E-ISSN 2656-8039
INTERNATIONAL JOURNAL OF ENVIRONMENT, ENGINEERING & EDUCATION
www.ijeedu.com
Vol. 2, No. 2, 2020

Research Article

The Impacts of Changes in Land Use and Buildings in Baghdad City: Perspectives on Cognitive Dimensions

Saad Khudhair Al-Jumaily, Eman Tahseen

Department of Architecture, Al-Nahrain University, Baghdad 64074, Iraq
Contact email: ajumaily.saad@ymail.com, max1558@yahoo.com

Received: May 11, 2020; *Accepted:* June 15, 2020; *Published:* August 5, 2020

Abstract: The research aims to study this phenomenon for one of the vital streets of the Baghdad city center to verify the psychological, aesthetic and health dimensions, visual and environmental pollution as cognitive outputs of the phenomenon of the spread of health services and transform the streets from vital whole streets to health centers with a single use. Primary research data obtained using a questionnaire as an instrument consisting of 25 questions addressed to 20 people who have been determined according to the expertise and objects of the study. The object of research is the use of land and buildings on Al-Kindi Street in Al-Harithiya, Baghdad City. It popped up in Iraqi cities emerged because of the deterioration of the security situation, the phenomenon of changing land uses from residential to commercial, and some of them have turned into health uses in the form of individual buildings and complexes in city centers, modern urban centers, and commercial streets. Which caused distortions in the urban scene because of the lack of controls regulating these uses and contributed to the mixing of patients with citizens using these places. A difference found in the evaluation of cognitive outputs of the phenomenon of changing street uses, where the psychological dimensions got 85 percent, the health dimensions 90 percent, and the aesthetic dimensions got 40 percent. These results illustrate the dangerous dimensions of this phenomenon on the behavior and health of citizens and society.

Keywords: Aesthetic Dimensions, Cognitive Outcomes, Healthy Dimensions, Psychological Dimensions, Whole Streets.

1. Introduction

The perceptual system receives various forms of external and subjective stimuli through sensory reception tools and these perceptual inputs are in the form of continuous streams of information and basic stimuli and their sub-outputs in addition to the outcome of previous perceptions that memory stores and their outputs in the form of concepts, meanings, and relationships.

Some of the phenomena received by us from the external environment have sent previously unfamiliar signals as they are strange, but they have become familiar and form part of the general scene of activities and events as cognitive outputs without attention to them by the competent authorities on the management of the city as a result of weak legislation or overtaking them and the deterioration of public health institutions and deterioration The security situation after the 2003 events in Iraq, Among these signs is the suggestion that society is sick because of the proliferation of treatment centers and the transformation of cities and public centers from cultural, economic, social, recreational and scientific centers to health centers to treat patients, which encourages the spread of diseases as a result of direct and indirect mixing and pollution of the surrounding environment as well as manifestations that do not Consistent with contemporary urban activities.

These streets and places have Constitute the polluted urban hotbeds that can be Scalable and extended to the surrounding environments in multiple areas in the city of

This Article Citation: S. K. Al-Jumaily, E. Tahseen, "The Impacts of Changes in Land Use and Buildings in Baghdad City: Perspectives on Cognitive Dimensions," Int. J. Environ. Eng. Educ., vol. 2, no. 2, pp. 23-30, 2020.

Baghdad and the big cities in Iraq, and this phenomenon has become a source of inconvenience and tension for the local community and visitors. It provides treatment centers, but it has other implications for the nature of the formation and organization of urban spaces that cannot be controlled in the future.

This phenomenon will be discussed and verification of its psychological, aesthetic and health implications and dimensions through addressing the most important contemporary concepts and trends to change the uses of streets to vital places attractive and not expelling the general community and the most important of these concepts is the shift to the idea of Complete Streets, Healthy Streets and reducing the manifestations of visual and environmental pollution.

2. Theoretical Framework

There are contemporary challenges facing cities in general, the most prominent of which are economic, cultural, security, environmental, health, social, psychological, aesthetic, globalization, and competition, which all fall under the concept of urban sustainability. On the other hand, there is a contemporary response to these challenges that crystallized in several policies or trends, the most important of which is to encourage the vertical and horizontal mixed use of public buildings and the surrounding streets, to obtain the greatest degree of diversity in activities to satisfy the needs of people. By this, the idea of streets has emerged, transforming streets into places that are environmentally sustainable and Compact. The concept of buildings, streets, and smart cities has also emerged.

The endeavor to manufacture competitive places at the local, regional, and global levels to support the concept of sustainability and urban tourism, which is the framework for contemporary trends, all these trends and response to it is one of the pressures that contributed to changing land uses in several levels.

2.1. Complete Streets

Complete Streets have several benefits across areas as diverse as public health, economic vitality, aging, safety, environmental quality and improving quality of life [1]. Complete Streets are planned, designed, built, and maintained to serve all people who use streets. They are developed for individuals of all ages, abilities, and income levels, including people walking, biking, taking transit, and driving. The purpose is to design streets for all people and for communities of all sizes [2]. Complete Streets aims to great Healthy Streets to reducing the use of the private car and increasing the number of people walking, cycling, and using public transport and will make the city healthier [3]. then Complete Streets provide opportunities for increased physical activity by incorporating features that promote regular walking, cycling and transit use into just about every street [3]. Complete Streets means Safe, comfortable, and convenient street for everyone, no matter who they are or how they travel [4]. A healthy, active city is one that is continually creating and improving opportunities in the built and social environments and expanding community resources to enable all its citizens to be physically active in day-to-day life. [5]. If a street is a healthy and inclusive environment then we should see all members of the community out on the street sitting, standing, walking, cycling, and using public transport. and Good quality street design, a clean, well-kept environment and plenty of plants can help create attractive and relaxing places to walk and cycle [6]. There are many indicators to makes streets appealing healthy: Pedestrians from all walks of life, Easy to cross, Shade and shelter, Places to stop and rest, Not too noisy, People choose to walk, cycle and use public transport, People feel safe, Things to see and do, People feel relaxed, Clean air [7].

Complete street is a link between places, but it can also be a place of recreation, socialization, and environmental benefit [8], [9]. The performance of the street can be assessed according to Environment Functions, Movement Functions, Place functions, urban Realm, Parking, retail performance, and measurements of community health and happiness [10].

Complete street types are: Main Streets, Avenues (collector), Boulevards (minor arterials), Parkways (major arterials), Local Streets, Rural Roads, and Scenic Roads. The land use of Local streets is: Urban Single Family Residential; Urban Multi Family Residential; Urban Mixed Use; Single Family Residential; Multi Family Residential; Town Single Family Residential; Town Multi Family Residential; Rural Town Residential; Institutional; Open Space/Recreation for that the land use places are associated with the complete street types [11].

2.2. Visual Pollution

The lack of balance in the uses of the urban environment, including important streets, will lead to the spread of the phenomenon of visual pollution, and some of these uses will become a source of inconvenience and discomfort for the users of those environments.

The effects of exposure to visual pollution include: distraction, eye fatigue, decreases in opinion diversity, and loss of identity. It has also been shown to increase biological stress responses and impair balance. Visual Pollution defined as the whole of irregular formations, which are mostly found in nature [12]. Visual pollution is an aesthetic issue and refers to the impacts of pollution that impair one's ability to enjoy a vista or view. Visual

pollution disturbs the visual areas of people by creating harmful changes in the natural environment [13]. The term visual pollution is usually applied to describe the negative effects of man-made structures on people's perception and enjoyment of the surrounding environment. The concept is subjective, because it depends on one has aesthetic views, but is often related to aspects such as the disruption of visibility, irregular or incoherent patterns, clutter, juxtaposition of different types of visual elements, and predominance of certain shapes and colors.

The urban visual pollution is the negative physical condition of a number of objects which have a direct as well as an indirect relation with the quality of the built environment which ultimately has implications for humans living and health in that place [14]. Visual pollution is an imbalance in the proportional relations between the shapes and sizes of buildings and the spaces surrounding them or the streets overlooking them, and results from a defect in the organization, selection and harmony of colors, sizes and proportional relations in the scale of buildings, advertisement boards, and the spread of the phenomenon of eroded or destroyed buildings, especially old buildings. In addition to a loss of balance in the use of land and buildings.

The manifestations of visual pollution in Iraqi cities are numerous and varied, leading to the loss of their aesthetics and the dispersal of the state of understanding and awareness of their external appearance. Among these familiar aspects are: Irregular urbanization of the city, the creeping of health, treatment and service centers to urban centers, the spread of slums at the entrances and edges of cities, the presence of cracks in the streets and sidewalks, the lack of organization of infrastructure services and the phenomenon, the spread of correction workshops and the sale of construction materials in the streets and spaces between buildings, overtaking Sidewalks, ads and promotion of various activities, Exposed waste collection sites, leaving heritage and historical buildings without maintenance, random spread of popular markets and retail sale, penetration of harmful occupations of commercial, cultural and historical streets, penetration of health services and harmful occupations of streets and commercial places.

The manifestations of visual pollution of streets and urban centers form a large part of the daily perceptual inputs that the sensory organs receive, and result in several cognitive outputs after their reception and interpretation, some of which are in the form of ideas, meanings, relationships, and interconnections and thus lead to the establishment of aesthetic judgments of the individual and society. Three basic and sub-outputs will be addressed for the phenomenon of transforming some vital streets in Iraqi cities into streets specialized in medical services for society, including Al-Kindi Street in Al-Harithiya as a case study through its relationship to the following cognitive outputs:

- Psychological dimensions: relate to the feeling, perception, understanding, interpretation, emotion, fear, interaction, feelings, emotions, signals, and response which are dimensions in which judgment differs because it is Subjectively and differs in different people.
- Aesthetic dimensions: related to aesthetic provisions related to harmony, visual unity, design rules, scale, proportional relationships, points of attraction, comfort, entertainment, aesthetic pleasure, diversity of events and activities, mixed use of buildings and the surrounding environment, accessibility, street furniture, quality Services, diversity of services, sufficiency of services, green areas, colors, texture, excitement, cultural, social and economic interaction, environmental protection, etc.
- Health dimensions: relate to health pollution, environmental pollution, risks, disease transmission, mental illnesses, etc.

3. Research Methods

3.1. Location Study

Al-Kindi Street is in the Al-Harithiya area of the Karkh side near the vital Mansour area, which borders the largest park in the city of Baghdad, is Al-Zawaa Park. The green zone on the eastern side. There is also the Baghdad Mall, which is located at the beginning of Al-Kindi Street, from the side of the Baghdad International Fair, which people visit with great intensity. The street is 40 meters wide and around 1000 meters long. The following diagram shows the location of the street in relation to Baghdad.

Figure 1. Location of Al-Kindi Street for the city of Baghdad

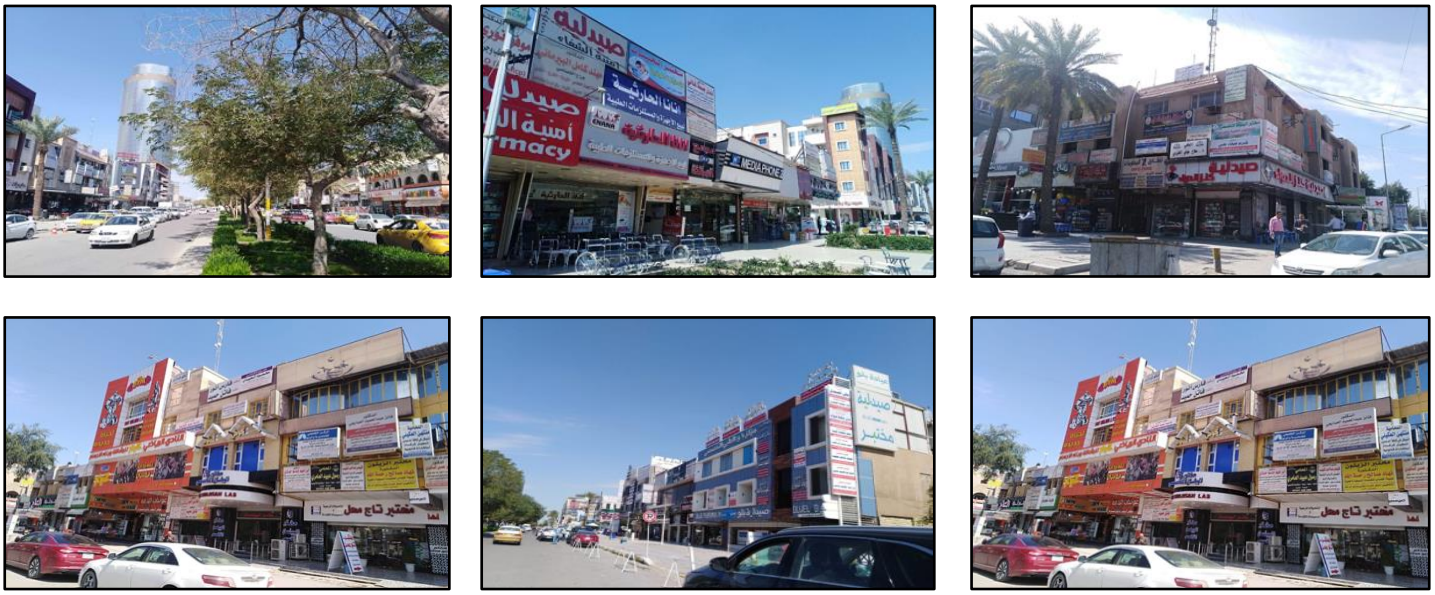

Figure 2. The urban scene of Al-Kindi Street in Al-Harithiya

3.2. Instrument

The pictures below show the urban scene of this street, which adopted in the study and analysis of the site after the work of a questionnaire consisting of 25 questions addressed to 20 individuals from the architects, planners, and those with experience in the higher education. This questionnaire aims to obtain the opinions of an important sample of the Iraqi community, with a broad knowledge of the current state of Al-Kindi Street in Al-Harithiya.

4. Result and Discussions

4.1. Psychological Dimensions

The results of interviews related to psychological dimensions on the impact of land use and buildings as follows:

Table 1. Survey results of the psychological dimensions

No.	Psychological Dimensions				
	Very high effect	High effect	Medium effect	Less effect	No Effect
1	6	4	7	1	2
2	4	2	2	4	8
3	1	5	1	2	1
4	9	5	3	1	2
5	10	6	4	0	0
6	6	6	6	2	0
7	3	7	3	4	3
8	6	5	2	4	3
9	5	9	3	2	1

After sorting and analyzing questions related to psychological dimensions, the research concluded:

1. The presence of a very high impact by 30%
2. 20% high impact
3. Having an average effect of 35%
4. Having a 5% weak effect
5. No effect of 10%

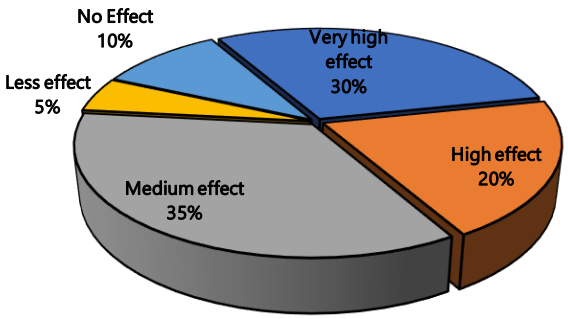

Figure 3. Percentage of results achieved to assess the psychological dimensions of the effect of changing the land uses.

The final evaluation of the psychological outcomes is 85%, after excluding the lowest and no effect values. The dimensions of psychological change land use and buildings: it seems to change the uses of the land and buildings have the effect of psychological clear on individuals was 85% comes after health dimensions, it shows that individuals suffering from this phenomenon which shows the awareness of the citizen and aware of these risks.

Human behavior understood as forming architecture but also architecture can shape human behavior. As stated by Winston Churchill [15], "We shape our buildings; then they shape us ". Humans build buildings for the fulfillment of their own needs, then the building shapes the human

behavior that lives in the building. Buildings designed by humans that originally built to meet human needs affect the way that people live their social lives and the values that exist in life. This concerns the stability between architecture and social where both co-exist in environmental harmony. Human behavior itself understood as a set of behaviors possessed by humans and influenced by customs, attitudes, emotions, values, aesthetics, power, persuasion, and genetics.

Human behavior in relation to a physical setting takes place and is consistent according to time and situation [16]. Therefore, the behavior patterns that are specific to the physical setting can be identified. Of course, what is discussed does not necessarily become so simple that humans all behave permanently in a certain place and time. But generally, the frequency of activities that occur in a single or group setting with other settings shows a constant over time. This shows that not only the characters and fixed patterns of behavior that can be detected in relation to a setting but also the possibilities that emerge such as patterns of behavioral responses that can sometimes turn into the opposite

4.2. Aesthetic Dimensions

The results of interviews related to esthetic dimensions on the impact of land use and buildings as follows:

Table 2. Survey results of the aesthetic dimensions

No.	Aesthetic Dimensions				
	Very high effect	High effect	Medium effect	Less effect	No Effect
1	3	1	4	7	0
2	4	3	1	5	0
3	9	8	1	1	0
4	4	2	3	9	0
5	5	10	3	1	0
6	3	3	3	4	0
7	8	6	3	1	0
8	1	2	8	5	0
9	1	5	4	5	0
10	11	4	4	1	0

After sorting and analyzing questions related to aesthetic dimensions, the research found:
1. A very high impact of 15%.
2. 5% high impact
3. Having an average effect of 20%
4. Having a 35% impact
5. No effect of 25%

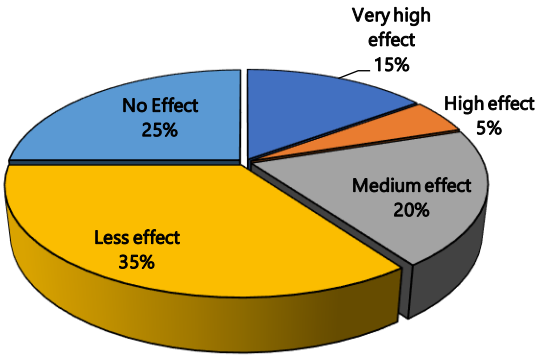

Figure 4. Percentage of results achieved to assess the aesthetic dimensions of the effect of changing the land uses.

The final evaluation of aesthetic outcomes is 40% after excluding values that have no effect and least effect. The aesthetic dimensions of changing land uses: As for the aesthetic dimensions, as they relate to the experience, age, environment, and culture of society in assessing the aesthetic dimensions, it came in the third place and was 40%. According to Smardon [17], [18], visual signs are visual sources in a visual system, so that the visual system has certain qualities. While Broadbent [19], argues that the physical quality of a city is visually influenced by the main factors in the form that is seen through the arrangement of each building and its relation to one another through the sequence, scale, proportion, and hierarchy. According to Spreiregen [20], visual aesthetics are needed from an early age because order and beauty in the human environment are the needs of humans themselves. However, according to Shirvani [21], city design is part of the planning process in the form of designs related to the physical and spatial quality of an environment. City planning is based on aspects of physical quality, one of which is visual quality.

4.3. Health Dimensions

The results of interviews related to health dimensions on the impact of land use and buildings as follows:

Table 3. Survey results of the healthy dimensions

No.	Healthy Dimensions				
	Very high effect	High effect	Medium effect	Less effect	No Effect
1	8	6	4	2	0
2	3	9	5	2	1
3	9	6	3	2	0
4	5	7	5	2	1
5	15	3	1	0	1
6	3	2	1	4	10

After sorting and analyzing health-related questions, the research found:

1. Having a very severe effect of 40%.
2. high impact 30%
3. Having an average effect of 20%
4. Having a 10% lower impact
5. No effect of 0%

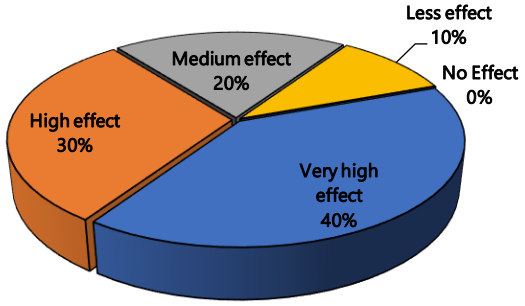

Figure 5. Percentage of results achieved to assess the health dimensions of the effect of changing the land uses

The final evaluation of health outcomes is 90% after excluding values that have no effect and least effect. The health dimensions of changing the uses of land and buildings: It seems that changing the uses of buildings and buildings has achieved the highest results by 90%, which is a large percentage compared to the results obtained by the psychological and aesthetic dimensions, as they relate to health risks and their impact on the health of citizens and society. As for the manifestations of visual pollution, they are evident through the variation in the sizes and colors of billboards and advertisements with health implications that are difficult to distinguish and focus on, as they have a specific functional use in the street.

Complete trails offer opportunities for greater physical activity by combining features that promote regular use of walking, biking, and transit on almost all roads. A report prepared by the National Conference of State Lawmakers found that the most effective political way to encourage cycling and walking is to incorporate sidewalks and bicycle paths into community design, which basically creates complete roads. A safe and sustainable network of sidewalks and bicycle lanes provided by comprehensive road policies is important to encourage active travel.

The Al-Hartheya area that Al-Kindi Street penetrates was devoted to the rich families who abandoned it due to the high economic value and its strategic importance as a result of the increased demand for this vital street and the buildings surrounding it and leading to it as it gradually turned into an area for treatment services and medical equipment in addition to the services that patients need and a safe haven for doctors after a deterioration Public health institutions after the 2003 events in Iraq and as a result of the deteriorating security.

5. Conclusion

It is through discussion of the practical results of this study that there are actual risks to the health of the citizen and society and to his psychological health and behavior as well, in addition to the aesthetic dimensions, although the results are mixed, but they reflect the viewpoint of a community that uses these places without paying attention to the aesthetic manifestations as it does not search for them in such special places Medical services in a large percentage, in addition to the difference in aesthetic judgments among people according to culture, gender, age, environment, experience and aesthetic taste. However, they participate in assessing their environment from other aspects related to the risks, fear of injury and spread of diseases inside these places, which can extend to other urban environments and streets.

Acknowledgments

The research fully supported by the Department of Architecture, Al-Nahrain University and special thanks to the experts whose names we cannot name as informants in the study.

References

[1] Kimley-Horn, "Trip-Generation Rates for Urban Infill Land Uses in California." Final report. California Department of Transportation Sacramento, 2009.

[2] D. Dohm and H. Wooten, "A guide to building healthy streets," 2016.

[3] National Complete Streets Coalition, "Benefits of Complete Streets," *Smart Growth America*, 2015. http://old.smartgrowthamerica.org/complete-streets/complete-streets-fundamentals/benefits-of-complete-streets/ (accessed May 27, 2020).

[4] J. LaPlante and B. McCann, "Complete streets: We can get there from here," *ITE J.*, vol. 78, no. 5, p. 24, 2008.

[5] P. Edwards, "A healthy city is an active city: a physical activity planning guide," 2009.

[6] Transport for London, "Guide to the Healthy Streets Indicators – Delivering the Health Streets Approach." Lucy Saunders, London, United Kingdom, 2017.

[7] N. Hui, S. Saxe, M. Roorda, P. Hess, and E. J. Miller, "Measuring the completeness of complete streets," *Transp. Rev.*, vol. 38, no. 1, pp. 73–95, 2018.

[8] D. Burden and T. Litman, "America needs complete streets," *ITE J.*, vol. 81, no. 4, pp. 36–43, 2011.

[9] B. McCann and S. Rynne, "Complete the streets," *Planning*, vol. 71, no. 5, pp. 18–23, 2005.

[10] T. Litman, "Evaluating Complete Streets," *Victoria Transp. Policy Inst.*, 2015.

[11] S. D. Cerny, *An Architectural Guidebook to San Francisco and*

the Bay Area. Gibbs Smith, 2007.
[12] A. Portella, *Visual pollution: advertising, signage and environmental quality*. Routledge, 2016.
[13] K. Wakil, M. A. Naeem, G. A. Anjum, A. Waheed, M. J. Thaheem, and R. Nawaz, "A Hybrid Tool for Visual Pollution Assessment in Urban Environments," *Sustainability*, vol. 11, no. 8, p. 2211, 2019.
[14] M. Garrett, *Encyclopedia of transportation: Social science and policy*. SAGE Publications, 2014.
[15] W. Churchill, "The price of greatness is responsibility," *Finest Flour*, vol. 80, 1943.
[16] J. J. Gibson and A. D. Pick, "Perception of another person's looking behavior," *Am. J. Psychol.*, vol. 76, no. 3, pp. 386–394, 1963.
[17] R. C. Smardon, J. F. Palmer, and J. P. Felleman, *Foundations for visual project analysis*. Wiley New York, 1986.
[18] R. C. Smardon, "Perception and aesthetics of the urban environment: Review of the role of vegetation," *Landsc. Urban Plan.*, vol. 15, no. 1–2, pp. 85–106, 1988.
[19] G. Broadbent, *Design in architecture: architecture and the human sciences*. John Wiley & Sons New York, 1973.
[20] P. D. Spreiregen, *Urban design: The architecture of towns and cities*. McGraw-Hill, 1965.
[21] H. Shirvani, "The role of landscape architecture in urban design," *Landsc. Archit.*, vol. 74, no. 2, pp. 56–57, 1984.

Appendix

Instruments. The questions directed to the elected sample focused on three dimensions of the perceptual outputs of the phenomenon of changing the uses of land and buildings for Al-Kindi Street in the Al-Harithiya

No.	Dimensions	No effect	Little effect	Medium effect	High impact	Severe impact
Psychological dimensions						
1	Do you feel upset and uncomfortable when seeing places and streets with health and therapeutic uses?					
2	Do you visit these places for non-medical and health purposes?					
3	Do you prefer visiting the streets and places without health use?					
4	Do you prefer to isolate medical services from commercial areas and streets?					
5	Does the presence of medical services affect your choice of residence and residence in these streets and places?					
6	Does the presence of medical services affect the length of your stay in these places and streets for long periods of time to practice other unhealthy activities and events?					
7	Do you visit restaurants, cafes and fast food scattered in these places and streets?					
8	Do you feel that these streets and places give the impression that they are sick or polluted?					
9	Does the presence of advertisements for medical services on the facades of buildings raise excitement and fear of disease when viewing them?					
Aesthetic dimensions						
10	Does the presence of health services affect your visit to these places for entertainment, enjoyment, enjoyment, and shopping?					
11	Do you encourage these places to practice social, cultural, and economic activities and events?					
12	Do you feel a domination and imbalance in the uses of the land in these places and streets?					
13	Do you encourage these places and streets to walk as an activity?					
14	Does the presence of medical services within the commercial areas and streets have an impact on their efficiency and quality?					
15	Do you feel the harmony of the colors, sizes, locations of advertisements and references for medical services?					
16	Does the presence of medical services affect the aesthetics of the Urban scape?					
17	Do you feel a mixed use (residential, commercial) for Al-Kindy Street in Al-Harethiya?					
18	Do you encourage the provision of health services within the commercial areas?					
19	Do you prefer places and streets rich in different events and activities without medical services?					
Health dimensions						
20	Do you feel that the users of these places and streets may be sick or carriers of the disease when you are among them?					
21	Do you feel health threats and risks when visiting these places and commercial streets?					
22	Does the presence of medical services in these streets affect visual pollution?					
23	Do you think there is a health or environmental pollution in these streets and places?					
24	Does the presence of sanitary waste on these streets affect environmental pollution?					
25	Do you prefer to live in these places?					