PHYSICAL AND PSYCHOLOGICAL HEALTH IMPACTS OF URBAN PARK IN RELATION TO PANDEMIC CRISES

BY

AMIRA ARISYA BINTI MOHAMAD NADZRI

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Kulliyyah of Architecture and Environmental Design
International Islamic University Malaysia

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ABSTRACT

Urban parks have numerous advantages and have been identified as a unique source of community resilience throughout protracted pandemic lockdowns and quarantine. The pandemic-related issues, including stay-at-home orders, lockdowns, and long-term quarantine, pose a global public health concern. It undoubtedly causes tremendous negative impacts on human health. It is believed that safe, healthy, and supportive environments are needed to maintain good human physical and psychological health. The research aims to investigate the role of urban parks as the mechanism for the physical and psychological health impacts of the pandemic crises. This research is exploratory research that employs a mixed-method approach. A survey questionnaire and Focus Group Discussion (FGD) are used for data collection. SPSS (Statistical Package for Social Science) software is utilised to help with the descriptive statistical analysis of the questionnaire survey data. In contrast, content analysis is used to analyse the data collected from the focus group discussion (FGD). The result shows that a natural environment has benefited one's overall physical and psychological health. The research suggests that environment and greenery are best practices to improve human health, especially during pandemic crises. The research findings show that urban parks can be designed to accommodate a safe space for physical activity and psychological health support. The necessity for urban people to have an open space to meet their fundamental physical and psychological needs is significant to improve their overall health. A more substantial plan must be implemented to develop a more accessible open green area. The available vacant spaces in the cities should be fully utilised by transforming them into multi-used urban parks with better connectivity and accessibility. A preventative measure of urban parks as the mechanism for physical and psychological health impact during pandemic crises is formed based on the survey questionnaire and FGD findings. The built environment professionals, such as architects, urban planners, and landscape architects, can use preventative measures to create evidence-based designs for public spaces that prioritise public health and well-being. It leads to the development of design specifications incorporating features and elements that promote physical and psychological health in urban parks, creating more health-conscious public spaces. As the research is conducted in the context of a pandemic, it can provide insights into pandemic-resilient design.

مُلَخّصُ البَحْثِ

تتمتع المتنزهات الحضرية بمزايا عديدة، والتي قد تمَّ تحديدها بوصفها مصدرًا فريدًا للمجتمع المرن خلال عمليات الإغلاق الوبائيّة الطويلة والحجر الصحيّ. إنَّ القضايا المتعلقة بالوباء، بما في ذلك أوامر البقاء في المنزل، وعمليات الإغلاق، والتّدابير طويلة الأمد، ومصطلح الحجر الصحي، تُشكّل مصدرَ قلقٍ عالمي للصّحّة العامّة، ولا شكّ أنها تسبب آثارًا سلبيةً جسيمةً في صحّة الإنسان. يعتقدُ البعض أنه آمن وصحي، وأنَّ هناك حاجة إلى بيئات داعمة للحفاظ على صحّة الإنسان البدنيّة والعقليّة والصّحّة النّفسيّة. يهدف البحث إلى التّعرُّف على دور الحدائق الحضريّة بوصفها آليّةً للتعامل مع الآثار الصّحيّة الجسديّة والنّفسيّة النّاجمة عن أزمات الجائحة. هذا البحث هو بحث استكشافي يستخدم طريقة المنهج المختلط، تمَّ فيه استخدام استبيان المسح ومناقشة مجموعة التركيز (FGD) لجمع البيانا، تمَّ توظيف برنامج SPSS (الحزمة الإحصائيّة للعلوم الاجتماعيّة) للمساعدة في التحليل الإحصائي الوصفي لبيانات الاستبيان. وفي المقابل تمَّ استخدام تحليل بيانات المحتوى التي تمَّ جمعها من مناقشة مجموعة التركيز .(FGD) تظهر النّتيجة أنَّ البيئة الطّبيعيّة أفادت الصّحّة النّفسيّة للفرد جسديًّا وعقليًّا إفادةً عامّةً، ويشير البحث إلى أنَّ البيئة والمساحات الخضراء هي الأفضل ممارسةً لتحسين صحّة الإنسان، خاصة أثناء الأزمات الوبائيّة، تظهر نتائج البحث ضرورة تصميم الحدائق الحضريّة لاستيعاب مساحة آمنة للنشاط البدنيّ وللدعم النّفسيّ لسكان الحضر الذين لديهم مساحة مفتوحة لتلبية لاحتياجاتهم الجسديّة والنّفسيّة الأساسيّة، وهي مهمة لتحسين صحتهم تحسينًا تامًّا، يجب أنْ تكون هناك خطة أكثر جوهريّة يتمُّ تنفيذها لتطوير مناطق خضراء مفتوحة يسهل الوصول إليها؛ لذا يجب استغلال المساحات الشاغرة المتاحة في المدن استغلالاً كاملاً، وذلك بتحويلها إلى مساحات متعددة الاستخدامات بصفتها حدائق حضريّة تتمتع بالاتصال وإمكانية وصول أفضل. إنَّ الحدائق الحضريّة بوصفها آليّةً للتأثير في الصّحّة الجسديّة والنفسيّة تُشكّل إجراءً الوقائيًّا أثناء الأزمات الوبائيّة، بناءً على استبيان المسح ونتائج مجموعات التركيز يمكن للمتخصصين في بناء البيئة، مثل: المهندسين المعماريين ومخططي المدن والمناظر الطبيعيّة والمهندسين المعماريين استخدام التّدابير الوقائيّة لإيجاد تصميم المساحات القائمة على الأدلة التي تمنحُ الأولويّة للصحّة العامّة والرفاهيّة للجمهور، وتؤدّي إلى تطوير مواصفات التصميم التي تتضمن الميزات والعناصر التي تعزز الماديّة والصّحّة النّفسيّة في الحدائق الحضريّة، وخلق مساحات عامّة أكثر وعيًا بالصّحّة .مثل هذا البحث أُجري في سياق الجائحة، وأنَّه يُقدم نظرةً ثاقبة لتصميم مقاوم للوباء.

APPROVAL PAGE

I certify that I have supervised and read this study and that in my opinion, it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a thesis for the degree of Master of Science (Built Environment).

……
Mohd Ramzi Mohd Hussain
Supervisor

……
Izawati Tukiman
Co-Supervisor

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a thesis for the degree of Master of Science (Built Environment).

……
Rashidi Othman
Internal Examiner

……
Mohd Yazid Mohd Yunos
External Examiner

This thesis was submitted to the Department of Landscape Architecture and is accepted as a fulfilment of the requirement for the degree of Master of Science (Built Environment).

……
Putri Haryati Ibrahim
Head, Department of Landscape Architecture

This thesis was submitted to the Kulliyyah of Architecture and Environmental Design and is accepted as a fulfilment of the requirement for the degree of Master of Science (Built Environment).

……
Abdul Razak Sapian
Dean, Kulliyyah of Architecture and Environmental Design

DECLARATION

I hereby declare that this thesis is the result of my own investigations, except where otherwise stated. I also declare that it has not been previously or concurrently submitted as a whole for any other degrees at IIUM or other institutions.

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This thesis is dedicated to my beloved parents for laying the foundation of what I turned out to be in life.

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AIDS	Acquired Immunodeficiency Syndrome	H3N2	influenza A subtype H3N2
app.	appendix	MCO	Movement Control Order
art./arts.	article/articles	MERS-COV	Middle East respiratory syndrome coronavirus
b.	born	MOE	Margin of Error
bk./bks.	book/books	ms./mss.	manuscript/manuscripts
c.	copyright	n. d.	no date
ca.	(circa): about, approximately	no./no.s	number/numbers
cf.	compare	n.p.	no place: no publisher
chap./chaps.	chapter/chapters	n. s.	new series
col./cols.	column/columns	o. s.	old series
COVID	Coronavirus Disease	P. B. U. H.	Peace Be Upon Him
comp./comps.	compiler/compilers; compiled by	p./pars.	paragraph/paragraphs
dept./depts.	department/departments	pt./pts.	part/parts
df	degrees of freedom	RII	Relative Importance Index
e. g	*(exempligratia)*; for example	SARS-COV	Severe acute respiratory syndrome coronavirus
EHI	Environmental Health Indicator	S. W. T.	Subhanahu Wa Ta'ala (Praise be to Allah and the Most High)
EHINZ	Environmental Health Intelligence New Zealand	sec./secs.	section/sections
et al.	*(et alia)*: and others	TB	tuberculosis
etc	*(et cetera)*: and so forth pages that follow	trans.	translator/translated by
FGD	Focus Group Discussion	v./vv.	verse/verses
fig./figs.	figure/figures	vol./vols.	volume/volumes
HIV	Human Immunodeficiency Virus	WHO	World Health Organization
H1N1	influenza A subtype H1N1		
H2N2	influenza A subtype H2N2		

CHAPTER ONE

INTRODUCTION

1.1 INTRODUCTION

This chapter discusses the introduction of the research. It provides background information on the physical and psychological health impacts of urban parks during pandemic crises. This chapter highlights the problem statement, research gap, research aim, research questions, and objectives. This chapter also outlines the thesis structure and concludes with a conclusion.

1.2 RESEARCH BACKGROUND

In recent years, an increasing number of scientific studies on urban parks have highlighted the numerous benefits of parks. According to Konijnendijk et al. (2013), urban parks are crucial to the livability and sustainability of cities and communities. Prior to the global pandemic crises, the health-promoting potential of urban parks was widely recognised. However, during times of crisis, this potential becomes much more apparent (Maller et al., 2006; van den Bosch and Ode Sang, 2017). Public parks have been identified as a unique source of community resilience during prolonged pandemic isolation and quarantine on multiple continents (Grima et al., 2020; Samuelsson et al., 2020; Slater et al., 2020). Parks provide some respite from the risk of outbreak transmission and social isolation of city life (Johnson et al., 2022). This urban park promotes numerous physical and psychological health benefits of human-nature interactions, including weight loss, depression, anxiety reduction, increased physical activity, spiritual engagement, and social connections (Bratman et al., 2019). Throughout the pandemic, youth (Jackson et al., 2021) and adults (Cindrich et al., 2021; Poortinga et al., 2021) who participated in outdoor activities had superior health outcomes than those who did not. According to Ugolini (2021), park-based activities

were one of the few options for urban residents to maintain or enhance their health and well-being during the early stages of the crisis, when few alternatives were available in cities around the globe.

According to the World Health Organisation (WHO), urban parks offer a number of benefits through a variety of means, with potentially varying effects on population environmental health. The World Health Organisation (WHO) defines health as a state of complete physical, mental, and social well-being and not solely the absence of disease or infirmity (Huber, 2011). The environments in which people reside and work can have an effect on their health. These environments are defined as geographical locations or social situations in which individuals engage in daily activities. Various epidemiological methodologies have been used to assess the effects of urban park availability and accessibility on the health outcomes of study participants (Huber, 2021). Environmental health, as defined by Environmental Health Intelligence New Zealand (EHINZ, 2018), is the interaction between human health and the environment, which is influenced by physical, chemical, biological, social, and psychosocial environmental factors. According to the definition, secure, healthful, and supportive environments are required to maintain human health. Environmental health is a significant determinant of our health and wellbeing. According to Morris (2006), urban parks, as part of a broader environmental context, are believed to be an effective strategy and have the potential to resolve problems associated with the effects of ailing health.

Pandemics are typically large-scale disease epidemics that spread rapidly due to human-to-human infection and can substantially increase morbidity and mortality over a vast geographical area (Qiu et al., 2017; Madhav et al., 2018). Throughout history, numerous notable disease outbreaks and pandemics have occurred, such as the Antonine Plague, Spanish Flu, Russian Flu, HIV/AIDS, Asian Flu, Hong Kong Flu, Nipah, MERS, SARS, Ebola, Swine Flu and the ongoing COVID-19 (WHO, 2011; Rewar et al., 2015; Maurice, 2016; Zhang et al., 2020). This pandemic-related concern poses a global threat to public health. It wreaks havoc on human health (physically and psychologically), the economy, society, and the security of national and international societies. In addition, strong restrictive measures, such as stay-at-home orders,

lockdowns, and long-term quarantines, exacerbated social isolation in many cities around the world (Lau et al., 2020). This impacts people's daily lives by limiting their access to physical activity in public spaces (such as parks) and social interaction with other residents. Consequently, global physical and psychological health is declining. The statistic by World Health Organization revealed that the global prevalence of psychological-related illness such as anxiety and depression has a massive increased by 25% during pandemic (WHO, 2022). According to a study by Maas et al. (2009), it is believed that the highly prevalent illnesses and diseases in many cities can be mitigated by the presence of urban green spaces, specifically urban parks. This aim of costly and large-scale preventative programmes in urban parks will provide many opportunities to build cities with better health outcomes for residents (Maas et al., 2009). Given the potential for urban parks to serve as health promotion settings, particularly during pandemic crises, it is crucial to investigate and identify the underlying mechanisms that contribute to physical and psychological health impacts during pandemic crises.

1.3 PROBLEM STATEMENT

Inconsistent empirical evidence exists regarding how individuals utilised urban parks during the pandemic. The majority of previous studies have only focused on the population's psychological health during the pandemic (Chan et al., 2007; Ren et al., 2020; Fofana et al., 2020; Mazza et al., 2020), whereas a substantial body of research identifies multiple contributions of urban parks to human health and well-being (Maas et al., 2006; Richardson et al., 2012; White et al., 2013). Consequently, this research highlights and integrates the roles of urban parks for physical and psychological health impacts during pandemic crises.

As previous research has only focused on the benefits of urban parks without integrating the role of urban parks as a mechanism to improve physical and psychological health and strengthen resistance to pandemics, it is necessary to assess the influence of urban parks on physical and psychological health in order to monitor health status and trends, design interventions to preserve and promote health, and establish a core capacity to respond to pandemics. To assess the effects on the physical

and psychological health of the general population or a specific subpopulation, it is essential to examine the relationship between environmental factors and health outcomes.

During the pandemic, people's physical and psychological health has deteriorated due to restricted access to urban parks. Due to the city's quarantine policy, the persistent environmental hazards will continue to exist after the current pandemic has passed (Jackson et al., 2021). If nothing is done to resolve the problem, restricted access to urban parks may increase the risk of long-term health issues (Slater et al., 2020). Efforts to determine the effects of these park closure regulations have been constrained, limiting the ability of policymakers to evaluate their implementation adequately (Rice et al., 2020; Korevaar et al., 2020; Honey-Roses et al., 2021). Consequently, approaches to the appropriate preventative measures of urban parks during pandemic crises are required to address the issues.

Table 1.1 The problem statements and its implication in the research

Authors	**Problem statements**	**Implications**
Maas et al., 2006; Richardson et al., 2012; White et al., 2013; Chan et al., 2007; Ren et al., 2020; Fofana et al., 2020; Mazza et al., 2020	Many of the previous research only focused on the benefits of urban parks without integrating the role of urban parks to improve physical and psychological health in the context of pandemic crises.	The integration of the urban parks' role for pandemic management and recovery could provide valuable insights into how the urban park can support physical and psychological well-being. This could be particularly relevant for future pandemic preparedness and response efforts.
Slater et al., 2020; Jackson et al., 2021	Restricted access to urban parks may increase the risk of long-term health issues and the persistent environmental hazards will continue to exist after the current pandemic has passed if no action been taken to mitigate the issue	Restrictions on urban park access can disproportionately affect vulnerable urban communities. Addressing this issue is essential to prevent the exacerbation of health disparities during and after a pandemic.
Rice et al., 2020; Korevaar et al., 2020; Honey-Roses et al., 2021	Efforts to determine the effects of these park closure regulations have been constrained, limiting the ability of policymakers to evaluate their implementation adequately	Effective measure in curbing the spread of disease and maintaining public safety in needed for policymaking, ensuring that urban parks are accessible, both during and after a pandemic.

1.4 RESEARCH GAP

While many aspects of the significance of urban parks in promoting health have been studied, some are underexposed. To enhance overall health during the pandemic, we must first gain a deeper understanding of the functions and utilisation of urban parks. There are few and inconsistent studies linking the utilisation of urban parks to improved physical and psychological health. The majority of research incorporates only two concepts: either the use of urban parks to enhance health without considering pandemic crises or the perspective of physical and psychological health during a pandemic without considering the significance of urban parks.

Second, the effective utilisation of urban parks to enhance physical and psychological health during pandemic crises. It is due to a lack of studies assessing the urban parks as a catalyst to improve health concerning pandemic crises. The majority addresses the advantages of urban parks. Most regulate the effects separately and do not combine them for physical and psychological health, particularly during pandemic outbreaks. More cross-scale research is required to comprehend how to maximise the environmental health benefits of urban park utilisation during pandemic crises.

Third, the significance of urban park preventative measures in enhancing health during pandemic crises. This is due to a shortage of research that utilised a temporal perspective to compare past park usage and perceptions to the current situation of urban parks or to compare past urban park preferences without taking the pandemic crises into account. The roles performed by urban parks and their impacts, including what changes in urban park design, character, elements, features, quality, or accessibility imply for its users and the city as a whole, especially during pandemic crises, must be addressed.

1.5 RESEARCH AIM

This research aims to investigate the role of urban park as the mechanism for the physical and psychological health impacts concerning the pandemic crises.

1.6 RESEARCH QUESTIONS

As such, three questions have been raised.

1. What is the beneficial role of urban park in improving physical and psychological health during pandemic crises?
2. Why is urban park important to improve health during pandemic crises?
3. How can urban park contribute to improving physical and psychological health during pandemic crises?

1.7 RESEARCH OBJECTIVES

In this regard, the objectives below are hence formulated:

1. To investigate the beneficial role of urban park in enhancing physical and psychological health during the pandemic crises;
2. To evaluate the importance of urban park to improve physical and psychological health during the pandemic crises;
3. To propose preventative measure of urban park as a mechanism for physical and psychological health during pandemic crises.

1.8 THESIS STRUCTURE

This research is divided into five chapters. Chapter One introduces the research topic, including background information on the usage of the urban park to improve physical and psychological health during the pandemic crises. This chapter includes the problem statement, research gaps, aim, questions, objectives, and thesis structure.

Chapter Two discusses the critical literature review in greater detail before concluding with the three primary foci of this research: a conceptual review of urban parks, health, and pandemic crises. It begins with the theory of urban park that focuses on the evolution of urban park. This chapter also discusses the physical and psychological impacts and aspects of urban park during pandemic. Through a critical literature review, this chapter emphasises the information required for an integrated strategy to investigate the effectiveness of urban parks as the mechanism for physical and psychological health impacts concerning pandemic crises.

Chapter Three outlines the research design and methodology, including data needs, sampling design, and method used for this research. It determines the research approaches and method of analysis of the selected methods.

Chapter Four presents the analysis and interpretation of the findings. Based on the research findings during the data collection, this chapter explores the core of the research aim. It connects the literature review to the findings of the focus group discussion (FGD) and questionnaire survey and suggests how the findings can be used to identify the roles of urban parks as the mechanism for the physical and psychological health impacts of pandemic crises.

Chapter Five recommends and concludes the outcomes of preceding chapters, answers research questions, and concludes with ideas and recommendations for further research priorities.

1.9 CONCLUSION

This chapter presented the introduction of research topics and described the brief background information on the usage of the urban park to improve physical and psychological health impacts during the pandemic crises, including research problems, aims, questions, and objectives. The chapter concluded with the thesis structure and conclusion. The next chapter presents the relevant literature used in this research and focuses on urban parks, physical and psychological health, and pandemic crises.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter presents the literature and is divided into six sections. The first section elaborates on the theory of urban parks and its evolution. The second section explains on the physical and psychological impacts of urban park, while the third section explains on the physical and psychological aspects of urban park. The chapter continues with the elaboration on the urban park as a sustainable environmental health. The fifth section presents the importance of urban park during pandemic that includes the definition, timeline of global pandemic crises and its impacts. The last chapter presents the Islamic perspectives on urban park and health. The chapter concludes with a conclusion.

2.2 THEORY OF URBAN PARKS

Urban park is an integral part of the vast urban ecosystem networks, providing essential ecological services. According to Ching et al. (2016), park planning was inextricably linked to urban and horticultural planning. It provides environmental, aesthetic, recreational, psychological, and economic benefits to metropolitan areas (Woudstra and Fieldhouse, 2000; Loures et al., 2007). According to Loures et al. (2007), the theory of urban parks arose during the industrial revolution in the 19th century, when the urban park movement sought to enhance the quality of life in urban areas.

2.2.1 Evolution of Urban Parks and Its Definition

Urban parks have emerged as an essential component of the urban fabric for creating livable and sustainable cities and villages (Collins, 2020). It is an open space that provides multiple benefits to enhance the health, well-being, economy, and quality of life of people. According to Mazelan (2015), Frederick Law Olmsted provided the most

well-known definition of an urban park as a naturalised passive retreat. From the mid-19th century to the early 20th century, Olmsted's term was widely used worldwide, particularly in the United States. According to Maulan (2002), in 1988, Eplan defined a park as a pleasure garden where people unable to escape overcrowding, disease, and suffocating air can find a tranquil rural environment. According to Maulan (2002), Solecki, an urban geographer, defined the urban park as a form of landscape feature that offers environmental benefits, wildlife habitats, and calm and active public enjoyment. Historically, urban parks originated from public spaces in cities and municipalities that were formerly used for grazing (Mazelan, 2015). On the basis of evidence from 17th-century Western Europe and New England communities in the United States, Maulan (2002) asserts that residents had set aside areas near their towns, cities, or villages for the use of their fellow citizens. They used these commons to pasture livestock and retain animals prior to selling or utilising them in the village or town (Maulan, 2002). From this remarkable history, people began to utilise these pastoral lands for other purposes, and they eventually became vital city spaces.

The contemporary idea of the urban park emerged during the Industrial Revolution in the early 19th century in the Western world (Chen, 2013; Jones, 2018; Collins, 2020). The finding by Jones (2018) demonstrates that, at an early stage, urban planners recognised the significance of urban parks in enhancing the quality of urban life, which had declined as a result of the period's increasing industrialization. Parks evolved as a refuge from the stresses of industrial cities. The idea spread to the United States, Great Britain, and continental Europe (Collins, 2020). Cities such as Sweden, Denmark, and the Netherlands began to construct and develop urban parks to enhance the quality of urban environments (Sadeghian and Vardanyan, 2015). Eventually, numerous parks were established during this period for a variety of purposes.

In addition to accelerated industrialization, widespread urban migration also contributed to the development of urban parks, according to Sadeghian and Vardanyan (2015). According to Collins (2020), the massive influx of people into cities has considerably impacted the character of urban life in congested urban areas. Since then, planners have begun to view urban parks as places that could enhance the tranquilly and comfort of city life by providing a place for urban residents to escape the grime and

stress (Collins, 2020). Late in the nineteenth century, social reform of the working class in Britain set the groundwork for early legislation by establishing open spaces in the cities (Maulan, 2002). This led to the construction of urban parks at public expense. Since then, urban parks have altered American and European cities.

During the late 19th-century colonial period, Europeans introduced the concept of urban parks to Asia, and by the 20th century, cities such as Manila, Hong Kong, Shanghai, Singapore, and Kuala Lumpur had urban parks (Yuen, 2011). During colonialism, however, landscapes were manipulated and altered to satisfy the demands of colonial authorities, as demonstrated by Maulan's (2002) study. Maulan explains that colonial monarchs sought to establish private sanctuaries for their own families, residents, and local affluent individuals, such as members of the royal family, rather than public parks. According to Yuen (2011), after World War II, when countries such as Singapore, Malaysia, Indonesia, China, and the Philippines gained independence, the demand for urban parks increased as cities expanded and urban populations exploded. There was a demand for improved urban spaces for health and recreation, as well as better town and municipal planning (Maulan, 2002; Yuen, 2011). To meet this demand, governments in the majority of Eastern countries have begun to construct new parks and redevelop existing ones.

In today's extensively urbanised and industrialised communities, urban parks are valuable assets to city-states (Church, 2018). Urban parks are rapidly becoming one of the most important components of the urban environment. Since many cities have become more urbanised and industrialised, the need and demand for urban parks have increased as a result of substantial population shifts (Chiesura, 2004; Gobster, 2007; Abdelhamid and Elfakharany, 2020). According to Chiesura (2004), urban parks provide multiple benefits to cities and their residents. People would visit an urban park for recreation, relaxation, and social interaction with their families and neighbours (Peters et al., 2010; Sandifer et al., 2015; Church, 2018). It has evolved into essential and prized urban spaces that contribute to a city's image and enhance its quality of life. This human-nature contact role played by urban parks has significant physical and psychological health impacts, including reductions in obesity, depression, and anxiety, as well as increases in physical activity, spiritual engagement, and social connection

(Bratman et al., 2019, Frumkin et al., 2017, Svendsen et al., 2016). Figure 2.1 depicts the development of urban parks from the 17th to the 20th centuries.

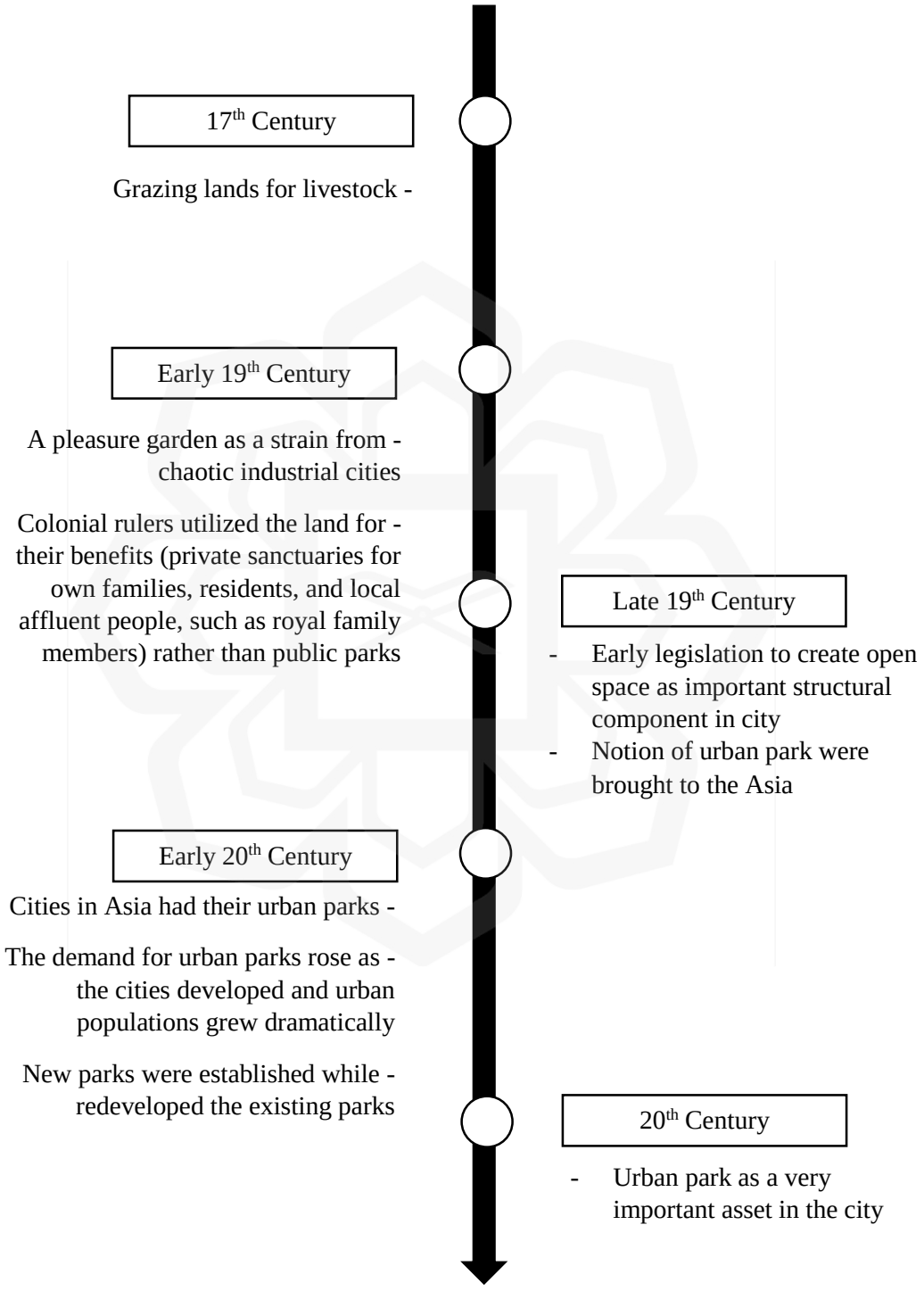

Figure 2.1 Timeline of the urban park's evolution

According to Wong et al. (2005), the definition of an urban park in the context of the urban world is a useful source of enjoyment for users and a pleasant location for city dwellers to have fun while escaping the strains and expectations of urbanisation. According to Hami (2009) and McCormack (2010), an urban park is any designated public place that is located inside a metropolitan region and that provides options for either passive or active forms of recreation. According to Yuen (2011), who conducted research on urban parks in Southeast Asia, one definition of an urban park is any land in an urban setting that is set aside for aesthetic, recreational, cultural, and educational purposes for the use of the public. This is yet another explanation of what constitutes an urban park. This is confirmed by Christiansen et al. (2001) and Malek (2012), who claimed that urban parks are designed for leisure and would give urbanites with enormous advantages through boosting public health, social well-being, and public enjoyment of the local environment. Christiansen et al. (2001) and Malek (2012) also noted that urban parks are meant for leisure and will provide urbanites with incredible advantages. In the perspective of urban lifestyle, Shafee (2019) offers an alternative definition of an urban park as a public place in metropolitan regions that includes eco-friendly spaces for leisure activities and social life, a natural setting, aesthetic purpose, education, and cultural heritage. This definition of an urban park may be found in the context of urban lifestyle.

Urban parks have been utilised in a variety of ways over the course of human history in order to fulfil the requirements of various cultures, civilizations, and cities (Peters et al., 2010; Sandifer et al., 2015; Church, 2018). A shift in lifestyle, for instance, can increase people's concerns about their health and fitness, which would result in an increase in the number of people going to parks to work out. According to Shafee (2019), the need for a variety of leisure spaces and activities had an impact on the layout and design of parks. The number of people living in cities will continue to rise, which will result in a major rise in demand for open spaces, activities that are suitable for families, and programmes for both children and ageing populations.

2.3 PHYSICAL AND PSYCHOLOGICAL IMPACTS OF URBAN PARK

Since the beginning of urban planning, the significance of urban parks to city life has been a topic of discussion. According to Maulan (2002), Fredrick Law Olmstead, the designer of the world-famous Central Park in New York City, popularised the notion that urban parks offer numerous health benefits to residents. Pelgrims et al. (2021) advocate for an urban design that allows for the planting of large, mature trees along city streets, as well as parks that offer a respite from the city's commotion, congestion, and sights. In the 1980s, greenbelts encircled Ebenezer Howard's Garden Cities and Corbusier's high-rises were interwoven with parks, allowing residents to enjoy their leisure time in clean, light, noise-free environments (Dines, 2016). Konijnendijk et al. (2013) discussed the need for urban dwellers to engage in open leisure, or enjoyment of the environment without exertion. Konijnendijk et al. (2013) has categorised the benefits of urban parks based on the strength of the scientific evidence supporting them as follows: biodiversity benefit, health and wellbeing benefit, house prices benefit, cooling benefit, air quality and carbon sequestration benefit, water management benefit, tourism benefit, and finally social cohesion benefit.

According to Sadeghian and Vardanyan (2013), urban parks have the potential to satisfy a broad range of human needs. Several studies have shown that nature and green open spaces benefit public health by reducing stress and psychological disorders (Thompson et. al., 2012; Annerstedt et al., 2012; Sadeghian and Vardanyan, 2013), increasing the effect of physical activity (Mitchell et al., 2012), improving health outcomes (Mitchell and Popham, 2008), and enhancing the perception of life quality and self-reported overall fitness (Maas et al., 2006; Stigsdotter et. al., 2010). By providing opportunities for physical activity (Coombes et al., 2010), enhancing enjoyment with the living environment and social interactions (Bjork et al., 2008; Maas et al., 2009), and by various types and modalities of recreation (Weber and Anderson, 2010), indirect health effects are communicated.

2.3.1 Urban Parks Enhanced Physical Activity

There is evidence that the presence of parks is associated with improved physical health (Pereira, 2012; Gascon, 2015; Twohig et al., 2018; Carmona, 2021). According to Carmona (2021), research conducted in the 1980s by Roger Ulrich demonstrated that merely gazing out the window at nature can provide physical benefits. Carmona (2021) added that patients in hospital beds with a view of trees recovered more quickly, used less pain medication, and had fewer post-surgical complications than those in accommodations with city views. A systematic review conducted by Twohig et al. (2018) found that people who spend more time in natural areas have significantly reduced risks for a variety of chronic diseases. Twohig et al. (2018) found that exposure to green spaces was associated with a lower heart rate, lower blood pressure, lower cholesterol, and a reduced incidence of stroke, asthma, diabetes, and coronary heart disease.

Moreover, Gascon (2015) found in a systematic review of research that residing in areas with higher levels of residential greenness reduces the risk of cardiovascular mortality. According to the findings of Hu et al. (2008), greater exposure to green space is associated with a reduced incidence of stroke deaths in Florida. A finding by Pereira (2012) emphasised the significance of landscape diversity, such as trees and open spaces, in enhancing physical health outcomes. According to the study's findings, a greater variety of greenery in a neighbourhood is associated with a reduced risk of cardiovascular disease and stroke. People residing in metropolitan areas with highly variable greenness had a lower risk of hospitalisation and self-reported heart disease or stroke, according to the study. According to Pereira et al. (2012), variation in the distribution of greenness may contribute to enhanced health outcomes by encouraging physical activity.

There is evidence that urban parks enhance physical health, where, according to Nicol and Blake (2000), over 80% of the population of the United Kingdom resides in urban settings, and thus the open space within urban areas provides a sustainable portion of total outdoor recreational opportunities. According to a study conducted by Neuvonen et al. (2007), nearly all (97%) of Helsinki's city residents engage in some form of outdoor recreation throughout the year. The majority of the population visits

the outdoors daily or every other day. Karade et al. (2013), on the other hand, highlighted the finding made by Sorensen in 1997 in Mexico City, where the strategically located Chapultepec Park attracts up to three million people per week who engage in a variety of activities. According to Karade et al. (2013), residing near a park in an urban environment improves people's physical health, primarily by increasing their activity levels. This is due to the fact that parks provide a place for people to engage in physical activity, meander, and cycle while appreciating nature and escaping traffic. This increases the number of opportunities for exercise and makes it more enjoyable.

2.3.2 Urban Parks Improved Psychological Health

Natural environments can also considerably enhance an individual's overall psychological health (Van den Berg et al., 2015; Bowen, 2015; Frumkin et al., 2017; White et al., 2019). It can reduce the environmental and health risks associated with urban living. According to Frumkin et al. (2017), the presence of urban parks and verdant spaces promotes psychological health and well-being by promoting stress reduction and relaxation. This health advantage consists of improved psychological health, physical fitness, cognitive and immunological function, and lower overall mortality rates (Thompson et al., 2012; Annerstedt et al., 2012; Sadeghian and Vardanyan, 2013). Bowen (2015) demonstrated that exposure to the natural environment can reduce stress levels. Other studies by Annerstedt et al. (2012) and Grahn and Stigsdotter (2003) demonstrated that parks have a significant positive impact on psychological health by enhancing general mood, reducing depressive symptoms, enhancing cognitive functioning, concentration, and short-term memory performance, and fostering creativity.

As revealed by Frumkin et al. (2017) in their study, stress levels decreased instantaneously when people were exposed to natural environments, whereas stress levels remained elevated when people were exposed to urban environments. In the same study, the author demonstrated that hospital patients whose rooms confronted a park recovered 10% faster and required 50% fewer strong painkillers than those whose rooms faced a building wall. This is persuasive evidence that urban parks may enhance

the physical and psychological health of city residents. Grahn and Stigsdotter (2003) found in another study conducted in Swedish cities that the more time people spend outdoors in urban parks, the less anxious they are. Lack of interaction with natural environments has been linked to an increase in the incidence of psychological disorders (Van den Berg et al., 2015). Louv (2005) coined the term nature deficit disorder based on an expanding corpus of research indicating that a lack of contact with nature is detrimental.

The aforementioned factors align with the World Health Organization's (WHO) definition of health, which incorporates physical and psychological aspects (WHO, 2016). In addition, Leung et al. (2020) highlight the efforts of society and communities to promote health and prevent disease. To promote and enhance public health, it is believed that local administrators and policymakers must engage in a variety of activities. Creating a healthy urban environment is a crucial contribution to this industry. Given the increasing global urbanisation, urban parks are one of the most important factors in sustaining and promoting the physical and psychological health of urban residents.

2.4 PHYSICAL AND PSYCHOLOGICAL ASPECTS OF URBAN PARK

During protracted periods of pandemic lockdown and quarantine, during which any green outdoor spaces (especially parks) may be temporarily closed, it is essential to design, plan, and manage parks so that they are accessible and offer recreational opportunities for diverse communities at all times (Wolch et al., 2014; Smiley et al., 2016). Prior research has examined urban park visitation and access, but it remains unclear how visitor perceptions and preferences vary across various categories of urban parks (Weems, 2016; Vierikko et al., 2020). This is due to the fact that an urban park may contain a variety of characteristics that have a positive effect on humans, such as peaceful relaxation, interaction with the natural green environment, children's play area, physical exercise, and sporting activities, as well as escape from unpleasant qualities of the urban environment, such as traffic and heat (Matthews et al., 2021). Consequently, this research will emphasise the four primary design factors of urban parks that are associated with health impacts, namely accessibility and quality perceptions of urban

parks, size of urban parks, availability of facilities in urban parks, and greenery and its density.

2.4.1 Accessibility and Quality Perceptions of Urban Parks

Research on the relationship between parks and health outcomes has long focused on the role that physical activity plays in this relationship (Giles-Corti et al., 2005; Hillsdon et al., 2006). According to the findings of a qualitative study conducted by McCormack et al. (2010), the promotion of outdoor physical activity requires parks to have certain features, the most important of which are accessibility, safety, attractiveness, facilities, upkeep and maintenance, and closeness to homes. Both the amount of time people spent in parks and the amount of exercise they got had a negative impact due to factors such as vandalism, violence, graffiti, trash, dog faeces, congestion, and other types of pollution.

Giles-Corti et al. (2005) discovered that access to visually enticing and expansive parks was associated with increased walking. This is supported by a Dutch study (Van Dillen et al., 2012) that investigated the quantity and character of parks, in addition to their associations with self-reported health. Van Dillen et al. (2012) discovered that the character of a park, as measured by factors such as accessibility, maintenance and upkeep, absence of garbage, and safety, was positively associated with overall health. In an Australian study, Sugiyama et al. (2013) found no correlation between walking initiation and the quality and proximity of urban parks. However, access to urban parks and the presence of large-scale vegetation within 1.6 kilometres of one's residence were associated with walking frequency. The aesthetic value of urban parks has also been linked to increased recreational walking (Sugiyama et al., 2010). This position was supported by Wang et al. (2015), who found in their study that positive views on the experience of visiting parks and perceptions of its accessibility appear to be as predictive of urban park usage as independently evaluated geographic factors.

Pope et al. (2015) identified features of urban parks that facilitate relaxation and enjoyment as crucial factors for enhancing psychological well-being. Francis et al. (2012) have demonstrated that the character of public open spaces (including parks and gardens) in the community is more essential for psychological health than their quantity. Dadvand et al. (2014) found that verdant residential areas, as measured by NDVI, and proximity to woodlands were associated with a lower likelihood of being overweight or obese. Pereira et al. (2012) discovered that the area's greenness diversity had a protective effect against coronary heart disease and stroke in adults. According to the study by Pereira et al. (2012), residents of verdant communities are more likely to be exposed to visually appealing natural environments and urban destinations that encourage walking.

2.4.2 Size of Urban Parks

The size of parks is likely to influence the number and variety of activities that individuals engage in within them. According to Sugiyama et al. (2010), the aesthetics and activity opportunities of an area are more important than the number of available open spaces. This study examined parks ranging in size from approximately 110 hectares. When planning and constructing green spaces to encourage physical activity, the authors argued that it may be preferable to have one large park rather than several lesser parks. This notion was supported by a study by Epstein et al. (2006), which found that children who reside near prominent parks anticipate spending significantly more time performing moderate- to vigorous-intensity activities.

Further research is required to ascertain the relationship between green space layout and health outcomes. According to Robertson et al. (2012), what green space offers in terms of facilities and services, event programmes, formal game pitches, wellness trails, cycling, walking, and hiking routes, possibilities that can be used as a route to regular locations such as schools or shops will be affected not only by its design and management, but also by its size, shape, topography, and/or configuration in relation to broader facilities and the variety of uses.

2.4.3 Availability of Facilities in the Urban Parks

The surrounding environment may either encourage or discourage outdoor activity. According to a study conducted in Ontario, Canada (Kaczynski et al., 2008), park amenities like paved trails, water areas, and playgrounds are more important for physical activity than garden amenities like beverage fountains, picnic areas, and restrooms. According to Schipperijn et al. (2013), elements such as walking or cycling paths, woodland areas, water features, light, appealing vistas, bike racks, and parking are positively associated with the level of physical activity in the park of the neighbouring metropolis. In studies conducted in the United States, playground utilisation was associated with increased levels of physical activity among adolescents aged 11 to 14 (Oreskovic et al., 2015).

In addition, Chastin et al. (2014) found that an inadequate number of outdoor resting areas in the domicile significantly inhibits participants' motivation or confidence to be physically active. The majority of respondents indicated that they would walk more if there were rest stops at regular intervals in public spaces, allowing them to catch their breath when necessary and boosting their confidence to explore further. This supports a previous study that demonstrated the importance of trees and greenery as a lure for parents to utilise the outdoor environment, as well as the need for seating and amenities such as restrooms to enable the elderly access to and enjoyment of public green areas (Aspinall et al., 2010).

2.4.4 Greenery and Its Density

Research conducted by Tan et al. (2015) found that urban greenery has the potential to significantly mitigate the urban heat island effect. Despite the fact that the population's perception of a lack of surrounding greenery was substantially associated with mortality in the study of all-cause mortality during heat waves in Barcelona, Spain (Xu et al., 2013), researchers found that a higher proportion of tree closures was not associated with a reduced risk mortality.

In the United States, Jiang et al. (2014) investigated the effect of tree canopy density on self-reported stress recovery in a laboratory setting. The authors discovered a positive linear relationship between tree density and self-reported stress levels, demonstrating a correlation between the two variables. Jiang et al. (2014) discovered that moderate tree density reduced male tension more than high or low levels, but not female stress. In addition, according to a study conducted in Baltimore (Holtan et al., 2015), tree canopies have the ability to increase social capital. According to the findings of Kuo et al. (2001), the presence of trees and vegetation visible from an apartment block reduces levels of hostility and psychological exhaustion among residents, compared to those who live indoors and view a desolate environment. In addition, Kuo et al. (2001) demonstrated that the absence of green features near dwellings has a negative impact on the administration of vital life concerns. However, certain characteristics of parks associated with tree cover, particularly when overgrown or unmanaged, can increase anxiety due to dread of criminality and have a negative impact on the well-being of individuals.

2.5 URBAN PARK AS SUSTAINABLE ENVIRONMENTAL HEALTH

The environment, in its broadest sense, is one of the most important determinants of human health and happiness. According to a study conducted by Goldman and Coussens (2004) for the Pew Charitable Trusts in 2000, 86% of the American public agreed that environmental factors play a significant role in causing illness. According to the author, health professionals, policymakers, and emergency response teams require immediate access to exposure and background data in times of crisis, whether natural, incidental, or terroristic. The challenge, according to Goldman and Coussens (2004), is that information must be obtained rapidly and in a comprehensible format in order to construct appropriate interventions and notify the public. Environmental health experts have advocated for additional research into diverse environmental exposures (Shrestha et al., 2016; Pineo et al., 2018).

Environmental health indicators establish a crucial connection between toxicant exposure and health outcomes (Briggs, 1999; Kjellstrom and Corvalan, 1996; Rice, 2013). According to the Centres for Disease Control and Prevention (2011), the purpose of the environmental health indicator is to identify developing threats over time, implement control measures, evaluate their effectiveness, and modify them as necessary. It is the practical application of epidemiological, toxicological, and other data to attain the following objectives:

i. Monitor progress towards sustainable development;
ii. Monitor trends in environmental conditions;
iii. Monitor trends in the health impacts of risks;
iv. Look into the linkages between the environmental and health;
v. Track the impact of policies and their preventative measures; and
vi. Examine patterns in different geographic locations

Massive amounts of data on environmental conditions, including human health risks, are collected, but they are rarely properly linked to health outcomes; conversely, innumerable health outcomes are recorded that are not properly linked to environmental risks (Kjellstrom et al., 2007). According to the Centres for Disease Control and Prevention (2011), it is difficult to maximise the availability of usable links between environmental exposure and health outcomes due to the independent monitoring of the state of health and the state of the environment by different agencies employing different methodologies. This makes it difficult to take timely and appropriate corrective action.

According to Moy et al. (2010), numerous countries address the issues of producing human health indicators with a clear and comprehensible correlation and influence on the environment, also known as an environmental health indicator (EHI). (Briggs, 1999; Kjellstrom et al., 2007) The Environmental Health Indicators (EHI) are essential tools for evaluating potential hazards to human health from pollution and diseases and guiding policymaking. EHIs can provide decision-makers with a valuable

tool for identifying and prioritising issues affecting human health and the environment on a local scale, as well as the ability to monitor, analyse, and compare trends on a national and international scale (Vlahov et al., 2007, Pineo et al., 2018).

2.5.1 Definition of Environmental Health Indicator (EHI)

In recent years, the term indicator has become more prevalent in scientific and international agency publications (WHO, 2002). According to the World Health Organisation, monitoring and the use of indicators are widespread in government and business as a means of analysing issues, establishing policy, and tracking progress. Indicators provide information about situations and, when monitored over time, reveal changes and tendencies. Niemeijer (2002) noted that indicators frequently indicate that something more fundamental or complex is occurring than what is assessed, which makes them essential for governing policy and conducting research.

In a study by Spangenberg (2002), the intense debate on indicators prompted by the recommendations in Agenda 21's Chapter 40, Information for Decision-Making, is cited as one explanation. According to Spangenberg, sustainable development indicators must be developed to provide reliable bases for decision-making at all levels and to promote the self-regulation of integrated environmental and development systems. Corvalan et al. (1999) noted that countries, international governmental organisations, and non-profit organisations were charged with devising the concept of sustainable development indicators. According to Kjellstrom et al. (2007), the World Health Organisation is assisting in the development and dissemination of population health indicators, a crucial aspect of sustainable development as highlighted in Chapter 6 of Agenda 21, Protecting and Promoting Human Health. EHI, or environmental health indicators, are of particular interest to the WHO in terms of specific environmental aspects of development.

According to Karim (2007), an environmental health indicator is a quantitative measurement that analyses the impact of an environmental agent on the health and well-being of a community's adults or children. As a measure of environmental health, Kjellstrom et al. (2007) suggest using the proportion of a community's population that

suffers from maladies directly attributable to exposure to environmental agents. According to English et al. (2009), an environmental health indicator is distinguished by providing information regarding a scientifically supported relationship between the environment and health. English et al. (2009) state that an indicator cannot be considered an environmental health indicator if it only reports the status of the environment and has no obvious relationship to environmental health effects.

In the study by Kjellstrom et al. (2007), a number of alternative working definitions of environmental health indicators have been stated. Indicator of environmental health has been described as:

i. Environmental and health information may be utilised in management and decision-making for the protection and promotion of human health.

ii. Intended to shed light on the environmental impact on human health and well-being. The data is intended to enhance environmental and health management decision-making. This presupposes that a plausible connection between the environment and health has been established.

iii. A parameter or value derived from parameters that aims to provide information about or describe the state of the environment in relation to human health and has significance beyond what can be garnered directly from observable characteristics.

The environment-health relationship and decision-makers' activities to mitigate environmental health concerns are the two fundamental factors in all of these formulations.

2.5.2 Key Purpose and the Relevance of Environmental Health Indicator (EHI)

The most important characteristic of an environmental health indicator is that it demonstrates a connection between the environment and health (Kjellstrom and Corvalan, 1995; Briggs, 1999; Rice, 2003). According to Dalbokova and Khalmeier

(2008), environmental indicators are those that describe the environment without any explicit or direct implications for health; health indicators are those that describe the state of, or changes in, health without any explicit or direct implications for the environment. Environmental health focuses primarily on how specific environmental factors may impact or directly affect human health, either positively or negatively (Dalbokova and Khalmeier, 2008). Figure 2.2 illustrates how Briggs et al. (2000) devised the scope of the environmental health indicator to facilitate a better comprehension of this metric. It depicts the three interconnected domains of environment, health, and environmental health. The intersection (or relationship) between the environment and health is represented by the indicator area 'A'. Area 'B' signifies the area in which the environment may contribute to health outcomes even though it does not directly affect human health. Area 'C' reflects health outcomes (such as diseases such as certain malignancies) with uncertain but potentially environmental causes. Aspects 'D' and 'E' represent those areas of the environment and health in which there is no clear connection.

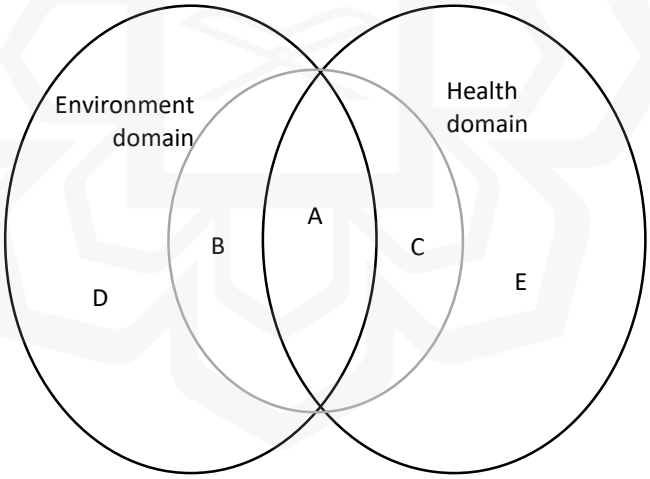

Figure 2.2 The scope of the environmental health indicator (Source: Briggs et al. 2000, p.32). A: represents the environmental health indicator, B: represents environmental indicators indicating potential human health impacts, and C: represents health indicators with an unknown but possible environmental causes.

According to Briggs (2000), amongst the assumptions of the environmental health indicator are that indicator is valid (i.e., it measures what was intended to be measured), reliable (i.e., its measurement is not significantly affected by random error), has broad and representative coverage of the population or area of interest, and if time comparisons are required, they can be obtained continuously and periodically. Kjellstrom et al. (2007) have written about these and other specific criteria for selecting or constructing indicators. According to Kjellstrom et al. (2007), the most important characteristics of an environmental health indicator are that it is based on a strong or reasonable relationship between the environment and health, that it utilises existing or easily collected data, that it is easily understood by decision-makers as opposed to experts, and that it can guide the implementation of specific precautions. As a result, an environmental health indicator can be regarded as a measure that summarises in easily understandable and actionable terms a component of the environment-health interaction (Corvalan et al., 2000). Consequently, it is a metric that represents the health outcome as a consequence of exposure to an environmental hazard and is founded on the application of a known or assumed environmental-exposure health-effect link.

According to Briggs et al. (2000), environmental health indicators are numerical measurements of environmental threats, health consequences, and management procedures. Indicators are created with policy and practise in mind; for instance, it must be straightforward to comprehend what changes in the indicator signify in terms of changes to current practise (Briggs et al., 2000). According to Pineo et al. (2018), this environmental health indicator can serve a variety of functions. An important application of environmental health indicators from a strictly human rights perspective is identifying and holding accountable the entities, organisations, and individuals primarily responsible for causing or allowing the adverse effects of harmful environmental agents on human populations (Karim, 2007). For these reasons, environmental health indicators are the most important tools for bringing to light significant public health policy issues that have historically been overlooked or given low priority by elected authorities or regulatory bodies (Briggs, 2000). As stated by Karim (2007), environmental health indicators provide avenues for monitoring and data collection, allowing the public to evaluate alternative policy options being considered by local regulatory officials and other national and international decision-makers.

Although these indicators are ineffectual of detecting underlying societal concerns associated with environmental impacts on human health, they can be used to increase community awareness of important environmental issues (Karim, 2007). In other words, they can be utilised by both the general public and policymakers as valuable instruments to target environmental health issues that require immediate action (Pineo et al., 2018).

2.6 THE IMPORTANCE OF URBAN PARK DURING PANDEMIC

According to Gossling et al. (2020), the historical pandemic agents most likely originated in large groups of animals that may sustain transmission of the agent within those populations. There have been 249 pandemics from 1,200 B.C. to the present-day COVID-19 virus. According to Wernecke et al. (2020), these transmission agents can arise as a result of alterations in the type or behaviour of commensal bacteria that cause disease, or as a result of infection by novel organisms, primarily through interaction with animals and the environment, where the majority of microorganisms reside. According to Woolhouse and Gowtage-Sequeria (2005), over 60% of human diseases have an animal origin, and Taylor et al. (2001) estimate that approximately 75% of all novel and emerging human infectious diseases "jump species" from (non-human) animals to humans. This infection transmitted to humans from animals or fauna is known as zoonotic disease (Howie, 2020). Notable zoonotic diseases include Bird Flu, pandemic human influenza (H1N1), the Middle East respiratory syndrome (MERS), and severe acute respiratory syndrome (SARS), of which the majority have proven or suspected domestic animal involvement in transmission; only SARS has a suspected pre-domestic wildlife reservoir, though this has yet to be confirmed (Taylor et al., 2001).

Evidence from previous studies demonstrated that each pandemic is detrimental to human life (Qiu et al., 2017; Madhav et al., 2018). Emerging diseases are, without a doubt, exceedingly problematic, with some becoming epidemic and others pandemic. According to Qiu et al. (2017), pandemics are unpredictable but periodic occurrences that can have far-reaching effects on cultures around the globe. It affects a larger population and is frequently caused by a virus or disease that has not existed for

centuries or decades. This disease increased human-animal interactions, which facilitated the transmission of pathogens. It increased travel to other locations, exposing people to other viruses and pathogens, which will eventually have a negative impact on their health (Howie, 2020). The relationship between humans, animals, and the environment that can affect one's health is depicted in Figure 2.3.

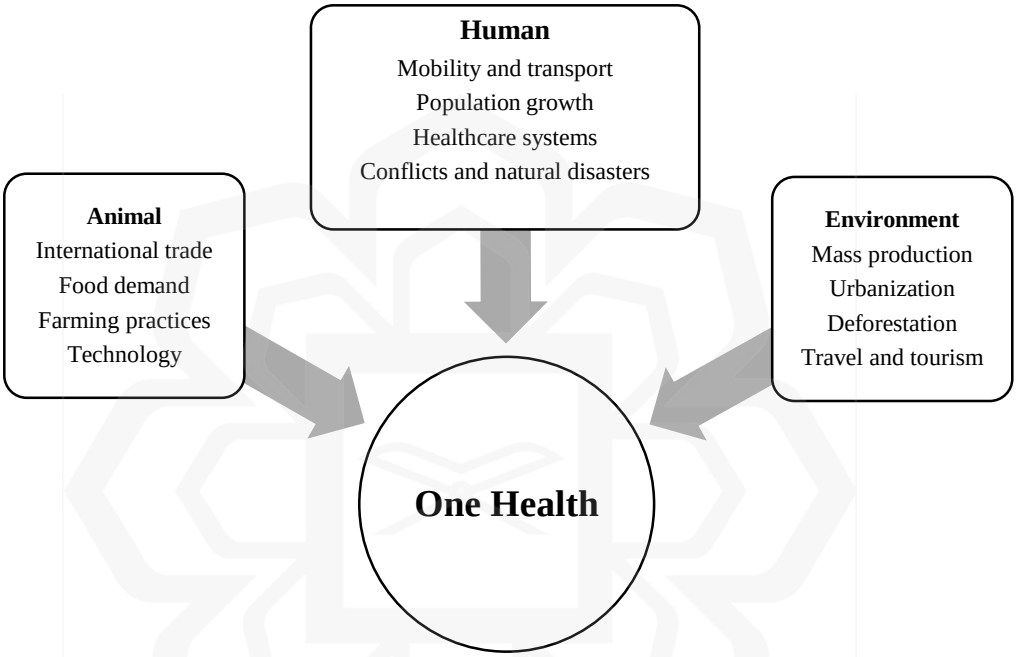

Figure 2.3 Relationship of human, animal and environment that can affect one's health. (Adapted from Howie, 2020)

As a result of the fact that the vast majority of people have very little or no protection against diseases, pandemic crises typically generate social unrest and a worsening in public health. According to Qiu et al. (2017), the pandemic that occurred in 1918-1919 is considered to be the worst pandemic that has ever been documented in the history of humankind. This is because it claimed the lives of over 20 million people all over the world. People are getting sick and dying as a result of this epidemic, which has caused billions of people to go into various forms of lockdowns as health services struggle to keep up. The progression of mankind should not be slowed down, even in

the face of ongoing pandemics and the possibility of future ones. It is essential to acquire new knowledge on a consistent basis, make adjustments in response to the pandemic, and do geographical and statistical measures to limit the spread.

2.6.1 Definition of Pandemic Crises

According to Qiu et al. (2017), the term pandemic is derived from the Greek word, *Pan*, which means all, and *Demos*, which means people. It is commonly used to characterise a widespread infectious disease epidemic that affects the entire nation or the entire globe. The Dictionary of Epidemiology provides a straightforward and well-known definition of a pandemic: an epidemic that occurs globally or across a very large region, crosses international borders, and frequently affects a large number of people (Qiu et al., 2017). Despite the fact that many medical publications and studies do not define the term "pandemic," there are fundamental characteristics of a pandemic that aid in understanding the concept (Taubenberger et al., 2009; Rewar et al., 2015; Barrelet et al., 2013; Morens et al., 2009; Donaldson et al., 2009; Su et al., 2015; Taubenberger et al., 2009; Fangriya, 2015; WHO, 2013; Wildoner, 2016). According to Qiu et al. (2017), there are seven features of a pandemic: wide geographic extension, disease movement, novelty, severity, high attack rates and explosiveness, minimal population immunity, and the pandemic's infectiousness and contagiousness. Table 2.1 describes each of the pandemic features.

Table 2.1 Seven features of a pandemic

Features	Description	Author(s)
Wide geographic extension	Typically, the term pandemic refers to diseases that spread over a large geographical area, such as the Black Death epidemic of the 14th century, cholera, influenza, and the HIV/AIDS virus of human infection. In recent analyses of the history of influenza pandemics, pandemics have been classified as trans-regional or global. 178 countries became infected during the 2009 H1N1 pandemic.	Taubenberger et al., 2009; Rewar et al., 2015.

Disease movement	Most of the time, the word "pandemic" refers to the sudden spread of a disease or its spread from one place to another in a way that can be tracked, like the Black Death. There is a wide spread of diseases that are caused by lung viruses, like influenza and SARS, or by organisms in the gut, like Vibrio cholera, or by carriers, like dengue. For the influenza A (H1N1) pandemic, the virus spread widely in both hemispheres between April and September 2009. In the temperate southern hemisphere, this was at the start of the flu season, but it was not the flu season in the temperate northern hemisphere. Pandemics of influenza are different because they happen outside of flu season.	Barrelet et al., 2013
Novelty	Commonly, the term pandemic refers to a disease that is new or associated with a new type of existing organisms, such as antigenic changes in the influenza virus, the advent of HIV/AIDS in the early 1980s, and the history of disease-like epidemics. Nonetheless, novelty is a subjective term. According to Morens et al. (2009), there have been seven cholera epidemics over the past two centuries, and all of them appear to have been caused by the same variety of bacteria. Emerging diseases with pandemic potential that originated in Asia in the twenty-first century are SARS and the bird flu.	Morens et al., 2009
Severity	The term pandemic is frequently associated with severe or catastrophic infections (such as the Black Death, HIV/AIDS, and SARS). According to Rewar et al. (2015), when a virulent new viral strain against which the human population has no immunity emerges, global pandemics with significant mortality and morbidity follow. Case fatality ratio is used as a severity metric. In contrast to Ebola, according to WHO (2003), the majority of patients perish within 10 days of infection, with a mortality rate of 50–90%. The H7N9 outbreak has caused over 600 human ailments, with mortality rates exceeding 30%.	Rewar et al., 2015; Donaldson et al., 2009; WHO, 2003; Su et al., 2015

High attack rates and explosiveness	Pandemics are characterised by their high attack rates and swift spread. Influenza H1N1, Ebola, and SARS are examples. However, a transmission is not considered a pandemic if it is not explosive and pervasive. In 1999, for instance, the West Nile virus spread across the Middle East, Russia, and the Western Hemisphere, but transmission was sluggish and attack rates were low, so it was not deemed a pandemic. Diseases with a moderate rate of transmission or clinical illness are rarely recognised as pandemics, even if they spread rapidly. However, Donaldson et al. (2009) noted that diseases with low or moderate severity, including Acute Haemorrhagic Conjunctivitis (AHC) in 1981 and global cyclic recurrent scabies, have also been designated as pandemics when they exhibit an outbreak (AHC) or pervasive and recurrent geographical spread.	Donaldson et al., 2009
Minimal population immunity	Despite the fact that pandemics are frequently documented in semi-immune populations, it is evident that population immunity may be a significant anti-pandemic factor in preventing infection and microbial transmission. Pandemics are characterised by nearly total population immunity. As a consequence, the majority of the population is susceptible to infection. For instance, because H7N9 is a novel influenza virus, the population lacks protection, resulting in a rapid increase in the number of cases worldwide.	Taubenberger et al., 2009; Fangriya, 2015; WHO, 2013; Wildoner, 2016
Infectiousness and contagiousness	Pandemics have occasionally been used to explain non-communicable diseases like obesity or dangerous behaviours like smoking that are geographically widespread and may increase internationally but are not infectious. Infectious diseases transmit between people. According to Morens et al. (2009), this transmission might be direct (person-to-person) or indirect (person-to-vector-person). SARS spreads by close contact, while H7N9 spreads through live poultry.	Morens et al., 2009; Su et al., 2015

Given the comprehensive definition of the term, pandemics may occur annually in both the temperate southern and northern hemispheres (Morens et al., 2009). In the case of influenza, biologists require that pandemic variants endure significant genetic changes known as an antigenic shift (WHO, 2011). In order for the World Health Organisation to issue a level six pandemic alert, continuous transmission must occur simultaneously in at least two regions. WHO's standard definition of pandemic refers to a situation in which a new and highly pathogenic viral subtype establishes a foothold in the human population, to which few or no humans have immunological resistance and which is easily transmissible between humans, at which point it rapidly spreads across the globe (WHO, 2011).

2.6.2 Overview and Timeline of the Global Pandemic Crises

Numerous studies over the past two thousand years have described pandemics according to the pandemic period, but agents and diseases are not inherently distinguishable due to the absence of current case definitions or medical terminology (LePan, 2020; Piret and Boivin, 2021; Sampath et al., 2021). Plague is an appropriate beginning for diseases and pandemics in history. Plague is derived from the Greek word *plaga*, which means to strike or to strike with force (Howie et al., 2020). Howie et al. (2020) state that the term plague is used interchangeably when referring to the contagious febrile disease caused by *Yersinia pestis*. The term plague is also used to refer to any outbreak of disease that causes a sudden pandemic (WHO, 2020). According to Huremovic (2019), the plagues mentioned in the sacred texts that form the foundation of Abrahamic religions, commencing with the Old Testament, are perhaps the most well-known examples of documented plagues. Huremovic also drew attention to the Book of Exodus, Chapters 7 through 11, which describes a series of ten calamities that would strike the Egyptians before the Israelites, who had been held captive by Pharaoh, the governor of Egypt, were eventually set free. According to Lice, diseased livestock, sores, and possibly infant mortality are symptoms of a variety of infectious diseases, zoonoses, and parasitoses (Piret and Boivin, 2021).

Huremovic (2019) highlighted that in Islamic tradition, similar plagues were mentioned and referred to in Chapter 7 of the Qur'an,

> “So We plagued them with floods, locusts, lice, frogs, and blood—all as clear signs, but they persisted in arrogance and were a wicked people” (Surah Al-A'raf, verse 133).

Regardless of the evidence, these events had a significant impact on human history and are now celebrated in religious traditions around the globe. According to Sampath et al. (2021), primarily referring to Western history, there have been recorded pandemics that have profoundly altered our history and civilization, including laying the foundations for contemporary health sciences.

During the Peloponnesian War in 430-26 B.C., the Athenian Plague, which originated in Ethiopia and spread throughout Egypt and Greece, occurs for the first time. According to Qiu et al. (2017), the initial symptoms include headache, conjunctivitis, rashes, fever, and hemoptysis (blood weeping from the lungs). Since this occurred during a conflict, there was significant overcrowding in Athens; consequently, the epidemic spread rapidly and killed more than 25% of the population (Huremovic, 2019). Later, between 165 and 180 A.D., it was discovered that the Antonine Plague (also known as the Galen Plague) occurred in the Roman Empire, was brought by soldiers from Seville, and affected Asia Minor, Egypt, Greece, and Italy (LePan, 2020; Sampath et al., 2021). The Antonine Plague, which killed nearly a third of the population, or approximately 5 million people, likely initiated the decline of the Roman Empire (Huremovic, 2019).

In 541-542 A.D., the first plague induced by *Yersinia pestis* was documented; this was the Justinian Plague (LePan, 2020). According to LePan, the origin of this pandemic is uncertain; it may have originated in Ethiopia and spread to Egypt, or it may have originated in Central Asia and spread along caravan routes. Because it followed trade routes, the Justinian Plague was significant in coastal cities (WHO, 2020; Sampath et al., 2021). Early symptoms included delirium, lethargy, and refusal to consume or drink; as a result, infected individuals will pass away within a few days (Sampath et al., 2021). Nearly forty percent of the Byzantine Empire's population and more than fifty percent of Constantinople's population perished (Huremovic, 2019).

Huremovic (2019) reports that, within a brief period of time, the gravesites were filled to capacity, necessitating the digging of immense pits to accommodate the deceased. Qiu et al. (2017) explain further that the Byzantine Empire's physical, economic, and cultural infrastructure suffered prior to the pandemic. According to Qiu, all commercial activity ceased, the tax base disappeared, there was no economic output, and people perished from malnutrition or disease. The disease weakened the Byzantine Empire, from which it never completely recovered (Qiu et al., 2017).

The Bubonic Plague, also known as the Black Death, originated in China in 1334, spread to Central Asia and Northern India via the Silk Road, arrived in Europe in 1347, and spread throughout the entire European continent within five years (Piret and Boivin, 202). According to Sampath et al. (2021), the Black Death murdered approximately 200 million individuals within 50 years. The mortality rate, if left untreated, was close to 70% with the majority dying within eight days (Sampath et al., 2021). Initially, the Black Death was attributed to the alignment of three planets that caused 'vast pestilence in the air'; later, it was attributed to poisoned air (Howie, 2020). During the Black Death, theriac was extensively used in Europe and the United Kingdom, according to the U.S. National Library of Medicine (Huremovic, 2019). Theriac, a mixture of over 55 plants and other substances such as cinnamon, myrrh, and honey, was placed into the beaked masks worn by physicians to prevent the spread of the Bubonic Plague (Huremovic, 2019). Later in the 19th century, it was determined that the Black Death or Bubonic Plague was caused by an enormous population of Yersinia pestis (Barry, 2020). Since then, according to Barry (2020), societies have been horrified and have begun to return to religion. The majority of the populace viewed the pandemic as a punishment for transgressions, and some of them attributed it to the worst offenders against God (Huremovic, 2019).

Other notable pandemics include the introduction of smallpox to Mexico, which contributed significantly to the fall of Tenochtitlan (Piret and Boivin, 2021). This pandemic of smallpox resulted in the deaths of 5 to 8 million people and a mortality rate of more than 50 percent in some communities (Piret and Boivin, 2021). The Spanish flu pandemic of 1918 to 1920 follows (Martini et al., 2019). According to Martini et al. (2019), this was the first genuine global pandemic in the context of

contemporary medicine. This pandemic was caused by the H1N1 strain of the influenza virus, and the same strain reemerged in 2009-2010 as Swine flu (Martini et al., 2019; Barry, 2020; Sampath et al., 2021). Over a quarter of the world's population was affected by the Spanish flu pandemic (Martini et al., 2019). It caused a 10% to 20% mortality rate and 40 to 50 million deaths (Huremovic, 2019). According to Huremovic (2019), the Spanish virus ultimately had a profound effect on global society. However, it has been labelled the forgotten pandemic because it persisted for only about nine months and was overshadowed by the conclusion of World War I, which was likely exacerbated by military and civilian population migrations (Martini et al., 2019).

Recent infectious causes of mortality are more likely to be endemic than pandemic (WHO, 2020). Only in recent years have HIV/AIDS-related deaths worldwide fallen below one million per year (Dasgupta and Crunkhorn, 2020). According to Qiu et al. (2017), the HIV/AIDS pandemic is a global pandemic with a sluggish progression. Beginning in the early 1980s in the United States, it continues to present the contemporary world with new challenges (Huremovic, 2019). According to Piret and Boivin (2021), it had affected nearly 40 million persons worldwide, resulting in the deaths of nearly 35 million. According to Sampath et al. (2021), HIV/AIDS receives a large deal of attention from national and international governments as well as pharmaceutical companies. HIV has become a chronic condition due to advances in treatment (Huremovic, 2019).

COVID-19 is the most recent pandemic that has caused worldwide concern (WHO, 2020; Piret and Boivin, 2020). The COVID-19 pandemic is an outbreak of novel coronaviruses, namely MERS-COV, SARS-COV, and COVID-19 (Velavan and Meyer, 2020). According to the World Health Organisation, all of these diseases can be traced back to bats or pangolins. As of May 202, the World Health Organisation (WHO) estimated that the disease had affected 518 million people and caused over six million fatalities since its onset in China in 2019. Intense public health response included quarantining in affected areas, isolating infected individuals, routine surface sanitation, and the widespread use of facemasks (Velavan and Meyer, 2020). Table 2.2 depicts the other main pandemics that have occurred with its type or pre-human host throughout history.

Table 2.2 Major historical pandemics that have occurred over time.

Name	Time/Period	Type/Pre-human host
Athenian Plague	430-26	Unknown: Either typhoid fever or Ebola virus
Antonine Plague	165-180	Believed to be either smallpox or measles
Japanese smallpox epidemic	735-737	Variola major virus
Plague of Justinian	541-542	Yersinia pestis bacteria / Rats, fleas
Black Death	1347-1351	Yersinia pestis bacteria / Rats, fleas
New World Smallpox Outbreak	1520 – onwards	Variola major virus
Great Plague of London	1665	Yersinia pestis bacteria / Rats, fleas
Italian plague	1629-1631	Yersinia pestis bacteria / Rats, fleas
Cholera Pandemics 1-6	1817-1923	V. cholera bacteria
Third Plague	1885	Yersinia pestis bacteria / Rats, fleas
Yellow Fever	The late 1800s	Virus / Mosquitoes
Russian Flu	1889-1890	Believed to be H2N2 (avian origin)
Spanish Flu	1918-1919	H1N1 virus / Pigs
Asian Flu	1957-1958	H2N2 virus
Hong Kong Flu	1968-1970	H3N2 virus
HIV/AIDS	1981-present	Virus / Chimpanzees
Swine Flu	2009-2010	H1N1 virus / Pigs
SARS	2002-2003	Coronavirus / Bats, Civets
Ebola	2014-2016	Ebolavirus / Wild animals
MERS	2015-Present	Coronavirus / Bats, camels
COVID-19	2019-Present	Coronavirus – Unknown (possibly pangolins)

There is no doubt about it, epidemics and pandemics will continue to occur in the future. These contagious diseases and the epidemics they cause will cause the population of the globe to shift. People may be more prepared for future outbreaks through utilising the lessons acquired from previous ones, such as the plague, cholera, influenza, and COVID-19. In point of fact, this has the potential to assist in the diagnosis, treatment, and prevention of epidemics such as tuberculosis (TB) and hepatitis C, as well as a future agent that has not been found.

2.6.3 Territorial Impact of Pandemic

Pandemics have the potential to cause widespread illness and death, in addition to social, political, and economic disruption (Qiu et al., 2017; Huremovic, 2019; Piret and Boivin, 2021; Sampath et al., 2021). Pandemics have a variety of negative social, environmental, physical, and psychological repercussions in addition to debilitating and frequently fatal consequences for those directly affected (Davies et al., 2013). HIV, H1N1, H5N1, and SARS pandemics are infectious disease epidemics that can easily cross international borders, posing a threat to economic and regional stability (Qiu et al., 2017). The mid-fourteenth century zoonotic bubonic plague or pest (Black Death caused by the bacteria *Yersinia pestis)* wiped out one-third of Europe's population, killing millions of people in Eurasia and North Africa (Qiu et al., 2017).

Other than mortality, pandemic influenza such as H1N1 in 2009 had an impact on healthcare systems, animal health, agriculture, education, transportation, tourism, and the financial sector (Sampath et al., 2021). The pandemics of SARS in 2003 and Ebola in 2013 and 2015, respectively, harmed the economies and social order in China and West Africa, in addition to causing mortality and illness (Qiu et al., 2017). According to Nabarro and Wannous (2016), Ebola and other pandemics have diminished the quality of life for families and communities, and Ebola has disrupted essential services such as education, transportation, and tourism, as well as weakened West African economies and isolated populations, with repercussions beyond Africa as a result of the global effort to contain the outbreak.

Infectious disease catastrophes, such as pandemics and emerging infectious disease epidemics, are capable of causing pervasive morbidity and mortality, accounting for up to a quarter of global mortality (Barry, 2020). Both pandemics and infectious diseases carry a mortality risk of 5 to 10 percent in developing countries (Kern, 2016). Since the middle ages, Table 2.3 depicts notable epidemics and pandemics and the estimated direct morbidity and/or mortality associated with each event.

Table 2.3 The notable epidemic and pandemics since the middle ages.

Starting Year	**Pandemic/Epidemic Event**	**Geographic Context**	**Estimated Direct Morbidity and/or Mortality**
430-26	Athenian Plague	Egypt and Greece	Killed over 25 percent of the populations
165-180	Antonine Plague	Asia Minor, Egypt, Greece, Italy	Killed almost 1/3 of the populations (Approx. 5 million)
541-542	Justinian Plague	Egypt, Central Asia	Approx. 40 percent population of Byzantine Empire died, over 50 percent population in Constantinople died
1347	Bubonic plague (Black Death) pandemic	Eurasia	30–50 percent mortality of the European population, within 50 years, Black Death killed approx. 200 million
1500s	Smallpox	Americas	More than 50 percent mortality in some communities
1881	Fifth cholera pandemic	Global	More than 1.5 million deaths (9.7 per 10,000 persons)
1918	Spanish Flu influenza pandemic	Global	20 million–100 million deaths (111–555 deaths per 10,000 persons)

1957	Asian flu influenza pandemic	Global	0.7 million–1.5 million deaths (2.4–5.1 deaths per 10,000 persons)
1968	Hong Kong flu influenza pandemic	Global	1 million deaths (2.8 deaths per 10,000 persons)
1981	HIV/AIDS	Global	More than 70 million infections, 36.7 million deaths
2003	SARS pandemic	4 continents, 37 countries	8,098 possible cases, 744 deaths
2009	Swine flu (H1N1) influenza pandemic	Global	151,700–575,500 deaths (0.2–0.8 per 10,000 persons)
2012	MERS epidemic	22 countries	1,879 symptomatic cases, 659 deaths
2013	West Africa Ebola virus disease epidemic	10 countries	28,646 cases, 11,323 deaths
2014	Ebola pandemic	Global	28,000 cases, 11,000 total deaths
2015	Zika Virus pandemic	76 countries	2,656 reported cases of microcephaly or central nervous system malformation
2019	COVID-19	Global	518 million people and over six million deaths (as of May 2022)

Each type of pandemic emergency requires a distinct measure of preparedness and response strategy. According to Nita et al. (2021), the diversity of pandemic threats stems from the diversity of viruses and their interactions with humans. The method and dynamics of disease transmission, as well as the severity and differentiability of associated morbidities, vary among pathogens (Nita et al., 2021). These and other factors influence whether cases are rapidly identified and controlled or whether an outbreak spreads (Fraser et al., 2004). In terms of the immensity of their potential health, economic, and socio-political consequences, as well as the required resources, capacities, and mitigation strategies, viruses with pandemic potential vary considerably.

2.7 ISLAMIC PERSPECTIVES ON URBAN PARKS AND HEALTH

Islamic gardens and parks are constructed and separated from various forms of wilderness throughout Muslim history and geography (Ruggles, 2008; Ansari, 2011). Parks and gardens have been essential social and recreational spaces for all civilizations since ancient times (Ruggles, 2008). According to Jani et al., (2015), the Quran's description of Paradise, the ideal garden, explains the significance of gardens in the past and present lives of Muslims. A park is the result of a practical need to manage the surrounding area, control nature, and increase soil yield in order to provide a healthy, verdant environment (Ruggles, 2008). According to Ruggles, parks were established to embellish the human-made environment, the landscape, and to represent cultural and religious aspirations and goals. As such, they are among the most significant and enduring Muslim expressions of nature's function and its significance to humanity, along with architecture and the arts (Ruggles, 2008). According to Zahid and Usman (2019), parks, gardens, and landscape design in Muslim civilizations have historically been essential expressions of ethical ideals regarding stewardship, ecology, and aesthetics. This history of places and ideas has been under increasing pressure in recent years as a result of rapid population shifts, desertification (the degradation of formerly cultivated land), increased urbanisation, and general neglect (Ansari, 2011).

According to Zahid and Usman (2019), the significance of such public spaces and recreational areas as parks may be established by three Islamic tenets, which are:

i. To spend leisure times;
ii. To see greeneries and the natural environment; and
iii. To appreciate and utilize freely accessible open natural surroundings.

To begin, people build parks and gardens so that they may spend their spare time outside in the fresh air with their families, friends, or even by themselves. Parks and gardens are great places to encourage physically active lifestyles. According to Zahid and Usman (2019), one of the tenets of Islam that is associated with Haqooq un Nufs is to lead a life that is free from illness. Allah has deemed good health to be one of the blessings. It is mentioned in a Hadith in Tirmidhi that,

> "Ask Allah for Forgiveness and Health, for being granted certainty, one is given nothing better than Health, and No one will be allowed to move from his position on the Day of Judgement until he has been asked how he spent his life, how he used his knowledge, how he earnt and spent his money and in what pursuits he used his health,"

From this ayah, the definition of health in Islam encompasses whole physical, social, mental, and spiritual well-being. Since Islamic moral teaching has been related to heart illness, not in a physical but in a spiritual sense, based on Surah Al-Baqarah, verse 10,

> "In their heart is a disease, and God increases their disease; for them is a painful chastisement because of the lies they were telling."

Therefore, in order to become spiritually healthy, one has to engage in practises that promote mental, ethical, and bodily health. In point of fact, parks have the potential to offer an appealing platform in this respect given that they offer a clean, green, and secure environment.

Second, the visibility of vegetation and the surrounding natural environment is improved by the presence of parks and other public green spaces. According to Zahid and Usman (2019), many Muslims discover that it is simpler to establish a connection with God while they are outside or when they are travelling. As Allah says, one should learn from the mistakes of previous generations, based on Surah Al-Naml, verse 69,

> "[O Muhammad], Travel through the land and observe how was the end of the criminals."

The other purpose is to develop an appreciation for nature in order to see Allah as the unique Creator and, as a result, the one and only deity worthy of worship, as mentioned in Surah Al-'Ankabut, verse 20,

> “Say, [O Muḥammad], "Travel through the land and observe how He began creation. Then Allah will produce the final creation [i.e., development]. Indeed, Allah, over all things, is competent."

Based on the social aspect of Islamic teachings that promotes the requirement of compassion, the third Islamic tenet is to appreciate and use freely available open natural surroundings to facilitate meaningful time with family, friends, and neighbours (Zahid and Usman, 2019). This may be accomplished by appreciating and using freely accessible open natural surroundings to facilitate meaningful time with family, friends, and neighbours. In Islam, participating in social activities with one's family, neighbours, and friends is encouraged. According to Ansari (2011), this results in an increased focus on socialising, which in turn increases collaboration and acts for the good of the community. As mentioned in the Holy Quran, Surah Al-Nisa, verse 36,

> “Worship Allah and associate nothing with Him, and to parents do good, and to relatives, orphans, the needy, the near neighbour, the neighbour farther away, the companion at your side, the traveller, and those whom your right hands possess. Indeed, Allah does not like those who are self-deluding and boastful.”

As a result, parks may be regarded as areas that encourage the public domain to enhance one's spiritual and physical ability to receive Allah's gifts by observing the nature and participation in healthy activities. This definition is based on the three Islamic precepts that are discussed above.

Zahid and Usman (2019) highlighted a study that was conducted by Khayat in 1997 and included in his article Environmental Health: An Islamic Perspective. In their study, Khayat found that humans have a responsibility to maintain their health. The potential for improved health is quite important; if it were not for this, the poor health would continue, and the balance would gradually deteriorate. All of this stems from the immutable global rule, which is based on Surah Ar-Rahman, verses 7–9,

> "And the heaven He raised and imposed the balance, that you do not transgress within the balance, and establish weight in justice and do not make deficient the balance."

If people are instructed to build things and rewarded for doing so, they should also be cautioned against producing an excessive amount of anything that may contaminate the environment and against irresponsibly misusing the environmental potential that maintains a state of equilibrium. They are responsible for paying the costs associated with any imbalance that results from excess or neglect. The Prophet Muhammad encourages people to refrain from polluting their surroundings and to maintain a clean atmosphere. Therefore, sensible people need to call on each other to save the pristine environment as a preparatory step to saving themselves from negative repercussions and protecting them from the effects of the filth that can be detected on land as a result of their acts. This will allow them to rescue themselves from negative repercussions and protect them from the effects of the filth that can be observed on land.

2.8 SUMMARY ON THE IMPACT OF URBAN PARK FOR PHYSICAL AND PSYCHOLOGICAL HEALTH BENEFITS DURING PANDEMIC CRISES

Urban parks have long been regarded as essential components of urban landscapes, offering a range of benefits to urban community. This greenery in the city has evolved over time, adapting to the changing needs of urban populations and playing a critical role in enhancing urban resilience, particularly during pandemic crises. A fundamental aspect of understanding urban parks is their definition. Urban park, as defined by Frederick Law Olmsted is a naturalized passive retreat where the green spaces within urban areas area designed not only for recreational purposes but also for ecological and aesthetic considerations. They encompass a wide range of sizes, from small pocket parks to vast urban forests, each serving a unique purpose within the urban fabric.

The evolution of urban parks has been marked by their transformation from grazing land to multifunctional environments catering to diverse community needs. They have adapted to accommodate changing lifestyles and urbanization trends, evolving into vibrant hubs for social interactions, exercise, relaxation, and cultural

events. Not only that, urban parks offer various physical and psychological benefits to the urban community. On a physical level, they provide opportunities for exercise, promoting active lifestyles and physical health. They also improve air quality by acting as natural filters and reducing noise pollution, contributing to better environmental health. Psychologically, urban parks have a profound impact on mental well-being. They offer spaces for relaxation, stress relief, and solitude, allowing urban residents to disconnect from the pressures of daily life. Moreover, they foster social interactions, helping to combat feelings of loneliness and isolation that often accompany urban living.

Several aspects influence the effectiveness of urban parks in delivering these benefits. Accessibility and quality perceptions of urban parks are critical. Parks must be easily accessible to all residents, ensuring inclusivity and equity. Moreover, the size of urban parks matters, as larger parks often offer a greater variety of amenities and more greenery, enhancing their appeal and usefulness. The availability of facilities within urban parks, such as playgrounds, sports courts, and picnic areas, caters to diverse interests and age groups. Lastly, the amount of greenery in urban parks directly influences their ability to provide environmental and mental health benefits. Lush green spaces offer a sense of tranquillity and connection to nature.

The need for accessible urban parks becomes even more apparent in light of these territorial shifts. Pandemics often lead to rethinking urban community's necessities, with a focus on creating more green and open spaces within cities. A pandemic is defined as a global outbreak of a disease that affects a large number of people across multiple regions. The timeline of global pandemic crises, from the Spanish flu to the COVID-19 pandemic, highlights their recurring nature and their profound impact on societies. The territorial impact of pandemics is significant, influencing urban planning, migration patterns, and healthcare resource distribution. During the COVID-19 pandemic, urban parks emerged as lifelines for urban communities. Lockdowns and social distancing measures limited opportunities for physical activity and social interaction. Urban parks provided accessible and safe environments for exercise, relaxation, and connection with nature. They became vital

spaces for mental health support, offering solace and respite from the stress and isolation associated with quarantine measures.

In an Islamic context, urban parks and health are interconnected through the significance of such public spaces and recreational areas as parks may be established by three Islamic tenets, which are to spend leisure times, to see greeneries and the natural environment, and to appreciate and utilize freely accessible open natural surroundings. Islam emphasizes the importance of maintaining a balance between the physical and spiritual aspects of life. Urban parks offer spaces for physical health, as well as opportunities for reflection and connection with the natural world, aligning with Islamic values.

In conclusion, urban parks are integral to enhancing urban resilience, offering physical and psychological health benefits, supporting sustainability, and becoming even more critical during pandemic crises. These green spaces are not just recreational areas; they are essential components of healthy, resilient, and sustainable cities. Understanding their multifaceted roles and ensuring their accessibility and quality are vital steps in promoting the well-being of urban communities, irrespective of the challenges they face.

2.9 CONCLUSION

This chapter has elaborated on four theoretical ideas related to the research topic. The first section explained the theory of urban parks and its evolution. The second section explained the physical and psychological impacts of urban park while the third section described physical and psychological aspect of urban park. The fourth section described the need for the environmental health indicator, and the key purpose and relevance of the environmental health indicator. The fifth section discussed the importance of urban park during pandemic. The chapter ended with the Islamic perspective on parks and health, and finally, the conclusion of the chapter. What follows in Chapter Three is the research methodology that is used to achieve the aim and objectives of the research. It focuses to determines the research design and approach used in this research. The method of analysis of each approach is explained in the next chapter.

CHAPTER THREE

METHODOLOGY

3.1 INTRODUCTION

This chapter presents the methods used for data collection with detailed research procedures and instruments. This chapter includes the data collection approach used for this research, which are through survey questionnaires and focus group discussions (FGD). These two methods were undertaken to achieve the aim and objectives of this research.

3.2 RESEARCH DESIGN

This research utilises an exploratory research design. According to Abutabenjeh et al. (2018), exploratory research is conducted to address practical issues, not to acquire knowledge for its own sake. According to Gog (2015), exploratory research is used to explain hypothesised causal relationships that are too complex for surveys or experiments. The purpose of exploratory research is to investigate the research questions and gain a greater understanding of the existing issue (Saunders et al., 2017; Abutabenjeh et al., 2018; George, 2021). The exploratory research will not provide definitive and conclusive solutions to current problems; rather, it is used to provide a more in-depth perspective on a study topic, as opposed to merely collecting data to answer the question (Saunders et al., 2017; George, 2021).

There are a variety of exploratory research methods for data collection, and they can be categorised into the primary and secondary research methods (Abutabenjeh et al., 2018; Dudovskiy, 2018). George (2021) explained that the primary research method collects information directly from participants or respondents. It requires a comprehensive analysis of the gathered data. Observation, surveys, interviews, and focus groups are examples of primary research methods used in exploratory research, whereas secondary research methods collect data from previously collected primary

resources on the subject under study (George, 2021). George (2021) provides as examples of secondary research methodologies literature reviews, online sources, and case studies.

To accomplish the research objectives and answer the research question, a mixed-methods research approach was utilised. A mixed method approach is a research methodology that employs multiple methods to answer research questions in a principled and appropriate manner (Creswell et al., 2011; Creswell, 2015; Bowen et al., 2017). According to Creswell (2012), the mixed method approach is a method for collecting, analysing, and combining quantitative and qualitative research and methodologies from multiple sources within a single study in order to gain a deeper understanding of a research topic. In addition to provide a logical foundation, methodological flexibility, and an in-depth understanding of smaller instances, the mixed-method approach provides a logical basis, such that smaller instances can be thoroughly comprehended (Maxwell, 2016). The quantitative technique, for instance, enables researchers to collect data from a large number of participants, which increases the likelihood that the findings can be generalised to a larger population (Enosh et al., 2014). Enosh et al. (2014) explained further that the qualitative method provides a deeper understanding of the investigated topic while respecting the participants' opinions. In other words, quantitative data provide breadth to the investigation while qualitative data provide depth (Enosh et al., 2014).

Due to the fact that this research has three objectives required to investigate the role of urban parks as the mechanism for physical and psychological health impacts related to pandemic crises, two methods of data collection will be employed. The selected methodologies include survey questionnaire distribution and Focus Group Discussion (FGD). These methods have been chosen to facilitate data collection and to collect information on the beneficial function of urban park, the significance of urban park, and the preventative measure of urban park as a mechanism for physical and psychological health during pandemic. The selected methods were also chosen in consideration of the prevalent mixed-method research designs used to investigate the roles of urban parks. Based on the work of a number of authors, Table 3.1 outlines the methodology of the mixed-method approach used in prior research.

Table 3.1 Current approaches of research in health impacts of urban park

Author	Exploratory Research Area	Methodology Approach
Luangmany and Voravong (2009)	Uses a mixed-method approach to identify the sustainable development and maintenance of urban parks in Saysetha Park	Two Focus Group Discussions and Pre-test Questionnaire – divided into three main sections
Talal and Santelmann (2021)	Uses a mixed-method approach to explore park visitor use and access in different urban park types, ranging from more developed to more natural parks in Portland, Oregon, United States.	Quantitative using observation Qualitative using interviews
Larson et al. (2021)	Uses a mixed-method approach to explore the links on how COVID-19 impacted urban park use of different groups and whether certain communities are more negatively impacted by the pandemic.	Used primary data (in the form of a survey) Secondary data (in the form of geo-tracking data)
Yeshitela (2020)	Uses a mixed-method approach to explore the residents' perceptions of impacts and challenges in urban neighbourhood parks	Three Focus Group Discussion (planners and ecologists from the academia and experts working in the city's public institutions that deal with urban green space development, administration and regulation) Quantitative - Questionnaire survey
Gagliardi et al. (2020)	Uses a mixed-method approach to investigate the impacts on older people engaged in environmental volunteering and socializing activities in city parks in Italy	Quantitative survey – questionnaire survey Qualitative interviews – Two Focus Group Discussion

3.3 RESEARCH APPROACH

Data collection plays a vital part in any research activity (Cresswell, 2011). According to Annum (2015), the research instrument is any of the different ways used by a researcher to collect data from respondents for research purposes. The term data refers to all types of information, including any fact, observation, or facts on the subject of the research that are obtained by researchers from research participants (Annum, 2015). Therefore, this section describes in detail the instruments used for each method used in this research which is a questionnaire survey and focus group discussion (FGD).

3.3.1 Questionnaire Survey Approach

Survey questionnaires are widely used to collect data on current conditions, practises, opinions, and attitudes swiftly and precisely (Bizimana et al., 2014). According to Kothari (2004), questionnaires are one of the most frequently used data collection methods in academic research. It is a simple method for obtaining information. Consequently, in this research, a questionnaire containing multiple queries to be answered by respondents has been developed. The questions are designed to accomplish the three research objectives, which are to beneficial role of urban park in enhancing physical and psychological health during the pandemic crises, to evaluate the importance of urban park to improve physical and psychological health during the pandemic crises, and to propose preventative measure of urban park as a mechanism for physical and psychological health.

3.3.1.1 Questionnaire Survey Design

The questionnaire included an open-ended question, a checklist question, and a five-point Likert scale. This questionnaire is designed to be easy to complete for respondents of all ages. The questionnaire was written in Malay and English to ensure that all Malaysians, regardless of ethnicity, could understand it. Table 3.2 shows the questions related to research objectives that were asked in the questionnaire survey.

a) Section A - Demographic data

- Demographic information is collected for the confirmation of the respondents' age, gender, ethnicity, religion, residential area, length of stay, education level, marital status, occupation, and a monthly income as check-list questions.

b) Section B – Urban park usage and user's experience

- This section evaluates the respondents' attitudes and understanding of urban parks. This section will use a five-point Likert scale to find the best answer from the respondents. It allows participants to express their level of agreement on a certain issue by utilizing categories such as "strongly agree", "agree", "neutral", "disagree", and "strongly disagree"

c) ***Section C – Understanding of urban park***

- This section allows the respondents to suggest on the definition of urban park based on their understanding. The section also includes their opinion on the important softscape and hardscape elements in an urban park.

d) ***Section D: Urban park and pandemic***

- The last section includes the respondents' opinion on the urban park in Malaysia on how it can help to promote overall health during pandemic. The question also includes their opinion on urban park's beneficial roles and its importance to improve health during pandemic.

Table 3.2 The sample of questionnaire survey's questions based on four sections

Section A: Demographic Data	**Section B: Urban Park Usage and User's Experience**	**Section C: Design Preference and Suggestion**	**Section D: Urban Park and Pandemic**
• Gender • Age • Ethnicity • Marital status • Household members • Educational level • Occupation • Monthly income	• Proximity • Mode of transportation to the nearest urban park • Frequency of urban park usage • Preferred time to utilised park • Purpose to come to the urban park • Activities done at the urban park • Experience on existing urban park facilities	• Definition of urban park • Important softscape element • Important hardscape element	• Opinion on Malaysia's urban park • Beneficial role of urban park during pandemic • Importance of urban park during pandemic
	To achieve research objective 1 and 2	*To achieve research objective 3*	*To achieve research objective 1 and 2*

3.3.1.2 Sampling Calculation

The research deals with 1,588,750 populations (Department of Statistics Malaysia, 2022) in the Klang Valley. The sample for this research was determined using Taro Yamane's formula that was formulated in 1967. In this research, a 95% confidence level is used to describe an 8% (±8% precision level) margin of error (MOE) to deduce the actual sample size of the research. Although the typical practice of MOE acceptable for various sectors in research is 5% (±5% precision level) (Israel, 1992; Singh and Masuku, 2014; Kosar et al., 2018), it is still acceptable to assume 8% of MOE as the range of a reliable MOE is typically falls between 3% (±3% precision level) and 10% (±10% precision level) at the 95% confidence (Israel, 1992; Singh and Masuku, 2014).

Although a larger population size needs a smaller MOE to prove a more reliable survey results, increasing the typical practice of 5% MOE to 8% MOE is needed in this research due to the difficulty to reach all respondents physically during the Movement Control Order (MCO) in Malaysia. The researcher had to depend on the online data collection by distributing the Google Form via a link to respondents so that they can answer the survey questionnaire virtually. Several research papers utilized the same technique of using web-based or online platform as a way to collect data during COVID-19 pandemic outbreak. Lu et al. (2020) used Instagram data to collect park visit related Instagram posts during global COVID-19 crisis, while Venter et al. (2020) used Google mobility (Google Earth Engine) to identify the effect of COVID-19 lockdown and mitigation actions on recreational activity over Oslo municipality. This type of virtual data collection is the best option to collect the data due to inaccessible area and strict lockdown measure imposed by the government.

Therefore, the sample size is calculated using Yamane's formula for calculation is as follows:

Where:

$$n = \frac{N}{1 + N * (e)^2}$$

n: The sample size

N: The population size

e: The margin error (MOE)

1: Statistical constant

Substitute numbers in the formula:

$$n = \frac{1{,}101{,}758}{1 + 1{,}101{,}758\ (0.08)^2}$$

= 156 (rounded)

After calculating the sample size by substituting the numbers into Yamane's formula, the numbers of the sample are 156.2278 persons and has been rounded off to 156 persons. In total, the researcher managed to collect 182 respondents to respond to the questionnaire surveys.

3.3.2 Focus Group Discussion Approach

The ideal definition of a focus group discussion (FGD) is a small group of carefully selected participants who contribute to open discussions for research purposes. According to Nyumba et al. (2018), focus group discussions are a popular qualitative method for obtaining a comprehensive understanding of social issues. Instead of a statistically representative sample of a larger population, the method collects data from a group of individuals that has been purposefully selected. Even though this strategy has been extensively utilised in conservation research, its efficacy has not been evaluated. The group exchanges feedback, opinions, knowledge, and insights regarding the current topic. Participants express their opinions candidly and are free to persuade one another of their beliefs. The mediator takes note of the group members' discussion

and opinions. All information is captured using a digital video camera and voice recorder.

An FGD has been conducted on the topic of Urban Park as an Index for the Sustainable Mental-Health Policy during Pandemic Outbreak. The FGD was conducted on 21st June 2022 at Lecture Theatre 1 (LT1), Seminar Room 1, and Seminar Room 2, Kulliyyah of Architecture and Environmental Design (KAED), International Islamic University Malaysia (IIUM), Gombak Campus. There were 15 participants involved in the FGD as tabulated in Table 3.3 below.

Table 3.3 Participants of FGD session

Agencies / Representative	**Post**
Jabatan Landskap Negara (JLN)	Senior Landscape Architect
Verona Design Sdn. Bhd.	Senior Landscape Architect
Sime Darby Property	Senior Landscape Architect
Putrajaya Cooperation (PJC)	Senior Landscape Architect
	Senior Landscape Architect
	Senior Landscape Architect
Malaysian Institute of Planners (MIP)	Senior Planner
	Senior Planner
Pertubuhan Arkitek Malaysia (PAM)	Senior Architect
	Senior Architect
Dewan Bandaraya Kuala Lumpur (DBKL)	Medical Officer
	Medical Officer
Kementerian Kesihatan Malaysia (KKM)	Medical Officer
Universiti Teknologi Malaysia	Senior Lecturer
	Senior Lecturer

Table 3.4 shows the three themes were designed and discussed during the FGD as listed below:

Table 3.4 Three themes that were discussed during the FGD

Theme 1: Urban Park
• Definition of urban park; • Impacts of urban park; • Functions of urban park; and • Problems of urban park
Theme 2: Health
• Health and its component; • How park can reduce stress; • Health versus urban park; and • Environmental and sensory needs for health;
Theme 3: Relationship of Urban Park, Health and Pandemic
• Current action and guide on how urban park become the role for health improvement

3.4 METHOD OF ANALYSIS

As this research employs the mixed-method approach, the data collected from the questionnaire survey and the focus group discussion (FGD) are analysed by using descriptive and content analysis. All of the information needs to be key-in into a database and to be examined. Table 3.5 shows the methods of data collection that were used in this research based on the research questions and research objectives.

Table 3.5 Methods of data collection

R. Questions	R. Objectives	Method	Analysis technique	Expected findings
What is the beneficial role of urban park in improving physical and psychological health during pandemic crises?	To investigate the beneficial role of urban park in enhancing physical and psychological health during the pandemic crises	Questionnaire survey	Descriptive analysis (SPSS)	• The role of urban park concerning pandemic crises • The benefits of urban park in enhancing the physical and psychological health • Relationship between urban park and the community
		FGD	Content analysis	
Why is urban park important to improve health during pandemic crises?	To evaluate the importance of urban park during the pandemic crises to improve health	Questionnaire survey	Descriptive analysis (SPSS)	• The importance of urban park to improve physical and psychological health impacts during pandemic crises
		FGD	Content analysis	
How can urban park contribute to improving physical and	To propose preventative measure of urban park as a mechanism	Questionnaire survey	Descriptive analysis (SPSS)	• Previous urban park perceptions during pandemic crises

psychological health?	for physical and psychological health.	FGD	Content analysis	• Preferred urban park design and elements that can contribute to better health outcomes during pandemic crises

3.4.1 Descriptive Analysis for Questionnaire Survey

The descriptive analysis used frequency, mean, and factor analysis to produce an analysis. The researcher utilized SPSS (Statistical Package for Social Science) Version 27 software to help with the descriptive statistical analysis from the questionnaire survey data. The data was analysed as follows:

1. The respondents' demographic background information was examined and presented using descriptive statistics in the form of frequency and percentage;
2. The park usage and the level of user satisfaction were examined and ranked using statistical analysis in the form of variables that are categorised according to nominal or ordinal; chi-square, cross tabulation and RII rank were used
3. The data on urban park preferences of the users will be examined and presented using statistical analysis where RII rank were used
4. The questionnaire was scored using a five-point rating scale or a Five-Likert scale that are range as follows:
    a) Strongly agree – 5 points
    b) Agree – 4 points
    c) Neutral – 3 points
    d) Disagree – 2 points
    e) Strongly disagree – 1 point

3.4.2 Content Analysis for Focus Group Discussion (FGD)

Content analysis was used to analyse the data collected from the focus group discussion. Two steps were taken to analyse the data using the content analysis, which are:

1. Identify the frequently used keyword by the respondents as the indicators to the three themes of the FGD
2. Eliminates, combines and subdivide the data by coding it systematically based on the three themes

According to Nyumba et al. (2018), these steps helps the researcher to organised the information based on the recorded tapes and transcripts that were prepared by the repertoire based on the systematic coding. The overall contents from the FGD were transcribed in verbatim format and elaborated according to the themes that were designed for the research topic.

3.6 SUMMARY OF THE RESEARCH DESIGN

Based on the explanation of the research design and methods used in this research, figure 3.1 shows the summary of the research design.

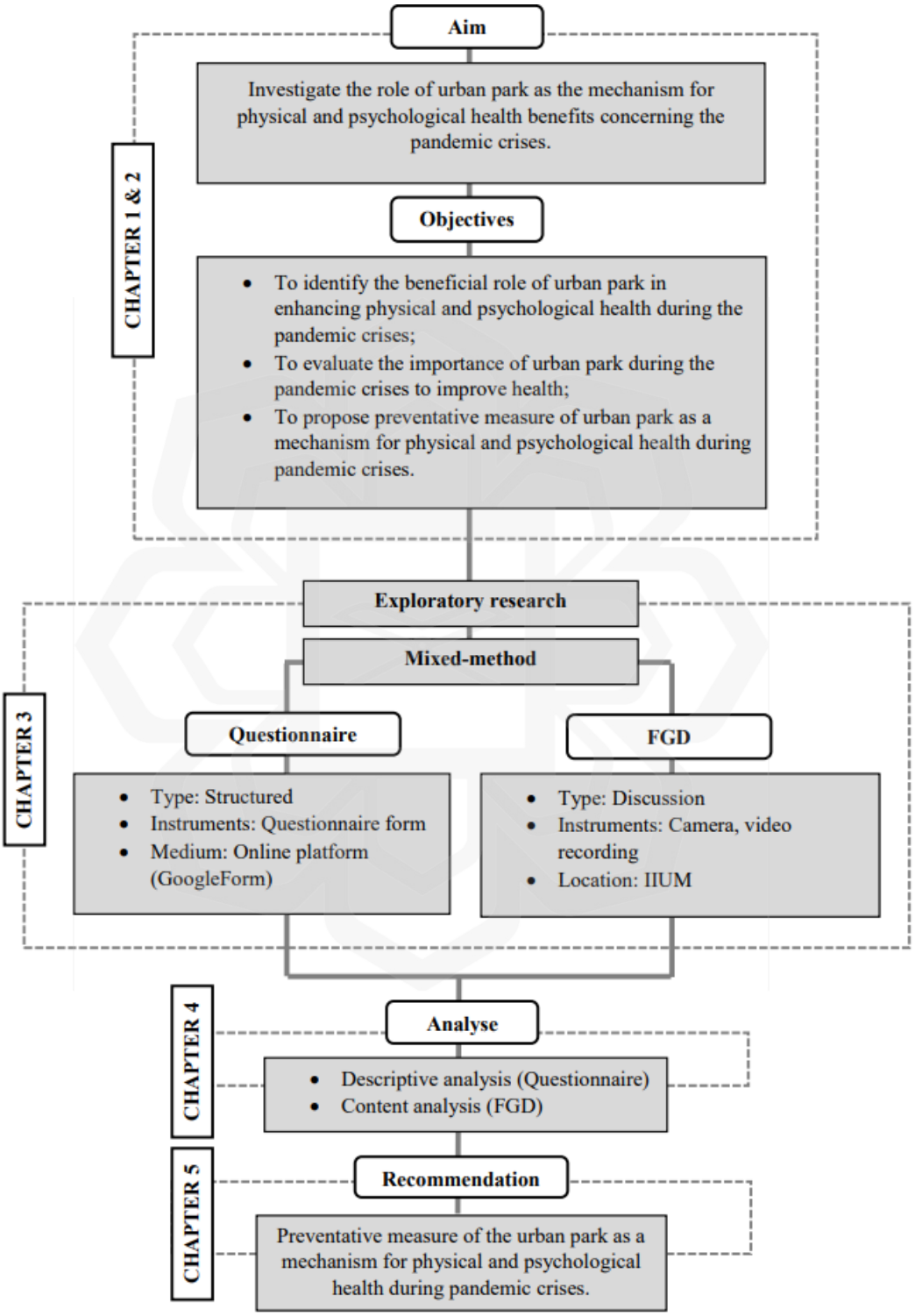

Figure 3.1 Summary of the research design used in the research

3.7 CONCLUSION

This chapter presented a through discussion on the selection of research methods. These methods help to collect the required data. The first method, the survey questionnaire, helps to gather information directly based on the park users' perspectives. Different from the questionnaire, the FGD method is based on expert perspectives on park usage according to the expert's point of view. All of the findings from the stated methods will be discussed in the next chapter.

CHAPTER FOUR

RESULTS AND FINDINGS

4.1 INTRODUCTION

This chapter presents the results and data analysis for both the questionnaire survey and focus group discussion (FGD). The chapter is divided into two sections. The first section presents the results from the questionnaire survey, while the second section presents the results from the FGD. Based on the results during the data collection, this chapter achieves the core of the research aim and objectives to investigate the role of urban park as the mechanism for the physical and psychological health impacts concerning the pandemic crises.

The first section of this chapter analyses the information gathered through a questionnaire survey that was conducted online using Google Forms from 13 June 2022 until 9 July 2022. A total of 182 respondents responded to the questionnaire. All of the data collected were analysed using the Statistical Package for the Social Sciences (SPSS) for Windows, Version 27.0. Cross-tabulation, chi-square, correlation, and Relative Importance Index (RII) analysis are used to analyse further the data gathered.

The second section of this chapter reveals the information gathered through the focus group discussion (FGD) that was conducted on 21 June 2022 at Seminar Room Kulliyyah of Architecture and Environmental Design (KAED), International Islamic University Malaysia. A total of 15 participants from different backgrounds and expertise have joined the FGD. Questions were asked to the participants regarding the topic. The data from the audio and video of their feedback, opinions, knowledge, and insights about the topic were transcribed and analysed according to the themes.

4.2 RESULTS OF QUESTIONNAIRE SURVEY

This section presents the results from the questionnaire survey that consists of four sections in which most of the questions are in the form of a multi-choice format. Section A presents the demographic information of the respondents; Section B presents the urban park usage and experience of the respondents; Section C presents the respondents' understanding of urban parks, and Section D presents the respondents' opinions on urban parks and pandemics.

4.2.1 Background of Respondents

This section provides information on the general background of the respondents. Questions related to respondents' gender, age, ethnicity, marital status, household members, and socio-economic backgrounds such as education level, occupation, and monthly income were asked during the survey.

As shown in Table 4.1, the result indicates that more than half of the respondents are females, with 63.7% of the total respondents, while the remaining are males, with a total of 36.3%. According to the age distribution, of the 182 respondents, most of the respondents are from the 20 to 30 years old category, with 89.6% of the total respondents. The questionnaire surveys are equally distributed to the respondents aged 31 to 40 years old category and 41 to 50 years old category, with 4.4% respondents, while the remaining 1.1% are from 51 to 60 years old category. Respondents who are aged above 61 years old are the least number of respondents with 0.5% of the total respondents.

Based on the ethnic distribution, the result indicates that almost all of the respondents are Malay, with 97.8% of the respondents, while the remaining are Chinese comprised 0.5%, Indian comprised 1.1%, and from other ethnic groups comprised 0.5%. According to the marital status distribution, of the 182 respondents, most the respondents are single, with a total of 77.5% of the respondents, while the remaining respondents are married, with a total of 22.5%. Based on the household members, the result shows that almost half of the respondents have three to five household members,

with 47.8% of the total respondents. This is then followed by having six or more household members that comprised 39.6%, and less than two household members that comprised 12.6% of the total respondents.

The education level distribution indicates that most respondents are in the university education level category, with 84.1% of respondents. Of that 15.9% left, 11.5% of the respondents are in the college or institute category, 3.8% are in the secondary school category, and 0.5% are in the no-school enrolment category. According to the occupation distributions, half of the respondents are working in the private sector, 51%. This category is then followed by students (20.9%), self-employed (14.3%), government workers (9.3%), retirees or unemployed (2.2%), and housewives (1.6%). The least number of respondents based on the source of income is those who are working in GLC, which covers the remaining respondents (0.5%). The monthly income distribution indicates that, of the 182 respondents, most of the respondents have fixed incomes, with 80.8% of the respondents. Almost half of the respondents have RM1,501 to RM3,000 monthly incomes (40.7%). Respondents with RM3,001 to RM5,000 monthly income and respondents with no fixed income have a similar result, which comprises 19.2%. The data also indicates that 13.2% of the respondents have less than RM1,500 monthly incomes, and the remaining 7.7% of the respondents have more than RM5,001 monthly incomes.

Table 4.1 Summary of the individual background of the respondents

Characteristics	Category	Frequency	
		Number (n)	Percentage (%)
Gender	Male	66	36.3
	Female	116	63.7
	Total	**182**	**100**
Age	20 – 30 years old	163	89.6
	31 – 40 years old	8	4.4
	41 – 50 years old	8	4.4
	51 – 60 years old	2	1.1
	Above 61 years old	1	0.5
	Total	**182**	**100**
Ethnicity	Malay	178	97.8
	Chinese	1	0.5
	Indian	2	1.1
	Others	1	0.5
	Total	**182**	**100**
Marital status	Married	41	22.5
	Single	141	77.5
	Divorced	-	-
	Total	**182**	**100**
Household members	0 – 2	23	12.6
	3 – 5	87	47.8
	6 or more	72	39.6
	Total	**182**	**100**
Education level	No school enrollment	1	0.5
	Primary school	-	-
	Secondary school	7	3.8
	College/Institute	21	11.5
	University	153	84.1
	Total	**182**	**100**
Occupation	Retiree/Unemployed	4	2.2
	Government worker	17	9.3
	Private sector	93	51.0
	Self-employed	26	14.3
	Housewife	3	1.6
	Student	38	20.9
	Others	1	0.5
	Total	**182**	**100**
Monthly income	< RM 1,500	24	13.2
	RM 1,501 – RM 3,000	74	40.7
	RM 3,001 – RM 5,000	35	19.2
	> RM 5, 001	14	7.7
	No fixed income	35	19.2
	Total	**182**	**100**

4.2.2 Urban Park Usage and Experience

This section provides information on the usage and experience of urban parks. Questions related to the travel distance, mode of transportation to the urban park, frequency of visitation, preferences, companion, purpose, and feelings when visiting the urban park were asked during the survey.

4.2.2.1 Proximity of Respondents' Houses to The Nearest Urban Park

The result in Table 4.2 indicates that, of the 182 respondents, nearly half of the respondents travel more than 5 km from their house to the urban park, with 48.4%. In comparison, 18.7% of the respondents travel 2 km to 3 km from their house to the urban parks. Respondents who travel less than 1km to the urban park and 4 km to 5 km to the urban park have the same total number of respondents, which comprised 16.5% respectively.

Table 4.2 Frequency of respondents' travel distance from house to the urban park

Category	**Frequency**	
	Number (n)	**Percentage (%)**
< 1 km from home	30	16.5
2 km – 3 km from home	34	18.7
4 km – 5 km from home	30	16.5
> 5 km from home	88	48.4
Total	**182**	**100**

4.2.2.2 Mode of Transportation to the Urban Park

Referring to Table 4.3, the result indicates that the car is the primary mode of transportation of the respondents to the urban park, with 89.6% of the respondents agreeing with this. The motorcycle is the second mode of transportation of the respondents to the urban park, with 34.1% of the total respondents. Other than that, 18.1% of the respondents go to the urban park by train, 13.7% of the respondents will walk to the urban park, 13.2% of the respondents by bus, and 12.6% of the respondents by bicycle. The least mode of transportation to the urban park is by taxi, which comprised 12.1% of the total respondents.

Table 4.3 Frequency of respondents' mode of transportation to the urban park

Category	Frequency	
	Number (n)	Percentage (%)
Walking	25	13.7
Bicycle	23	12.6
Motorcycle	62	34.1
Car	163	89.6
Taxi	22	12.1
Bus	24	13.2
Train	33	18.1

To identify the relationship between respondents' travel distance from house to the urban park and their mode of transportation to the urban park, a cross-tabulation is used as displayed in Table 4.4 below. Based on the result, the chi-square result indicates that there is a significant relationship (Chi-square= 173.045, df= 108, P= 0.000) between respondents' travel distance from house to the urban park and their mode of transportation to the urban park.

Table 4.4 Chi-square test on respondents' travel distance from house to the urban park and their mode of transportation to the urban park

Category	Travel distance	
	Value	p-value
Respondents' mode of transportation to the urban park	173.045	0.000

Chi-square= 173.045, df= 108, P= 0.000

4.2.2.3 Frequency of Visitation to the Urban Park

Based on Table 4.5, the result shows that 35.2% of the respondents rarely visit the urban park, 31.9% of the respondents visit the urban park monthly or several times a month, and 19.2% of the respondents visit the urban park weekly or often. Respondents from two categories of visiting urban parks daily or more often and visiting once or twice a year have the same results, with 6.0% of the respondents respectively. Only 1.6% of the respondents visit the urban park for the first time or once in their lifetime.

Table 4.5 Frequency of visitation to the urban park

Category	Frequency	
	Number (n)	Percentage (%)
Daily or more often	11	6.0
Weekly or often	35	19.2
Monthly or several times a month	58	31.9
Once or twice a year	11	6.0
Rarely	64	35.2
First time or once	3	1.6
Total	**182**	**100**

A cross-tabulation test is conducted to identify the relationship between respondents' travel distance from the house to the urban park and the frequency to visit the urban park as displayed in Table 4.6 below. Based on the result, the chi-square result indicates that there is a significant relationship (Chi-square= 38.722, df= 15, P= 0.000) between respondents' travel distance from house to the urban park and the frequency to visit the urban park.

Table 4.6 Chi-square test on respondents' travel distance from house to the urban park and the frequency to visit the urban park

Category	Travel distance	
	Value	p-value
Frequency to visit the urban park	38.722	0.000

Chi-square= 38.722, df= 15, P= 0.000

From the result of Table 4.5 and 4.6 above, since both have p-values for the respondents' travel distance to the urban park with their mode of transportation and their frequency to the urban park are 0.000, it shows that travel distance has influenced respondents' mode of transportation to the urban park and their frequency to visit the urban park.

4.2.2.4 Respondents' Preferences to Visit Urban Park

According to the result in Table 4.7, of the 182 respondents, more than half of the respondents prefer to visit the urban park on the weekend, with 59.3% of the total respondents, while in contrast, the respondents prefer to visit the park on the weekdays, with 9.9% of the total respondents. The remaining visit the urban park on both weekdays and weekends, with 30.8% of the total respondents.

Table 4.7 Frequency of respondents' preferences to visit urban park

Category	**Frequency**	
	Number (n)	**Percentage (%)**
Weekdays	18	9.9
Weekend	108	59.3
Both	56	30.8
Total	**182**	**100**

To identify the relationship between respondents' occupation and their preference to visit the urban park, the cross-tabulation test is used. The result indicates that there is a significant relationship between respondents' preference to visit the urban park and their occupation (Chi-square= 27.453, df= 14, P= 0.017); this is presented in Table 4.8. According to the result, it appears likely that those who are working prefer to visit the urban park on weekends rather than on weekdays due to the busy schedule on weekdays.

Table 4.8 Chi-square test on respondents' occupation and their preference to visit the urban park

Category	**Occupation**	
	Value	**p-value**
Preference to visit the urban park	27.453	0.017

Chi-square= 27.453, df= 14, P= 0.017

4.2.2.5 Respondents' Companions to the Urban Park

Based on the result in Table 4.9, 35.7% of the respondents go to the urban park accompanied by family members, 28.6% of the respondents accompanied by friends, and 12.1% of the respondents go to the park alone. The remaining respondents go to the urban park accompanied by all of the mentioned categories, with 23.6% of the total respondents.

Table 4.9 Frequency of respondents' companions to the urban park

Category	**Frequency**	
	Number (n)	**Percentage (%)**
Friend	52	28.6
Family	65	35.7
Alone	22	12.1
All of the above	43	23.6
Total	**182**	**100**

To identify the relationship between respondents' gender and the respondents' companion to the urban park, the cross-tabulation test is used. The results indicate that there is a significant relationship between respondents' gender and their companion to the urban park (Chi-square= 13.394, df= 3, P= 0.004); this is presented in Table 4.10. According to the result, females are more likely to have any companion in the urban park compared to males. It appears likely that males can go to the urban park alone, while female is vice versa.

Table 4.10 Chi-square test on respondents' gender and the person they go with to the urban park

Category	**Gender**	
	Value	**p-value**
Respondents' companion to the urban park	13.394	0.004

Chi-square= 13.394, df= 3, P= 0.004

Additionally, another cross-tabulation test is used as displayed in Table 4.11. to identify the relationship between respondents' age and respondents' companion to the urban park. The chi-square test result indicates that there is a significant relationship (Chi-square= 28.311, df=12, P= 0.005) between the respondents' companion to the urban park and their age. The result shows that the respondents' age has influenced their preference of with whom they are going to the park.

Table 4.11 Chi-square test on respondents' age and the person they go with to the urban park

Category	Age	
	Value	p-value
Respondents' companion to the urban park	28.311	0.005

Chi-square= 28.311, df=12, P= 0.005

To identify the relationship between respondents' marital status and their companion to the urban park, the cross-tabulation test is used. The result indicates that there is a significant relationship between with whom the respondents go to the park and their marital status (Chi-square= 23.204, df= 3, P= 0.000); this is presented in Table 4.12.

Table 4.12 Chi-square test on respondents' marital status and the person they go with to the urban park

Category	Marital status	
	Value	p-value
Respondents' companion to the urban park	23.204	0.000

Chi-square= 23.204, df= 3, P= 0.000

4.2.2.6 Purpose of visitation to the urban park

A ranking analysis was made using the Relative Importance Index (RII) analysis related to the respondents' purpose of visitation to the urban park and the result is shown in Table 4.13. RII analysis that is based on the Likert-scale of the 5-rating scale of response was used to gauge responses from the respondents on their purpose of visitation.

Table 4.13 RII Rank on the respondents' purpose of visitation to the urban park

Purpose of visit to the urban park	Responses										RII	Rank
	Never		Rarely		Sometimes		Often		Always			
	F	Rscore	F	Rscore	F	Rscore	F	Rscore	F	Rscore		
Strolling / Enjoying the scenery	2	2	24	48	56	168	53	212	47	235	0.7306	**1**
To release stress	8	8	29	58	45	135	46	184	54	270	0.7198	**2**
Recreation and fitness	6	6	44	88	62	186	40	160	30	150	0.6484	**3**
Gathering with friends/ family	13	13	45	90	55	165	43	172	26	130	0.6264	**4**
Attracted to the facilities	16	16	45	90	64	192	34	136	23	115	0.6033	**5**
Having a picnic	19	19	54	108	54	162	33	132	22	110	0.5835	**6**
Invited by friends	26	26	55	110	50	150	32	128	19	95	0.5593	**7**
Near the house	440	40	44	88	52	156	28	112	18	90	0.5341	**8**
For community event	54	54	56	112	52	156	11	44	9	45	0.4516	**9**

As shown in Table 4.13 above, the highest RII score represents the most common purpose of visitation to the urban park. Based on the result, the highest RII score of the common purpose of visitation to the urban park is strolling or enjoying the scenery, which comprised with RII score of 0.7306. This is then followed by visiting the urban park to release stress (RII score = 0.7198) ranked as the second common purpose of visitation, recreation, and fitness (RII sore = 0.6484) ranked as the third, gathering with friends and families (RII score = 0.6264) ranked as the forth, attracted to the facilities (RII score = 0.6033) ranked as the fifth, having a picnic (RII score = 0.5835) ranked as the sixth common purpose to the urban park, invited by friends (RII score = 0.5593) ranked as the seventh common purpose to the urban park, and near to the house (RII score = 0.5341) ranked as the eighth common purpose to the urban park. The least purpose ranked as number nine by the respondents with an RII score of 0.4516 is for the community event.

A cross-tabulation test was conducted to identify the relationship between respondents' frequency to visit the urban park and their purpose to visit the urban park. As shown in Table 4.14, there is a significant relationship on respondents' purpose to visit the urban park and their frequency of visitation (Chi-square= 30.850 – 63.196, df= 20, P= 0.000 – 0.057). According to the result, it appears likely that the frequency of visitation to the urban park by the respondents was influenced by their purpose of visitation.

Table 4.14 Chi-square test on respondents' frequency to visit the urban park and their purpose to visit the urban park

Respondent's purpose to visit the urban park	Frequency of visitation	
	Value	p-value
Recreation and fitness	46.618	0.000
Strolling / Enjoying the scenery	53.367	0.000
For community event	31.015	0.055
Gathering with friends/family	30.850	0.057
Having a picnic	33.002	0.034
To release stress	42.366	0.002
Attracted to the facilities	41.446	0.003
Invited by friends	38.572	0.008
Near the house	63.196	0.000

Chi-square= 30.850 – 63.196, df= 20, P= 0.000 – 0.057

4.2.2.7 Significant Feeling When Visiting the Urban Park

Another Relative Importance Index (RII) analysis was done on the respondents' feelings when visiting the urban park. This RII analysis allowed the researcher to identify the most common factor that attracts people to go to the urban park based on their preferences and feelings when visiting the urban park.

Referring to Table 4.15, the highest RII score represents the most significant feeling when visiting the urban park ranked by the respondents. The result indicates that the feeling of enjoyable and comfortable when visiting the urban park is the first significant feeling ranked by the respondents with an RII score of 0.7439. This is followed by being able to do physical activities in the urban park as the second rank of significant feeling when visiting the urban park (RII score = 0.7407). Respondents

ranked large and wide as the third with an RII score of 0.7363, cool and cozy as the forth (RII score = 0.6835), safe as the fifth (RII score = 0.6824), sufficient or well-maintained facilities as the sixth (0.6418), and the urban park is ideal for people with disabilities (PWDs) with safety design features as the seventh significant feeling when visiting the urban park with RII score of 0.6341. The minor feeling when visiting the urban park as ranked by the respondents is the urban park is near and accessible, ranked as number eight with an RII score of 0.6297.

Table 4.15 RII Rank on the respondents' feeling when visiting the urban park

Feeling when visiting the urban park	**Responses**										**RII**	**Rank**
	Never		**Rarely**		**Sometimes**		**Often**		**Always**			
	F	**Rscore**	**F**	**Rscore**	**F**	**Rscore**	**F**	**Rscore**	**F**	**Rscore**		
Enjoyable and comfortable	1	1	20	40	53	159	63	252	45	225	0.7439	**1**
Able to do physical activities	3	3	22	44	45	135	68	272	44	220	0.7407	**2**
Large and wide	5	5	19	38	53	159	57	228	48	240	0.7363	**3**
Cool and cozy	5	5	40	80	47	141	54	216	36	180	0.6835	**4**
Safe	5	5	29	58	65	195	52	208	31	155	0.6824	**5**
Sufficient/ well-maintained facilities	5	5	45	90	64	192	43	172	25	125	0.6418	**6**
Ideal for PWDs with safety design features	8	8	42	84	64	192	47	188	21	105	0.6341	**7**
Near and accessible	15	15	42	84	52	156	47	188	26	130	0.6297	**8**

Other than that, the results of the chi-square test (Chi-square= 26.921 – 59.044, df= 20, P= 0.000 – 0.138) on the respondents' frequency to visit the urban park and their feelings when visiting the urban park shows a significant relationship between several categories, which include enjoyable and comfortable (P= 0.000), able to do physical activities (P= 0.000), near and accessible (P= 0.000), safe (P= 0.008), sufficient and well-maintained facilities (P= 0.014), and cool and cozy (P= 0.035). The result is shown in Table 4.16.

Table 4.16 Chi-square test on respondents' frequency to visit the urban park and their feelings when visiting the urban park

Respondent's feelings when visiting the urban park	Frequency of visitation	
	Value	p-value
Large and wide	26.921	0.138
Enjoyable and comfortable	79.230	0.000
Safe	38.412	0.008
Sufficient / Well-maintained facilities	36.317	0.014
Able to do physical activities	51.594	0.000
Ideal for PWDs with safety design features	29.204	0.084
Near and accessible	59.044	0.000
Cool and cozy	32.814	0.035

Chi-square= 26.921 – 59.044, df= 20, P= 0.000 – 0.138

4.2.3 Understanding of Urban Park

Referring to Table 4.17, the result indicates nearly half of the respondents agreed that the definition of an urban park is a 'recreational area that helps improve public health, social well-being and enhance public enjoyment among urban residents', which comprised 41.8% of the total respondents. 30.2% of the respondents agree that 'a designated public space within a metropolitan area that offers passive or active leisure opportunities' is the definition of an urban park. The remaining respondents agreed that 'any public area of land set for aesthetic, educational, recreational, or cultural use by the public located in urban areas' is the definition of an urban park, which comprised 15.9% of the respondents, while 'landscape features that provide various functions such as recreation, environmental benefits and wildlife habitats' comprised 12.1% of the total respondents.

Table 4.17 Frequency of the definition of urban parks according to the respondents

Category	Frequency	
	Number (n)	Percentage (%)
Recreation area that helps improve public health, and social well-being, and enhance public enjoyment among urban residents	76	41.8
Landscape features that provide various functions such as recreation, environmental benefits, and wildlife habitats	22	12.1
A designated public space within a metropolitan area that offers passive or active leisure opportunities	55	30.2
Any public area of land set for aesthetic, educational, recreational, or cultural use by the public located in urban areas	29	15.9
Total	**182**	**100**

4.2.3.1 Important Hardscape Element in an Urban Park

Responses on respondents' opinions on the important hardscape elements in an urban park are shown in Table 4.18 below using the RII analysis. Based on Table 4.19 below, both benches/resting areas and toilets have the highest RII score (0.8956), ranked as the most important hardscape elements in an urban park. This is then followed by ample parking space (RII score = 0.8846) ranked as the second important hardscape element, lighting (RII score = 0.8835) ranked as the third, signage or route map (RII score 0.8769) ranked as the forth, water features (RII score = 0.8726) ranked as the fifth, and jogging/bicycle track (RII score = 0.8560) ranked as the sixth important hardscape element. On the seventh rank, physical activity areas and fence/gate/barrier have the same RII score of 0.858. The least voted hardscape elements in an urban park as ranked by the respondents is sculpture/art elements, with an RII score of 0.7473.

Table 4.18 RII Rank on the respondents' opinion on important hardscape elements in an urban park

Hardscape elements	Responses										RII	Rank
	Never		Rarely		Sometimes		Often		Always			
	F	Rscore	F	Rscore	F	Rscore	F	Rscore	F	Rscore		
Benches/resting areas	2	2	0	0	20	60	47	188	113	565	0.8956	**1**
Toilets	2	2	2	4	21	63	39	156	102	590	0.8956	**1**
Ample parking space	2	2	2	4	21	63	49	196	108	540	0.8846	**2**
Lighting	2	2	4	8	21	63	44	176	111	555	0.8835	**3**
Signage / route map	2	2	3	6	23	69	49	196	105	525	0.8769	**4**
Water features	3	3	3	6	21	63	53	212	102	510	0.8726	**5**
Jogging track and bicycle lane	3	3	3	6	25	75	60	240	91	455	0.8560	**6**
Physical activity areas	2	2	1	2	28	84	66	264	85	425	0.8538	**7**
Fence, gates and barrier	2	2	7	14	29	87	46	184	98	490	0.8538	**7**
Sculpture / art element	3	3	9	18	63	189	65	260	42	210	0.7473	**8**

4.2.3.2 Important Softscape Element in an Urban Park

Another RII analysis was done to identify the respondents' opinions on important softscape elements in an urban park ranked by the respondents as shown in Table 4.19. The result revealed that the highest RII score on the most important softscape elements in an urban park as ranked by the respondents is a large and shady tree (RII score = 0.9044), followed by the colourful flowering tree (RII score = 0.8857). The third important softscape element is the fragrant tree with an RII score of 0.8297, while the fourth softscape element is a tall and sparse tree with an RII score of 0.7462. The least important softscape element in an urban park is a fruit tree with an RII score of 0.7109.

Table 4.19 RII Rank on the respondents' opinion on important softscape elements in an urban park

Softscape elements	Responses										RII	Rank
	Never		Rarely		Sometimes		Often		Always			
	F	Rscore	F	Rscore	F	Rscore	F	Rscore	F	Rscore		
Large and shady tree	1	1	0	0	20	60	43	172	118	823	0.9044	**1**
Colorful flowers	1	1	1	2	24	72	49	196	107	535	0.8857	**2**
Fragrant tree	1	1	5	10	39	117	58	232	79	395	0.8297	**3**
Tall and sparse tree	6	6	12	24	53	159	65	260	46	230	0.7462	**4**
Fruit tree	5	5	13	26	76	228	52	208	36	180	0.7109	**5**

A cross-tabulation test is conducted to identify the relationship between respondents' occupation and their opinion on the important softscape elements in an urban park as displayed in Table 4.20 below. Based on the result, chi-square test result indicates that there are significant relationships between several softscape elements (Chi-square= 24.184 – 65.203, df= 28, P= 0.000 – 0.672), which include fragrant tree (P= 0.000), colorful flowering tree (P= 0.000), large and shady tree (P= 0.000), and tall and sparse tree (P= 0.000). However, there is no significant relationship between respondents' occupation and fruit trees as important softscape elements in an urban park (P=0.672). This shows that respondents who are working prefer softscape elements that provide relaxation and calmness by having a fragrant, colorful, and shady tree character at the area as these characters are hard to find especially in their working area.

Table 4.20 Chi-square test on respondents' occupation and their opinion on the important softscape elements in an urban park

Respondent's opinion on the important softscape elements	Occupation	
	Value	p-value
Fruit tree	24.184	0.672
Fragrant tree	64.137	0.000
Large and shady tree	59.575	0.000
Tall and sparse tree	44.549	0.024
Colorful flowers	65.203	0.000

Chi-square= 24.184 – 65.203, df= 28, P= 0.000 – 0.672

4.2.4 Urban Park and Pandemic

Based on the result in Table 4.21, the majority of the respondents agreed that urban park in Malaysia helps in promoting overall health during pandemic crises, with 91.8% respondents, while the remaining are not (8.2%).

Table 4.21 Frequency of respondents' opinion on the urban park in Malaysia in helping to promote overall health during the pandemic

Category	**Frequency**	
	Number (n)	**Percentage (%)**
Yes	167	91.8
No	15	8.2
Total	**182**	**100**

A cross-tabulation test is conducted to observe the relationship between respondents' age and their opinion on the urban park in Malaysia that helps to promote overall health during pandemic crises as shown in Table 4.22 below. Based on the result, the chi-square result indicates that there is a significant relationship (Chi-square= 15.169, df= 4, P= 0.004) between the respondents' opinion on the urban park in Malaysia and their age. From the result, it appears likely that age would influence their knowledge of the urban park in Malaysia that helps to promote overall health during the pandemic.

Table 4.22 Chi-square test on respondents' age and their opinion on the urban park in Malaysia that helps to promote overall health during the pandemic

Category	**Age**	
	Value	**p-value**
Respondents' opinion on Malaysia's urban parks that helps to promote overall health during the pandemic	15.169	0.004

Chi-square= 15.169, df= 4, P= 0.004

Additionally, another cross-tabulation test is conducted to identify the relationship between respondents' occupation and their opinion on the urban park in Malaysia that can help to promote overall health during the pandemic, a cross-tabulation test is used (Table 4.23). Based on the result in Table 4.23 below, the chi-square result indicates that there is a significant relationship (Chi-square= 688.429, df= 588, P= 0.003) between respondents' opinions on the urban park in Malaysia that can help to promote overall health during the pandemic and their occupation. It shows that respondents' occupation has influenced their knowledge of urban parks in Malaysia.

Table 4.23 Chi-square test on respondents' occupation and their opinion on the urban park in Malaysia that can help to promote overall health during the pandemic

Category	**Occupation**	
	Value	**p-value**
Opinion on Malaysia's urban park that can help to promote overall health during the pandemic	688.429	0.003

Chi-square= 688.429, df= 588, P= 0.003

4.2.4.1 Beneficial Role of the Urban Park

Referring to Table 4.24, RII analysis was done to identify the respondents' opinions on the beneficial role of the urban park, especially during pandemic crises. As shown in the table, the highest score of RII is urban park helps to reduce stress and depression symptoms (RII score = 0.8659). Encourage physical activity with an RII score of 0.8582 ranked as the second most beneficial role of the urban park, followed by beautifying and making a healthier environment with an RII score of 0.8516. On the other hand, improving psychological health, and increasing life quality and satisfaction have the same RII score of 0.8451, making both beneficial roles to be in the fourth rank. As ranked by the respondents, improving social interaction and cohesion is the fifth most beneficial role of the urban park, with an RII score of 0.8275, while the least beneficial role ranked by the respondents is to increase life span and reduce mortality, with RII score of 0.7627.

Table 4.24 RII Rank on the respondents' opinion on the beneficial role of urban park, especially during pandemic

Beneficial role of urban park during pandemic	Responses										RII	Rank
	Never		Rarely		Sometimes		Often		Always			
	F	Rscore	F	Rscore	F	Rscore	F	Rscore	F	Rscore		
Reduce stress and depression symptoms	2	2	1	2	23	69	65	260	91	455	0.8659	**1**
Encourage physical activity	2	2	2	4	23	69	69	276	86	430	0.8582	**2**
Beautify and make a healthier environment	2	2	2	4	26	78	69	276	83	415	0.8516	**3**
Improve psychologic al health	2	2	0	0	33	99	67	268	80	400	0.8451	**4**
Increase life quality and satisfaction	2	2	0	0	28	84	77	308	75	375	0.8451	**4**
Improve social interaction and cohesion	1	1	0	0	41	123	71	284	69	345	0.8275	**5**
Increase life span and reduce mortality	3	3	11	22	57	171	57	228	54	270	0.7627	**6**

4.2.4.2 Importance of the Urban Park

Another RII analysis was done to identify the respondents' opinions on the importance of the urban park, especially during a pandemic. Based on Table 4.25, the result revealed that providing a healthy lifestyle is the main importance of urban parks as ranked by the respondents with an RII score of 0.8615. Improving psychological health and reducing stress is the second importance of urban parks with an RII score of 0.8495, followed by increased physical activity level with an RII score of 0.8352. Other than that, the fourth importance of the urban park, especially during pandemic crises is improving quality of life and life satisfaction (RII score = 0.8319), the fifth is for entertainment and relaxation (RII score = 0.8286), sixth is increasing social interaction

and cohesion (RII score = 0.8154), seventh is improve the physical condition (RII score = 0.8143), while eighth is reduce chronic and acute pain (RII score = 0.7736). The least importance of urban parks as ranked by the respondents is to reduce the risk of disease transmission, with an RII score of 0.7363).

Table 4.25 RII Rank on the respondents' opinion on the importance of the urban park, especially during a pandemic

Importance of urban park during pandemic	**Responses**										**RII**	**Rank**
	Never		**Rarely**		**Sometimes**		**Often**		**Always**			
	F	**Rscore**	**F**	**Rscore**	**F**	**Rscore**	**F**	**Rscore**	**F**	**Rscore**		
Provide a healthy lifestyle	2	2	1	2	25	75	65	260	89	445	0.8615	**1**
Improve psychological health and reduce stress	2	2	2	4	28	84	67	268	83	415	0.8495	**2**
Increase physical activity level	2	2	2	4	27	81	82	328	69	345	0.8352	**3**
Improve quality of life and life satisfaction	3	3	2	4	32	96	71	284	74	370	0.8319	**4**
For entertainment and relaxation	2	2	2	4	32	96	78	312	68	340	0.8286	**5**
Increase social interaction and cohesion	2	2	2	4	43	129	68	272	67	335	0.8154	**6**
Improve physical condition	3	3	2	4	39	117	73	292	65	325	0.8143	**7**
Reduce chronic and acute pain	4	4	6	12	52	156	68	272	52	260	0.7736	**8**
Reduce the risk of disease transmission	4	4	19	38	58	174	51	204	50	250	0.7363	**9**

4.3 RESULTS OF FOCUS GROUP DISCUSSION (FGD)

This section presents the key findings of the FGD conducted based on content analysis of their transcripts' words and phrases. The overall contents from the FGD were transcribed in verbatim format and elaborated according to the themes that were designed for the research topic. Three main themes were deliberated to gauge respondents' responses, which are Theme 1: Urban Park; Theme 2: Health; and Theme 3: Relationship of Urban Park, Health, and Pandemic. Further, descriptive statistics (frequency and percentage) are used to describe the characteristics of the respondents. Figure 4.1 shows the FGD session that was held on 21st June 2022.

Figure 4.1 Focus Group Discussion conducted with fifteen (15) participants from multi agencies

4.3.1 Background of the Respondents

As tabulated in Table 4.26, the participants consist of 13 representatives from various agencies (87%), and two lecturers (13%).

Table 4.26 Participants of FGD session

Agencies / Representative	Code
Senior Landscape Architect, Jabatan Landskap Negara (JLN)	SLA1
Senior Landscape Architect (Principal of Verona Design Sdn. Bhd.)	SLA2
Senior Landscape Architect (Sime Darby Property)	SLA3
Senior Landscape Architect, Putrajaya Cooperation (PJC)	SLA4
Senior Landscape Architect, Putrajaya Cooperation (PJC)	SLA5
Senior Landscape Architect, Putrajaya Cooperation (PJC)	SLA6
Senior Planner, Malaysian Institute of Planners (MIP)	SP1
Senior Planner, Malaysian Institute of Planners (MIP)	SP2
Senior Architect, Pertubuhan Arkitek Malaysia (PAM)	SA1
Senior Architect, Pertubuhan Arkitek Malaysia (PAM)	SA2
Medical Officer, Dewan Bandaraya Kuala Lumpur (DBKL)	DOC1
Medical Officer, Dewan Bandaraya Kuala Lumpur (DBKL)	DOC2
Medical Officer, Kementerian Kesihatan Malaysia (KKM)	DOC3
	13 (87%)
Senior Lecturer, Universiti Teknologi Malaysia	LEC1
Senior Lecturer, Universiti Teknologi Malaysia	LEC2
	2 (13%)
Total	**15 (100%)**

4.3.2 Understanding of Urban Park

In this section, participants were asked about several topics related to urban parks. This includes the definition, impacts, functions, and problems of urban parks according to their point of view as an expert in the field. The finding indicates that 33% of the participants were able to define the definition of an urban park, 26% were able to highlight the impacts of the urban park, 20% were able to highlight the functions of the urban park, and 87% of the participants able to list down the problems related to urban park.

4.3.2.1 The Definition of Urban Park

According to the result, there are several definitions of the urban park according to the participants' points of view. SP1 stated that:

"…is a recreation park for live, work, play"

SP1

According to SP2, the definition of an urban park is:

"Any spaces that is open and its open to the public…for me, urban green spaces are anything that not within a confined building that you have around of your house…allow a lot of activity and freedom."

SP2

SP2 also added that:

"…is a person of any age of any capability of any income groups could actually spend a little bit of time of sight from confined of their house..."

SP2

On the other hand, SA2 suggests that the definition of an urban park is as follows:

"…a reserve spot, green reserve that has to be their city centres in the anywhere in the world…"

SA2

Accordingly, DOC2 suggests the definition of urban park with other category of open spaces:

"…open spaces that accessible to the public which provide greenery and its function to certain part and aspects…for example, we have urban spaces, park connector, also we include urban liners plaza, urban community park, treated banks area, forest trails, river front, and also kids playground included into urban spaces as well…"

DOC2

The above statements emphasize that the definition of an urban park is any open green area that is accessible by the public that can provide recreational activities and freedom for all ages and income groups.

4.3.2.2 The Impacts of Urban Park

Based on the result, 26% of the participants highlighted the impacts of urban parks. As shared by DOC1:

> "Urban park can give some sort of relaxation therapy…this give them relaxation and open mind for them"
>
> DOC1

This statement is supported by SP1, where apart of relaxation therapy as mentioned by DOC1, urban parks also provide a therapeutic environment that will give impact to psychological health:

> "So, green space also community garden is therapeutic, when they are talking about mental health"
>
> SP1

SLA2 added:

> "lot of people doing urban farming at home for relaxation and therapy because they cannot go out. They can look at the plant as their part of therapy"
>
> SLA2

Apart from the impacts of the urban park as relaxation and therapy for psychological health, SP2 shared the benefit of the urban park from the perspective of a town planner:

> "…green spaces help to sell the property, sound like lives among the nature, open the to the environment, you wake up to the green… green spaces add the value to the homes…"
>
> SP2

Indeed, an urban park will not only be beneficial for oneself but also add value to the property.

4.3.2.3 The Functions of Urban Park

From the discussion, 20% of the participants highlighted the function of the urban park to improve psychological health and a source of recreation, especially during pandemic crises. According to SLA2:

> "…they want to reduce stress and worrisome because they are being trapped for so long."
>
> SLA2

Supporting and exploring the point given, SP2 stated that:

> "…isolation is the keyword to mental health…if they can go to the park, they can release their isolation…"
>
> SP2

Apart from that, SA2 shares the opinion on the function of the urban park as a place for people to do recreational activities:

> "We went for refreshing ourselves and recreation activity everything in natural way"
>
> SA2

This shows that the participants are aware of the function of the urban park to improve psychological health as well as provide a space for recreational activities.

4.3.2.4 The Problems of Urban Park

From the discussion, the majority of the participants shared their opinions on the problems of urban parks. 87% of the participants agreed that there are several problems with urban parks that are sometimes overlooked by many. First, SP1 highlighted his concern about the accessibility of urban parks.

> "…those people who living in covered bed, they are not accessible, through the little green spaces that we have. So, think that accessibility also important"
>
> SP1

SP1 further emphasized that:

> "When you have from gated land lease, your urban green space area not public…not all the people have the access. And only the rich people can enjoy it"

SP1

LEC1 also shared the concern to make the urban park accessible for any ability and any income range. According to LEC1:

> "I observed that in gated community we are not stress out because we have a large park…metropolitan park in weekend is hard to find the parking and have to lift things if we have children, and it is not disabled-friendly…"

LEC1

This was agreed upon by the other participants as well. SLA2 and SLA1 mentioned:

> "…having more urban park within the neighbourhood or pocket area not only like inside the gated development, they have to be outside for public…"

SLA2

> "…other problem about park is linkages…we need more accessible in term of linkages and location…the strategy to create more access open spaces from the planning level, implementation level and then afterwards to the maintenance area as well"

SLA1

SP2 added his opinion on accessibility for people with disabilities where the pathway must be seamless to avoid people with walking-aids are not fall off:

> "…make sure these spaces are disable friendly and seamless…"

SP2

In terms of the usage of the urban park during the pandemic crises, ILAM1 raised his concern about the SOP due to the limited park that is accessible in the neighborhood. SLA2 mentioned:

> "The main concern during the pandemic is overcrowded because sometime the park is limited in the city…these are bigger park which public form high, low, middle income goes to the city park…very overcrowded and there is no proper SOP and guidelines by the government…insufficient green spaces in the city and this not accessible within 15minutes from the cities"
>
> SLA2

SLA2 is concerned about the crime that happened during the pandemic crises at the urban park due to the minimal supervision during pandemic crises:

> "…because during the pandemic, we have a challenge there is vices nad drugs in the park…we have our police but we can't control it. The simplest what we did is we put a gate to not allow the motorcyclist. There is a lot of crime happened."
>
> SLA2

This is also related to safety. DOC1 explained his concern on suicidal thoughts that might have crossed the mind of anyone with psychological disorder:

> "When involve to mental health like established mental disorder patient for example, safety is another issue. When they have this underlying problems, sometime when they come like MDD it has two types either maniac or depressive. So, when they came to maniac episodes, this one is quite difficult to handle because they tend to be tantrum expressive without even knowing themselves… if there is a lake, if possible we don't want something that can cause death. Because when the hallucination come, so they tend to suicide so when we attract this people to green spaces"
>
> DOC1

Other than that, park connectivity was among the common problem related to urban parks. Several participants discussed and raised their concerns on this issue. SLA1 explained:

"…we need more accessible in term of linkages and location."

SLA1

LEC1 further contended:

"…where is the integrations…at least there is green connected to go to another park and so on…we also don't have pocket park."

LEC1

Additionally, SA2 shared his concern about connectivity and movement in the urban park:

"Of course, in that must come out connectivity. This where we need the proper footpath, cycling…like many developed cities, they very cycle friendly. They can cycle and pedestrian friendly. They can move easily between greenspaces."

SA2

Another problem with the urban park is that the green requirements are not emphasized in planning. As shared by LEC1:

"…if we in high rise building, we could not see any green at all…"

LEC1

LEC1 added:

"…spaces 1 metre to plant a tree then the tree is not big because the spaces that you gave to the tree won't allow to grow to their need…"

LEC1

According to SP2, this is not a new issue related to the green requirement as imposed by the authority. SP2 added:

"…front door and the corridor spaces they have spaces that just enough…that is not very green spaces. That is a corridor spaces, still confined…green spaces are compromised in the lower income housing area…"

SP2

SA2 agreed with SP2 in a responsible manner. SA2 added:

> "We have some green spaces in front, at the back, but some people today they just pave the whole thing…I think we need to have these a renovation plans or what for our green requirement"

SA2

He contended:

> "…in area of precinct must have the average of 10% green space…I'm sure we can provide 30% for commercial development…provide the green spaces below, and also forward to vertical garden or the rooftop garden…"

SA2

SLA6 raised concerned on this topic of green requirements as well. SLA6 shared the current green requirement at Putrajaya which had increased from 10% to 30% greenery:

> "We believe the 10% of green spaces or open spaces is very-very insufficient…within this 30%, you have some space that you play around. You need also green spaces by plantings and so on. We believe that sufficient space is good for wellbeing of people living in the spaces within the area…"

SLA3

Another major problem of the urban park is maintenance and public awareness. As mentioned by SLA1:

> "…other factor should be maintenance, definitely the main issue…"

SLA1

Regarding this issue, SLA4 shared and added points on wild animals and viruses that they may carried:

> "...picnic…they bring food…the monkey come and collect the left-over food…that is our problem.... the monkey itself they have their carrier…They have many virus… very fragile with only vaccines…there also the stress as well. Going to the park to reduce stress, seeing monkeys is stressful."

SLA4

This is agreed by SLA5. SLA5 added:

> "…carrying capacity if the parks. The more people come, the more damage to the park"
>
> SLA5

SLA3 also shared the experience of public concern and awareness which is related to the maintenance:

> "…area the space during the pandemic time the space is abandoned…rubbish is everywhere…rubbish collection is not coming. And then PBT did not come either. So that is one of the problems when pandemic happens"
>
> SLA3

Apart from all of the issues and problems mentioned by the participants, SA1 highlighted his perspective on the selection of plants:

> "…we have very hot weather…the tree has to be strong. Because of the weather now can easily change like strong wind the tree will not stand. I think the selections of plants is also important and also leave sufficient shading"
>
> SA1

At the end of the first theme, participants listed some suggestions on how to overcome the problems related to urban parks. As raised by SA2:

> "Don't create open green spaces only, but create also activity for the community."
>
> SA2

Therefore, DOC2 suggested that:

> "…we have to bring like the vibrant thing that people called it as 'Instagrammable'…"
>
> DOC2

As for safety, SLA3 explained that:

> "…putting up WIFI and then putting up the CCTV…. CCTV is one of the ideas that we on progress now…. the removable bollard…"
>
> SLA3

Other suggestions and ongoing projects related to the urban park that can maximize the usage of urban park as highlighted by SLA3:

> "…community urban farming club at that community and the collections, have AGM…we gave them land, at the flat areas, we clear the land behind the flats and everything, we build up the irrigation system and give them some tents. And then they manage to plant vegetables and then, they manage to sell their chilies, they propagate 20-60k collections"
>
> SLA3

In the nutshell, it is important to ensure that all community levels, as well as local authorities, are responsible for the maintenance of urban parks as it gives a positive impact on human well-being. To summarize, the key findings for Theme 1: Urban Park are presented in Table 4.27.

Table 4.27 FGD's findings on Theme 1: Urban Park

Topic	Key Findings
Definition of Urban Park	• Recreation park for living, work, and play • A space that is accessible by the public, without a confined wall • A space where a person of any age, any capability, and any income group can spend time outside a confined area • A reserved spot, green space • Open spaces that are accessible to the public provide greenery and its function to certain parts and aspect • Urban space, park connector, urban liner, plaza, urban community park, treated banks area, forest trail, riverfront, and kid's playground are considered as urban green space

Impacts of Urban Park	• Relaxation therapy • Therapeutic to psychological health • Add values to the property
Functions of Urban Park	• A place to do physical and recreational activities • A place to reduce stress • A place to seek peace due to isolation • An area to refresh ourselves
Problems of Urban Park	• Not accessible to all ages, capabilities, and income group • Urban park at gated land lease is not public • Small and unmaintained park • Lack of facilities (Insufficient parking, bicycle track, jogging trails, etc.) • Lack of linkages that linked from one green space to another • The location of the park is not accessible within 15 minutes • Limited and insufficient parks within the city • Overcrowded park causes people to be distressed by the spread of viruses • Minimal supervision by the authorities causes the park to be vandalized • Safety: crime and immorality • Design to meet the needs of users of all ages, capabilities, and income group • 10% of green requirement is insufficient • Awareness by the users (food-waste disposal, rubbish, damaged facilities, etc.) • Poor tree selection (not sturdy, less dense tree canopy, etc.) • Lack of activity offered at the open space

4.3.3 Psychological and Physical Health

In this section, participants were asked about several topics related to psychological and physical health. This includes the health and its component, how the park can reduce stress, health versus urban parks, and environmental and sensory needs for health according to their point of view as an expert in the field. The finding indicates that 6% of the participants were able to explain psychological and physical health and its component, 20% were able to highlight the underlying reasons how the park can reduce stress, 53% were able to identify the relationship between health and urban park, and 53% able to list down the environmental and sensory needs for health.

4.3.3.1 Health and Its Component

DOC3 explained the definition of psychological health and the component of psychological health as it is in his expertise. DOC3 stated that:

> *"*Mental health is a state of wellbeing in which the individual realizes his or her own ability can cope with the normal stress of life, work productively and able to contribute to community*"*
>
> DOC3

DOC3 explained the effect of psychological health will not only affect one's psychological condition but eventually affect one's physical well-being:

> "…mental health ni it's also related to physical health…stress, depress, disorder, related to mental health, you have high risk of getting non communicable disease like diabetes hypertension, stroke and everything…once you have physical problem you get mental problem too."
>
> DOC3

DOC3 further explained the composition and effects of psychological health:

> "…mental health issues are more about anxiety, stress… stress prolonged stress or whether it's a very big sudden trauma"
>
> DOC3

DOC3 added the effect of psychological health is varying for every age group:

> "…age group. Mental health does have a factor in every laying cause. Children, adults, the elderly, the elderly are all different,"
>
> DOC3

Additionally, DOC3 stated the trend of psychological health issues much more apparent during a pandemic outbreak. DOC3 shared:

> "Actually during this pandemic, we can see the effects on mental health. Previously we don't talk about mental health. We don't know about mental health."
>
> DOC3

DOC3 also added:

> "…overcrowd more than 2 persons per room will have the risk for a non-communicable disease"
>
> DOC3

All of the above statements emphasized by DOC3 have enlightened the other participants on the definition of health and the current situation of health during pandemic crises.

4.3.3.2 Urban Parks to Reduce Stress

Based on the result, 20% of the participants highlighted the impacts of the park in reducing stress. As stated by SLA6:

> "…having good sufficient ample spaces of open spaces, with greens is actually a good effort to do…"
>
> SLA6

DOC1 added:

> "…psychology…connective behaviour…involve some sort of relaxation therapy, one of the treatment for the diseases."

DOC1

Both statements were agreed upon by DOC3 with the explanation of:

> "…there is already a study, seeing the green is indeed a relief...green is human right and it's also for all. That means it is accessible to everyone. Regardless of age, gender"

DOC3

This shows that the participants are aware that the park is beneficial for human beings to reduce stress. Seeing an open greenery area helps to reduce stress for most people, regardless of their age and gender.

4.3.3.3 Health vs Urban Parks

From the earlier topic on the benefit of the park in reducing stress, the discussion continues with identifying the relationship between health and urban parks. Based on the discussion, 53% of the participants highlighted the relationship between health and urban park, especially during pandemic crises. According to SLA4, enforcing SOP at the urban park has contributed to positive health:

> "…after we already enforce the SOP… they more tolerate to the public and surround it…this also contribute to the positive mental health…they are more caring in the way that if I do this what happen next person that using the park…. they are more concern about their health and their colleague as well. That's the positive thing that we learnt, yet to be improved like SOP and guidelines, that's already documented just that hopefully we not reinvent."

SLA4

DOC1 shared that the pandemic has made people aware of psychological health issues. Not only that, people began to acknowledge the function of the urban park as a safe place for them to overcome problems related to health:

> "…this pandemic makes people awake and make them understand what is important to mental health…urban park is one of very good

idea since people really aware of the important of mental health. They seek where to look outcome the problems."

DOC1

SLA5 also shared his experience and opinion on this topic. PJC2 shared:

"…. really affected by the pandemic. Some of them are anxiety, depression, stress, and to the suicide option because of the pandemic…when the parks are open, people find that park or urban park first…."

SLA5

DOC1 and SLA6 agreed with the statement and added:

"…confined spaces induce claustrophobic a component that use this stress threat. So when we bring those with mental issues to open spaces, this gives them relaxation and open mind for them."

DOC1

"…the best place for them to keep their health is actually at open spaces. It is good actually for our health instead of staying inside the building itself…"

SLA6

To relate to the points given by other participants, SLA3 shared his experience with park usage during the current pandemic situation. It can be seen that people fully utilized the park and open spaces when the strict control movement order was lifted by the government. From that situation, many people were trying to achieve a better and healthier lifestyle to get over the feeling of being isolated for such a long time.

"…any park at that moment is full of people. People want to go out jogging. So that time I think the lifestyle change…people start cycling, jogging. Those who never jog suddenly jog…"

SLA3

SP2 compared the issue of the spreading of viruses during the COVID-19 pandemic outbreak between open spaces and enclosed spaces:

"Most of the cluster come from enclosed spaces; shopping centre… when we out in the open, that little virus does not work. Its only when you in enclosed area"

SP2

Apart from that, DOC3 added the smart health city concept and the effect on human's health:

> "…smart health city has cycling. And the whole park is gazetted as a non-smoking area. It's healthy to have a concept..."

DOC3

Interestingly, DOC2 shared one of the research findings on greenery and its effect on human health:

> "...if you don't have the greenspace just put up a green portrait…it does reduce stress, and even the sensory"

DOC2

SLA6 summarized all the points given by the participants with:

> "We believe that we need bigger spaces for our good health too, especially for mental health. And there's also place that he has all our activities, socializing, and recreational at that such area for all works and ages"

SLA6

Indeed, park-based activities were one of the uncostly options for urban inhabitants to maintain or improve their health and well-being as it promotes numerous psychological and physical health advantages of human-nature contacts, especially during pandemic crises.

4.3.3.4 Environmental and Sensory Needs for Health

Based on the result, 53% of the participants have listed down environmental and sensory needs for psychological health. SLA1 highlighted a few points on this topic:

> "…create a therapeutic environment ambience…create other than flora we need fauna as well, especially the birds the insects and the other

benefits animals…combination of these elements that creates the nature environment that is one of the answers to reduce stress"

SLA1

SP1 agreed to the points given by SLA1 and added on the need for interaction among humans:

"Confined spaces are probably cause claustrophobia…also caused by isolation…in design maybe in the corner people can chat with each other interactions."

SP1

Additionally, SA1 shared an opinion on the need for community activity in the open space such as a community garden in a hospital to encourage interaction and improve the cognitive function of the patients:

"…. a community garden; anybody can run anything and I think that is very good that thing I think should be encourage."

SA1

SLA5 agreed to the idea given by PAM1 and further explained the effect on one's health:

"…. they can smell aromatic scent it stimulates our sensory"

SLA5

Some other ways can improve humans' health through the existence of environmental-sensory elements in a park. As discussed by SLA1, among them are:

"The park need the ambiance, we need wildlife, sound of nature, wind sound and so on heard from plants like bamboo trees. This nature sound is kind of therapeutic sound that make we feel so relaxing"

SLA1

Other than that, SA1 suggested the idea of having greenery within one's compound:

> "…. vertical or wall or in rooftop level and also urban farming is also encourage…you can do your own farming within your compound"
>
> SA1

SLA2 and DOC2 agreed to the idea suggested by SA1 and added:

> "…lot of people doing urban farming at home for relaxation and therapy because they cannot go out. They can look at the plant as their part of therapy"
>
> SLA2

> "…urban farming and even they were competing with each other…it does reduce stress…we are actually interacting with nature and the greenspaces as well to reduce the mental health as well"
>
> DOC2

In the nutshell, the park is beneficial, not just for individual health, but also for the health of the community as a whole. Spending time in parks with other people, and especially participating in activities such as gardening or community service not only helps to improve physical and psychological health but also helps to build bonds between neighbours. It is undeniable that the presence of parks and greeneries in the urban area promotes and facilitates psychological health and well-being through promoting stress reduction and relaxation. To summarize, the key findings for Theme 2: Psychological and Physical Health are presented in Table 4.28.

Table 4.28 FGD's findings on Theme 2: Psychological and Physical Health

Topic	Key Findings
Health and Its Component	• Definition: A state of wellbeing in which the individual realizes his or her ability can cope with the normal stress of life, work productively, and able to contribute to the community • Common: anxiety and stress • Psychological health related to physical health (stress, depression, the disorder may lead to diabetes, hypertension, stroke) • Can be prevented • The different age group has different laying causes and different coping mechanism • People are more aware of psychological health issues during the current COVID-19 pandemic due to isolation • An overcrowded environment of more than 2 persons per room can lead to the risk of non-communicable disease
Urban Park to Reduce Stress	• Sufficient and ample open space helps to reduce stress • Provide relaxation therapy, one of the treatments for the disease • Claustrophobic leads to stress, open green area helps to reduce stress
Health vs Urban Park	• Enforcing SOP in open area contribute to positive psychological health (sanitized hand, queue, social distancing) • Pandemic makes people aware and understand the importance of green space to psychological health • Affected people from anxiety, depression, stress, and suicide tend to seek parks or urban green spaces to recover from the problem • Open spaces give relaxation and peace due to stress threat • Seek recreational in an open space, change in lifestyle (more productive) due to pandemic • The smart health city concept creates a healthy environment • Bigger space for activities, socializing and recreational activities contribute to better health

Environmental and Sensory Needs for Health	• Large open space • Natural sound elements (birds, wildlife, the wind blowing through leaves, etc.) • Therapeutic environment ambiance • Various flora and fauna • Space for interaction (urban farming, etc.) • Fragrant elements to stimulate sensory

4.3.4 Relationship Between Urban Parks, Health, and Pandemic

In this section, participants were asked about their opinions on the relationship between urban parks, health, and pandemic crises according to their point of view as an expert in the field. The finding indicates that all of the participants were able to suggest current action and guide on how urban parks become the role for psychological and physical health reductions and improvement, especially during the pandemic outbreak.

4.3.4.1 Current Action and Guide on How Urban Park Become the Role for Psychological and Physical Health Reduction and Improvement during Pandemic

According to the result, SLA2 suggests utilizing the vacant spaces and convert into urban parks. In the future, this urban park can be used for emergency purposes. SLA2 explained:

> "…use the vacant spaces and convert it into urban park so we can cater more green spaces in the city which is very critical and its can be also be used during the pandemic…Urban park also functions as emergencies for health purposes and vaccination centre in the future because it is outdoor ventilated area it is safer compared to go inside of building"
>
> SLA2

SLA2 added:

> "…we can take the abandoned green spaces and vacant spaces that we have and turn it into a public park…."
>
> SLA2

SP1 suggested the idea to provide more accessible and better connectivity from one place to another. This is to ensure that people can have access to the park seamlessly. SP1 explained:

> "…I think local authorities need to talk to each other to connect it…we create these linkages...it could produce mental wellbeing factor by cycle… design that street for people to walk so the open spaces become bigger…. Bigger park, better connections, and more interactions"
>
> SP1

On the other hand, SA1 raised his concern about providing a comfortable park that has good shades. This is to ensure that users can walk comfortably from one space to another, and eventually can reduce carbon footprint due to lesser use of vehicles in the city. SA1 explained:

> "…good to reduce the carbon footprint so we don't have so many cars…in terms of release the stress is good, providing the shades because our weather is hot and humid so produce that thing and our people will walk"
>
> SA1

The statement was agreed upon by SLA2 and added:

> "have sufficient green spaces so that people able to go out any time no need to drive and go out when its overcrowded and need to go back… need to have a system that can determine which green spaces that they can go by online, how many people, weather it is full or it still can cater people like they go during the pandemic they know that this park still can go, not just go there, and suddenly closed overcrowding, and many people are using the spaces during the pandemic."
>
> SLA2

SA1 reminded to carefully select the choices of softscape elements in park design:

> "Sometime we want to create the environment to get back to our nature, we also need to be careful in our selections"
>
> SA1

The topic continued with the suggestion for park maintenance. SLA2 raised the concern about the maintenance issue. SLA2 suggested:

> "…CSR program need to be implemented so that private sectors can assist the local government to help maintain the park, to reduce the tax…. I think that should be done those private sectors need to help local authorities as well so that the parks can be used by all people"
>
> SLA2

SLA1 also added a point and suggestion for this maintenance issue to be participated voluntarily based on Local Agenda 21:

> "…we need community work together with authority. From the Local Agenda 21, we need more activity of volunteerism especially talking about maintenance…"
>
> SLA1

Additionally, SA1 shared the idea on how to tackle the maintenance issue for garbage disposal by users using the technique of left-over food composed. SA1 explained:

> "…start educate this people with waste food become a composed thing. A lot of way to treat the left-over food…so maybe they can plant themselves and harvest."
>
> SA1

As discussed earlier, SLA2 suggested having a green space within a building, for example, a hospital. This will eventually help to improve the physical and psychological well-being of the patients and other people within the compound. SLA2 suggested:

> "…hospitals can create therapeutic or meditations gardens for the patient and they can create horticulture or urban farming for the patient like they have schedule like one hour to bring the patient out to see the greeneries and do some activities just to release stress and depression and other sickness and illness that the patience have"
>
> SLA2

DOC3 agreed with the suggestion by SLA2 while further explained on the idea:

> "…it's not only for fine at the housing area, or the road area, we also need green at working place but like more Instagrammable…"
>
> DOC3

This is agreed by SA2 while suggesting having more and larger green space in the area. SA2 explained:

> "…large urban park and the community green spaces and all this could be connected at work because we want harmonious living environment live in the nature back…not just create open spaces also doesn't make any sense…introduced the vertical or wall or in rooftop level and also urban farming…"
>
> SA2

SA2 added:

> "…you must have the green spaces within that and enjoy back with the nature. And free yourself. Otherwise, you live in concrete jungle everywhere you will be stressed out"
>
> SA2

SLA6 concluded:

> "…each places either hotel or offices or commercial or whatever, it need to have this open spaces and have more green within that spaces"
>
> SLA6

Additionally, DOC1 suggested promoting psychological health awareness in park design implementation. DOC1 explained:

> "I think we need to normalize all the term related to mental health… For example, urban park we find near the park like you walk 100m you can burn 100cal. So, I think maybe what we want to link to mental health is maybe we can put up signage related to mental health as well. Like if you walk 100m you can reduce your stress level 20% to create awareness"
>
> DOC1

Other than that, SP1 suggested establishing an award to make the local authorities committed to doing maintenance of the park. SP1 explained:

> "…I think to encourage like this kind of policies implemented, it has to be an awareness also we came out with an award. Like *Anugerah Hijau* (Green Award), so all the local authorities will be committed."
>
> SP1

SP1 also suggested increasing the research on the relationship between health and greenery, as well as increasing the fund for park maintenance. SP1 stated that:

> "…awareness not only for the community but also the local authorities to follow the guideline that we do…there should have theoretical research and so on…. Give extra money for maintenance and for step out to enlarge the park…"
>
> SP1

Other than that, SLA1 suggested implementing a biophilic design as one of the strategies to create a more natural environment compared to the current design. This is to ensure that people can enjoy more greenery at the park which will eventually improve psychological well-being. SLA1 explained:

> "We need park that more natural ambiance that's why we need the macro level actions form the design of park, and local authorities make sure every park submitted by the developer the design have some kind of biophilia design so that why we need to go to other level. So need to see the nature biophilic design impact that can be used as a part of submission requirement"
>
> SLA1

Furthermore, SP1 shared the opinion on the park guidelines. According to SP1, people's lifestyles changed due to COVID-19. People began to exercise to fight COVID as their immune systems are not as strong as before. However, the guidelines have projections. These projections are at par and somehow, they must be revamped as people are changing their lifestyles. SP1 explained:

> "When we talk about guidelines, comparing life before COVID because now, people lifestyle changes…We exercise because we want to fight COVID, immune system are not strong and everybody exercising but the guidelines have projections…now we need to redo the guideline where all people are changing lifestyle"

SP1

SP1 also added his view on park design:

> "…can also have like other than a chat corner and booth and just get out of the house and just talk to people..."

SP1

Interestingly, SA2 raised the idea of planting one tree a month individually. SA2 explained:

> "…we going towards sustainability and of course low carbon cities…putting more plant to plant back…if the whole community can plant one tree a month also can do a lot to the environment"

SA2

This is supported by the suggestion from SP2 that people should start to utilise the unused curb and back lanes for propagating fruit trees and herbs. SP2 explained:

> "In this age of time of food security, that must happen. Back lanes should be planted…."

SP2

SP2 added:

> "…can we multipurpose use of the back lane. It can be a bicycle lane, plus plants… doing some gardening on the small patch is a therapy itself"

SP2

As discussed earlier in Theme 1, the green requirement should be increased from 10% to another amount of greenery. According to SLA6:

> "…10% is insufficient as we also know that within that 10% of other services also are in there as well using the same space"

SLA6

SLA6 suggested to increase the minimum amount of greenery must be at least 30%. SLA6 explained:

> "…the minimum of green space or open spaces that we need, the good for people to living and stay around has be at least minimum of 30%. Within this 30%, you have some space that you play around. You need also green spaces by plantings and so on. We believe that sufficient space is good for wellbeing of people living in the spaces within the area…we still believe that within the small pockets of development. They need to maintain the size of the open spaces. So, we try our best in new development within each part, we required them to do the minimum of 30% of open spaces, that have the hardscape and softscape"
>
> SLA6

Apart from that, SA2 suggested creating more activities at the park and open spaces for social engagement. SA2 added:

> "Don't create open green spaces only, but create also activity for the community.…lot can create sometimes have festival engagement with people allow them to play games"
>
> SA2

DOC2 agreed with this idea and further suggest an urban farming activity to reduce stress. DOC2 suggested:

> "I think they propagating this awareness urban farming…It's actually in a way it does reduce stress."
>
> DOC2

In the context of safety, SP2 highlighted some suggestions to tackle this issue. SP2 explained:

> "…. community policing. It can be done. I know CCTV can be very expensive, and it maintenance. But think outside the box, just giving the Curitiba as an example. That part I thought it brilliant"
>
> SP2

Other than that, SP2 suggested to emphasized the needs of the local community. SP2 explained:

> "…you ask people first what they want for their own environment…you got the idea form them you just facilitate…You don't tell them what to do, instead, you ask them what they want…We talk at their language"
>
> SP2

Design-wise, every park must emphasize the needs of disabled people and various age groups. The design of the park should be disabled-friendly and suitable for all ages, from kids to the elderly. SLA6 explained:

> "Design should be for all; the thing is not yet successful and sometime we need someone else organization or NGO to tell us back we need to do this…the seamless of mobility, especially for elderly. Not only for those with a wheelchair, other than those elderly pregnant women, autism also…"
>
> SLA6

In the nutshell, the usage of urban parks has evolved to meet the demands of cultures, societies, and cities. For example, a lifestyle change may boost health and fitness concerns, leading to a rise in the number of individuals visiting parks to exercise. As a result, the demand for various leisure places and activities will influence park planning and design. All of the divergent demands for family activities, and programs for aging societies and children are anticipated to be met by urban parks; if contemporary socioeconomic requirements are not met, urban parks may become disused and neglected. To summarize, the key findings for Theme 3: The Relationship between Urban Park, Health, and Pandemic are presented in Table 4.29.

Table 4.29 FGD's findings on Theme 3: The Relationship between Urban Park, Health and Pandemic

Topic	Key Findings
Current Action and Guide On How Urban Parks Become The Role For Psychological and Physical Health Reduction or Improvement	• Utilize vacant spaces and convert them into multi-use open spaces (urban parks, emergency purposes, social gatherings, health purposes, events, etc.) • More accessibility and better connectivity from one place to another (cycling, etc.) • Provide a comfortable green space that has good shades so that people can walk comfortably from one space to another, can reduce carbon footprint, and improve one's health • Increase the number of parks and greenery in the city • Provide a bigger scale of greenery to avoid overcrowded • Carefully select the choices of softscape elements in park design for the comfortability of the users • Maintenance issues should not be neglected. Everyone must take part in maintaining the parks (individuals, communities, authorities, etc.) • Promote psychological health awareness in park design implementation • Establish an award to make the local authorities and communities committed to doing maintenance of the park • Increase the research on the benefit and relationship between psychological health and greenery • Increase the fund for park maintenance • Implement biophilic design as one of the strategies to create a more natural environment, to improve psychological well-being • Revamp park guidelines to cater to users' needs according to the current situation of pandemic and changes in lifestyle • Planting a tree per month individually • Utilized the unused curb and back lanes for propagating fruit trees and herbs as a therapy • Increase the minimum amount of greenery from 10% to 30%. Sufficient space is good for human well-being within the area

	• Create more activity at the park and open space to increase social engagement among users (urban farming is believed can reduce stress levels) • Consider the needs of the local community, guide and facilitate the local community to have a better lifestyle by utilizing the open space • Emphasize the needs of disabled people and various age groups. The design of the park should be disabled-friendly and suitable for all ages, from kids to elderly

4.4 SUMMARY OF THE OVERALL RESULTS AND FINDINGS

Urban parks play a pivotal role in enhancing the physical and psychological health of urban communities, especially during pandemic crises. The use and experience of urban parks are influenced by various factors such as proximity to one's residence, transportation options, visitation frequency, and the purpose of the visit. Those who live within walking distance of the urban park are more likely to incorporate park visits into their daily routines, enjoying both physical activity and the psychological refreshment that these environments provide. Additionally, accessibility through public transportation or bike paths further extends the reach of urban parks, allowing individuals from various neighbourhoods to enjoy their benefits. These access points promote the use of sustainable and active modes of transportation, contributing to physical well-being.

Frequent visitation and the preference for weekends are crucial for fully experiencing the health benefits of urban parks. Regular visits facilitate physical activities such as jogging, cycling, and yoga, which are essential for maintaining or improving physical health. Simultaneously, leisure activities, offer opportunities for relaxation, social interaction, and a significant boost to psychological well-being. During the pandemic, when the world was struggling with lockdowns and social distancing, urban parks became essential safe havens for these activities, offering a respite from the stresses of the crises.

Hardscape and softscape elements within urban parks also play a substantial role in shaping the park experience. The availability of toilets and benches ensures the comfort and convenience of park-goers, an aspect that became even more crucial during the pandemic when public health and hygiene concerns were paramount. Not only that, benches provide resting spots and promote social interactions while maintaining physical distance. Furthermore, the presence of shady trees as a softscape element is essential. They offer refuge from the sun's heat, making outdoor activities comfortable while creating a serene environment conducive to relaxation and contemplation. During the pandemic, these natural elements played a critical role in reducing stress and promoting better psychological health.

The relationship between health and urban parks during the pandemic is undeniable. Parks offered a space where individuals could engage in outdoor activities safely, helping to maintain physical health and reduce the risk of physical inactivity-related diseases. Activities like walking and jogging in parks offered a safe alternative to crowded gyms or indoor spaces. Simultaneously, the calming effect of greenery provided an escape from the constant strains of the pandemic, offering solace to those experiencing heightened stress and anxiety. Urban parks became sanctuaries where individuals could connect with nature, which has been proven to boost psychological health, alleviate symptoms of depression, and enhance overall physical well-being. In conclusion, urban parks are not just recreational spaces; they are indispensable resources for the holistic well-being of urban communities, especially during times of crisis.

4.5 CONCLUSION

This chapter has revealed the result and data analysis for both the questionnaire survey and focus group discussion (FGD). The chapter explained the result in two sections. The first section presents the results from the questionnaire survey, while the second section presents the results from the FGD. What follows in Chapter Five is the interpretation, discussion, and conclusion of the research.

CHAPTER FIVE

INTERPRETATION, DISCUSSION AND CONCLUSION

5.1 INTRODUCTION

This chapter interprets the overall findings of the questionnaire survey and Focus Group Discussion (FGD). The central focus underpinning this research to role of urban park as the mechanism for the physical and psychological health impacts concerning the pandemic crises is examined. The findings are summarised and divided into two sections; physical health impacts of urban park and psychological health impacts of urban park. The chapter includes the preventative measure of the urban park as a mechanism of physical and psychological health outcome during pandemic crises. The chapter concludes with a discussion of the limitation of the research and recommendation for further research directions. Recommendations were based on the conclusions and purpose of the research.

5.2 KEY FINDINGS OF THE URBAN PARKS AND HEALTH

This research is based on survey questionnaire and Focus Group Discussion (FGD) data. According to the results of the questionnaire survey, the experience and knowledge of respondents in using urban parks to promote health during pandemic crises are influenced by their demographic characteristics. The survey also revealed that respondents' experience and knowledge of the effects and functions of urban parks to improve health during pandemic crises are strongly correlated with their gender, age, occupation, marital status, education level, proximity to an urban park from their residence, and frequency of park visits. Due to the area's accessibility and connectivity, it is evident from the responses that people who live in close proximity to the urban park are the most frequent park users.

The findings of the FGD revealed a variety of impacts and the importance of urban parks to promote human health during pandemic crises. It is also disclosed that

there are numerous concerns regarding urban park and that everyone, including individuals, communities, and city governments, should maintain the urban park. Particularly during pandemic outbreaks, programmes and activities should be implemented to increase user awareness of the effects of these green spaces on health improvement. This participation will help to establish a strong connection between local communities and local authorities in order to enhance the condition of existing natural spaces.

As for the definition of an urban park, the results of the questionnaire survey indicated that nearly half of the respondents agreed that an urban park is a recreation area that contributes to the improvement of public health, social well-being, and public enjoyment among urban residents. According to the findings of the FGD, an urban park is defined as any publicly accessible space that offers a variety of activities for living, working, and playing. The data also revealed that the most prevalent definition of an urban park is a green space in the city that is accessible to people of all ages, abilities, and income levels, and that can provide vegetation and its function to specific areas and features. Consequently, based on all of the definitions provided by the respondents, the research suggests that the best definition of an urban park is an open green space in the city that is accessible to the public and offers recreational activities and freedom for people of all ages, abilities, and income levels in order to improve public health, social well-being, and public enjoyment.

Health, on the other hand, is a condition of complete physical and psychological wellbeing in which every individual realises his or her capacity to deal with the normal stresses of life, to work productively, and to make a contribution to one's community. Psychological health is strongly correlated with physical health, and those with a psychological health diagnosis have an elevated risk of developing a non-communicable disease. When a person is agitated or despondent, for instance, they are more likely to develop hypertension, stroke, or diabetes. In addition, the findings disclosed that the trend of this health concern is rising during the pandemic outbreak. During pandemic crises, people are more aware of their physical and psychological health due to a lack of socialisation and reduced physical activity during

the isolation period. The research indicates that environment and vegetation is one of the most effective ways to enhance human health, particularly during pandemic crises.

The researcher included a discussion and interpretation of the significant findings based on the results in the following section. The discussion is divided into two sections; physical health impacts of urban park and psychological health impacts of urban park. On the basis of the research findings, a list of preventative measures to enhance physical and psychological health impacts during pandemic crises is formed.

5.2.1 Physical Health Impacts of Urban Park

According to the statistics, more than half of the respondents concurred that the closest urban park is more than five kilometres away from their residence and is only accessible by car, motorcycle, or public transportation. As it is not within walking distance, the majority of respondents visit the urban park infrequently or only monthly or several times per month, rather than weekly. In addition, since the majority of respondents are employed, either in an office or as self-employed workers, the majority of respondents prefer to visit the park only on weekends due to a lack of leisure time during the week. They also prefer to be accompanied by family or friends rather than visiting the urban park alone, which explains why the majority of respondents chose the weekend as the best time to visit the urban park, as this corresponds with others' leisure time.

The data confirms that when visiting the urban park, respondents have a pleasant experience and find that the park is comfortable to be used by many. Despite the fact that respondents rarely visit the urban park, they indicate that they would willingly utilise it regardless of its proximity due to its size and potential. There is a high demand for a park that is large and spacious enough to accommodate a variety of activities, calm and comfortable, and secure to use in terms of its safety and security. However, two main criteria do not satisfy the satisfaction of the users while using the urban park: the park is unsuitable for people with disabilities (PWDs) due to a lack of safety design features, and the park is too far and inaccessible to be reached on foot. It is essential to emphasise that these spaces must be accessible to people with disabilities and seamlessly connected so that users of all abilities and ages can move from one space to

another with ease. As a result, more people from every demographic will utilise the urban park, as it will be within walking distance of their homes.

During the FGD, concerns regarding park accessibility are also highlighted. The findings of the FGD indicate that a stronger strategy is required to create a more accessible urban park. It is necessary to maximise the use of vacant urban spaces by transforming them into multi-use open spaces with improved connectivity and accessibility for all. These areas are not required to be immense. Creating a large, seamless urban park that attracts people and satisfies their requirements and preferences can be accomplished by connecting small urban parks. Most importantly, these parks must not be restricted to the urban centre. These parks should be distributed evenly throughout the city so that all segments of the population can utilise them. Its functionality and user-friendliness are attributable to the city's well-designed open space network, which will connect all parks and recreation facilities. This link will improve city residents' access to parks, open spaces, and recreational facilities.

Despite the fact that people who live more than five kilometres from an urban park still visit it due to its comfort, size, and safety features, the research indicates that it is necessary to increase the number of urban parks in the city that are accessible by foot and have better connections. There is an urgent need for improved urban park accessibility and connectivity in the city. Creating urban parks that are more accessible must take into account a variety of factors. This is due to the correlation between access to visually appealing and expansive parks and increased levels of walking. As discussed in Chapter 2, Section 2.2.3.1, it was determined that the quality, as measured by factors such as accessibility, maintenance and upkeep, absence of garbage, and safety, was positively related to overall health.

In addition, respondents believe that a well-designed urban park should provide sufficient parking for visitors. Users consider the availability of parking spaces to be crucial when visiting an urban park. People frequently travel to the urban park as opposed to walking there because it is distant from the neighbourhood. It should be emphasised that this parking spot should be close to the entrance of the urban park and

large enough for wheelchair users to readily enter and exit their vehicles. People may lose interest in urban parks if they do not have access to all of these amenities.

The findings suggest that ample benches or resting areas and well-maintained restrooms are the most essential hardscape elements in an urban park. One piece of evidence supporting the provision of resting areas is that the absence of outdoor resting areas substantially diminishes the motivation or confidence of participants to be physically active. People would walk more if they could pause at regular intervals in public areas, allowing them to unwind when necessary and boosting their confidence to continue exploring (as discussed in Chapter 2, Section 2.2.3.3).

Respondents were also concerned about the safety of the urban park. A secure environment must incorporate a route map, signs, and any other practicable precautions. As suggested by FGD participants, the installation of CCTV will be considered to prevent crime and immorality. Regarding people with disabilities, the urban park should be equipped with handrails and staircases. Aside from that, it is recommended that the urban park include therapeutic water features. However, the location of water features in an urban park should not encourage suicidal behaviour among the mentally ill. Regarding active recreation, the respondent emphasises the presence of a jogging track, a bicycle lane, and other physical activity options, which will encourage physical recreation at the urban park. Stone pathways and outdoor gyms or exercise equipment are examples of leisure options. This pastime can encourage individuals to indulge in physical activity in order to enhance their quality of life. The least popular among respondents was the inclusion of sculpture and art components.

In addition, the results of the questionnaire survey disclosed the respondents' perspectives on the urban park in Malaysia's role in pandemic health promotion. Among them are that the urban park improves physical health with various types and modes of recreation, promotes and facilitates psychological health by promoting stress reduction and relaxation, enhancing the perception of life quality, helps to build bonds between neighbours, fostering a sense of community and social vitality, reduces the risk of chronic conditions, elevates the general mood and facilitates relaxation, reducing depressive symptoms, and strengthens the immune system.

During a pandemic outbreak, the urban park also functions as a space to encourage physical activity. Apart from beautifying and making a healthier environment, urban parks also serve to improve users' life quality and pleasure amid pandemic crises. According to Section 2.2.2.3 of Chapter 2, every 10% increase in the park is associated with a reduction in diseases equal to a five-year rise in life expectancy. In addition, the research found that those who spent more time in green spaces had significantly reduced risks for a number of chronic diseases (as discussed in Chapter 2, Section 2.2.2.3). Thus, the research suggests that residing near a park in an urban environment improves people's physical health, primarily by increasing their level of physical activity. Parks offer individuals a place to exercise, meander, and cycle while appreciating the scenery and avoiding traffic. This increases the available exercise options and makes exercise more enjoyable.

Additionally, the data disclosed that park-goers engage in active recreation during their leisure time. Despite the fact that some respondents rarely visit the urban park, they are doing the same thing. This is primarily because individuals have limited space in their homes for physical activities during the isolation period. Findings indicate that the need for urban residents to have access to open space in order to fulfil their basic physical requirements is essential for improving their physical health.

The findings indicate, based on the utilisation and patterns of urban parks, people require both active and passive activities for their physical health. Respondents wish to appreciate nature and engage in passive pastimes while also having the option to participate in active activities. It should be emphasised that an urban park should be a public location where people can engage in active and passive recreation. Any plan to enhance an urban park should prioritise environmental preservation while also introducing new recreational opportunities to the community.

5.2.2 Psychological Health Impacts of Urban Park

The data revealed that the main purpose why people visit an urban park during their leisure time is to engage in passive recreation. The primary activity in the urban park is meandering and taking in the scenery, while tension relief is the secondary activity. These findings suggest that the primary objective of park users is to appreciate the natural environment. People enjoy viewing natural elements such as plants, trees, bushes, animals, lakes, mountains, and others. These natural settings are ideal for passive activities such as strolling, appreciating, resting, escaping the city and concrete wilderness, social gatherings, and picnicking with friends. By doing so, they will feel more relaxed and tranquil, and their level of tension will quickly decrease.

During extended periods of pandemic closure and quarantine, during which most outdoor spaces (especially parks) may be temporarily closed, people experience stress due to their isolation. Typically, it causes social unrest and public health issues. In response, the presence of urban parks and green spaces enhances and facilitates psychological health and well-being by promoting stress reduction and relaxation. This is due to the fact that urban parks can provide humans with a variety of benefits, such as peaceful relaxation, interaction with the natural green environment, children's play areas, physical exercise, and sporting activities, as well as an escape from undesirable aspects of the urban environment, such as traffic and heat. As described in Chapter 2, Section 2.2.3, this highlighted why the existence of an urban park is essential for urban residents to enhance their psychological health during pandemic crises.

In addition, the findings of the FGD have revealed additional considerations that must be made. The findings indicate that the urban park may serve as a social gathering place. Due to isolation, individuals communicate less than usual. The urban park appears to be an ideal spot for people to interact with their peers and family in order to foster social interactions. It is also suggested that the urban park include more activities and events on a regular basis, such as urban farming, a multi-use amphitheatre, and an outdoor chess table, to encourage user participation. Such surroundings in an urban park may stimulate people's senses and improve their well-being.

In terms of softscape elements, it has been demonstrated that the presence of trees and vegetation visible from a building decreases levels of hostility and psychological fatigue among residents, compared to those who live indoors and observe a barren landscape (as discussed in Chapter 2, Section 2.2.3.4). The findings of the FGD suggest that softscape elements should be carefully selected for the convenience of park visitors when designing parks. The presence of large, shady trees in a park is one of the most desired softscape elements in an urban park. According to the findings of the FGD, it is recommended that urban parks include shade trees as a form of psychological rehabilitation and relaxation. Additionally, the shade tree provides comfort to park visitors. As discussed in Section 2.2.3.4 of Chapter 2, the effect of tree canopy density on self-reported stress recovery.

In addition, the presence of colourful trees and fragrant trees is believed to be essential for enhancing psychological health. The findings of the FGD indicated that the aroma of fragrant trees can heighten people's sensory perception. Fruit trees are less important than other tree characteristics. This relates predominantly to fruit produce ownership. As users may not be able to enjoy the fruits because they do not belong to them, respondents deemed fruit trees to be inconsequential softscape elements. However, some park characteristics associated with tree cover, particularly when overgrown or mismanaged, may exacerbate criminal fear and damage people's health.

The finding also highlights the role of urban park to reduce tension and depression symptoms in order to enhance psychological health. The presence of natural environments has significant positive effects on the psychological health of individuals. It can aid in mitigating environmental and health dangers associated with urban living. This is consistent with the previous topic, as discussed in Chapter 2, Section 2.2.2.4, in which people's stress levels decreased rapidly when exposed to natural environments but remained elevated when exposed to urban areas. It is believed that an absence of engagement with natural environments contributes to the development of psychiatric disorders.

5.3 PHYSICAL AND PSYCHOLOGICAL HEALTH IMPACTS AS URBAN PARK'S PREVENTATIVE MEASURE

As the demand for these facilities is high, an ideal urban park shall be provided with the hardscape and softscape elements mentioned. The facilities need to cater to both passive and active recreation so that people are encouraged to practice a better healthy lifestyle by utilizing the urban park. It is essential to understand and quantify the urban park activities in the area. Therefore, Table 5.1 and Figure 5.1 is formed to show the preventative measures of the urban park as a mechanism of physical and psychological health impacts during pandemic crises based on the findings from the questionnaire survey and FGD.

Table 5.1 The preventative measure of the urban park as a mechanism of physical and psychological health impacts during pandemic crises

Exposure / Condition	Driving Cause	Health Impact of Risk	Preventative Measure	Actions/Guidelines
Physical condition	• Isolation • Lack of exercise • Overwork	• Cardiovascular diseases • Respiratory diseases • Hypertension • Heart disease • Stroke • Diabetes • Bodily ill • Chronic illness • Morbidity and mortality	• More accessibility and better connectivity are needed from one place to another (encourage walking) • Provide ample parking that is near the entrance (encourage more people to use the park) • Provide seamless pavement with destination points and markers to measure walking progress and encourage people to reach it • Provide spaces for low-impact exercise equipment • Provide near public transit stops for public transport users (encourage more people to use the park) • Provide adequate numbers of seating areas for the users to stop and rest • Provide a comfortable seating area with an ergonomic design with backs and arms (good facilities attract more people) • Provide a bigger scale of parks to avoid overcrowded • Increase the number of parks and greenery in the city: utilize vacant spaces and convert them into multi-use open spaces (urban parks, emergency purposes, social gatherings, health purposes, events, etc.)	• Increase the minimum amount of greenery from 10% to 30%. Sufficient space is good for psychological and physical well-being • Planting a tree per month individually: promotes good psychological health • Consider the needs of the local community, guide and facilitate the local community to have a better lifestyle by utilizing the open space • Implement biophilic design as one of the strategies to create a more natural environment • Revamp park guidelines to cater to users' needs according to the current situation of pandemic and changes in lifestyle • Emphasize the needs of disabled people and various age groups. The design of the park should be disabled-friendly and suitable for all ages, from kids to elderly • Keep the area as a setting for unthreatening wildlife such as birds, butterflies, squirrels, and many more **Maintenance** • Keep the existing facilities (toilets, hall, hut, etc.) well-maintained

			• Benches or seating areas need to be placed under large tree foliage or gazebos that can provide shade	• Everyone must take part in maintaining the parks (individual, communities, authorities, etc.) • Establish an award to make the local authorities and communities committed in doing maintenance of the park • Increase fund for park maintenance
Psychological condition	• Isolation • Overwork • Temporary closure of outdoor area	• Stress • Depression • Mental disorder • Schizophrenia • Short-term memory performance • Unstable emotion • Lack of social interaction • Loneliness	• Promote mental health awareness in park design implementation • Utilized the unused curb and back lanes for propagating fruit trees and herbs as a therapy • Create more activity at the park and open space to increase social engagement among users (urban farming, social gathering area) • Provide fixed and movable tables where the users can have lunch, have a social gathering, and play board games • Carefully select the choices of softscape elements in park design that have good shades so that people can walk comfortably from one space to another, can reduce carbon footprint, and improve one's health	**Safety and security** • Provide walkway and other park facilities that can be seen without obstruction of view by rich tree foliage and shrubs • Avoid dark and concealed area by providing good lighting throughout the park • Provide several emergency phone boxes that can be reached by the users • Consider technological innovations such as motion activated lights and surveillance camera coverage • Provide even and non-slippery paving materials with particular attention to the interface between paved and unpaved surfaces • Avoid tripping hazard to prevent crutches, wheels or high heels from being trapped by ensuring that the joints on the pavement should not wider than 3mm, without bevelled and rounded edges • Provide walkway that are flat or with very gentle slope that are less than 2% with no steps to ease the movement of PWD • Provide handrails on ramps and paths

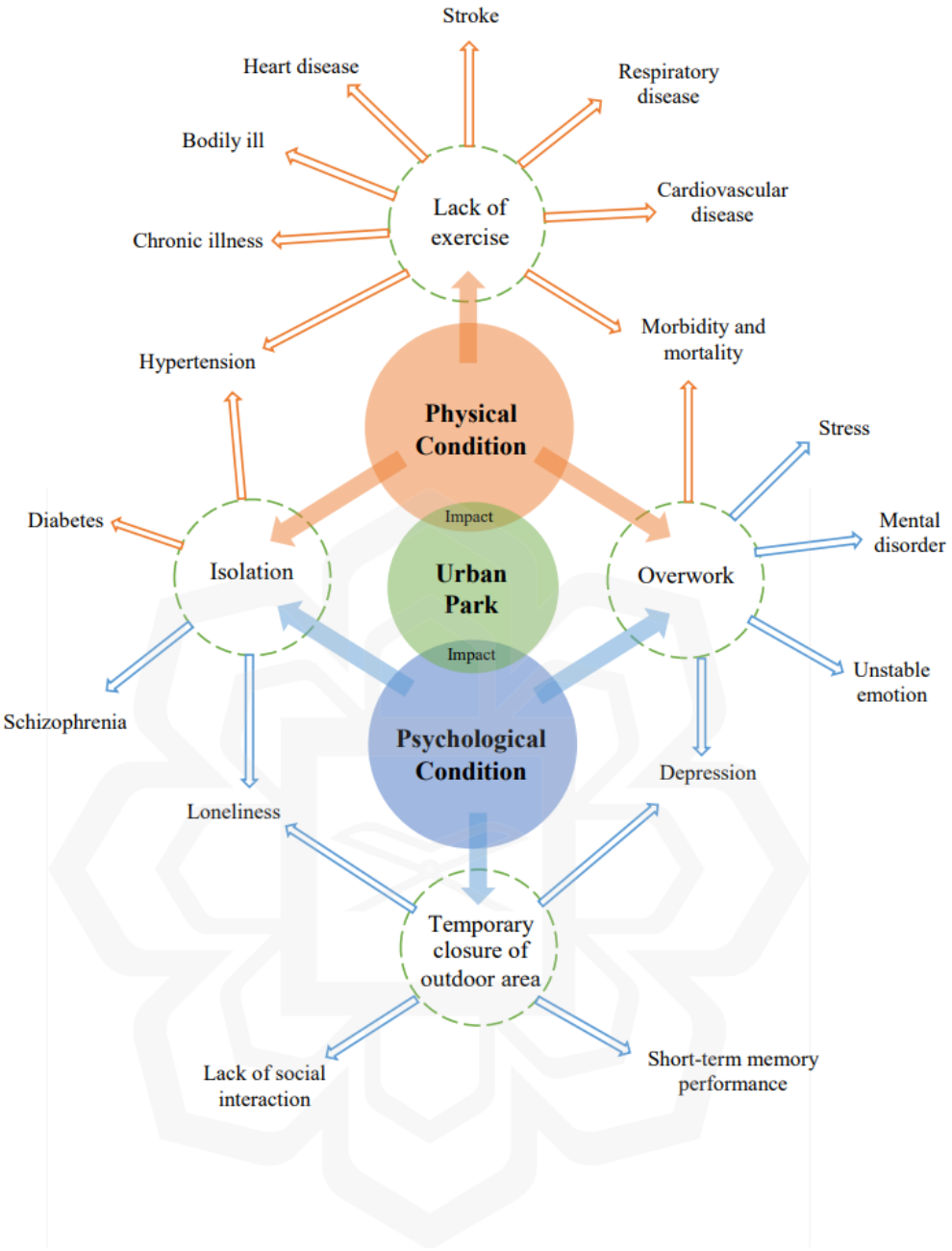

Figure 5.1 The summary of physical and psychological health impact of urban park as urban park preventative measure

5.4 FUTURE RESEARCH

This research would benefit future research, as few studies have addressed the role of urban parks as the mechanism for physical and psychological health impacts during pandemic crises. This research provides evidence of multiple positive effects of urban parks on both physical and psychological health during pandemic suffering. In addition, this research highlights the preventive measure of the urban park as a mechanism for physical and psychological health impacts during pandemic crises. It is anticipated that the community will benefit from the research's recommendations and suggestions.

In addition to reiterating the role and significance of urban parks in improving physical and psychological health during pandemic crises, this research demonstrates how urban parks can have a variety of other impacts and functions based on the needs and preferences of all age group. It is anticipated that future research will address the issue for various age groups, such as the role of urban parks in improving the physical and psychological health of the elderly and kids. However, after completing this research, it is clear that recommendations that could aid in the refinement of the research are required.

To obtain more reliable results, the research should ensure that the questionnaire sample population is evenly distributed. Several conclusions, for instance, could not be confirmed definitively due to the sample's unequal distribution among ethnicities. As the research was done in Malaysia, the majority of respondents are Malays, making the results for other ethnicities unreliable. Other ethnicities should also be surveyed. The primary cause of this issue is the online distribution of survey questionnaires rather than their physical distribution to respondents. As a consequence, the researcher cannot distribute the survey uniformly throughout the sample population. One way to improve sample distribution is to conduct the survey in-person as opposed to online. The survey should be distributed to a particular group at specific times and locations. This is to ensure that each category has a sufficient number of participants, thereby reducing statistical error and ensuring the results are highly reliable.

5.5 CONCLUSION

The research explored the physical and psychological health impacts of urban parks during pandemic outbreaks. The purpose of the research was to investigate the role of urban parks as a mechanism for the physical and psychological health impacts during pandemic crises. Three research questions were formulated and answered, namely, to investigate the beneficial role of urban park in enhancing physical and psychological health during pandemic crises, to evaluate the importance of urban park to improve physical and psychological health during pandemic crises, and to propose the preventative measure of urban park as a mechanism for physical and psychological health. This research is exploratory in nature and utilised a mixed-method approach. The research utilised a survey questionnaire and a focus group discussion (FGD). The research elaborated a critical literature review of the urban park's theory and evolution, physical and psychological health impacts and aspects of urban parks, the needs of urban parks during pandemics, the key purpose of sustainable environmental health, and the Islamic viewpoint on parks and health. The research also included a comprehensive discussion of the results of the survey questionnaire and focus group discussions, which were analysed using descriptive and content analysis.

The research revealed that an urban park should be a public space where people can enjoy passive activities and recreation to enhance their physical and psychological health. Any plan to enhance an urban park should prioritise preservation of the environment while also introducing new recreational opportunities to the community. It is essential for the improvement of urban residents' health that they have access to open space to satisfy their basic physical and psychological requirements. The formulation of preventative measures of an urban park to enhance physical and psychological health as a result of this research contributes to the development of a new concept or guideline for future research. In conclusion, this research discussed the roles and significance of urban parks in enhancing physical and psychological health during pandemic crises, as well as the preventative measures required to satisfy the needs and preferences of users, which can be improved upon and utilised in future research. It is anticipated that the results of this research will serve as a beneficial resource for gaining a deeper understanding of the role of urban parks in promoting physical and psychological health during pandemic crises.

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APPENDIX I: QUESTIONNAIRE SURVEY

Survey on 'Urban Park as a Mechanism for Environmental Health Indicator during Pandemic Crises'

Dear Respondent,

I am Amira Arisya Mohamad Nadzri, a student from Kulliyyah of Architecture and Environmental Design, International Islamic University Malaysia (IIUM) Gombak. I am currently conducting a survey on the 'Urban Park as a Mechanism for Environmental Health Indicator during Pandemic Crises'.

The enclosed questionnaire consists of four (4) sections in which most of the questions are in the form of multiple-choice format. It will take about ten (10) minutes to complete the survey. Your individual responses will be kept private and confidential as the report will only be used for academic and research purposes.

You may withdraw your participation whenever you feel uncomfortable answering the questions. Participation is strictly voluntary. I appreciate your honest feedback as your input will be valuable for the research. Any question pertaining to the study may be directed to this email: amiraarisyamn@gmail.com

Thank you.

Responden yang dihormati,

Saya Amira Arisya Mohamad Nadzri, pelajar dari Kulliyyah Seni Bina dan Reka Bentuk Alam Sekitar, Universiti Islam Antarabangsa Malaysia (UIAM) Gombak. Saya sedang menjalankan tinjauan tentang 'Taman Bandar sebagai Mekanisme Petunjuk Kesihatan Persekitaran Semasa Krisis Pandemik'.

Soal selidik yang disertakan ini mengandungi empat (4) bahagian yang mana kebanyakan soalan adalah dalam bentuk format aneka pilihan. Ia akan mengambil masa kira-kira sepuluh (10) minit untuk melengkapkan tinjauan. Jawapan individu anda akan dirahsiakan dan sulit kerana laporan tersebut hanya akan digunakan untuk tujuan akademik dan penyelidikan.

Anda boleh menarik balik penyertaan anda apabila anda berasa tidak selesa menjawab soalan. Penyertaan adalah secara sukarela. Saya menghargai maklum balas jujur anda kerana input anda sangat berharga untuk bidang komunikasi. Sebarang pertanyaan berkaitan kajian boleh diajukan ke emel ini: amiraarisyamn@gmail.com

Terima kasih.

Section A: Demographic Information (Bahagian A: Maklumat Demografi)

Instruction: Please tick in the box provided.

Arahan: Sila tandakan pada kotak yang disediakan.

1. Gender (Jantina) *

- ◯ Male (Lelaki)
- ◯ Female (Perempuan)

2. Age (Umur) *

- ◯ 20-30 years (Tahun)
- ◯ 31-40 years (Tahun)
- ◯ 41-50 years (Tahun)
- ◯ 51-60 years (Tahun)
- ◯ Above 61 years (Atas 61 tahun)

3. Ethnicity (Kaum) *

- ◯ Malay (Melayu)
- ◯ Chinese (Cina)
- ◯ Indian (India)
- ◯ Other: _____

4. Marital status (Status perkahwinan) *

- ◯ Single (Bujang)
- ◯ Married (Berkahwin)
- ◯ Divorced (Becerai)

5. Household members (Bilangan ahli keluarga) *

- ◯ 0 - 2
- ◯ 3 - 5
- ◯ 6 or more

6. Education level (Tahap pendidikan) *

- ◯ No school enrollment (Tidak bersekolah)
- ◯ Primary school (Sekolah rendah)
- ◯ Secondary school (Sekolah menengah)
- ◯ College/Institute (Kolej/Institut)
- ◯ University (Universiti)

7. Occupation (Pekerjaan) *

- ◯ Retiree (Bersara) / Unemployed (Tidak bekerja)
- ◯ Government worker (Penjawat Awam)
- ◯ Private sector (Pekerja Swasta)
- ◯ Self-employed (Bekerja sendiri)
- ◯ Housewife (Suri rumah)
- ◯ Student (Pelajar)
- ◯ Other: _____

8. Monthly income (Pendapatan bulanan) *

- ◯ < RM 1500
- ◯ RM1501-RM3000
- ◯ RM3001-RM5000
- ◯ > RM 5001
- ◯ No fixed income (Tiada pendapatan tetap)

Section B: Urban Park Usage and Experience (Bahagian B: Penggunaan dan Pengalaman Taman Bandar)

Instruction: Please tick in the box provided.

Arahan: Sila tandakan pada kotak yang disediakan.

9. Travel distance from house to the urban park (Jarak penjalanan daripada rumah ke taman bandar) *

- ◯ < 1 km from home (<1 km dari rumah)
- ◯ 2 - 3 km (2 - km dari rumah)
- ◯ 4 - 5 km (4 - 5 km dari rumah)
- ◯ > 5 km (>5 km dari rumah)

10. Mode of transportation to the urban park. You may tick more than one answer * (Cara pengangkutan ke taman bandar. Anda boleh menanda lebih daripada satu jawapan)

- ☐ Walking (Berjalan kaki)
- ☐ Bicycle (Basikal)
- ☐ Motorcycle (Motosikal)
- ☐ Car (Kereta)
- ☐ Taxi (Teksi)
- ☐ Bus (Bas)
- ☐ LRT/Train (Kereta api)
- ☐ Other: _____

11. How frequent do you visit the urban park? (Berapa kerapkah anda melawati taman bandar?) *

- ◯ Daily or more often (Setiap hari atau lebih kerap)
- ◯ Weekly or often (Mingguan atau kerap)
- ◯ Monthly or several times a month (Bulanan atau beberapa kali sebulan)
- ◯ Once or twice a year (Setahun sekali atau dua kali)
- ◯ Rarely (Jarang)
- ◯ First time (Pertama kali)

12. When do you prefer to visit the urban park? (Waktu manakah yang anda selalu lawati taman bandar?) *

- ◯ Weekdays (Hari minggu)
- ◯ Weekend (Hujung minggu)
- ◯ Both (Kedua-duanya)

13. Who do you go with to the urban park? (Dengan siapa anda pergi ke taman bandar?) *

- ◯ Friend (Kawan)
- ◯ Family (Keluarga)
- ◯ Alone (Berseorangan)
- ◯ All of the above (Semua di atas)

14. What is the purpose of your visit to the urban park? *

	Never (Tidak pernah)	Rarely (Jarang)	Sometimes (Kadang-kadang)	Often (Selalu)	Always (Sentiasa)
Recreation and fitness (Rekreasi dan kecergasan)	○	○	○	○	○
Strolling / Enjoying the scenery (Bersiar-siar / Menikmati pemandangan)	○	○	○	○	○
For community event (Untuk acara komuniti)	○	○	○	○	○
Gathering with friends/family (Berkumpul bersama rakan/keluarga)	○	○	○	○	○
Having a picnic (Berkelah)	○	○	○	○	○
To release stress (Mengurangkan tekanan)	○	○	○	○	○
Attracted to the facilities (Tertarik dengan kemudahan)	○	○	○	○	○
Invited by friends (Dijemput rakan)	○	○	○	○	○
Near to the house (Berhampiran dengan rumah)	○	○	○	○	○

15. How do you feel when visiting the urban park? (Bagaimanakah perasaan anda semasa melawati taman bandar?) *

	Never (Tidak pernah)	Rarely (Jarang)	Sometimes (Kadang-kadang)	Often (Selalu)	Always (Sentiasa)
Large and wide (Besar dan luas)	○	○	○	○	○
Enjoyable and comfortable (Gembira dan selesa)	○	○	○	○	○
Safe (Selamat)	○	○	○	○	○
Sufficient/well-maintained facilities (Kemudahan yang mencukupi / diselenggara dengan baik)	○	○	○	○	○
Able to do physical activities (Mampu melakukan aktiviti fizikal)	○	○	○	○	○
Near and accessible (Dekat dan mudah akses)	○	○	○	○	○
Cool and cozy (Sejuk dan nyaman)	○	○	○	○	○

Section C: Understanding of Urban Park (Bahagian C: Kefahaman tentang Taman Bandar)

Instruction: Please tick in the box provided.

Arahan: Sila tandakan pada kotak yang disediakan.

16. How do you define 'urban park'? (Apakah definisi 'taman bandar' pada anda?) *

- ◯ Recreation area that helps improve public health, social well-being and enhance public enjoyment among urban residents (Kawasan rekreasi yang membantu meningkatkan kesihatan awam, kesejahteraan sosial dan meningkatkan keseronokan penduduk bandar)
- ◯ Landscape features that provide various functions such as recreation, environmental benefits and wildlife habitats (Landskap yang memyediakan pelbagai fungsi seperti penyedia rekreasi, kebaikan alam sekitar dan habitat hidupan liar)
- ◯ A designated public space within a metropolitan area that offers passive or active leisure opportunities (Ruang awam yang ditetapkan di dalam kawasan metropolitan yang menawarkan peluang riadah pasif atau aktif)
- ◯ Any public area of land set for aesthetic, educational, recreational, or cultural use by the public located in urban areas (Mana-mana kawasan tanah awam yang ditetapkan untuk kegunaan estetika, pendidikan, rekreasi atau budaya oleh orang ramai di kawasan bandar)

17. In your opinion, what are the important hardscape elements in an urban park? * (Pada pendapat anda, apakah elemen landskap kejur yang penting di dalam taman bandar?)

	Strongly disagree (Sangat tidak setuju)	Disagree (Tidak setuju)	Neutral	Agree (Setuju)	Strongly agree (Sangat setuju)
Jogging track and bicycle lane (Trek joging dan lorong basikal)	○	○	○	○	○
Physical activity areas (Kawasan aktiviti fizikal)	○	○	○	○	○
Benches / resting areas (Bangku / tempat rehat)	○	○	○	○	○
Toilets (Tandas)	○	○	○	○	○
Water features (Air)	○	○	○	○	○
Lighting (Lampu)	○	○	○	○	○
Signage / route map (Papan tanda / peta laluan)	○	○	○	○	○
Fence, gates and barrier (Pagar dan penghadang)	○	○	○	○	○
Sculpture / art element (Arca / elemen seni)	○	○	○	○	○
Ample parking space (Tempat letak kenderaan yang luas)	○	○	○	○	○

18. In your opinion, what are the important softscape elements in an urban park? * (Pada pendapat anda, apakah elemen landskap lembut yang penting di dalam taman bandar?)

	Strongly disagree (Sangat tidak setuju)	Disagree (Tidak setuju)	Neutral	Agree (Setuju)	Strongly agree (Sangat setuju)
Fruit tree (Pokok berbuah)	○	○	○	○	○
Fragrant tree (Pokok yang mempunyai bau/haruman)	○	○	○	○	○
Large and shady tree (Pokok besar dan redup))	○	○	○	○	○
Tall and sparse tree (Pokok tinggi dan jarang)	○	○	○	○	○
Colorful flowers (Bunga yang berwarna-warni)	○	○	○	○	○

Section D: Urban Park and Pandemic (Bahagian D: Taman Bandar dan Pandemik)

Instruction: Please tick in the box provided.

Arahan: Sila tandakan pada kotak yang disediakan.

19. In your opinion, is the urban park in Malaysia helps promote overall health during pandemic? (Pada pendapat anda, adakah taman bandar di Malaysia membantu meningkatkan kesihatan semasa pandemik?) *

- ◯ Yes
- ◯ No

19a. Please state the reason of your choice based on your answer in question 19 (Sila nyatakan sebab pilihan anda berdasarkan soalan nombor 19) *

- ☐ Improves physical health with various types and modes of recreation (Meningkatkan kesihatan fizikal dengan pelbagai jenis dan mod rekreasi)
- ☐ Promotes and improves psychological health (Menggalakkan dan meningkatkan kesihatan psikologi)
- ☐ Enhancing perception of life quality (Meningkatkan persepsi kualiti hidup)
- ☐ Helps to build bonds between neighbours, fomenting a sense of community and social vitality (Membantu membina ikatan antara jiran, memupuk semangat kemasyarakatan dan kecergasan sosial)
- ☐ Lower risks for chronic conditions (Risiko yang lebih rendah untuk keadaan kronik)
- ☐ Elevates general mood and facilitates relaxation (Meningkatkan mood dan ketenangan)
- ☐ Minimizing depressive symptoms (Mengurangkan gejala kemurungan)
- ☐ Strengthening cognitive functioning, concentration, and short-term memory performance (Memperkukuh fungsi kognitif, tumpuan, dan prestasi ingatan jangka pendek)
- ☐ Other: _____

20. In your opinion, what are the beneficial roles of urban park, especially during pandemic? (Pada pendapat anda, apakah kelebihan peranan taman bandar, terutama sekali semasa wabak?) *

	Strongly disagree (Sangat tidak setuju)	Disagree (Tidak setuju)	Neutral	Agree (Setuju)	Strongly agree (Sangat setuju)
Improve psychological health (Meningkatkan kesihatan psikologi)	○	○	○	○	○
Reduce stress and depression symptoms (Mengurangkan tekanan dan gejala kemurungan)	○	○	○	○	○
Improve social interaction and cohesion (Meningkatkan interaksi sosial dan perpaduan)	○	○	○	○	○
Increase life quality and satisfaction (Meningkatkan kualiti hidup dan	○	○	○	○	○
Increase life span and reduce mortality (Meningkatkan jangka hayat dan mengurangkan kematian)	○	○	○	○	○
Beautify and make a healthier environments (Mengindahkan dan menjadikan persekitaran yang lebih sihat)	○	○	○	○	○
Encourage physical activity (Menggalakkan aktiviti fizikal)	○	○	○	○	○

21. In your opinion, what are the importance of urban park, especially during pandemic? (Pada pendapat anda, apakah kepentingan taman bandar semasa wabak?) *

	Strongly disagree (Sangat tidak setuju)	Disagree (Tidak setuju)	Neutral	Agree (Setuju)	Strongly agree (Sangat setuju)
Improve physical condition (Memperbaiki keadaan fizikal)	○	○	○	○	○
Improve quality of life and life satisfaction (Meningkatkan kualiti hidup dan kepuasan hidup)	○	○	○	○	○
Reduce chronic and acute pain (Mengurangkan kesakitan kronik dan teruk)	○	○	○	○	○
Increase physical activity level (Meningkatkan tahap aktiviti fizikal)	○	○	○	○	○
Provide a healthy lifestyle (Sediakan gaya hidup sihat)	○	○	○	○	○
Reduce the risk of disease transmission (Mengurangkan risiko penularan penyakit)	○	○	○	○	○
Increase social interaction and cohesion (Meningkatkan interaksi sosial dan perpaduan)	○	○	○	○	○
For entertainment and relaxation (Untuk hiburan dan bersantai)	○	○	○	○	○
Improve psychological health and reduce stress (Meningkatkan kesihatan psikologi dan mengurangkan tekanan)	○	○	○	○	○

APPENDIX II: FGD QUESTIONS

21st June 2022

FOCUS GROUP DISCUSSION
MASA & IIUM

General Overview, problems and issues

NST online: 2nd March 2022

Berita Harian online: 6th Nov. 2022

Several news and articles of NST online proof that mental of of Malaysian since the pendemic outbreak. For instance, Nst online reported between March 25, 2020, and May 20, 2021, **85.5 percent of the 145,173** calls received by government-operated helplines were from **people suffering from mental problems** and in need of emotional assistance and therapy (2nd July 2021, Nst online).

21st June 2022

FOCUS GROUP DISCUSSION
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Urban Green Spaces

1. A **unique source of community resilience** throughout protracted periods of pandemic lockdown and quarantine (Grima et al., 2020; Samuelsson et al., 2020; Slater et al., 2020)
2. **Provide some relief** from the risk of outbreak **transmission** and the **social isolation** of city life (Johnson et al, 2021).

UGS Examples

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FOCUS GROUP DISCUSSION
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Urban Green Spaces
benefits and its relations to mental health

1. It is important to recreate green environment such as green spaces in urban fabric for the **important of mental health** benefits and for recreational uses concomitant with the **SDG 3 and 11 goals**. (Venter et. al., 2020)

2. During the pandemic, **spending more time in greenspace** may have affected **emotional wellness**, since a growing body of pre-pandemic evidence suggests that living close and spending time in greenspace is **linked to improved mental health**. (Wortzel et. al., 2021)

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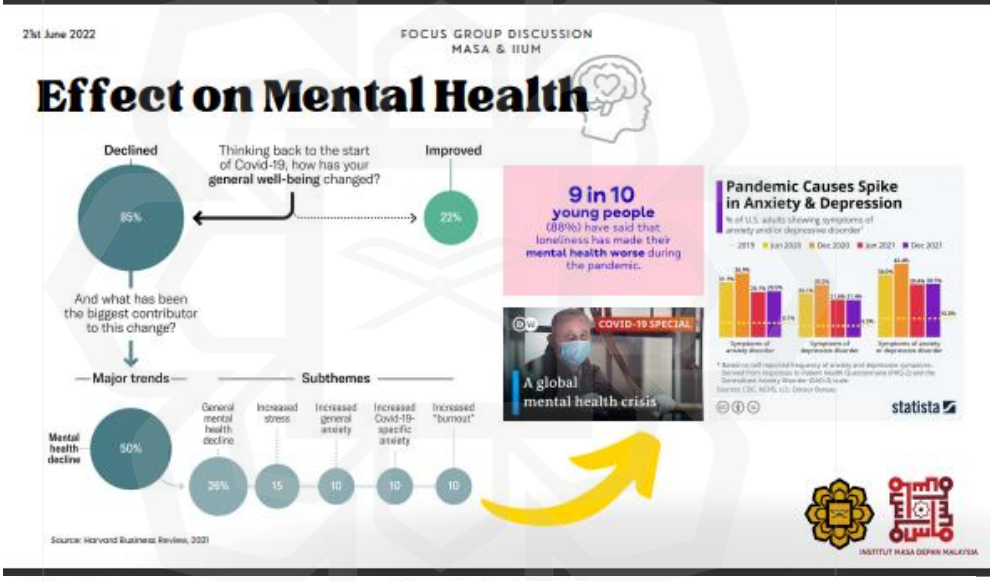
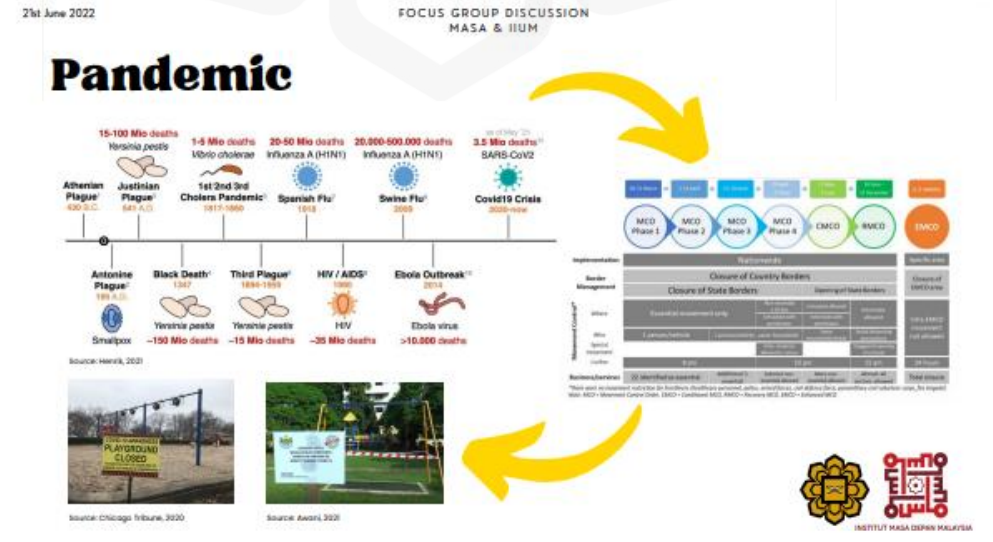
21st June 2022
FOCUS GROUP DISCUSSION
MASA & IIUM
Urban Green Spaces
relations to
Sustainable Development Goals
(SDG)
Good health is essential to sustainable development and the 2030 Agenda reflects the complexity and interconnectedness of the two. It takes into account widening economic and social inequalities, rapid urbanization, threats to the climate and the environment, the continuing burden of HIV and other infectious diseases, and emerging challenges such as noncommunicable diseases.
Making cities sustainable means creating career and business opportunities, safe and affordable housing, and building resilient societies and economies. It involves investment in public transport, creating green public spaces, and improving urban planning and management in participatory and inclusive ways.


21st June 2022
FOCUS GROUP DISCUSSION
MASA & IIUM
Effect on Mental Health
Declined
Thinking back to the start of Covid-19, how has your general well-being changed?
Improved
And what has been the biggest contributor to this change?
Major trends
Subthemes
Mental health decline
General mental health decline
Increased stress
Increased general anxiety
Increased Covid-19-specific anxiety
Increased "burnout"
Source: Harvard Business Review, 2021
9 in 10
young people
(88%) have said that loneliness has made their mental health worse during the pandemic.
COVID-19 SPECIAL
A global mental health crisis
Pandemic Causes Spike in Anxiety & Depression
statista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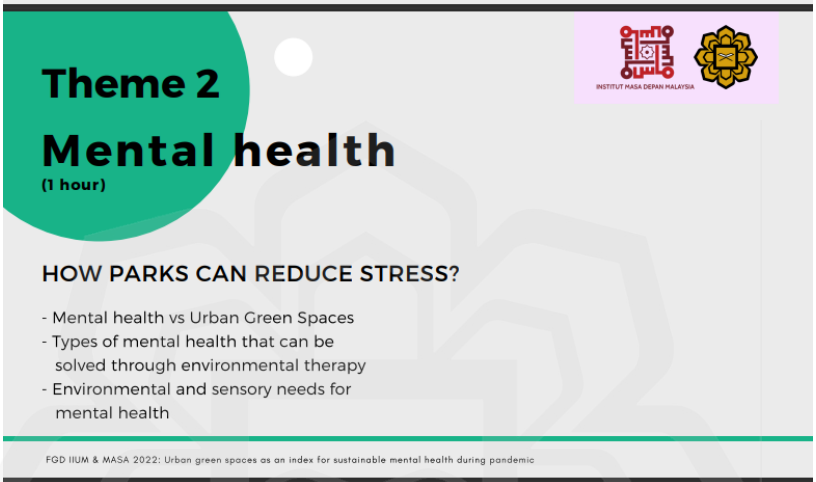
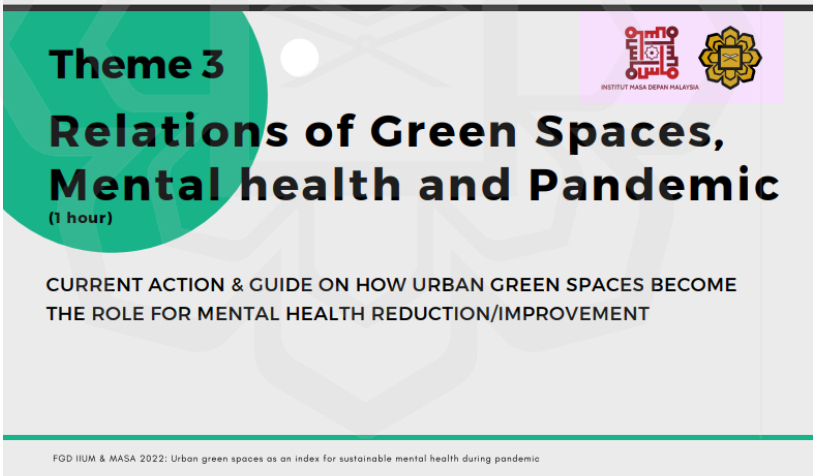
Pandemic
Athenian Plague
Justinian Plague
Antonine Plague
Black Death
Third Plague
HIV / AIDS
Ebola Outbreak
Smallpox
Yersinia pestis
HIV
Ebola virus
Covid19 Crisis
Swine Flu
Spanish Flu
1st/2nd/3rd Cholera Pandemic
Source: Henrik, 2021
PLAYGROUND CLOSED
Source: Chicago Tribune, 2020
Source: Awani, 2020


Theme 1
Urban Green Spaces
(1 hour)
WHAT IS URBAN GREEN SPACES (UGS)?
- the benefits of UGS
- the functions of UGS
- the problems
FGD IIUM & MASA 2022: Urban green spaces as an index for sustainable mental health during pandemic


Theme 2
Mental health
(1 hour)
HOW PARKS CAN REDUCE STRESS?
- Mental health vs Urban Green Spaces
- Types of mental health that can be solved through environmental therapy
- Environmental and sensory needs for mental health
FGD IIUM & MASA 2022: Urban green spaces as an index for sustainable mental health during pandemic


Theme 3
Relations of Green Spaces, Mental health and Pandemic
(1 hour)
CURRENT ACTION & GUIDE ON HOW URBAN GREEN SPACES BECOME THE ROLE FOR MENTAL HEALTH REDUCTION/IMPROVEMENT
FGD IIUM & MASA 2022: Urban green spaces as an index for sustainable mental health during pandemic


21st June 2022
FOCUS GROUP DISCUSSION
MASA & IIUM
The End
Thank you for joining and participating this Focus Group Discussion.
Participant can disperse to Lecture Theater (LT1) to get lunch and photo session.