoint.

Public space utilisation

Public space utilisation may be linked with various aspects, including its construction, design, management and planning. In relation to urban planning, urban spaces have been categorised by Newman (1972) as belonging to four different groups, namely private and semi-private, and public and semi-public. In relation to the consideration of public space planning and its impact on utilisation trends, it is noted by Jacobs (1961) that, in an effort to improve the public sphere, urban designers and planners first need to consider connecting activities and the presence of buildings with a number of different uses. In this light, it may be inferred that an adequate wealth of people and activities, in combination, can be recognised as a criterion for the establishment of well-used public spaces and improvements to public life. From a morphological perspective, it is noted by (1979: 76) that urban space may be described as "the prerequisite medium from which the whole fabric of urbanism emerges."

In line with the above, the city is recognised as developing into a spatial creation comprising open spaces, as in the cases of squares and streets, for example. Hillier (2007), a space analyst, directs attention to the view that well-linked urban spaces are better positioned to motivate and encourage pedestrian movement whilst also sustaining and facilitating a number of different activities. Furthermore, the point is made that trends concerning space and natural movement are far more valuable than land use when it comes to establishing quality and movement densities together with encounter rates. Not necessarily in agreement with the theory of geometric properties of the spatial configuration of urban spaces, as put forward by Hillier, Carmona et al. (2010) states that despite the mechanistic perspective of people, as adopted by Hillier, combined with his viewpoint on their behaviour, which together provide backing for forecasts that are seen to link significantly with recognised patterns of pedestrian movement, he nonetheless fails to recognise or address movement in terms of its purpose – which is associated with users' links to the function of urban spaces.

Similarly, he also fails to take into account the considerations of such spaces' accessibility and visual quality. As such, public spaces that are viewed as a success may be realised through meticulous examination of the link between space configuration, land use and movement, especially that of pedestrians.

When it comes to the different methods employed to design public spaces, it is noted in the work of Kallus (2001) that although urban designers, as well as others, view urban spaces as a void entity, normative urban designers, on the other hand, as well as social science-focused academics, are more inclined Carmona, De Magalhaes, and Hammond (2008) to view them as incremental and irregular phenomena, with attention directed towards the way in which individuals recognise, understand and interrelate with such social spaces. In this regard, it could be posited that the ways in which public spaces are created, devised, managed and planned all have an impact on their trends of consumption. Accordingly, as will be described in the section below, the creation of a successful public space, complete with validation, can be achieved through urban designers ensuring emphasis is placed not only on improving such spaces' morphological attributes, but also on garnering insights into everyday spatial experiences and users' actual requirements.

Making public spaces functional

A number of different theorists and professionals in the urban arena emphasise elements influencing the use of public spaces, in line with varying viewpoints. For instance, from the morphological method and objective reality, it is noted by Krier and Rowe (1979) that valuable urban space may be defined as one that add vitality and strength to public life, with such a space seen to integrate itself with the surrounding structures. In this sense, it is highlighted in the study of Carmona et al. (2008) that a number of different historic and conventional spaces – which have been well-considered and designed – have nonetheless demonstrated some degree of decline, meaning public space quality can rest on not only the way in which such spaces are designed, but also on their management.

When it comes to the most critical needs as experienced by people in public spaces, Carr (1992) pinpoint five elements. A good public space is one with the ability to provide at least one of the following criteria, namely active engagement with the environment, comfort, discovery, passive engagement with the environment and relaxation. A sense of comfort may be improved through consideration of the way in which a public space is designed, taking

into account environmental factors, the psychological and social comfort of those passing through or remaining within the space, environmental factors and relaxation principles, all of which are associated with the approaches designers take when incorporating natural elements, including greenery and trees, thereby facilitating relaxation and a natural area for spending time.

The passive engagement design criterion is seen to encompass the requirement of interaction with the environment, even if involvement is not active. This may be delivered, as suggested in the work of Carmona et al. (2010), through the involvement of attractive design aspects, including nice views, performances, public art, foundations and others, all of which have been incorporated in line with pedestrian flow. On the other hand, active involvement requires that direct public experience with public spaces is made more pleasurable. In this regard, it is noted by William Hollingsworth Whyte (1980), as an example, that if an ideal state of desirability is to be achieved by a public space, there is a need for it to offer potential for interaction and impulsive social contact. In relation to the identification of design criteria, it is highlighted in the study by Carmona et al. (2010) that these may be linked with a range and a shift in the way in which the public space is managed and designed or is otherwise active. It is posited that this may comprise a respite in the routine, with some degree of irregularity deemed necessary through integrating a number of desirable aspects and initiatives, such as art exhibitions, concerts, festivals, markets, parades and other social events, including trade promotion.

In consideration of how social public spaces can be established, it is noted by Whyte (1980) that those spaces recognised as the most social are seen to comprise four key aspects, i.e. a good location, the inclusion of a sitting area, being at the same level as the pavement and providing seating that can be moved to facilitate choice. Furthermore, the statement is made that despite a space's size and shape being useful when it comes to achieving success in public space provision, these aspects are not recognised as fundamental. Moreover, Pasaogullari and Doratli (2004) have stressed further poor accessibility as being one of the key preventions influencing public space use, with the scholars emphasising that when accessibility is offered, other elements then come into play in terms of outlining and influencing the public space's quality – and subsequently enhancing overall utilisation.

In a similar regard, it is noted by J. Williams (2005) that there are numbers of different components facilitating and motivating social interaction across residential neighbourhoods, such as community size, physical and visual accessibility, dwelling density, public space

quality and the adoption of communal and semi-private spaces, which enhance the overall ability of outdoor areas to be monitored (M. Alfonzo, Boarnet, Day, Mcmillan, & Anderson, 2008; Van Melik, Van Aalst, & Van Weesep, 2007). Generally speaking, studies carried out more recently in the field of changes being witnessed in regard to public space roles highlight a number of different viewpoints across authors, with various views maintaining how public spaces should be created, and others placing emphasis on particular models. Accordingly, when it comes to urban designers creating pluralistic spaces and ensuring vitality, there is a pressing need to acknowledge spatial urban systems' complexity whilst at once acknowledging their users' socio-cultural traits. Otherwise stated, owing to the fact that such spaces encourage a wide range of activities, their provision needs to be recognised by taking into account subjective and objective realities.

2.4.6 The temporal dimension

Growing emphasis has been placed by urban designers on urban space as four-dimensional, where time is seen to make up the fourth aspect. As such, urban design's temporal dimension, as highlighted in the work of Lynch (1972), recognises space and time as a model through which life experience can be positioned. Accordingly, it has been noted by Carmona et al. (2010) that owing to the fact that both urban and natural settings are recognised and applied in varying ways and at different times, garnering insight into the impacts of time and its associated activities would ultimately facilitate urban designers and managers in developing the dynamic time cycle in such a way as to create additional variety and interest towards public spaces, thus allowing the public sphere, as a whole, to improve.

Built environment and urban space changes with the passing of time

A public space's temporal dimension centres on the detail that society and space together experience dynamic change – notably induced through economic, socio-cultural and technological changes – and can be seen highlighting across urban spaces and thus cause changes in history that cannot be reversed (Carmona, 2010). This is commonly witnessed through two different means: via urban space consumption's temporal pattern in urban settings that regenerate daily life, as well as via such spaces' advancing reorganisation to align with people's ever-changing needs, requirements and preferences (Wunderlich, 2010). Moreover, such change may be seen as either minor or gradual, whilst in other areas it may be more significant. In the view of Kostof (cited in Madanipour, 1996: 4), it would be possible to identify three key processes resulting in urban change, namely incremental changes that arise from a number of different small-scale physical actions which are witnessed in urban settings, large-scale interventions and natural disasters that are positioned to cause immediate change.

In response to cities' physical transformation and the socio-cultural changes that appear to go hand-in-hand with such, by the early 1970s, subsequent to a number of academic works and much public protest, the government devised and implemented a number of new policies that would deliver a degree of protection to individual places and would allow their unique identity and character to be maintained (Carmona, 2010). Accordingly, as highlighted by Rossi and Eisenman (1982), who notably makes a point of supporting physical continuity in pre-industrial places, in the case of those structures bordering squares and streets, their texture and permanence were recognised as an urban policy with the ability to re-establish the cultural qualities of such places, allowing them to be recognised once again as valuable locations whose presence not only presented memory and allowed the regulation of socio-cultural life, but which also provided the city with its own character. It may be stated that such ideas could be linked to continuity and conservation, where such elements are components of the impact of the built environment's temporal dimension.

Management Change in the case of public spaces

In response to the undesirable consequences stemming from sudden change in the physical setting in the 1940s' a wide-ranging array of urban design theories emerged. J. Jacobs (1992),Lynch (1972) ,Alexander, Silverstein, Angel, Ishikawa, and Abrams (1975) J Lang (2005) and others, have been emphasised that, should change be considered unavoidable from both an economic and a political standpoint, such change should be controlled, small-scale and completed with ease, thus ensuring continuity with the past is maintained as much as possible, in order to facilitate successive generations in benefitting from continuity in their physical environment as opposed to being forced to accept massive, sudden change. It is noteworthy that, regardless of the importance in the urban design literature directed towards small-scale, gradual change, in the case of regions suffering from economic depression, large-scale project development is fundamental if the requirements of urban design and planning are to be satisfied, with this done in such a way as to satisfy various stakeholders' prospects. Nonetheless, as posited by Carmona (2010), in an effort to ensure such developments' negative implications are avoided, intentional design and management are critical, notably achieved by breaking them down into more practical and controllable projects across varying phases, in order to ensure individuals are positioned to adapt, validate and expect incremental changes.

There is much to learn in recognising that all of those aspects making up public spaces are positioned to change with the passing of time. Moreover, across history, urban environments and their respective spaces have been influenced by the key forces of that period. In the case of European cities, as an example, industrial society meant urban settings' fabric exhibited change. In the modern-day world, the service society does not experience change in providing new characterisations of cities. In this vein, it is noted by Madanipour (2006) that, in what is regarded as a globalised world, significant changes are witnessed across those areas with large populations, with a much quicker pace recognised in such cases. This stems from varying and unexpected levels across demographic, economic, political, socio-cultural and technological change. Owing to the fact that urban designers' priorities may be identified in relation to the role they play in implementing city transformation, one fundamental aspect of their task is centred on making changes to the city through shaping the urban fabric in new ways, and by devising projects with the ability to react to emerging societies' aspirations and needs. Otherwise stated, if a space is to be made with the positive contribution of an urban designer, there is first a need to recognise and garner insight into the effects of time

and to outline further predictions in relation to the way in which economic and political power can influence new urban conditions and influence urban settings' quality and that of public spaces.

2.5 City form and urban public open spaces

According to Chiesura (2004), urban public open spaces are important elements in making a city liveable, with the main purpose being to provide and satisfy people's needs. Notably, accessibility to open spaces with a capacity to provide a range of facilities will help support physical activity (McCormack, Rock, Toohey, & Hignell, 2010). Although, it is important to note that although this provision of facilities will provide the opportunity to undertake different types of recreation, it will not, by itself, necessarily motivate those who have neither positive exercise role models nor a history of physical activity (McCormack et al., 2010).

Nevertheless, a city's reputation, image and life are enhanced by urban public spaces (Cybriwsky, 1999), while both an emotional and physical sense of attachment and civic identity are related to the provision of public spaces, adding an essential dimension to the life of any city. Furthermore, dynamic public spaces are believed to be essential components for city dwellers in supporting their recreational activities and social interactions (Addas, 2015). Parks, streets and squares within a city are all open public spaces that help to give a city its character, with urban green open spaces acting in correlation with multiple levels of physical activity (Akpinar, 2016). There has been an increased appreciation of how the social and physical functions of public places can enhance the safety, pleasure and care of urban users (Carmona, 2010; Lynch, 1960). Carr (1992), for instance, highlights that "public spaces are where the drama of community life takes place and demonstrates a relationship between the complexities of urban structures" (Carr, 1992). In addition, this 'drama of community life' takes place in a different global context compared to the European tradition of planning civic space surrounded by unplanned public spaces, which has led to the informal appropriation of space (Carr, 1992).

According to Heckscher and Robinson (1977), public space can ideally form the skeleton of a city, on which neighbourhoods, business centres and institutional complexes depend. Green spaces, waterfronts, riverbanks, parks and walkways offer a city a coherent amenity through which to share space, develop a sense of togetherness and undertake recreational activities, where there is restorative landscape.

Most societies value open spaces which reflect a natural setting and support ecological systems in cities (Chou, Lee, & Chang, 2016). Markedly, preferences vary according to climate, geography and culture. With regards to the Arab Middle East, traditional typologies of open space have been neglected and have not been replaced by a modern equivalent. Jeddah's waterfront is important because it has the potential to provide a full package of entertainment and leisure opportunities, if designed with foresight and vision and by taking into account the needs of the community (Addas, 2015). Nevertheless, public spaces are experienced differently depending on different cultures. For instance, in Saudi Arabia, there is a severe lack of design space in local neighbourhoods, and access to open space is different for men and women because of legal issues and a complete lack of public transport (Alhajaj, 2014). The '*drama of community life'* in Saudi Arabia is dependent on complex legal, religious, cultural and economic factors, all of which complicate matters for government decision-makers and officials, while designers and planners must work within very tight boundaries, as there is no repository of modern urban spatial planning skills and experiences in Jeddah (Mandeli, 2011).

As developments within the city increase, demand for accommodation and vehicles has also amplified. These demands have forced the city authorities to provide infrastructure for new buildings and methods of transport, whereas the remaining public spaces within the city have not received the attention that they deserved during the urban planning process. The municipality of Jeddah working on the expanding public transportation infrastructures by providing a new project like Jeddah Metro and Jeddah Bus routes and stations. Jeddah Metro scheduled to open by 2020 and this could help people to travel in three lines. The first will link the centre of Jeddah with King Abdul Aziz International Airport. This will be followed by the 67km Orange Line which will pass along the eastern side of the city. Finally, the Green Line will be link between east and west of Jeddah city (Briginshaw, 2015). Figure shows public transportation master plan of 2020 that supporting Saudi vision 2030 which include the Metro, light tram, and sea taxies.

Figure 2.5-1 Jeddah public transportation master plan

According to two health studies carried out in Australia, which focused on the presence of public open spaces and actively walking in "aesthetically pleasing pedestrian environments," the more attractive the space, the greater the degree of physical activity chosen as a recreational pursuit. Participants in the studies, who had larger public spaces (Bergeron, Paquette, & Poullaouec-Gonidec, 2014) within walking distance, were associated with walking for recreation and health (Takemi Sugiyama, Francis, Middleton, Owen, & Giles-Corti, 2010). Moreover, research has shown that the presence of a particular type of green space, such as a well-maintained garden or specific park features in the form of paths, water areas and playgrounds, will encourage physical activity (Coombes, Jones, & Hillsdon, 2010; Kaczynski, Potwarka, & Saelens, 2008).

As a consequence, the environments around public spaces may also affect physical activity, with the role of neighbourhood attributes including land use mix and walkability, associated with residents' active park use, including walking to parks and within-park physical activity (Grasser, Van Dyck, Titze, & Stronegger, 2013; Parra et al., 2010)

In this research, urban public open spaces refer to outdoor spaces, such as parks, water fronts, (Corniche) areas, pathways and green public open spaces within the urban context of Jeddah City. It focuses on the design of open spaces that provide walking facilities, such as pedestrian walkways and open spaces designed for physical activity purposes as the Al-Tahlia walkway. Jeddah's waterfront is an important example of similarities in the typographies of open spaces, because it has the potential to provide a full range of leisure and entertainment facilities, if carefully designed, whilst taking into account the needs of the community (Addas, 2015). Social wellbeing, including social inclusion and integration, is facilitated by public open spaces, as they provide settings to promote 'social capital' and good health, albeit some research studies contest these findings (Amin, 2002a; Valentine, 2008). (Kawachi, Kennedy, Lochner, & Prothrow-Stith, 1997), for instance, comment that the benefits arising from 'social capital' are available to all those living within a particular community, and access to it cannot be restricted, but there are many barriers for individuals to engage in society, and 'community' can be defined in different ways (Crow & Mah, 2011)

Immigrants often use public open spaces to become more familiar with everyday activities, rather than specifically to build social networks; however, these spaces offer forms of contact that could be culturally specific (Rishbeth, 2006). These findings have direct relevance for this study, as Jeddah has a high number of migrant workers from many different countries, and the patterns of use for these individuals are an important element of this research. The social and cultural traditions of Jeddah also mean that Saudi citizens often use public open spaces as centres for recreation and social interaction between families and within groups of friends.

An important point to consider is that Chiesura (2004) suggest that people are more attracted to and engaged socially in specifically designed communal areas between buildings, in comparison to barren spaces. Meanwhile, Kweon, Sullivan, and Wiley (1998) indicate that the use of open spaces promotes a sense of community and social integration (Kweon et al., 1998). Participation in the local environment also helps immigrants integrate into a new society (Rishbeth, 2006), and a diverse society can enhance social capital by having open spaces, such as parks, for common use. It is also well-acknowledged that open spaces can improve the community and social life by bringing people together (Amin, 2002b).

2.6 The use of public open spaces in the Middle Eastern context: The effects of rapid urbanization

Across periods of history, gardens have developed as an identified characteristic or feature, and they were visible in Greek, Persian and Babylonian cultures. However, these artistic features and historical legacies are also reflected in Arab gardens that provide examples of Arab culture and Islamic features, such as Jannat Al-Aarif and the Alhambra Garden (Delgado et al., 2007). These two public open spaces are described herein, because they have specific importance to Arabic society and for Muslims living in Arab countries, for both religious and cultural reasons, thereby demonstrating elements of civilisation from earlier historical periods that are important to all people. Gardens also hold religious importance when developed in Islamic countries, due to specific associations with elements of the Quran, as Muslims believe that in the afterlife, Paradise is awash with trees, palms and plants. Muslims are encouraged to create, maintain and visit gardens, not least because they are suitable places for daily prayers, which explains why the names of some gardens have been established over many years in Saudi Arabia, such as Al-Rawdah and Al-Bustan (Al-Nassan, 2008). There is a clear historical importance attached to the social and cultural uses of open spaces, but this also needs to be considered within the current contexts of rapid urbanisation in many cities in the Middle East region.

Rapid urbanisation has resulted in fewer public open spaces and greater demands for leisure activities from a growing population within cities, but these are met by insufficient responses from local municipalities to meet the needs of users of these open spaces. In recent years, a study by the government municipality of Al-Majmaah (cited by Al-Fahad, 2008) investigated why few local people used the gardens and parks built and designed for them. As cited by Al-Fahad (2008), an article in the *Al Jazirah* newspaper reported that between 80% and 85% of families considered that public garden facilities failed to meet the needs of their children. Other findings from this newspaper report indicated that only 20% of local respondents used these public open spaces and that most respondents thought that the poor design and management were the reasons behind this issue. In addition, these findings suggested that the softscape and hardscape features of these public open spaces were of poor quality (Al-Fahad, 2008). The Al-Majmaah case study (as cited in Al-Fahad, 2008) concluded that 80% of children under 16 years must rely upon unplanned open spaces or streets for recreation, with 65% of children prioritising them as spaces to play football and

22% attracted to opportunities for climbing, with the remainder playing video games (Al-Fahad, 2008). The government municipality of Al-Majmaah was tasked with using the findings to inform future planning and to consider the opinions of adult and child users.

Furthermore, the rapid urbanisation of many cities in the Middle East, has been due to the expansion of the oil industry over recent years, this has had a strong influence on increasing social diversity and its consequent effects on patterns of open space use. In Jeddah, it becomes instantly apparent to any onlooker that society has benefited from huge material gains. In the rush to build new facilities, however, common amenities that may benefit the general public and residents have been slow to materialise, due partly to land being expensive with well-set, conveniently located sites hard to find. Nagy (2006) refers to social distinctions in the use of open spaces based on feelings of affiliation and behaviours and attitudes towards social diversity based around gender and ethnicity. Furthermore, Ilahi (2009) suggests that males and females have different experiences of open spaces in Egypt, where feminist demands for extended freedom of movement have met the disapproval of religious leaders. Patterns of open space usage are influenced by gender in Islamic societies, and so further research is needed to investigate whether feminist movements have had any success in this regard. There is a lack of women's participation in policy- and decision-making, linked to a lack of access to political processes, so that women generally do not share in decisions about their futures in sport and physical recreation and are not sufficiently considered at the planning stage.

In the study of the streets of Islamic Cairo for different generations Al-Sayyad (1981), found that insufficient information concerning social, economic and natural factors helped explain the shortage of studies about the principles for contemporary urban design. This study was based on the review and analysis of physical criteria based on the history of the Muslim built environment (Al-Sayyed, 1981). Meanwhile, Nooraddin (1998) highlighted the importance of streets, which play an important role in historic parts of Islamic cities as part of the urban context, defining them as "in-between" spaces. Streets are defined as lines that separate indoor from outdoor spaces, and they are mostly neglected in cities in the Middle East.

2.7 The need for physical activities

Chodzko-Zajko (2009) defines physical activity as a body movement produced by the contraction of skeletal muscles that increases energy consumption. Exercise refers to

planned, structured and repetitive movement to improve or maintain one or more components of physical fitness. Physical activity varies, depending on age and body structures. According to studies, older people between the ages of 40 and 65 years are in need of more physical activity (Bann et al., 2015; Chodzko-Zajko, 2009). Importantly, there are many health benefits linked to physical activity across a lifespan, including physical, social, emotional and cognitive development (Dionigi, 2007; Jancey, Clarke, Howat, Maycock, & Lee, 2009). Furthermore, exercise and physical activity reduce chronic disease and disability and help improve the quality of life (Chodzko-Zajko, 2009), with evidence showing that it is very beneficial, because it has both physical and mental benefits (Boone-Heinonen, Casanova, Richardson, & Gordon-Larsen, 2010). Research has also found that physical activity reduces the risk of cardiovascular disease, coronary heart disease and strokes in women, while it ameliorates the effects of joint diseases such as arthritis and helps to prevent osteoporosis and perhaps related problems such as bone fractures (Rehman et al., 2004).

In addition, UK physical activity guidelines also recommend exercise to maintain a basic level of health for all ages. The guidelines endorse at least 60 minutes of physical activity every day, which can range from moderate to vigorous activity (Health, 2011). This includes small increases in breathing or heart rate, encouraged by activities such as brisk walking, cycling, vacuuming or gardening, with walking identified as one of the best ways to improve people's physical and mental health (N. Morris, 2003), as it is said to maintain physical health (Dunton & Schneider, 2006), reduce body fat and lower blood pressure (Dunn et al., 1999).

Nevertheless, promoting stress reduction, relaxation and restoration relies to a large extent upon the provision of open space (Greenspace Scotland, 2008). Tyrväinen et al. (2014) indicate that even short-term visits to urban green spaces have positive psychological and physiological effects on perceived stress relief. People are attracted to them for physical activities, social interactions and relief from daily life, which benefits their mental and physical health (Thwaites, Helleur, & Simkins, 2005). However, it is the context of the open spaces and physical activities, as well as the environment, that often improves mental wellbeing (Guite, Clark, & Ackrill, 2006). The reasons for the impact of green space upon mental health differ, but they include exercise and outdoor activities, stimulation of the senses, natural daylight and an aesthetic experience (Greenspace Scotland, 2008).

2.8 Factors affecting the use of open spaces for physical activities

Research suggests that several factors may encourage and affect the use and practice of physical activities in urban public open spaces (Akpinar, 2016), including the possibility of walking, attractiveness, proximity, facilities, accessibility, safety, policies, conditions, facilities, features and the distribution of the open spaces. Moreover, the diversity of public open space features that encourage users to engage in different kinds of active and sedentary activities is important for all age groups (Van Hecke et al., 2016). In addition, evidence shows that physical activity is associated with environmental variables and neighbourhood contexts (Brownson et al., 2000; Ross, 2000), whereas other study identify public open space attributes as aesthetics, safety, amenities, proximity and maintenance (McCormack et al., 2010). Other studies have highlighted that public open space visitation is associated with public health, though this depends on factors like location, amenities and crowding.

Consequently, different sectors within the government and the community, such as ministries, municipalities, urban planners and the media, should consider the above-mentioned variables and factors, as well as the establishment of sports societies that could motivate physical activity among residents (Deborah A Cohen, Sturm, Han, & Marsh, 2014).

2.8.1 Walkability

According to Leslie et al. (2007), walkability can be described as a situation whereby built environment characteristics support residents to walk for leisure or transportation needs, a notion demonstrated through a comparison of environmental attributes and physical activity in different countries showing that walkable neighbourhoods are associated with achieving the recommended levels of physical activity (Owen et al., 2007; James F Sallis, Prochaska, & Taylor, 2000; James F. Sallis et al., 2009; Sundquist et al., 2011; Van Dyck et al., 2010). Further research has attempted to identify the differences between walking for transport, recreation or utilitarian walking (James F Sallis, Owen, & Fisher, 2008). For instance, some studies associate walking for recreation with the pleasantness of public open spaces and a lack of nuisance, while the existence of good paths or sidewalks that facilitate access to urban public open spaces are associated more with walking for transport (Sugiyama et al., 2008).

Significantly, neighbourhood walkability and a pleasant environment can have a substantial influence and benefit on people's health, especially for those on a lower income (Van Cauwenberg, Van Holle, De Bourdeaudhuij, Van Dyck, & Deforche, 2016), with walking

being one of the most popular physical activities among adults, as it can be done at any time and anywhere, without the need for accessories or added expense (Hamdorf, Starr, & Williams, 2002; Tudor-Locke, Jones, Myers, Paterson, & Ecclestone, 2002). However, several mediating variables could affect negatively health outcomes in highly walkable neighbourhoods; for instance, pollution, crime and safety are all factors that may influence the level of walkability.

Another significant influence of walkability is street connectivity, which refers to the number of intersections per square metre (Lawrence D. Frank, Schmid, Sallis, Chapman, & Saelens, 2005) and is a reflection of neighbourhood design. Research carried out by Fank et al. (2005) shows that there is a composite walkability index, which can be integrated into land-use mix (diversity), street connectivity (design) and the retail floor area ratio (retail building floor area to land area), with the results used to predict walking patterns.

Furthermore, there is a correlation between density, diversity, design and walking (Lawrence D Frank et al., 2010; Grasser et al., 2013; Sundquist et al., 2011), with significant evidence suggesting that areas with a higher density, increased street connectivity and good access to mixed use areas have more people walking (Ewing & Cervero, 2010; Grasser et al., 2013; Saelens & Handy, 2008; Van Holle et al., 2012). Therefore, it is important for mixed- use strategies to concentrate on land locations that include facilities such as restaurants, shops, banks and parks, which would encourage close proximity walking for residents (Lee & Moudon, 2008). In addition, a lack of pedestrian infrastructure, such as pavements or sidewalks, along with little connectivity to the surrounding neighbourhood areas, may reduce walking for either recreational or transport purposes, as pedestrian infrastructures are most often used for walking (Powell, Martin, & Chowdhury, 2003).

Notably, evidence from walkable neighbourhoods shows that there needs to be a provision of the factors mentioned above, to create a good atmosphere, for instance mixed land uses, with homes near commercial and institutional destinations, and streets that are highly connected and provide direct routes from place to place (Lawrence D Frank et al., 2010). Additionally, Western studies have encountered associations between neighbourhood walkability and physical activity (Van Dyck et al., 2010), with an effective walking environment encouraging physical activity, which in turn will improve mental health (Brian E. Saelens, James F. Sallis, & Lawrence D. Frank, 2003). Ultimately, Chiang and Lei (2016)

determine four essential components in order to establish a friendly walking environment: safety, facilities, aesthetics and land use mix.

2.8.2 Proximity

Public open space proximity defines a geographic unit's distance to the nearest public open spaces, regardless of their size and amenities (Rigolon, 2016). The proximity of public open spaces should be a prime consideration when planning their distribution within neighbourhoods (Koohsari, Kaczynski, Giles-Corti, & Karakiewicz, 2013). This can be determined by two variables, which are density and land use mix, as mentioned previously, whereby a mixed-use development refers to the integration of residents, businesses such as banks and shops, as well as cultural places such as parks or mosques, with the provision of pedestrian connectivity.

Density, on the other hand, has a direct effect on practical issues, as it relates to places with potential destinations to which people can walk, such as parks, shops and nearby workplaces (Forsyth, Oakes, Schmitz, & Hearst, 2007; Lee & Moudon, 2006), with higher utilitarian neighbourhoods demonstrating an increase in the level of physical activity (Forsyth et al., 2007).

Consequently, the higher the density of a neighbourhood, the more potential for walking, with high integration and connectivity of places being principles of proximity (Brian E. Saelens et al., 2003); hence, the proximity of amenities or recreational facilities could influence physical activity participation (Kaczynski & Henderson, 2007). Markedly, distance to the nearest public open space and fewer public open spaces within 1 km were linked positively to the total amount of walking to public open spaces (Koohsari et al., 2013). Giles-Corti et al. (2005) emphasise that proximity and type, in terms of the features on offer and design, increase the likelihood of utilisation by the population.

In this study, along with considering social factors, life patterns and context for Saudi women, the factors of proximity and density should also be examined, as there is a significant relationship between the distance of neighbourhoods and major parks and the amount of active sports performed (Grahn & Stigsdotter, 2003). If urban public open spaces are situated in central neighbourhoods, in proximity to residential areas, the correlation of use increases significantly (Pasaogullari and Doratli (2004)

2.8.3 Distribution of public open spaces

Open space distribution is a significant attribute that can either encourage or discourage the use of spaces, with equity of access linked to methods and policies of distribution equality. It is the responsibility of Jeddah Municipality to achieve distribution equality. Currently, most open spaces designed for walking in the city are not specifically related to public health, and as is often the case, deprived areas have less access to urban public open spaces due to unequal provision. At a neighbourhood planning scale, these differences mean unequal opportunities for outdoor activity, with results showing that a lack of equal distribution affects different areas' actual levels of physical activity.

Talen (1998) named the spatial distribution of urban public amenities as "equity mapping," while urban public open spaces have particular attention in distribution (Talen, 1998). Therefore, distributing urban public open spaces based on considering park needs is called an "equity-oriented approach," which can give a better balance of recreation and public health than distributed urban public open spaces based on sparse resources which consider regardless of demographic needs (Boone, Buckley, Grove, & Sister, 2009). Urban public open spaces or parks are necessary for people with limited access to these spaces, including all age groups, low-earners or ethnic minorities (Boone et al., 2009). Other studies have also identified less access to green spaces by low-income people and ethnic minorities people than white and wealthy groups (J. R. Wolch, Byrne, & Newell, 2014).

Moreover, evidence shows that in the UK, the quality of public open spaces is fairly evenly distributed across different socio-economic groups (Ward Thompson, 2013), whereas studies in the USA display less access to public open spaces in low-income neighbourhoods, which detrimentally affects opportunities for physical activity (Floyd, Spengler, Maddock, Gobster, & Suau, 2008). Consequently, many older adults living in high-deprivation urban areas (Davis et al., 2011) are physically inactive (J. Harvey, Chastin, & Skelton, 2013). In addition, the importance of urban public open space locations could improve the physical activity levels of all age groups (Koohsari et al., 2015).

Figure 2.8-1

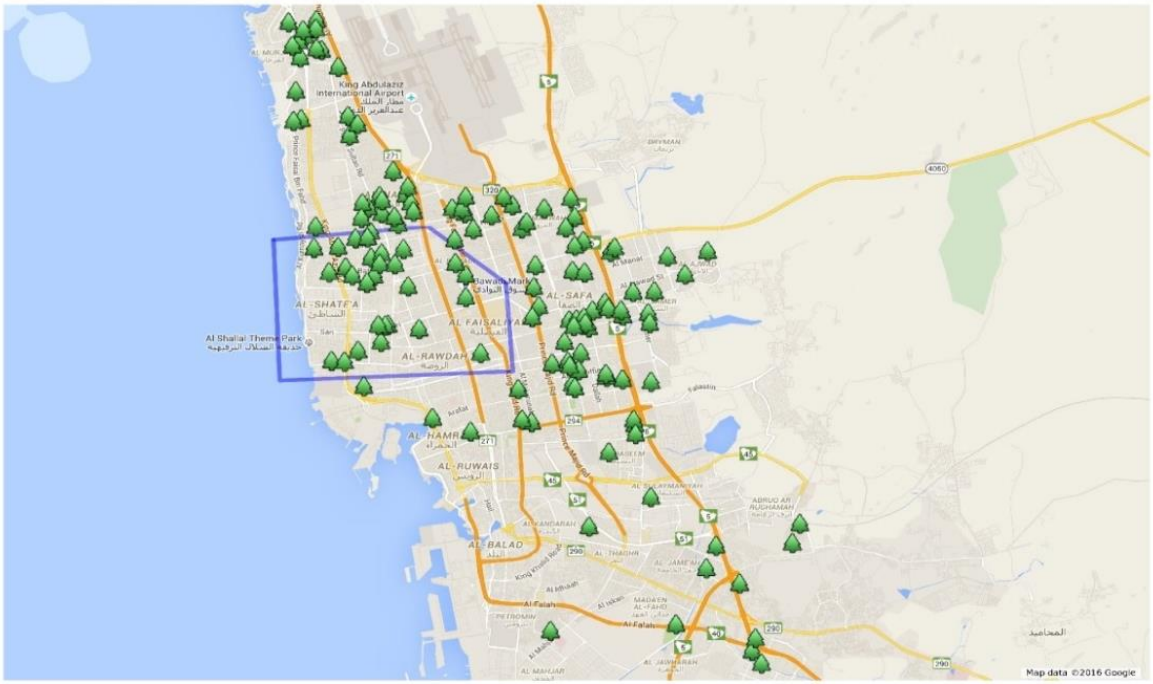


Figure 2.8-1 Jeddah's park distribution

2.8.4 Accessibility

According to (Lee & Moudon, 2008), there is a direct link between accessibility and physical activity, and as mentioned previously, public open spaces that are situated in close proximity to homes that are easily accessible, either by walking or via public transport, can motivate residents to take part in physical activities (Van Hecke et al., 2016). Thus, accessibility plays a vital role in the design of urban public open spaces. There are four elements to consider in this regard: location, barrier-free, wayfinding and circulation. These factors directly affect the use of parks (KO & HW, 2017). (Wang, Brown, & Liu, 2015) determine five dimensions that contain physical and non-physical variables for the perception of urban park accessibility: physical, transport, knowledge, social and personal dimensions of urban park accessibility. The following figure (2.8-2) shows the five dimensions and the variables within each dimension.

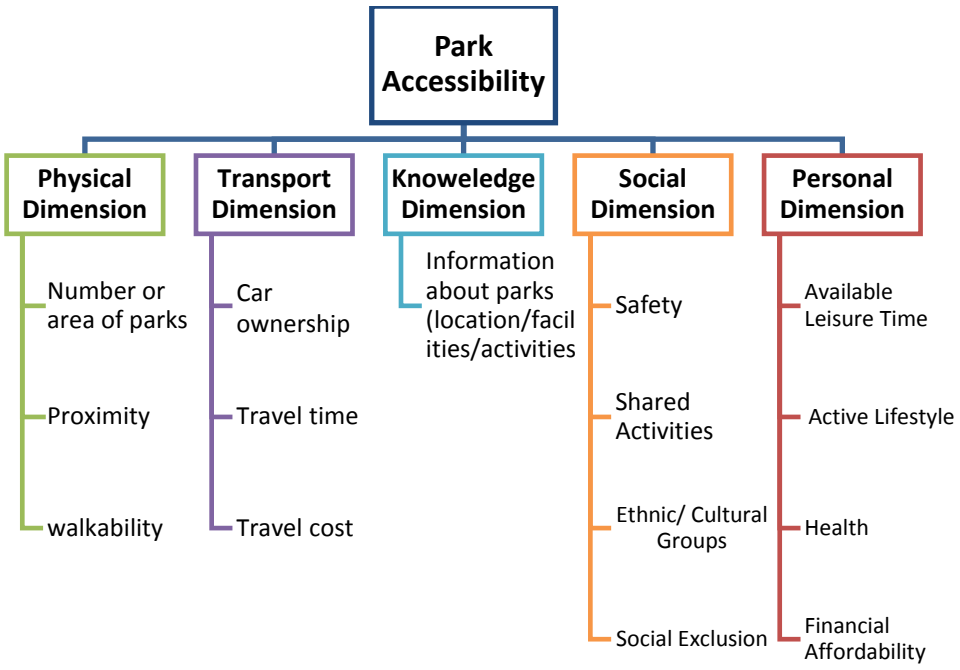


Figure 2.8-2 An integrated model of park accessibility by Wang et al. 2015

In addition, socioeconomic and demographic characteristics influence urban space access (J. Byrne & Wolch, 2009). For instance, proximity has a strong link with park accessibility (Wang et al., 2015), in that houses situated closer could possibly cause a higher level of physical activity (Bancroft et al., 2015). Other studies, however, have established that neighbourhood park proximity is not associated with physical activity (J. A. Carlson et al., 2012; McConville, Rodríguez, Cho, Fleischhacker, & Clifton, 2010; Saelens et al., 2012; Stewart, Moudon, Littman, Seto, & Saelens, 2018; Strath et al., 2012).

2.8.5 Safety

According to (Forsyth et al., 2007), safety means feeling little or no threat from crime for neighbourhood residents, and this factor can significantly affect levels of physical activity, with social aspects that impact on a decision to visit and use a POS being undesirable users, numbers of other users and safety at night (Van Hecke et al., 2016). Evidence indicates that neighbourhood safety is important for supporting and encouraging outdoor walking (Lee & Moudon, 2008; Saelens & Handy, 2008), and where people perceive their neighbourhood to be safer, there is more likelihood of walking (Zandieh, Martinez, Flacke, Jones, & van Maarseveen, 2016). Therefore, a sense of security is vital.

Lack of maintenance and facilities can have a detrimental effect in this regard in the form of lack of adequate lighting, unsafe surfaces, broken pavements, holes and poor cleanliness

(Derr & Tarantini, 2016; Roult, Adjizian, Auger, & Royer, 2016; Slater, Fitzgibbon, & Floyd, 2013; Van Hecke et al., 2016). Traffic levels in and around urban public open spaces are associated with physical activity (Esteban-Cornejo et al., 2016; Topmiller, Jacquez, Vissman, Raleigh, & Miller-Francis, 2015; Van Hecke et al., 2016). In addition, Derr and Tarantini (2016) suggest that safe crossing roads encourage people to visit these locations, and emergency stations are also a positive addition (Gallerani, Besenyi, Stanis, & Kaczynski, 2017). Users need to feel safe in urban public open spaces and this could encourage them to visit public open spaces. Physical characteristics that negatively affected Users feelings of safety were insufficient lightning, poor maintenance, too much traffic near the POS, and secluded areas or paths (Van Hecke et al., 2016).

2.8.6 Size

Another factor that determines the use of public open spaces is size (Giles-Corti et al., 2005), which is a measurable factor. According to Rigolon (2016), public open space area measurements describe the size and the number of the public open spaces within geographic units. Measures like the number of parks or spaces within a neighbourhood, and areas of space per capita within a neighbourhood (Boone et al., 2009; Rigolon, 2016; Vaughan et al., 2013; J. Wolch, Wilson, & Fehrenbach, 2005), are such examples. The size of urban public open spaces is associated with physical activity and is one of the essential factors that influence this pursuit (Akpinar, 2016; Giles-Corti et al., 2005; Kaczynski et al., 2008; Paquet et al., 2013). In addition, size is directly linked to park use (Deborah A. Cohen et al., 2010). This association with size could be related to more possible activities such as dog walking or playing fields for sports such as football or cricket, or the ability to explore new areas (Paquet et al., 2013). Furthermore, an Australian study proved that access to larger public open spaces is associated with walking (Giles-Corti et al., 2005).

2.8.7 Aesthetics

One determinant to the use of public open space, which has previously been mentioned, is aesthetics, which refers to whether there is a visual sense of beauty or attractiveness. With regards to public open spaces, this may mean an attractive place for recreation, such as an aesthetically pleasurable neighbourhood with beautiful architecture and trees, thus inviting users to participate and enjoy the scenery (M. A. Alfonzo, 2005).

Aesthetics can be classified as an environmental attribute (Zandieh et al. (2016), with research suggesting it plays a significant role in the encouragement and support of pedestrians when outdoor walking (Lee & Moudon, 2008; Saelens & Handy, 2008). This is particularly the case when looking at longer outdoor walks (Zandieh et al. (2016). Many elements can attract and encourage people to visit urban public open spaces for physical activity such as modern designs, new constructions, historical elements, greenery and beautiful natural scenery (Derr & Tarantini, 2016; Ries et al., 2008; Van Hecke et al., 2016; Winter et al., 2016). Other researchers indicate that water features (Derr & Tarantini, 2016), colours and graffiti (A. L. Smith, Troped, McDonough, & DeFreese, 2015) in designated areas are also likely to attract people, while Lindberg and Schipperijn (2015) found the presence of landscape and greenery associated with park visitations. However, other researchers did not find an association between greenness and landscape (Gallo, Townshend, & Lake, 2015; Janssen & Rosu, 2015; Veitch et al., 2017).

2.8.8 Quality of urban spaces

Urban public open space quality measurement involves describing a space's amenities, maintenance level and crime safety, and visitation can be influenced by quality (McCormack et al., 2010). Public open space amenities have been introduced in some studies according to recreational facilities such as playgrounds, trails, sports facilities, tree canopy coverage and aesthetics (Crawford et al., 2008; Vaughan et al., 2013; Zhou & Kim, 2013). The quality of public open spaces is measured by residents' perceptions or by public open space audits (Crawford et al., 2008; Vaughan et al., 2013). L. O'Brien and Tabbush (2005) carried out some research with regards to poorly maintained, and according to the results, respondents complained about litter and graffiti, which contributed to the worsening of neglected areas and increased anti-social behaviour, whereas the maintenance and cleanliness of urban green spaces is associated with the positive frequency of visits (Akpinar, 2016).

In addition, a variety of activities and facilities can enhance the utilisation of spaces (Pasaogullari & Doratli, 2004), such as good maintenance and management, cleanliness, providing sanitary facilities and adequate lighting for safe and secure walking and sitting (Kemperman & Timmermans, 2014). Therefore, the quality of a space can significantly affect user satisfaction (KO & HW, 2017). Parks or public open spaces that have lower levels of quality and maintenance are disliked more by people and affect how often they are visited (Rigolon, 2016). Studies show that the quality of public open spaces is considerably lower

in poor neighbourhoods (S. A. Carlson, Brooks, Brown, & Buchner, 2010; Crawford et al., 2008; Vaughan et al., 2013).

2.8.9 Place attachment/ sense of place

A place of attachment or a sense of place is the emotional feeling that connects a person and a place together, and this can be greatly influenced by personal or meaningful experiences, where psychological needs can create connections or bonds with a place. For instance, a person can have certain memories that happened in their childhood or at different life stages, which can be evoked by visiting these spaces (Addas, 2015).

Scannell and Gifford (2010) describe one of the constant models of place attachment as the correlation between people and their environments. This is a deeply studied phenomenon, with similarities to the conceptualisation of a 'sense of place', or 'place dependency', and it can be linked to environmental place attachment or pro-environmental behaviour, independent of gender, age, education, length of residence or home town.

Place attachment has three dimensions, namely place, person and process, each of which is significant in any transactional theory when attempting to understand environmental-human relationships (Scannell & Gifford, 2010). The person dimension refers to those people, individually or in groups, who may express place attachment. While, process dimension refers to psychological ways through which groups and individuals relate to a place, whereas place dimension is the most important dimension of place attachment, as it is related to the object of the attachment (Scannell & Gifford, 2010).

2.8.10 Social connection

A social connection means that people can meet and talk with one another whilst enjoying the outdoors. This connection is associated with the elderly in particular, as it helps combat loneliness or isolation and is a satisfying use of urban public open space (KO & HW, 2017) The establishment of a social or friendly space is related to the physical configuration of the built environment context, resulting from a good understanding of users' needs, behaviour, perspectives and interactions within the social context (Marshall, 2008). Additionally, social interactions in public open spaces explain the range of ways in which individual users have emerged within public open spaces (Peters, 2010).

Nevertheless, Carmona (2010) claims that the built environment could also encourage unwelcome behaviour, with examples including anti-social behaviour, vandalism, littering and graffiti, any combination of which contributes to the degradation of the built environment and the community (Carmona, 2010). However, urban design can minimise these anti-social activities and behaviours.

Furthermore, (Bourdieu & Richardson, 1986) introduced social capital theory, continued by (Cattell, Gesler, & Curtis, 2006), who addressed essential conditions that are applicable to public open spaces and improve social interaction, including space use, availability of facilities and the familiarity with the space to give purpose and improve social success (Peters, 2010).

2.8.11 Gender

Most references to previous studies identified related to female users of public open spaces are based on Western studies, as there is a lack of insufficient studies in Islamic countries on the subject. However, it is an important issue when investigating open space users, and the findings of Western studies remain a vital contribution to this research. The scope of this study is to highlight the issue of gender in terms of patterns public open space usage in Jeddah, Saudi Arabia, aligned with relevant studies of gender in Islamic countries.

Research by (Burgess, 1995) reveals that public open spaces are generally accepted as safe places; however, threats, such as sexual harassment, are often experienced by women using them. In terms of their assessment and interpretation of danger, the perceptions and use of public open spaces for women differ, with some respondents claiming that they do not feel limited or unsafe. Issues of safety are perceived as being of secondary importance, and the company of others is appreciated (Krenichyn, 2004). These findings are also relevant to women in Jeddah, but the customs and traditions of some conservative families normally require them to be accompanied by men when in public open spaces.

A study by MacNaghten and Urry (2000) reveals that many female respondents are afraid of walking through the woods, particularly at night, and some mothers are concerned about their children being safe if they play in these areas. Other studies suggest that female respondents might have perceptions of sexual assault or possible crime, rather than the reality of safety in a wooded area (Pacione, 2003).

Relationship studies indicate gender differences in terms of perceived benefits and uses in public spaces (Curson & Kitts, 2000), and boys tend to become involved in activities and use public open spaces more than girls (Tyrväinen, Mäkinen, & Schipperijn, 2007). Gender segregation affects physical and other activities in open spaces in Jeddah, i.e. groups will include boys or girls separately (Addas, 2015).

2.8.12 Age

Children, compared with adults, are likely to develop a different relationship with open spaces, since their movement through time and space tends to be limited (O'Brien, 2006). Valentine (2004) suggests that young children need to be protected from potential dangers in public open spaces, while older teenagers, who are often viewed by media reports as threatening to society, welcome the opportunity to meet their peers in these areas. Patterns of the use of open spaces in Jeddah indicate that family groups, including all age groups, often use these spaces for recreational activities and to share food, so young children are closely monitored. However, older teenagers are more likely to form male or female groups during these visits to open spaces, separate from the groups of older family members.

Notably, age is a significant factor for the use of open spaces, as findings indicate that older people tend to use these spaces less than other groups. According to Greenhalgh and Worpole (1996), respondents over the age of 60 are less likely to use parks, while in another survey, respondents over the age of 65 were seen as low users or non-users of open spaces, compared to the 12-19 years age group (Dunnett, Swanwick, & Woolley, 2002). In another study, users of a park were found to be mostly under the age 50 years, and yet age was not a factor that influenced the choice of preferred activities. Social and family patterns of the use of open spaces in Jeddah indicate that users are often part of a family group or friendship group with members of different ages. In addition, KO and HW (2017) believe that users' ages have a positive effect on satisfaction levels in older adults and in the determination of choice.

2.8.13 Cultural Background

The cultural background, people attitudes, and their personality are negated by authors whereas giving objects and material more importance (J. T. Lang, 1987; Madanipow et al., 2001) has a study of refugees and how they perceive and use outdoors spaces in Sheffield (UK), by Rishbeth and Finney (2006), found that parks were mainly visited as a social

activity with family members, but not alone or individually. Therefore, city farms and some types of urban parks were new concepts to these respondents, who often perceived them as a novelty. The refugee respondents also explained that visits to public open spaces containing plants and flowers gave them feelings of nostalgia for their home countries, which contributed to retaining their national identity. Jeddah has a high percentage of migrant workers that also use public open spaces, and migrants also demonstrate similar patterns of use in meeting with others of the same ethnic background and language, as well as forming attachments to specific open spaces or softscape features within these areas.

Payne, Mowen, and Orsega-Smith (2002), carried out research into different ethnic groups and their use of parks in the USA. The findings showed that there were differences in preferences of activities compared to those of the Caucasian respondents. For instance, organised and recreational activities were generally perceived to be more important than conservation. Furthermore, a study by (Tinsley, Tinsley, & Croskeys, 2002) demonstrated that Caucasian and African-American respondents agreed on the inclusion of natural features like flowers and/or trees, while Asian or Hispanic respondents were less attracted to them. However, there were differences in the frequency of or reasons for visiting parks, as the African-American respondents generally chose to visit with friends, while the Caucasians generally went with a family member or alone. With regards to refugees and asylum seekers, public open spaces tended to have little relevance to them and were not used very much. The avoidance of these areas was contributed to by issues such as inappropriate behaviour, lack of money or safety concerns (Rishbeth and Finney, 2006).

A review of the literature has shown that there is a lack of research related to ethnic differences in non-Western countries and Arabic countries. Qualitative studies tend to be localised, and therefore generalisation would be difficult to incorporate, as it could fail to clarify or resolve 'mixed' identities. Hence, there are limitations to this research with regards to ethnicity.

2.8.14 Privacy

Bentley (2004) define privacy is involving barriers between public and the private realms. In urban design the building elements can contribute to provide privacy by ordering and organising the elements such as entrance, changing levels and shifting buildings, front and back yard design (Carmona, 2010; Bentely, 2004). The public realm can be the setting for

formal and informal public life. Carmona (2010) defines physical public realms as being accessible and used a space by the public with including external and internal spaces. Additionally, external public open spaces consist of public squares, parks, streets, highways, forests, lakes and parking lots (Carmona, 2010). On the other hand, other authors define privacy as on of the four key functions of public realms (Loukaitou-Sideris & Banerjee, 1998; Tiesdell & Oc, 1998). Moreover, women are more different in their choices of public open spaces (William H Whyte, 2012). Gehl (2008) on the other hand noted that privacy greatly required by women rather than men.

Privacy has been defined as the "selective control of access and of interaction." (Carmona, 2010). The need for privacy and interaction is different among individuals, cultures and societies. In Middle Eastern culture, people considered privacy as a significant element in urban context, and it can be explained in different ways. The privacy can include visual, behavioural and distance (Knox & Ozolins, 2000). Additionally, privacy has been classified in two categories aural and visual (Carmona, 2010). Visual privacy relates to the interface between public and private realms, especially the physical and visual aspects between those realms. Furthermore, Bahammam (1995), suggests that every society construct their own need of privacy according to the socio-cultural life. Therefore, privacy is thus a cultural construction notion.

2.9 Children's health

Another key area is the level of child activity. Specifically, children enjoy outdoor activities and they tend to be more active in an outdoor rather than an indoor environment (Ferreira et al., 2007). Hence, a creative design is likely to be a significant attraction for children. Furthermore, encouragement to use open spaces for recreation and health venues could play a key part in the prevention of obesity (Blanck et al., 2012), and so by creating and enhancing access to parks and playgrounds, physical activity among children and adolescents could increase and be used as a promising strategy to combat this rising issue (Floyd et al., 2011).

2.10 Ecological model

According to Sallis et al. (2008), environmental behaviour research has contributed to developing ecological models that can help to describe and clarify the determinants of health behaviour, thus helping to comprehend how people relate to their environment. An example of this is walkability, as mentioned previously, as walking for transport or recreation can be dependent on the mixed land use, connectivity, proximity and safety of an area. These

determinants can also be dependent on the lifestyle or the socio-economic background of the participants. Furthermore, research by Sallis et al. (2008) demonstrates that physical activity can be related to "individual, social and environmental characteristics;" for instance, the presence of friends or family members could be a key aspect in the physical environment (Van Hecke et al., 2016). These ecological models suggest that multiple behavioural influences could be intrapersonal, interpersonal or environmental, and a combination of psychosocial and environmental policy variables will best explain the physical activity of users in urban public open spaces (Booth et al., 2001; James F Sallis & Owen, 1998). The ecological model may be useful for physical activity research. Sallis and colleagues describe the current status of ecological models for health promotion and propose principles that should be followed if these models are to contribute substantially to health promotion research and practice. Ecological models are comprehensive multi-level frameworks for health promotion.

The main concept of the ecological model is that behaviour has multiple levels of influences, which include biological, psychological, social, cultural, organizational, community, physical environmental, and policy. Ecological models are to provide a comprehensive framework for explanation the multiple and interacting determinants of health behaviours. Necessarily, ecological models can be used as Saill cite 2008, p.p466 "*to develop comprehensive intervention approaches that systematically target mechanisms of change at each level of influence".* James F Sallis et al. (2008) has proposed four essential principles of ecological models of health behaviour:

1. There are multiple influences on specific health behaviours, including factors at the intrapersonal, interpersonal, organizational, community, and public policy levels.
2. Influences on behaviours interact across these different levels.
3. Ecological models should be behaviour-specific, identifying the most relevant potential influences at each level.
4. Multi-level interventions should be most effective in changing behaviour.

The need to recognise environmental and policy variables that are exact to each behaviour is a challenge in the use of ecological models, because lessons learned with one behaviour, for example, encouraging walking to work. Of course, some lessons learned in one can apply to others. General ecological models can be used as the basis of behaviour-specific models that are needed for application to research and interventions.

2.11 The practice of landscape architecture planning, design and management for urban public spaces

Current planning and design practices in Saudi Arabia fail to take account of a number of social dimensions in terms of open space. First of all , as Addas has identified, there is a lack of landscape planning and green space infrastructure; and secondly, design quality and value are poor (Addas, 2015). Figure 3-2, below, plots all of the gardens in Jeddah on a GIS map; however, the pilot study showed that many of these are simply unplanned pieces of land, so unbuilt and barren pieces of land are counted as open spaces. In fact, the number of designed open spaces for public use is far fewer than what the map shows. On a local scale, people generally socialise in streets or on these undeveloped pieces of land.

Figure 2.11-1 The Municipality of Jeddah – geographic information system department (2011).

According to Mandeli (2011), the quality of a design and the impact of urban spaces on the image of the city matter. Quality is important during the design process, implementation of the project and ongoing maintenance.

A comparative study in Libya and Dubai, by Al-Musawi (2010), investigated the potential benefits and quality of open spaces within these cities and whether they met the needs of users. The findings suggest that the case study sites of Sabratah and Dubai reflect a common pattern across North Africa and the Middle East, in that there are insufficient public open spaces to meet the needs of the local population, and most open spaces in this region show signs of neglect. This region has also shown that commercial, industrial and residential demand for land has increased significantly, so that those responsible for urban planning decisions often identify public open spaces as land that could be used for urban development.

Al-Musawi (2010) argues that professional designers of gardens and public open spaces appear to lack awareness of the potential economic and social benefits of investing in the development of public open spaces, such as meeting the needs of local people that could contribute to an improvement in their lives, through the use of effectively designed and maintained public open spaces.

Thus, it is important that decision-makers who plan open spaces in the city are fully aware of the needs of the residents. They must consider that there are variations within the population of the city and there are many differences, and all of them have their own ideas of how they would like to spend their spare time in open spaces (Mandeli, 2011) in terms of not only a difference in gender, but also age, educational levels, income and other social differences and factors. Subsequently, decision-makers responsible for the design and planning of open spaces should be informed by good practice in landscape architecture and planning, as well as being culturally agile in relating this to the Saudi context. This would help lead future developments in the planning of open spaces more effectively, as well as improving the profession of landscape architecture in the future.

Development strategies for urban open spaces in Gaza were investigated by Hirzalla (2014), and it was found that most of the open spaces were visually and physically deformed, often lacking a function or purpose. Climate factors were also ignored, so that shade, water supplies and appropriate plants and trees were not considered. These factors negatively influenced the potential use of these open spaces by local people, as landscape design and maintenance generally failed to enrich the environment of these spaces (Hirzalla, 2014).

2.12 Urban public open space typology

In order to gain a grounded understanding of the types of places that Jeddah residents use regularly for physical activity purposes, it is important to look at the typology of public open spaces in the city that are relevant to the research. Developing a typology of open spaces in Jeddah will make a useful contribution to academic knowledge on middle eastern public open spaces. In addition, it will aid the aim of this research, which is to investigate the provision of urban public open spaces and the impact of users of physical activity.

Dunnett et al. (2002) define four main types of urban green space: amenity green spaces, functional green spaces, semi-natural habitats and linear green spaces. Table 2.12-1 shows

how each of these types is aggregated to subtypes. However, the typologies presented by Dunnett et al. (2002) adopt a methodological overview that could be applied to Jeddah by focusing on amenity spaces, functional spaces and natural spaces as broad typologies. Therefore, certain elements of typology developed for the landscape of the United Kingdom would be classed as irrelevant, but some specific elements could be adapted, such as transport corridors and informal recreation spaces.

Table 2.12-1 Urban green space typology (Dunnett et al., 2002).

Main Types of Green Space				
		Categories of Typology	Types of spaces	Jeddah relevant typology
ALL URBAN GREEN SPACE	Amenity Green Space	Recreation Green Space	Parks and Gardens Informal recreation Areas outdoor sports Areas	Parks Gardens, Informal recreation outdoor sports area
		Incidental Green Space	Housing green space Other incidental space	Other incidental space
		Private Green Space	Domestic garden	Not relevant
	Functional Green Space	Productive Green Space	Remnant Farmland city Farms	Not relevant
		Burial Ground	Cemeteries Churchyards	
		Institutional Ground	School ground Other institutional ground	Institutional ground
	Semi-natural Habitats	Wetland	Open / Running water Marsh, Fen	Open water
		Woodland	Deciduous Woodland	Not relevant
		Other Habitats	Moor/Heath Grassland Disturbed ground	Not relevant
	Linear Green Space		River and Canal banks Transport corridors Other linear features	Transport Corridor Other linear features

This typology illustrates the type of urban green spaces that occur in the green fabric of the United Kingdom. The relevant typology in Jeddah context are parks, gardens, outdoor sport area, informal recreation, open water, institutional ground, transport Corridor and other linear features.

2.13 Urban public open space typology in Jeddah

As illustrated in Figure 3-3 below, Alhajaj (2014) catalogues three different current public open spaces, namely official, unofficial and road traffic islands. The total area of official public open spaces is 573 hectares, with the road traffic island area approximately 86 hectares. Official public open spaces include waterfronts (Corniches), neighbourhood parks, malls and plazas, whereas unofficial spaces encompass large vacant blocks, local streets, under city bypasses and parking areas. At the same time, road traffic islands consist of mosque gardens, large road traffic island parks and multipurpose community squares (Alhajaj, 2014).

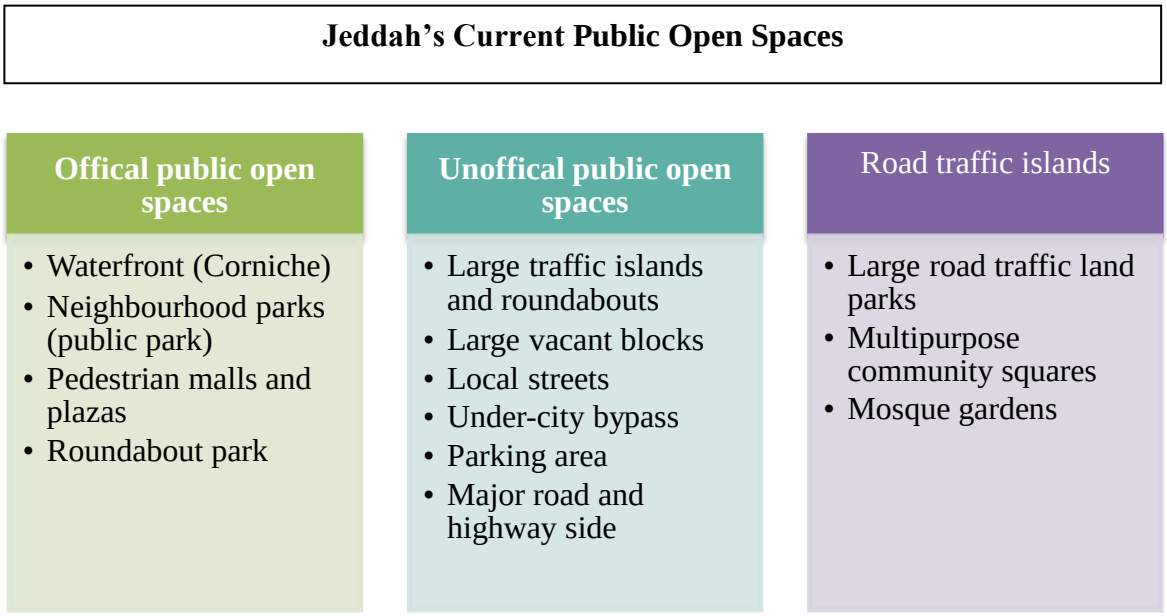


Figure 2.13-1 Jeddah's current public open spaces (Alhajaj, 2014)

Furthermore, Addas (2015) makes a distinction between the extensive and intensive landscapes of Jeddah's open spaces. Extensive landscapes consist of the waterfront and desert open spaces, while the intensive landscape is subdivided into incidental (pavements, tunnels and roundabouts) and design areas (parks, gardens and squares), with incidental open spaces being of a confined nature in Jeddah. See Figure 3-4 below for further details.

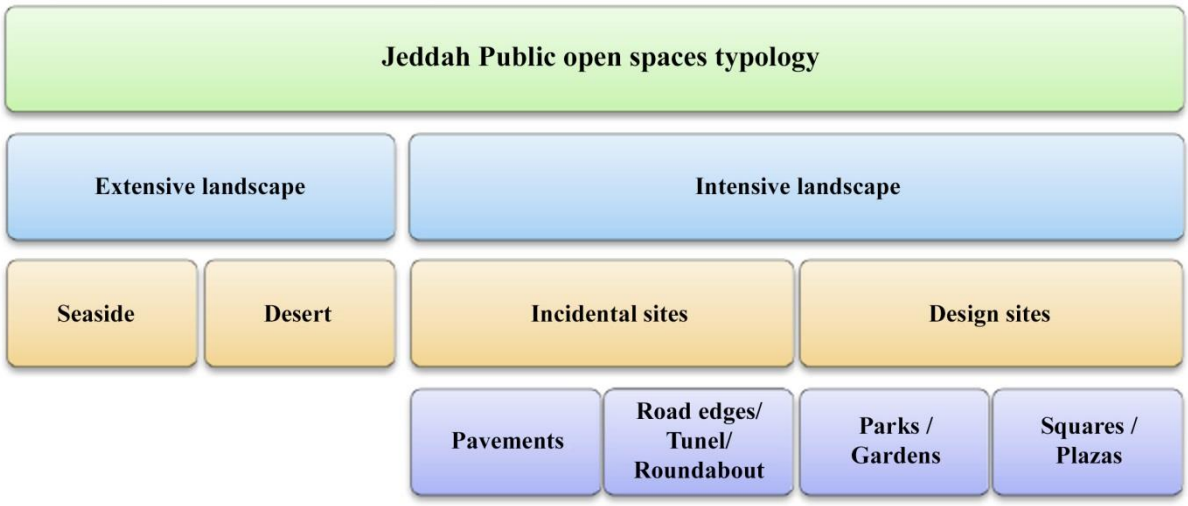


Figure 2.13-2 Jeddah's public open spaces typology (Addas, 2015).

For the purpose of this research, only Jeddah's outdoor urban public open spaces will be studied, as private and indoor spaces are beyond the scope of this study. In this study, According to Alhajaj (2014) the case study sites have been categorised as unofficial public open spaces for non-design sites that have been selected. On the other hand, Addas categorised these non-design sites as incidental pavement sites. The designed sites have also categorised in two different classification. Amira park is considered as official public open spaces in Alhajaj category where as in Addas as design sites. The walking spaces that designed and founded in this research are considered as pavements sites and incidental sites in- spite of being designed and construct by municipality.

2.14 The national standard for public open spaces

According to the Ministry of Municipal Rural Affairs (2003), a national standard in Saudi Arabia's cities with regards to public open spaces recommends that within residential areas, there should be 6.5m^2 of public open space per person, whilst in new residential districts, there should be at least an open space area of 5000m^2. Meanwhile, with regards to active recreation, there should be a ratio with a minimum of 400m^2 for every 20 residential units, whilst the entire area for public use, including parks, roads and parking, must not be more than 33% of the total land area of residential development.

Furthermore, there is a recommendation that active recreational spaces should be at least 400m^2 of public open space for every 20 residential units. In addition, there should be roads for the entire area, thus improving connectivity. However, they cannot take up more than

20% of the total land area. In total, the manual presents eight different forms of public open spaces, with rigid specifications and standards for each of them, including children's playgrounds, residential cluster parks, neighbourhood parks, sports grounds, unfenced open spaces for passive recreation, district sports grounds, sub-municipal parks and regional parks (see appendix 4).

2.15 National Background

Saudi Arabia is the largest country in the Arab Gulf region, and it variety of natural assets in the form of rivers, beaches, mountains, deserts, sand dunes and beautiful oases (Al-Rasheed, 2010). The main cities of Riyadh and Jeddah are of a high standard with a variety of amenities. It has been classified as the largest oil exportation country in the world, and with regards to cultural and social issues, the country follows a conservative line. Islam is the basic foundation of Saudi Arabia in religion, laws and policy, and residents adhere to their Islamic traditions and customs taught and handed down through the generations. These social norms affect people's dress and behaviour strictly.

However, aspects of the country's cultural practices are changing in line with development, such as the use of technology, the quality of and access to education and commercial developments, each of which is improving the quality of life for many people. It is a well-known fact that social life acts as a key behavioural and life pattern component. With regards to the education of Saudi girls in both the private and public sectors, there are no physical education classes or team sports as part of the curriculum, although this has changed recently, when sports classes for female schools were initiated in September 2017, thus supporting them to exercise in private spaces. In addition, this will influence health and behaviour, as well as help to distribute sports community cultural awareness.

Figure 2.15-1 Saudi Arabian provinces

2.15.1 Study Area: Jeddah

Jeddah is located to the west of Saudi Arabia and is the second largest city. It lies on the Red Sea and has an area of 5,640 km². It is situated in the Tihama plains between the Red Sea and the lower height of the Alhejaz region (Bindaqji, 1978). It is a port and trading city and a major commercial hub, and it also has great historical value, as it is believed to have been settled in the pre-Islamic period, around the second century B.C. In 2014, the ancient city of Jeddah (gate to Makkah) was named as a World UNESCO heritage site.

This city was chosen as the case study for this research because of its features that allow the research to be tested. First, its location is an economic place. Second, it is the main port of entry for all Muslims wishing to visit Makkah, and third, the social component of Jeddah is different from other Saudi cities (Addas,2015), so it has the potential to improve and develop an open space system. Also, the social life aspect is different from other cities, because of the topographical location of the neighbourhoods. Furthermore, the city of Jeddah is the birthplace and hometown of the researcher, and so this insider knowledge of the social, cultural, environmental and urban fabric aspects will assist the research process. It is also the place where the researcher gained a bachelor's degree in Landscape Architecture and worked for several years in the private sector on many local landscape projects, as well as in the academic field as a lecturer for the Landscape Architecture Department. Finally, the researcher already has fixed and established relationships with different sectors that will

enable the gathering of appropriate data which are readily accessible and available due to these connections.

Before the oil industry revolution in Saudi Arabia, Jeddah was a small traditional city with a population of only 35,000, occupying a land area of about 300 hectares (Daghistani, 1991). During the last two decades, the area has become significantly built-up to meet the needs of an increasingly growing population: in 1956, the built-up area reached 3300 hectares and the population 50,000. By 1961, the population reached 150,000 people. By 1987, the population had jumped to more than 1.3 million people with a built-up area of 18,000 hectares (Daghistani, 1991). Since then, Jeddah's population has amplified greatly, reaching 4.1 million residents, with a built-up area of 176,500 hectares, and it is expected to grow to over 5 million by 2029 (Jeddah Municipality, 2012), as it continues to attract people from different regions, both domestically and internationally, who come to work or live. At present, the balance between the Saudi population is at about 52% and the non-Saudi contingent is around 48% (Statistics, 2015). Therefore, decision-makers in the planning and the design of urban public open spaces are facing a great challenge, because of the diversity in the use of these spaces. Due to these demographic differences, users' needs, uses and interactions will be varied and different (Addas, 2015). In addition, 39.92% of Saudi nationals are aged 15 years and under, and this is also reflected in Jeddah's population, albeit at a slightly lower percentage of 32.2% (Statistics, 2015).

Jeddah is located within a high-temperatures, dry climate zone, i.e. a desert environment with limited vegetation cover and low rainfall (Jeddah Municipality, 2012), although it does receive above-average rainfall for Saudi Arabia, with 53.5mm recorded per year, or 4.5mm per month. On average, there 5 days per year experience more than 0.1mm (Climatemps, 2017). Maximum temperatures can be found in July and August and can reach up to 43°C, dropping to 30°C in the evenings, with the minimum in February at around 28°C in the daytime. In addition, humidity is high in the summer, due to the proximity of the city to the Red Sea. Due to Jeddah's temperature, the prevailing wind blows from the northwest of the city with moderate intensity for most of the year. It is important to note that the climate may influence the use of urban public spaces. For example, in extreme heat, humidity or rain, users may not wish to practice sports or activities in the open.

2.16 Summary

This chapter has discussed findings from a review of the literature regarding experiences that are associated with physical activity in urban public open spaces. The need for physical activity in urban public open spaces is highlighted and examined from the findings of various studies. Therefore, this research focuses on those factors that affect women's usage of public open spaces for physical activity in Saudi Arabia. A review of historical background of urban spaces and urban design in Western urbanization shows that a wider logic of how the urban spaces design in Western cities constructed based on the human agents and social values.

Additionally, It has also discussed the nature of urban public open space as the main subject matter of physical activity use. Briefly exploring some of the dilemmas associated with it has been addressed. The evidence presents that recent urban design literature has a wide range of issues and opinions in an attempt to explain the causes of public realm decline and the lack of a sense community in modern residential environments. Carmona (2010) has suggest six dimensions that influence the urban design. Firstly, morphological dimension which concern about the change of the form and shape of settlements over time. The settlement elements are divided to several keys like land use, building structure, street pattern, and plot patterns. Urban public open spaces are a significant elements in creation of the built environment and classified to solid and void (Krier & Rowe, 1979). In this study the morphological dimension is linked to how the growth of the city can change the use of public open spaces and how the spaces can be distributed within the settlement. Secondly, the perceptual dimension is basically about the perception and experience of the place. Sense of place, place image, and place identity are basics terms in construction of place. Many theories associated with perceptual dimension have been discussed as Gestalt theory, Lynch imageability work, behaviour approach, transactional philosophy, and ecological theory. Social as a third dimension shows the understanding of the relationship between people and urban public open spaces. This section has discussed many theoretical backgrounds of social aspects such as Marxism which is not conducted in this research not focused on the political and economic theories that linked in Marxism. The social interaction and exclusion have presented the users relationship with the spaces. Also, it indicates and help to understand how women use urban public open spaces for physical activity in Jeddah. The visual-aesthetics dimension of urban environment which is identify and responsible for our recollection of emotions, experiences and memories (Cullen,1971). Sitte (1986) presented a number of different artistic principles to enhance the aesthetics quality of the spaces, such as enclosure, freestanding sculptural mass, the placement of public monuments and/or

statuary and the proportional shape of a space to the surrounding buildings. Furthermore, the functional dimension relates to how the space work and how urban designers can make spaces better to use. The function considered in term of access, circulation, traffic flow, infrastructure utilities and daylighting. Finally, the temporal dimension focuses on the change of the spaces and management through times. All these dimensions support the research in the area that help to achieve the main of this research.

In addition, the use of urban public open spaces in the Middle Eastern context have been addressed. Historical and religious features and concerns have been mentioned as a nature of context. The different of the social life. The need of physical activity and the factors that influence the use of public open spaces for physical activity have been addressed in this chapter as an issue that could help to improve Saudi society health. the findings form this chapter are strongly link with the methodology that is adopted for this study, therefore these relationships with open spaces are analysed in association with women physical activities, patterns of usage and other factors, such as walkability, proximity, aesthetics, accessibility, gender, age and cultural backgrounds. Therefore, the typology of urban public open spaces in Jeddah city have classified by Alhajaj (2014) and Addas (2015). This help to classify the cases study in this research and position each one of these sites in the right classification. Both of typology classifications are different and the cases in this research classified as design and non-design as will described in next chapter.

This chapter helps to identify the main factors that influence the use of urban public pen spaces and link all factors to the main urban design dimensions. The findings of literature review present the main issues that associated to this research context and how this could help to investigate in-depth about the use of urban public open spaces for physical activity. The following chapters are build based on the data that gathered from the literature review and how these sections are engaged with literature review. These findings produce a strong link with the methodology adopted for this study, so that these relationships with urban public open spaces are analysed in association with physical activities, patterns of usage and other factors, such as gender, age and cultural background. This contributes to an analysis of the use of public open spaces for physical activity, which directs this research towards its focus of women physical activity use.

The following chapter explains the methodological philosophy, approach, methods, strategies, data collection methods, and analysis to meet the research aim. The methodology is linked to the findings from the review of the literature.

Chapter 3.

The Methodological framework and Analysis of Methods Used

3.1 Research Methodology

3.1.1 Introduction

The previous chapter reviewed the available literature with regards to public open space and its implications, with a focus on the meanings, definitions, needs, factors and requirements necessary to address the research issues of the study. This chapter sets out the methodological framework and describes the philosophical perspective informing the research process. Initially, an understanding of the research concept is discussed, before a complete methodological framework is given with descriptions and explanations. Then the thesis describes the research philosophy and the approach of this study, followed by a discussion on the case study design. I also, discuss data collection and analysis techniques, as well as the use of computer-aided software for data analysis. Before concluding with the applicability of the case study research.

3.1.2 Understanding the research concept

According to Remenyi, Williams, and Swartz (2000), there appears to be an infinite need to improve and develop life with regards to social, economic and environmental factors. However, social issues and unanswered questions remain unresolved with these rapid changes. Therefore, knowledge can be achieved through structured empirical research that allows the collection of new data and can contribute to resolutions. For this purpose, a combination of techniques can be used that help to answer or study a specific situation or phenomenon, known as a methodology (Easterby-Smith, Thorpe, & Jackson, 2012).

According to Remenyi et al. (2000), questions pertaining to what and where to research are closely related and dependent on the researcher and what they are investigating. To a certain extent, the attainment of knowledge will depend on variables such as academic background or work experience, which can stimulate a desire to discover new areas through research. However, Remenyi et al. (2000) suggest that a new researcher solicits professional or academic advice and support from an expert with an interest in the proposed research topic, and who can provide supervision.

According to Remenyi et al. (2000), "understanding the philosophical stance or research" will help avoid or reduce the risk of errors and uncertainty whilst enabling success. A significant consideration is to ensure that the researcher has complete understanding of the issues under investigation and knowledge of how this information will be attained and/or collected. This in turn will enable the researcher to decide whether quantitative or qualitative

research is undertaken. Table 3.1-1 below identifies the claimed features of qualitative and quantitative methods, according to Halfpenny (1979).

Table 3.1-1 Claimed features of qualitative and quantitative methods (Source: Halfpenny, 1979).

Qualitative	Quantitative
Soft	Hard
Flexible	Fixed
Subjective	Objective
Political	Value-free
Case study	Survey
Speculative	Hypothesis testing
Grounded	Abstract

Additionally, in order to deal with the first or ultimate principles of the research, a paradigm needs to be set. N. K. Denzin and Lincoln (2011) describe a paradigm as a "basic set of beliefs that guide an individual." Trochim and Donnelly (2001) add that "the beliefs the researcher holds, will reflect the way the research is designed, how data is both collected and analysed, and how the research results are presented." Therefore, it is vital that a paradigm is recognised, to help the research process, finalise the course of action and determine viewpoints.

Identification stage

The first phase explains how the researcher arrived at the research problem. This was through work experience as a landscape architect in the private sector and as a lecturer of Landscape Architecture at the King Abdul-Aziz University in Jeddah for 7 years. This academic background related to landscape planning and design, has helped identify the research gap. Hence, the researcher developed an initial impetus and later thoroughly reviewed the available literature. The process of recognising the exact research area encapsulates the background of the study for the subject area and the definition of the research problem for investigation. The following subsection addresses how the initial impetus was supported with the literature review, in order to arrive at the research problem relevant to the study.

A summarised selection of appropriate methodological choices, and justifications based on the research requirements, is illustrated in table 3.1-2 below, detailing the choices and purposes of selection.

Table 3.1-2 Summarised methodological choices

	Choices	Types	Selection	Justification
Research Philosophy	**Ontology**	Objectivism Subjectivism	**Subjectivism**	Urban public open spaces are highly influenced by users' social views and interpretation of the value of site design and what appeals to specific sites.
	Epistemology	Positivism Interpretivism	**Interpretivism**	The researcher looks at possible ways of obtaining knowledge about women practicing physical activities in urban public open spaces. This will be done by understanding the experiences of users. Therefore, the study adopts an interpretivist stance.
	Axiology	Value-free Value-laden Value-constituted Value-driven	**Value-laden**	The researcher is part of what is researched, subjective. Researcher interpretations key to contribution. Also, the researcher is reflexive. The choice of value-laden is determined by human beliefs and experiences.
Research Approach		Inductive Deductive Abductive Retroductive	**Inductive**	Adopting inductive research allows for a variety of data collection methods, in order to establish different views of phenomena. The inductive approach is helpful in supporting outcomes of the research on the basis of realistic evidence, considering the factors influencing the need for open spaces in a Saudi Arabian context.
Research Method		Qualitative Quantitative Mixed Method	**Qualitative**	To cover the subject of the physical activity in urban public open spaces, specifically women, it was crucial to select a qualitative method because it produces rich data from a small sample number. The study is exploratory in nature, and little information is available on this subject.
Research Strategies		Ethnography Phenomenology Grounded-Theory Action research Case Study	**Case Study**	The phenomenon under study is not readily distinguishable from its context. Case study focuses on one aspect of a problem. Also, in a case study, the researcher can used in-depth analysis of people. Exploratory studies often use case studies. In addition, case studies can be used to contribute to the knowledge of individual, social that related to phenomena and understand the phenomena better. Conducting a case study allows one to gain holistic and meaningful new information and to understand casual relationships between female physical activity and the use of urban public open spaces. Furthermore, a case study can be used to determine the type of physical activity used in public open spaces in Jeddah City, and it offers an opportunity to examine and explore a phenomenon that not many have investigated before. In addition, it will assist in obtaining a firm understanding of how the use of physical spaces is related to the experiences of the people using them, and the patterns associated with physical activity.
Data Collection		Interviews Questionnaire Documents Observation	**Interviews** **Observation**	Interviewing on site helps the researcher understand and observe users' behaviour and record the physical activity practiced by them. Also, understanding the users' interaction with the site elements. Furthermore, on-site interviews can give more in-depth detail such as the physical experiences that users are experiencing, which can improve data.
Sampling		Probability Sampling: Random Cluster Snowball Non-Probability Sampling: Convenience Quota Purposive	**Random Snowballs**	The researcher has a clear idea about the sample unit that is needed in this study, because women who are using urban public open spaces for physical activities will be randomly selected according to the researcher's observation of user eligibility.
Data Analysis		Content Analysis Thematic Analysis	**Thematic Analysis**	Thematic analysis is a method for identifying and analysing themes within qualitative data. The main purpose of using this approach is to analyse and search for themes or patterns that occur across a dataset. This will involve the researcher's coding data, to identify themes or patterns for future analysis related to the research questions.

The adopted methodology will be discussed and explained in the following sections. Figure 3.1-1 shows the methodology framework for this study.

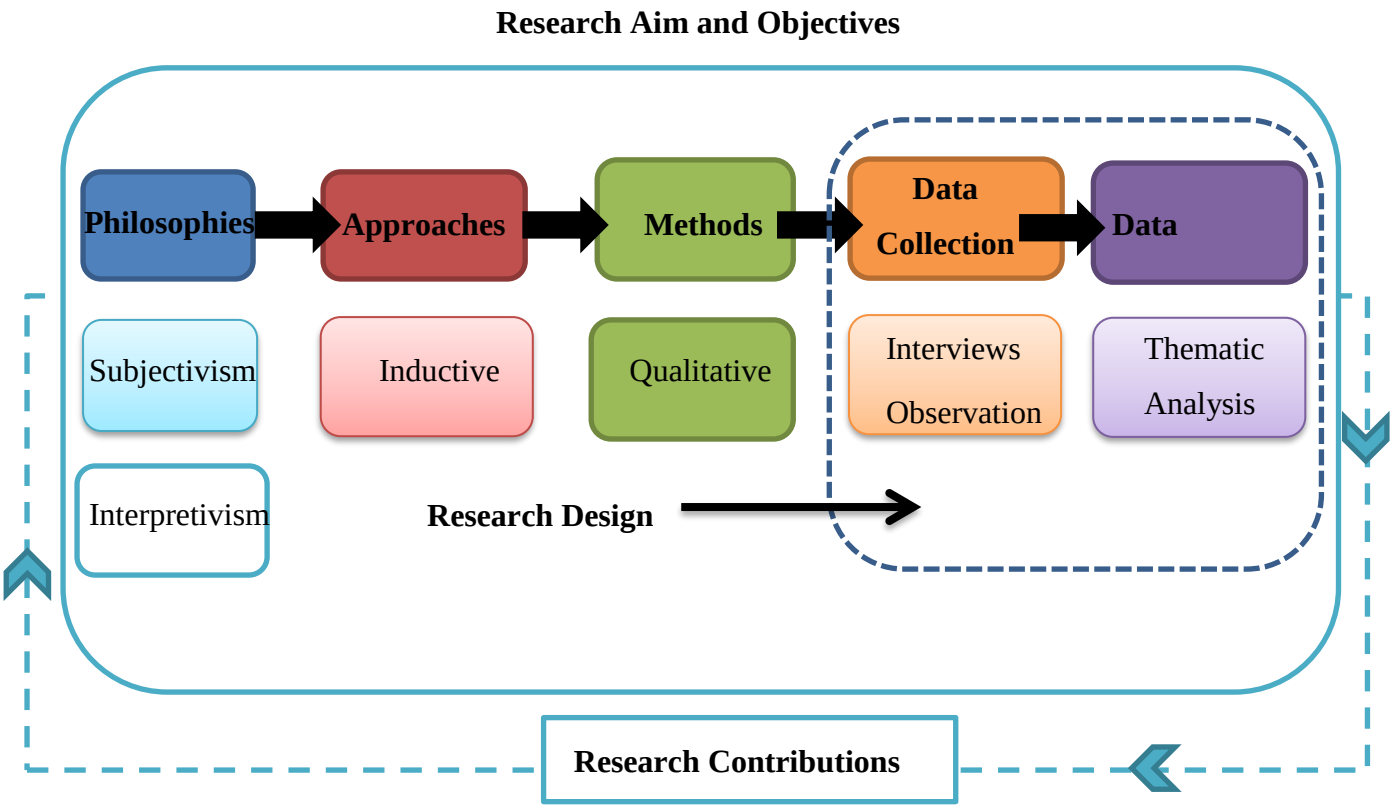


Figure 3.1-1 Methodology framework for this study.

Research methodology needs to be understood before research can be carried out, and it is vital for a researcher to match the underlying philosophy to the most appropriate research methods (Travers, 2001). The methodological approaches and research strategy are shaped by the research aim, which is to identify how people use urban public open spaces in Jeddah for physical activity and whether people (in particular women) are reluctant to use these spaces. Through examination of the social dimensions of space and how they shape the values and meaning of spaces across diverse axes of identity, this enables recommendations to be made for improved planning and design, to meet the needs of the users in Jeddah more effectively. This study will be guided by the theoretical perspective of social reality, which has helped position the philosophy of this research and identify the relevant methodology.

The research onion diagram (as depicted in Figure 3.1-2, section 3.1.4), below, demonstrates in more detail the research philosophy and approach selected for this study.

The methodology is partly guided by the axiological assumptions (values) of the researcher, which determine how to reach the information source and what tools to apply for the collection of data (epistemology). The tools and techniques that a researcher chooses are also determined by their personal beliefs (ontology). In this way, a researcher's (subjective/objective) belief is a way to view the (nominal/realistic) reality, and their values determine the research paradigm. According to Kuhn (1970), it stands for "the entire constellation of beliefs, values and techniques, shared by the members of a community."

In addition, according to Renmenyi (2000), the researcher must consider research perspectives and the epistemological, ethical and ontological assumptions that will influence and support the strategy and methods selected. Guba and Lincoln (1994) describe the fundamental concepts of research philosophy as epistemology, ontology and axiology. Two of these three philosophical concepts, which are fundamental when choosing a research philosophy, are epistemology and ontology. The former asks how a phenomenon can be understood, whereas the latter asks what the phenomena are, or what exists, or is the nature of an entity. Ontology concerns itself with what is true, while epistemology concerns itself with how we know it is true. Furthermore, ontology is about the nature of reality and epistemology is about "how knowledge can be created, acquired and communicated, in other words what it means to know." Notably, axiology is the third aspect of philosophy that "studies judgements about value" (Saunders, 2016).

In detail, the research methodology refers to a procedural framework within which the research is undertaken and where the approach can be put into practice to help describe the research process (Remenyi et al., 2000). The researcher needs to understand each of the components in the research methodology, to understand better the importance and inter-relationship of each component and coordinate the right flow of the research process. This research will follow the methodology of Saunders' research onion (2016), as this approach helps to understand the assumptions and path dependencies. The diagram in section 3.1.4 below illustrates the deployment of each element in the research onion methodolgy for this study.

3.1.3 Research philosophy

The philosophical stance needs to be laid in a strong foundation of epistemological undertakings, ontological assumptions and axiological purposes. It is important to have a clear understanding about research philosophies, because they act as a guide for the researcher to see how the knowledge is created.

A philosophy is an investigation of the nature, causes or principles of reality, knowledge or values, based on logical reasoning rather than on empirical methods. Therefore, it contributes to the body of knowledge in an appropriate manner.

Furthermore, Easterby-Smith et al. (2012) emphasise three reasons to focus on the importance of understanding philosophical issues while conducting research:

- It helps clarify the research design.
- It helps the researcher identify which research design will work and which will not work under different circumstances.
- It helps the researcher identify and create research designs which may be outside of experience.

Namely, there are two main research philosophies: positivism (objectivism) and interpretivism (social constructionism).

- **Positivism**

Behaviourism- and cognitivism-based learning and instructional theories are grounded in positivist philosophy, because they suggest that learning can be acquired and that reality as well as knowledge is discovered, rather than created.

- **Interpretivism**

Social learning-based theories are aligned more closely with constructivist philosophy, because they suggest that knowledge is constructed based on experience with the world and its people, so that reality is constructed.

In agreement with this theory, Easterby-Smith et al. (2012) indicate two contrasting sides of the philosophical traditions continuum about how social research should be conducted: positivism and constructionism (interpretivism).

Table 3.1-3 Contrasting implications of positivism and interpretivism (Source: Easterby-Smith, 2012)

Item	Positivism	Interpretivism
The Observer	Must be independent	Is part of what is being observed
Human Interests	Should be irrelevant	Are the main driver
Explanation	Must demonstrate causality	Aim to increase general understanding of the situation
Research progress through	Hypothesis and deductions	Gathering rich data form which ideas are induced
Concepts	Need to be operationalised so that they can be measured	Should incorporate stakeholder perspectives
Unit of analysis	Should be reduced to the simplest term	May include the complexity of a whole situation
Generalisation through	Statistical probability	Theoretical abstraction
Sampling requires	Large numbers selected randomly	Small numbers of case chosen for specific reason

Accordingly, as the first layer of the research onion (see Figure 3-.1-2 below), it explains the philosophy that is chosen by classification of:

- What counts as reality in many ways to structure it as a type of knowledge? (ontology)?
- How may the knowledge of that reality be established (epistemology)?
- What values go into that knowledge (axiology)?

3.1.3.1 Epistemology undertaking

Epistemology is about how the world is viewed, a general set of assumptions about how knowledge about the world is acquired and accepted (Saunders, 2016). Positivism is an epistemological stance that advocates the application of the methods of natural science to the study of (social) reality, treating the objective 'truth' as 'out there' to be discovered. It holds that the social world exists externally, and its properties should be measured through objective methods rather than being inferred subjectively through sensation, reflection or

intuition. Positivism assumes that the researcher is independent of and neither affects nor is affected by the subject of the research (Easterby-Smith et al., 2012).

In different ways, many authors and researchers (Creswell, 2013; Easterby-Smith et al., 2012; Remenyi et al., 2000; Saunders, 2016) agree that positivism is a philosophy which states that the only authentic knowledge is knowledge based on experience. Such knowledge can only come from the affirmation of theories through a strict scientific method. In contrast, a constructivist view argues that knowledge and reality do not have an objective or an absolute value, or at the least they have no way of knowing this reality. Constructionism is more likely a view in philosophy according to which all knowledge is constructed, in as much as it is contingent on connection, human perception and social experience.

It is important that the epistemological stance of the research needs to be looked at together with the ontological assumption and axiological purpose, as it is a part of the philosophical branch of knowledge. As such, it will help the researcher understand better the research undertaken, even from an early stage, to help clarify objectives, as this will make a significant contribution to the body of knowledge.

3.1.3.2 Ontological assumptions

Ontology is an assumption about the nature of reality (Saunders, 2016), a study of conceptions of reality and the nature of being. Ontology deals with the precise use of words as descriptors of entities or realities. On research approaches, ontology can be set in realism or idealism of research knowledge.

3.1.3.3 Axiological purposes

Axiology deals with the nature of values and the foundation of value judgements (Saunders, 2016) and depends crucially on notions of value, as in this study which sets out to examine the behaviours and beliefs which reflect social norms and therefore lays the groundwork for this study. At either end of its spectrum, it has two aspects: 'value-free' and 'value-laden'. In value-free research, the choice of what to study and how to study it, is determined by objective criteria and in value-laden research, the choice is determined by human beliefs and experiences. According to Creswell (2013), whether research is value-free or value-laden will be determined by judgments based on objective criteria or on human belief and experience. People's viewpoints differ, and these different opinions and experiences go towards forming their viewpoint on how truth is represented. Ultimately, axiology asks: how do we know that what exists actually has merit?

3.1.4 The position of the research paradigm

The research methodology takes interpretivism as a philosophical stance and as a subdivision of epistemology, "[…] directed at understanding phenomena from the individual's perspective, investigating interaction among individuals as well as the historical and cultural contexts which people inhabit" (Creswell, 2013). Moreover, "it is necessary to explore the subjective meanings motivating and underlying the actions of social actors before the researcher can understand these actions" (Saunders, 2016).

Interpretivism emphasises that humans are different from physical phenomena because they create a meaning (Saunders, 2016). The researcher tries to take account of this complexity by collecting what is meaningful to the research participants. By choosing an interpretivism stance, this will help simplify the theories and concepts and give the researcher new understanding of worldviews. After identifying the research philosophy stance, the research will be guided to be typically inductive as an approach to theory development, which will allow for small samples using qualitative methods of data analysis. The following diagram (Figure 3.1-2) demonstrates the research methodology approach and research philosophy.

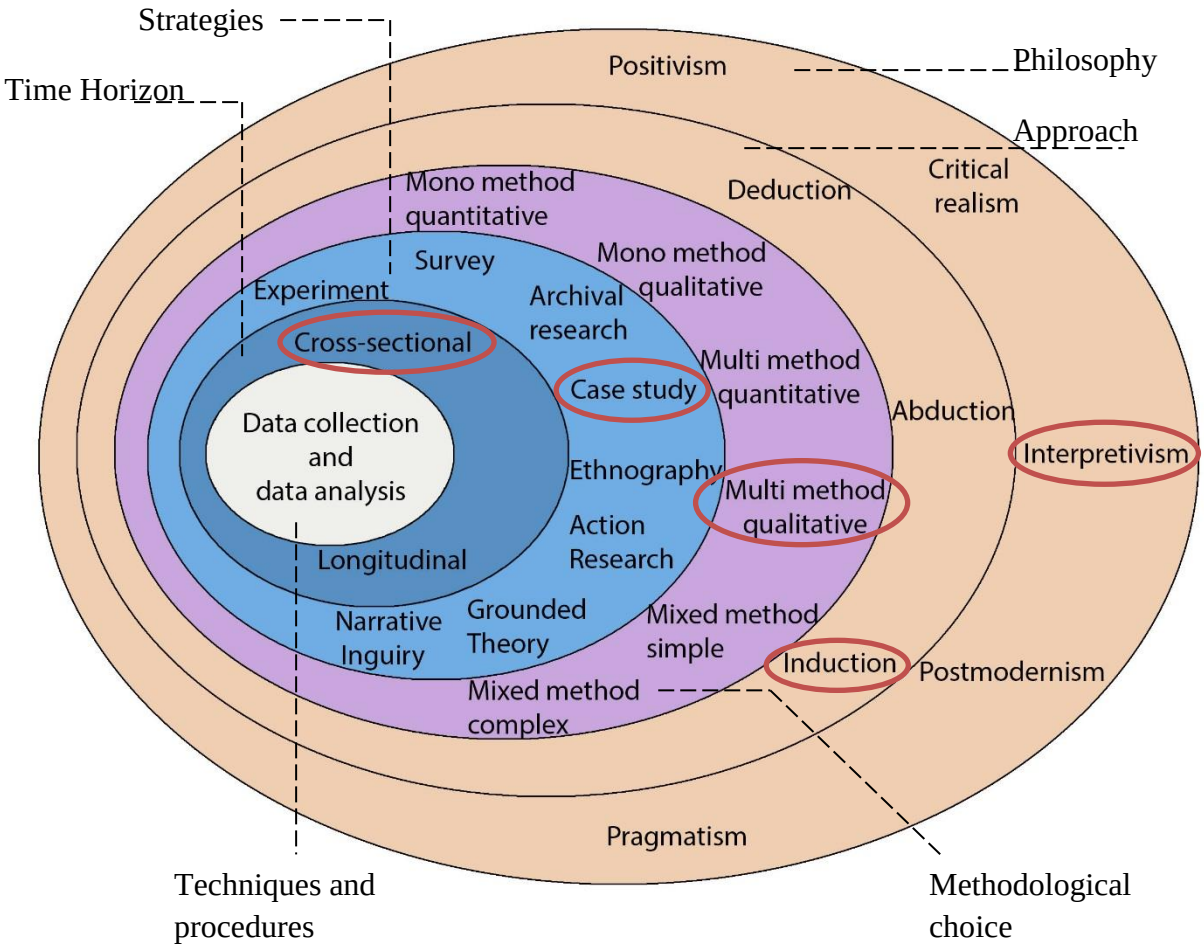


Figure 3.1-2 The research onion (Saunders, 2016)

In summation of the discussion on the research philosophy in the previous section (3.1.3), research positioning towards interpretivism has been identified as the most appropriate research philosophy for this study, as the main research aim is to explore the effectiveness of urban public open space design practices in promoting physical activity in Jeddah, specifically for women.

With regards to the epistemological undertaking, this study leans more towards interpretivism, as its nature is rooted in the notion of world-lived experiences. This study is socially constructed based on knowledge gathered by exploring a variety of women using urban public open spaces for physical activities.

Regarding the ontological assumption, this study is largely a theory-testing attempt rather than a theory-building exercise, and so it holds the ontological assumption that reality is not predetermined but socially constructed. Additionally, the research environment was not expected to be controlled and simplified with assumptions and hypotheses as in the deductive research approach used in positivist studies. Conversely, an inductive research approach is

used with the intention of generating rich data to test theories. The aim of this study is to explore the effectiveness of design practices in promoting physical activity in public open spaces in Jeddah for women.

As for the axiological purpose, this study leans towards the value-laden element, as the researcher's choices are determined by human beliefs and interests (Easterby-Smith et al., 2012). The phenomenon under study is interpreted within a context through direct interactions with users, to seek and explore the factors that affect women using urban public open spaces for physical activities. The research environment cannot be controlled, as the idea constructed is determined by human beliefs and interests. Accordingly, the study makes a value-laden research choice.

Accordingly, Figure 3.1-3 below illustrates the positioning of the research within the philosophical continuum in line with this study.

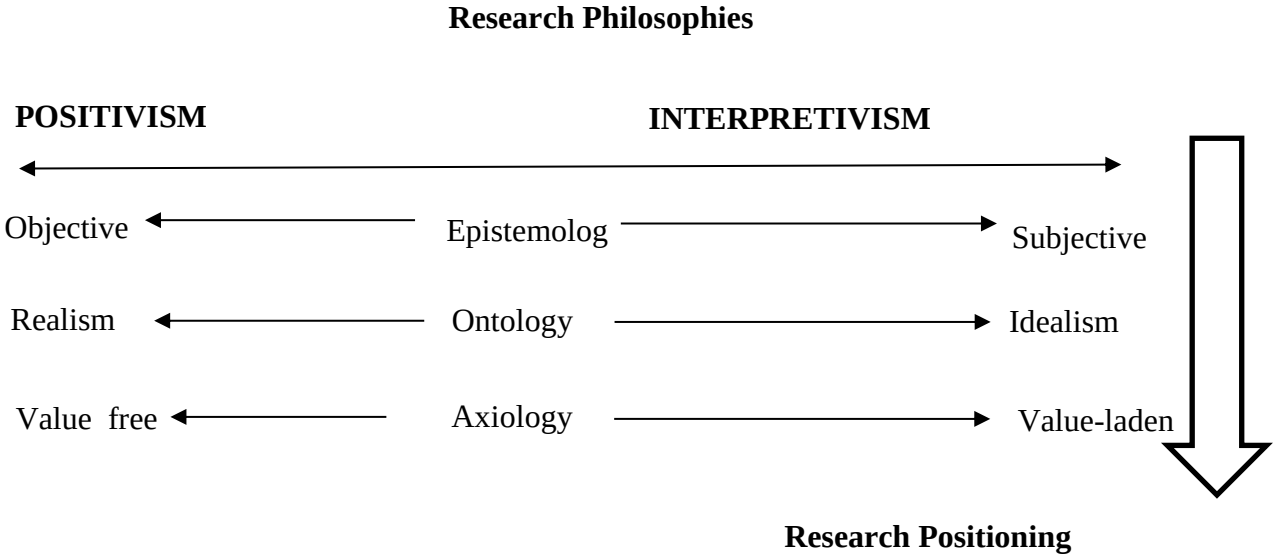


Figure 3.1-3 Positioning the research within the philosophical continuum

In summary, the research nature of this study contributes to the establishment of a philosophical basis within the epistemological territory of social constructionism (interpretivism), the ontological stance of idealism and an axiological view of being value-laden and therefore possibly biased, as it is determined by the experiences and interpretations of the researcher. This philosophical standing thus influences the selection of an appropriate approach, as described in the next section.

3.1.5 Research approach

There are two approaches to enquiry in the social sciences, namely the structured and the unstructured approach, and both represent different research strategies (Bryman, 2015). An unstructured approach to the collection of data, qualitative researchers adopt methods of research that do not require the investigator to develop highly specific research questions in advance and therefore to devise instruments specifically for those questions to be answered. An advantage of the unstructured nature of most qualitative enquiry (that is, in addition to the prospect of gaining access to people's worldviews) is that it offers the prospect of flexibility (Bryman, 2015).

The key characteristics of the structured approach are that the research process is predetermined and conducted in a structured order, contrary to the unstructured approach, which permits flexibility (A. M. Smith, 2012). Quantitative research is a structured process, whereas qualitative research is an unstructured approach, although some believe that these two research methods should not be categorised in this way (Bryman, 2015). For example, Gorard and Taylor (2004) state that the terms 'quantitative' and 'qualitative' can have the same aim and therefore the methods can be combined.

In general, a qualitative study takes on a holistic descriptive approach, and quantitative studies can be measured with numbers (Creswell, 2013). Either way, both approaches have their place in research and are very commonly used together to support each other and mitigate their individual weaknesses. Qualitative research builds understandings of social realities, as it concentrates on the experiences of participants (Jenner, Flick, von Kardoff, & Steinke, 2004).

According to Crotty (1998), four design elements – epistemology, the theoretical perspective, methodology and methods – that rely on one another in research, with each decision made in one of these elements also affecting decisions in the others (see Figure 3.1-4 below). The epistemological approach means the theory of knowledge that will be used, and it triggers the whole research process (Crotty, 1998). The choice of this approach will then shape the theoretical perspective, such as constructivism, which in turn will shape the methodology and methods; hence, their reliance on one another.

For the purpose of this research, the epistemology is constructivism. This epistemological approach was selected because there is no singular truth in the constructivism paradigm, and therefore reality is perceived as subjective. This means that there are multiple ways of seeing

every event, and reality is produced by human intelligence. The theoretical perspective choice for this work is interpretivism, which acknowledges that there is no single external reality but multiple realities, depending on the observer. This means that there are no direct relationships with the world, and reality is interpreted by the people (Gray, 2013).

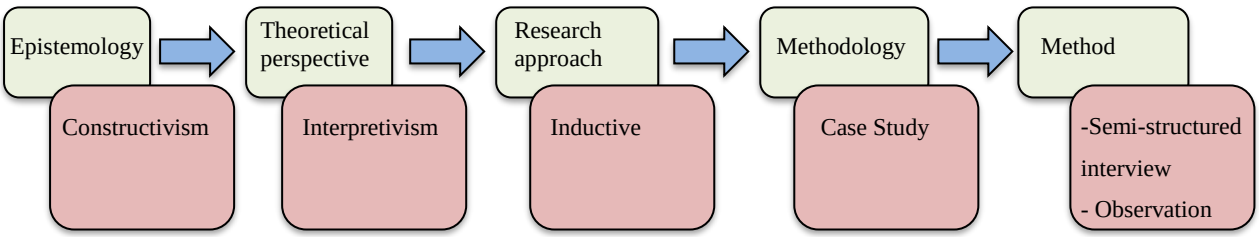


Figure 3.1-4 The five elements of the research process (Crotty, 1998)

3.1.5.1 Qualitative approaches

For the context of this study, an inductive research approach, which is a "procedure, which is systematic... [and] helps in conducting analysis of the qualitative data, which is guided by the objectives that are specific" has been adopted (Thomas, 2006), so that the factors surrounding the use of open spaces and the users' behaviour can be considered by the researcher from the collected data. An inductive approach is also helpful in supporting the outcomes of the research on the basis of realistic evidence and by considering factors influencing the need for open spaces in the Saudi Arabian context.

The adoption of inductive research is likely to work with qualitative data using a variety of methods to collect it, in order to establish different views of the phenomena (Saunders, 2016) (Saunders, 2016). An inductive approach for qualitative data analysis is described herein, and details provided, about the assumptions and procedures used. The reasons for using an inductive approach include the condensation of extensive and varied raw text data into a brief, summarised format, in addition to the establishment of clear links between the research objectives and the summary findings derived from the raw data and the development of a model or theory about the underlying structure of experiences or processes (Thomas, 2005).

A wide range of both qualitative and quantitative research methods can be found, including the use of questionnaires, interviews and observation studies, as well as more landscape-specific methods such as walking interviews or photographic diaries. It is important to recognise that research methods are situated within a cultural context and need to respond to the constraints, expectations and opportunities of the location and potential participants.

Qualitative research seeks to understand a given research problem or topic from the perspectives of the local population involved in the study, and it is especially effective in obtaining culturally-specific information about values, opinions, behaviours and the social context of particular populations (Mason, 2017). Moreover, it provides a means of gathering detailed and specific information and, most importantly, it goes beyond statistical data by enabling the investigation of the localised and complex mechanisms of both event processes (Miles, Miles, & Huberman, 1994) and by emphasising contextualised qualitative research that could help to explore a wide array of dimensions in Jeddah's social world, including the textures and weave of everyday life, the understanding, experiences and imaginations of its users and how urban public open spaces attribute to the influence of physical activity patterns (McCormack et al., 2010).

Moreover, it involves the studied use and collection of a variety of empirical materials such as case studies, personal experiences, introspections, life stories, interviews, artefacts and cultural texts and productions, along with observational, historical, interactional and visual texts that describe routine and problematic moments and meanings in individuals' lives. The research techniques will include interviews with residents and designers/professionals, informal interviews and observations in public open spaces, which will subsequently inform a second-stage design review process. In addition, qualitative methods could contribute to understanding of the impact of urban public open spaces on physical activity behaviours (McCormack et al., 2010).

Qualitative research can be defined as a process related to inquiry, in which data are drawn from the context of their occurrence, so that these occurrences can be described (Gorman, Clayton, & Shep, 2005). The strength of qualitative research is that it can provide complex textual descriptions of how people experience physical activity and interact with public urban spaces in Jeddah. The meanings of events are determined by the participants' experiences and their own perceptions, as well as the analysis of findings made by the researcher. Qualitative methods are also effective in identifying nuanced factors, such as social norms, socioeconomic status, gender roles and practices related to ethnicity and religion, which will be relevant to the research.

As the current data for urban public open spaces are minimal in the context of Saudi Arabia, this research will develop an innovative and fundamental data collection process. In addition, there is a need to understand the spaces under investigation, which includes issues of opinions and values, as well as senses and perceptions. It will also include an exploration of

practices relating to demographic values whilst linking these data from social research into the practice of landscape architecture in Saudi Arabia.

3.1.6 Methodology choices

Qualitative research covers a variety of research techniques and philosophies (Hennink, Hutter, & Bailey, 2010), and it can take the form of ethnography, phenomenology, grounded theory or action research, all of which combine a compatible set of principles to inform the whole process (Crouch & Pearce, 2012). According to Mason (2017), qualitative research methodology explores people's experiences and their understanding of complex, everyday life and social interactions. Both qualitative and quantitative methodologies, however, employ different methods; for instance, some qualitative methods involve different types of interviews, focus group discussions, observations, content analysis, visual methods, life histories or biographies (Hennik et al., 2010). In addition, Flick (2008) listed the positive characteristics of qualitative research design as a clear focus on the research questions, methods and sampling, all of which contribute to a good research design and are important for managing the research (Flick, 2008).

Furthermore, a research study must choose between a qualitative and a quantitative methodological approach, with the decision based on the nature of the study. Qualitative research is used when perceptions, interpretations, meanings, values and the context in which they occur are important. The quantitative approach focuses on testing hypotheses and answering the research questions, and it is said to do so in a more objective-focused manner, partly because it often relies upon numerical data and partly because it is held to rely upon more scientific methods informed by positivist values. However, researchers also have the choice of combining the two methodological approaches and opting for a mixed methods approach, if the researcher believes that doing so will enable the achievement of the research aims and objectives (Bryman, 2015).

After taking into consideration all of the factors listed above, the researcher has adopted a qualitative research approach to an exploratory study assessing the contribution that public open spaces make to communities in Jeddah. The proposition is that public open spaces can and should be used for exercise and enjoyment. However, as they must fit with Islamic values and practices, and arguments about public female exercise are value judgments, this is best-suited to resolution through a qualitative research approach. The researcher believes

that the qualitative approach will allow exploration of the research topic in depth, through the use of unstructured probing (Bryman, 2015). Adopting a qualitative research approach, the researcher will focus on a sample of 24 research participants who can be asked open-ended questions, followed by supplementary questions, to establish how they perceive the provision and value of open space and to what extent they believe it contributes to good health and is marked by social cohesion or disapprobation.

In reality, no one study is purely quantitative or qualitative; the phases of research are recursive, i.e. the researcher moves back and forth between collecting and analysing data. Qualitative researchers analyse their data by reading it over several times and conducting an analysis each time. Reviewing the material allows the researcher to continue to explore for more details and patterns related to each common theme. Qualitative research is interpretative, whereby the researcher makes personal assessments of the data in a descriptive format and then develops the themes that capture the major categories of information, thus bringing their own perspective to the interpretations.

Notably, quantitative and qualitative research strategies differ in their epistemological foundations (Bryman, 2015). In quantitative research, reality is seen as objective and singular, and the process of research as deductive, which is the opposite of the subjective and multiple reality seen in the inductive approach of a qualitative study (Creswell, 2013). Moreover, quantitative research has the ability to make statistical generalisations, whereas qualitative research can create thick descriptions of the phenomenon and participants' experiences. Additionally, quantitative research is suitable for testing theories, and qualitative research is capable of generating new theories (Bryman, 2015). Consequently, both approaches have their place, because the research aims and purposes define the right choice. Crouch and Pearce (2012) stress that the most important thing is that methodological decisions are clear, purposeful, coherent, ethical and capable of enabling researchers to engage in the kind of enquiry they intend to carry out. For the purpose of this research, a qualitative approach has been chosen, because this approach can construct broad descriptions of the participants' experiences.

Creswell (2017) suggests five approaches for a qualitative research design, and so the following section will present the most common qualitative research methodology approaches currently available.

3.1.6.1 Ethnography

According to Dooley (2001), the meaning of ethnography is literally "the description of an ethnic group." Ethnographic research is interested in how different types of groups or communities live and experience their lives and the world around them (Robson & McCartan, 2016). The ethnographic researcher attempts to gain a holistic picture of the researched community, including the economic and cultural context (Hennink, 2010). Common research methods in ethnography include participant observations, interviews and the analysis of artefacts and documents (Creswell, 2013), while typical features for ethnographic research are the observation of participants and participation in the lives and daily activities of research participants (Robson, 2016), as this form of observation allows researchers to record the behaviours, actions and interactions of people in a systematic way (Hennink, 2010).

Ethnographic research, or field research, has a long tradition and developed from the discipline of anthropology, which is the study of human beings, their lived experiences and their cultural practices, with colonialism expanding this field when new societies were discovered (Bryman, 2015) in an attempt to explain how differently these newly founded societies experienced daily life. Anthropological research took place typically in the field, and sometimes researchers spent long periods of time, several months or even years, living alongside the researched society (Crouch & Pearce, 2012).

Ethnographic approaches can have different levels of participation by the researcher. Observation is commonly divided into participant and non-participant observation, and as mentioned previously, it has a long history in qualitative research (Flick, 2008). Ethnographic approaches in design research have the potential to identify and elaborate on the social and cultural dimensions of design problems and solutions (Crouch & Pearce, 2012). In order to determine whether ethnography is a suitable fieldwork approach, Hennink et al. (2010, p.47) suggest considering if one or more of the following seven points is involved in the process:

- The comprehension of a community, village or neighbourhood.
- Gaining a holistic picture of a situation.
- Attempting to achieve a more meaningful perception of the study population's lives.
- Seeking an insider's viewpoint.

- Wishing to understand (cultural) meanings related to the research problems.
- Having a theory of culture, which underlies the research.
- Seeking to participate in the study population's lives.

Source: Adapted from Hennink et al. (2010, p.47).

Furthermore, Gray (2013) states that ethnography differs from phenomenology by often researching 'sites' instead of individuals. Ethnographic methods were not appropriate for this study, as its design did not lend itself to this method, which is about understanding one's population in-depth.

3.1.6.2 Phenomenology

Phenomenology seeks to understand how people view the world around them, and it holds a very strong anti-positivist interpretation in research (Bryman, 2015). In a phenomenological paradigm, people's experiences are studied, often in a small sample, in order to make sense of them (Creswell, 2013). When a researcher has chosen a phenomenological approach, it means they will concentrate on what is going on and the meaning that is given to occurrences (Gray, 2013).

Phenomenology concentrates on studying individuals and uses relatively unstructured methods of data collection, often in-depth unstructured interviews, as its main method, although other qualitative methods can be used as well (Gray, 2013). It acknowledges that there is no one single truth and that people's experiences of reality vary (Dooley, 2001).

Gray (2013, p.28) lists four characteristics of phenomenology:

- It emphasises inductive logic.
- It seeks the opinions and subjective accounts and interpretations of participants.
- It relies [on the] qualitative analysis of data.
- It is not as concerned with generalisations of larger populations but with contextual description and analysis.

One of the characteristics of phenomenology is that it acknowledges that objective reality does not exist and seeks the subjective views of participants (Dooley, 2001). Even though an inductive approach would be of value for this study, it does not allow for the multi-participant group sample that is needed, due to its lived experience approach. It also focuses on understanding the essence of the experience, which makes it inappropriate for this study.

3.1.6.3 Grounded Theory

The main purpose of a grounded theory approach is to generate theory from the collected data and to avoid presumptions (Flick, 2008; Lewis-Beck, Bryman, & Liao, 2003; Robson & McCartan, 2016). Therefore, grounded theory is situated under the umbrella of inductive research methodologies, where the priority is given to empirical data collected from the field (Flick, 2008). Within this approach, research processes are led by data collection processes and the insights arising from them, and the study design evolves in light of these insights. One of the characteristics of grounded theory is theoretical sampling, where the sample is defined step by step (Flick, 2008). Early insights inform who or what should be sampled next.

Grounded theory was introduced by two American sociologists, Barney Glaser and Anselm Strauss, in 1967 (Robson, 2016). One of its benefits is its application into fields that are completely new or do not have existing theories (Robson, 2016). It is a research design approach and methodology, but it can also be referred to as a 'data analysing' method, whereby data are coded with open, axial and selective coding (Gray, 2013). Flick (2008) states that in grounded theory, the interpretation of data is much more important than data collection methods, as the researcher already has expertise around the research topic and is familiar with much of the literature, which in the case of the present study makes grounded theory an inappropriate choice of methodology.

3.1.6.4 Action Research

Action research defines everyday problems and finds practical and relevant solutions (Saunders, 2016). Promoting change in an organisation requires close collaboration with researchers and participants (Gray, 2013). It is flexible and allows new research questions to arise along the way, as well as the use of a variety of associated methods (Crouch & Pearce, 2012). Gorard and Taylor (2004) state that action research typically takes place in real-world settings, with the intention of solving the problems separating action research from other forms of research methodologies, which mainly aim to understand and explain the phenomena and develop new theories (Crouch & Pearce, 2012). There are two types of action research – one without controls and one with control groups (Gomm, 2008). According to Gomm (2008), action research without controls is problematic, because the initial and end situations are difficult to define, and therefore the effects of the action remain unknown. An action research study method has not been pursued for this research study.

3.1.6.5 Case Study

Saunders et al. (2016) indicate that a case study is the polar opposite of an experimental strategy and also differs from the restricted research context of a survey, with its limited capacity to explore and understand: "A case study is a method of choice, when the phenomenon under study is not readily distinguishable from its context" (Yin 2003, as cited in Blaxter et al., 2006). Furthermore, Naoum (2012) writes that case studies are used for an in-depth analysis of a person or an organisation, and as the nature of a case study focuses on one aspect of a problem, the conclusion drawn will not be generalised but rather related to one particular event or area of interest.

According to (Naoum, 2012), there are three types of case study designs:

- A descriptive case study, which is similar to the concept of a descriptive survey (i.e. counting), except it is applied to detailed cases.
- An analytical case study, which is similar to the concept of an analytical survey (i.e. counting, association and relationships), except it is applied to a detailed case.
- An explanatory case study, which is the theoretical approach to the problem. It explains causality and tries to show linkages among the objects of the study. It asks why things happen the way they do. It also suggests that a single cause can have a specific effect. In other words, the researcher collects facts and studies the relationship between one set of facts and another, in the hope of finding some causal relationships between them.

In addition, Saunders et al. (2016) explain that the case study generates answers to 'why?', 'what?' and 'how?' questions. For this reason, a case study strategy is most often used in explanatory and exploratory research, thus allowing one to collect and describe facts and phenomena in detail.

A case study has been defined as *"*the study of the particularity and complexity of a case, coming to understand its activity within important circumstances" (Stake, 1995), whilst in landscape architecture, a case study is "a well-documented and systematic examination of the process, decision-making and outcomes of a project, which is undertaken for the purpose of informing future practice, policy, theory and/or education" (Francis, 2001). As a research method, the case study is used to contribute to knowledge of organisational, group, individual, social, political and related phenomena and comes from a desire to understand

these phenomena better (R. K. Yin, 2013). Meanwhile, Stake (1995) emphasises that a case study approach is especially suitable for understanding a complex single or multiple case.

The purpose of case studies is to gain holistic and meaningful new information and to understand casual relationships between, for example, "real-life events, individual life cycles, small group behaviour, organisational and managerial processes, neighbourhood change, school performance, international relations and the maturation of industries" (Gray, 2013, p.247; Yin, 2013, p.4).

For this research, a case study method has been chosen, as it will help to gather more specific data about cultural practices in public open spaces, as well as aid in determining the types of physical activities used in urban public open spaces in Jeddah. Furthermore, the use of case studies will assist in obtaining a firm understanding of how the use of physical spaces is related to the experiences of the people using them and the patterns associated with physical activity. Although Hancock and Algozzine (2017) point out that case study methodology could be both qualitative and quantitative, in this work, the case study will use a qualitative approach alone, because deeper knowledge is desired. It will also offer the opportunity to examine and explore a phenomenon that not many have investigated before, and as mentioned previously, there is a lack of research in this particular area. Also, as Yin (2013) suggests, it could help to hypothesise "the transferability or due consideration of it typicality."

Case studies often have a longitudinal element, with the research lasting up to several months and interviews taking place over lengthy periods (Bryman, 2015), and as a wide variety of research methods can be used in case studies, the data are typically collected from multiple sources (Robson, 2011). Furthermore, Yin (2013) argues that, usually, the researcher has no or very little control over the timings of the case study, meaning that sometimes the researched case happens despite the researcher being there or not. Yin (2013) also proposes that carrying out a case study is a suitable methodology when the research attempts to answer questions such as 'how' or 'why'. Meanwhile, Crouch and Pearce (2012) highlight that a particular focus for a case study must be identified, because it affects the research outcome.

The case study spaces in this research have therefore been selected according to their validity rather than by using random samples, as selecting a few cases for their validity is more appropriate than using random samples (Flyvbjerg, 2006). Furthermore, examining an extreme case study has greater potential to provide a wealth of information compared to a

typical case, as it activates extra actors and extra basic mechanisms in the research situation (Flyvbjerg, 2006).

3.1.7 Case study design

According to (Yin, 2014), there are four major types of case study design: a single case, a multiple case, a holistic case and an embedded case. To clarify these types of case studies simply, each design is included as shown below (Figure 3.1-5):

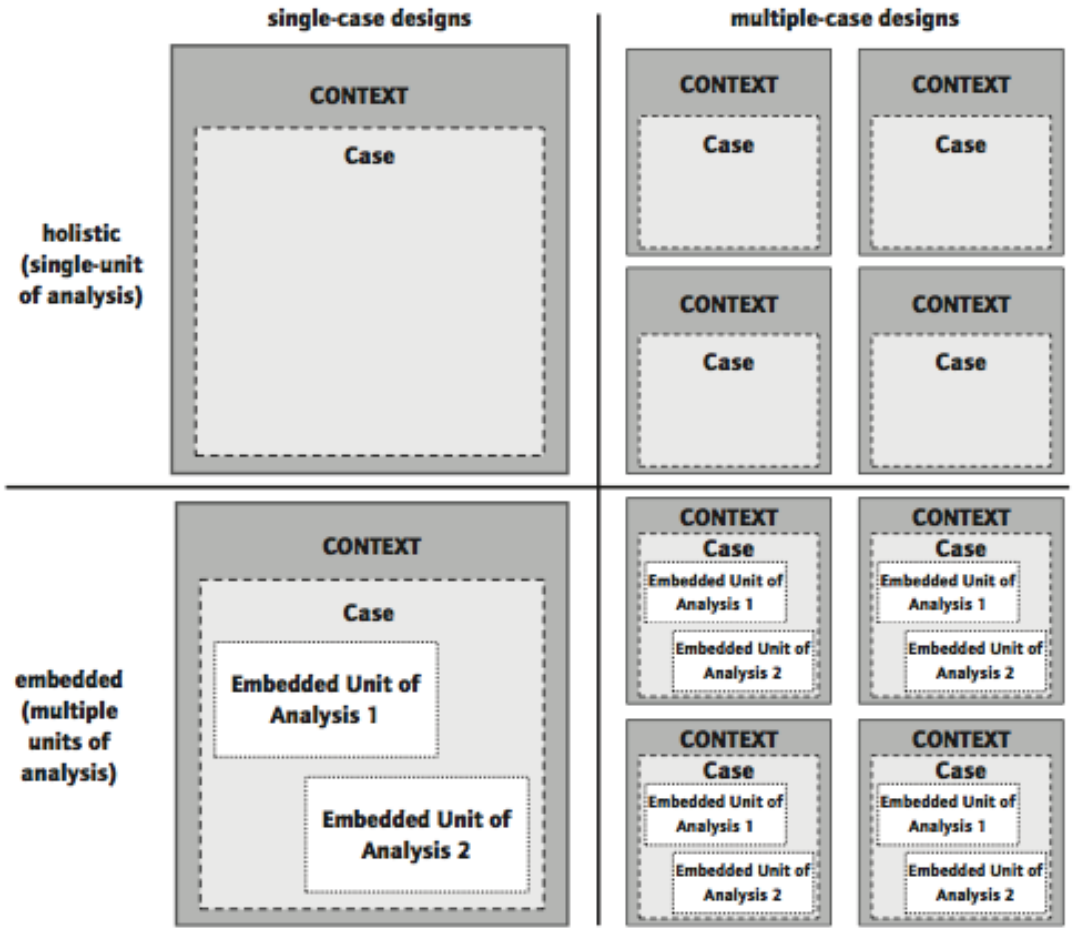


Figure 3.1-5 Basic types of designs for case studies (Yin, 2014).

When comparing a single case study and a multiple case study design, multiple case designs have distinct overall advantages, such as the evidence that emerges from multiple cases being considered as compelling and therefore regarded as robust. On the other hand, conducting multiple cases can require more resources and more time, which may be beyond the decision of selection this strategy by a single researcher or an independent research investigator (Yin, 2014).

Aligning with the argument above, this study has adopted holistic multiple cases, because they provide the possibility for direct replication. Multiple case designs should follow a replication, not a sampling logic, and an investigator must choose each case carefully. There are differences between a holistic and an embedded case design, though both refer to the unit of analysis. A holistic design concentrates on an organisation as a whole, while the embedded approach refers to subunits within an organisation (Saunders, 2016). This research seeks to explore the design implications for multi-site public open spaces allocated for female physical activity.

This research will use the first type of case design (holistic case design), as this selection is appropriate for the research's aim and objectives. The application of a holistic case study allows for the provision of an appropriate distinction between different sites or organisations (Yin, 2014); furthermore, holistic case studies examine a multiple cases unit. According to Yin (2014), a holistic case study ensures that a general view is obtained as an example of an applied organisational strategy. Additionally, adopting this approach determines when the underlying theory is itself represented in a holistic way (Yin, 2014). Therefore, the case examined in this research will be the city of Jeddah, explored as holistic case. The fundamental point of the unit of analysis is that it refers to what or who is being investigated, which could be an individual, a group, an organisation, an industry or a programme (Saunders, 2016).

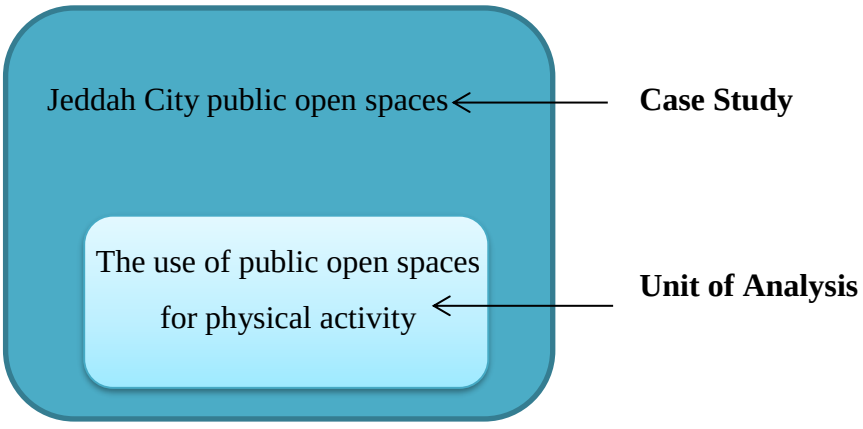


Figure 3.1-6 Unit of analysis for case study

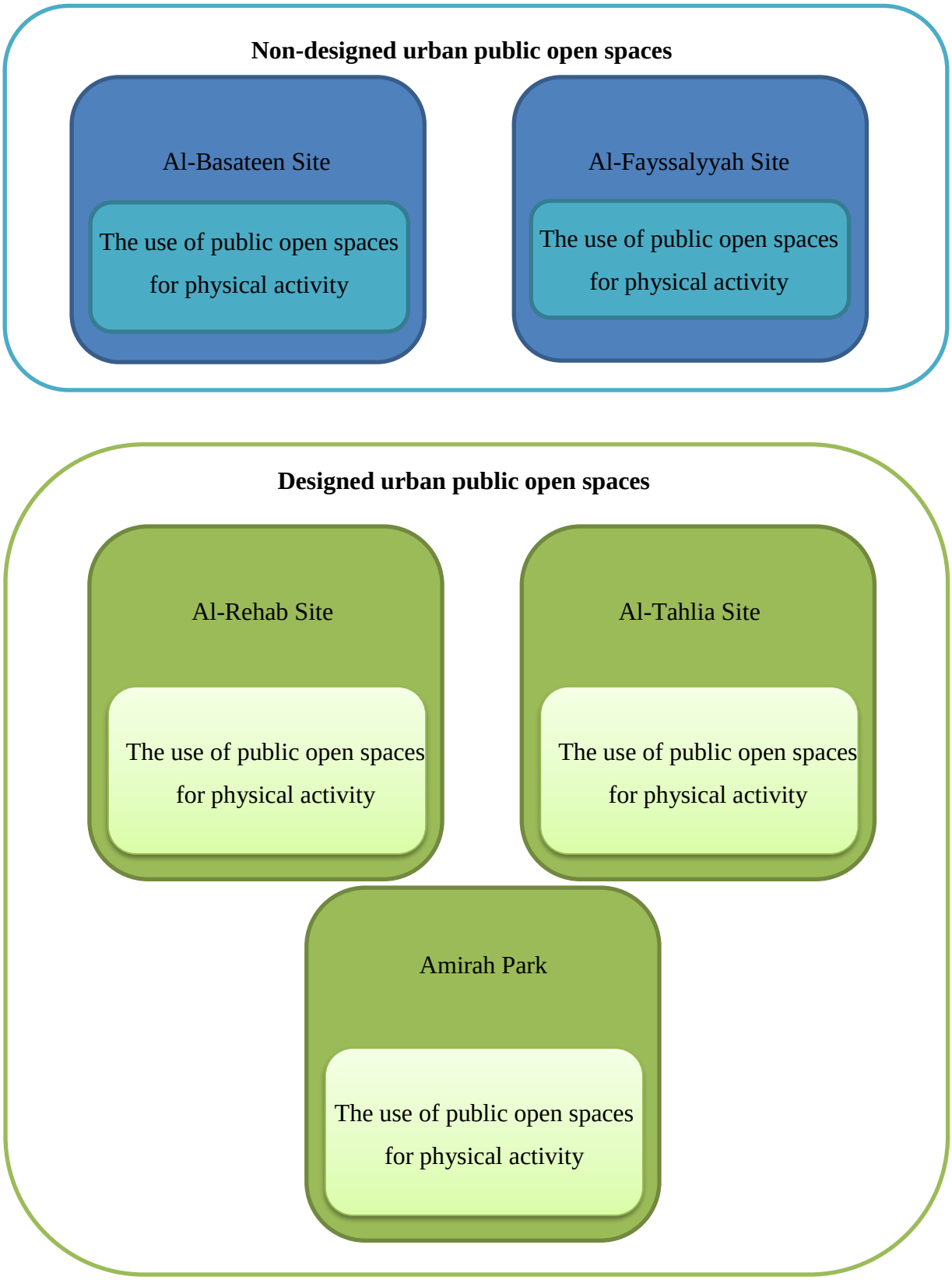


Figure 3.1-7 Research case study unit of analysis

As will be discussed in the following section, five case studies were selected in Jeddah: two designed urban public open spaces for walking purposes, and two non-designed spaces inside the urban context of Jeddah, which were chosen by users to partake in physical activity. The researcher has excluded the main public open spaces in Jeddah (waterfront) because of the closure of the site for development. The new proposal of the waterfront suggests to provide running, bicycle track with link between the water front with other site that designed for walking purpose in the back street of the water front. The last case study is an urban public open space designed specifically for women (see Figure 3.1-7). As Karl Popper (as cited in Flyvbjerg, 2006) argues, a "falsification test" could be illustrated by observing the example of a 'black swan' within examples of "all swans are white," to falsify the proposition and to clarify general significance, before stimulating further investigation and formulating a theory.

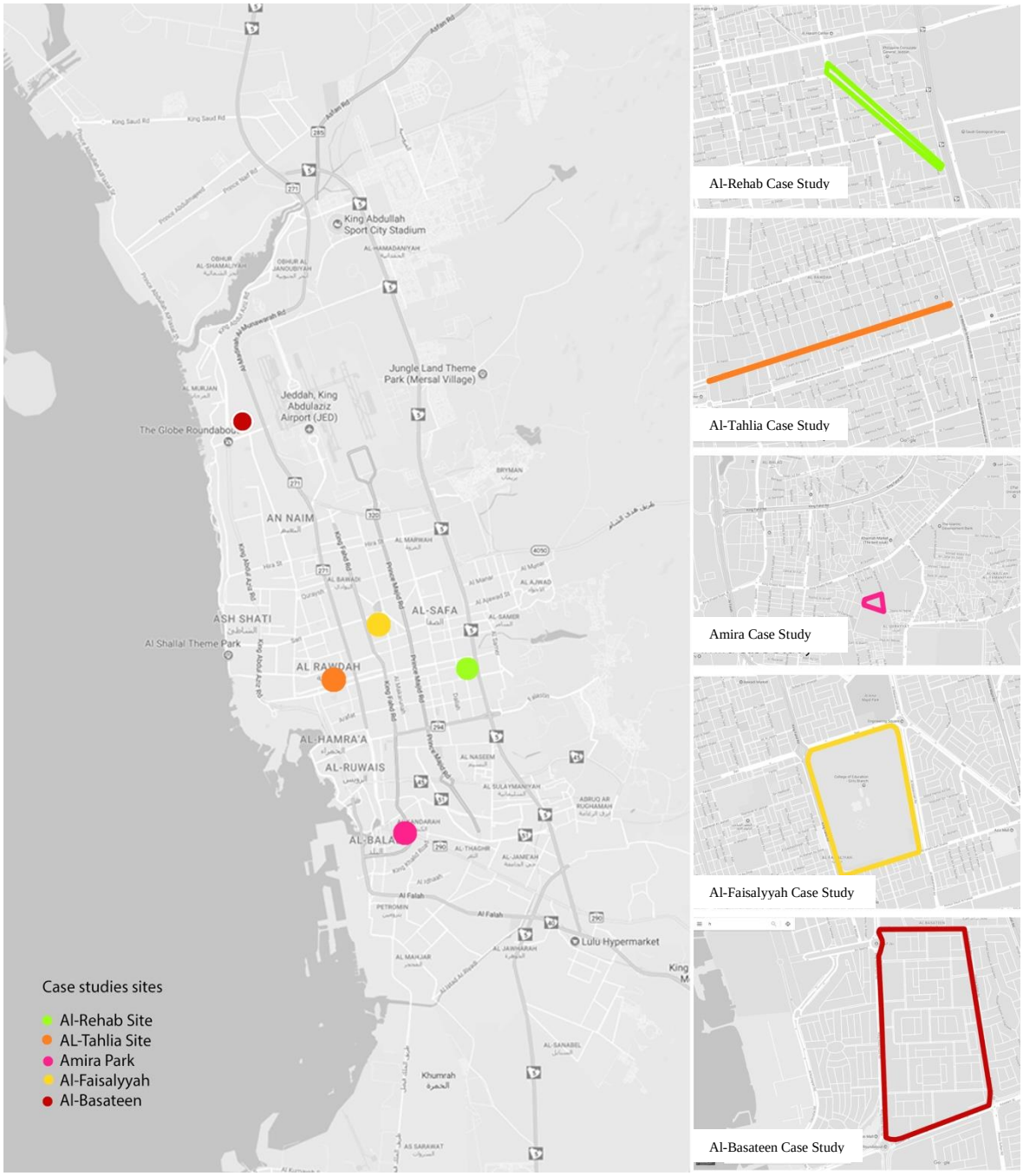


Figure 3.1-8 Case study location

The selected sites were chosen after meeting with a senior decision-maker in Jeddah municipality park and open spaces department and reviewing previous studies that identified open space typology in the city (Addas, 2015; Alhajaj, 2014). The reasons behind choosing these sites will be explained in more detail later. Jeddah City has a variety of social life patterns. For example, in the south and east of the city, local communities reflect the closure of mind that comes from a Bedouin background. In contrast, to the north and west, people are more open and come from a variety of cultures. This was a reason for limiting the

selection of the sites, according to the topography and identification of the designed and non-designed sites in both contexts, which were selected carefully in order to fulfil the research aim. By developing a more in-depth understanding of the meanings of the phenomena in the represented selection of the case studies, the findings could potentially be generalised to Jeddah and the Middle East. After the pilot study, the researcher identified female parks located in the southern part of Jeddah. These parks were also considered in the study to achieve the research objectives.

To begin, the researcher selected four sites according to the research criteria, which included a distribution of the population in Jeddah neighbourhoods (as shown in Table 3.1-4 below). Looking at Jeddah's Municipality list of urban public open spaces that residents use for physical activity and the diversity of the topographical location and the economic data related to the neighbourhoods. The data have gathered from Jeddah Municipality as presented at Appendix 5.

Research from many disciplines such social, and public health is engaged in investigating the social dynamics of public open spaces, and a review of the literature indicates that there is significant diversity in the range of methods that have been used. In this study, the suitability and context of potential methods of inquiry with open spaces users will be critiqued with respect to the Saudi context. An understanding of people's needs and human behaviour in terms of using urban public open spaces for physical activity is key to this research. Moreover, a qualitative approach will help to achieve and cover the research aims and objectives.

Table 3.1-4 Distribution of Jeddah's population (sources: Jeddah Municipality, Jeddah's Structure Plan 2012).

Geographical location	District	Area in km2	Population	Residential density (capita/km2)	Availability of public open space (for PA)
NORTH	Al-Faisalyyah	8.88	118,380	13,331	Y
	Al-Basateen	5.78	12,699	2,197	Y
WEST	Al-Rawdah	8.34	68,424	8,204	Y
EAST	Al-Rehab	6.37	55,402	8,697	Y
CENTRAL	AL-Quriyat	1.59	20,348	12,797	Y

3.1.8 Designed Urban Public Open Spaces Case Study

Selection Criteria	**Four residential neighbourhoods in Jeddah that have contrasting characteristics in terms of socio-economic factors, ethnic diversity, population and geographical location.**
Activities	Semi-structured interviews, observations and involvement of the participants in drawing, writing and informal interviews.
Data Collected	Photos - maps - sections - interview recording.
Objectives Met	1, and 2

In comparison to the scale of Jeddah City, the amounts of pre-designed public open spaces are limited (Alhajaj, 2014). The rationale for using neighbourhood areas is that this research will examine the everyday uses of urban public open spaces, where women partake in physical activity, and compare them with different parts of Jeddah. In addition, it will include the ways in which these spaces are used at different times of the year and the impact of this on their use. Studying designed neighbourhood spaces as case studies will lead to identifying the designed urban public open spaces and the incidental spaces within them.

Figure 3.1-9 Al-Rehab district walking area: an example of a designed site.

3.1.9 Non-Designed Urban Public Open Spaces Case Study

Selection Criteria	**Four residential neighbourhoods in Jeddah, with contrasting characteristics of socio-economic factors, ethnic diversity, population and geographical location.**
Activities	Semi-structured interviews, observation and involving the participants in drawing, writing and informal interviews.
Data Collected	Photos - drawings - voice recordings
Objectives Met	1, and 2

This section of the research will discover and identify those Incidental or non-designed urban public open spaces where people chose to do some exercises such as walking. These locations exist in different parts of the city, and each site is located in a neighbourhood to

meet the residents' physical activity needs. In addition, the use and existence of these spaces reflect the needs of urban open spaces.

According to Alhajaj (2014), the provision of public open spaces per capita in Jeddah is less than 2m², and in more than half of the city's residential areas it is less than 1m². These measurements are less than the World Health Organisation recommends, i.e. a minimum of 9 m² per capita (Emmanuel, 2009; Thundiyil, 2003).

In each of the case studies, the researcher will interview the users of these places. Semi-structured interviews will be held with a number of participants at each site, and the selection of participants will be based upon differences in demographics, gender and cultural factors that are necessary to seek information about diversity and differences in the use of urban public open spaces. The interviews will include in-depth investigations, which will be achieved by asking the participants questions about their daily, weekly, annual and once-in-a-lifetime experiences and the meaning of the place.

3.1.10 The organisational structure of Jeddah's municipality and public open spaces

The organisational structure, illustrated below in Figure 3.1-10, shows that the provision and development of POS has no specific department. Current responsibilities lie within the General Directory of Parks and Plantations and the General Directory of Studies and Design, both under the Deputy Mayor for projects and construction.

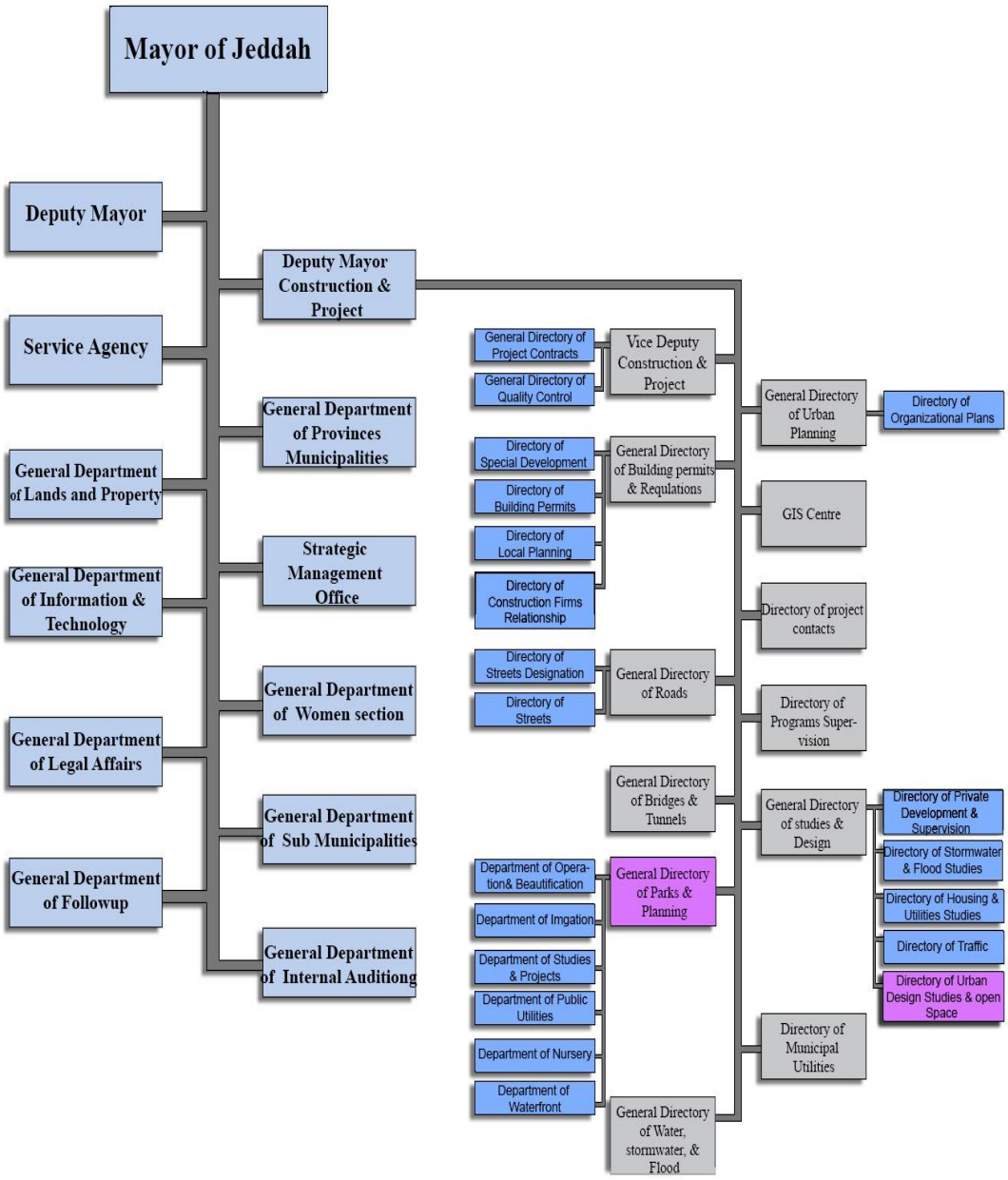


Figure 3.1-10 The public open spaces and urban design department within Jeddah's municipality organisational structure shows two departments in purple colour that responsible of park design and management

3.1.11 Validity and reliability

Validity in qualitative research means that the researcher checks for the accuracy of the findings by following certain procedures (Creswell, 2013). However, qualitative reliability refers to whether the researcher's approach is steady and there are stable findings taken from different cases (Gray, 2013; Jones, Bunce, Evans, Gibbs, & Hein, 2008). In this study, triangulation is used as validation strategy to collect different data and build a coherent justification for the themes. The researcher uses a variety of data collection techniques to achieve data validity and reliability; for instance, semi-structured interviews, observations, literature reviews, and focus group are the main data collection techniques used herein, as (Creswell, 2017) suggests that interviews recordings, field notes and transcriptions can enhance research reliability. Interpretive structural modelling (ISM) is used to identify and summarise relationships among specific variables defining a problem or an issue (Warfield, 1974; Sage, 1977). The objective of ISM is to identify and rank these variables, to establish the interrelationship between them and to discuss the managerial implications of the research. ISM development needs to follow a process to achieve these aims. Focus group occurred after relationship model built it to validate the relationship between the factors according to their evaluation on the first stage of this method.

According to Creswell (2017) reliability refers to the constancy of responses to multiple coders of data set in qualitative research. The reliability can be achieved and got stable by used computer data analysis software like NVivo as conducted in this research. Also, it could by developing initial codebook among coders as presented in the transcripts. It is necessary in this stage to review and finalise the extracted themes that got from interviews (Creswell, 2017). In line with N. K. a. Denzin (2017) reliability can be confirmed with triangulation. Four types of translations have been addressed; data, investigator, multiple and methodological triangulation (N. K. a. Denzin, 2017). In this research, I used method triangulation by conducting semi-structure interviews, observation, and focus group.

3.1.12 Methodological Limitation

The researcher of this study is a Saudi male in his mid-thirties, and by conducting and undertaking qualitative work of this nature explicitly situates the researcher within the research context. This has strengths and limitations and requires a reflexive practice. He was unable to reach and communicate with some parts of the community users, such as conservative families and individuals or groups of females. Furthermore, the transcript was translated from Arabic to English language whilst ensuring non bias approach. The researcher trained two

female members (wife/sister) to conduct interview with women in Amira park (case study 3) because men are not allowed to enter the park. In addition, the sample size of this study was limited during the period of data collection and not allowed to access to more spaces like projects that under-construction or in development phase. The further study could have more samples and more in-depth observation in the further research as a part of ethnography research. This research also has limitation in methodology that as a nature of the qualitative research it is impossible to generalise the finding of this research. Additionally, the selection of case study criteria was consider just the public open spaces that design and use for physical activity purposes. Other locations were provide the same purpose but it was not included in this study because the closing of the sites for more than one year for development. One of this location is a part of main public open space (Corniche). The closing of the major P.O.S could affect the users' numbers that distribute through the other sites and could influence the number of users on the case study sites later.

3.1.13 Ethical Issues

Ethical principles are fundamental considerations when producing social research, and they are concerned with what is or is not legitimate to do in a morally correct way while producing the research. Bryman (2015) categorise these principles into four main elements. The first, principle is to ensure that there is no physical, mental or social harm to participants or the researcher. A second principle is to check whether there is a lack of informed consent. Finally, is to ensure that there is no invasion of privacy and fourth, to ensure that there is no element of deception.

This research has considered the ethical issues that relate to the process of data collection, with the key concerns being anonymity, the safety of the researcher, the use of visual materials, photographing in public spaces and the public nature of the end product and how it will be received within the academic and professional contexts in Saudi Arabia. When interviewing Saudi women, the researcher was accompanied by a female (wife or sister). Furthermore, the researcher introduced a brief of the research topic, its purpose and the aim of the study. In both interviews and observations, sensitive issues that could cause potential complications were purposefully avoided. The researcher informed all participants of his position as a PhD researcher, and that the confidentiality and security of personal data and other material related to the participants would be respected. Additionally, no pressure was imposed in any way on the participants to be part of the research. In this study, all the respondents remain anonymous in accordance with the University of Salford's guidelines

aligned with the Data Protection and Data Management Act of 1998. As presented in Ethical Approval in Appendix 3.

3.2 Methods Used

3.2.1 Literature Review

A literature review is an essential early stage of any research, and it aims to sift through and record the changing viewpoints recorded by previous studies (Fellows & Liu, 2015). It identifies a gap in research and proposes research questions that could address this gap (Eisenhardt & Graebner, 2007), but it is also an opportunity to engage in a written dialogue with other researchers on the topic, demonstrating that the researcher is engaged with, understands and responds to trends in the body of knowledge (Ridley, 2008).

It is a continuous process, which highlights awareness of the current state of knowledge by demonstrating a critical review of the subject (Gill & Johnson, 2010). According to Hart (1998), the literature review serves at least one of the following purposes in research:

- Distinguishing what has been done from what needs to be done.
- Discovering important variables relevant to the topic.
- Synthesising and gaining a new perspective.
- Identifying relationships between ideas and practice.
- Establishing the context of the topic or problem.
- Enhancing and acquiring the subject vocabulary.
- Understanding the structure of the subject.
- Relating ideas and theory to applications.
- Identifying the main methodologies and research techniques that have been used.
- Placing the research in a historical context to show familiarity with state-of-the-art developments.

In a rudimentary manner, all literature reviews should have the following characteristics:

- Be organised around and related directly to the thesis or research question being developed.
- Synthesise the results into a summary of what is and is not known.
- Identify areas of controversy in the literature.
- Formulate questions that need further research.

In summation, in the identification stage, a literature review plays a major role, which is to identify the research background, to put the research idea into perspective, and to identify relevant sources within the subject area. This process will lead later to the research aims and the development of research objectives, as well as formulating research questions. Therefore, this discussion highlights three stages, namely background research, gap identification and a specific and structured literature review, which will lead to the development of a series of research questions.

Furthermore, as explained previously in section 3.2-1 (Literature Review section), the researcher's background in landscape planning and design, and previous studies within this field, led to the identification of the research gap. Moreover, numerous authors have highlighted the issue of public health and its relationship to public open spaces, most of which encourage the perception that good health is a "positive dynamic state, not merely the absence of disease,"(Paquet et al., 2013; T. Sugiyama, Leslie, Giles-Corti, & Owen, 2008; Ward Thompson, 2013) taking into account that this health promotion model assumes that people will be motivated to actively regulate their own behaviour.

Later, with an academic background related to landscape architecture, a review associated with urban public open spaces was selected as the broad area for this study. First, a general literature review was carried out, to narrow down the research area by using numerous published sources, and was discovered through electronic databases, journals, books, conference proceedings, websites and PhD theses. Whilst exploring the vast amount of issues linked to urban public open spaces and physical activity, the researcher came across a new alignment in urban public open spaces, which potentially offers an approach to tackling the research gap. This initial literature review led to two broad areas:

1) Literature on urban public open spaces: in context, the principles of using urban public open spaces, themes, factors that affect their use, and the new trend in using these spaces.
2) Literature on physical activity that is associated with urban public open spaces: the kind of physical activity supported by urban public open spaces, and the benefits of using these locations on public health.

Accordingly, the following figure illustrates the initial research methodology process, utilising the literature review as a guide for achieving the research aims. This will examine the specific methods involved and how they are integrated into developing the analysis and

the findings of this study. In addition, these points are addressed for each of the selected methods and demonstrate how the researcher dealt with these issues.

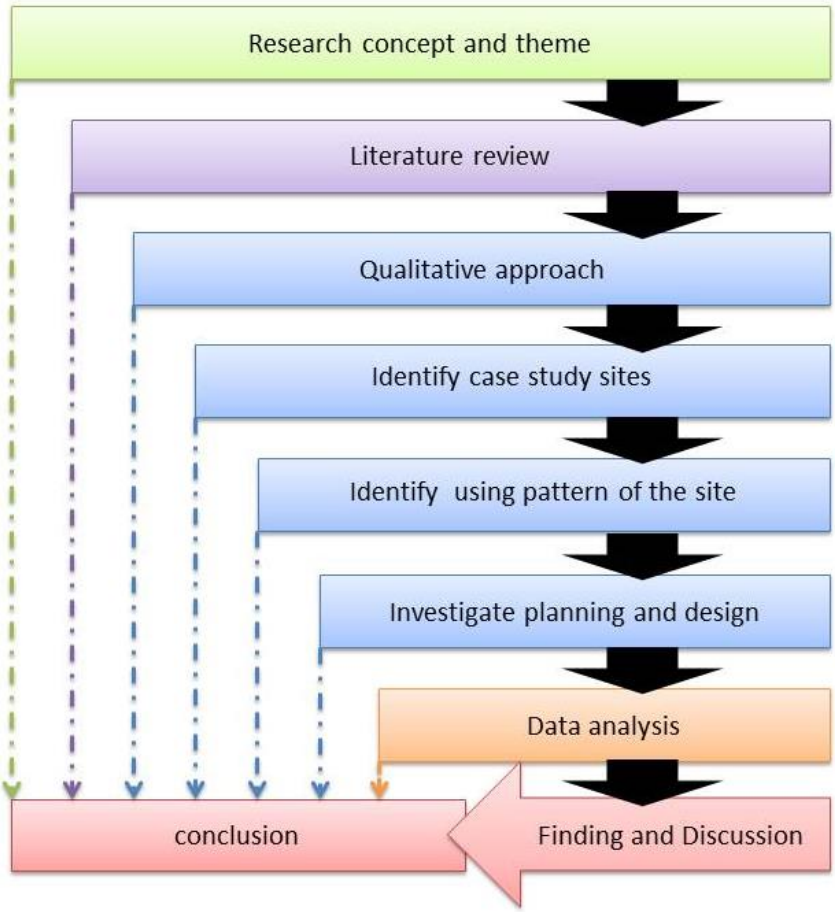


Figure 3.2-1 Research methodology process

The literature review process was treated as a continuous, never-ending process, as the researcher must take into account the latest works right up to the final publication of the dissertation (Remenyi et al., 2000). Having discussed the literature review process, the following section will discuss the importance of completing the pilot interviews before the main data collection stage is accomplished, to elaborate on the initial findings emerging from the literature review.

3.2.2 Semi-Interviews

The researcher chose semi-structured interviews as a method for obtaining data, because they focus upon specific socially produced events, experiences and interactions and aim for depth, nuance and complexity (Mason, 2017). The advantage of interviewing is the addition of the use of open questions, which allow the respondents to focus on any issues of greater importance to them. In addition, semi-structured interviews allow for the ordering by the

interviewee of flexible questions according to the priority of the topic (Breeze & Barbour, 2011), as well as the achievement of the five objectives of the research.

In order to explore the effectiveness of urban public open spaces when promoting physical activity in Jeddah, in particular in relation to women, face-to-face interviews involved two sources: case study sites and practitioners.

For most of the interviews, the case study sites involved female users being questioned in or around the actual places, although three were also held in a café, whereas the second type of interviews, with practitioners, were held in an office environment in a prearranged meeting. For both categories, semi-structured interviews were used, with questions designed to cover specific issues such as site design, user behaviour and physical activity in both public open spaces and indoor environments.

In order to clarify and analyse the responses to the questions, if a response was 'yes' or 'no', additional questions were asked. In addition, the questions were open-ended, with the interview lasting between 20 and 60 minutes. Regarding the practitioners, invitations were sent out in advance by letter or telephone and arrangements made accordingly.

The following section shows the key research actions employed and what objectives were met in each one.

3.2.2.1 Pilot interviews

In this research, the pilot studies were based on qualitative methods, using interviews as a data collection technique. The pilot study in this research adopted interviews in order to run a small-scale exploratory study (not applying rigorous standards), as it is a crucial element of good study design because it does increase the likelihood of a strong main study, even if success is not guaranteed (Van Teijlingen & Hundley, 2001).

Moreover, a pilot study avoids unnecessary risks, by indicating weaknesses in the main research project, where research protocols may not be followed, or if proposed methods are inappropriate (Van Teijlingen & Hundley, 2001). It also helps to contextualise the issue by identifying practical problems during the research procedure (Van Teijlingen & Hundley, 2001).

The pilot study conducted during the initial stages lasted from 1st April to 30th April, 2017. With the purpose being to establish the availability of data, the feasibility of selected public spaces, facilitate a further exploration of the research question and determine the most

appropriate methodology. Numbers of data sources were required for the pilot study, including base maps, aerial images of the city dating from different periods and maps of Jeddah on a variety of scales. In addition, data tooks account of Jeddah's population and demographic characteristics.

3.2.2.2 User interviews (on site)

The interviews that occurred on site were not scheduled or determined with the users or respondents. Notably, interviewing on site enabled the researcher to investigate and examine the behaviour of the users and record the physical activity taking place, as well as offering an insight into the users' interactions with the site's design and facilities. Moreover, as Rishbeth (2014) suggests, on-site interviews can further enhance findings by offering in-depth knowledge of users' experiences, thus enriching data. Nonetheless, on-site interviews require extra care, due to the customs and traditions of Saudi Arabia, as it is not acceptable for male strangers to approach women in public spaces. Also, certain difficulties included noise, visual distractions and maintaining the concentration of the interviewee for an amount of time.

Interview questioned designed based on the factors that have been collected through review of the literature. It grouped to four main categories: visits, site design, behaviour in public open spaces and indoor physical activities. Two approaches were undertaken: standing interviews and walk-along interviews.

The go-along, or walking method, could be classified as in-depth, as it permitted the researcher to examine the user's experience first-hand, as well interpret practices within a specific environment (Carpiano, 2009). The idea of using this technique is to minimise interruptions for users whilst walking or partaking in physical activities. Go-along or mobile methodologies are designed to use mobility as a way to establish contact with real-life situations and environments (Hein, Evans, & Jones, 2008). This will allow participants to express and contextualize experience. In addition, the method is allow to generate a rich data by talking to people during their walk, running, and exercising.

The role of an interviewer is to gather data, even from those who are less inclined to answer fully. During the interview stage, it was noted that some respondents were not as vocal as others, and so in this case, further, more detailed questions were given, in order to retrieve more detailed information. On the other hand, some respondents were more effusive but at times offered irrelevant answers to the research. When this happened, they were redirected

back to the original question but were still given a chance to talk about the subject that interested them so much.

The native language of Saudi Arabia is Arabic. Thus, for the purpose of this research, the questions were translated from English to Arabic, and although there were some non-native participants, all spoke well enough in this language. During the six interviews, at times the respondents would use some English words, so the conversation would move naturally to English. All of them, apart from one, were recorded.

As mentioned previously, due to strict social norms in both private and public places, no interaction between males and females is allowed, unless they are related. Therefore, the researcher was accompanied by his wife when carrying out the interviews at the chosen urban public open spaces. In order to achieve the aims of the study, the researcher's wife was instructed on the guidelines and research objectives, as well as how to carry out the interviews and achieve the responses to the questions well, in particular when focusing on or covering an important point. This was especially important in the case of one selected park (Amira Park- case 3), where only females are permitted.

In total, out of the twenty-four interviews carried out, five were undertaken by the female assistant, without the researcher being present, albeit the researcher was always nearby and mobile, ready to offer assistance and listen to the interview responses, in order to offer feedback or clarify some points and add further questions for the participants.

The following table 3.2-1 presents details of all 24 participants, including the interview date, nationality, age and duration. All interviews were audio-recorded, which made it easier for transcribing and translating.

Table 3.2-1 Interview participants

	No.	Users	Date	Nationality	Age	Duration
Site 1 Al-Tahlia	1	S1/01	16/04/17	Lebanese	60	14:20
	2	S1/02	16/04/17	Saudi	31	7:47
	3	S1/03	21/04/17	Pakistani	29	11:14
	4	S1/04	21/04/17	Saudi	25	10:50
Site 2 Al-Rehab	5	S2/01	15/04/17	Palestinian	33	17:32
	6	S2/02	15/04/17	Palestinian	30	15:10
	7	S2/03	15/04/17	Saudi	28	11:30
	8	S2/04	17/04/17	Palestinian	26	16:00
	9	S2/05	17/04/17	Syrian	33	20:42
	10	S2/06	17/04/17	Saudi	28	12:53
	11	S2/07	17/04/17	Saudi	32	14:32
Site 3 Amira Park	20	S5/01	02/08/17	Yemen	33	35:00
	21	S5/02	02/08/17	Egypt	Over 40	35:00
	22	S5/03	02/08/17	Afghanistan	Over 40	35:00
	23	S5/04	02/08/17	Yemen	Over 40	35:00
	24	S5/05	02/08/17	Saudi	28	35:00
Site 4 Alfaysaliyyah	12	S3/01	5/08/17	Saudi	34	12:30
	13	S3/02	5/08/17	Saudi	Over 40	11:26
Site 5 Al-Basateen	14	S4/01	18/04/17	Saudi	36	21:06
	15	S4/02	18/04/17	Saudi	23	17:32
	16	S4/03	08/08/17	Saudi	24	18:50
	17	S4/04	10/08/17	Saudi	Over 40	32:12
	18	S4/05	10/08/17	Saudi	Over 40	32:12
	19	S4/06	10/08/17	Saudi	Over 40	32:12

3.2.2.3 Practitioner interviews

The practitioner interviews were conducted in the second stage of the data collection process, during between 22nd July 2017 and 29th August 2017. The researcher intended to interview practitioners and experts linked with the landscape architecture profession, as this would lead to the achievement of objectives 3 and 4. During the second stage of the field trip, the researcher interviewed five practitioners from different sectors of the Jeddah municipality, namely the head of the Park And Planning Department, a park manager (Amira Park), the head of the Women In Sport Authority (Princess Rema Bint Bandar Bin Sultan), the project manager of the largest urban public open space in Jeddah (Jeddah Waterfront Project) and the head of the landscape department at King Abdulaziz University.

These interviews revealed the current opinions and views of urban design and landscape architecture practices in Jeddah City, and they were pre-arranged by appointment, on the phone or by sending a research information sheet and an invitation letter by e-mail. The researcher had the opportunity to travel from Jeddah to Riyadh, to interview the head of the Women in Sport Authority. In some of the interviews, the interviewees gave the researcher

a contact number for people who should be involved and would like to add to the research, such as a consultant at the Women in Sport Authority. By the third year, the researcher will discuss the emerging findings with these practitioners. Table 3.2-2 below details all five experts who were interviewed, along with their organisation, position, date and duration of the interviews. All were audio-recorded.

Table 3.2-2: Interviewed practitioner and experts

Position	Organisation	Code.	Date	Duration
Head of sport authority- female section	Head of the Women in Sport Authority	P1	7/08/2017	43:42 Min
Amira Park Manager	Municipality	P2	02/08/2017	42:10 Min
Project Manager	Jeddah Municipality	P3	08/08/2017	30:33 Min
Head of Parks Department	Jeddah Municipality	P4	13/08/2017	35:13 Min
Head of Landscape Department	King Abdulaziz University	P5	17/08/2017	40:35 Min

3.2.2.4 Focus group

The technique of focus group is about a method of interviewing more than one participant (Bryman,2015). Basically, it is a group interview. The number of interviewing groups should be between 4 to 15 participants (Saunders, 2016). Focus groups are usually focusing on a specific theme or topic that is investigated in depth. The focus groups give an opportunity to have a discussion in specific topic with expert's people.

This research conducts focus group method in the validation of factors relationship. Four experts have been selected according to their experience and background in the field of urban design and landscape architecture. The focus group conducting by using skype video call and start discussing the relationship between 15th factors that presented in chapter 8 section 2. The experts by the end of the discussion gave evaluation to the factors relationships that help to proceed the process of interpretive structural modelling (ISM). In chapter 8, the explanation of how the researcher conduct ISM and presented the steps of this method.

3.2.2.5 Recording

During the interviews, the researcher asked the participants for permission to be audio-recorded, and all of them accepted and signed the consent form except for one participant. These audio-recordings helped the researcher avoid the distraction of making notes during the interviews (Saunders, 2016). Furthermore, digital audio-recordings were carried out in urban public open spaces through informal walking interviews (go-along interviews), which again helped. Audio-recordings were used for two reasons: first, to maintain a continuous conversation and second, to provide an accurate representation of what was said.

3.2.2.6 Transcribing

Transcription is a data analysis step that involves deciding on whether or not collected details should be included or excluded (Brinkmann, 2015). The researcher was able to become more familiar with the data through carrying out this task. The interviews were transcribed and translated from Arabic into English.

3.2.2.7 Photographs

According to Ball (1992), photographs can be used for qualitative studies as a visual source of data collection for examining visual phenomena. It is a technique that can be used by the researcher to clarify and support research in different ways (Zeisel, 1984). Photo documentation usually accompany the observation stage (Gehl & Svarre, 2013). Photographs were used in the observation process in the five case studies, to present the site designs, user attributes and visual problems as a mapping analysis of these sites. Different aerial photographs of the selected sites and design layouts, collected from Jeddah's municipality, were identified and reviewed in detail. In this study, the researcher photographs that are present in chapter 5 have not included female member as result of ethical and social-cultural reason which do not allow them to have their picture taken. Women need a greater level of privacy than men (Gehl, 2008).

3.2.3 **Samples** and **sample size**

The size of a sample needs to consider the research aims, objectives and questions (Onwuegbuzie & Leech, 2007; Saunders, 2016). Sampling techniques help the researcher minimise the amounts of data that need to be collected, by measuring what has been collected and covered and helping to establish the size of the sample that needs to be analysed in depth. This is especially important when single or individual researchers are conducting research, and when time limitations are in place.

The literature review indicates that the sample size may be variable, as the type of research and aims of conducting the interviews are the basis on which the identification of size is established. Moreover, participant numbers will depend on what is being searched for and what will be useful, as well as identifying the purpose of the investigation (Patton, 1990). As a result, there are many different opinions on what should be presented by the researcher in qualitative research. According to Kuzel (1992), when the subjects are homogeneous, there should be between six and eight data sources, whereas the author suggests that a general requirement should between 12 and 20 data sources. Meanwhile, Morse (1994) suggests between 30 and 50 interviews and/or observations. Finally, Kvale and Brinkmann (2009) suggest between 10 and 15 participants are common in interview studies.

In semi-structured interviews, M. N. Saunders (2011) suggests between five and 25 participants for general studies, with the sample size of a general study being undertaken at between five and 30 interviews (Creswell, 2013). Based on these findings, the sample size herein was 24 participants, located at five different sites in Jeddah City. Table 3.2-3 below presents the sites and the interviews conducted in each one.

Another important point to consider when gathering information is when to stop, if and when saturation or redundancy occurs (Cleary, Horsfall, & Hayter, 2014). Saturation is "the process of sequentially conducting interviews until all concepts are repeated multiple times without new concepts or themes emerging" (Trotter, 2012, p. 399). According to Trotter (2012), reaching saturation level in interviews depends on whether the questions have been explored completely in depth and in detail, with no new themes or concepts appearing in subsequent interviews.

Table 3.2-3 Sampling size details

Study Sites	Interview Numbers
Al-Tahlia Walkway	4
Al-Rehab Walkway	7
Al-Basateen Walkway	6
Al-Faisalyyah Walkway	2
Amera Women's Park	5
Total	24

The selection of participants was carried out randomly at each site, with the researcher directly choosing women exercising or walking, with both Saudi and non-Saudi females

interviewed. The selection was based on the researcher's knowledge of identifying the nationalities of the users, according to their dress and appearance. Table 3.2-1 (see section 3.2.2.2 above) reflects the variety of user nationalities. Snowball techniques were used in both the practitioner and the participant interviews.

3.2.4 Observation

Observation is one of the rudimental elements of case study data collection methods in the built environment of fieldwork (Gray, 2013). According to Lynch (1960), observation reflects a visual perception which observes the surrounding area through direct contact with different spaces. Creswell (2013) defines observation as the action of taking field notes of people's behaviour, settings and activities at the research site. Furthermore, Gray (2013) suggests that it is a description of events, people and settings, while (Zeisel, 1984) states that observation is a convenient technique for comparing different urban settings.

> "*When you observe behaviour, you soon become aware of repetitive activities in identifiable places. Place-specific activities within such a pattern are more closely related to one another than to patterns of activities in other places. In different socio-cultural and physical settings, the same behaviour can have different design implications"* (Zeisel, 1984, p114*).*

The site observations were conducted during two field trips, as summarised in Table 3.2-4 below. The observations describe how people used the sites, the site settings and the physical surroundings, as well as recording the spatial and visual characteristics of the sites. The researcher made notes on each visit and considered a number of factors, such as how the women reached the site, where the starting point was placed, the drop-off area, the micro-climate, site furniture and circulation. In addition, activity times, the environment, types of people and their movements were recorded.

Observations were carried out several times throughout the fieldwork period, with the researcher also taking into consideration the weather. Hence, the fieldwork was divided into two seasons, i.e. spring and summer. Aerial photographs and drawings of some zones, according to the use of each specific area of the site, were also gathered.

3.3 Data Analysis

3.3.1 Data Analysis Techniques

The data analysis techniques explain how information on Saudi women, who use urban public open spaces was collected. The researcher used analysis techniques that were suitable and consistent with the philosophical and methodological choices. This research adopted a thematic analysis as a technique used for semi-structured interviews. Additionally, the qualitative data analysis for the transcription of interviews and other materials collected such as photographs, was mainly based on an inductive approach in order to determine key themes. Most of the analysis techniques can be used for a wide range of data (Easterby-Smith et al., 2012). The interview questions were designed and categorized into four themes, to help the researcher explore the significant opinions and points in the analysis later (Grbich, 2012).

Understanding analysis procedures and how to use thematic analysis with transcript data is extremely important. As this helps the researcher to identify useful information. An analysis of qualitative data needs to understand three basic analysis strategies (Creswell, 2017). These strategies or data analysis processes are adopted from three authors (Huberman & Miles, 1994; Madison, 2011; Wolcott, 1994). While, the following three analysis strategies are suggested by Creswell (2017):

- Data preparation for analysis (texts, transcripts, photos, and notes).
- Data coding through categorisation of the data to themes.
- Code integration into themes, representing the data in charts, figures, tables, or discussion.

3.3.2 Thematic Analysis

Analysis involves the process of breaking data into small units to discover themes and build structure (Dey, 2003). Of significance is a clear explanation of the analysis process, illustrating how the raw data was transformed to meaningful conclusions for analysis (Easterby-Smith et al., 2012). One method is thematic analysis, which is used for identifying and analysis themes within qualitative data (Braun & Clarke, 2006). With the main purpose of using this approach in analysis being to search for themes or patterns, that occur across a dataset. As it minimally organises and describes the data set in rich detail.

A theme captures something important about data in relation to the research question and represents a level of patterned response or meaning within the data. This approach is flexible

and the analysis of in- depth interviews and other data such as photographs, is mainly based on an inductive approach in order to identify key themes. Furthermore, it is systematic as it provides an orderly and logical way to analyse qualitative data. With thematic data used for both small or large datasets (M. N. Saunders, 2011). The procedure of the data analysis is developed by cross-referencing emerging themes.

As mentioned previously, the interviews were carried out in Arabic and the collected data was recorded on a voice recorder, which had to be transcribed. This procedure gave the researcher challenges of working with two languages, specifically when analysing the collected data to ensure the responses were identified correctly. Transcripts were produced, and the researcher has started coding some of the data to different themes. Visual materials, drawings and sections will also be coded. Then the transcription of most of the interviews that took place. In doing so, the translation of some extracts will be carried out, so as to include people's voices as a source of evidence.

3.3.3 Use of Computer Software for Data Analysis

The facilitation of data analysis using computer applications has become an important approach (Creswell, 2017; Huberman & Miles, 1994; Krippendorff, 2012; Remenyi et al., 2000). Computer software helps the researcher to organise collected data (Creswell, 2017). Then the organised data can be stored in document files containing interview transcripts, field observational notes, or articles.

The process for analysing multiple case studies begins with coding. As for each case study, the researcher will start to illustrate the case context and description separately. Thus, coding and adding themes for each case. Later, the researcher will start the cross-case analysis to show the similarities and differences between cases. By the end, it will include codes for assertions and generalizations through all cases. Figure 6 below displays the coding of the case-study using analysis software.

3.3.4 Using NVivo Software for Analysing Qualitative Data

There is a wide range of computer software available for analysing qualitative data, such as, MAXQA, ATLAS.ti, QSR, NVivo, HyperRESEARCH, and Microsoft Visio. For the purpose of this research, NVivo software has been chosen for data analysis because it is commonly used for qualitative data and the University of Salford provides different session

levels in NVivo programmes. All the listed programmes help researchers to analyse qualitative data in different ways using the software.

NVivo software (Version 11) was used for the study of thematic analysis. As the software stores and organises data, whilst providing easy access to it. NVivo software provides a combination of features, that help to make the analysis process easier. It allows the researcher to code the data and provide graphics for codes and themes. Furthermore, it enables the researcher to write notes and draw links between maps and images. Huberman and Miles (1994) state that, *"the researcher who does not use software beyond a word processor will be hampered in comparison with those who do".* Consequently, using the software has helped the researcher to gain more skills when applying analysis programmes.

In this section, the researcher will discuss the steps taken when analysing the interview data by using NVivo software. As a basis, the following figure illustrates the Nvivo workspace components. The workspace provides easy access to all the features of the research project. The Nvivo workspace components are made up of the following.

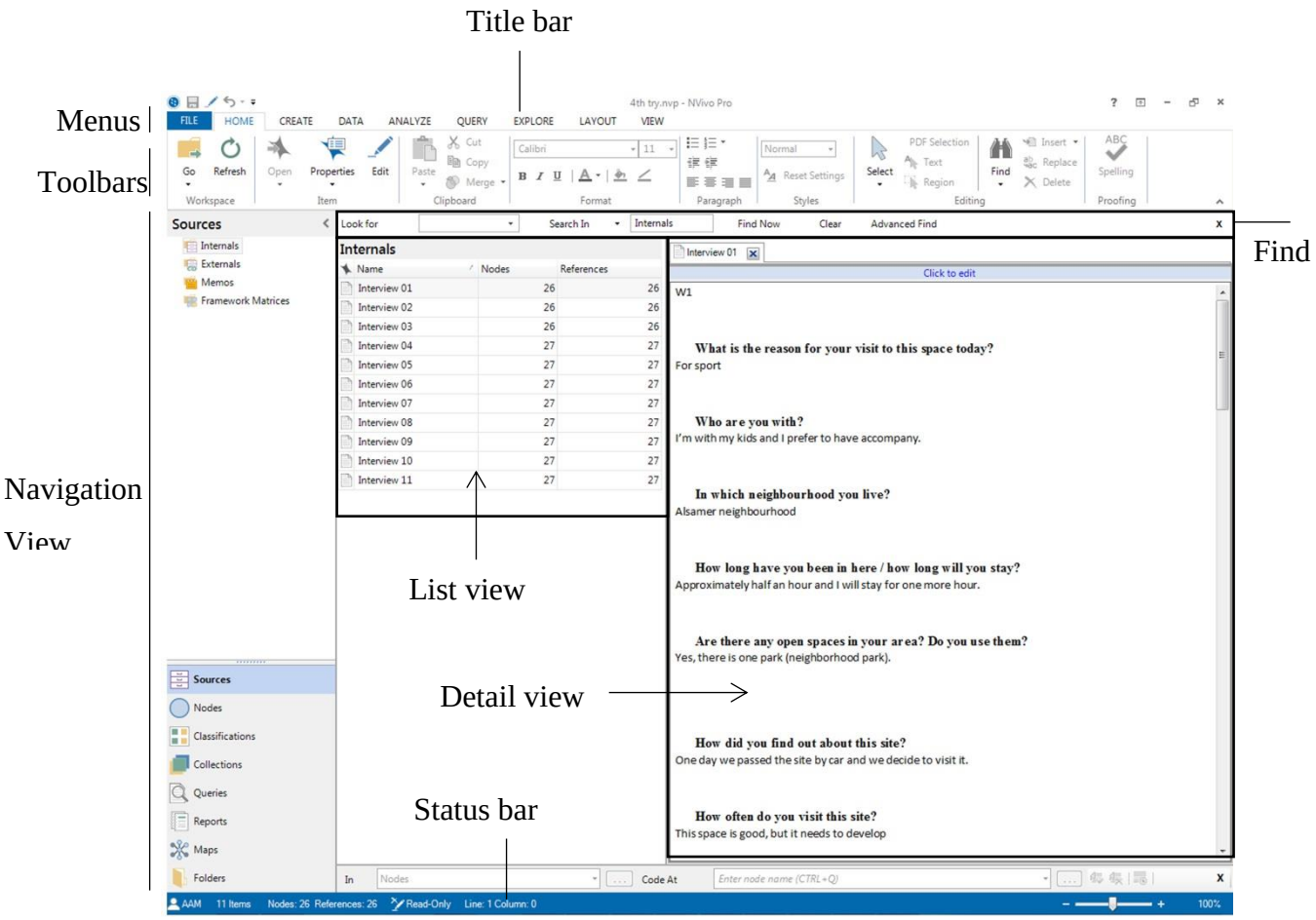


Figure 3.3-1 NVivo workspace components

The workspace has three main views to work with the project item:

- Detail view
- List view
- Navigation view

The major components of the navigation view are where the researcher can have access to all the items of all projects.

3.3.5 Data Analysis Procedures using NVivo

This section will discuss the analysing steps of the semi-structured interviews using NVivo11 software. Braun and Clarke (2006) suggest an outline for thematic analysis through six phases (see figure 4-3 below). Thematic analysis methods assist in clarifying, analysing and reporting paradigms within the data (Braun & Clarke, 2006). Similarly, the six phases are used as a basis and each phase is dependent on the previous one, thus enabling the researcher to achieve the objectives of a qualitative data analysis.

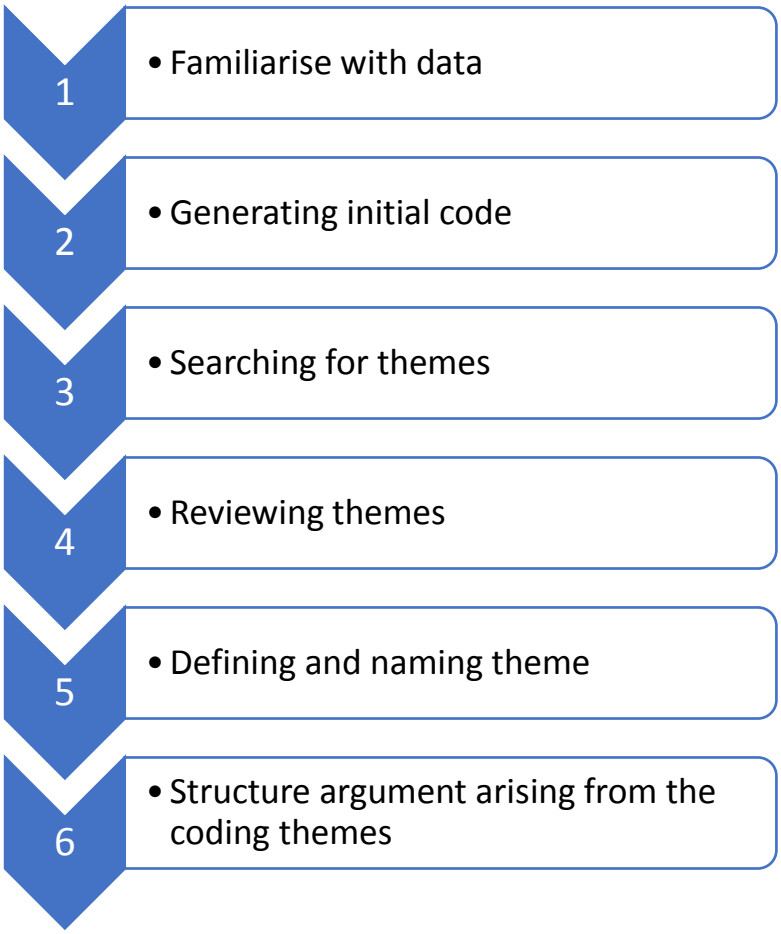


Figure 3.3-2 Thematic analysis phases (Braun & Clarke, 2006)

As a first phase, the interviews and transcripts were recorded. Then, the interviews were listened to and the transcripts were read to familiarise with the data. This procedure was carried out twice. This phase was important to gain a holistic picture. The second phase consisted of the creation of a new project in NVivo from the main entrance view of the software.

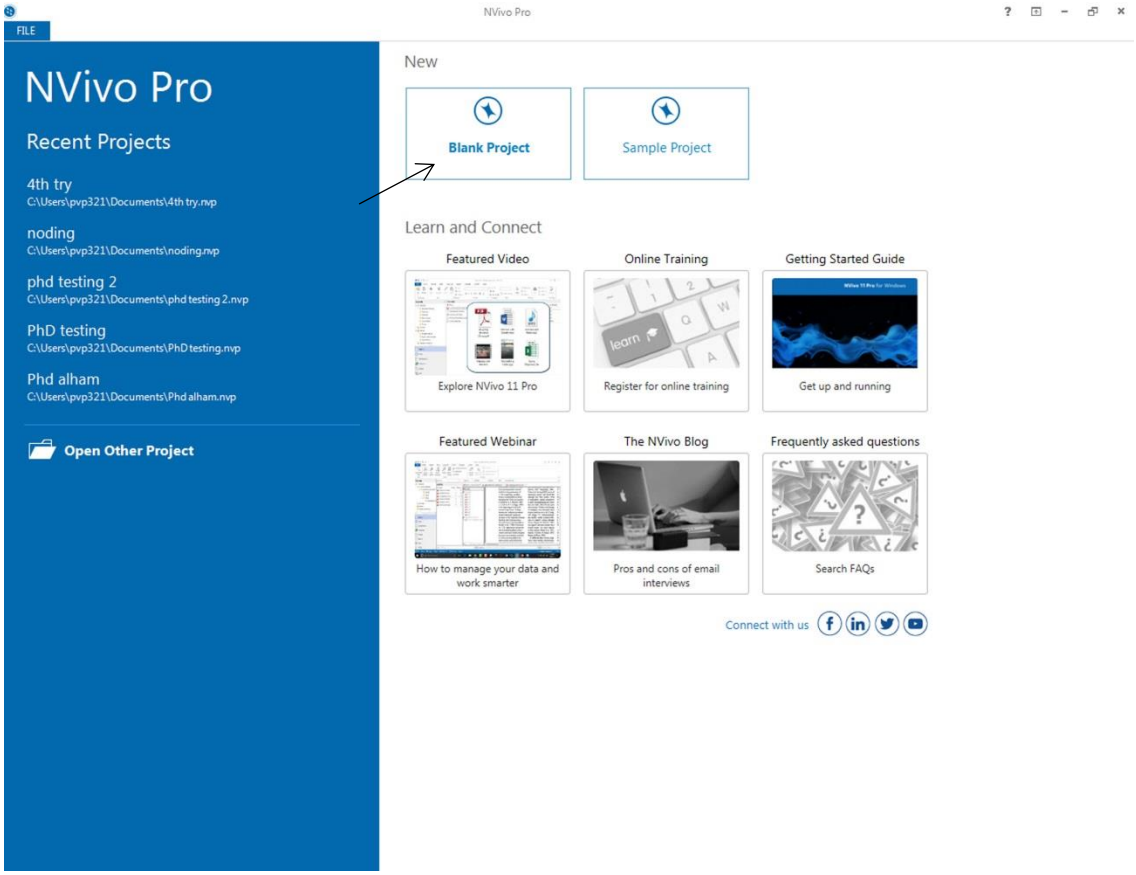


Figure 3.3-3 Creating a new project in NVivo software

The third phase involved the importation of all the interview files to NVivo and the coding carried out through the nodes feature, which includes information from the coded themes. The transcripts were coded according to the themes, that emerged from the text into nodes. This stage helped to identify the key factors. The following Figure 3.3-4 shows interviews that have been imported to NVivo with nodes starting to appear.

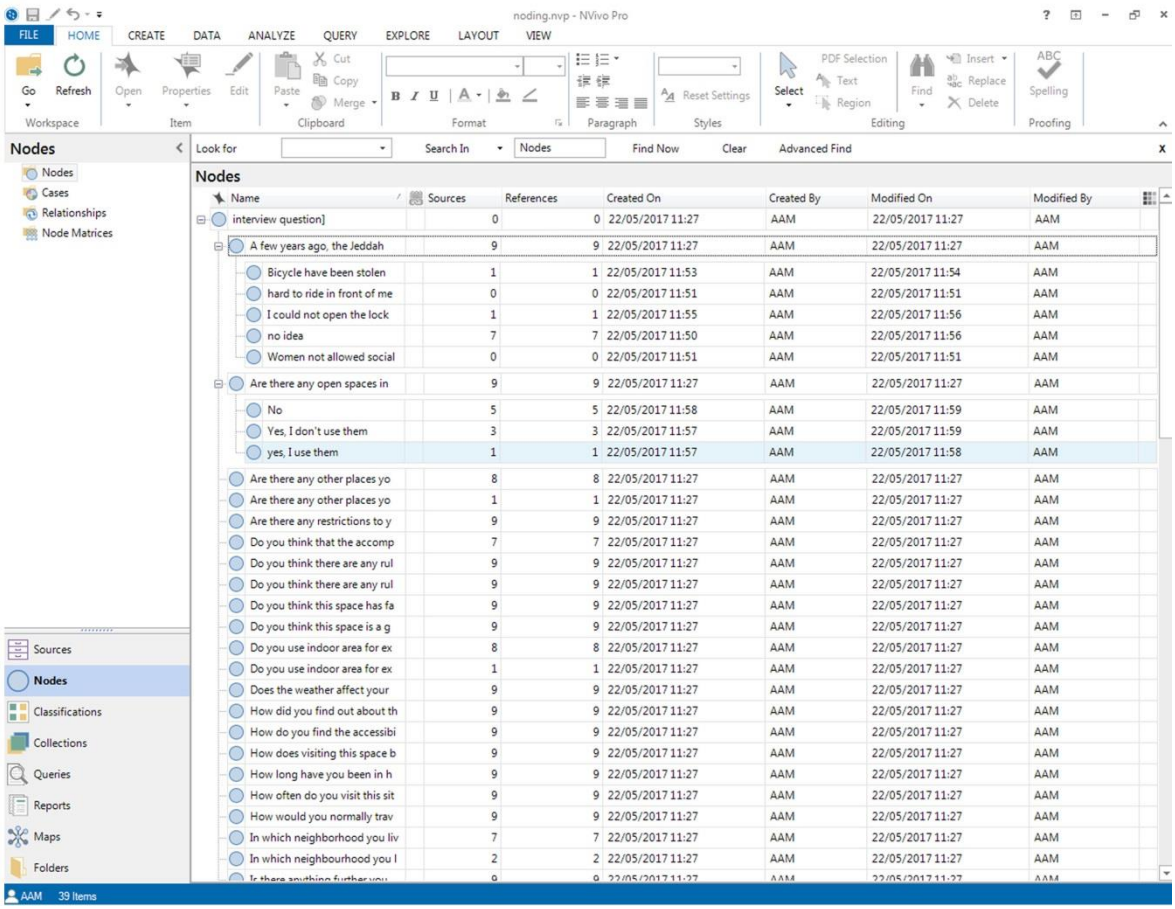


Figure 3.3-4: Interviews nodes

Table 3.3-1 NVivo themes generated from interview analysis

Themes	Themes related to behaviour	Themes related to design	Theme related to health	Themes related to visit
Concept of code-list that was generated from interviews	Alone Accompanied with friends Group of women Driver dropped me off Gathering Neighbours	Easy access Close to home Absence of facilities Not safe for children Like the rubber pavement Site furniture	Love walking and exercise in open spaces. Contact with nature. Walking for health. Walking anytime	Every day visits Except weekend and religious events Two days in gym and two days in public open spaces Keep children playing and having fresh air
Proposed themes for the finding	Social life within urban open spaces context	Exploring design factors that women need	A user's perception of importance of health and wellbeing	Women's use of the space. Frequency of use in spaces. Purposes of visiting

3.3.6 Cognitive Mapping

Cognitive map can be considered as a technique that utilized to structure the idea and represent the relationship between theme. Also, it can be seen as a graphical representation of an individual's conceptions or system of conceptions about given phenomena. A cognitive map is consisting of concepts – short phrase that express an idea (fact or assertation) about an issue –and links- connections between the concepts which are read as may lead to (Eden, 1992, 1998). Within qualitative studies cognitive map could be utilized to simplify mental model, enhance and facilitate the communication as well as enhance the understanding and manage large qualitative information's (Eden, 1992).

Furthermore, Cognitive maps most often take the form of a net of nodes (concepts) and arrow links relationships) between these concepts; it is a network of nodes and arrows as links (Eden, 2004). In addition, A cognitive map requires that assertions have consequences or implications which answer to the question "so what", where the map is consist of concepts

and arrows that representing the direction of implication embedded in the belief or argument (Eden, Ackermann, 2002). Furthermore, it shows and describe how different concepts are related to each other in terms of propositions about studied phenomena within the research (Scherp, 2013). Cognitive map is usually drawn as short text linked with unidirectional arrows to link theme in general "a statement at the tail of an arrow is taken to cause or influence the statement at the arrow head" (Edin, 2004).

Within this research the aim is to understand how women use urban public open spaces could contribute towards improving the delivery of good quality of public open spaces in Saudi Arabia. Cognitive mapping was utilized in order to clarify the relationship between different identified main themes and subthemes within this study. Within the thematic analysis of the interviewee's, respondents' emphases the relationship between different related themes and subtheme that are investigated within the implementation of delivery of good urban public open spaces for women physical activity in Saudi Arabia. Within the utilization of cognitive mapping the researcher different investigated themes can be mapped in order to help understand the interrelationship between different identified node or concept within the investigated phenomena of this study.

This study also used the 'cognitive mapping technique' to display relationships within the theme by illustrating the visual presentation. Therefore, for this purpose the cognitive mapping application in NVivo was used as shown in Chapter 4 and 5. The use of NVivo helps to manage the data effectively while dealing efficiently with time, because it allows room for mistakes and 'trial and error' while playing with the data to suit the best output that it can possibly give.

3.4 Case Study Evaluation

This part of the research will display the nature of each case study. Including site forms, or the shape of urban public open spaces, and the urban context, that influences the way people use them. The evaluation of the case study involved using aerial images to show the relationship between the case study and the surrounding context. Also, it reflects the diversity of land uses, road networks, circulation, and pedestrian patterns. This section will introduce and describe five case studies, which were selected for interviews and observations in both categories (designed and non-designed urban public open spaces). Analysis of the case study as a mapping analysis will be presented.

Francis (2001) suggests three levels of formats for information, which is probable in case study analysis. The levels of formats are:

1- Project abstract

2- Full project case study

3- More in-depth case study.

Projects of an abstract level include photographs, project background, project significance and impact, lessons learnt, contacts, and keywords. While, full and in-depth case studies include more in depth and contextualised or specialized material, than at project abstract level. In this study, the second level of format is adopted to display more contextual information about the sites. Table 3.4-1 below illustrates the differences between the three levels of format.

Table 3.4-1 : Suggested format for case studies (Francis, 2001)

Project Abstract	**Full Case Study**	**In-Depth Case Study**
- **Photographs** - **Project Background** - **Project Significance and Impact.** - **Lessons Learnt** - **Contacts** - **Keywords**	- Project name - Location - Size - Managed by - Context - Site analysis - Project background and history - Programme elements - Maintenance and management - Photograph(s) - Site plan(s) to scale - User/use analysis - Criticism - Significance and uniqueness of the project	- Archival research - Awards or special recognition for the project - Copies of articles or report on the project - Interviews with client - Interviews with managers and maintenance people - Interviews with users - Interviews with non-users - Longitudinal studies of the place over time

Case studies were conducted in this study to give and display to the reader an overview of each site location, character, background and the context. As all of this data was deemed essential. During the field trips, the researcher discovered that there is a lack of information in the public knowledge related to the history, design, designers, and more detailed information about the sites. Figure 3-8 in chapter 3 section 1.7 illustrates the locations for each case study site.

3.5 Summary

In conclusion, this chapter presents the research position for each of the research philosophies, approaches and choices, and the rationale for ultimately choosing for each aspect. Research philosophy has been selected as subjectivisms in ontology, Interpretivism as epistemological stance, and Value-laden in axiology. This help to locate the research position in the philosophical stance. Furthermore, a qualitative research approach was conducted in this study. However, case study techniques have been used to achieve the aim of this research by understanding and investigating the phenomenon. Multiple case study has conducted in this study. Five case studies have been selected according to the criteria that mention in section 6. The case studies classified to designed and non-design case studies. After that, Data collection have been conducted in two different time of the year to ensure that spaces used during Hot and cool weather. This has influence in recognising the samples number. Furthermore, data collection took place in two periods, namely during April 2017 and then from July through September 2017. The researcher interviewed 24 participants at five sites, and five practitioners from different – but related – sectors. Go- along interviews have been occurred during the visit of the sites. Observation and recording the pattern of use the site also taken during each visit of the site in three time a day.

The limitations of the data collection were in translating the transcript from Arabic to English language with ensuring that fulfil a free bias. The researcher trained two female members (wife/sisters) to do interview with women specially in Amira park (case study 3) because of not allowed to men to enter the park. Furthermore, sample size limitation because of the period of the research and it could have more samples and more in-depth observation in the further research as a part of ethnography research. Finally, this chapter ended with the case study types used herein. Also, the refused of many women who covered their faces to do interviews because of the male members do that and that make limited in samples and sometimes male members which accompany users answered instead of her and trying to keep him ask her and get the accurate answer. This research also has limitation of selecting

case study because of the closing the main public open space (Corniche) in Jeddah during this research for development. The closing of the major P.O.S could affect the users' numbers that distribute through the other sites and could influence the number of users on the case study sites later. Finally, the transcribed interviews have analysed and sort out the main themes for this study as presenting in chapter 4 and chapter 5.

The qualitative research gives the research strength by providing complex textual description of how people use and interact with urban public open spaces for physical activity in Jeddah. The researcher could identify the meaning of the events by the experience of the participants and their own perceptions, and the analysis of the finding. In addition, qualitative methods are more powerful in identifying related factors, such as social norms, socioeconomic status, gender roles, and practices related to cultural-background and religion, which will be related to this study. The methods that described in this section should help to meet the objectives to lead to the main aim of this thesis. Methods used in this study help to develop innovative means of data collection that are suitable for the case study context of Saudi Arabia; in specific Jeddah city. Additionally, the research methodology examines practices relating to demographic values, and links the data from social research into the practice of landscape architecture in Saudi Arabia. The observations of different urban public open spaces that are used by women for physical activity will help to identify the most popular places that use by them. The purpose of selecting case studies from different locations in the city of Jeddah to compare different residential contexts, populations, density, and residential neighbourhood area. The findings of the methodology chapter ensure the research validity and reliability of data collection and analysis are achieved.

Chapter 4.

Public Open Spaces: Exploring Female Use

4.1 Introduction

Rationale for selection of the case studies was discussed in Chapter 3, section 6. This chapter aims to present and synthesise the research findings of the empirical investigation. It is structured into three broad sections. Initially, five case studies are thoroughly described and explained, followed by the second section which discusses the findings of all of the case studies, starting with a description of the interviewees and followed by a thematic analysis of the findings, including the four main categories 'visit', 'site design', 'behaviour in public open space' and 'indoor physical activity'. Finally, a cross-sectional discussion on all case studies and their findings is presented.

This chapter aims to present and synthesise the research findings of empirical investigation. Additionally, it is structured into three broad sections. Initially, five case studies are thoroughly described and explained. Second section discussed findings of all case studies starting with description of interviewees and followed by thematic analysis of findings including four main categories: 'Visit', 'Site Design', 'Behaviour in Public Open Space' and 'Indoor Physical Activity'. Finally, a cross-sectional discussion on all case studies and their findings are presented.

4.2 Presentation of Case Study

As discussed in the research methodology chapter 3 Section 1.7, multiple holistic case designs were selected to study a specific phenomenon occurring at a particular time. The research topic is based on the design implications of urban public spaces for female physical activity in Saudi Arabia. Five cases were selected according to their contrasting characteristics in terms of socio-economic factors, ethnic diversity, population and geographical location in Jeddah City. This section outlines the context and provides a description of representative case studies.

4.2.1 Design Case Study

Case study 1 - Al-Tahlia walkway space

The Al-Tahlia walkway space is located in the Al-Rawdah district in the west of Jeddah, a neighbourhood famous for its ornate palaces and exquisite architecture. It is home to around 68,000 people and covers an area of 8.34 km^2. The neighbourhood is divided into two parts in terms of building type. The southern side is planned and designed for villas and palaces, while the northern part is planned for residential buildings of four storeys or less. The Al-Rawdah district is also well known as a highly affluent neighbourhood.

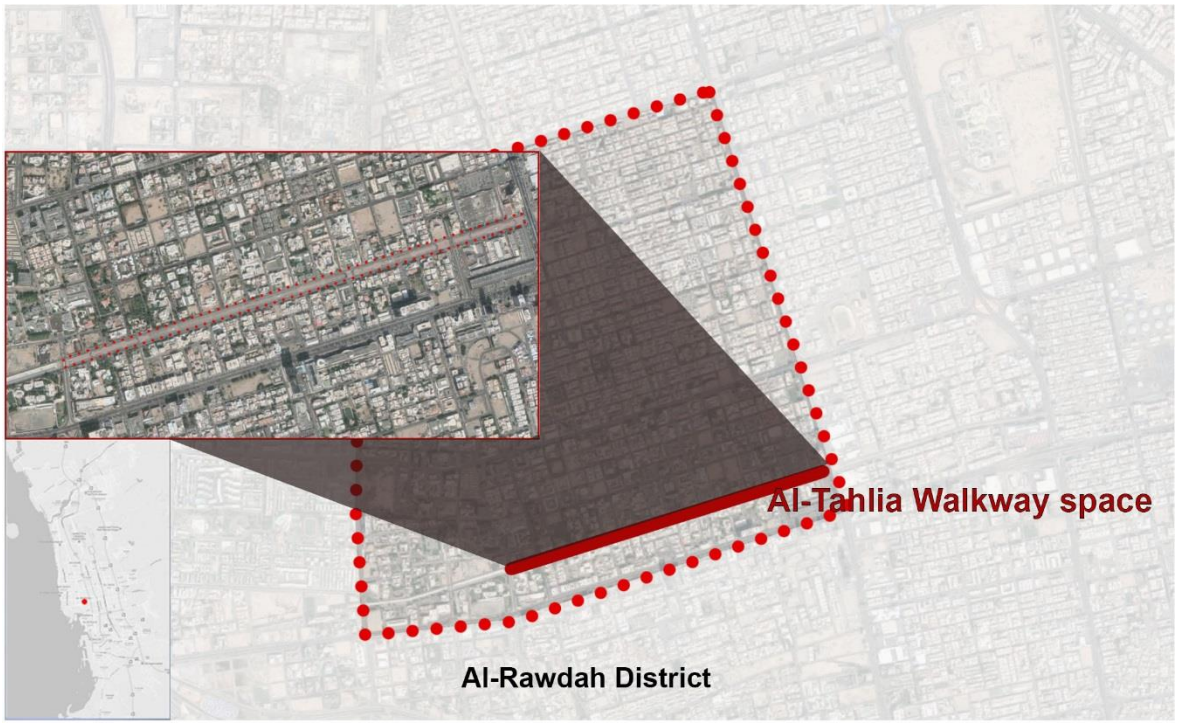


Figure 4.2-1 Al-Tahlia case study site location

The site is located in the middle of Al-Nahdda street, and its boundary runs from the eastern side along Al-Madinah road, from the southern side where there is a commercial area, to the northern side's palaces and residential villas, and finally to the western side, where there is a drainage channel or stream. The walkway has a liner design, and its length is 2.2 km, varying in width between 10 and 30 m (Figure 4.2-2).

Figure 4.2-2 Site dimensions

In the past, the site was used as rain water drainage channel (as cab be seen in Figure 4.2-3). Until the municipality decided to cover the channels in 2008 using in three stages. The first stage involved covering this site from Madinah Road to Prince Sultan Road, where this site located. According to the municipal agent for projects, the main idea behind this channel project was to eliminate a breeding ground for mosquitoes carrying dengue fever, in addition to contributing to the beautification of the city by adding more public open spaces. Moreover,

the site was filled with stagnant water and attracted waste disposal, which resulted in an unhealthy environment, that was a source of disease.

Figure 4.2-3 Historical view of the site (this picture is of the most northerly side of the site, which is not covered yet).

According to one municipal landscape architect, *"this site was not designed by specialists but ... by a road contractor for leftover materials."* The site is paved by an interlocking concrete pavement with 30cm cast-in-place curbs. The site passes through a main traffic intersection and seven traffic U-turn places, and its features include seating benches distributed along the site, car parking, disabled car parks, shrubs and plants, lighting features and a track for the blind people's in part of the site. The end of the site is equipped with physical activity machines. Users of the site had different ethnicities and cultural backgrounds, and all of them had travelled from other neighbourhoods.

The Al-Tahlia walkway space is divided into four areas of varying length (Figure 4.2-7) image 2. The first area starts at the eastern side of Madinah Road and runs up to the intersection. This area is high in terms of both traffic numbers and carbon dioxide (Figure 4.2-4). One interviewee mentioned *that "in this area, especially at night-time, the traffic is so congested, and it is so crowded, also some cars produce high levels of carbon dioxide, which makes me avoid it".* W*hile,* another user mentioned that "*the intersection in this area makes it difficult to get* to." The second site area also has similar mobile issues, especially because of the light traffic.

Figure 4.2-4 Traffic at the first part of the site

The second area is where a track for the blind is located along with car parking on both sides (Figure 4.2-4). This area is also where the municipality began a bicycle renting scheme in 2013, accessed using credit card payments, but unfortunately, this scheme was not successful and failed to catch on. One interviewee mentioned the scheme saying *"I have not seen it, because I heard it was stolen,"* while another *said, "even if the bikes were available, as women we cannot ride them, because men look at us and make us feel uncomfortable."* As mentioned above, the site for the blind, and further questioning regarding whether there had been any research conducted around use by the blind either walking or exercising on the site, was answered by a landscape architect answered *"Actually, no study was done on this site; it was to show that we care about all users."*

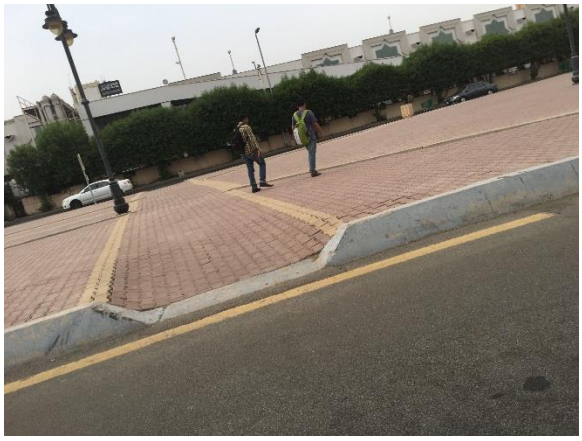


Figure 4.2-5 Disabled ramp in the first part

Figure 4.2-6 Track for the blind

The longest part of the site is located in the third part, though this is narrower than the previous two parts as shown in (Figure 4.2-7-B). This area has two pump rooms, the surrounding areas are used by people use for prayer. The walkway is divided into three parts, i.e. two outer paths and a main path (Figure 5-7.2). Car parking is also available. Users mentioned that *"this area is good to walk and run along, without any disturbance from traffic."* At the end of the site, activity equipment can be found.

One interviewee mentioned that *"this is one of the good sites as far as location is concerned… but there is no W.C., which is a problem because I have diabetes and I need to go to the toilet. Additionally, there are no drinking water fountains or kiosks that sell water."* These issues were discussed with a municipal manager, and who responded by starting that *"The municipality is currently looking to develop services to existing sites by seeking tender plans to build facilities like kiosks and W.C.s and provide these for investments, but the problem is the current budget – and this may take a long time."* However, the procedure involved in designing and providing spaces without studying what the public reqire, means that these projects face many problems, making them hard to develop, especially if that need for new tenders' books.

Figure 4.2-7 shows part of the site with more in-depth observation and this is highlighted similar issues of the whole site. In this diagram, the researcher illustrates the circulation route that surrounds the site and presents site conditions. The end of the site the covering of the channel end and the plan display the real situation of the site. Picture (A) presents the site location, whereas Picture (B) shows the site observation, circulation and the history of the site. All the images show the site at different locations. Image 1 shows the pump room that disturbs the view and the actual walkway. In addition, it shows the different paths as mentioned above. The second image shows a parking slot and the height of the curbs, while image 5 presents the third part of the site, which is lined with planters to identify the pathway. Meanwhile, images 3 and 7 show5s how the view towards the U-turn area disturbs the movement of the users. And finally, image 6 shows the physical activity equipment and how it is exposed to weather conditions such as the sun and heat.

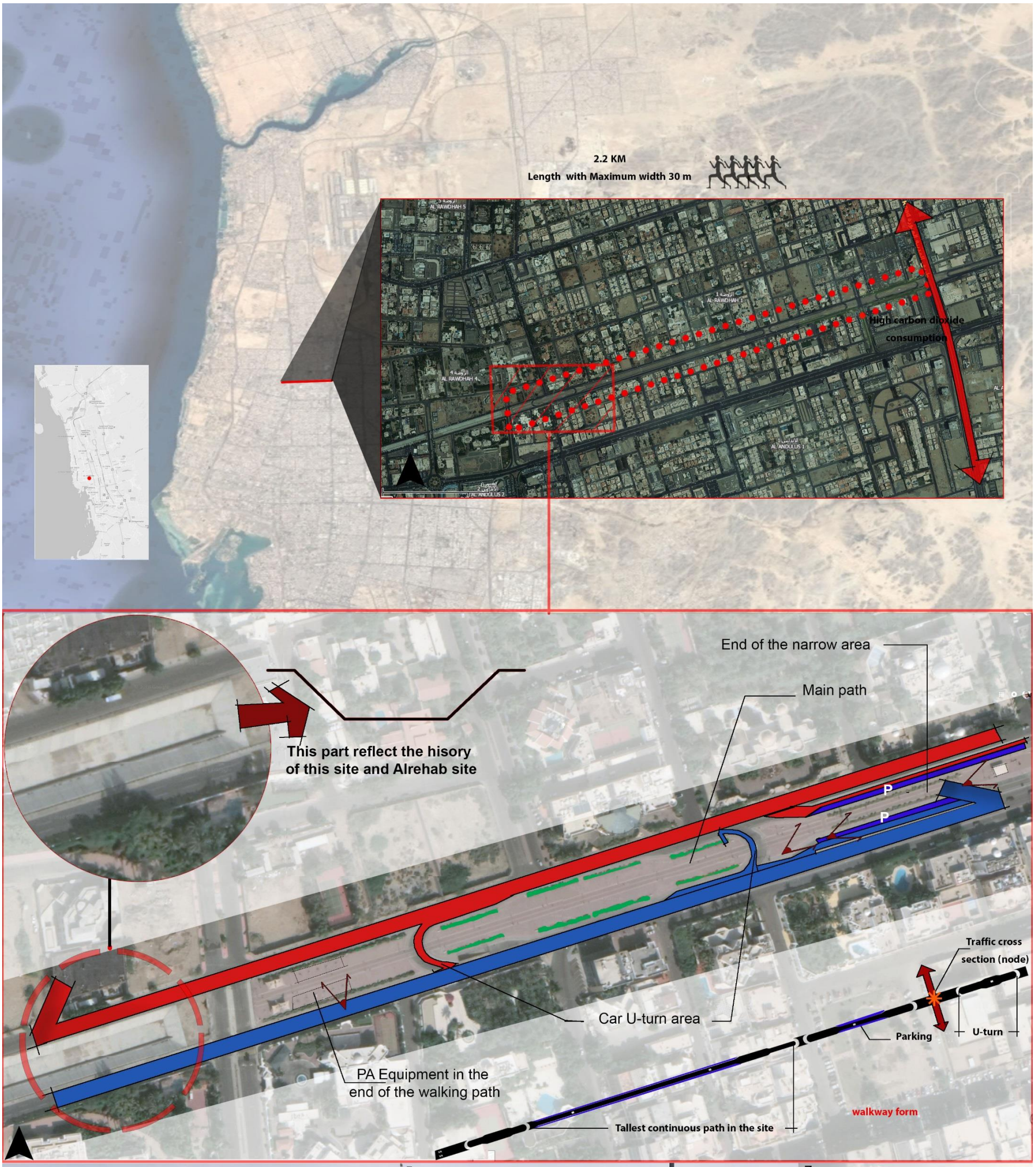


Figure 4.2-7 Observation sheet analysis

Case Study 2 - Al-Rehab walkway space

The Al-Rehab district is regarded as one of the more elegant residential areas in Jeddah, and it was developed in 1979 (Municipality, 2012) to the west of the city (Figure 4.2-8). The walkway space is located in a low-density area, with the total population being around 55,000 (Jeddah Municipality, 2012). The walkway is located in the central part. The design is poor and without any discernable or clear design classification. According to an interview with a landscape architect in Jeddah municipality, " it was carried out *by a contractor using leftover materials from another project with no thought to the design for most of the walking spaces." He also added that "the absence of a landscape architect, and in fact no involvement of landscape architects at all, along with an unrelated background in the department of open spaces and parks, are the main problems for poor design quality in Jeddah City*" (P02).

Figure 4.2-8: Al-Rehab case study site location

The historical use of the site was as a channel to drain rain water from the east to the west of Jeddah (Figure 5-6). While, residents used the surrounding fence of the channel to walk. The site measurements are about 1800m in length and 20 to 48m in width. Although the covering the channel and changing its use, to encourage people to walk, was a good idea, but it was missing consideration of users' needs. The site provides walking, running and bicycle trails. However, the users utilities the trail for all purposes, and there are cycling limitations.

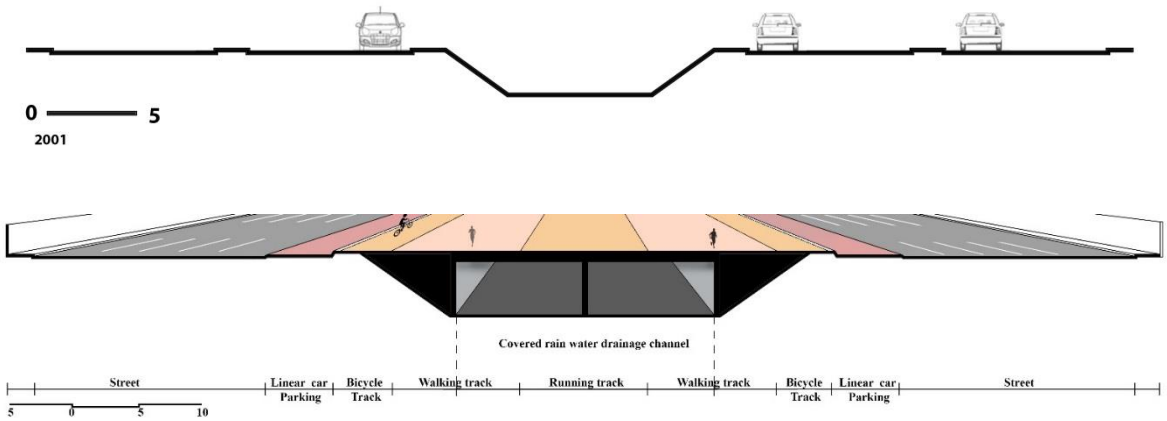


Figure 4.2-9: Section of past and current site uses

The walking trails are paved with pre-cast concrete, while the running and bicycle tracks are covered with a rubber pavement. However, most of the users utilise the rubber paved zones for walking, because it is more comfortable and attractive than the concrete pavements. Also, it provides a seating area, shading structures, parking and physical activity equipment. The physical activity equipment is mostly used by men. This is a cultural issue, as women using this kind equipment are frowned upon. One of the interviewee respondents, who uses the equipment, mentioned in their interview that "*I use this machine, because my husband does not accompany me."*

The site is used by women of different ethnicities and ages. Users from other neighborhoods travel around 10 minutes to reach this site. In spring and winter, the walkway is open and windy, the latter of which is particularly annoying for the women, because it blows their abaya (cloaks). Another site feature is that there are drainage catchment walls, which people use to shelter from the wind or as seating areas, places for prayer, graffiti (Figure 4.2-10) and football goals for children. The walls, pumping rooms, central artificial planters and car U-turn intersections divide the site and make walking a discontinuous endeavor as shown in figure (4.2-12). Women reach this walkway by car with private drivers, and these drivers

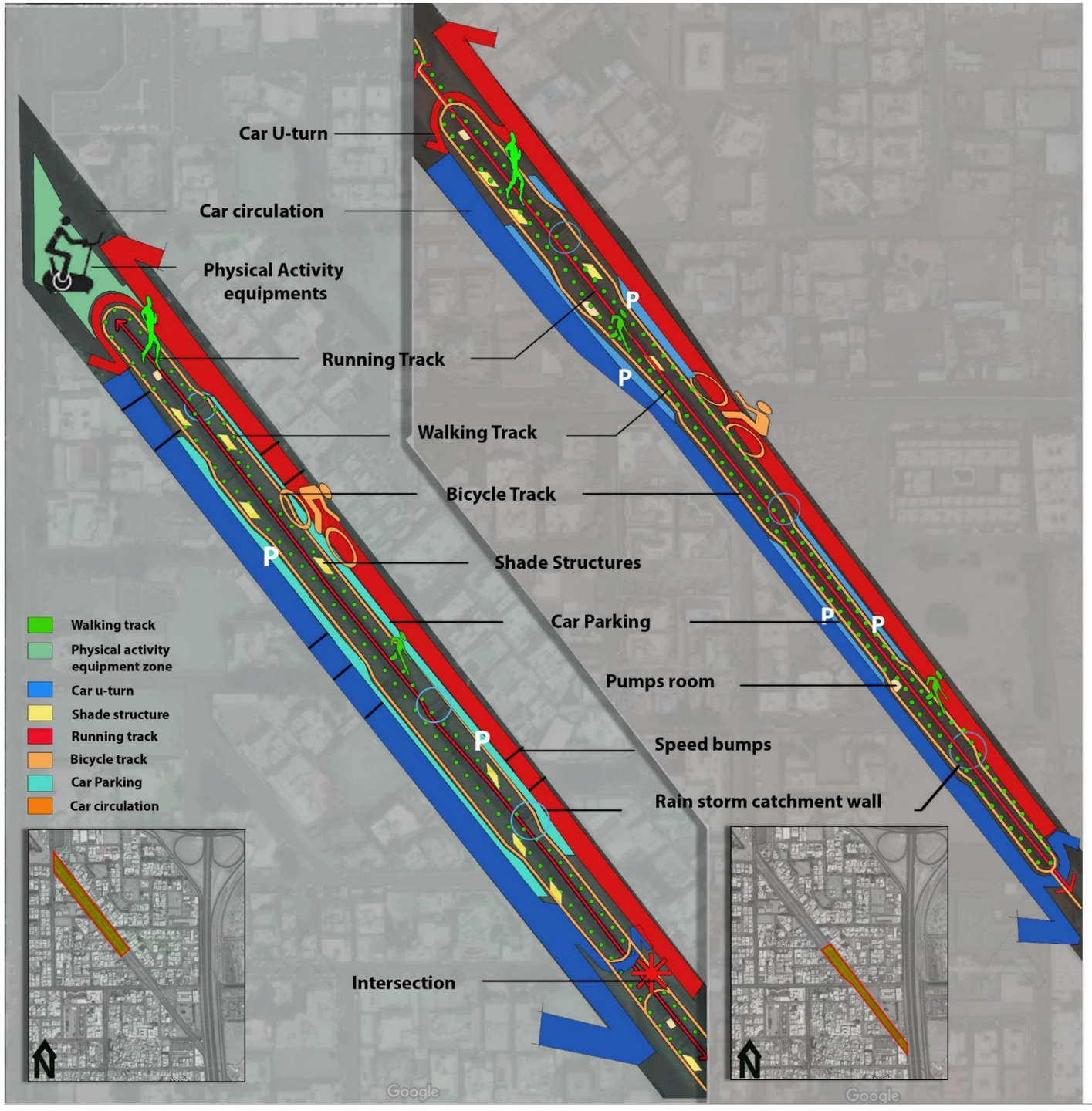
use the parking area as a drop off zone, where the walking journey begins. Drivers sit on the curbs of the walkway and wait until the walking or exercising has finished.

Recently, Saudi Arabian women have been granted the right to drive but during the time of the research not all women were driving, and they still used drivers to reach site. This is because as with all the new regulation, it will take some time to adapt and be acknowledged and accepted by all society members. With more females driving cars this could influence the number of visits to urban public open spaces, but this not clear in this research because no many women drive yet. The curbstone specification is 25 to 30cm in height, making it difficult for disabled users to utilize the site. According to experts' interview *"the purpose of replace regular slandered curbstones with this high of curbstone is from transpiration department and their specification to control the traffic because people who cross and drive on the curbs".* This reflect the lack of cooperation between municipality departments and resolve the problems with non-specialist.

Furthermore, street breaker (humps) and coloured asphalt are safety features of this site (Figure 4.2-11). One interviewee mentioned *"Safety does not exist on site, especially for my kids, and so I can't leave them alone. There are cars surrounding the site and no fence to protect them. We need more safety spaces."* Al-Rehab walkway is one of the more recently constructed sites for walking and has both advantages and disadvantages.

Figure 4.2-10 Using a drainage wall for graftiti

Figure 4.2-11 Coloured asphalt and humps



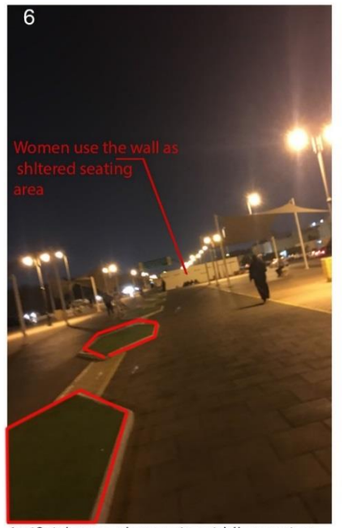
Physical activity equipment zone

Physical activity equipment

Praying zone behind drainage walls

Rain-storm catchment

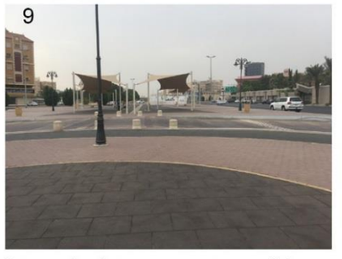
Bicycle track with rupper pavement



Artificial grass planters in middle running track

Walls used for graffiti

Parking space



Intersection between car u-turn and site

Figure 4.2-12 Al-Rehab site observation sheet

Case Study 3 - Amira women's park

Amira Trabelsi Park is located in the southern Al-Qriat neighbourhood in Jeddah, which is a high-density area. The total population of this district is around 20,348 (Jeddah Municipality, 2012). The park is over 19,000m^2, and it was designed as a model park for women and children, with large green spaces and a 500-metre walkway, children's playgrounds and a free event tent and an open theatre for up to 2,000 people. As one participant said in the interview, *"the park has had a significant impact on family cohesion and social networking."* Adding that, "the park is bordered with a transparent fence that allows us to have semi-privacy and practice physical activities without any obstacles." (P24). Park users are mostly from the neighbourhood and of different ethnicities.

Figure 4.2-13 Amira park case study location

'Amira Trabelsi' is the surname of three large and wealthy families living in the neighbourhood, who bequeathed the land away as an open spacefor local inhabitants. The land was previously used as a parking lot for trucks. Ladies and members of the Friends of Jeddah Association, headed by a local businesswoman, hail from the neighbourhood, and together with help from both the private and public sectors, they created a park that changed people's lives for the better. Friends of Jeddah Parks is a charitable association that supports and provides funds for the construction of parks.

As many women celebrate graduation parties and weddings, but the apartments in these areas are small and do not allow them because of space restrictions in their flats, and so the tents in the park have become gathering places for women and for religious seminars, in addition to the fact that a few women suffer from obesity and after walking in the gardens they feel better after losing weight. Children play with a good degree of freedom, without their mothers worrying about playing in the streets between cars. In Amira Park, space usage patterns are different to other public open spaces, in that women use the inside of the park, while men use the outer pavement walkway behind the fence (figure 4.2-15).

Figure 4.2-14 Top park view

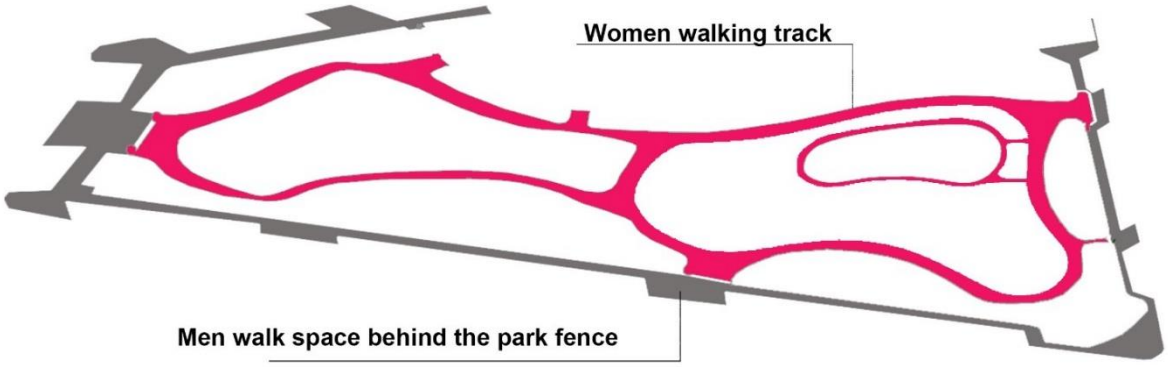


Figure 4.2-15 Path use distinguish by men and women

The park has three gates, each of which was named by one of the grands family name of Amira Tarabulsi. The site provides a good range of facilities such as toilets and seating benches distributed throughout, and the landscape design encourages users to walk between the palms surrounding the walkways. Amira Park has many rules presented at the front gate of the site. These rules prohibit the age of male members over the age12 years old allowed to use the site, and food rules, i.e. only snacks and drinking. The park opens at 4:00pm and closes at 10:00

pm. During the morning, the city's municipality maintenance department maintains and looks after the park. During the observations that took place throughout the data collection phase, only one of the three gates was ever open. This gate is controlled by male and female security guards and lays to the west of the site (Figure 4.2-16).

The only entrance point is through there and users are dropped at the front of the Abduljawad gate and then enter and start walking or looking for a place to gather with their friends. They enjoy sitting on the grass and chatting with each other. Some users mentioned "we come every day and meet our neighbours and friends, talk a bit, walk and let our kids play in a secure and safe place." Some users walk from their home to the park, but there are no kiosks or drinking water fountains, so users need to cross the street to buy goods from local shops.

Figure 4.2-16 Park controlled gate

Figure 4.2-17 Drop off family in front of gate

Activities in the park cover not only leisure or health, but also, from time to time, reading days or diabetes information centres to raise awareness among people and introduce the importance of physical activities. The park manager noted "we put on many events that help and improve awareness amongst local residents, such as breast cancer day, dentist day and cultural events like the national day of Saudi Arabia" (Figure 4.2-18).

Figure 4.2-18 Social activities in parks (sources: park Facebook page)

According to one interviewee, social interaction and social services are the main reasons for using this park. Neighbours motivate each other to exercise by walking or running as, "*because of the width of the walkways cycling is not allowed".* The design of the path is for walking only and does not allow people to do any other type of activity, and so if they want to exercise, they use the area close to the theatre, albeit the problem with this area is that, most of the time, it is closed and opens on events days. One user mentioned "*We use the park for just walking or running as exercise because we do not have any knowledge of further physical activity that we do. So, we just run or walk."*

Figure 4.2-19 Site observation

4.2.2 Non- Designed case studies (Incidental Sites)

Case Study 4- Al-Basateen walkway space

Jeddah City has many non-designed spaces found by users for walking and physical activities. Such spaces include King Abdulaziz University's main campus wall, KAU Al-Faisalyyah campus, Al-Nahda district vacant land, the Prince Fawaz district water drainage channel, Al-Basateen district's walking space, the King Khalid walking space, etc. The Al-Basateen walking space is located to the north of Jeddah City in a low-density area. The total population of this district is around 12,699 (Jeddah Municipality, 2012). Al-Basateen district is one of the newer areas in Jeddah not exceeding more than 20 years in age. The district is covered with facilities and services but with a noticeable lack of large public open spaces. Building regulations in this district limit villas of two storeys. The walkway is over than 6 km in length.

Figure 4.2-20 Al-Basateen site location

The site is part of a new development neighbourhood which is surrounded by short concrete walls (Figure 4.2-21) image 6. This neighbourhood is planned vacant land and paved inside and outside. The sale of the development was stopped by law due to a number of municipal and security issues. The neighbour in the district used this surrounding wall and in some time inside location for walking for proximity and the advantage of site length. The site was found by users and not designed as an official open space, and so people started using the pedestrian

walk way for physical activities such as running and walking. Female users use the inner street of the development for walking, running and occasionally yoga. A group of female joggers in the inner part of the site said *"We walk, run, jog and practice yoga at this site and on other vacant land along King Abdulazaiz Road. This site gives us semi-privacy away from men and other users… We also use other vacant land where we use parked cars to form a circle and create our own privacy… We are a group of 16 women and run along Jeddah's waterfront."*

The site quality has a lot of issues. According to one user, *"the site is good for the distance we walk, but in terms of safety or in quality, I wish we had better than this."* During observation of the site, the researcher noticed and recorded the paved walkway as having multiple widths, ranging from 0.6 m-2.0 m. There are many obstacles to walking that make users walk on the main road, namely broken pavements and electrical generators covering the walkway (Figure 4.2-21) image 1. One interviewee mentioned, when reaching the tiny path located in the main cross-section, "this is the most dangerous area; my friend passed away here following a car accident and this result of we get out the paved to the main area…..she started crying" (Figure 4.2-21) image 2.

Many of the users were afraid of losing the space, as there was no alternative in terms of distance and proximity. Respondent I09 said *"Our area needs public open space for physical activity, because we do not know what will happen."* Other users mentioned the same thing: *"Our area needs public open space for physical activity, because we do not know what will happen after this neighbourhood is sold and building work starts… I think we should have security or police on duty, because as women we face harassment from guys, and for this reason, sometimes, my family stop me from visiting here… There is no place to go close to our home after this site and the gym prices are high."*. The following maps show the path the users used inside the neighbourhood for walking and exercise. The site is surrounded by two neighbourhoods to the north and the east, and users have to cross the street to reach the site, while users from outside the district use drivers who park around the site. The surrounding streets do not have zebra or pedestrian crossings, and users have to jump over a small wall or find gaps in taller walls, as shown in (Figure 4.2-21) image 8.

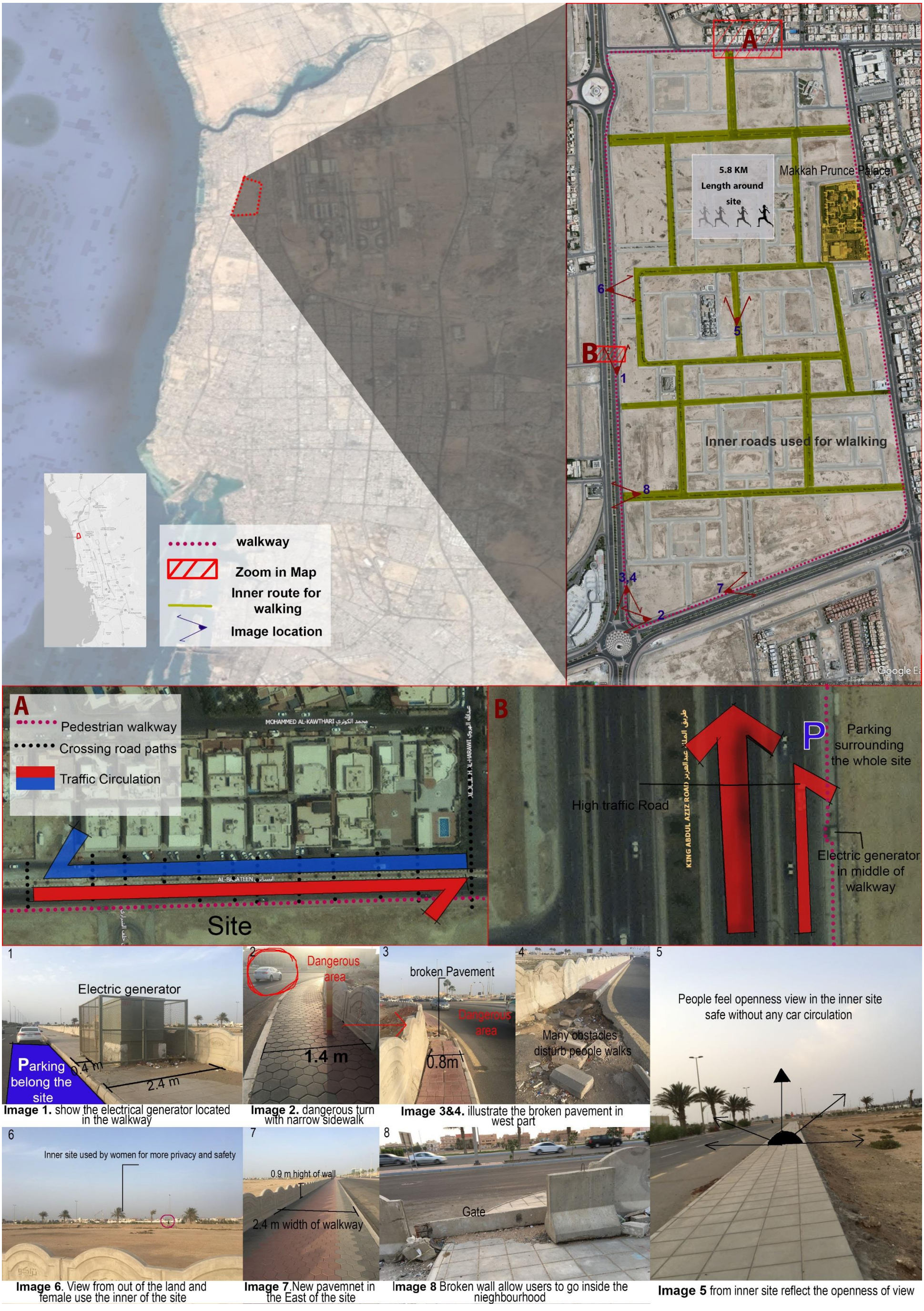


Image 1. show the electrical generator located in the walkway

Image 2. dangerous turn with narrow sidewalk

Image 3&4. illustrate the broken pavement in west part

Image 6. View from out of the land and female use the inner of the site

Image 7.New pavemnet in the East of the site

Image 8 Broken wall allow users to go inside the nieghbourhood

Image 5 from inner site reflect the openness of view

Figure 4.2-21 Site observation

Case Study 5 - Al-Faisalyyah walkway space

The Al-Faisalyyah walking space is located in the middle and slightly to the north of Jeddah City in a high-density area. The total population of this district is around 118,380 (Jeddah Municipality, 2012). The Al-Faisalyyah district is one of the oldest areas in Jeddah, exceeding more than 40 years. This district was one of the first neighbourhoods to be built after the demolition of the Jeddah City wall, due to its northerly expansion (Figure 4.2-22). The district is covered with facilities and services with a noticeable lack of large public open spaces as result of the density of buildings. Building regulations stipulate that residential buildings can be from two to six storeys high.

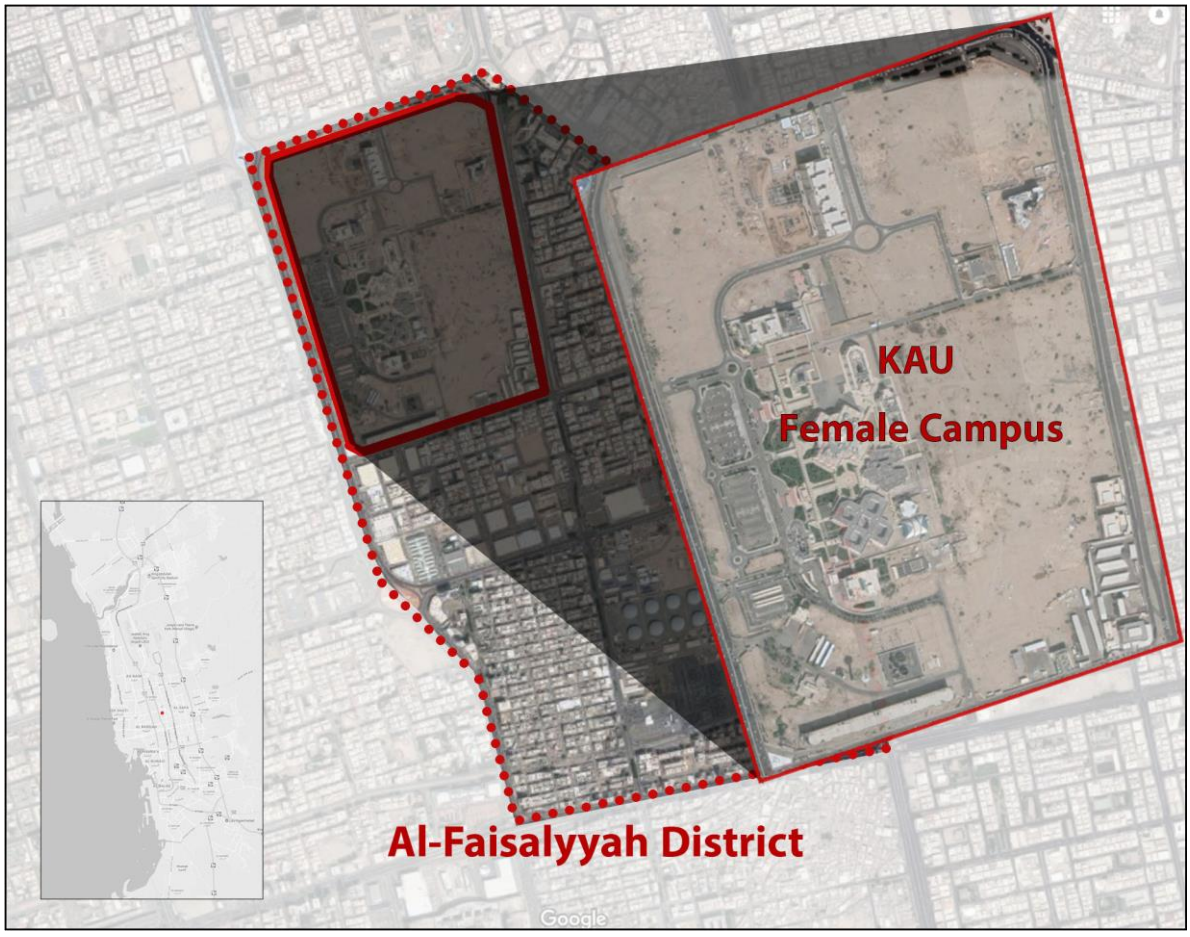


Figure 4.2-22 Al-Faisalyyah site location

This site is on a pedestrian walkway which surrounds King Abdulaziz University – Female Campus. It used to be a college of education before merging into the University. The college has been in existence since 1390 (KAU, 2018). This site is famously known as the 'pregnant wall' and the name is derived from the many users, who walked around the wall and later became pregnant. Most people in the past used this site because there were no readily available public open spaces, and at over 5 km in length, it takes around one hour and twenty minutes to

complete a walk. It is surrounded by four main roads with high levels of traffic that cross the city from the south to the north, and from east to west. It is bordered to the north by Sari Road and to the south by Al Imam Ash Shafei Street. On the east side is Almakarounah Road, and from the west is King Fahad Road Figure (4.2-23)

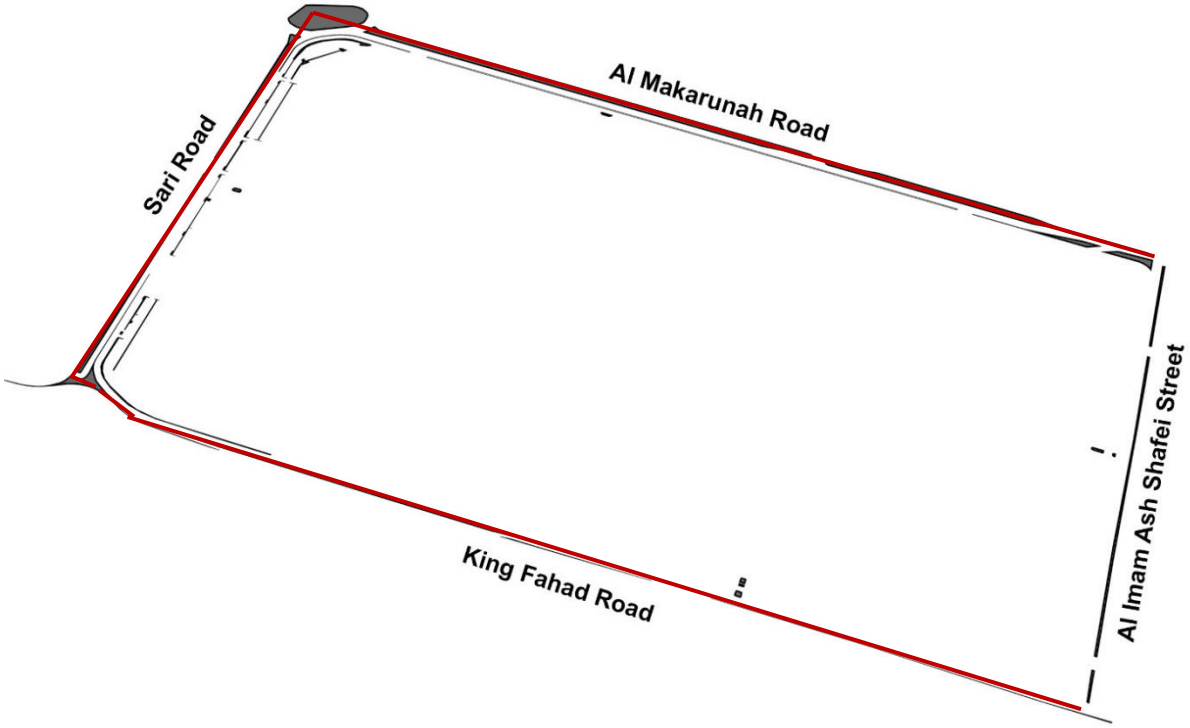


Figure 4.2-23 Site surrounded streets with pedestrian dis-connectivity with three sides

The traffic around the site is high, except for Al Imam Ash Shafei street. The three main roads are designed for 12 lanes, and so there are high levels of carbon dioxide pollution. The walkway width ranges between 2m and 4m, with the narrowest width located at the northern side in the parking area (Figure 4.2-25) image1 and 3. Most of the site remains uncovered with no plants apart from the western side and part of the northern area (see Figure 4.2-24). In these areas, Planters minimise sidewalk width, as shown in Figure 4.2-24. The walkway is made up of 40x40 cm concrete pavement slabs, and in some parts, they are broken or have deteriorated (see Figure 4.2-26) image 2. Usually, the starting point for users is at the southern side, where people visiting the site on foot from their homes. As the other side is hard to cross because of the main road, which makes accessibility from these sides unsafe. One interviewee mentioned this point by saying that, *"I visit the site three times a week. And although I live very close, I come by car with my driver, because it is hard to cross the Sari Road."*

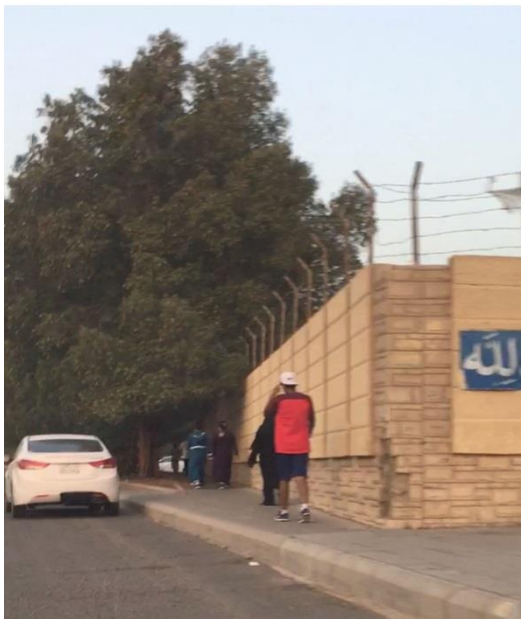


Figure 4.2-24 Pavement width change through the site

Site maintenance and quality are low, as one female user mentioned: *"The site is not connected, and in some parts I find obstacles like garbage bins, building materials in the middle of the path, which makes me walk on the street."* In some parts, however, university students use the wall to present works of art students. Users like this art work, as it helps break the repetition. According to one interviewee, *"some parts of the walkway make you feel unsafe, or the views are repeated and make you feel a bit depressed, but other times we enjoy looking at arts and seeing people do other activities, such as kids playing football in the middle of the parking area,"* a practice noted during the observation phase (Figure 4.2-23).

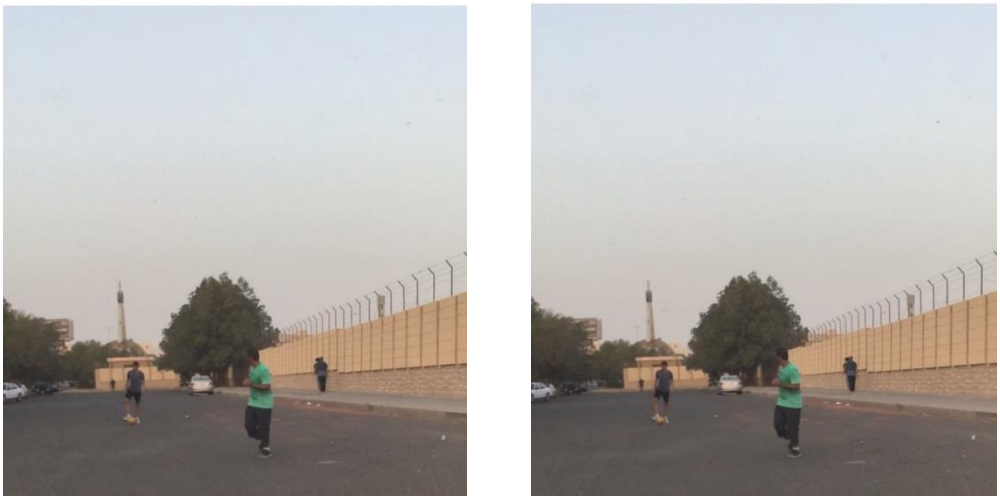


Figure 4.2-25 People playing football in the parking area

The following Figure 4.2-26 shows an aerial view of the site and reflects people's usage patterns. The maps illustrate the location of the site according to Jeddah City. The zoom in map

chosen from Al-Makaronah Road is one example used to reflect the volume of traffic along the route of the site. This case is repeated for two more roads. On the left of the maps, 3D layers reflect five site elements: the whole site, walkway, roads, user movement and green structures. The images illustrate the width and views from the site as well as some of the obstacles mentioned by the interviewees, such as garbage and construction materials left in the middle of the path.

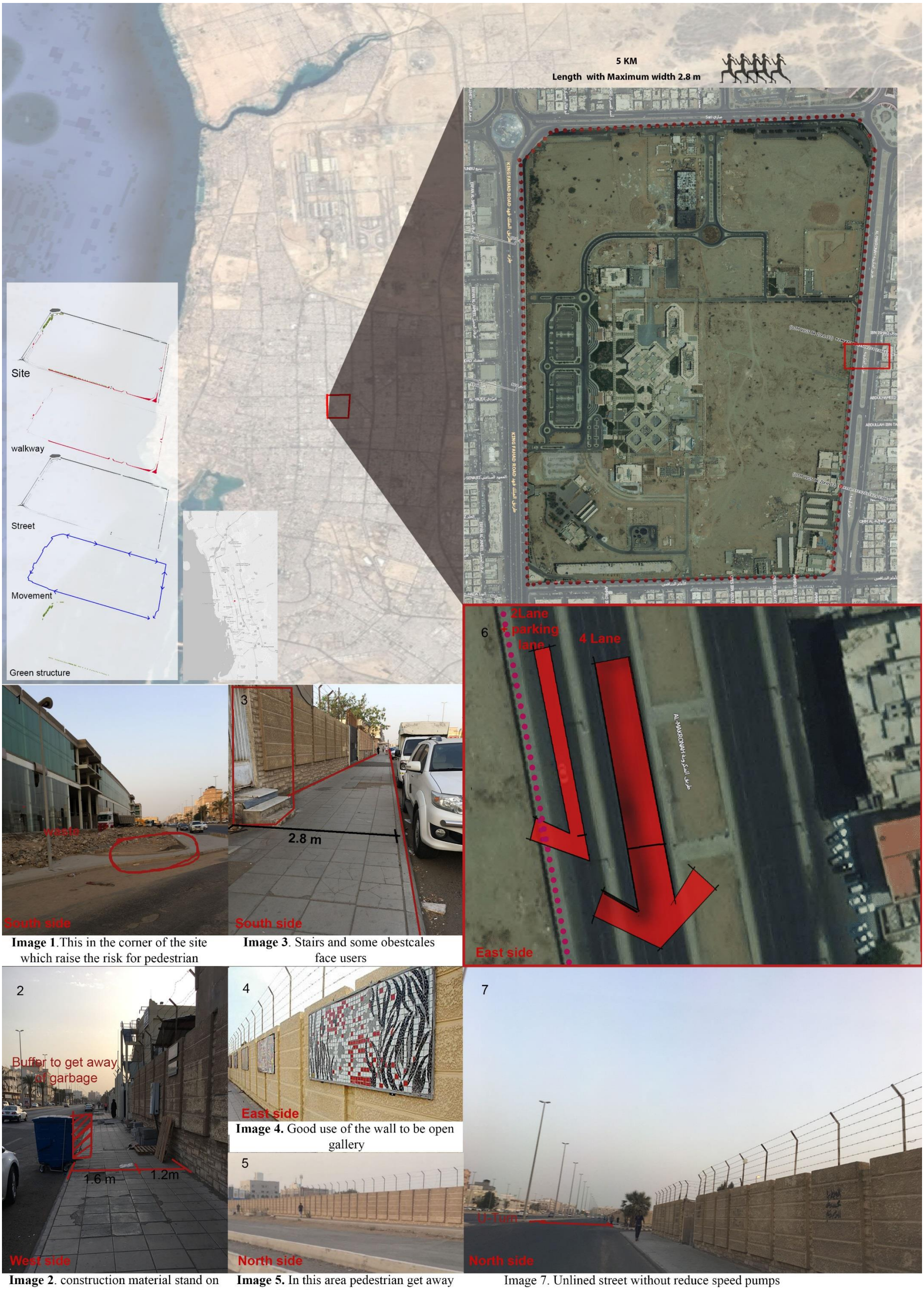


Image 1.This in the corner of the site which raise the risk for pedestrian

Image 3. Stairs and some obestcales face users

Image 2. construction material stand on the wall and floor

Image 4. Good use of the wall to be open gallery

Image 5. In this area pedestrian get away a little bit of high traffic street

Image 7. Unlined street without reduce speed pumps make walking dangerous

Figure 4.2-26 Site observation

4.3 Exploring the Uses of the Sites

4.3.1 Introduction

The aim of conducting case studies was to explore the effectiveness of urban public open spaces when promoting physical activity in Jeddah. Further, issues relating to urban public open spaces, such as site design, user behaviour and indoor physical activity, were explored with the interview participants. The results of the interviews are summarised according to all case studies.

This section is divided into two parts: the first part describes those interviewees participating in the case studies, and the second part presents a thematic analysis of the findings.

4.3.2 Description of the interviewees

As mentioned in the research methodology chapter 3 Section 2.2.2, 24 semi-structured interviews were conducted in order to collect data for the case studies. This section presents interviewees who were involved in the semi-structured interviews for all case studies. Details of the case study, respondent's nationality, educational background, and age, along with the duration of interview and education of the interview participants are presented in Table 3-2-1.

4.3.3 Thematic Analysis

As detailed in the research methodology chapter 3 Section 2.2.2, the interview questions were designed to incorporate four main categories: visit, site design, behaviour in public open space and indoor physical activity. Therefore, the collected data has been thematically analysed based on these groups.

4.3.3.1 Visit

Themes captured from all case studies regarding visits to the sites are presented in Figure 4.3-1, which highlights the main factors relating to visiting sites by the participants. Initially, all interviewees stated that their main reason for visiting walking spaces is socialising (concept 106). This social interaction includes daily physical activity, which mainly improves body health (concept 117), and interaction with friends and family for leisure purposes (concept 118). The interviewees stated that visiting walking spaces is one way of spending time with their friends or family, as it gives them more incentives to carry out physical activity. They also stated that they prefer not to visit a site (walkway space) alone (concept 110) and prefer to

be accompanied by someone (concepts 101) such as friends, family members or their children (concepts 107, 108 and 109). Only one of the participants stated that sometimes she prefers to visit a site alone, as she feels she has more freedom and more time to concentrate only on the exercises rather than talking with friends. While some participants stated that they prefer to visit sites with their children, as they can do the exercises with them, which benefits them all and allows them be healthy and active together (concepts 107 and 111).

Figure 4.3-1 A screenshot showing themes related to visit

The four main themes mentioned by the participants about why they visited the areas, are reflected in the statements below:

"I usually come to this park with either my friends or my kids for walking and leisure, mostly with my kids, as they can spend some time outside the house and play with other kids. We also exercise together… (101) My friends motivate me to come to this place to exercise with them, and (107) I also recommend it to my family. Once a week, I come here with my family to spend time, and we all exercise together, which is really fun… always come here with my friends, as I don't like to come alone. We talk together about different things. This place gives us motivation to socialise and exercise simultaneously (106) … Most of the time, I prefer to come here alone, because I feel more comfortable and relaxed while exercising (walking or running). This enables me to concentrate more on my thoughts. It is like I am doing some sort of yoga."

As stated by the interviewees, the majority prefer to be accompanied by someone while visiting a site. However, visiting varies due to people's free time (concept 103), i.e. every day, on weekends or every day except for weekends (concepts 112 and 113). The interviewees described that each visit takes approximately 60 to 90 minutes (concept 102), and all of them stated they do not visit any walking space and exercise outdoors during Ramadan (concept 114).

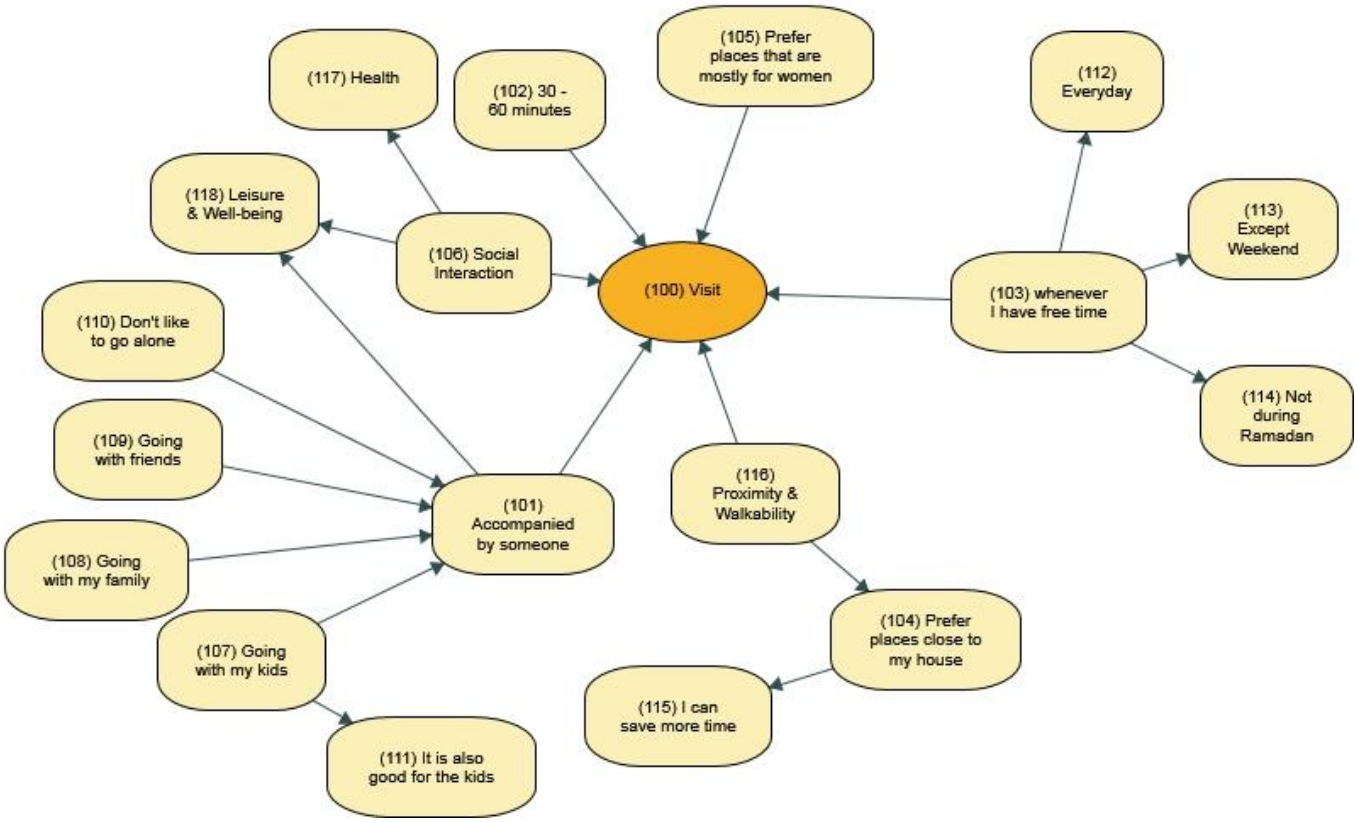


Figure 4.3-2 Cognitive map of visits as elicited from all case studies.

Several statements, related to the concept 103, 113, 109, 102, 106 and 111 are detailed below:

"It depends on my daily schedule, as to whether or not I to go to the park and exercise. Sometimes, I am only free on weekends (103) … I usually schedule my time to come here every day except weekends (113), as weekends are for family and we spend time together or visit my husband's parents… so today, I have come with my friends (109), a and we usually walk the space three times, which takes at least an hour (102)… I come to do jogging alone; I start with a warm up, then jog and finish by cooling down for 15minutes. Overall, it takes approximately 90 minutes, and once I finish my workout, I then meet some people in the park (106), walk and play with their kids." (111)

One of the main reasons for selection selecting of a walking space is that it is close to where the participants live (concept 104), this enables them to spend less time travelling to the site and more time on doing exercises and socialising with other people (concept 115). These concepts are known as proximity and walkability features of public open spaces, and they play

a key role in motivating visitors (concept 116). They also stated that they prefer sites (women's parks) that are mostly designed for use by women (concept 105), as it makes them feel more comfortable:

> *"I chose this site, as it is close to my home, only 10 minutes by foot and 3 minutes by car." (*proximity*) "There are three parks around my home, but I prefer to come to this one, as it is designed for women and called the women's park." (105). "I always visit this site with my friends, because it is close to our houses compared to other places in our area."*

4.3.3.2 Site design

Themes captured from the five case studies about 'Site Design' are presented in Figure 4.3-3 and the main factors are highlighted below. All participants agreed that there was a lack of site advertising within both the media and on the streets around each site (concept 201); instead, they found out about the availability of sites through word of mouth from their friends or family members (concept 202).

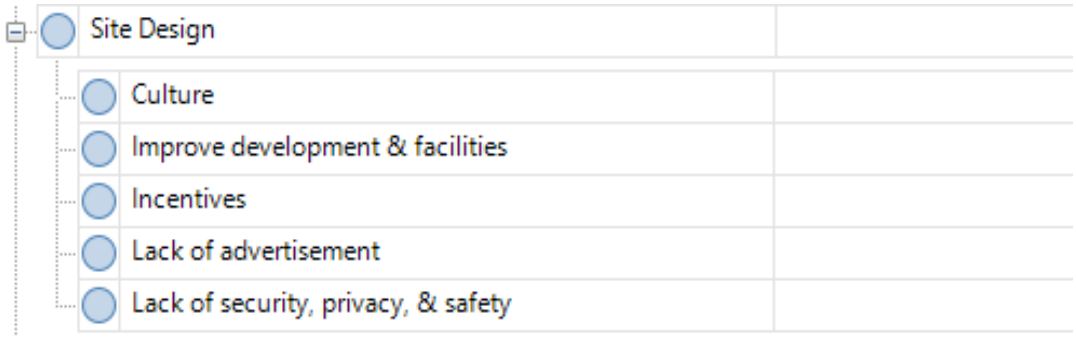


Figure 4.3-3 A screenshot showing site design themes

These factors are reflected in the statements below:

> *"I found out about this site from my sister, and she heard about it from her friends … I saw this park last year while I was in the car with my husband… I live 10 minutes away from this park, and I remember the day the council started building this place; at that point, I told my friends that once this place was built, we would have to come here and do some exercise (201,202)."*

Noticeably, the interviewees highlighted a lack of facilities available on the sites (concept 203), such as public restrooms, benches, vending machines and kiosks selling soft drinks or snacks and water fountains (concepts 204, 205, 206, 207 and 233). Furthermore, they mentioned that

the sites needed more development, and designers must consider these factors during the design phase (concept 208). They also stated that they would like to see more planted areas, more exercise equipment (machines) and a bicycle pathway along each site (concepts 209, 210 and 211). Having a private pitch or area for women on site was another issue raised during the interviews (concept 212). However, all interviewees agreed that the sites were well designed in terms of having a big car park that is easily accessible (concept 213). One interviewee mentioned some memories of places visited by stating that "*during my travel to many places like Germany, the UK, and the USA the design of the spaces was beautiful it encouraged users to visited and do physical activities and I wish our spaces had the same thing*".

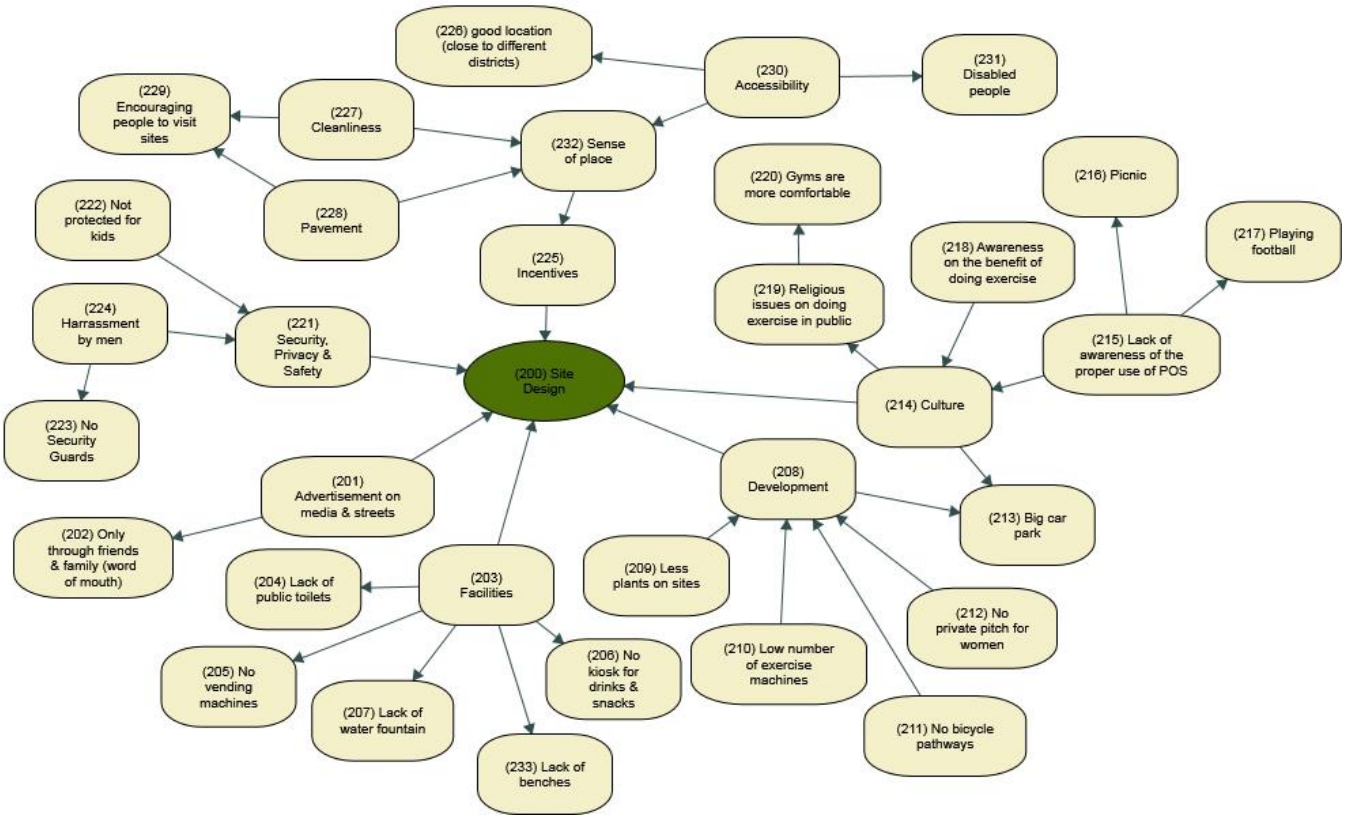


Figure 4.3-4 Cognitive site design map, as elicited from all case studies.

Some of these factors are reflected in the statements below:

"I like this park, as it is well designed and close to my home and only takes 10 minutes by foot, but every time I have to bring water, because there is no place that you can buy water or any other soft drink on site, especially important when the weather is really hot (203)… I used to come and exercise with my kids, but now I don't bring my kids, as there are no toilets available on site and only a few benches for sitting… We think this site needs more development in terms of having a specific place for riding bicycles and

a private pitch for women (208) …The site looks good, but it would be better if it had more green plants… My friends and I always come here to walk and do a bit of jogging; one thing that we think is missed on this site is having no exercise machines (210) … I prefer to use this site only when the weather is not windy. Also, this site is only 2 minutes by car, which is a bonus for us (230) … However, most of the sites that I visit in the city are not properly accessible for disabled people. One of my friends is disabled and she refuses to go out, but once I brought her here, despite all the difficulties of moving her wheelchair, and she enjoyed and became quite animated."

As a major aspect of designing a public open space is to motivate people to use it, the participants were asked about their motivation behind choosing to visit a site (concept 225). One factor identified was cleanliness as all sites were always clean with the pavements designed in a way that encouraged not only visit to the sites for walks, but also to spend more time there (concepts 227, 228 and 229). Another aspect of design is the location of the site in terms of being accessible by foot or car, which was discussed during the interviews. According to the participants, all sites are in areas that are easily accessible and close to different surrounding districts (concept 226). Furthermore, one important aspect that can often be ignored in the design of existing public open spaces is the ease of accessibility of disabled people (concept 230 and 231). It is important that public open spaces are easily accessible for the disabled so that they too can improve their health and mind, by visiting these sites and socializing and taking part in physical activities. All of these features fall under the 'sense of place' concept, which should be considered by designers of public open spaces (concept 232).

Some of these factorsrs are reflected in the statements below

"The main reason I visit this site is that it is always clean, as is all areas and pathways." (227) "I was just talking with my friends about what we like most about this site, and it is the design of the pavement and the locations of the park that attract us most" (228) "My friend and I live in two nearby districts, and the location of this park is the motivation for us to come, meet up and do a bit of exercise." (226)

One vital design issue that were raised by all participants is safety and security provided at the sites (concept 221). As the sites are exposed, open and do not have fencing to protect their children (concept 222). Furthermore, there are no security kiosks (concept 223), which means there are no security guards to discourage male harassment (concept 224).

These factors are reflected in the statements below:

> *"I don't think this site is safe for kids, as it is not surrounded by any fencing and it is open, which is why I don't bring them with me anymore (222) … In terms of safety, I have to say that the design of the walkway needs to be reconsidered, as one of my friends had an accident at one of the corners where the width of the walkway was too narrow… I was just talking to my friend about the security of this site before you came: there is no security guard here (223), and sometimes we are bothered by random men (224)."*

The main factor when designing a site should be the consideration of the culture of the people living around it (concept 214). One aspect of culture is the religious beliefs of people that restrict and limit their exercise in public open spaces (concept 219). As some participants stated that they felt more comfortable exercising in indoor places (concept 220). Another aspect of culture to consider when designing a site is the awareness regarding the benefits of doing exercise and the proper use of the sites (concepts 218 and 215). Several age ranges were , and all stated that they are aware of the benefits of doing exercise for their health. However, one issue raised was that some people use these open spaces for other purposes like picnics, playing football, etc. (concepts 216 and 217), due to a lack of awareness about the proper use of the sites, or the specification of different areas for different purposes, which should be considered during the design phase.

These factors are reflected in the statements below:

> *"As you know, this site is located in the south of Jeddah, where people are more religious. Sometimes, I have been questioned and harassed by some extremists about why I am here alone and doing exercise." (224) "This also happened to my friends and cousins who live nearby, so we decided to come here as a group… Although for women doing exercise in a gym it is more comfortable, due to the religious limitations in public places." (219) "I still prefer to come to this park rather than going to a gym, as there are no limitation in terms of the time and duration of visit." (117) "I think we all know that doing exercise is good for health, and specifically having a walking routine will help people who are diabetics." "I visit this site only on weekends" (103), "sometimes alone and sometimes with my friends, and the problem is that we always come across is the mis-use of the site by some people and their families. They come here and use the*

walking path for picnics or to play football with their kids." (217) "This makes lots of noise and obstructs the pathways".

4.3.3.3 Behaviour in public open spaces

The themes captured from all case studies regarding 'Behaviour in Public Open Space' are presented in Figure 4.3-5 below. This highlights the main factors relating to the behaviour of people on sites. The participants stated that their behaviour, in terms of doing exercise, is highly influenced by religious rules and laws (concept 301). This culture limits them to certain exercises in public places, and they can only walk (concepts 304 and 305). Furthermore, the interviewees mentioned about the low amount of privacy they have, in that they are often abused and harassed by men (concepts 302 and 303).

Figure 4.3-5 A screenshot showing theme related to behaviour in public open spaces

Some of these factors are reflected in the statements below:

"As a woman in this country, my behaviour and activity in public places is limited… I am Muslim and I have to follow Islamic rules." (301) "There are some extremists that cannot tolerate women doing activities in public places." (304) "It has happened to my friend and me many times, where men have bothered us while we have been walking on this site."

In addition, the participants mentioned that the sites were mis-used by people because there were no policies or guidance on proper use (concept 306). In this regard, they mentioned having more space for different purposes, such as family areas or picnics (concept 307).

"I used to come here on weekends, but I changed to weekdays because some people come to this site with their families on weekends for a picnic or to play football instead of walking.' (309) "I think spaces on the site should be distinguished according to their purpose of use".

Another factor that affects the behaviour of people using public spaces is the weather (concept 314). The interviewees stated that they usually visit the sites when humidity is low (concept 315); however, they also noted that sometimes dust storms hit the site while they are walking and there is no place to keep themselves safe (concepts 316 and 311).

> *"I usually visit this site either early morning or in the evening, when the humidity is a bit low and the weather is not so hot." (314/315) "For me and my friends, the weather is fine, so the only issue we face is when dust storms hit the site; as you can see, there is no shelter for us to use during dust storms. This situation is also the same at other sites in the city".(316/311)*

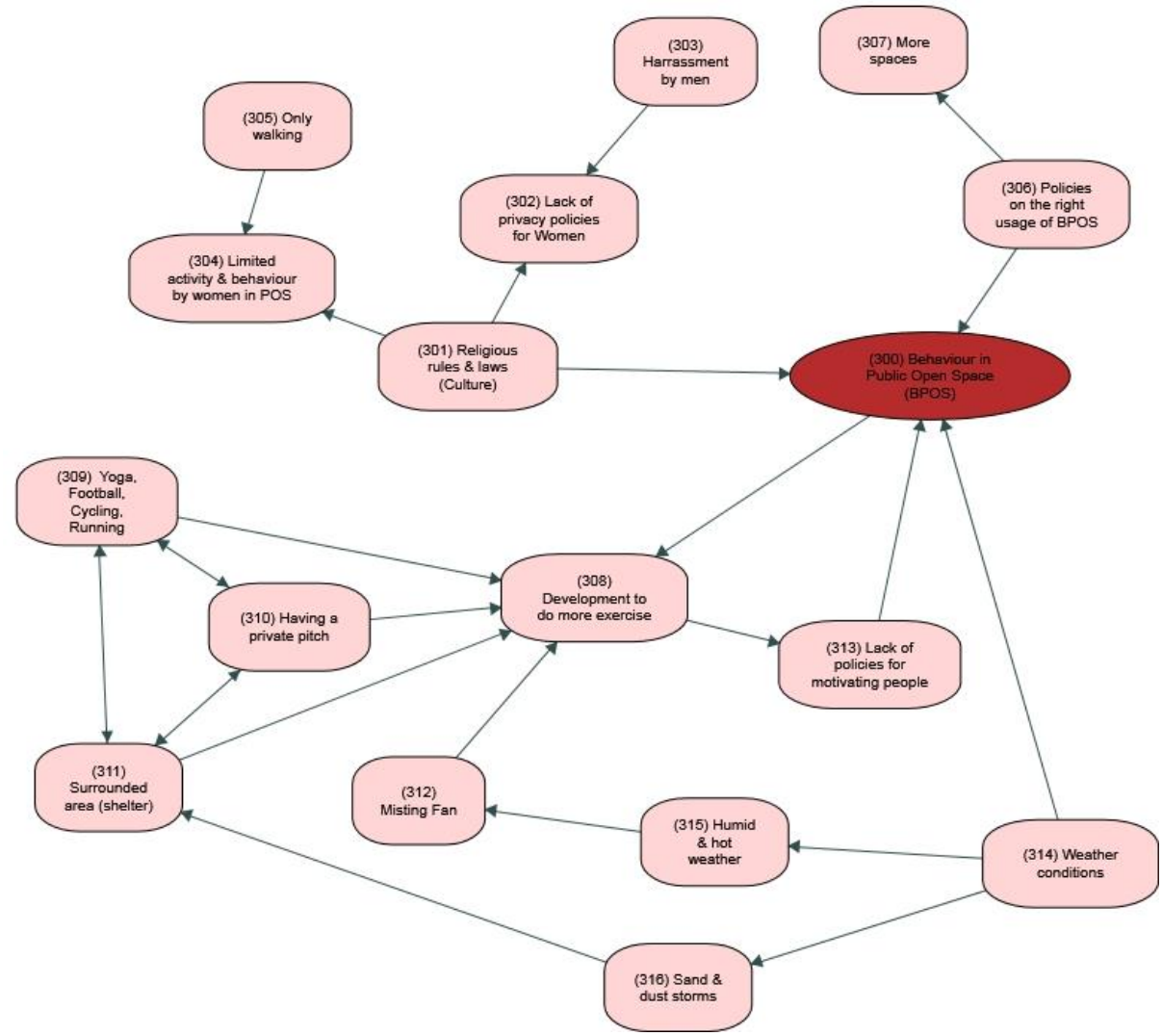


Figure 4.3-6 Cognitive map of behaviour in public open spaces as elicited from all case studies.

Behaviour in public places, in terms of doing exercise, can also be affected by the incentives available at the sites. The interviewees stated that there is a need to have more policies on supporting and motivating women to use public open places and to exercise (concept 313). This also means ensuring more development at these sites (concept 308), since the participants indicated that site development could extend to having separate or allocated areas for different purposes, such as yoga, football, cycling, running and even a private pitch (concepts 309 and 310). They also mentioned that a yoga area could be surrounded by a one-way mirror that provides more privacy for women (concept 311). In terms of dust storms and humidity, the interviewees suggested having some shelter and a misting fan on site (concepts 311 and 312).

These factors are reflected in the statements below:

> *"I like to visit this site and exercise; I have diabetes and I think it is necessary for my health to exercise, so I always motivate my friends and family to join me. Unfortunately, I don't see any support or policies to motivate women to use these sites." (306) "My sister and I have been coming to this site for the past two years, and we haven't seen any new facilities or development. I personally would like to see separate pathways for running and cycling." (309) "I do yoga at home alone, but it would be good to have a private pitch for free yoga classes." (310) "It could be surrounded by a one-way mirror and I would suggest having some humidifiers or moisting fans on site," (312) "to motivate people to visit, exercise and not feel overly hot, because as women we have to wear an abaya". (314)*

4.3.3.4 Indoor physical activity

Themes captured from all the case studies regarding indoor physical activity are presented in Figure 4.3-7 below, which highlights the main factors. Noticeably, the interviewees stated that they only use the gym only because it provides specialist equipment and facilities that are neither available on sites nor allowed by Saudi culture (concepts 401, 410 and 411).

Figure 4.3-7 A screenshot showing themes on indoor physical activity

Some of these factors are reflected in the statements below:

> *"The difference between the gym and this site is the availability of a wide range of exercise equipment, and that's why I go there one day per week… even if the facilities were available on site, I wouldn't feel comfortable using them, because first I am wearing an abaya, and second because of my religion."*

Using the gym for indoor physical activity was not particularly popular with the interviewees (concept 402), as they felt that these establishments are usually managed in order only to make money rather than considering the comfort and satisfaction of customers (concept 403). In this regard, the participants also mentioned that gyms are usually expensive, noisy and always busy at all times (concepts 404, 405 and 407). Other factors included the lack of gyms and the distance required to travel, in comparison to public open spaces (concepts 408 and 409).

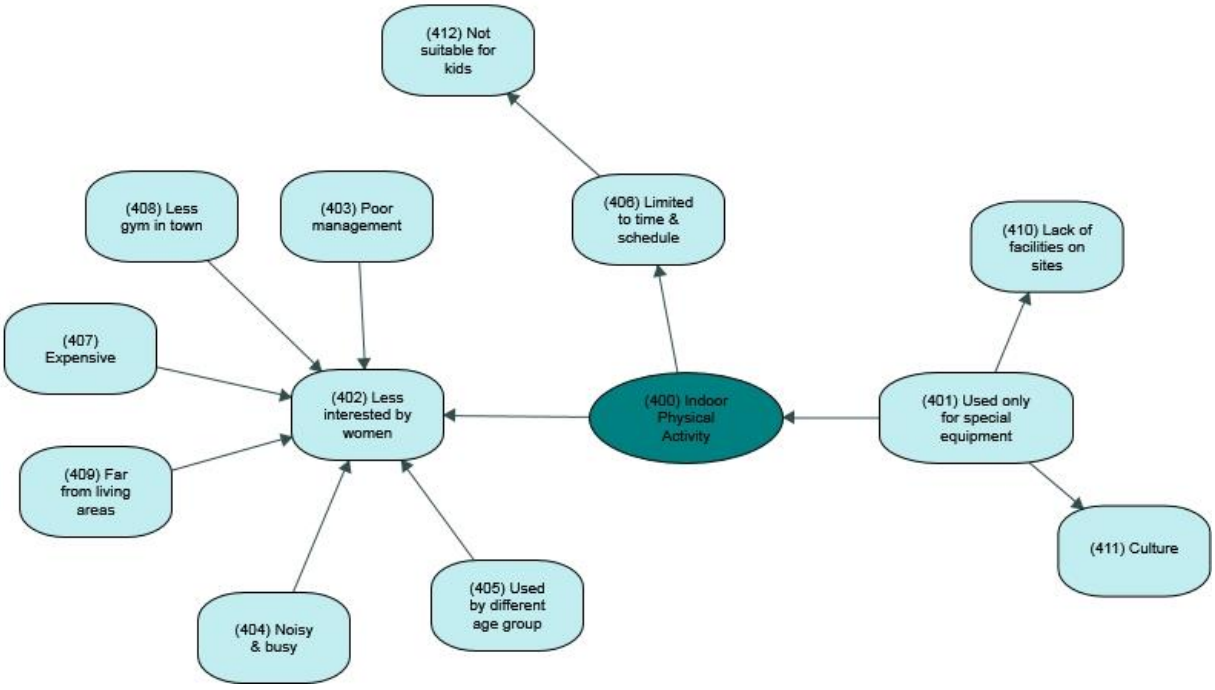


Figure 4.3-8 Cognitive map of behaviour in public open spaces as elicited from all case studies.

Participants indicated that using a gym is limited to a specific time and date, and it can be difficult for those who have a family, specifically those with small children, as it is not comfortable or safe place for them (concept 406 and 412).

These factors are reflected in the statements below:

> *"I don't use the gym, because of my family and children. I cannot take them to the gym." (412) "Because it's not safe for them, and even if I did take them, I wouldn't be*

able to use the facilities properly, as I have to take care of them. Also, gyms are limited to specific times and dates." (406) "My friends used to go to the gym and they said that it is good in terms of using different facilities and equipment, but it is really noisy and busy"(404), "and sometimes you have to wait in the queue to use some equipment" (401) "It is much easier for me and my friends to visit this site rather than going to the gym, because most of the gyms are far away from where we live."..."I personally believe that doing indoor physical activity is more comfortable for women, but unfortunately gyms are quite expensive and tend to have poor management." (403) "They look at it as a business rather than motivating and providing more comfort for customers".

4.4 Discussion (synthesis of all case studies and themes)

Sections 4.3.3.1 to 4.3.3.4 discussed the findings related to the main categories affecting the use of urban public open spaces when promoting physical activity in Jeddah, as elicited from participants who took part in case studies 1 to 5. The synthesis of these categories from all case studies is presented in Figure 4.2-33. A comparison of the identified factors revealed that some factors are similar and related to each other such as development, proper usage of site, culture, of interest to women, incentives, and security & safety concepts. Therefore, a new collective cognitive map was produced to present the relationship that are similar and related to all fours main themes, as well as demonstrating those that have the same characteristics such as Concepts 214, 301 and 411 (culture); Concepts 215 and 306 (proper usage of site) ; Concepts 221 (security &safety), 302 (lack of privacy policies for women) and 101 (accompanied by someone); Concepts 208 and 308 (development); Concepts 212 and 310 (private pitch for women); Concepts 226, 104 (good location with close distance) and 409 (far from living area); Concepts 225 and 402 (Of interested by women); Concepts 408 (less gym in town) and 103 (time) ; 402 (less interested by women), Concepts 210 and 410 (lack of facilities on site).

Respondents in all case studies highlighted that 'culture' is one of the main factors influencing their behaviour in public open spaces, specifically in terms of doing exercise. This is because the country is Islamic and controlled by religious rules that limit their behaviour and activities in public places. Furthermore, they highlighted that this factor was not thoroughly considered in the design of sites; for instance, there were no private or separated pitches or spaces for

women on the sites. Another aspect of ‘culture’ is the proper use of sites. The interviewees stated that there is a lack of awareness concerning both the proper use and benefits of doing exercise in these places. Moreover, they highlighted that the policies on the right usage of open spaces are weak and need to be improved.

The synthesis of all the case studies revealed that another main factors affecting the behaviour of women in public open spaces is ‘improving development and facilities’ even though it is not usually considered by the designers of public open spaces. Respondents stated that they would prefer to visit sites that are more developed and have more facilities. For instance, it would be beneficial to allocate more spaces to women in terms of having private pitches to run yoga classes, bicycle pathways and more exercise machines, as well as providing facilities like public toilets and vending machines. Having a policy to consider this factor during the design phase could positively affect the behaviour of people, especially women, in terms of increasing their awareness, motivation and incentive to use these sites.

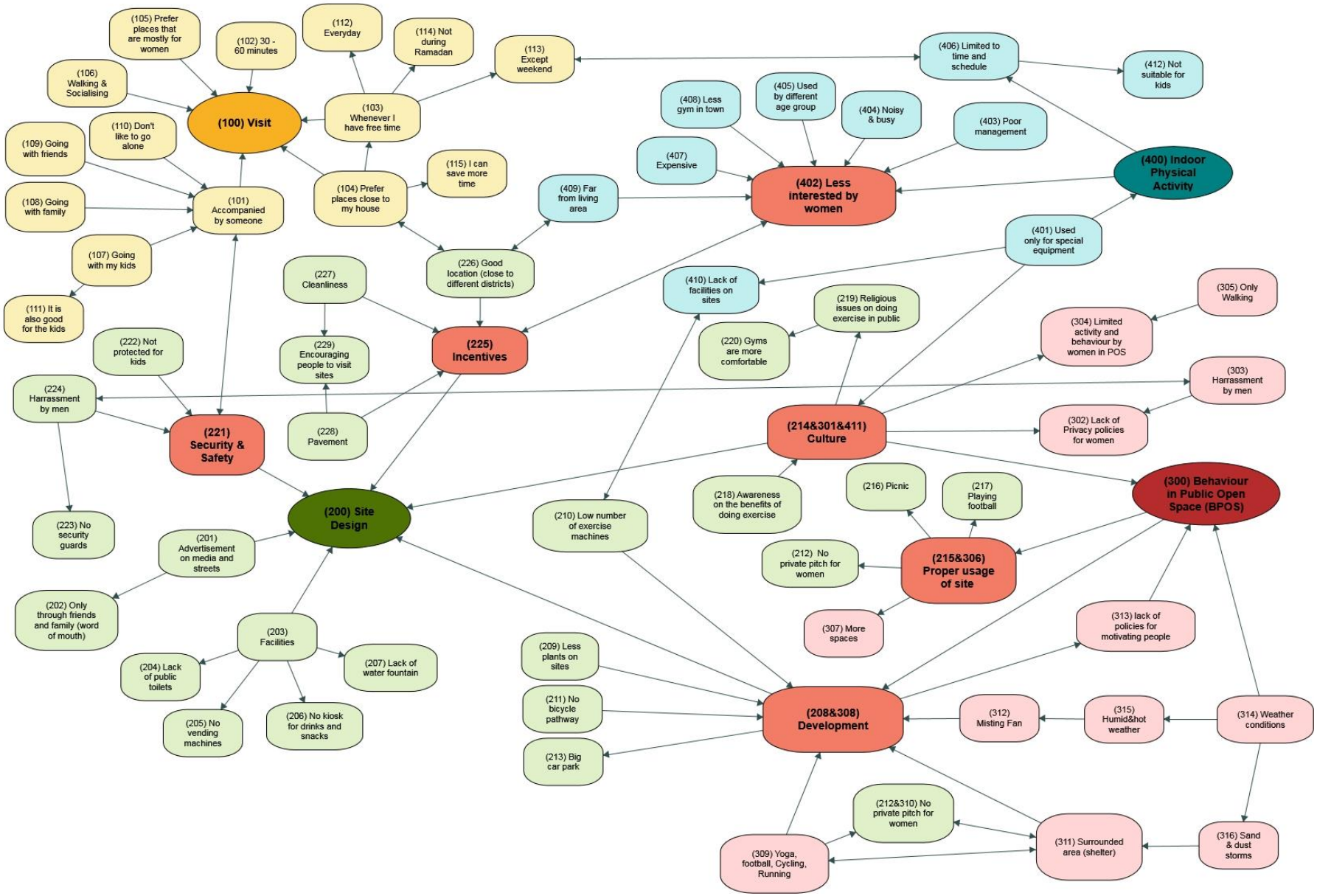


Figure 4.4-1 Synthesis of all case studies

Another case study finding shows that the interviewees preferred to visit sites while accompanied by either family or friends, because they felt safer in terms of being harassed by men. This is due to the lack of security policies, which have not considered by wither the site designers or the responsible authorities that (Concepts 101, 202 and 302).

A further key factor highlighted by the respondents that they are more interested in visiting sites that are close to where they live rather than gyms that are limited and far away (Concepts 104, 408, 409, 402, 226 and 225). Visits to the sites are due to two main reasons: location (being close to home) and the usage concept of public open space that differs from indoor spaces, i.e. it is not limited to specific times and schedules (Concepts 103 and 406). In this regard, the location of the site is an incentive that should be considered during the design phase. Also, visiting public open spaces and indoor physical activity are key factors that should be considering when designing the sites.

Another main factor that affects the behaviour of women in terms of visiting these places is 'motivation'. The synthesis of case studies reveals that there is a lack of advertisement and policies on motivating women. Respondents highlighted that daily physical activity and socialising are the main reasons for visiting sites (Concept 106). Therefore, these factors should be considered by designers in terms of improving facilities and motivating people, specifically women.

Finally, there are five main factors that have been elicited from the synthesis of all the case studies, that impact on the effectiveness of urban public open spaces when promoting physical activity they are:

- Culture
- Development of facilities
- Location and proper usage of sites
- Security and safety
- Motivation

Therefore, these elements should be considered by both designers and related authorities when designing and setting policies for sites.

4.5 Summary

This chapter has presented key information taken from all of the case studies site during the observation stage, when semi-structured interviews were conducted at the exploratory phase to examine female use public open spaces for physical activity, with the aim of identifying factors that impact on the effectiveness of urban public open spaces. Based on the data analysis, four main categories were related to each other: visit, site design, behaviour in public open spaces and indoor physical activity.

The findings of this chapter showed that there was insufficient design and consideration of key points for urban public open spaces. Although Amira Park (case study 3) has been designed well with the aim of helping local residents to use the space for multipurpose activities such as social, physical, and leisure. Both Al-Tahliah (case study 1), and Al-Rehab walk way has lack in facilities, safety, accessibility, privacy, and lack in maintenance. However, the respondents did acknowledge some site elements that are attractive for users such as the rubber pavement at Al-Rehab (case study 2). All case studies are linear places that are categorised as pavement spaces apart from Amira park (case study 3) it was different as shown in figure 4.2-18. It has been noted that users visit non-design sites because of the length of the walkway that surrounds the vacant land or government institute such as the King Abdulaziz university campus. Respondents mentioned that The size of site, proximity, and accessibility of the site are the main factors that encouraged visitors and users. On other hand, findings showed that disconnectivity of these site make them difficult as access at present (see Figure 4.2-20/24).

The thematic analysis identified four main themes: Visit, site design, behaviour in public open spaces and indoor physical activity. The findings presented coded relationships within the main themes using a cognitive map method as mentioned in chapter 3 section 3.6.the codes and the main themes were linked with relationship arrows that presented the relationship. The visit theme presented sub themes related to reason for visiting urban public open spaces, such as social interaction, being accompanied by someone, daily physical activity and socialising, proximity and walkability, and visit during their free time. The second theme presented site design which was related to issues that related to the design of public open spaces and was divided into five sub-themes (culture, improve development and facilities, incentives, lack of advertisement, and lack of security, privacy and safety). The third theme was behaviour in public open spaces and was associated with factors that were

linked to the user's behaviour in urban public open spaces. Five sub-themes were established: development of public open spaces, policies for motivating and supporting people, policies on the right usage, religious rules (culture), and weather conditions. The final theme was related to indoor physical activity such as use of the gym and indoor spaces for physical activity compared to outdoor spaces. This theme presented the least interest due to time limits and schedule and was only for special equipment's. By the end of this chapter a synthesis analysis combined the four main themes and linked all the other themes and sub-themes together to show the relationship between them. A discussed of the main categories that have impacted on the effectiveness of urban public open spaces when promoting physical activity in Jeddah was also included. The findings of the synthesis revealed the improvement of the development and facilities were the main factors related to female behaviour in urban public open spaces (Figure 4.2-33). Additionally, Culture, location and proper usage of sites, security and safety, and motivation were all main factors that impacted on the use of urban public open spaces. Therefore, these factors should be considered by the designers at the design stage and during the setting of the policies and regulation for the site. The next chapter presents the findings from the semi-structured interviews with practitioners related to the design, policies, and management of urban public open spaces.

Chapter 5.

Exploring the Design of Public Open Spaces by Experts

5.1 Introduction

The previous chapter discussed user behaviour, the pattern of use for urban public open spaces, and an analysis of the case studies focusing on four main categories: Visit', 'Site Design', 'Behaviour in Public Open Spaces' and 'Indoor Physical Activity'. This chapter aims to present the viewpoints of urban design and landscape architecture practitioners in Jeddah City with regards to both the socio-cultural behaviours of women using public open spaces and the factors that impact on the design and management of these places. It is structured based on semi-structured interview questions, including five main categories: 'users', 'design', 'management', 'factors' and 'improvements'. In this regard, a thematic analysis of the findings of these categories is discussed, followed by a synthesis and summary. Interviewee profiles are presented in Chapter 4 section 3.3. This chapter which 'explores the design of public open spaces by experts' is different from the previous chapter which presented users' opinions, whereas this chapter will focus more on the design, policies, and management.

5.2 Users

This section deals primarily with the views of practitioners regarding the reasons why women are reluctant to use public open spaces, as well as the ways in which the users of public open spaces interact with these spaces and the physical activities that they carry out during their visits. A cognitive map of themes derived from the practitioners' interview responses on 'users' is presented in Figure 5.2-1 below.

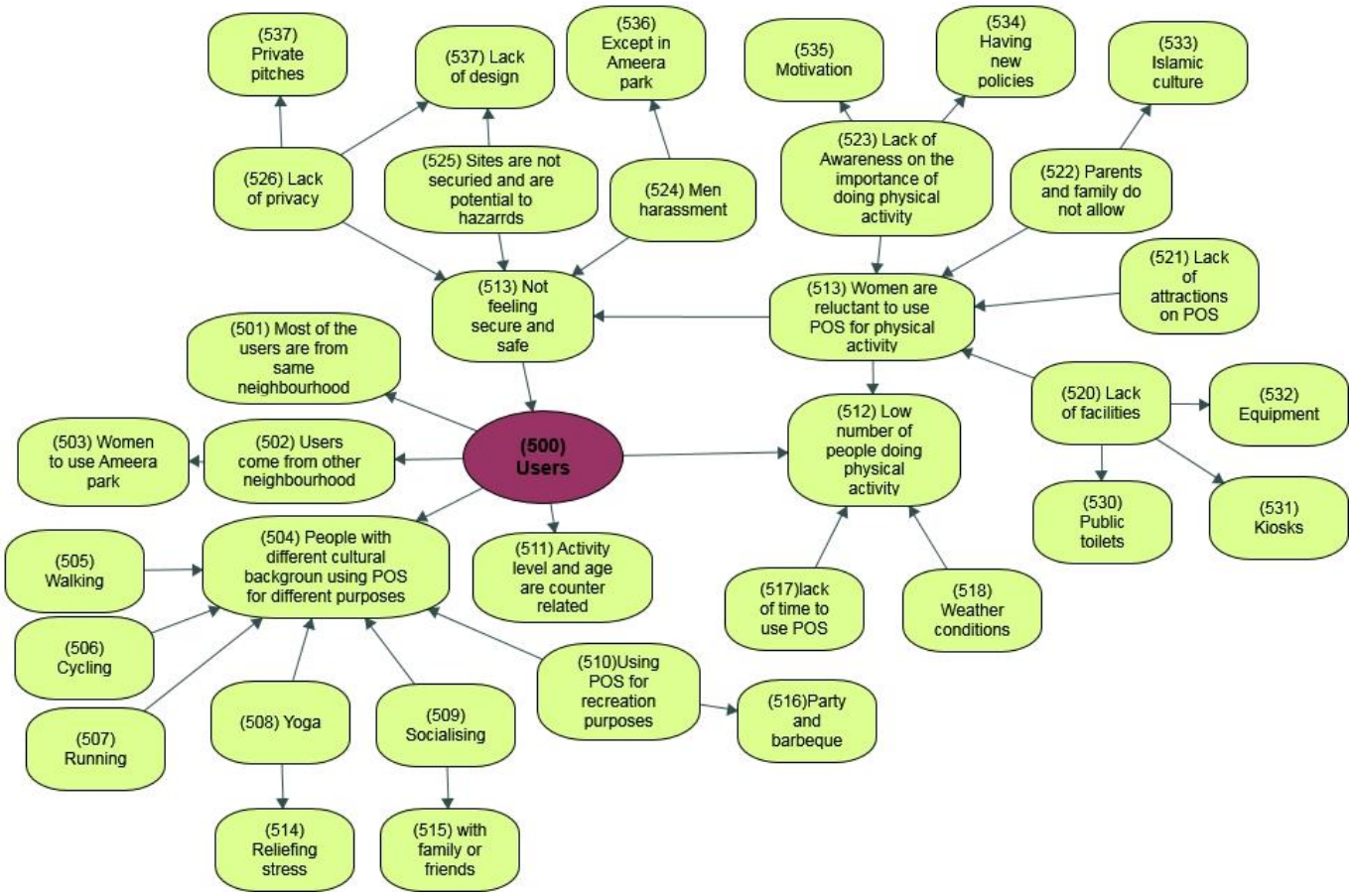


Figure 5.2-1Cognitive map of users, as elicited from practitioners.

From the interview responses, it was evident that many people are reluctant to use public open spaces and take part in physical activities (513). In this regard, the number of women visiting public open spaces, compared to men, is low, specifically in terms of partaking in physical activities. In other words, women are reluctant to use these spaces. The first interviewee, who was the head of the Women in Sport Authority said that, "*In 2015, we ran a survey that investigated the mass participation of Saudi citizens in physical activities. This survey used more than 10,000 Saudi citizens as a sample representative of the nation. According to this report, only 13% of all participants were active and took part in physical activity, of which 79% were men."* In addition, *"based on the same report, 71% of participants in the survey were inactive and above 40 years old."* This indicates that there is an indirect relationship between age and the activity level of people (511).

The low number of visitors to public open spaces is caused by different factors (512), such as lack of time (517), weather conditions (518)), lack of attractions (521), lack of awareness of the health benefits of partaking in physical activities (523), lack of facilities at sites (520), safety (513) and privacy (526) and the Islamic culture (533).

In addition, the first interviewee explained that, *"there is a need to increase the awareness of people (523), specifically women, on the benefits of visiting open spaces and doing exercise. Most of them are diabetic and suffer from obesity and being inactive. We don't see this in the younger generation (511). This requires a change of the policies and regulations at the highest level by those involved in designing and managing these places, to increase the attraction (521) of these sites and motivate women. It's also necessary to make facilities friendlier for women and families." (520)*

Furthermore, the second interviewee, the Amira Park manager remarked that, *"most of the visitors are from the younger generation, as this site is designed for women. In addition, I have carried out off-the-record interviews with some of the visitors in the other parks, mostly middle-aged women (511), in order to see the level of their satisfaction about their visit and available facilities (520), and the majority of them complained about having no place in the park to buy a bottle of water (531), or the provision of a public toilet." (530)*

Consequently, awareness of the health benefits of using public open spaces needs to increase (523), specifically for those who are above 40 years old. In order to increase awareness, decision-makers, site managers and municipality designers should improve their cooperation and consider new regulations and policies (534), in terms of not only designing public open spaces to be more attractive to women (521), but also considering new facilities (520) such as friendlier equipment (532), public toilets (530) and kiosks (531) to motivate women to visit these sites. Furthermore, the length of pathways and their surroundings are two important issues that can impress the users of these places. Having only one public toilet and a long pathway leads to boredom and a reluctance to visit these places again. In other words, there should be improvements to the facilities, surrounding areas and pathway designs, in order to be more attractive to users.

Moreover, the Amira Park manager stated that, *"... there is a reduction in the number of visitors during the summer and Ramadan, as people fast during the day and don't have the energy to carry out physical activity." (517)* Both weather conditions (518) and Islamic events play a key role in visits to public open spaces. Also, as many women have a family and need to take care of their children during the day, it can be a challenge for them to allocate time to visit public open spaces rather than take their children there to play.

While, the first interviewee reported that, *"as head of the Women in Sport Authority, one of the responsibilities is to develop plans and programmes to motivate women (535) to visit*

public open spaces and carry out physical activities. We focus more on Ramadan (517), as during this month the level of physical activity is very low. Another issue that limits women visiting these sites is their social life." (509) This indicates that Islamic culture (533) plays a key role in this regard, but Islamic events like Ramadan can be used as an opportunity to highlight the importance of physical activity and motivate people, specifically women, to allocate time in their daily schedule and visit public open spaces. It should be mentioned that this requires consideration of new policies and regulations (534) at decision-maker level in the municipality, in terms of developing programmes to motivate and attract women.

Previously, it has been noted that women are more comfortable visiting public open spaces that are close to where they live. This allows them to visit these places without asking their driver or any male family member to accompany them. However, there are exceptions, and sometimes they travel from different districts in the city to visit specific sites, such as Amira Park, which is designed for women. In this regard, the first interviewee stated that, *"according to the survey in 2015, users prefer to visit open spaces that are closer to their neighbourhood (501), unless they want to visit specific sites that are designed for women (502). We are focusing on these sites and have a plan to increase the number."* While, the Amira Park manager estimated that, *"in this park, 90% of visitors are from the same neighbourhood area (501), and the remaining women come from other neighbourhood areas just to visit this site, as this park is designed for women (502). We haven't received any harassment complaints, and women feel safer here."*

Security and privacy also impact on women visiting public open spaces, specifically in terms of harassment and hazards. This was pointed out by the head of Women in Sport Authority, who stated that, *"security (513) and privacy (526) are main factors that are important for women. Most of them are afraid of harassment (524), and that is why they prefer to be accompanied by either family members or a friend while visiting public open spaces. In addition, most of these public open spaces have high levels of hazards (525), and that's why the women are afraid of not only visiting these places alone, but also bringing their children."* The findings indicate that security levels and potential hazards should be considered when designing new public open spaces by investigating areas surrounding the park. Furthermore, having private pitches or places that are solely for women is another factor that should be considered by decision-makers at the municipality. It should also be mentioned that increasing the level of privacy and security will require employment of an on-site security team, which should be managed by the park managers.

There are many different reasons (504) why women visit public open spaces; mainly for running, walking, cycling, socialising with family and friends, meditation to relieve stress and recreational purposes like partying and barbeques. This is highlighted by the first interviewee, who stated that, *"users of parks have different cultural backgrounds (504), and they go to these spaces for different purposes. Now I am talking about women who visit these sites mainly to walk (505) and socialise (509) with their family members or friends. While the younger generation prefer to visit these sites for running (507) and cycling (506), and this is the area on which we need to focus and consider more. The younger generation also visit these sites to practice yoga (508) or relieve stress." (514)* In contrast the second interviewee reported that, *"some people use these places for recreational purposes such as barbeques and partying (516), which bothers most of the visitors as they want to concentrate more on their physical activities."* These findings indicate that cultural diversity is a visitor feature that needs to be considered by decision-makers at municipality level, when designing a new public open space, as well as by park managers looking to improve the efficiency of these sites. Moreover, design is necessary to attract people to visit these sites and carry out different types of physical activity. This will be discussed further in the next section.

5.3 Design

This section deals primarily with the views of practitioners in relation to the design of public open spaces. The following interviews were carried out to investigate the processes, challenges and organisations involved in the design phase of public open spaces, as well as the criteria for the selection of new spaces for female physical activities. A cognitive map of themes derived from the practitioners' interviews on 'design' is presented in Figure 5.3-1 below.

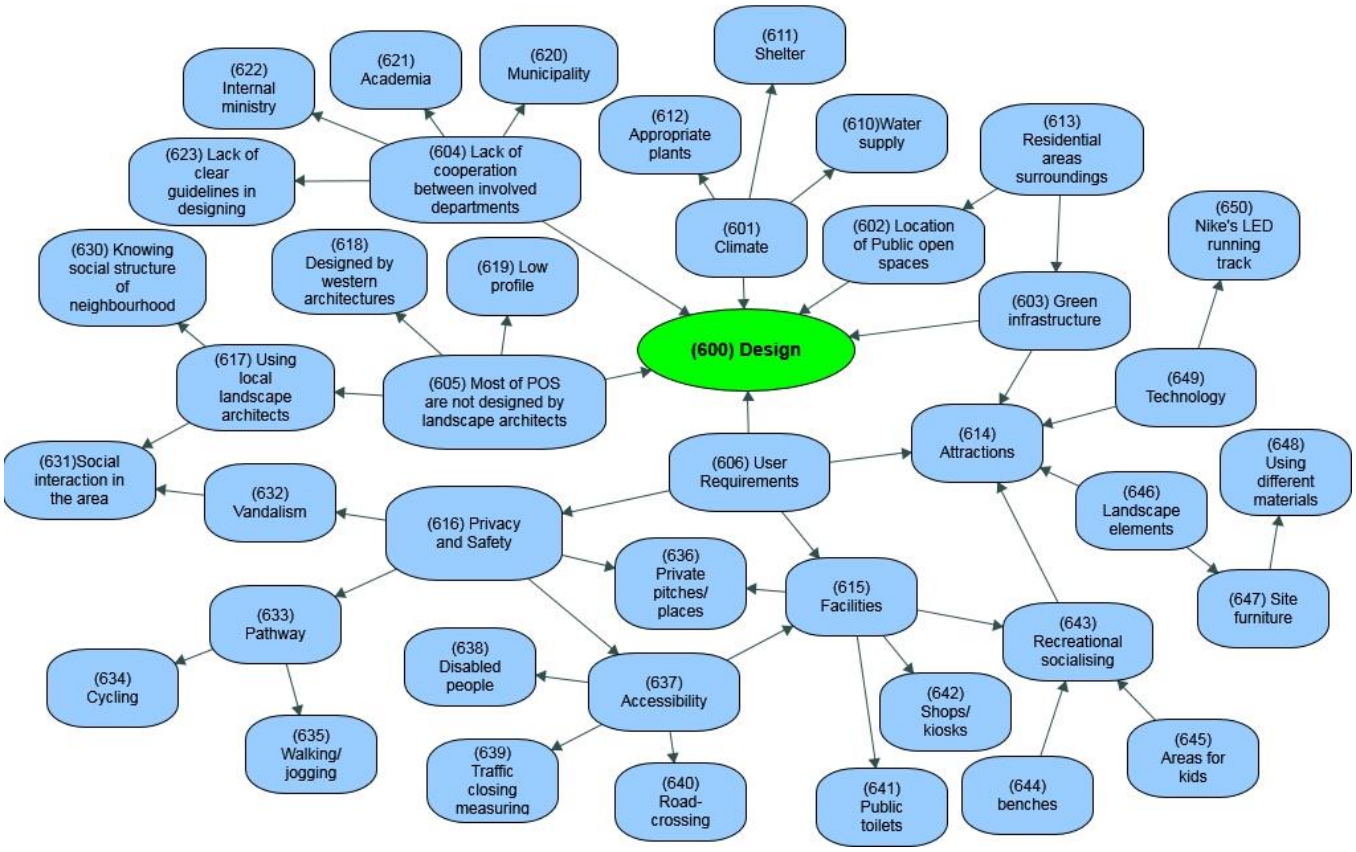


Figure 5.3-1 Cognitive map of design as elicited from practitioners.

The design of public open spaces is a key factor in motivating people, especially women, to visit these sites and take part in physical activities. Therefore, the design process of new sites requires landscape architects (605) and the full cooperation of all involved parties, namely the municipality, academia and internal ministries (604). According to the interviews, there is a lack of clear guidelines in this regard (623), and most of these sites are designed by unprofessional or Western architects (618) and they do not have the enough knowledge about the cultures and female pattern of use. Furthermore, the role of landscape architecture in designing public open spaces is not currently positioned in the municipality.

The fifth interviewee, who was head of the landscape department at the University of King AbdulAziz, said that, *"I believe the public open spaces were built without any design element, and by low-profile (619) Western architects (618) or non-landscape architects. In addition to this, the cooperation and communication between the municipality, universities and internal ministries in designing these sites is so weak (604). There is no landscape architect working in the municipality"*. Additionally, the head of the Women in Sport Authority explained that, *"communication between involved departments, the municipality and internal ministries in the design process should be improved (604), in order to design*

places that are more comfortable for women, for example by considering specific places where women can carry out physical activity whilst wearing Islamic sports clothes."

The role of the Internal Ministry is important, as it regulates rules and policies that are related to the social behaviour and appearance of women in public places. However, currently cooperation is weak, and the municipality should consider this factor when designing new public open spaces. Furthermore, using Western architects to design public open spaces in Jeddah is against Middle Eastern aesthetic concepts and landscape design customs. This indicates the importance of using local landscape architects (617) in the design process, because they are familiar with both the social interaction and structure of their neighbourhoods (630). Moreover, local landscape architects are familiar with vandalism (632) and the anti-social behaviours (631) of residents, which could help when designing public open spaces in a way that considers more privacy and safety (616).

The location of public open spaces and weather conditions (601) are further factors that should be considered by landscape architects during the design process. The population of Jeddah is continuing to increase, as reflected in the growth of residential places. Furthermore, there is a lack of green living spaces between the new residential areas (603). This means that landscape architects should not only consider the surroundings of these residential areas (613), but also the green urban infrastructure (603) that could apply to these public open spaces. Green infrastructure has the potential to attract people, specifically women, to visit these sites and take part in physical activities. This is highlighted by the second interviewee who states that, *"the factor that distinguishes Amira Park from others is its location (602), it is close to residential buildings and there are more green spaces (603). These green spaces and the design of the park are important to the visitors."* Meanwhile, the head of the landscape department said that, *"as a landscape designer (617), the location of a site is an important factor in designing a new park (602). We should cooperate more in this matter with the municipality (604) whenever there is a new residential building programme. As well as considering climate change (601) by using the right plants (612) and facilities (615) when designing the site."* Furthermore, the fourth interviewee, who was head of the Parks Department reported that, *"most of the parks need to improve their facilities (615) in terms of water supply (610) and shelter (611) for when we have sand and dust storms."* One of the key factors of public open space design is weather condition (601), which dictates the most appropriate plants (610) to be used. Furthermore, landscape designers should consider sheltered spaces (611) in their design, for when the city is hit by sand and dust storms.

The consideration of users' requirements (606) plays a key role in designing public open spaces for women. Attraction, facilities (615), privacy and safety (616) were provided by the interviewees as the main requirements that should be respected by landscape architects, and as mentioned earlier, people should be motivated to visit these sites, specifically women, as the majority of them are reluctant to do so. This could be enhanced by designing the sites in a more attractive way (614). For instance, the second interviewee explained that, *"although Amira Park is designed for women, the numbers of women who go there are low, and then most of the users only walk (635) along the pathways (633) once, as they think it is boring. This also happens at other sites where the green spaces are fewer and the pavement materials (648) are boring and unattractive."* While, the head of the Women in Sport Authority said that, *"in our department, we believe that not only green structures should be improved, but also the sites should be designed in a way that is embedded with technology (649), for example Nike's LED running track (650) that embeds an interactive smart screen on the site, in order to create an avatar that accompanies the user while jogging or running along the pathway."*

Furthermore, the fifth interviewee believes that, *"we should change our methods and consider more green spaces (603) and technology (649), like water and smart screens in our design (646). This decision should be taken by the municipality."* These findings indicate that consideration of green infrastructure and landscape elements, such as site furniture (647) and appropriate materials (648) for pathways, would attract more women to visit public open spaces. Also, it is important to consider site furniture (647) for recreational socialising places (643), along with implementation of technology (649) in the designs as additional attractive factors (614).

The supply of facilities (615) is another user requirement (606) that has been ignored in the design of current public open spaces in Jeddah City. As users complain about the lack of public toilets (641) and small shops that provide drinks and snacks (642) on the sites. These places are not family friendly and have been designed and built without consideration of any areas for facilities. Furthermore, recreational areas for socialising (643), such as places for play (645), benches (644) along pathways and children's playgrounds (645), are facilities that are important for women, especially those with young children. This is highlighted by the first interviewee who states that, *"apart from the younger generation, most of the visitors are women who have kids. Therefore, public restrooms are necessary (641) as is a kiosk (642), especially when they bring their kids because they can buy snacks and drinks for them.*

Also, having places for kids to play and places for socialising (643) will make it more efficient and enable the users to concentrate more on their physical activities. Also, sometimes people have parties and barbeques on the sites or close to the walkways, so users cannot easily take part in physical activity". This factor is also mentioned by the head of the parks department who explains that, *"most of the public open spaces do not have any specific spaces for kids or places to socialise that are private (636) for women. Also, providing public toilets (641) and shops on sites requires a budget that needs to be approved by the municipality, because these facilities were not considered originally during the design stage".* Consequently, there needs to be full cooperation between the different departments and the municipality that provides the budget.

Of importance to women is privacy and safety (616) which is a key factor for landscape designers. In terms of privacy, public open spaces could be designed in a way that separates jogging (635) or cycling (634) pathways for women, as this gives them more privacy. In addition, users would prefer private pitches (636) and areas for physical activity like yoga. The head of the Women in Sport Authority described how important privacy and safety are by saying that, *"privacy and Safety (616) are two important factors for women that can attract them to visiting public open spaces. Based on the Islamic culture, women are more comfortable and prefer access to private places (636) for physical activities. This could be achieved by specifying separate areas on the site to be used by women or having a specific walkway. Also, another group that is often ignored is disabled people (638) who want to use the facilities".*

While the fourth interviewee stated that, *"the challenge we are faced with, is the safety of the sites. Most of the sites were built without any proper design element, and so they have lots of safety issues like protection from their surroundings. Recently, we had some car accidents on the pathways in the parks, as they are close to the roads and without any hazard signs or fencing to protect users." (639,640)* In terms of safety, landscape designers should consider the accessibility (637) and surrounding areas of a site. In other words, these places should be easily accessible for disabled people (638) as well as being fully protected from the traffic (639) and vandalism (632). These factors are not properly considered in the design of available public open spaces. Significantly, the design of urban public open spaces occurs in the primary stage when the site is being built but it also needs to be managed continuously to ensure that people continue to visit. Therefore, management is one of the key factors that has been highlighted in the findings by the experts and will be presented in the next section,

5.4 Management

Various factors in the design and construction of public open spaces are related to the management quality of these spaces. Responses from practitioners indicated that the management of public open spaces can be affected by three factors: maintenance, resources and coordination. A cognitive map of themes derived from the practitioners' interviews on 'Management' is presented in the figure 5.4-1 below.

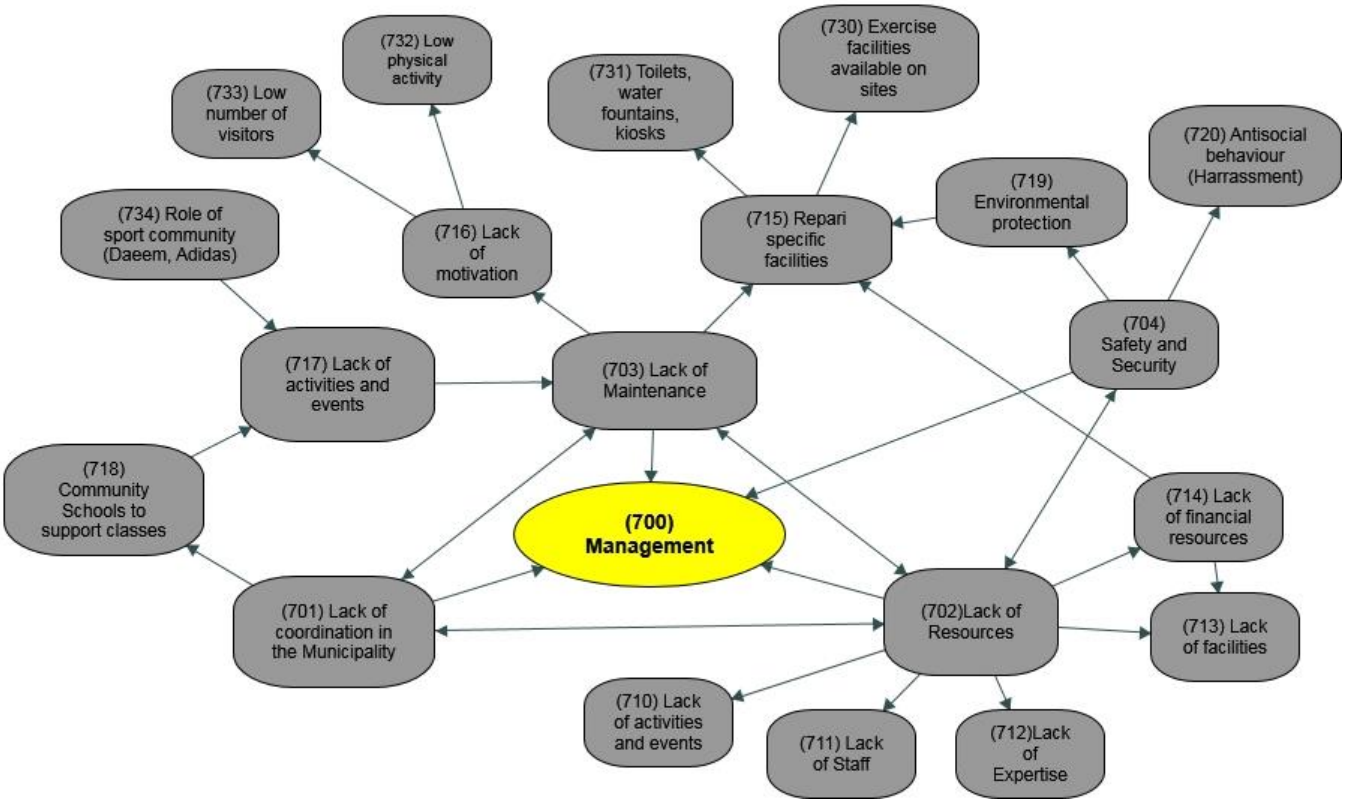


Figure 5.4-1 Cognitive map of management as elicited from practitioners.

Noticeably, responses from the interviews revealed that there is no clear management plan for public open spaces at either the site or the decision-making level. This is explained by the head of the Parks Department who states that, *"the Department of Cleaning is responsible for cleaning open spaces in the city, which is rarely done, and the people who are in charge of cleaning are not qualified, well-trained or able to follow a clear programme."* (703) In this regard, the Amira Park manager explains that, *"unfortunately, the municipality does not have a clear plan for the cleaning and maintenance of parks nor for the coordinating contractors (701), or the department of maintenance and cleaning."* (703) This finding indicates the lack of collaboration between different departments at municipality level in terms of the management and maintenance of designed public open spaces.

The management of public open spaces also includes the type and number of events on the sites, which may encourage more people to visit. In this regard, the sporting community plays a key role and requires collaboration and the support of a site manager. This point is emphasised by the first interviewee who states that, *"the sports authority supports any type of activity* (717) *that encourages people, specifically women, to visit parks, such as the DA'AEM and Adidas programmes* (734). *This support should also be considered by the municipality in terms of maintenance* (703), *facilities and budget."* (702) While, the Amira Park manager stated that, *"we don't have sufficient budget for the maintenance and repair of specific facilities* (715) *like toilets* (731), *because most of the municipality's budget is used on other programmes."* (714) Thus, insufficient financial resources and a lack of collaboration between the related departments at municipality level are the most significant challenges impacting on the maintenance and provision of public open spaces.

Insufficient financial resources allocated by the municipality, do not only affect the design of these places, but also the quality provided by regulators and providers. Limited budgets are mentioned by the fourth interviewee who states that, *"in terms of managing and designing parks, our budget is limited* (714) *when compared to other sectors in the municipality or city, due to our dependence on central government funding."* Furthermore, the head of the landscape department at the University of King Abdulaziz reports that, *"recently, our department was involved in a project for the municipality, and we realised that not only was the budget for the project really low, but also the staff within the municipality were not well-trained."* (711,712) Hence, this indicates that insufficient financial resources (714) are not only linked to a lack of experts (712) and well-trained employees (711), but also to a lack of collaboration with other departments and stakeholders.

Furthermore, the management of public open spaces also includes the provision of safety and security (704) for users. In terms of safety, there should be an allocated fund for improving the safety of open spaces, specifically for those not designed mainly for physical activities. In other words, these sites are more vulnerable because of their location in the city and their traditional and old design. This is highlighted by the fourth interviewee who states that, *"I believe in terms of safety* (704) *our main problem is old sites, as they were built for other purposes by unprofessional people without a plan or a proper landscape architect. These sites have so many safety issues that need to be managed."* While, the manager of Amira Park reports that, *"hopefully, we don't have safety issues on this site, but I have seen so many accidents on other sites such as car crashes on pathways because the sites are*

located so close to the main roads and there are no fences. Also, accidents with people clashing while riding bicycles on the walkway (719). We don't have the budget or make any money from the park, and some facilities need to be maintained". Resolving these issues requires both a sufficient budget and the provision of resources by the municipality, alongside thorough collaboration between all stakeholders, in order to increase safety by improving onsite facilities.

The management of public open spaces in Jeddah is dependent on central government funding, and as citizens do not pay tax, local taxes cannot be applied by managers to meet their needs. This also applies to providing security for antisocial behaviour (720) in these spaces, which is one of the main issues that needs to be managed. As previously mentioned, security (704) is vital for women, so that they are not harassed by men, as this issue contributes significantly to their reluctance to visit these spaces for physical activities. As the head of the Women in Sport Authority noted, *"security (704) is the main factor for women, which relates to the culture of this region. According to a recent survey, most of the women prefer not to visit open spaces, specifically those that are not designed for them, due to the lack of security. This issue needs to be managed and considered by all related departments, which definitely requires specified budgets."* Whilst, the Amira Park manager states that, *"we receive fewer complaints about security problems, which I believe relates to the design of this site and the few security wardens and kiosks we have."* This indicates that safety and security are linked to resource allocation (financial, human and related equipment), regulations and coordination between related departments in the municipality (701).

According to the responses collected from the interviews, the professionals and departments with responsibilities for designing, building and maintaining public open spaces are operated separately, and there is a lack of coordination and collaboration between them. As the head of the Parks Department confided, *"there is a lack of experts* (712) *and well-trained staff* (711) *in the municipality, and also it takes time to communicate with different departments."* This issue was reiterated by the fifth interviewee who stated that, *"in terms of designing our teamwork perfectly, the problem is poor collaboration and unqualified employees in other departments, such as building and maintenance."* This indicates that related departments in the municipality require efficient collaboration and coordination in their activities (701), but they also need to employ experts and qualified staff who have appropriate knowledge in designing, building and managing public open spaces.

In summary, the management of public open spaces suffers from fragmentation of responsibilities, insufficient financial resources, a lack of equipment and poor resource allocation and expertise. Furthermore, the management of these spaces is also impacted by a lack of coordination when organising resources, which can lead to poor levels of maintenance. The next section discusses other contributory factors that can influence the use of urban public open spaces for physical activity according to the practitioner's experiences.

5.5 Other Contribution Factors

There are various factors that affect people, especially women, in terms of visiting public open spaces. Responses gathered from the practitioners indicate the main factors that should be considered by both landscape architects and the municipality when designing and building new public open spaces for women. They include proximity, safety, security, privacy, accessibility, culture and regulations. A cognitive map of themes derived from the practitioners' interviews on 'Factors' is presented in Figure 5.5-1 below.

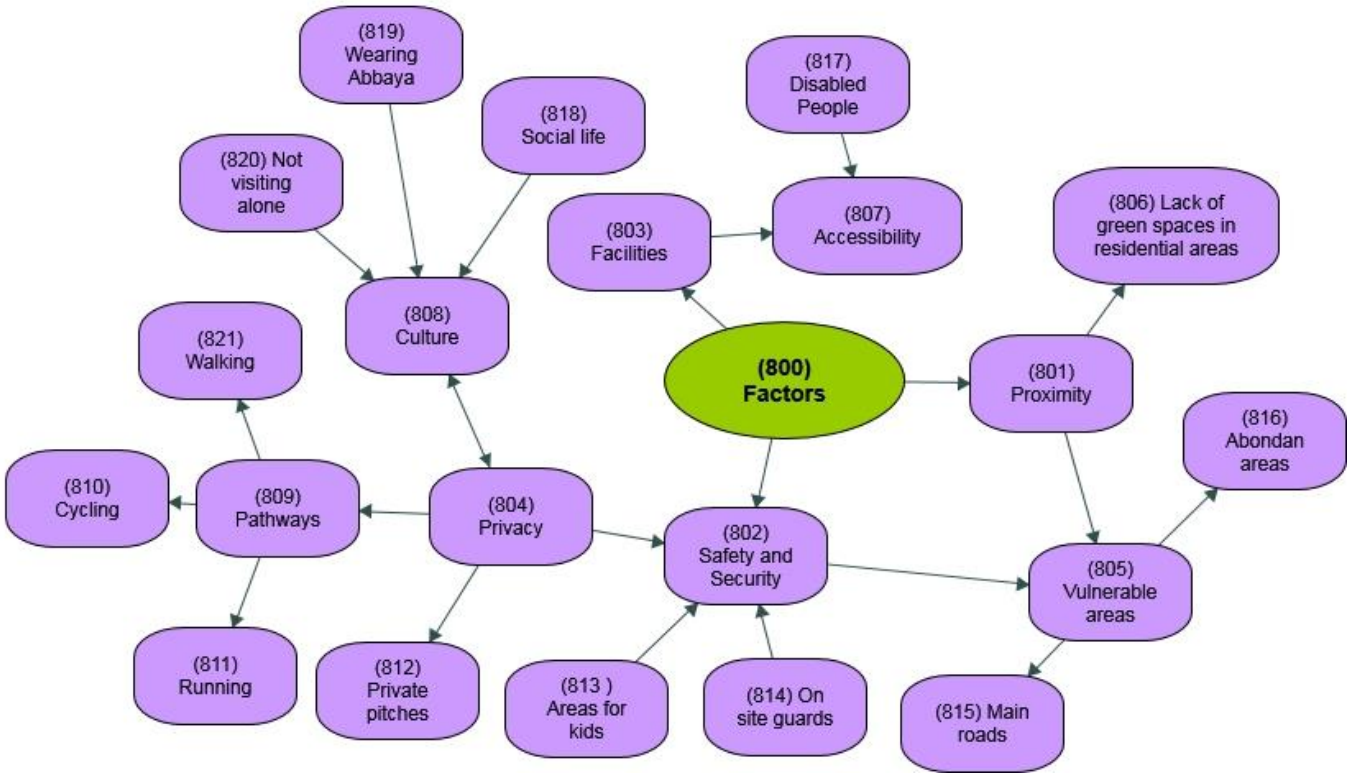


Figure 5.5-1 Cognitive map of factors as elicited from practitioners.

One factor that motivates people to visit public open spaces is the location of these spaces and whether they are in proximity (801) to residential areas. Some of these spaces are located far away from residential areas or they are in vulnerable areas (805), such as being near to main roads or abandoned zones. However, as the Amira Park manager discloses, *"the factor*

that distinguishes the Amira Park from others is its location (801)*, as it is close to residential buildings and green spaces* (806)*. These green spaces and the design of the park are important reasons for the high numbers of visitors to this site."* In contrast, the head of the Parks Department in Jeddah said that, *"unfortunately, most of the parks in Jeddah are either in abandoned areas* (816) *or in close proximity* (801) *to main roads* (815)*, which makes their users highly vulnerable* (805)*."* This point is also discussed by the first interviewee, who mentioned that, *"according to our recent survey, most of the women prefer not to visit vulnerable open spaces* (805)*, specifically those that are not designed for women, due to the lack of security* (802) *and their location."* This indicates that the proximity (801) of public open spaces to residential buildings will not only motivate visitors, but also increase their impression of being secure and safe (802) while visiting these spaces. Furthermore, this factor distinguishes open spaces that are mainly designed for women.

A further point is that most women visit these sites with their children, to both partake in physical activities and spend time with them. Therefore, having a protected area for children (813) in public open spaces is important and encourages visits to these sites. As the head of the Women in Sport Authority reports that, *"according to our survey in 2015 the number of women who are mothers and partake in physical activities is low, because they either don't have enough time, or they feel the public open spaces are unsafe for their children* (813)*. In addition, the younger generation uses these sites for other purposes, such as meditation and yoga, which require privacy."* Having privacy (804) is another factor that increases the impression of safety and security (802) for women, specifically the younger generation, who visit public open spaces mostly to do physical activities such as walking and running.

This is in line with the viewpoint of the second interviewee who said that, *"most of the visitors are of the younger generation, as this site is designed for women, with separate pathways* (809) *for different purposes."* A factor that impacts on privacy is that of other users, as the fourth interviewee reports that, *"in our monthly meetings with all the park managers, they have mentioned about receiving complaints from visitors regarding misbehaviour and the misuse of parks, sometimes they were asked by people whether they are allowed to barbeque on the sites."* This indicates that privacy (804) is important, as public open spaces are misused sometimes by people for other purposes, specifically playing football, having a picnic or cycling on a walkway. In this regard, considering private pitches (812) or separated pathways (809) for walking (821), running (811) and cycling (810) will enable more freedom, safety and security (802).

Another factor that impacts on women visiting public open spaces is culture (808). This is because according to Islamic culture, there are limitations which affect them taking part in physical activities, such as wearing Islamic clothes (abaya) (819) or being accompanied by relatives or friends (820). This is highlighted by the first interviewee who says that, *"because of our culture* (808)*, women must wear the abaya in public places* (819)*, specifically for partaking in physical activities, which limits their motions and is really difficult to exercise in when the weather is hot. Islamic sports clothes are more flexible, but they're not used by women. We should cooperate with the municipality in terms of regulations and encourage women to use them."* Adding that, "*women mostly don't visit public spaces alone* (820)*, because of the culture* (808) *so with the help of the municipality we should provide safety and privacy* (802) *to encourage them to visit*". This indicates that culture (808) is related to privacy (804), and so when designing and building open spaces, landscape designers and the municipality need to encourage more women from different age groups to visit these sites. Although, the head of the landscape department at King AbdulAziz University pointed out that, "*considering culture is important in designing public open spaces, as the social lives of people are different in different cities"*.

The concept of safety and security (802) is also linked to the provision of facilities for disabled people, which means making these sites more accessible, and having onsite guards (814) or security kiosks to prevent antisocial behaviour that can disturb women. As the fourth interviewee mentioned, "*we are not only considering the accessibility of disabled people in our new open spaces, but we're also improving those spaces that were ignored; however, this requires a good budget*." Adding that, "*harassment is not a new issue – we have received so many complaints from women who have been abused by men. We should provide security, but it needs an allocated budget to be provided by the municipality*". These issues require the cooperation of the municipality in terms of providing enough funding for these spaces to improve safety and security. It should be mentioned that considering all these factors will attract and motivate women to visit public open spaces and take part in physical activities. Thus, according to the practitioners and the findings of the previous three sections, existing urban public open spaces need to be improved with regards to facilities, policies, safety, and design.

5.6 Improvement

According to various factors elicited from practitioners, existing public open spaces need improvement for the purpose of partaking in physical activities. Responses from the

interviewees indicated that improvements of public open spaces can be achieved by addressing five main factors. They are regulations and collaboration, safety and security, increased awareness of the benefits of using public open spaces, enhanced facilities and employment of local landscape architects. These factors are linked together and improving them will help to motivate women. A cognitive map of themes derived from the practitioners' interviews on 'Improvement' is presented in the figure 5.6-1below.

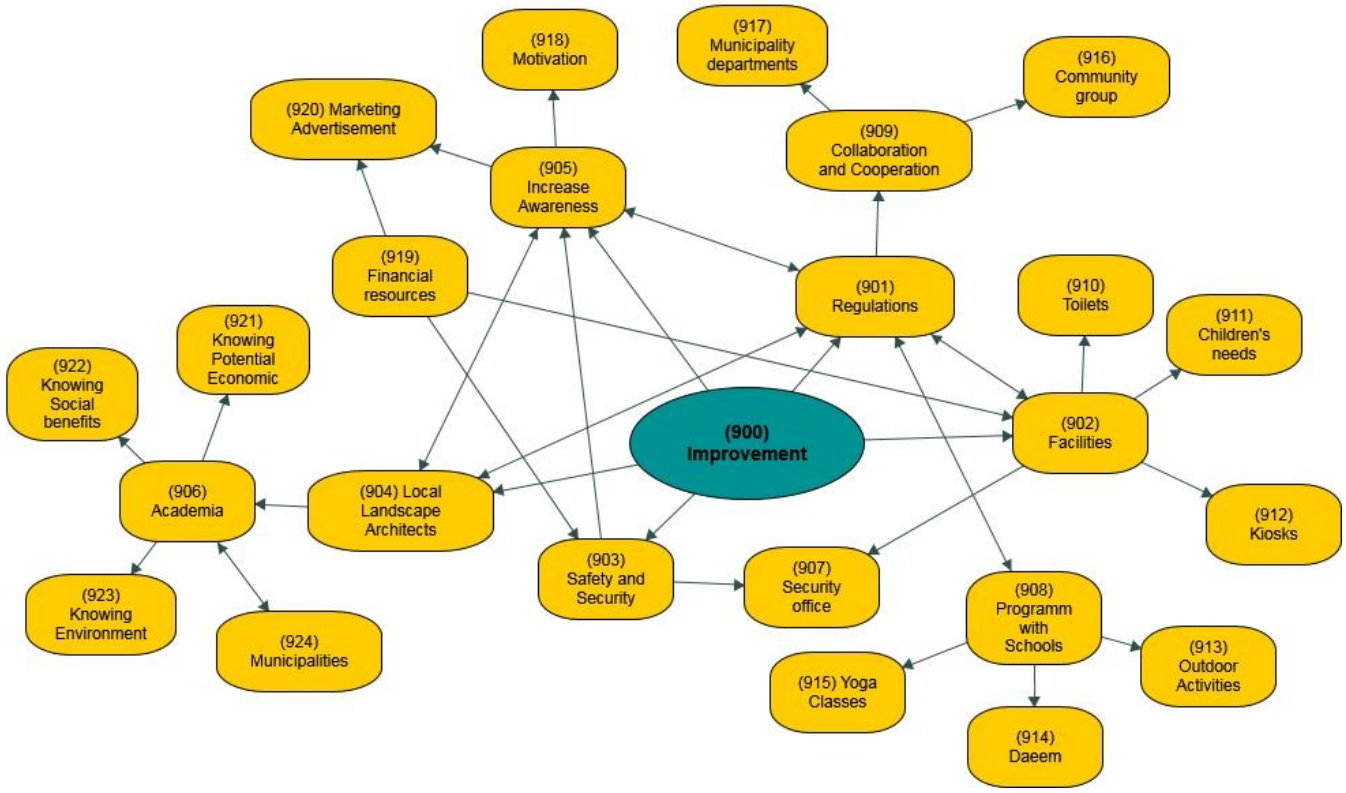


Figure 5.6-1 Cognitive map of improvement as elicited from practitioners.

One of the main factors that can motivate women to use public open spaces is improvement of the facilities (902) available in these spaces. As mentioned earlier, most of the existing open spaces have little or no equipment for physical activities, few clean toilets (910), random playgrounds for children (911) and no refreshment kiosks (912). As there are many mothers in Saudi Arabia, the rate of women who are reluctant to bring their children to these places is high, due to the substandard facilities available. This key concern as previously mentioned in section 6.2, can be recognised in the following figures and reasons why, *"... in our survey in 2015 of 10,000 Saudi citizens as a sample representative of the nation, only 13% of all participants were active and took any physical activity, among which only* ***21%*** *were women. They were so concerned about the* ***hygiene*** *and* ***cleanliness of sites*** *and complained about* ***the lack of safety for their children****."* This statement came from the head

of the Parks Department, who also stated that, *"we are aware of the need to improve facilities* (902), *but our budget is limited."* (919) Furthermore, resolving this matter requires both allocation of enough financial resources (919) by the municipality and collaboration at the management and decision-making level.

Moreover, antisocial behaviour is an issue that prevents women from visiting public open spaces, while provision of a security office at sites (907) would significantly decrease this antisocial behaviour and motivate women to use these spaces. This concept is championed by the Amira Park manager who said that, "*women are happy to visit this site, and one of the reasons is the security guards that we have here, although this does not happen at most sites in the city, which is the main reason for the high numbers of harassment complaints at the other sites*." Furthermore, another interviewee stated that, *"two main safety* (903) *challenges that we face are accidents and unrelated usage. We always have car crashes, and some people cycle and make trouble for those who are walking"*. This indicates that open spaces need to be safer, particularly in terms of privacy. In other words, some of these sites are too close to main roads and offer no protection, or they are used for other purposes, such as cycling, thereby increasing the possibility of accidents. This point was picked up by the head of the Parks Department who suggested that, *"we should work with the municipality to have policies for securing and protecting high-risk parks* (901)*, as well as extra money to do so in the annual budget."* (905) Ultimately, the improvement of safety and security (903) requires the establishment of regulations (901) and financial support (919) from the municipality.

One way of increasing awareness (905) of the benefits of partaking in physical activities and promoting these spaces is to provide social outdoor activities for women, and to advertise (920) them effectively. This should be considered by the municipality, as one interviewee indicates, "*there is a need for both physical and recreational activities to attract and motivate* (918) *women to use the parks, and we are working on a plan to promote these places to female schools. The cooperation of the municipality and the education ministry is important in order to boost the process."* (908) This indicates that the process of collaboration and the establishment of regulations at the municipality requires improvement. Activities could be in the form of programmes that are run in collaboration with schools (908), gyms, sport centres and communities (916). Or programmes that provide meditation and activity classes in public open spaces. This would require the establishment of new regulations at the municipality (901) along with departmental alliances and the allocation of

a budget, that not only creates such programmes but also advertises and promotes them. Furthermore, the municipality could collaborate with sponsors to promote public open spaces and advertise activity programmes run on these sites, which would motivate people to use these public open spaces for physical activities.

As mentioned in previous sections, the available open spaces have mostly been designed by Western architects, who were unfamiliar with the culture and environment of Jeddah. Hence, designing new public open spaces requires local landscape architects. A further interviewee elaborated on this concept by stating that, "*landscape architects are not being engaged in public open space projects, because decisionmakers at the municipality do not have sufficient understanding of landscape architecture, the patterns of use of these sites or the social behaviours of the city's residents*." Subsequently, this indicates the need for a collective effort between academia and the municipality to involve local landscape architects (904), because they are familiar with the environment (923), social benefits, behaviours (922) and the economies (921) of the different areas in the city. Thus, local landscape architects could potentially increase the number of visitors to public open spaces.

5.7 Summary

This chapter has presented the viewpoints of urban design and landscape architect practitioners in Jeddah City on both the socio-cultural behaviour of women using public open spaces and the factors that affect the design and management of these places. Findings from the five main categories are summarised below:

Users – The findings indicate that the main factors stopping women from using public open spaces are; security, safety and privacy, cultural background, low rate of visitors, lack of motivation and diversity.

Design - This term includes all the main factors that need to be considered by the designers of public open spaces, in order to be more attractive for users looking to take part in physical activity. The main factors raised by the interviewees are; non-cooperation within the municipality, insufficient local and landscape architects, disregard of users' requirements (safety, security, privacy, facilities, accessibility) and the lack of a feasibility study on the location of sites (distribution).

Management - In this research the term 'management' refers to all the factors that need to be considered by the stakeholders, in order to improve the management of public open spaces. The findings indicate that the following factors significantly impact on the management of public open spaces. These factors are; insufficient resources (financial, non-

financial, facilities, safety and security), poor maintenance, and a lack of cooperation and coordination within the municipality.

Other Contributory Factors - The main factors that should be considered by both landscape architects and the municipality when designing and providing new public open spaces for women are; proximity, safety, security and privacy, culture, regulations and accessibility.

Improvements - In this research the term 'Improvements' refers to the enhancement of existing public open spaces. In this regard, the main factors that are raised by interviewees are; regulations and collaboration, safety, security and privacy, increasing awareness of the benefits of using public open spaces, enhanced facilities and local landscape architects.

Synthesis of these categories reveals that they are related and have common factors, which are underlined. These factors can both affect the socio-cultural behaviour of women using public open spaces and enhance the design and management of these places. The main factors are cultural background, safety, security and privacy, motivation, regulations, cooperation and collaboration within the municipality, local landscape architects, and resources (financial, human, facilities). The next chapter will discuss the main findings of the previous two chapters and link it with chapter two (literature review) to propose contributive influential factors in the scope of this study (the use of public open spaces for female physical activity).

Chapter 6.

Social, Design, Identity characteristics of Public open spaces

6.1 Introduction

This chapter presents findings from the previous two analysis chapters and links them to the theory discussed in the literature review. The discussion demonstrates key findings of the research, in order to support the aim of the study. This explains how the research will improve the knowledge of both the landscape architecture and urban design fields by showing how the presented cases can be embedded into the Saudi Arabian context.

The research is based on data collected from fieldwork, in the form of semi-structured interviews, site observations, and a literature review. The case studies in Chapter 5 concentrated on the contexts of physical activity and the use of urban public open spaces, especially by women, at five sites in different neighbourhoods of Jeddah City. Noticeably, Jeddah presents a unique case study because it is considered a multicultural city as a result of being the gateway to Islam's holy cities, and so the proximity of Makkah and Al-Madinah make the City an attractive destination for millions of Muslims. In addition, the responses from the users and practitioners in the previous two chapters are considered, to articulate the discussion, and form a bridge between the literature review, case study analysis and the interview findings.

6.2 Attributes of Urban Public Open Space

Most of the literature in relation to urban public open spaces originates from studies carried out in Western countries, where patterns of use have been well documented. The key findings of this section vary as they focus on the patterns of use regarding Jeddah's public open spaces, their quality and the design of these spaces. This section helps to fill the gap of knowledge by observing and recording patterns of use and how these differ from Western contexts and culture. By addressing many factors, such as social, temporal aspects and a specific gender, this research shows a new form of urban public open spaces that are appearing and have been specifically designed for physical activity purposes in Jeddah. It is also important to mention the patterns of use of these spaces, to reflect the relationship between these spaces and physical activity.

6.2.1 Typology

The differences between urban public open spaces in different countries affects the patterns of use. When comparing urban public open space typology in both a Western and Middle

Eastern context, both Addas (2015) who presented six types of spaces in Jeddah and Dunnett et al. (2002) who defined 10 types of green public open spaces were used as points of reference. It is possible to apply certain types of space from the Western context, if the Jeddah context is known and includes social, cultural, environment, religious, climate and geographical location factors. In this study, two types of spaces used for physical activities by women were identified. The first type was pavement spaces, as defined by Addas in Figure 2.13-2 and the second was a new type of space suitable for physical activity, specifically for women. These include spaces designed for walking, such as the Al-Tahliah (case 1), Al-Rehab (case 2), Al-Basateen (case 4) and Al-Faisalyyah (case 5) sites. Because Jeddah is a unique city, this provides unique case studies that contribute new knowledge to the urban public open spaces' typology, that could resonate with other countries that have similar contexts.

In order to understand the use of urban public open spaces for physical activity, and how women perceive and utilize them, it was necessary to have a clear image of the space typology. In addition, it is important to consider a new type of space, which should consider physical activity as the main purpose of site visits, especially for women. However, the pavement category of public open spaces, as Addas (2015) classified, involves purely incidental sites, whereas Al-Tahliah (case 1) and Al-Rehab (case 2) are adopted sites in Jeddah, as mentioned in Chapter 5, Section 3, and this new type of design can be found around the world. Consequently, the findings of this study are classified as spaces that had been found and adopted by users for physical activity and were not incidental, which as classified by Addas (2015) includes roundabouts, road edges and tunnels. Like the non-designed sites that were introduced previously in Chapter 3, Section 1.9.

With regards to this new type of space, one interviewee gave an example of interactive design and a sense of place, in that a designer used new technology to encourage people to partake in physical activity. One example of this is the Nike LED running track, which is funded and supported by the Nike company as a service to the community (see Figure 6.2-1), and it shows how we need to stimulate the role of companies to provide this type of community service. As it is possible to import and accommodate such a facility within the Saudi context. Furthermore, as mentioned previously, urban public open spaces are linked to other attributes that could improve their use such as walkability, proximity, distribution, accessibility and size as will be discussed in the next sections.

Figure 6.2-1 Nike LED running track design

(sources: https://www.designboom.com/design/nike-unlimited-stadium-manila-worlds-first-led-running-track-05-08-2017/)

6.2.2 Walkability

Leslie et al. (2007) described walkability as a built environment that supports residents to walk for leisure and transportation purposes. In addition, Cauemberg et al. (2016) proved neighbourhood walkability can influence public health. The findings from this research indicate that most female users travel to public open spaces by car with drivers or with a male member of the family. This results from a lack of connectivity between homes and public open spaces and a lack of public open spaces close to residential areas. Other studies have shown how the association between walkability and density, and the diversity of neighbourhoods, has increased street connectivity and given more people the opportunity to walk (Ewing & Cervero, 2010; Grasser et al., 2013; Brian E Saelens & Handy, 2008; Van Holle et al., 2012). However, Jeddah's neighbourhoods have less connectivity between

public open spaces and residential areas, as the findings through observation of the case studies and interviewee feedback demonstrate. Moreover, walkability factors are not applicable in the Saudi context, because women in Saudi society are dependent on cars to travel anywhere, and as part of their culture they are not allowed to go out most of the time. This is also the result of other factors such as safety and pedestrian infrastructure, as mentioned by Lee & Moudon (2008).

6.2.3 Proximity

As mentioned previously, the proximity of public open spaces is an effective factor in physical activity. Therefore, Koohsari et al. (2013) argue that this should be considered when planning spaces in neighbourhoods, but mixed use and density also impact on the use of public open spaces and proximity. In addition, other studies have revealed that mixed land use and density can make people walk to parks, shops and nearby workplaces, again reflecting in health benefits (Forsyth, Oakes, Schmitz & Hearst, 2007; Lee & Moudon, 2006). In addition, a study by Kaczynski & Henderson (2007) shows that the proximity of recreational areas or amenities could influence physical activity participation. This research discovered that public open space proximity to a residential area is an important factor with regards to participating in physical activities. Despite the lack of public open spaces, street connectivity and pedestrian infrastructure such as crossing areas and good paved walkways, the women at some sites got there by walking, without using any other mode of transport. Moreover, some women in this study used sites close to their home because it saved on travelling time and they could therefore spend longer at the site. In the Jeddah context, proximity is not achieved by the existing sites because the distribution of the site and other issues such as size make these spaces unusable. The findings indicate that most respondents travelled to the sites by car but would like spaces closer to their home. Other respondents liked to travel and not use the closest space or park to their home, because certain attributes or features attracted them to a different site. As females in Saudi Arabia only started to drive cars in June 2017, not many currently drive, this is because it is a recent change and not everyone in the community has accepted it. This relates to the social and cultural background of Saudi society and it is important to note that something new in society will require more time to be accepted. Most women currently driving have learnt whilst living abroad and studying in Western countries. However, Saudi society and the people of Jeddah use private transport a great deal, because public transportation is so unreliable. This research shows

that proximity is a factor linked to the distribution of public open spaces and it could be affected by new rules and regulations addressed by the 2030 Saudi vision.

6.2.4 Distribution of public open spaces

Public open space locations are significant attributes of the built environment and equality of distribution is important so that all resident levels can use these spaces regardless of ethnicity, social economic groups and demographic needs (Boone, 2009; Ward Thompson, 2013). The findings show that the location of public open spaces is associated with women visiting them, because Saudi women may have difficulty accessing certain places as a result of transportation issues. However, the equality of distribution of public open spaces is also related to other factors and attributes, the absence of which could result in non or under use (such as lack of maintenance, facilities, accessibility and safety).

One of the issues that impacts on building new public open spaces is the availability of land, which can affect their distribution throughout city neighbourhoods. In Jeddah City, a major public open space is the waterfront, the length of which is around 12 km, divided into three areas. Many Jeddah residents use and visit it for various purposes, such as leisure, social interaction, walking and picnics. These multiple purposes and visits consist of users with different cultural backgrounds and patterns of use. Although some women visit this site, the location and its proximity limit the number of visits. In this research, the criteria for selection of a case study site (as mentioned in Chapter 3, Section 6), were density, availability and social economic status. For example, even though Amira Park is in a low-income neighbourhood, its presence has a positive influence on visits and raises physical activity levels within the park context.

6.2.5 Accessibility

One of the most essential aspects of the built environment is spatial accessibility, which can influence a users' decisions to walk within a neighbourhood (Alfonzo, 2005). Furthermore, Alfonzo and Boarnet (2008) indicate that accessibility depends on the physical environment, such as pedestrian infrastructure and networks, and the presence of public open spaces, (as mentioned in Chapter 2, Section 8.4), in that accessibility has an association with physical activities. Similarly, Wang et al. (2015) note that park accessibility depends on size, proximity, walkability, travelling time and methods, location, facilities and safety.

In this study, in order to explore how accessibility can be applied to the case studies, the interviewees were asked about the travel time from their home to the sites and how they

travelled to these public open spaces. The findings revealed that there is a strong relationship between accessibility and public open space visitation, in that distance from a female user's home influences the physical activity level.

Moreover, a significant finding of this research relates to the typology of the urban public open space. For instance, the Al-Tahliah (case 1) and Al-Rehab (case 2) sites have been designed and are based in a central island of road spaces. While the Al-Fayssaliyah (case 5) and Al-Bassateen (case 4) sites are classified as incidental roadside spaces. Whereas, Amira Park (case 3) is a new purpose-built female park, which is in an easily accessible location for residents. However, this typology of public open spaces varies from the Western literature because according to the findings, most users of public open spaces for physical activity travel to the sites by car, due to poor connectivity.

6.2.6 Size

The size of the urban public open space is associated with the physical activity level (Paquet et al., 2013). Furthermore, Akpinar (2016) suggests that the size of a public open space is connected to less stress, lower risk of cardio-metabolic disease, obesity and diabetes. Similarly, the finding of this research supported that users preferred longer paths and larger sites for walking and jogging either to improve their health by losing weight, to decrease or maintain their diabetes, to relieve stress, or to strengthen their heart muscles. The findings of this research also show that size attracts users and encourages high levels of walking (as mentioned in Chapter 4, Section 3.3.2). Moreover, other researchers argue that size and the form of the space make them more successful in terms of user numbers (William Hollingsworth Whyte, 1980). The respondents pointed out that the size of the space encouraged them to walk for longer and decreased rigidity and boredom.

However, Jeddah's public open spaces vary in size. The case studies in this research were measured according to data collected from Jeddah municipality, and their sizes related to the length of the walking trails. The key findings of this research reveal that the size of the walkways tend to be insufficient and there is a need to provide larger spaces for residents. Physical activity for women requires enough space to encourage exercise, and so a greater size can therefore improve the level (Cohen, 2010) of physical activity (Kaczynski et al., 2008) that takes place. In addition, the findings indicate that a large size is directly related to other factors such as privacy, time, facilities, accessibility and sense of place (as described in Chapter 7, Section 2.4).

6.3 Social Characteristics involved in using Public Urban Open Spaces

6.3.1 Safety

Safety in public open spaces can be defined in different ways. For example, Forsyth et al. (2007) describe safety as a situation in which residents fear little or no danger from crime, while other researchers link it with harassment (Burgess, 1995) or the maintenance or quality of a space, such as broken pavements, faulty night lights and poor cleanliness. On the other hand, Derr, Van Hecke & Esteban (2016) cite traffic levels surrounding urban public open spaces as a safety issue. In addition, MacNaghten (2000) argues that women are afraid of walking through wooded areas, although this is not applicable to the Jeddah context.

Another factor is the time of day, as women tend to avoid public open spaces at night alone because of safety issues, traditions or socio-cultural aspects. This research focused on female attitudes and patterns of use and the findings show that safety is one of the most important factors considered when visiting a public open space for leisure or physical activity. The responses indicated several issues related to safety, such as traffic close to the site, which was particularly dangerous when children were in attendance. As well as harassment from males and poor maintenance, as some sites are in the middle of streets without any fences or barriers and there are broken pavements that could cause an injury to users. Consequently, one popular suggestion is to employ security patrols at sites, in order to make users feel somewhat safer. Furthermore, dangerous road crossings to reach the sites were mentioned as an issue that the respondents struggle with, especially when there are no pedestrian traffic lights or crossing lines.

The safety issues in this research were recorded through the observation of five sites and the findings illustrated that a lack of safety in traffic, poor maintenance and harassment were reported at all sites, apart from Amira Park. As a female-only facility, that is a managed space (as mentioned in Chapter 4, Section 3) women felt safer and more relaxed, which encouraged them to visit and use the site for physical activity. In a comparison of the five case studies, Amira Park is the only one that fulfilled the safety needs, as the other sites did not have a dedicated entrance or provide the safety of a guard service on the gates.

6.3.2 Aesthetics

The aesthetic concept refers to a visual sense of beauty, such as the attractiveness of a place (Alfonzo, 2005). Measurements of aesthetics vary between users. For some it can mean the

attractiveness or beauty of a space for recreation, while for others it could be the general landscape, elements, site furniture, water features, architectural and historical elements, colours or statues (Alfonzo, 2005; Van Hecke, 2016; Derr, 2016). Regardless, aesthetics is a variable that affects people's use of public open spaces. Currently, urban design philosophy emphasises aesthetic aspects in design while neglecting the reality of other aspects such as social life or lifestyle.

As previously mentioned in Chapter 4 section 2.2, the Al-Rehab site (case 2) attracts people as a result of its rubberised pavement, while others visit Amira Park because the plants and greenery attract them and make the space beautiful. The research findings prove that the aesthetics of public open spaces can influence female physical activity. However, in the Jeddah context, especially since there are not many public open spaces that support women's physical activity, the main consideration is to have places that can support and encourage them to visit.

6.3.3 Privacy

Privacy in public open spaces has been defined as involving barriers between the public and the private realms (Bentley, 1999). This process can be facilitated by building elements such as entrances, changing levels and altering buildings (Carmona, 2010). Furthermore, providing front yards and backyards with a level of privacy (Bentely, 1999). Carmona (2010) argues that the public realm can be the setting for formal or informal public life and physical public realms are defined as being accessible and used as a space by the public, including external and internal spaces. Additionally, Carmona (2010) classifies public squares, parks, streets, highways, forests, lakes and parking lots as external public spaces. While, other authors define privacy as one of the four key functions of public realms (Tiesdell& Oc; Loukaitou-Sideris & Banerjee, 1998). Notably, Whyte (1980) reports that women are more distinct in their choices of public open spaces, since they need a greater level of privacy than men (Gehl, 2008).

In urban design, Carmona (2010) defines privacy as the "*selective control of access and of interaction*." The needs for privacy and interaction are different among individuals, cultures and societies. In Middle Eastern culture, people think of privacy as an important element in urban life, and it can be realised and explained in different ways, which include visual, behavioural and distance (Mazumdar & Mazumdar, 2004). Visual privacy relates to the interface between public and private realms (Carmona, 2010), especially the physical and

visual aspects and it is the visual form that is required in most urban public open spaces, especially in the social and cultural contexts prevalent in Saudi Arabia.

One of the key findings of this research indicates that for women, privacy is an important element when using public open spaces for physical activity. The women in Jeddah City use these sites mostly for walking and they do not use outdoor gym equipment (as mentioned in Chapter 4, Section 2). This is because of the socio-cultural context within Saudi Arabia, as women wear the abaya during their visits, therefore privacy is required by the users, so that there are convenient places to take off the abaya and enjoy the place and equipment without social restrictions. Users indicate that privacy levels are comparatively lacking for female users. As the seat locations and exposed views decrease the level of privacy, whereas migrant users may find this a less important issue than Saudi women. Nevertheless, privacy in this research is a unique factor, because the literature review does not mention it as one of the factors influencing the use of public open spaces for physical activity by women. This finding may therefore contribute to academic knowledge in this field. Differences in the socio-cultural backgrounds of previous studies may not give privacy the value or importance that it has in the Saudi context.

Every society has socio-cultural constructs that address the need for privacy (Bahammam, 1995). It is an essential need for all people in society and in any culture. It can be defined as culturally or spatially distinguished and the modes of expressions vary. Significantly, it is an important factor or concept in Islamic culture, and this can be found in both the cultural norms and recreational aspects. The forms of privacy can be different, in terms of territory, personal area and culture, but religion and culture play an important role in identifying the level of privacy in Saudi Arabia, in that its society has strict regulations guiding privacy, which in turn influences public behaviour. Women have been observed to seek a location that provides an appropriate level of privacy to carry out physical activity. Segregation between genders provides a more comfortable and suitable level of privacy for Saudi women for all life activities, while socio-cultural and religious factors influence perceptions and the patterns of public open space usage. Furthermore, women use public open spaces on a limited basis, while men use them freely.

6.3.4 Circadian (Daily) patterns of use

The findings of this research indicate that the amount of time spent by women in urban public open spaces depends on many factors, such as weather, location and facilities. The results show that most women visit the sites during weekdays rather than at weekends. Before

recognising the temporal use of urban public open spaces for physical activity in Jeddah, it is important to understand and clarify Saudis' daily life patterns. The first factor affecting the temporal use of urban public open spaces is the weather. During the summertime in Jeddah, the use of these spaces is rare, especially in the daytime. Most of the respondents use public open spaces for physical activity normally from late afternoon until midnight, due to the cooler temperatures. The second factor is related to religion. The majority of users consider the prayer time before visiting these places, and as a result of the religious requirements of Muslim society, women prefer to participate in physical activity between the prayer times, such as between Asr (late afternoon) and Maghrib Prayer (sunset), or Maghrib and Isha (between sunset and midnight) or after Isha Prayer. During prayer time, all shops and commercial businesses close temporarily. From this point of view, it is observed that women are different to men, because Allah permits females to not pray during their menstrual period and no body criticises them for walking and using the sites during these times. Although, for most users, the interviews and observations show that they used the open spaces for physical activity after Asr Prayer and they stayed for various amounts of time. Women at all the case study sites, except for Amira Park, usually spent between thirty and ninety minutes walking, jogging or doing some light exercise. Older women with diabetes did not stay for too long in the places where no toilets or sitting areas were provided. While, in Amira Park, they spent more time than at any other site because it is designed for many purposes such as, social, family, recreation and exercise.

Based on interviews and observation, Saudi women's use of public open spaces on weekends is not substantial. Most of the responses mentioned that the weekend, Ramadan and Eid, are for social and religious activities that do not allow women to visit public open spaces. So, any users on a weekend are migrants, who use open spaces in Jeddah for varying amounts of time, dependent on the weather, social life patterns, location and facilities.

The weather and seasonal differences influence the use of public open spaces. Jeddah's weather falls into two periods. Winter and spring offer the most moderate conditions and allow women to use urban public open spaces for physical activity and other purposes. This affects the time of use, as mentioned above, women normally attend between 4:00 pm and 11:00 pm. In the summer and autumn, however, visiting times change, and the sites start to fill up after Maghrib Prayer at around 7:00 pm. Indicating that the cooler time of the evening is preferred for practising physical activity.

In addition, users noted that when there are no plants, shaded structures or water features, they have no relief from the sun and the reflected heat bounces back from the pavements demonstrating the importance of including these features in a design. Notably, Amira Park users indicate that the planting regime in the park provides a good microclimate that makes it far more comfortable to exercise.

6.4 Design and maintenance of urban public open spaces

The design and maintenance of urban public open spaces have an influence on their use for physical activity (Tzoulas et al., 2007), in terms of adequate facilities (Takemi Sugiyama, Neuhaus, Cole, Giles-Corti, & Owen, 2012; Thompson, Curl, Aspinall, Alves, & Zuin, 2014) and good infrastructure (McCormack et al., 2010). The following sections discuss the design vs. incidental sites, as well as the management and maintenance of urban public open spaces.

6.4.1 Designed vs Incidental

The presence of incidental sites in Jeddah City is a common thread throughout this study; for instance, (as addressed in Chapter 3, Section 1.7 and Chapter 4, Section 2), the case study sites were categorised as designed and incidental (non-designed) spaces. The selected sites were all incidental except for Amira Park. According to the interviewees, the sites were constructed using leftover materials and without the input of landscape architects and urban designers. One of the key findings of this research illustrates that most public open spaces are not designed by specialists. The absence of specialist landscape architects and urban designers impacts on the satisfaction of the users, their processes and outcomes. In addition, the findings highlight the lack of cooperation between municipality departments.

Another significant finding of this research is related to the typology of incidental public open spaces (as mentioned in Chapter 5, Section 3.3.2). These types of public open spaces are different to those documented in the Western literature on the subject, as they are quite widespread across Saudi Arabia compared to Europe and North America.

In a comparison between the five selected case studies, all sites were used by the residents of Jeddah City despite ethnic differences. According to the interviewees, they preferred to use these locations as there are inadequate open spaces available that motivate women to exercise. Some mentioned it was because of the proximity and accessibility of the sites (as addressed in Chapter 5, Section 3.3.1). Also, they mentioned availability and the cultural and social contexts of using some public open spaces, as some users were having picnics or playing football, even though they are designed for walking.

6.4.2 Management and Maintenance

Jeddah's population is increasing as a result of the city's expansion. Therefore, there is a necessity to formulate a green infrastructure strategy across new urban areas. This research indicates that high-quality provision of urban public open spaces in new neighbourhoods across the city would potentially increase women's use for physical activity.

Levels of management and maintenance are associated with urban public open spaces being visited (Akpinar, 2016). The findings of this research reveal that the management of urban public open spaces in general is weak, while managed parks such as Amira Park are successful. As addressed in Chapter 4, Section 2.3, the park manager provides sets of activities for visitors, such as physical activity, running competitions, health awareness programmes, national days and Eid celebrations. Whereas, the locations controlled and under the management of Jeddah municipality, lack programmes that can motivate people to use spaces for physical activity.

In addition, another significant finding is that the management and maintenance is associated with visitor behaviour in urban public open spaces. As mentioned in Chapter 4, Section 3.3.1, there are policies and rules that can help to identify the patterns of use. Management can easily control the usage of sites, for instance opening times and activities, as well as issue fines for lack of respect of other users through vandalism or graffiti. Management could also contribute towards more women gaining access to physical activity, especially with the government supporting their rights.

Public open spaces need to be maintained in terms of user safety, and poor maintenance could affect the use of any facilities and the space itself. For example, a broken pavement could injure users (as mentioned in Chapter 5, Section 2.3). Also, inadequate lighting maintenance could impact on how much female users feel safe. However, in Jeddah's public open spaces, the municipality maintains city parks under the authority of the Public Utilities Department (Chapter 2, Section 15.4). Damage to equipment in the case study locations is not fixed, because the procedure for fixing and maintaining this equipment is not considered at the planning and design stages as they are classified as incidental sites. Also, equipment replacement is difficult as it requires new tender documents, while limited budgets make it hard to make these spaces more durable. Moreover, maintenance is not just limited to outdoor gyms, since pavements, lighting, planting, parking, toilets, cleaning and site furniture, are important considerations too. It has been noted that the quality and maintenance of urban public open spaces influences how often women visit for physical

activity (Rigolon, 2016). In addition, Ko & Hw (2017) report that the maintenance and management of public open spaces influences user satisfaction.

6.5 The multiple identities of public open spaces in Saudi Arabia

6.5.1 The park as a gendered space

The users of urban public open spaces are different genders and ages. The findings of this research, based on interviews and observations, indicate that females have lower access than men in Jeddah to urban public open spaces for physical activity. Krenichyn (2004) studied gender roles in an urban public open spaces context. In addition, she also demonstrated the fears that women might face in these locations, while the present research highlights the issue of gender, especially in terms of women, as mentioned in Chapter 2 section 8.11. This research finding supports Krenichyn's thoughts that personal safety is an essential fear for women (Krenichyn, 2006) .

Women in Saudi Arabia are different to Western or other Middle Eastern countries in terms of dress code. The common dress code in public is the black abaya and hijab. However, as mentioned in Chapter 3 sections 3.3.3 and 3.3.4, female users do not use outdoor gyms because the dress code restricts them. Also, women who exercise, such as walking, in the case study sites prefer to wear light-coloured abayas and hijabs, to decrease the risk of dark colours absorbing sunlight. Also, the respondents mentioned that women in Saudi communities avoid wearing attractive clothes during their physical activity and walk on the edge of the walkway, to avoid unwanted comments from males.

6.5.2 The park as a health-promoting space

The researcher reports that female users of urban public open spaces care for their health and try to be active and fit. As mentioned previously, (Chapter 1, Section 3) women in Saudi Arabia have higher rates of obesity and blood pressure than men. The research findings indicate that women use public open spaces for physical activity to improve their health, reduce stress and relax, which is similar to previous studies, where it is associated with reducing stress (Tyrvainen, 2014), preventing chronic disease (Chodozko, 2009), improving mental health (N, Morris, 2003), and reducing obesity and blood pressure (Dunn et al., 1999).

The findings of this research confirm that women use the case study sites for physical activity as a purpose of visit (Chapter 4, Section 3.2). Walking outside for 60 to 90 minutes will maintain the basic level of health for all ages according to UK physical activity guidelines

(Health, 2011). Moreover, organised activity that supports health and physical fitness increases the level of awareness in women and could positively impact on the lifestyle. For example, Amira Park organised many activities with the cooperation of the Health Ministry (see Chapter 4, Section 2.3), such as diabetes awareness programmes, breast cancer day and inviting athletic training groups to use the park. These kinds of activity might help to encourage users to partake in more physical activities. In addition, the literature review supports the notion that proximity and accessibility could motivate outdoor physical activity and improve physical wellbeing (Cummins, Stafford, Macintyre, Marmot, & Ellaway, 2005; Rigolon, 2016; B. E. Saelens, J. F. Sallis, & L. D. Frank, 2003; Wang et al., 2015).

Currently, with rapid change occurring through the development of Saudi Arabia and the Saudi Vision 2030 initiative, women are playing a greater role in the KSA's development. For instance, in June 2017, women were permitted for the first time to drive cars, while sports classes have been added to girls' school curriculums and new sports bachelor programmes have been introduced at Saudi universities. All these changes will help to improve the inactive lifestyles of females in Saudi Arabia. However, in terms of changes such as car driving, it could take up to ten years for acceptance by society. Nonetheless, these lifestyle changes will make women more active and give them more freedom to choose which site they visit.

6.5.3 The park as a religious space

As a country based on Sharia Islam religion, Saudi Arabia is involved in most aspects of behaviour or affairs of society. The main pillar of Islamic religion is prayer, and so Muslims pray five times every day, without exclusions and without delay, except for menstruating women. Before Muslims pray, they need to wash their hands, face, arms and feet (known as Wudoo). Prayer times are different between cities and according to geographical location. All commercial activities are influenced by prayer time and all shops, malls, restaurants, cafés and other services close accordingly. According to observations and interviews, the designed sites provide rugs for men to pray in the middle of the pathway (see Chapter 4, Sections 2.1) while ignoring the rights of women to have a semi-private space in which to pray. The research findings suggest that public open spaces do not provide appropriate places for women to pray, and no facilities for Wudoo, which in turn could influence visiting times, in that they visit between 4:00 pm and 10:00 pm, or later, during which time there are two sets of prayers.

Other religious activities that impact on women participating in physical activity are Ramadan and Eid time. During the Ramadan month, all Muslims fast from Fajar (dawn/before sunrise) until Maghrib (sunset). Whilst fasting, Muslims are not allowed to eat or drink, and women usually prepare the Iftar foods during the day, before Maghrib. As such, only foreign users and non-Muslims visit the sites at this time. In some very rare cases, women will use the spaces between 10:00 pm and 2:00 am.

6.6 Social interactions and connections in public open spaces

Social connections or interactions refer to situations in which people meet and talk with one another and form new relationships (Ko & HW, 2017). Evidence from previous studies shows that social interactions help to maintain relationships between neighbours and familiar strangers (Cattel et al., 2007). In the United Kingdom, for instance, it is rare for people to start a simple interaction in a public open space based in an urban area by smiling and introducing themselves (Cattel et al., 2007). Similarly, the ways in which women use public spaces in Jeddah limit social interaction, because the purpose of their visit is normally just to walk and take part in some exercises. A recent study identified that social connections and interactions are associated with elderly users (Ko & HW, 2017). Creating a friendly social space is associated with the physical formation of the built environment context as the result of a deeper understanding of users' needs, behaviour, perspectives, and interactions within the social context (Marshall, 2009). Furthermore, social interactions in public open spaces show how individual users merge within the space (Peters, 2010).

The findings reveal that social interaction occurs more often in groups; for instance, groups of up to 16 walk together (Chapter 4, Section 3) and use vacant land to do yoga and other exercises by surrounding their workout area with cars, allowing more privacy and members to interact with each other. According to the interviews, this number will soon reach 30 ladies. While this could be an unusual case, there is another group called the Jeddah Runners, consisting of male and female migrants who meet two to three times a week at the waterfront of Jeddah. According to Addas (2015), there are positive social interactions between migrant families who visit public open spaces for leisure and recreation.

A further example is Amira Park, which offers a good range of social interactions for users, as it allows them to gather and meet. This improves the mental health of users, and Forest Research (2010) reports that public open spaces provide a good opportunity for social

interaction, inclusion and community cohesion. Users of Amira Park use it as a social place, because their houses do not have backyards, and the size of their homes makes it difficult to meet with any great number of neighbours or friends (see Chapter 4, Section 2.2). Most of the park's users are migrant women (as shown in Table 4-2). Addas (2015) explains that migrants use urban public open spaces for social purposes, classified into four categories: interaction with friends and family, other migrant users, people with the same nationality and Saudi users. However, the findings of this research reveal different uses for the public open spaces in the case studies. As it has been noted that migrants spend more time in public open spaces for leisure purposes rather than social interaction.

Jeddah city has migrant workers who come from the Middle East, east Asia, and Western countries such as the USA and the UK, with different cultural, social and religious backgrounds. Migrant workers from different countries bring new ideas and experiences from their society and culture. Non-Muslim migrant workers usually live in protected communities and have less social interaction with Saudi residents because of security issues that are required by their governments (Addas, 2015). In Jeddah, the urban public open spaces that are used by women, are only visited for the purpose of physical activity without social interaction between strangers. Public open spaces are used by users from different cultural background and not specific for Saudi women. The migrant users are use the spaces with respecting the social and traditional life of Saudi society.

In contrast, the female group of 16 who gather and do their exercise together as mentioned above, is an example of how physical activity can promote and encourage social interaction. This group contains female members who are from different cultural and religious backgrounds such as the Philippines and the UK. Therefore, organised activities and fitness groups could also enhance social interaction between migrants from different religious backgrounds and Saudi women. Thus, encouraging integration and a sense of belonging.

The findings of this research show that interaction between families and friends is the most common type of social gathering in public open spaces for women who are involved in physical activity. In addition, previous studies demonstrate that urban public open spaces are an ideal place for social interaction and establishing new friendships and networks (Cattell et al.,2006).

6.7 Place attachment and a sense of place

According to the literature review, a place of attachment is an emotional feeling that connects a person and a place (Addas, 2015). This could be the result of personal or meaningful experiences that happen to the users during their visit. Other studies describe place attachment as the relationship between people and their environment (Scannell and Gifford, 2010). It has three dimensions, namely place, person and process, and as previously described (see Chapter 2, section 8.9) these dimensions are linked in any transactional theory, when seeking to understand environmental human relationships.

The findings of this research indicate that place attachment for women using public open spaces for physical activity is not associated with visiting the places for physical activity. In Chapter 3, Section 2.4, the interviews and observations revealed a single case of place attachment for one user who recounted an emotional meaning with part of the site, because her friend had been killed by a car while exercising. Some respondents declared that the spaces were not old enough for them to have any emotional contact with them. In addition, users indicated that the use of urban public open spaces in Jeddah for physical activity purposes, especially for women, depends on the availability of the place and not on place attachment, design or affordability.

A sense of place is recognised through the five senses, which are smell, touch, hearing, sight and taste (Lynch, 1960), as they allow one to understand one's environment. In addition, a sense of place is seen to exist in the human interpretation of the physical environment (Jorgensen & Stedman, 2001). For instance, visual observation depends on space, distance, colours, shapes, textural, contrast gradients (Carmon, 2010), closure, openness, orientations and continuity (Lynch, 1960), while other senses provide more experience through touching, hearing and smelling. A sense of place is created simply by paying attention to the proper design and placement of the public area (Duany et al., 1991). Lynch (1960) notes that sense can be interpreted in many different forms, such as sense of proximity, anxiety, balance and wellbeing, emotional security, equality, motion, arrival, nearness, interconnectedness, spatial and community. The findings of this research suggest that respondents gauge their sense of feeling about a place in a spontaneous manner. In Chapter 5, people express places in terms of expansiveness, length, whether there are soft pavements, or it is safe or unsafe, all of which reflects a users' sense of place.

6.8 Summary

This chapter has discussed several patterns related to female use of public open spaces for physical activity in Jeddah. These findings support the aims of this study by exploring how females use designed and non-designed (incidental) public spaces for physical activity in the Saudi Arabian urban context. In addition, the findings address associations between factors that influence the use of these sites for physical activity. This chapter has also examined the notion that improved planning and design of urban public open spaces for physical activity would help to improve women's health in Saudi Arabia. These findings examine the provision of these spaces and the needs of landscape elements, such as safety, privacy, accessibility, proximity and management which could improve their quality.

The attributes consist of six elements that could help women visit urban public open spaces for physical activity. Public open space typology is one of the most significant factors that identifies the use of these spaces. As mentioned in section 2.1, typology has been categorised in a study by Addas (2015), as either incidental or design sites. Whereas, the findings reveal that the incidental design in this study has a different meaning to Addas's definitions. In this research, incidental sites mean spaces that have not been designed and instead have been adopted by users such as pedestrian walkways, vacant lands, and spaces for physical activity use. Walkability is the second factor that has been discussed and could influence people's health (Caumberg et al., 2016). Most female users travel to urban public open spaces by car in Jeddah, either with drivers or other family male member, due to lack of accessibility and connectivity between the spaces and the neighbourhoods. Additionally, proximity of public open spaces is an effective factor in physical activity, as close distance to residential areas with easy access allows more women to visit and take part in physical activity. This element reveals a significant key finding that could improve the existing distribution of urban public open spaces. The case study sites identify both a lack of connectivity and a lack of accessibility, which influences the use of urban public open spaces. Finally, the last attribute discussed is the size of the spaces. The size of public open spaces could identify the pattern of use. As the larger the space, the more services and activities could be provided that encourage people to use the site. Also, this would be as an attractive element for those looking for longer paths for jogging or walks. Furthermore, the findings indicate that public open space size is related to time spent on the site.

The second classification of the factors are social characteristic elements that influence the use of urban public open spaces. This includes safety, aesthetics, privacy, circadian pattern

of use, design and maintenance. The most crucial factors that women require are safety and privacy. They would like to have a safe place without having to worry about traffic, children's safety, and harassments. Moreover, users are attracted to spaces because of the aesthetics of the place and whether it has significant aesthetic elements, that would encourage them to use the site. The findings of the research agree with those of Van Hecke (2016) who believes that aesthetics affect how people use public open spaces. In addition, this chapter mentioned the element of time and explained the importance of prayer time for Muslims and how these spaces need to have prayer spaces available for both males and female. Time elements are linked to religious factors that could influence the daily patterns of use. For example, Ramadan impacts significantly on the amount of use especially for women as mentioned in section 6.5.3. Thus, all these factors lead to a good space, although it is essential to have decent maintenance to encourage people to use them. The following chapter presents relationship validation factors by using the method of Interpretive Structure Modelling (ISM).

Chapter 7.

Validating Finding Using Interpretive Structure Modelling

7.1 Introduction

After collecting and discussing the research findings, it is necessary to test them. Factors and attributes of using urban public open spaces are clearly identified by the end of the literature review (chapter 2) and finding chapters (4,5,6). The following sections present the framework development and validation approaches employed to test the scope of implications for urban public design on the physical activities of women in Saudi Arabia by evaluating a number of identified factors. The factors relationship framework conducted to introduce the significant factor that influence women use of urban public open spaces for physical activity and give hierarchy level for all factors. This presents as a relation diagrams present the importance of these factors.

This research used a qualitative methods approach, gathering data from "semi-structured interviews" with 24 participants and five experts, as mentioned in Chapter 3. The researcher used the "interpretive structural modelling" (ISM) method to develop a framework and validate the work. In addition, findings from the qualitative data "focus group" (including two experienced academics and two project managers) were used to validate the findings. The selection of the experts was based on their background and experience in the field. The choose of two academic experience occurred as their relative background and background in research in the urban public open spaces in Jeddah. Other two were based on their experience in design and practical work in Jeddah municipality.

Conducting ISM will give the research a value by and contribution of knowledge of factors relationship and hierarchy levels that influence the use of public open spaces for women in specific for women. This method have not been conducted by the researcher in the Saudi Arabia before and this give this research an opportunity to have a good contribution about influenced factors and improve public open spaces.

7.2 ISM Methodology

Interpretive structural modelling (ISM) is used to identify and summarise relationships among specific variables defining a problem or an issue (Sage, 1977; Warfield, 1974). The Interpretive structural modelling (ISM) is a qualitative technique for identifying and sorting relationships among factors that could describe an implementation process for a matter or a decision-making criterion to solve a problem (Sage,1977). The objective of ISM is to identify and rank these variables, to establish the interrelationship between them and to discuss the managerial

implications of the research. ISM development needs to follow a process to achieve these aims. The following actions explain the process in more detail:

1- Create a focus group for ISM. The selected member should have a sound base of knowledge, skills and a background related to the research topic.
2- Identify the factors affecting women's use of urban public open spaces for physical activity (Table 7.2-1).
3- Develop the structural self-interaction matrix (SSIM) for the factors, as shown in Table 8.). the matrix is checked for transitivity. The transitivity of the contextual relation is a basic assumption made in ISM. It states that if variable A is assist to achieve variable B and variable B assist to achieve variable C, then A is necessarily achieve and related to variable C.
4- Develop a reachability matrix from the SSIM in Table 7.2-4.
5- Partition the reachability matrix obtained in step 3 into a different level.
6- Form the factor's hierarchies by converted to ISM model (Figure 7.2-2).
7- Finally, the ISM model developed in Step 7is checked for theoretical inconsistencies and if so, then corrections are made. All the above steps are shown in (Figure 7.2-1).

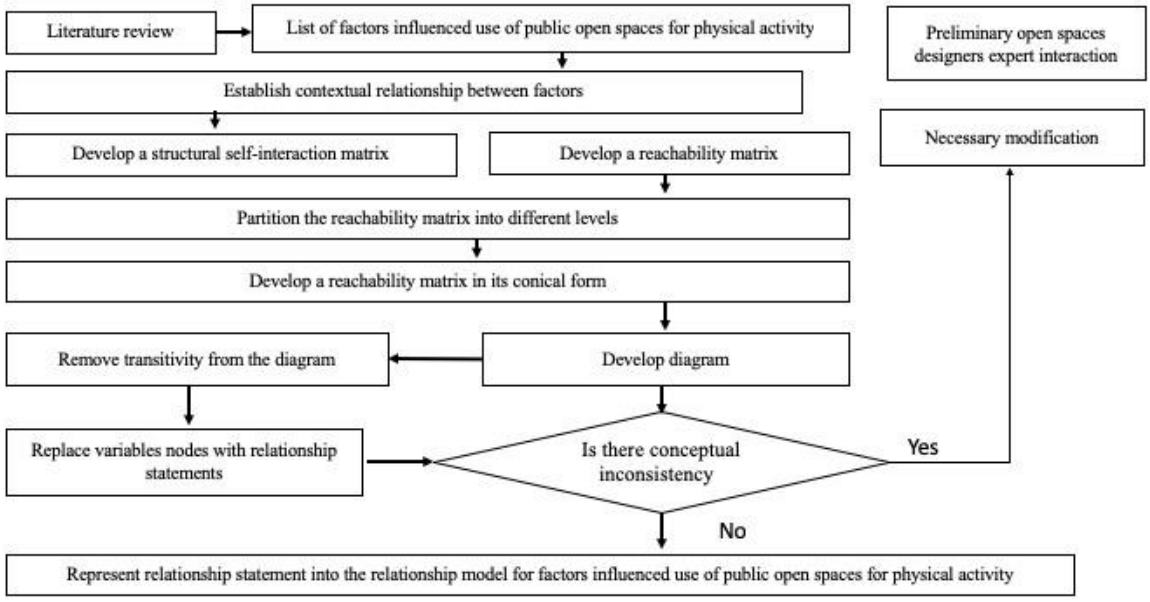


Figure 7.2-1 ISM process diagram

Upon reviewing physical activity in public open spaces, via the literature and the opinions of the interviewees, 15 important variables were identified. The discussion was used to develop a relationship matrix, later used in the development of an ISM model. The main objective of

this section is to rank the variables, in order to determine the most powerful examples influencing women's use of urban public open spaces.

7.2.1 Structural Self-Interaction Matrix

The 15 items below affect women's use of urban public open spaces for physical activity in Saudi Arabia. The factors have been gathering through reviewing literature and two factors from findings of this research which are privacy and religion.

Table 7.2-1 List of factors

No.	Items
1	Proximity
2	Walkability
3	Accessibility
4	Distribution
5	Aesthetics
6	Quality of public open spaces
7	Time
8	Religion
9	Place attachment/sense of place
10	Safety/security
11	Size
12	Privacy
13	Gender
14	Health
15	Management & maintenance

All possible pairs of factors were selected from the above in Table (7.2-1) and the experts were requested to classify the relationship between two factors as either:

- V (item i will assist to achieve item j); Proximity (item 1) assist to achieve Walkability (item2). This mean that proximity rises the walkability. Consequently, the relationship between item 1 and item 4 is characterised by "V" in the SSIM.

- A (item j will be achieved by item i); Walkability (item 2) can be achieved by accessibility (item 3). This mean that accessibility would encourage the walkability. Therefore, the relationship between item 2 and item 3 characterised by " A" in the SSIM

- X (items i and j will assist to achieve one another); accessibility (item 3) and place attachment/sense of place (item 9) assist to achieve each other. Therefore, the relationship between item 3 and item 9 characterised by "X" in the SSIM

- O (items i and j are unrelated); there is no relationship exist between distribution of public open spaces (item 4) and safety & security (item 10) and consequently the relationship between these items characterised by "O" in the SSIM.

The following table (7.2-2) explains the use of the symbols V, A, X and O in the SSIM as explained previously and according to expert's evaluation for these factors' relationship.

Table 7.2-2 Structural Self-Interaction Matrix (SSIM).

j / ***i***		**Proximity**	**Walkability**	**Accessibility**	**Distribution of POS**	**Aesthetics**	**Quality of POS**	**Time**	**Religion**	**Place attachment/sense of place**	**Safety/security**	**Size**	**Privacy**	**Gender**	**Health**	**Management & maintenance**
	Items #	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Proximity	**1**	X	V	V	V	0	X	V	0	V	V	0	V	V	V	V
Walkability	**2**		X	A	A	X	V	V	0	V	A	A	A	0	X	A
Accessibility	**3**			X	A	V	V	V	0	X	X	A	0	0	X	X
Distribution of POS	**4**				X	0	V	V	0	V	0	0	V	V	X	V
Aesthetics	**5**					X	V	V	X	X	V	0	0	0	A	V
Quality of POS	**6**						X	A	X	X	X	0	A	0	X	A
Time	**7**							X	0	x	x	A	0	0	V	X
Religion	**8**								X	V	0	A	0	0	0	V
Place attachment	**9**									X	X	0	A	A	V	X
Safety/security	**10**										X	A	X	X	X	X
Size	**11**											X	X	0	V	V
Privacy	**12**												X	X	0	0
Gender	**13**													X	0	0
Health	**14**														X	A
Management & maintenance	**15**															X

Table 7.2-3 Structural Self-Interaction Matrix (Initial and Final)

	Items #	Proximity	Walkability	Accessibility	Distribution of POS	Aesthetics	Quality of POS	Time	Religion	Place attachment/sense of place	Safety/security	Size	Privacy	Gender	Health	Management & maintenance
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Proximity	**1**	X	V	V	V	0	X	V	0	V	V	0	V	V	V	V
Walkability	**2**	A	X	A	A	X	V	V	0	V	A	A	A	0	X	A
Accessibility	**3**	A	V	X	A	V	V	V	0	X	X	A	0	0	X	X
Distribution of POS	**4**	A	V	V	X	0	V	V	0	V	0	0	V	V	X	V
Aesthetics	**5**	0	X	A	0	X	V	V	X	X	V	0	0	0	A	V
Quality of POS	**6**	X	A	A	A	A	X	A	X	X	X	0	A	0	X	A
Time	**7**	A	A	A	A	A	V	X	0	x	x	A	0	0	V	X
Religion	**8**	0	0	0	0	X	X	0	X	V	0	A	0	0	0	V
Place attachment	**9**	A	A	X	A	X	X	X	A	X	X	0	A	A	V	X
Safety/security	**10**	A	V	X	0	A	X	X	0	X	X	A	X	X	X	X
Size	**11**	0	V	V	0	0	0	V	V	0	V	X	X	0	V	V
Privacy	**12**	A	V	0	A	0	V	0	0	V	X	X	X	X	0	0
Gender	**13**	A	0	0	A	0	0	0	0	V	X	0	X	X	0	0
Health	**14**	A	X	X	X	V	x	A	0	A	X	A	0	0	X	A
Management & maintenance	**15**	A	V	X	A	A	V	X	A	X	X	A	0	0	V	X

7.2.2 Reachability Matrix

The structural self-interaction matrix (initial and final) is converted into a reachability matrix by assigning a 0 or 1 value to the original codes V, A, X and O, based on the following guidelines (Attri, Dev, & Sharma, 2013):

- If the (i, j) entry in the SSIM is V, then the (i, j) entry in the reachability matrix converts to 1 and the (j, i) entry converts 0.
- If the (i, j) entry in the SSIM is A, then the (i, j) entry in the reachability matrix converts to 0 and the (j, i) entry converts to 1.
- If the (i, j) entry in the SSIM is X, then the (i, j) entry in the reachability matrix converts to 1 and the (j, i) entry converts to 1.
- If the (i, j) entry in the SSIM is O, then the (i, j) entry in the reachability matrix converts to 0 and the (j, i) entry converts to 0.

Table 7.2-4 Initial Reachability Matrix

Items#		**Proximity**	**Walkability**	**Accessibility**	**Distribution of POS**	**Aesthetics**	**Quality of POS**	**Time**	**Religion**	**Place attachment/sense of**	**Safety/security**	**Size**	**Privacy**	**Gender**	**Health**	**Management & maintenance**
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Proximity	**1**	1	1	1	1	0	1	1	0	1	1	0	1	1	1	1
Walkability	**2**	0	1	0	0	1	1	1	0	1	0	0	0	0	1	0
Accessibility	**3**	0	1	1	0	1	1	1	0	1	1	0	0	0	1	1
Distribution of POS	**4**	0	1	1	1	0	1	1	0	1	0	0	1	1	1	1
Aesthetics	**5**	0	1	0	0	1	1	1	1	1	1	0	0	0	0	1
Quality of POS	**6**	1	0	0	0	0	1	0	1	1	1	0	0	0	1	0
Time	**7**	0	0	0	0	0	1	1	0	1	1	0	0	0	1	1
Religion	**8**	0	0	0	0	1	1	0	1	1	0	0	0	0	0	1
Place attachment	**9**	0	0	1	0	1	1	1	0	1	1	0	0	0	1	1
Safety/security	**10**	0	1	1	0	0	1	1	0	1	1	0	1	1	1	1
Size	**11**	0	1	1	0	0	0	1	1	0	1	1	1	0	1	1
Privacy	**12**	0	1	0	0	0	1	0	0	1	1	1	1	1	0	0
Gender	**13**	0	0	0	0	0	0	0	0	1	1	0	1	1	0	0
Health	**14**	0	1	1	1	1	1	0	0	0	1	0	0	0	1	0
Management & maintenance	**15**	0	1	1	0	0	1	1	0	1	1	0	0	0	1	1

By giving the values in the reachability matrix, the final reachability matrix is extended, as shown in Table 7.2-5). This table presents the driving and dependence powers of all items. The driving power is the sum of the items' numbers for each item in a row that might assist to achieve, whereas dependence is the sum of item numbers in a column that might assist to achieve it. These drivers are used in MICMAC analysis as described in section 7.2.5. MICMAC analysis allows for the categorisation of the items into four groups: autonomous, dependent, linkage and independent.

Table 7.2-5 Final reachability matrix

Items#		**Proximity**	**Walkability**	**Accessibility**	**Distribution of POS**	**Aesthetics**	**Quality of POS**	**Time**	**Religion**	**Place attachment/**	**Safety/security**	**Size**	**Privacy**	**Gender**	**Health**	**Management & maintenance**	**Driving power**
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	
Proximity	**1**	1	1	1	1	0	1	1	0	1	1	0	1	1	1	1	**12**
Walkability	**2**	0	1	0	0	1	1	1	0	1	0	0	0	0	1	0	**6**
Accessibility	**3**	0	1	1	0	1	1	1	0	1	1	0	0	0	1	1	**9**
Distribution of POS	**4**	0	1	1	1	0	1	1	0	1	0	0	1	1	1	1	**10**
Aesthetics	**5**	0	1	0	0	1	1	1	1	1	1	0	0	0	0	1	**8**
Quality of POS	**6**	1	0	0	0	0	1	0	1	1	1	0	0	0	1	0	**6**
Time	**7**	0	0	0	0	0	1	1	0	1	1	0	0	0	1	1	**6**
Religion	**8**	0	0	0	0	1	1	0	1	1	0	0	0	0	0	1	**5**
Place attachment	**9**	0	0	1	0	1	1	1	0	1	1	0	0	0	1	1	**8**
Safety/security	**10**	0	1	1	0	0	1	1	0	1	1	0	1	1	1	1	**10**
Size	**11**	0	1	1	0	0	0	1	1	0	1	1	1	0	1	1	**9**
Privacy	**12**	0	1	0	0	0	1	0	0	1	1	1	1	1	0	0	**7**
Gender	**13**	0	0	0	0	0	0	0	0	1	1	0	1	1	0	0	**4**
Health	**14**	0	1	1	1	1	1	0	0	0	1	0	0	0	1	0	**7**
Management & Main.	**15**	0	1	1	0	0	1	1	0	1	1	0	0	0	1	1	**8**
Dependence power		**2**	**10**	**8**	**3**	**6**	**12**	**10**	**4**	**13**	**12**	**2**	**6**	**5**	**11**	**10**	

7.2.3 Factor levels

After finalising the previous step in the reachability matrix, this section outlines the next step used to identify the level. This step depends on using the reachability and antecedent set for each item found in the final reachability matrix (Table 7.2-5). Warfield (1974) identified that the "reachability set" for each item includes the items itself and other items that they might assist to achieve. In addition, he indicated that the "antecedent set" includes the item itself and the other items that might assist in achieving it. Later, the intersection of these sets is resulting for all items. Those items whose the reachability and intersection sets are alike are positioned on the top level of the ISM hierarchy, as they will not assist in achieving any other item above their own level. After identifying the top-level element, it is removed from the other remaining items.

From Table 7.2-6, it is perceived that the "Quality of Urban Public open spaces" (item 6) is on level 1 and is positioned at the top of the ISM model. The same procedure is then repeated on all items until the levels are found, as shown in Table 7.2-7. In addition, the level identification for all items helps to construct the diagram for the final ISM model (Figure 8-1).

Table 7.2-6 Partition of reachability matrix

Items #	Reachability set	Antecedent set	Interaction	Level
1	1,2,3,4,6,7,9,10,12,13,14,15	1,6	1,6	
2	2,5,6,7,9,14	1,2,3,4,5,10,11,12,14,15	2,5,14	
3	2,3,5,6,7,9,10,14,15	1,3,4,9,10,11,14,15	3,9,10,14,15	
4	2,3,4,6,7,9,12,13,14,15	1,4,14	4,14	
5	2,5,6,7,8,9,10,15	2,3,5.8,9,14	2,5,8,9	
6	**1,6,8,9,10,14**	**1,2,3,4,5,6,7,8,9,10,12,14,15**	**1,6,8,9,10,14**	**1**
7	6,7,9,10,14,15	1,2,3,4,5,7,9,10,11,15	7,9,10,15	
8	5,6,8,9,15	5,6,8,11	5,6,8	
9	3,5,6,7,9,10,14,15	1,2,3,4,5,6,7,8,9,10,12,13,15	3,5,6,7,9,10,15	
10	2,3,6,7,9,10,12,13,14,15	1,3,5,6,7,9,10,11,12,13,14,15	3,6,7,9,10,12,13,14,15	
11	2,3,7,8,10,11,12,14,15	11,12	11,12	
12	2,6,9,10,11,12,13	1,4,10,11,12,13	10,11,12,13	
13	9,10,12,13	1,4,10,12,13	10,12,13	
14	2,3,4,5,10,14	1,2,3,4,6,7,9,10,11,14,15	2,3,4,10,14	
15	2,3,6,7,9,10,14,15	1,3,4,5,7,8,9,10,11,15	3,7,9,10,15	

According to Table 7.2-6, “Proximity” was one of the most effective factors mentioned by the focus group as well as the interviewees. This was followed by “Privacy,” which, on the other hand, came on the fifth level with “Health.” Moreover, “Accessibility, aesthetics, distribution of urban public open spaces, safety/security, size and management and maintenance” came in third place, as they were important to the focus group, whereas “walkability, religion” came in the third level followed by “time, place attachment and sense of place and gender) on the second level.

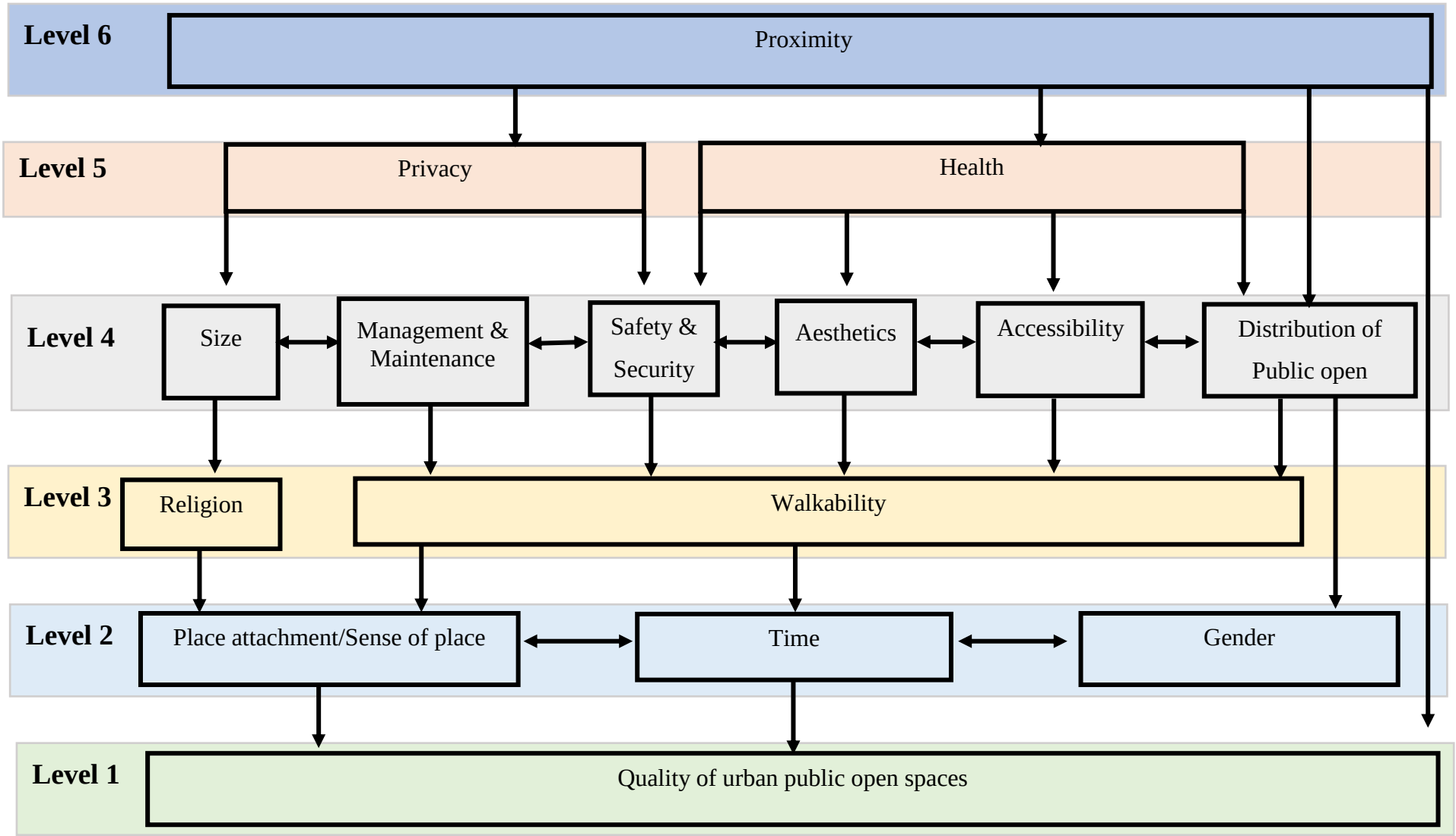
Table 7.2-7 Item levels

Level	Items Number	Items
1	6	Quality of urban public open spaces
2	7	Time
	9	Place Attachment/Sense of Place
	13	Gender
3	2	Walkability
	8	Religion
4	3	Accessibility
	4	Distribution of urban public open spaces
	5	Aesthetics
	10	Safety/security
	11	Size
	15	Management and Maintenance
5	14	Health
	12	Privacy
6	1	Proximity

7.2.4 Building an ISM-Based Model

The structural model was created from the final reachability matrix. The diagram (7.2-1) shows the relationships between factors according to the experts' focus group evaluation for the (i) and (j) relationship. Furthermore, the following diagram (7.2-1) represents six levels that are considered important implications of urban public open space design on women's physical activity in Saudi Arabia. The ISM illustrates that the key aspect that is considered of extreme importance, at level 6, is "Proximity." This item has a significant effect on "Privacy" and "Health." In addition, Proximity consider distribution of urban public open spaces and helps to gain more access in the city. The arrows direction based on the SSIM matrix by considering each factor that affecting each other.

Figure 7.2-2 Final ISM model



Users are interested in visiting sites for improving their health, but they need privacy to do different types of physical activity in public open spaces. Privacy effects on size and safety of the places by reducing security issues faced by women in public open spaces. Health is linked with aesthetics, distribution of UPOS, safety levels and the accessibility of the POS. More accessibility to public open spaces means healthier people, and more spaces achieve more accessibility. Moreover, the beauty and the aesthetic of the space lead to good mental health and enhance the user mode and relief from stress.

Level 4 shows that "safety and security, size, distribution of UPOS, accessibility, aesthetics, management and maintenance" help and encourage walkability in urban areas. A single relation between size and religion shows the importance of size in providing spaces for religious practices. Further importance could be given to place attachment/sense of place, time and gender the affected by walkability and religion with correlates with distribution of UPOS and gender. However, all factors on level two affect the quality of urban public open spaces. Proximity has a significant association with distribution of urban public open spaces, which means they affect each other.

Generally, the success of urban public open spaces will come from concentrating on the significant items and working through to the least important ones. Improvement and updating through all the levels is required to ensure a successful strategy for the effective use of urban public open spaces in Saudi Arabia. However, this model created according to Jeddah context and it could apply for the similar city context. Whereas another city needs to build up a new model for each city.

7.2.5 MICMAC Analysis – Classification of Achievement Items

MICMAC (impact matrix cross-reference multiplication applied to a classification) analysis is based on the driving power and the dependence power of variables. Implantation variables are classified into four groups, which Attri (2013) suggested as autonomous, dependent, linkage and independent factors. Figure 8-2 presents them as follows.

I. Autonomous factors:

Autonomous factors reflect weak drive power and weak dependence power. They are relatively disconnected from the system, with which they have few links, which may be very strong. Items considered in the autonomous category are:

8	Religion
12	Privacy
13	Gender

II. **Dependent factors:** These factors have weak drive power but strong dependence power. This factor includes:

2	Walkability	14	Health
7	Time	6	Quality of UPOS

III. **Linkage factors:** Four variables have been classified as linkage factors that have strong drive power as well as strong dependence power. These factors are unstable, as any action on these factors will have an effect on the others as well as a feedback effect on themselves.

3	Accessibility	10	Safety & Security
9	Place attachment/ Sense of place	15	Management & Maintenance

IV. **Independent factors:** These factors have strong drive power but weak dependence power. A factor with a very strong drive power, called the 'key factor', is identified in the category of independent or linkage factors.

1	Proximity	5	Aesthetics
4	Distribution of UPOS	11	Size

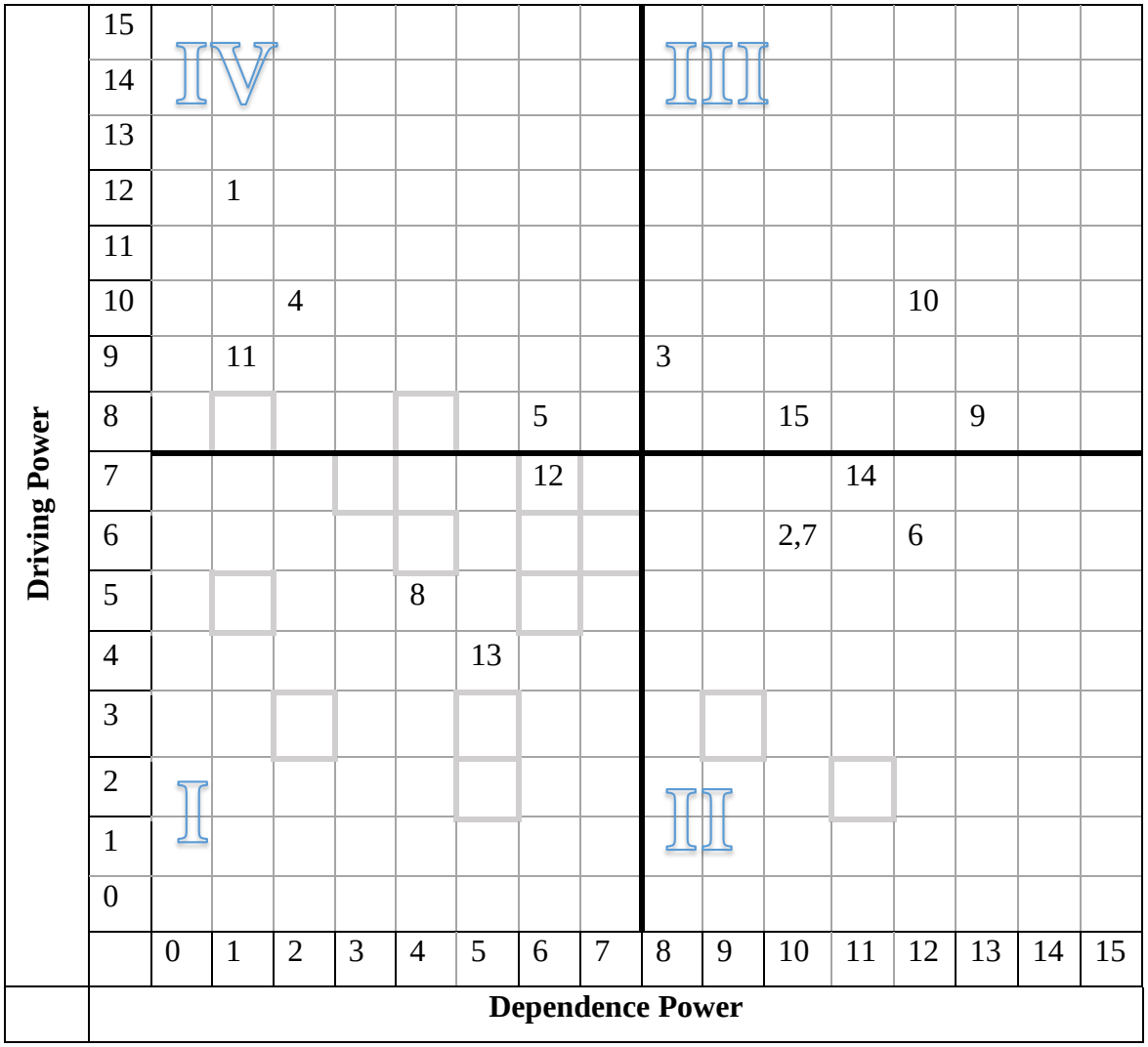


Figure (8-2) Classification of variables (MICMAC Analysis)

7.3 Summary

This chapter has presented the development structural self-interaction matrix, based on coordination with four experts from academia and municipality project managers, to classify the relationship between two variable items by using the symbols V, A, X and O as present in section 7.2.1. The outcome of this chapter is the framework development in Figure 7.2-1 in section 7.2.4, the rationale for which is also explained. Another focus group evaluated the result through discussion. This reflected the experts' classification of the relationships between the items in the first meeting, which supported the credibility of the framework and the rationale underlying it. The last step in the process classified the factors to four group: autonomous, dependent, linkage, and independent factors.

Factors relationship framework give this research a significant finding of factors level that influence women use of public open spaces for physical activity. As presented in diagram (7.2-1) the proximity has been evaluated as crucial factors that affect women visitation. The key

finding of this framework helps to achieve a successful open space for women by considering the factors that affect women use. Additionally, this will help to improve the design of public open spaces by considering these factors and deal with it depend on the level hierarchy. According to the framework as shown in figure 7.2-1 the quality of urban public open spaces achieved by other factors that assist to improve the public open spaces. The following chapter presents the recommendation of this study based on the finding of chapters 4,5,6, and 7.

Chapter 8. **Conclusion and Recommendations**

8.1 Introduction

Previously, the researchers identified the attributes and main issues that influence the use of urban public open spaces, such as; design, policies, and management. This chapter presents recommendations for improvement of public open space planning, design and management, that will facilitate the physical activity of female users in Jeddah City. The recommendations focus on four areas: planning, design, management, and improvement of the municipality's role to progress the existing and future provision of urban public open spaces. Significant key findings related to the research aim are presented in this chapter. In addition, this research presented forms of urban public open spaces that are used for physical activity in Jeddah and it illustrated the patterns of use. This was based on five case studies being conducted at different sites located in the city. This data collection method approach included semi-structured interviews with users and practitioners, site observations, documentation and focus groups.

8.2 Summary of the findings

The findings of this research are divided into practical and theoretical sections according to the research objectives. The main aim of this study was to investigate the provision of urban public open spaces for physical activity and develop design recommendations for urban designers and landscape architects, in order to improve their use for women in Jeddah, Saudi Arabia.

To identify urban public open spaces that provide physical activity for women in Jeddah

The first objective focused on identifying urban public open spaces that provide physical activity for women in Jeddah. The researcher identified these sites according to the criteria (see Chapter 3, Section 1-7) by examining the neighbourhood's population, density, area, and availability of urban public open spaces. The sites were classified into two categories; designed and incidental sites. It was observed that people use the waterfront, parks, sidewalks and middle island walkways to meet their physical activity needs. The literature review (see Chapter 2, Section 11) is clear about the typology of urban public open spaces in Jeddah. Public open spaces created in the last decade provide places for walking and linear spaces that provide good distances for walking and running are preferred by users. According to the Western literature, people use green corridors, forests, woodland and parks for physical activities, but in Saudi Arabia these spaces are not considered as types of urban public open spaces because of their context, geographical location, design and nature. In Saudi Arabia, the women's social and

cultural norms determine the type of urban public open spaces they use, but current designs of existing public spaces fail to meet quality standards; nonetheless, they still provide access to users.

The insufficient and inadequate quality of urban public open spaces is a significant issue worsened by an absence of landscape architects, urban designers, and professionals in the field. The spaces that are incidental or adopted in this study, such as case study 1 and 2 were originally designed by road engineers, which has influenced the use of space and the pattern of public open space design in Jeddah city. There are not enough urban public open spaces as previously mentioned (see Chapter 6, Section 2.2). According to the World Health Organisation standard, the recommended minimum is $8m^2$ per person (Emmanuel,2009; Thundiyil, 2003). Whereas, the provision of public open spaces per person in Jeddah is less than $2m^2$ for both genders. This could encourage specialists and experts in the field to design spaces with good quality and provide better places because the city is already lower than the global average.

The second objective was observation and the recording of female activity in order to improve the use of urban public open spaces. The objectives were carried out by conducting site visits, recording the patterns of use on maps and taking note of female behaviour. This research enhances knowledge on usage patterns in relation to urban public open spaces used by women to partake in physical activity. The findings show that movement and activity are not restricted by law, but by cultural norms. Segregation between genders and the time spent at the site give less opportunity for women to visit and use public open spaces. The experiences of both genders are different in terms of social space in Islamic countries and are influenced by religion (Ilahi, 2010).

This research presented residents' use of incidental and designed spaces that allow them to take part in exercise, such as walking and jogging. The findings support previous studies on public open spaces and physical activity within the context of western countries, but also offer variable levels regarding understanding of the social, temporal and functional dimensions that are different for many Middle Eastern countries, particularly the Saudi city of Jeddah. Also, this study identified differences between the patterns of use of urban public open spaces for physical activity and those of the European and North American literature. Different public open space typology could influence this observation. Thus, the findings of Tyrvainen (2014), regarding visits to green spaces having a positive impact on mental health, is challenged in the Saudi Arabian context, because the country does not have the same green public open spaces available, which in turn could affect the relationship between health and public open spaces.

The socio-cultural behaviour of women using urban public open spaces in Saudi Arabia is influenced by Sharia Islam, in that they must wear an abaya in public. In addition, another key factor is that female users often visit public open spaces with male family members. Due to a lack of public transportation and less access to cars, women find that the proximity of public open spaces encourages them to use these locations for physical activity. Social interaction in public open spaces between users is limited, because the selected designed case studies was designed for a specific pattern of use, namely physical activity. While, Amira Park is different from the other four sites, as women appear more active socially.

Social and cultural norms influence female use of public open spaces, by not permitting certain types of physical activities such as yoga but walking is encouraged. In addition, socio-cultural norms mean that women require privacy in outdoor gyms, to exercise. One of the significant findings in this research is that privacy has not been mentioned in previous literature related to physical activity and public open spaces This factor significantly influences the use of these sites and is unique to this research. Moreover, privacy could be applied to specific spaces to enhance and encourage the use of urban public open spaces for physical activity.

This could also be applicable for other Arab, Middle Eastern, and Western countries that have multicultural contexts by studying the factors and investigating the importance of privacy and security on female physical activity. According to Cubbage and Smith (2009), security could reduce fear and enhance experiences in public open spaces, while privacy could help to protect women from male harassment and sexual attacks, that occur globally and are not just specific to the Saudi Context.

Another issue related to socio-cultural norms is the time spent at a site. Women are often not permitted to go out alone late at night for exercise, due to safety and security issues. In addition, the females' traditional societal role in the house and responsibility for family, minimises the amount of time available to visit public open spaces, particularly during Ramadan and Eid, when women are significantly involved in religious and social tasks.

Professional practices and the design and management of public open spaces

Many previous studies that have researched the use of public open spaces, reflect the value of design on social life. Despite this, the users tend to have minimal or no opportunity to share their requirements with the designers and decision makers in planning and design departments, which ultimately results in failure to meet the users' needs. Carroll (2014) suggests that different government sectors need to collaborate with each other and with the community, by

involving municipalities, sports authorities, ministries, urban designers and sports groups, in order to promote, encourage and improve physical activity amongst female residents.

Poor maintenance is a significant issue that increases antisocial behaviour and creates neglected areas, that encourage graffiti and vandalism (O'Brian & Tabbush, 2008). This research indicates a concern about the maintenance of incidental spaces, that have poor pavements, graffiti and lighting issues. Furthermore, the findings of the research are of potential value to practitioners in Saudi Arabia. As the needs of users should be considered when making decisions about new urban public open space provision at the planning, design and management level. Nevertheless, this study has determined that it does not currently happen. This also has implications for the landscape design of urban public open spaces in Jeddah, as landscaped design features, including hardscape and softscape features, have failed to meet users' needs. For example, the provision of toilets, kiosks and drinking water fountains are simple amenities that could improve the site visit for users, especially for those accompanied with children, the elderly or diabetics. Additionally, planners and designers should consider and address non-designed sites that people use for physical activities, such as sidewalks surrounding a large area like universities, where users face danger from traffic and inadequate facilities.

Following the presentation of the findings, Interpretive Structural Modelling (ISM) has been applied to achieve the aim of this research, by enabling the organisation of several factors that impact on female physical activity in public open spaces in Jeddah. The developed framework presented in Chapter 7, Section 2.4, was facilitated by experts, in order to evaluate the relationships between factors using the symbols V, A, X and O. The experts were asked to discuss the items and determine the relationship between them. The researcher completed the ISM process after acquiring the relationship evaluation from a focus group and then developing the framework. After that, the focus group met again and were asked to validate the framework, which was ordered by the importance of its items: proximity, privacy, health, size, management and maintenance, safety and security, aesthetics, accessibility, distribution of public open spaces, religion, walkability, place attachment and sense of place, time, gender and the quality of urban public open spaces. Classification of the relationships between the factors was discussed and confirmed by the experts from the first meeting. The focus group meeting validated the framework and its underlying rationale.

Finally, the main aim of this research was to investigate the provision of urban public open spaces for physical activity and develop design recommendations for urban designers and landscape architects, in order to improve the use of physical activity in urban public open spaces for women in Jeddah, Saudi Arabia. The last objective will achieve this aim according to the findings, discussion and the framework developed to validate the process of the research. The recommendations are divided into two sections. The first section is related to practical aspects and the second to academia and researchers.

8.3 Recommendations for practice

In order to improve urban public open spaces, practitioners should consider two levels of recommendations. The first must cover the planning of urban public open spaces, while the second should concentrate on design.

8.3.1 Recommendation to improve the planning of urban public open spaces

Hierarchy of public open spaces

It is necessary to provide different scales of urban public open spaces throughout the city, to attain a level of hierarchy. A lack of public open spaces within neighbourhoods that are available for residents during weekdays is an observation of this research. Public open spaces can be hierarchically considered to be on the regional, district and neighbourhood scales, and could provide different types of activities (Thompson, 2008). Providing a good public open space may be fundamental for the reduction of many health problems such as diabetes, obesity and stress, as well as minimising the overuse of certain spaces. In addition, it can help or encourage women and their children to get together and take part in physical activity within their neighbourhoods, which in turn will reduce car dependency.

Presently, the typology of urban public open spaces in Jeddah is wide-ranging, as mentioned previously (see Chapter 2, Section 11) (Addas, 2014; Alhajaj, 2014). Previous studies have reported that Jeddah's waterfront (Corniche) is the main park in the city in terms of size. During the data collection stage of this research, 3 km of the Corniche had been closed for development for more than three years, which meant that people had had to find and use other sites for physical activity and other recreational purposes. This study selected spaces used solely for physical activities. The Al-Tahlia and Al-Rehab sites provide a good functional space, but both

have planning issues such as being in the centre of a road, but they could be improved by increasing the connectivity and accessibility of the sites within the surrounding area.

This study has established that women use spaces that are near to their home and which provide enough distance for walking and jogging. They use spaces that are not designed and are therefore incidental spaces created by users. These spaces are sidewalks located in different parts of the city and are missing the fundamental elements of landscape design. In addition, the distribution of incidental and designed spaces could improve accessibility to urban public open space, if they were developed well and met users' needs. These incidental spaces do not however, receive adequate attention from the municipality, whereas improving them would enhance the use of these sites alongside other spaces. Notably, city planners must pay attention to planning and designing neighbourhood parks by providing different ranges of active spaces, that allow users to exercise, whilst considering the factors that affect female use of public open spaces. Improvements to the size of public open spaces would encourage residents to be more active. In addition, planners must consider that the city needs to have a diverse range of public open spaces, especially parks that have large walking trails that meander through green areas, thus avoiding the linear spaces presented in most of the Jeddah spaces.

Provision of POS

As mentioned in Chapter 1, Jeddah is below average in terms of providing public open spaces (around $2m^2$ per person), while the World Health Organisation recommends $8m^2$ per person. This reflects the idea that Jeddah needs to have more spaces to meet people's needs, especially with the current expansion of the city in terms of buildings and population increase.

Public open spaces are part of a city's infrastructure and network, and so achieving good provision in this regard requires an effective process of planning and design. This study has revealed an absent process by which these areas are realised, with insufficient and inadequately designed public open spaces for women to participate in physical activity. A hierarchy of public open spaces will lead to improvements in the connectivity and improve the green areas of the city, which in turn will make these locations more accessible for physical activity. This research suggests that an efficient linkage between public open spaces and neighbourhoods would enhance the image of the city, reduce car dependency and encourage more walking. It has been observed in the case studies (1,2,3) that the planning and distribution of urban public open spaces are isolated from the urban context, with diminished connectivity to surrounding buildings or contexts. It is therefore necessary to create a public open space system in the city which would encourage more use and accessibility. Planners and designers should consider the

important factors listed in the framework herein, which would help to enhance the provision of public open space for female physical activity.

In addition, having a public open space system with a hierarchy of spaces and creating green spaces would help enhance the streetscape within the city context, which is currently neglected. This study finds that people use sidewalks and walkways located to the side or in the middle of the roads. Easy connectivity and accessibility are associated with good street planning and design. During the interviews, the respondents mentioned that there is a lack of accessibility and connectivity to spaces resulting in danger when crossing, especially as they are extremely busy roads. Women use the pavements despite their poor quality, but only because there is, "*no other place to go*". The width and length of sidewalks must be considered by planners and designers. The case studies show a wide range of walkway widths, ranging from 40 cm to 10 m, which were designed without considering the required standards. Furthermore, Jeddah municipality replaces curb stones on sidewalks and central reservations with cast-in-place curbs that go beyond design standards. The height of these curbs is between 25 and 30 cm, while the standard is 15 cm. This creates access difficulties for elderly and disabled users, as well as pooling collected rainwater, as the edges are raised above pavement height, thus stopping drainage. The reason that these curbs are used is that they control traffic by not allowing cars to cut across pavements during traffic jams.

It is suggested that there should be easy access for all age groups, that encourages visits to public open spaces and that there is provision of good health awareness and programmes for physical activities. Furthermore, a new curb stone dimension needs to be specifically designed and it is recommended that they have the same international standards. As the new curb stones currently being used are not efficient and during rainy weather, they hold rainwater, which exasperates the situation and makes crossing even more difficult. Moreover, climate is an important factor that should be considered when planning and designing the walkways. The field of urban design and landscape provides a range of shading techniques such as using trees or structures to protect users and give them shade during their walk. Therefore, trees, shade structures, distance between trees, tree pits and planting designs should all be considered. As these improvements to the micro-climate of the spaces could encourage users to visit in the summer months, by offering shade and providing water features. In addition, planting in these spaces could help to reduce the heat, provide good shade and offer wind shelter. The selection of plants species could also improve the aesthetics and attractiveness of the space. Ultimately,

the findings of this research and the recommendations based on it, have been identified as of great potential value to practitioners in Saudi Arabia. As the users' needs should be considered when making decisions about new urban public open space provision at the planning, design and management levels.

8.3.2 Recommendations to improve the design of urban public open spaces

Previous studies, as well as the current one, have identified poor examples of landscape design. The absence of a landscape architect role in Jeddah municipality has resulted in poor spatial design. Therefore, it is vital that designers of open spaces consider female users' socio-cultural needs, as well as the factors of health, accessibility, aesthetics, proximity, landscape element, safety and security, size and sense of place.

Social-Cultural Needs

Many studies have found that public open spaces are associated with social interaction and connection (see Section 2.4.3) (Van Herzele and Wiedemann, 2003; Warde et al., 2004; Parr, 2007). Hence, it is important that designers are aware of the social interactions that can occur during the use of public open spaces for physical activity, since the findings presented herein show that social interaction can involve gatherings with neighbours to go for a walk or indulge in different types of exercise. Designers should engage with the community and observe the social elements of each neighbourhood, to provide appropriate activities that are suitable for local users. Accordingly, designs within the city should be unique to each new site and dependent on the social structure of the local area. Also, it is necessary to provide and consider outdoor activities during the planning and design procedure.

Successful public open spaces achieve the users' needs. The findings of this research focused on factors that impact on how women exercise in public open spaces, with proximity, privacy and health being important elements. Car dependence makes proximity a particularly high requirement for women, while privacy is necessary because of the conservative religious background of the nation (see Chapter 6, Section 3.2). Furthermore, privacy could be applied in some urban public open spaces to encourage physical activity. In addition, it is recommended that there are more neighbourhood parks in areas that are highly populated. In future studies, researchers need to consider women driving as a new challenge, that could influence the use of urban public open spaces in either a good or bad way. In addition, improvement of connectivity

within existing public open spaces with that of the surrounding neighbourhoods could encourage and attract more people to use these spaces.

Additionally, another issue related to socio-cultural norms is the time that is spent at sites. In daily life, women are not permitted to go out alone late at night for exercise, due to safety and security issues. In addition, the female's traditional societal role in the house and responsibility for the family, minimises the amount of time available to visit public open spaces, especially during Ramadan and Eid, when women become highly involved in religious and social tasks. While time management of spaces could help to identify spaces or some days of the week more suitable for female use.

Accessibility

Physical accessibility is an important consideration in any design process. The findings of this research have illustrated that there is currently poor access to existing spaces due to locations in central road reservations and a disconnection with the local context. Women users often travel to open spaces in cars driven by male family members, thus making accessibility to any site similar, and it is essential to deal with all users' needs, such as those of the disabled, the elderly and mothers with prams and pushchairs. Providing a drop-off area with special parking and sloped ramps would therefore be beneficial, as well as dropping the height of the curb stones. This would enable easier access for many user groups whilst increasing the diversity of inclusive spaces. It is recommended that pedestrian infrastructure is developed, such as pavements or sidewalks, along with connectivity to the surrounding neighbourhood areas, this may increase walking for either recreational or transport purposes and enhance accessibility to the sites.

Aesthetics of public open spaces design

Aesthetics are in the third level of top factors that influence how women use public open spaces for physical activity as illustrated in the framework (see Chapter 7, Section 2.4). Designers in municipalities and the private sector should consider aesthetics, to attract people to different open spaces located in urban residential contexts. This design must not just consider the open space itself, but also the locations used, as mentioned in this study. Aesthetic quality is associated with visual quality, and many factors can enhance visual quality such as enclosures, freestanding sculptures, public monuments and the proportional shape of a space in relation to the surrounding buildings (Carmona, Heath et al., 2003). Amira Park is a good example of an enclosure that provides perfect views of green spaces and is appreciated by the users. The

experience of this park can help to improve other spaces by providing privacy, safety, facilities, management and activities. One significant benefit to Amira park is that the management have an office on site, where they can manage the park and user behaviour. Also, it is useful to have a coordinator for spaces, who can arrange activities for women such as running and national days, breast cancer awareness days, as well as distribute information about the benefits of physical activity.

The aesthetic concept can be achieved by using different landscape elements like plants, water features, sculptures, colourful hardscapes and the natural topography of the space. Existing linear spaces like the Al-Tahliah and Al-Rehab sites are surrounded by heavy traffic and need to provide screening in some parts. The enhancement of aesthetics at these sites would provide stimulating visual attributes rather than traffic. Moreover, the quality of the space and maintenance play an important role in improving the aesthetics. This study's observations of the Al-Tahliah and Al-Rehab sites show that their physical structure does not allow for the planting of trees, due mainly to being covered channels, as large tree roots could damage the structures. As such, other solutions should be considered by designers seeking to improve the aesthetic quality of these spaces like choosing appropriate plants that are suitable for these sites, as well as adding water features, sculptures, screens, outdoor gym equipment, and possibly site furniture.

Landscape element

Landscape elements play a significant role in improving the quality of urban public open spaces. Currently Jeddah lacks good quality landscape design (Addas, 2014), apart from the new waterfront, which connects the natural surrounding landscape (sea), using plants appropriate to a costal site, as well as a wide range of hardscapes. Soft scaping is considered an important element in presenting sites differently. Plants can improve the image of the city and the site itself. As they will grow over time and improve the visual quality of the space, while repetition of the same plant throughout the city provides a sense of similarity. Therefore, designers should choose plants carefully, by considering the look, plant structure, colours and size. In addition, the diversity of plant species like lawns, shrubs, trees, climbers, palms, succulents and groundcover can help reduce heat at a site and provide privacy.

The selection of good-quality hardscape is crucial in spaces designed for physical activities. For example, the pavement types at the Al-Rehab site meet the needs of the users. As the responses show acceptance of this kind of pavement (rubber) and that they are comfortable for walking which attracts users to the site more often. In addition, benches, shaded structures and

outdoor gym equipment are important elements in enhancing the sites for physical activity, and so designers should communicate with locals and look to meet their needs in public open space design. However, the incidental sites mentioned herein lack hardscape and softscape elements. In addition, public open space design for physical activity purposes must provide clear trails for walking, jogging and bicycles by using coloured pavements or symbols. The Saudi Vision 2030 initiative aims to provide fitness spaces for football, volleyball and basketball pitches, to allow more access to urban public open spaces. Consequently, designers should consider female use of these sport pitches in the future, to mirror the rapid development occurring currently in Saudi in terms of socio-cultural change.

Safety in design

Walkway sites must consider the safety of users and provide safe access to them. Also, designers need to be aware of anti-social behaviour and ensure that the culprits are deterred from frequenting these locations. Women visit the sites with their children, which requires more safety and security of the space. Traffic is a very significant issue that needs to be considered, as users are surrounded by traffic and it is necessary to ensure the site location is set far away from heavy traffic to provide safety for pedestrians and decrease noise and air pollution surrounding the site. A dedicated traffic control policy should therefore be considered during the design process. Using closed-circuit television (CCTV) in public open spaces could help improve the safety level of spaces; alternatively, a security patrol would enhance the feeling of safety for female users.

8.3.3 Recommendation to improve the management of urban public open spaces

The management of urban public open spaces is part of the planning and design. There is a need for quality management standards in line with clear specifications for the investment and upgrading of facilities and spaces that require improvement. Cooperation with the private sector would also play an important role in improving the maintenance and management of urban public open spaces, not only by helping residents, but also by attracting more investment and tourism, which would enhance the local economy.

Maintenance

The maintenance of a space has a dual purpose, in that it influences who visits and who does not visit a site. Jeddah municipality must be aware of public open space maintenance and

commit effort to this requirement. Public open spaces are not just about designing and creating sites, but also require follow-up care strategies. The Ministry of Rural and Municipal Affairs provides guidelines for the maintenance of public open spaces, but financial implications mean that they do not work effectively. While involvement of the private sector could improve the situation. However, this cooperation needs to have clear guidelines with maintenance contractors. As the existing contractors only maintain plants and planting, and so guidelines should consider the added maintenance of lighting, pavements, playgrounds and other site furniture and facilities.

User Awareness

Users must be involved in keeping the site clean and take more responsibility for public open spaces. The respondents mentioned that male users tend not to care about the cleanliness of sites and do not respect other users; for example, they spit on the pavements. It is therefore important to have policies in place and educate people on how to use public open spaces appropriately and respect other users. Also, users need to be more aware of their health and learn more about the association between public open spaces and health. Schools and universities could be the foundation for distributing awareness amongst the public, while sporting curriculum in girls' schools and at female universities could be a major benefit in this regard and thus encourage more females to use existing sites for physical activities.

Social programmes in public open spaces

The need to consider outdoor physical activity is especially important, as it will encourage people to use the spaces and improve their health. Programmes can concentrate on activities that allow women to join in and should look at socio-cultural elements such as yoga programmes, running competitions, women's marathons, group walking through public open spaces, and talks with famous female athletes. All of which would encourage more active use of public open spaces. In this regard, the municipality needs to involve the private sector and voluntary associations. In addition, this could happen at either city or neighbourhood scale. The Women in Sport Authority provides facilities for the public to use, which is a good opportunity to invite people to use these specialist services. In addition, more programmes and events could be considered throughout the year. For example, Western countries have specific days for cycling and marathon events every year.

Improvement of public open space amenities

The research findings show a lack of facilities like toilets, kiosks and drinking water fountains. Designers should therefore consider all age groups using the sites. The need for public toilets is particularly relevant for people spending a long time at these sites, but they are also vital for diabetics and children, as well as for those who need to pray and make Wudoo, as they stay at the sites for a longer time. Additionally, cycle hire, and refreshment stands would also add to the whole experience and draw people to these locations.

8.3.4 Recommendation to improve municipality planning and design

There needs to be cooperation between the municipality's open space departments and experts in landscape, landscape architecture, regional planning (at the King Abdulaziz University) and stakeholders, which could be achieved through the provision of workshops set up to provide better education and knowledge about issues related to public open space design, management, and maintenance and their associations with physical activity. This could improve the quality of planning for new spaces, and the maintenance of existing and new spaces.

The structure of the municipality (see Chapter 3) means that open spaces are managed by a general department rather than specialists in urban design and landscape architecture. The existing management of parks and open spaces is overseen by a civil engineer, and so, responsibility should be assigned instead, to people who have knowledge in the field of planning and design, like planners, architects and landscape architects. This could improve public open space provision and quality, which in turn would reflect positively on the legislation, policies and strategies of public open spaces in Jeddah.

A review of landscape planning and design practices in Western countries reveals that each city, such as London or New York, has its own strategy manual filled with information according to users' demands, needs and patterns of use, which could help planners and designers achieve their aims. This guidebook for Jeddah should focus on urban public open spaces and information contained in this study on how women use these locations for physical activity. It is also highly recommended that there are design and planning strategy manuals for all Saudi cities, which could help improve the process of planning and design of urban public open spaces. The following table (8.3-1) summarises the recommendation points of this study.

Table 8.3-1 summary of recommendations

Main category	Covered Recommendations in Each Category				
Recommendation for POS Planning	Hierarchy of public open spaces		Provision of POS		
Recommendation for POS Design	Social-cultural needs	Accessibility	Aesthetics	Landscape elements	Safety in design
Recommendation for POS Management	Maintenance	User awareness	Social programmes in POS	Improving POS amenities	
Recommendation for Municipality planning and design	The organisational structure of Jeddah municipality should consider the open space departments separately and clearly linked to the decision maker in the municipality, also highly recommended the cooperation with other government and private sector to improve the process of planning and design. In addition, the absent of landscape architects and urban design should be resolved and allow them to have position in the organisational structure				

8.4 Research implications

- **Theory**

The factors that influence the use of urban public open spaces for physical activity were identified. Then the empirical findings were based on the selection of five spaces (case studies). The selection was according to demographic and geographical location. The sites were physically visited to create the empirical data and meet the stakeholders to understand the decision-making process and gather more interpretive findings. With the aim of building knowledge about the factors and reasons behind female reluctance to use urban public open spaces for physical activity. A model was created to understand the relationships between the factors and enable the ranking of both the factors and challenges, also sub challenges and their interactions with each other along with their impact were noted.

The findings gave an overview of the recommendations that would help to improve and encourage use of the sites. Finally, the recommendations were divided into four categories; design, planning, management and maintenance, and improvement.

- **Practical**

Recommendations can be tested or implemented by stakeholders and practitioners involved in the decision-making process. Also, the hierarchy of factors demonstrates the user's reluctance and offers recommendations for each factor that will enable a better understanding of how to choose and design space to enhance female activity in urban public open spaces.

8.5 Contribution to Knowledge

This research intends to offer contributions to several areas:

Firstly, it constitutes ground-breaking research on the provision and characteristics of urban public open spaces that are used for physical activity in Jeddah, specifically new walking spaces and incidental sites. Moreover, it has revealed novel findings regarding the impact of landscape architecture and urban design when creating urban public open spaces in this socio-cultural context. In addition, it provides empirical data on conditions and usage of public open spaces in Saudi Arabia, as well as details of the planning and urban design processes where such spaces have been provided.

This research provides a significant contribution to academic research on the use of public open spaces and highlights the implications of public open space design and use. The findings inform academia of how women use public open spaces for a specific purpose. The relationship framework produced contributes to academic research in both the Middle East and in Western countries. Also, the research contributes in a practical way by highlighting the need to improve public open space planning, design and management, to meet user requirements in terms of outdoor physical activity.

Additionally, the selection and identification of new forms of spaces that are used for physical activity within the urban context contribute to the theoretical knowledge of public open space typology in the Middle Eastern context. While new factors have appeared in a Saudi and Muslim city context such as privacy and religion, that have influenced the use of urban public open spaces and contributed to the theories of functional and perceptual dimensions. Furthermore, this study adds to the literature by identifying new spaces that are used solely by women and expressing their patterns of use.

The list of recommendations and suggestions have been compiled with the purpose of informing practitioners on how to improve existing public open spaces. Additionally, it has contributed to the knowledge by identifying the relationships between factors which could help to build new relationships according to the context and allow designers consideration of these elements at the design and consultation stage.

8.6 Research limitations

This research illustrates an association between public open spaces and physical activity use by women in Saudi Arabia. The researcher, as mentioned, conducted a qualitative approach, but difficulties were experienced in the interviews, due to very conservative families and users. In addition, the research has limitations, in that non-users of the sites were interviewed, and it focused on sites designed for physical activity. Also, as the interviews were conducted with female users, in some cases the researcher needed to train his wife and sister so that they could accompany him to the site and carry out the interviews. Additionally, through the interview and data analyses, the research entailed transcribing and translating the interviews, as accurately as possible from Arabic to English. A future study could conduct a mixed method approach to allow more generalisation, which is impossible here because of the sample size.

Future studies could therefore consider the main open space in Jeddah, namely the new Corniche, which was closed during the data collection stage for development, to check the effect of this large space on the use of the existing sites. The development of this site and subsequent closure during the study created limitations. In addition, there is a notable gap in the available literature regarding female usage of public open spaces for physical activity in Saudi Arabia.

8.7 Further research

This study has uncovered case studies in Jeddah city that are used as walking spaces and raised new areas of further research in relation to the physical activity carried out in these spaces. As the focus was on female users, future research could examine the use of urban public open spaces for physical activity by both genders. It could also look at the waterfront and consider the influence of a relatively new Saudi law which has permitted women to drive.

This research focused on user perception and the pattern of use for these sites regarding physical activity. Further research could also examine other sites in the Saudi Arabian context with the influence of the factors identified in this research using the relationship framework.

More in-depth research could be conducted on the legal aspects of providing new urban public open spaces, considering ways of achieving quality and cooperation as recommended within Saudi institutions. Hopefully this can help to improve the quality of spaces in Jeddah and encourage more women to use public open spaces for physical activity. It is suggested that future research considers all the challenges that could change the pattern of use such as changes to the social structure of the Saudi society including uncovering the face and more female rights. A future study could also examine the factors and relationships that are based on these changes and the Saudi vision 2030.

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Appendices

Appendix 1 Participant Interview question

University of Salford MANCHESTER

University of Salford
School of Built Environment
SURFACE Inclusive Design
Research Centre

King Abdulaziz University
Faculty of Environment Design
Landscape Architecture
Department

Participants Interview Questions

Personal Information

1- **Age**
   - **12-19**
   - **20-40**
   - **41-60**
   - **Over 60's**
2- **Gender**
   - **Male**
   - **Female**
3- **Education**
4- **Job tittle**
5- **Nationality or Ethnitc Group**

Urban Public Open Spaces Interview questions:

1- Questions related to visit:
   - What is the reason for your visit to this space today?
   - Who are you with?
   - In which neighborhood you live?
   - How long have you been in here / how long will you stay?
   - Are there any open spaces in your area? Do you use them?

2- Questions related to the site:
   - How did you find out about this site?
   - How often do you visit this site?
   - When do you visit this space? (Weekend, weekdays, or celebration)
   - Do you think this space is a good example for women to exercise?
   - Do you think this space has facilities that you need?
   - How does visiting this space benefit you?
   - What does attract you to use this space?
   - Are there any other places you visit and do some exercise in it?/ Which sites do you prefer?
   - What do you like and dislike in this space?
   - How do you find the accessibility of this site?
   - Are there any restrictions to your use of this site?

Participants Interview Questions

- How would you normally travel to this space?
- Approximately how long does your normal journey take to this space?

3- Questions related to behavior in public open spaces

- Do you think there are any rules or law affecting your use of public open spaces? (Such as setting, privacy, location)
- Do you think there are any rules that should be applied to help women to exercise in this site?
- What kind of exercises that you wish do it in urban public open spaces?
- Does the weather affect your visit to open spaces?

4- Questions related to the indoor physical activity

- Do you visit any indoor or GYM for doing physical activity? If yes , Could you tell me when are you going and for how long do you stay in these sites? If no. could you tell me the reason?
- In your opinion, which space do you prefer for doing some physical activity? And why?
- Is there anything further you would like to say about public open spaces?

THNAK YOU FOR YOUR TIME AND COOPERATION

Ahmad Maghrabi Postgraduate Resreach student, University of Salford

Appendix 2 Practitioners interview question

University of Salford
MANCHESTER

University of Salford
School of Built Environment
SURFACE Inclusive Design
Research Centre

King Abdulaziz University
Faculty of Environment Design
Landscape Architecture
Department

Participants Interview Questions

Personal Information:

Name:

Position:

Organization:

Questions Related to Users

1- Do you use with your family open spaces for any kind of physical activities?
2- Do the users visiting this park form the same neighbourhood?
3- Do you consider any factor for women users or just for all kind of residents?
4- From point of your view, how the users use and interact with urban public open spaces?
5- What the most activities that users do in the sites as Tahlia, Rehab walking space, Amira Park?
6- What the physical activity that users do during their visit? Does the park support their needs?
7- In your opinion, what is the reasons behind users' reluctance of using public open spaces for physical activities, in specific women?

Questions Related to Design

1- What is the process that you follow to design urban public open spaces?
2- Do you think the existing public open spaces designed by specialist (Landscape Architecture)?
3- What is the criteria for selecting new spaces that related to physical activity and women activities in specific?
4- Few months ago, in newspaper the municipality mention that will be new public open spaces in construction, which are specific for women? Have you heard about these parks? Could you tell me about these project and what do you consider in designing as these specific sites and what the challenge of doing that?
5- Do you have any corporation with other organization for example (health ministry, women Sport organization or education sector) to have clear idea of what they need in public open spaces?
6- Do you have a minimum requirement in respect of the activities or facilities to be provide in each of these sites?
7- Do you think that should have a cooperation between your (department, society) and municipality departments for decision make?
8- In your opinion, what is the problems that face designers in Saudi Arabia?

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Participants Interview Questions

Questions Related to Management

1- What are the most significant problems that face your work in design and management of public open spaces and through the process?
2- Do you consider the value and quality of open spaces in design and management of these spaces? If yes, could you explain?

Questions Related to Factors

1- Do you have a minimum requirement in respect of the activities or facilities to be provide in each of these sites?
2- What is the main factors that must be consider in designing this space and the other public open spaces? In specific for women's.
3- Do you think proximity, safety, aesthetic, site furniture, activities, neighbourhoods context, accessibility, and quality of the space influence residents visit?

Questions Related to Improvements

4- What is your plan or suggestions that help to achieve the Saudi vision 2030 in providing new public open spaces?
5- How would you evaluate the existing urban public open spaces that designed for physical activity purposes (walking) in Jeddah as a resident, practitioner and decision maker?
6- What do you think would help the most in improving the existing situation of urban public open spaces that design for physical activity purposes?
7- In your opinion, how the municipality can improve the existing site for physical activity in specific for women?

Appendix 3 Ethical Approval letter

University of Salford MANCHESTER

Research, Innovation and Academic Engagement Ethical Approval Panel

Research Centres Support Team
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27 March 2017

Dear Ahmad,

RE: ETHICS APPLICATION ST1617-44 - The Benefits of Exercise in Public Open Spaces for People's Health in Saudi Arabia

Based on the information you provided, I am pleased to inform you that your application ST1617-44 has been approved.

If there are any changes to the project and/ or its methodology, please inform the Panel as soon as possible by contacting S&T-ResearchEthics@salford.ac.uk

Yours sincerely,

Dr Prasad Tumula
Acting Chair of Ethics
University of Salford
Maxwell Building, The Crescent
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www.salford.ac.uk/ethics

Appendix 4 Saudi public open spaces manual's

Ministry of Municipal Rural Affairs in Saudi Arabia have create standards manual's for Saudi cities municipalities to be the as main references in planning and urban design for practitioners.

The manual's present eight forms of public open spaces are as follows:

1- 1 The children's playground is a fenced (hard-scape wall) open space for active recreation and is proposed for children aged between 4 and 12 years in a residential cluster with a population of 900 to 1200 people. The standard recommends an area of 0.4 to 1.67 m2/person. The proposed pedestrian catchment area radius to this POS from should not exceed 275 m. It also recommends that the location of this form of POS should not be located in close proximity to road intersections.
2- The residential cluster park is a fenced (soft-scape wall) open space or passive recreation. It aims serve a residential cluster with population of between 900 and 1200 people. The standard recommends an area of between 0.08 an 0.3 m2 per person. The proposed pedestrian catchment area radius to this POS forms should not exceed 200 m. It also recommends that a residential cluster park should be located in a central place to serve the entire cluster.
3- The neighbourhood park is a fenced (hard-scape or soft-scape wall) open space for passive recreation that is proposed for neighbourhood with a population of 3000 to 5000 inhabitants. It also includes children's play area. The location of this open space should be away from traffic congested areas. The standard recommends an area of 0.8 to 1.66 m2 per person. The proposed pedestrian catchment area radius to this POS form should not exceed 350 m. It recommends that neighbourhood parks be located away from streets with a high speed limit and traffic congestion.
4- The neighbourhood sports ground is a fenced (hard-scape or sopft-scape wall) open spac for active recreation. It is suggested that it be in close proximity to primary scgools. The standard recommends an area of .07 to 1.2 m2 per person for population of 3000 to 5000 inhabitants. The proposed pedestrian catchment area radius to this POS from should not exceed 500 m.
5- The district park is an unfenced open space for passive recreation, but it can include some forms of informal sports grounds. It is also proposed to provide ecological services, which mainly relate to clean air pollution in residential areas. The standard recommends an area of 0.33 to 1 m2 per person for population of 10,000 to 15,000 inhabitants. The proposed pedestrian shed to this POS form should not exceed 800 m. sers should be provided with sfae sidewalks to reach this POS form.
6- The district sports ground is a fenced (hard-scape and soft-scape wall) open space for active recreation. It can be integrated with the district park if there is no suitable site for it. It is also suggested that it be located at a sufficient distance form residential areas to minimise noise impact on the surrounding areas. The standards recommends an area of 1 to 2.5 m2 per person for population of 10,000 to 15,000 people. The

proposed pedestrian catchment area radius to this POS form should not exceed 1200 m.

7- The sub-municipal park is a large, enced (hard-scape wall) open space or urban park for passive recreation. This form would be created on a large scale to bring nature into the city and provide residents with a place to escape from stress of the urban environment. The standard recommends an area of .07 to 1.2 m2 per person for a population of 30,000 to 45,000 people. It is recommended that the proposed catchment area radius to this POS form does not exceed 5 km.

8- The regional park is the last form of POS proposed by the standard. It is suggested that it be located outside the urban area in natural area such as forest or around dams which allow passive recreation. A regional park is a form of un fences POS that is proposed for a population of more than 400,000 inhalants. The standard recommend an area of between 1 and 2 m2 per person.

Appendix 5 Saudi public open spaces manual's

	Obhor Al-janobeya	**14.13**	**3,246**	**230**	**Y**
	Al-Mohammadeyah	**10.21**	**36,144**	**3,540**	**N**
	Al-Faisalyyah	**8.88**	**118,380**	**13,331**	**Y**
	Al-Rabwa	**7.72**	**177,552**	**22,999**	**Y**
	Al-Bawdy	**4.71**	**99,132**	**21,047**	**N**
	Al-Nuzha	**5.87**	**102,308**	**17,429**	**N**
	Al-Naieem	**5.91**	**37,948**	**6,421**	**N**
	AL-Basateen	**5.78**	**12,699**	**2,197**	**Y**
	Al-Murjan	**8.62**	**12,629**	**1,465**	**N**
	King Abdulaziz Airport	**96.18**	**28,399**	**295**	**N**
	Obhour-North	**22.39**	**5,006**	**224**	**N**
	Tayba	**12.89**	**5,397**	**419**	**N**
WEST	Al-Khaldeyah	4.93	19,488	3,953	N
	Al-Shate'e	18.41	38,336	2,082	Y
	Al-Nahdah	5.46	38,282	7,011	N
	Al-Hamra	5.30	21,782	1,679	Y
	Al-Rawdah	8.34	68,424	8,204	Y
	Al-Salamah	6.93	93,735	13,526	UC

	Al-Safa	13.88	253,455	113.89	Y
	Al-Azeziah	6.88	154,585	22,469	N
	Al-Marwa	10.48	74,347	7,094	N
	Al-Rehab	6.37	55,402	8,697	Y
	Bani Malik	5.03	93,933	18,675	N
	Alnaseem	6.66	41,005	6,157	N
	Al-Manar	5.05	20,453	4,050	N
	Al-Ajwad	5.54	35,764	6,456	N
	Al-Samer	8.41	47,446	5,642	N
	Al-Waha	7.00	12,341	1,763	Y
	Al-Nakheel	11.87	6,799	573	Y
	Meraiekh	15.88	5,404	340	N
	Al-Raghamah	19.76	85,143	4,309	N
	Bryman	50.62	41,965	829	N

Central	Al-Rowais	4.20	67,018	15,957	N
	Al-Sharafeyah	3.72	77,546	20,846	N
	Meshrefah	5.59	127,653	22,836	N
	Alworod	3.63	8,185	2,255	N
	Albalad	2.41	75,411	31,291	N
	Al-Baghdadiyah-East	1.50	31,793	21,195	N
	Al-Baghdadiyah-West	3.45	16,432	4,763	N
	Al-Kandarah	1.49	59,317	39,810	N
	AL-Ammaryyah	0.47	19,068	40,571	N
	Al-Sehaiyfah	0.43	26,004	60,474	N
	Al-Sabeel	0.88	35,324	40,140	N
	Al-Hendawiyah	1.85	73,268	39,604	N
	Al-Nuzla - East	1.78	31,338	17,605	N
	Al-Nuzla Alyamaniyah	3.95	76,803	19,444	N
	AL-Quriyat	1.59	20,348	12,797	Y
	Al-Thalba	1.55	33,951	21,904	N
	Ghulaiel	2.02	88,725	43,923	N

SOUTH	Al-Sulimaniyah	1.71	37,732	22,066	N
	Al-Fayhaa	9.49	43,634	4,598	Y
	Al-Thaghar	2.86	55,890	19,542	N
	Al-Jamaa	4.99	180,345	36,141	N
	Alrawabi	4.27	112,519	26,351	N
	Madaien Alfahad	7.48	109,279	14,609	N
	Petromeen	7.11	53,326	7,500	N
	Al-Muntazahat	13.78	103,624	7,520	N
	Umm Alsalam	10.74	65,711	6,118	N
	Alfadel	11.21	33,852	3,020	N
	Prince Fawaz	5.56	88,367	15,893	UC
	Prince Abdulmajeed	12.35	54,938	4,448	N
	Aljawohara	7.62	7,305	959	N
	Almahjar	15.81	16,382	1,036	N
	Alsenaiyah	17.69	964	54	N
	Alsororyiah	10.94	4,194	383	N
	Alkhomrah	16.23	15,933	982	N
TOTAL		647.36	3,779,007	5,838	

2. مساحة الحي

◆ قيم المؤشر و عناصره:

جدول رقم (193)، مؤشر رقم (66)

عدد السكان (نسمة) والكثافة السكانية (نسمة/ كم²) بمحافظة جدة موزعاً بحسب الأحياء

م	الحي	المساحة (كم²)	1432هـ		1433هـ		1434هـ	
			عدد السكان	الكثافة السكانية	عدد السكان	الكثافة السكانية	عدد السكان	الكثافة السكانية
1	الصفا	13.88	237,885	17,139	245,817	17,710	253,455	18,260
2	الفيصلية	8.88	111,108	12,512	114,813	12,929	118,380	13,331
3	الربوة	7.72	166,645	21,586	172,201	22,306	177,552	22,999
4	البوادي	4.71	93,043	19,754	96,145	20,413	99,132	21,047
5	المروة	10.48	69,780	6,658	72,107	6,880	74,347	7,094
6	النزهة	5.87	96,023	16,358	99,225	16,904	102,308	17,429
7	العزيزية	6.88	145,089	21,088	149,927	21,792	154,585	22,469
8	الرحاب	6.37	51,998	8,163	53,732	8,435	55,402	8,697
9	مشرفة	5.59	119,811	21,433	123,806	22,148	127,653	22,836
10	الأندلس	12.97	27,543	5,197	28,461	5,370	29,345	5,537
11	الحمراء	5.30	20,444	1,576	21,125	1,629	21,782	1,679
12	الشرفية	3.72	72,782	19,565	75,209	20,217	77,546	20,846
13	بني مالك	5.03	88,163	17,527	91,102	18,112	93,933	18,675
14	النسيم	6.66	38,486	5,779	39,769	5,971	41,005	6,157
15	الورود	3.63	7,682	2,116	7,938	2,187	8,185	2,255
16	الرويس	4.20	62,901	14,977	64,999	15,476	67,018	15,957
17	السلامة	6.93	87,977	12,695	90,910	13,118	93,735	13,526
18	الروضة	8.34	64,221	7,700	66,362	7,957	68,424	8,204
19	الخالدية	4.93	18,290	3,710	18,900	3,834	19,488	3,953
20	الزهراء	7.95	47,449	5,968	49,031	6,167	50,554	6,359
21	الشاطئ	18.41	35,981	1,954	37,181	2,020	38,336	2,082
22	البلد	2.41	70,778	29,369	73,138	30,348	75,411	31,291
23	البغدادية الشرقية	1.50	29,840	19,893	30,835	20,557	31,793	21,195
24	البغدادية الغربية	3.45	15,422	4,470	15,937	4,619	16,432	4,763

عدد السكان (نسمة) والكثافة السكانية (نسمة/ كم²) بمحافظة جدة موزعاً بحسب الأحياء

م	الحي	المساحة (كم²)	1432هـ		1433هـ		1434هـ	
			عدد السكان	الكثافة السكانية	عدد السكان	الكثافة السكانية	عدد السكان	الكثافة السكانية
25	الكندرة	1.49	55,673	37,365	57,530	38,611	59,317	39,810
26	العمارية	0.47	17,897	38,079	18,494	39,348	19,068	40,571
27	الصحيفة	0.43	24,406	56,759	25,220	58,651	26,004	60,474
28	السبيل	0.88	33,154	37,675	34,259	38,931	35,324	40,140
29	الهنداوية	1.85	68,767	37,171	71,060	38,411	73,268	39,604
30	السليمانية	1.71	35,414	20,710	36,595	21,401	37,732	22,066
31	الفيحاء	9.49	40,953	4,315	42,319	4,459	43,634	4,598
32	الثغر	2.86	52,456	18,341	54,205	18,953	55,890	19,542
33	الجامعة	4.99	169,266	33,921	174,910	35,052	180,345	36,141
34	الروابي	4.27	105,607	24,732	109,128	25,557	112,519	26,351
35	مدائن الفهد	7.48	102,565	13,712	105,985	14,169	109,279	14,609
36	النزلة الشرقية	1.78	29,412	16,524	30,393	17,075	31,338	17,605
37	النزلة اليمانية	3.95	72,085	18,249	74,489	18,858	76,803	19,444
38	القريات	1.59	19,098	12,011	19,734	12,412	20,348	12,797
39	الثعالبة	1.55	31,866	20,558	32,928	21,244	33,951	21,904
40	غليل	2.02	83,274	41,225	86,051	42,599	88,725	43,923
41	بترومين	7.11	50,050	7,039	51,719	7,274	53,326	7,500
42	النعيم	5.91	35,617	6,027	36,804	6,227	37,948	6,421
43	النهضة	5.46	35,931	6,581	37,129	6,800	38,282	7,011
44	المحمدية	10.21	33,924	3,323	35,055	3,433	36,144	3,540
45	البساتين	5.78	11,919	2,062	12,317	2,131	12,699	2,197
46	المرجان	8.62	11,853	1,375	12,249	1,421	12,629	1,465
47	أبحر الجنوبية	14.13	3,047	216	3,148	223	3,246	230
48	مطار الملك عبدالعزيز	96.18	26,654	277	27,543	286	28,399	295
49	بريمان	50.62	39,387	778	40,700	804	41,965	829
50	المنار	5.05	19,196	3,801	19,836	3,928	20,453	4,050
51	الأجواد	5.54	33,567	6,059	34,687	6,261	35,764	6,456
52	السامر	8.41	44,531	5,295	46,016	5,472	47,446	5,642
53	الواحة	7.00	11,583	1,655	11,969	1,710	12,341	1,763

عدد السكان (نسمة) والكثافة السكانية (نسمة/ كم²) بمحافظة جدة موزعاً بحسب الأحياء

م	الحي	المساحة (كم²)	1432هـ		1433هـ		1434هـ	
			عدد السكان	الكثافة السكانية	عدد السكان	الكثافة السكانية	عدد السكان	الكثافة السكانية
54	النخيل	11.87	6,381	538	6,594	556	6,799	573
55	مريخ	15.88	5,072	319	5,241	330	5,404	340
56	الرغامة	19.76	79,913	4,044	82,577	4,179	85,143	4,309
57	المنتزهات	13.78	97,258	7,058	100,501	7,293	103,624	7,520
58	أم السلم	10.74	61,674	5,742	63,731	5,934	65,711	6,118
59	الفضل	11.21	31,772	2,834	32,831	2,929	33,852	3,020
60	الأمير فواز الشمالي	1.52	22,643	14,896	23,398	15,393	24,125	15,871
61	الأمير فواز الجنوبي	4.04	60,295	14,925	62,306	15,422	64,242	15,901
62	الأمير عبدالمجيد	12.35	51,563	4,175	53,282	4,314	54,938	4,448
63	الجوهرة	7.62	6,856	900	7,085	930	7,305	959
64	المحجر	15.81	15,376	973	15,888	1,005	16,382	1,036
65	الصناعية	17.69	905	51	935	53	964	54
66	السرورية	10.94	3,936	360	4,067	372	4,194	383
67	الخمرة	16.23	14,954	921	15,453	952	15,933	982
68	أبحر الشمالية	22.39	4,699	210	4,855	217	5,006	224
69	طيبة	12.89	5,066	393	5,235	406	5,397	419
	إجمالي الأحياء المسجلة	647.36	3,546,854	5,479	3,665,120	5,662	3,779,007	5,838

شكل رقم (170)

الكثافة السكانية على مستوى حدود أحياء محافظة جدة