

Research Article

The Impact of Green Urban Open Spaces on Enhancing Mental Health

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Abstract

Scarcity of green public spaces not only could impair the livability and sustainability of cities but also would affect the public health, while there is potential benefit of green environments on mental health, it could be one of the great reasons of reducing depression and stress, many studies conducted during the last decade suggest the mental health benefits of green spaces, According to the World Health Organization, mental health promotion should include actions that create environments that support mental health and allow people to maintain healthy lifestyles, Given the increase in mental health problems and the ongoing massive urbanization, especially in developing countries, Evidence is growing for the beneficial impacts of natural outdoor environments on health. The general disproportion of urban development and the socio-economic crisis in Egypt followed by a number of acute and chronic stressors, as well as years of accumulated trauma, prevented the parallel physical, mental and social adaptation of society, in addition to a whole and continuous contraction of public green spaces in Cairo certainly affected the quality of mental health, increasing the absolute number of people with depression, stress and psychosomatic disorders. This paper aims to explore and document the development process of Merryland Park, Heliopolis, Cairo, Egypt with specific reference to the conflict between urban development, and mental health.

Keywords: Green public spaces, Public health, Mental health etc.

Introduction

Recently, proves have been growing in the great relationship between urban green public open spaces and enhancing physical and mental health, which considered one of the most important reasons behind the urban parks movement of the 19th and 20th century (Schuyler, 1988).

There is a prediction that the proportion of people living in urban areas is going to be increase from 46.6 to 69.6% in 2050, Environmental pollution, heat island and climate change and other urbanization problems, which followed by non-communicable diseases, such as mental illness, obesity, cardiovascular diseases, type 2 diabetes and cancer, that appeared the need for multi-sectoral action to promote health in urban populations and led to the rise of the 'Healthy Cities' movement and Preventable this non-communicable disease. Neglecting that facts, not only affecting health and wellbeing, but also increasing the cost of health care and decreasing the productivity of the workforce. A lot of illnesses like these are linked to chronic stress and lifestyle factors (Nations, 2007).

Most of the organizations that works on health and environment flagged up the the great role that urban green spaces play in managing major public health issues, for example, the Member States of the WHO European Region made a commitment "to provide each child by 2020 with a doorway to healthy and safe environments and settings of everyday life in which they can walk and cycle to schools, and to green spaces in which to play and practice physical activity", and at the United Nations Sustainable Development Goal 11.7 aims to achieve Improving access to green spaces in cities By 2030 (WHO, 2010).

At the scale of our country, Egypt, like the other region developing countries is facing economic, social and political change; Egypt is struggling with Contemporary the development and urban transformation on one hand, and holding on to the percentage of the green public open spaces on the other hand. conserving and protecting the green open spaces such as the public parks face more challenges than those faced by building them at the first place. Egyptian urban areas, like Heliopolis, was struggling because of the increasing in the population at the suburb and the ongoing urban development, Furthermore, its open spaces, squares, parks, and gardens (e.g. Merryland Park) have been more vulnerable to face this upbeat change. The changes that

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took place on the Maryland park and the reflection of that on the residents of the suburb became a vivid example of the research.

1. Relationship Between Urban Green Spaces and Improving Health

Crystallize the relationship between green open public spaces and public health in points

- Improved air quality, enhanced physical activity, stress reduction, and greater social cohesion was the four principles that Hartige suggested as the main item that improves health through green open space.
- Lachowycz & Jones confirmed the main avenue to health was dealing with natural green spaces by doing a physical exercise, relaxation, social activities and interactions engagement with nature, and interactions as the main avenue to health.
- Villanueva et al. suggested that physical exercise at open spaces and Utilization of the natural heat and air is so beneficial to respiratory health and heat-related illness.
- Kuo confirmed that there are a direct or indirect path between Natural green spaces and health which play a major role for enhancing immune functioning.
- Hartig briefed that interacting with nature has the most important effect on enhancing restorative psychological effects, While our research is focusing on parks as a major item of urban green open spaces, many of other researchers have found that Lack of park access has been linked to mortality (WHO.c, 2010).

1.1 Green Open Spaces and Physical Health

1.1.1 promote physical activity, evolve fitness and reduced obesity

The global mortality's fourth leading risk factor is Physical laziness. there are many reasons cause physical laziness in regions, such as shortage of green open spaces like parks and gardens, and the increase of traffic at the streets, and the lake of footpaths, most studies demonstrated the strong relationship between higher levels of physical activity and green open public spaces. more than a study found that sedentary time and reduced risks of children being overweight or obese is directly related to living in a greener natural suburb. cardiovascular health, mental health, neurocognitive development, and general well-being and preventing obesity, cancer, and osteoporosis are all benefits of Physical exercise. many studies had demonstrated that spending more time outdoors and practice physical activity could be rise by increasing natural green urban spaces, an American study had shown that physical exercise in Natural greener space

have multiple mental health benefits, a study at Scotland' proofed a relationship between reduction of poor mental health and exercising at natural green space, at variance that exercising at another environment didn't show a beneficial effect on mental health, there some opinions suggesting that an activity like using green space for growing food could have a great positive effect on enhancing physical activity, well-being and support a healthy diet could help in reducing obesity (WHO.c, 2010).

1.1.2 Reducing cardiovascular morbidity

In the United Kingdom a study has been found that the less the person deal with green space the more risk of circulatory disease increases, there is a study found that one of the best reasons effect on reducing heart rate and blood pressure is walking in a busy urban street. (WHO, 2016).

1.1.3 Reduced prevalence of type 2 diabetes

A lifestyle that improves physical activity and reduces obesity is has a strong relation to type 2 diabetes, mellitus reduces the incidence of this disease. Cross-sectional observational studies at many countries proof that one of the very important reasons for reducing odds of having type 2 diabetes mellitus is more dealing with green urban spaces (WHO, 2016).

1.1.4 Improved pregnancy outcomes

A study proofed that one of the reasons that increase, the risk of preterm birth and reduce gestational age is that pregnant women wake a larger distance to a city park from their homes, However Another study in USA showed only a weak relationship between green space and preterm births. (WHO, 2016).

1.1.5 Reduced mortality

Japanese Studies demonstrated that older adults aged over 70 who walk around a park or natural spaces have five-year survival rate, another study in U.K based on the 2001 census population of England, proofed that all-cause mortality is strongly related with the amount of greens in the suburb. (WHO, 2016).

1.2 Green Open Spaces and Mental Health

An Australian study has shown that mental health is more strongly related to green spaces in a suburb than physical health, while a study in Spain proves that enhancing mental health across all socioeconomic genders is related to access to well-designed green space. Moving to greener areas has been associated with mental health improvements, decreasing the level of stress and improved well-being is related to dealing more with greener public open spaces, A study in the United States demonstrate that lower level of depression is related to higher levels of green open

spaces, anxiety and stress, Sweden study demonstrate that mental health in women is strongly attached to regular access to 'quite' green space, recent cross-sectional study in Lithuania proofed that, among individuals who regularly use parks was associated with reduced odds of self-reported symptoms of depression. WHO documented a study had been done in four European cities that spending more time at green open public areas has a positive effect on enhancing mental health (WHO, 2016).

1.2.1 Improving relaxation and restoration

There are two main theories explain the mental health benefits from having contact with nature:

a) Psycho-physiological stress reduction theory suggests that: people who have high levels of stress could be shifting to positive emotional state by contact with green urban open spaces, which leads them to feel more relaxed and improving their well-being.

b) Attention Restoration Theory suggests that: to improve performance in difficult tasks.it demanding a Natural and Green Open Motivator Place.

huge studies have been done for avoiding health problems and improving well-being, Using the daily cortisol pattern as a biomarker of chronic stress, and the outcomes come to prove the great benefit of the green public open spaces on mental health and reducing chronic stress in adults living in greener suburb, it has also been proofed that exposure to green spaces reduces neural activity and moderate depression. (WHO, 2016).

1.2.2 Improving sleep

Metabolic syndrome, cardiovascular morbidity and mortality, and neurocognitive disorders (such as dementia) are a disease related with sleep lack, while Sufficient sleep is fateful for good health. studies had showed people that had lower risk of scanty sleep (less than six hours), living in a greener neighborhood. In the United States, Grigsby Toussaint found that the prevalence of self-reported scanty sleep in adults could be reduced by more exposure to natural environments, especially men. Therefore, connecting with nature and green public open spaces lead to maintain circadian rhythms through increasing people's dealing with natural patterns of daylight. (WHO, 2016).

1.2.3 Mental health benefits of green spaces in specific population groups

Some studies demonstrated that urban green spaces provide health benefits for a variety of populations such as:

1.2.3.1 Women

Many studies had found that women using urban green spaces as a city park, enjoyed exercise in the park compared to exercising in the street because of the

well designed and relaxing scenery and its spiritual qualities.

Salivary cortisol in women that lives at More green open space in the residential area was associated with a great decline from three to nine hours post awakening (healthier diurnal cortisol pattern) in both genders. However, women living in residential area with a low ratio of green open space have low cortisol level at three hours post-awakening.

In men, who has a superficial decline in cortisol level through the day, was found that they less exposure to greenness.

In pregnant women many studies showed the beneficial effect of association with greenness for reducing both depression and blood pressure (WHO, 2016).

1.2.3.2 Children and adolescents

studies prove that there is a connection between green space and children' mental composition, supporting the cognitive, emotional, social and physical development, which could lead to better health and better ability to preserve healthy lifestyles in adulthood. there is a study showed a beneficial association with green space and measures of cognitive development in primary schoolchildren. (WHO, 2016).

1.2.3.3 Adults

Green spaces also have a great effect on older adults living in inner-city neighborhoods, by enhancing social ties and a sense of community, which known to be necessary for mental health and well-being, where studies prove that social isolation has been significantly related to increased mortality.

Toussaint found a strong relationship between green spaces and sleep disability that people aged 65 and older suffer from compared to younger adults (WHO, 2016).

2. Characteristics of urban green space for enhancing mental health

One of the most important factors that offer different opportunities for physical activities and mental healing in the suburb is the existence of the urban green open spaces, depending on the person's age, gender, and individual priorities. the urban green space could Provide quiet relaxation by various qualified activities:

- The connection with the natural environment.
- Children's play.
- Physical exercise.
- And athletic activities.
- Getting away from unpleasant aspects of the urban. Environment, such as noise or heat.

2.1 Human needs in urban parks

A study in Singapore Yuen's demonstrated that the problems of urban open Spaces exist because:

- serving the most direct and explicit needs of the population (as a place to sit, stroll and play)
- giving all groups the same tender park design.
- regarding the needs differences of local users (STRIFE, 2009)

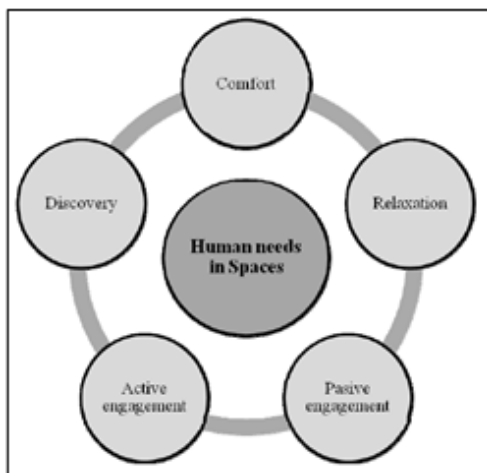


Figure 1: Human needs in open spaces according to Carr

2.1.1 Human needs in open spaces according to Carr:

2.1.1.1 Comfort

Comfort can be classified by its physical, social, or psychological components. Physical comfort measures how people react physically with the environment.

2.1.1.2 Relaxation

Relaxation is the most beneficial state for mind and body, Relaxation take place when people utilize in passive and active areas and noisy ones.

2.1.1.3 Passive engagement with the environment

Watching people’s activities, sports, and observing natural environments, is considering a passive activity. it leads to sense of relaxation.

2.1.1.4 Active engagement with the environment:

Active engagement includes contact with people. socializing, in terms of talking with others and become involved in recreational activities.

2.1.1 5 Discovery

Kaplan states that one of the factors in enhancing mental health is exploration activities (Nassar.usama, 2010).

2.1.2 comments of users that explore their needs in an open green public space

- "used to go to the park, but someone took the bench, so I do not go anymore " form Sheffield.
- "Paley park has good, reasonably priced food, as well as moveable chairs and tables that let people be comfortable and have some control over where they sit." From New York.
- " I love nature; I cannot see nature but it is like aother world when I go to open spaces. I can feel the open space around me. I love to listen to water and meditate on it and think about where it is going. I take my tape recorder to record the sounds and take it home to listen to it" from London.
- "I go to feel inspired. Parks improve your health, education and social behavior. Health problems are directly related to stress; therefore, you go to parks to feel relaxed." Another user from London.

2.2. The factors that make the public space successfully designed

Vahid Bigdeli Rada & Ibrahim Bin Ngaha state that there are five factors making the public spaces successful and offering he users' needs.

- Space has to provide safety, maintenance, firmness and the ability to expect all spaces.
- The space offers comfortable facilities in the space, comfortable environment and availability of practicing desired activities.
- The space presents more awareness, benefits, environmental enjoyment, more cultural awareness, the chance of self-express, diversity, contrast, variety of multiple options, certain identity of space, privacy, feeling the sense of belonging to the space.
- The space provides social interaction, comfort and safety in the garden's region.
- The space supports non-physical elements such as awareness, responsiveness and environmental experiences. (Nassar.usama, 2010).

According to Mark Francis in 2003 the urban spaces used in a good way from various social classes in the community can be described and evaluated as successful urban spaces.

Successful the parks and open spaces which are lively and well-used by people are considered the successful ones. The observation and writings of social scientists and designers such as William Whyte and other have shown that use is a requirement for good public landscapes".

One of the most important factor in improving mental well-being is The quality of green space that allowing relaxation and recreation. that shows the most beneficial to mental health is the quality of public open spaces (including parks and gardens) in the neighborhood more than their quantity (Nassar.usama, 2010).

3. Merryland park: the past and present

3.1 The History of Maryland Park

Merryland plot was originally used as a horse racing club and track (hippodrome), This racing track was one of the various luxurious entertainment facilities created to attract the elite to the newly constructed Heliopolis in the early 1900s.

In addition to the horse racing events, the hippodrome was used for holding aviation celebrations as well. In 1960, the hippodrome was transformed to merry land park. During reconstruction, the old track stands area was refused for the newly established Granada cinema at the time. Those stands are currently abandoned. In the redesign of hippodrome to be a park in 1960, more than half of its area was lost to other land uses (mainly residential units, streets, and commercial) (Shetawy A.1 Dief-Allah D.2, 2013).

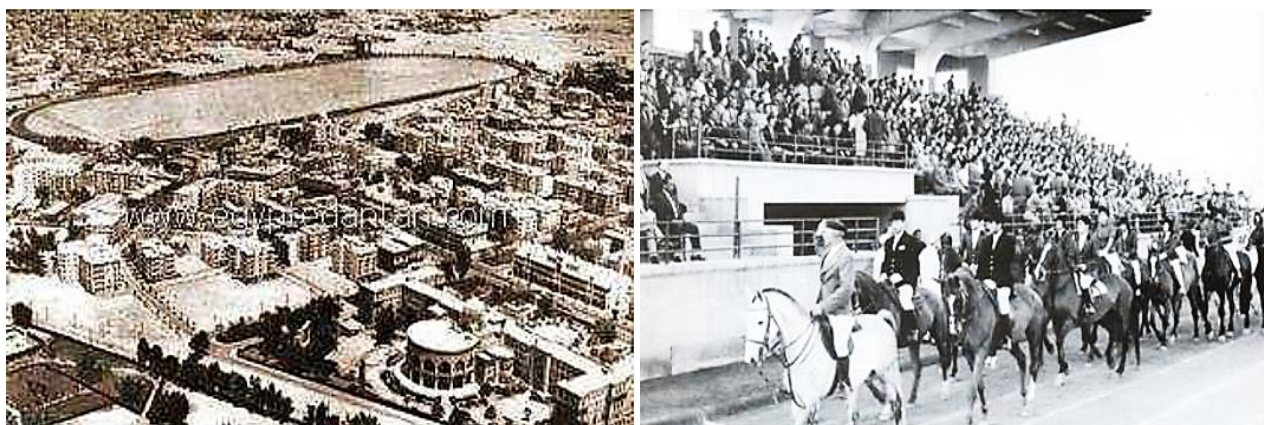


Figure 2: Horse Race Course (Old Merryland)

3.2 Changes to the Merryland Park and its connection to the mental and psychological health of the inhabitants of the Heliopolis neighborhood:

3.2.1. Establish and development of the park

The garden is one of the largest gardens in Heliopolis, or it can be the largest of Cairo's entire gardens, with an area of fifty acres. Over the years, the Maryland Park has become a favorite place for many to spend their leisure times, where they spend the most beautiful times between the green spaces and flowers and The children's entertainment and amusement games, at that time the residents of the region called it the "land of happiness".

The park included a casino for the entertainment of visitors to it as well as it included the lands of the skiing Batinaj, and in 1980 nursery tree and flowers and was selling some flowers and plants shade, three cafeterias were set up by the Alex company in order to provide the best service to the visitors. A small zoo and a duck lake were also created. In 1997, the tourist company Sindbad acquired the right to manage and operate the park, turning the park into a world-class tourist and entertainment destination, this is achieved through the establishment of restaurants to serve international food and also the establishment of places for private entertainment, Such as dolphins, dog seals and other water games, all in addition to the large green spaces.

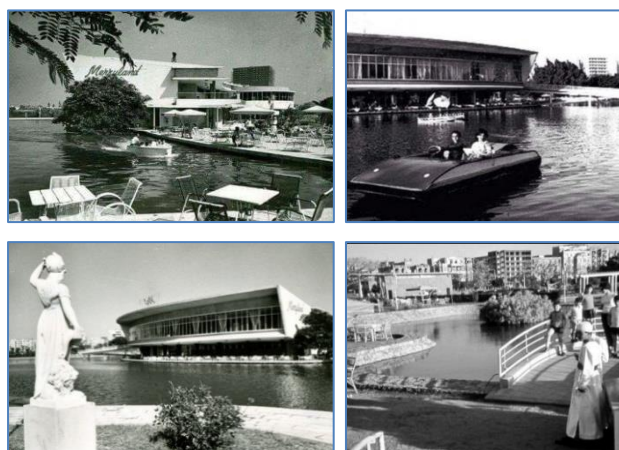


Figure 3: The pictures review the old Merryland Source: internet.



Figure 4: Maryland park at 2006. Source: Internet

3.2.2 Destruction of the Maryland Park

The park turned into desolate ruins, after it was famous for its many types of historical trees. After the large green areas, the land was covered with yellow sand, and time the residents of the region saw it as a ghost house. There was anything inside it but homeless dogs, and on one day the people of the region woke up to a kind of massacre, cutting their historical trees in the garden, which caused a shock for most of them.



Figure 5: A screenshot taken from a T.V show hosting the case of destroying sthe park



Figure 6: The merry land trees massacre



Figure 6: A photo taken at 2017 reviewing the park at time

2.3. 3.2.3. Maryland Park 2020

At Jun 9, 2018 The Minister of Public Works opened the Merryland Park in Heliopolis, 38000 meters' Green spaces were constructed, and many other facilities is in the plan of construction to make the Merryland the family hotspot.



Figure 7: The Marryland park 2018

3.3 Methodology of the applied Case study

The methods used in the collection and analysis of data were varied. The method of methodological pluralism was conducted by using more than one approach to data collection and analysis. The descriptive in-depth approach to urban studies was used to determine the spatial and physical characteristics of the surrounding area of the park. Qualitative and quantitative approaches in social studies through questionnaires and interviews with improvised quality users of different spaces around the study area were used to identify the activities and social interactions, to complete the behavioral observation and to conclude the needs of mental health promotion for the population of the region.

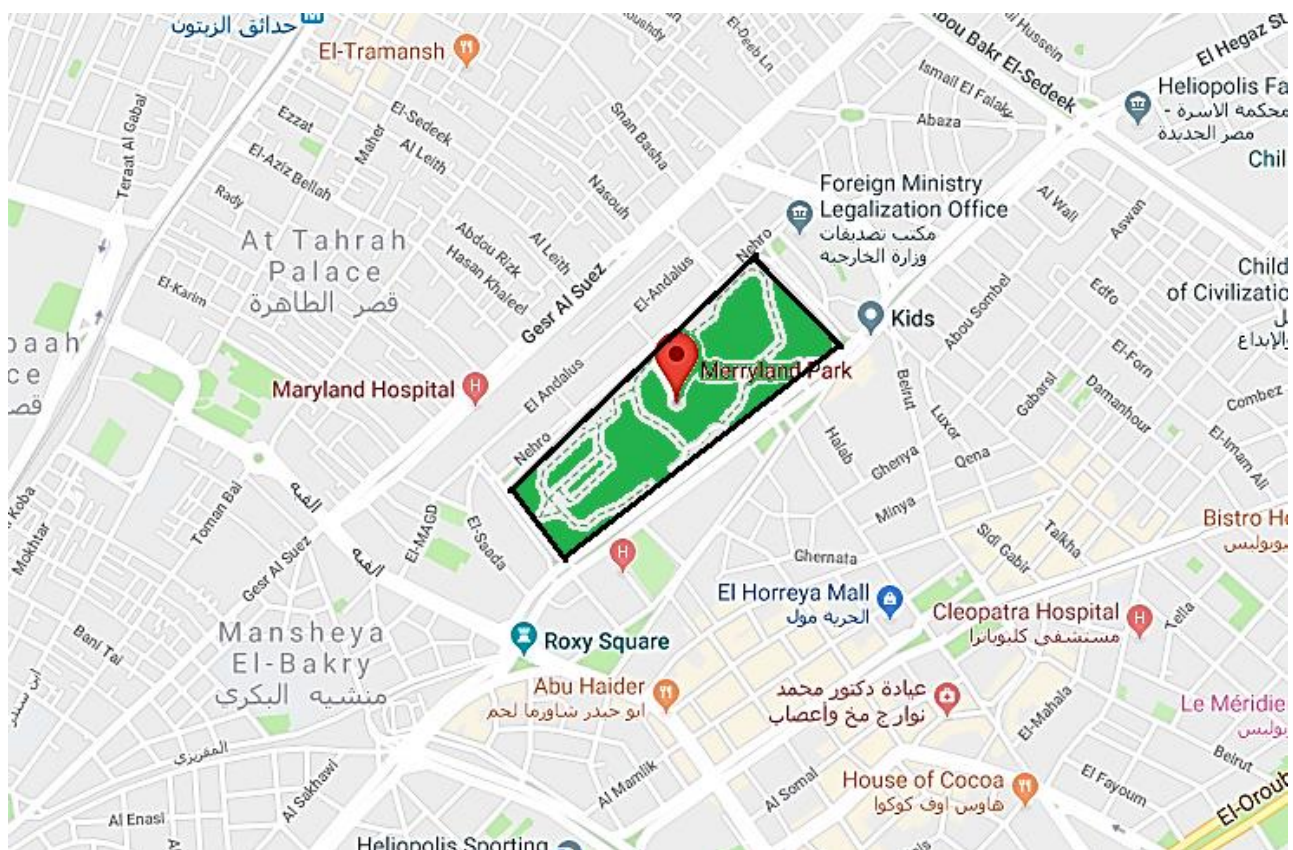


Figure 8: A map for the merryland park (By Author)



Figure 9: Analysis of layout (By Author)

3.3.1 Data collection tools

- Multiple visits, observation and observation at different times in the field.
- Interviews and interviews with all sample groups mentioned.
- Photography of the whole field and the surrounding quarries.
- Questionnaire: A survey was conducted for all sample groups mentioned.

3.3.2 Questionnaire

The first part of the questionnaire is a general background of the sample is used to collect information about the sample, while the second part consists of questions with open ends. These questions are designed to be general in order to leave individuals to express their problems, views and opinions. The third

and last part They are closed-ended questions that are straightforward to guide and avoid ambiguity.

3.3.3.1 Questionnaire Analysis:

The questionnaires were distributed to a sample of (84) persons, which included all types of users. women, men, children, adolescents, and older adults, users from the region and others from outside the area are using the park, the questionnaire started with questions with open end about how and where they want to spend the free time, and the most common health symptoms most people experience in Egypt, how they can deal with the daily stress, and if they found the park is an access for their mental health and Venting negative energy, the other part came with a closed end asking about the park and the activities that meet their needs. Trying to demonstrate that relation between the open public space and mental health. the results came like that.

Table 2: Results of the questionnaire

Questions	1st Highest percentage Answer	2nd Highest percentage Answer
How do you like to spend your free time? (multi check Q)	A place that combines green open spaces with indoor spaces(61.1%)	Open Green space "parks"(22.2%)
What are the most common health symptoms most people experience?(multi check Q)	Depression and daily stress (100%)	Obesity (55.6)
If you feel the daily tension, where do you want to go?	Open Green space "parks"(44.4%)	Alone at Home (38.9%)
What you do to improve your psyche when feeling depressed and tense everyday	Walking on the street(33.3%)	Going to the park(27.8)
Do you think that green areas (parks) affect the improvement of your psychology	Yes (83.3%)	I don't know (11.1)
What is the access to the park?	The car (55.5%)	Walking (22.2%)
What activities do you do in the park? (multi check Q)	Meditation and sit (44.4%)	Follow-up of passers-by and surrounding events(61.1)
Have you used the green spaces to vent your stress or depression inside and outside the park?	Yes(72.2%)	No(27.8)

Conclusion

Various reviews on this topic have been carried out, trying to demonstrate the relation between open green

spaces and health, found that there is a limitation of data and that we are in a need for more accurate results. In view of the differences 'social and economic differences', it is unclear if findings from one urban

region can be directly used at another place. Overall, the reported findings in studies were generally consistent with the current view that urban design can support mental health although more accurate research is needed not only to quantify the strength of the relation between green spaces and health but also to check the psychological and economic dimensions that are more difficult to measure.

Referring to Egypt, the noticed reduction of green public spaces not only could eventually impair the livability and sustainability of cities, but certainly affected the quality of mental and psychological health, increasing the number of people with depression, stress, and psychological disorders. While Evidence is growing for association between green open spaces and health, consequently, in the bustle of life these environments play a vital role as they are the meeting location of many users interests with many diverse groups. The current situation of green spaces in Egypt indicates that there is a big problem in achieving this concept. And Green Areas' proportions have to be suitable for the population. Decision-makers and urban planners must take this into consideration when developing future plans and in their plans to sustain existing cities.

Maryland park is just a living example of what the research is looking for, the changes that the Merryland passed through were followed by psychological changes on residents of the region and outcomes. When they lost the park, they lost their breather, their getaway place, the open area where they can get rid of their negative energy and recharge for life. They struggled to get it back to life after it had closed, but they eventually made it. In contrast to the previous studies, the Main findings of this study found that most of the park users study sample were from areas outside the Heliopolis-Misr Elgdida region such as (shubra el khima and Ain Shams) close regions, that were known as economically and socially low and middle standard regions.

It was known that these areas do not implicate public green areas, their residents use the car or public transport to reach the park. Even though their areas were not on the buffer zone of the park but they still searched for the nearest well designed public green area that meets their needs to go to. The indicators and questionnaires proved that the Maryland Park case study and its changes, and its reflection on users of the park, is a clear indication of the close link between public green areas and psychological - mental health.

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