A Geographical Investigation for the Efficacy of Health Services in Al-Mishkhab City

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Abstract

The study tackles the effectiveness of health care in Al-Mishkhab city from a geographical perspective. Its goal is to determine the population development and expansion, as well as the reality of the geographical distribution of primary health care centers in Al-Mishkhab city for the year 2020, and to assess their efficiency and insufficiency according to standards. The results of the research revealed that there is an accelerated growth of the city population due to its being an attractive population area, especially from the neighboring rural areas, which contributed to the growth of urban slums, making it difficult to meet the needs of the city residents for health services. The reality of the distribution, by analyzing the standard distance and the nearest neighbor, showed that the health centers represent the actual concentration point for both primary health care centers in the city. By measuring the functional efficiency, it was found that the city suffers from a clear deficit and deficiency in the health service after conforming to the Iraqi.

Introduction

To meet the requirements via comprehensive lifelong care, curative, preventative, counseling, and rehabilitative treatment, health services are considered as of critical importance to the people's needs. Because of its influence on Al-Mishkhab city developmental reality, this research is being used to profit from its findings in assessing and developing health services for its inhabitants and it is concerned with the geographical distribution of health services in Al-Mishkhab city. This study sheds light on the health service to detect the most important defects and shortcomings in the distribution and imbalance, and to measure its efficiency in Al-Mishkhab city.

Research problem

1- What is the nature of the geographical distribution of health services in Al-Mishkhab city?
2- How was efficacy and functional efficiency of health services in Al-Mishkhab city? What is the extent of the spatial deficit between the number of health centers and the number and density of the population in a way that achieves full benefit from this service in Al-Mishkhab city?

Research hypothesis

The health services in Al-Mishkhab city are not evenhandedly distributed among the neighborhoods and their population density, and their functional and spatial efficiency varies below the indicator and is not consistent with the population increase.

Research objective

conducting an applied research to benefit from its results in evaluating and planning health services that serve the residents of the city, evaluating the efficiency of health services according to local standards and the degree of their inadequacy, and knowing the current and future demand in the city to help improve and develop the current and future urban environment and its development.

Research Methodology

The descriptive approach is adopted in addition to statistical and quantitative methods in analyzing data for health services and factors and influences to determine the efficiency of health services in Al-Mishkhab city. The research adopted a field survey method based on observation and interview through a questionnaire form.

Spatial limits

The study area is determined in Al-Mishkhab city, the center of Al-Mishkhab District, which is administratively affiliated to the Najaf Governorate, 30 km southern part of the Al-Najaf Governorate. It is located astronomically between longitudes (44.32° -44.28°) east and two latitudes (31.44° -31.52°) nort (Boykova et al., 2016) h. It is located on the banks of the Euphrates River, and represents Al-Mishkhab city within the municipal boundaries of an area of 433.2 hectares (GIS10.7) U. t.). It includes (24) residential neighborhoods, (12) of which are official and (12) quarters. See map (1). The time limits represent the knowledge of the reality of health services in the city in 2020, according to planning standards. The objective limits represent three axes, the first is the development and growth of population in Al-Mishkhab city, the second is the reality of the spatial distribution of health services, and the third is the efficiency of health services and current and future needs.

The first axis: population development and growth in Al-Mishkhab city

Population growth

The increase in the positive and negative demographics and its source is the variation in births,

deaths and migration (Daniels, 1987). The prediction of future population estimates depends on the current population growth rate, and is based on multiple variables that affect each other (Hamaker, 1958). It appears from Table (1) and Figure-1 that the population of Al-Al-Mishkhab city varies from year to year with the development and growth of the city. In the 1977 census, it amounted to (9888) people or (30.77%) of the district population, and the city was considered one of the cities that attract residents from its neighboring areas. In 1987, its population amounted to 12077 people, with a growth rate (2) and a change rate of (22.1%), an increase of (2189) over the 1977 census and a rate of (29.75%) of the district population. In 1997, its population reached (17053) people, with a growth rate of (3.5) A change rate of

Map (1) of the location of Al-Mishkhab city in Iraq, the Najaf Governorate, and the residential neighborhoods in the city in the year 2020
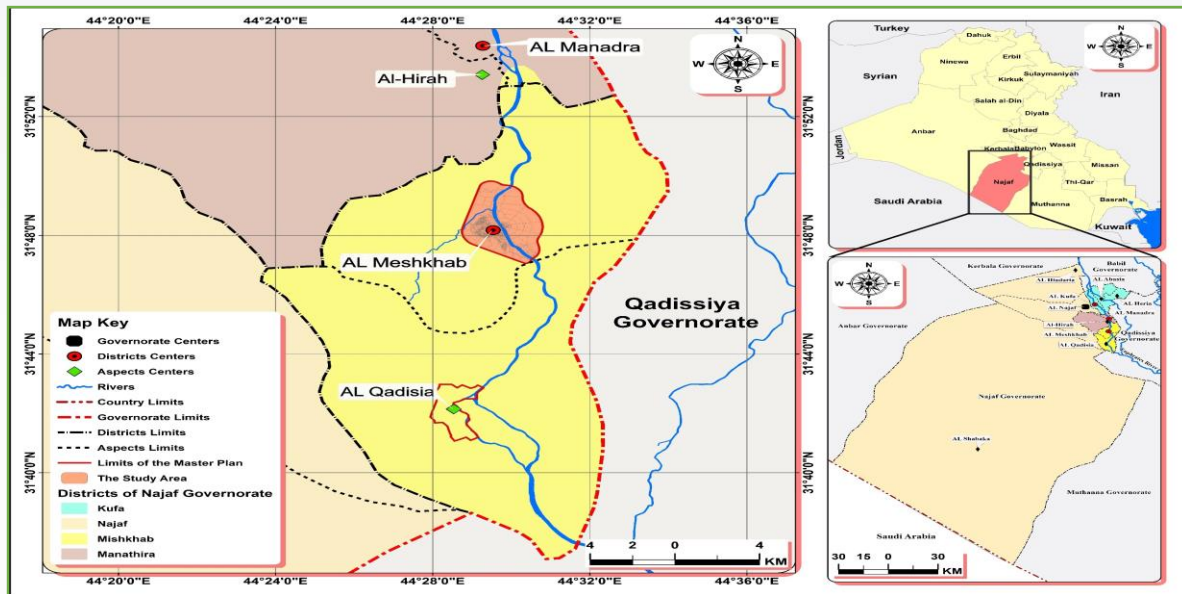
Source: - The work is conducthe researcher depending on -Using GIS technology, by Program ArcGIS 10.71 (Lees, 2003) (Hudson et al., 1979).

(41.2%) and an increase of (4,976) over the 1987 census and a rate of (29.07%) of the district population. In 2007, its population reached (23337) people, with a growth rate (3) and a change rate of (36.8%), with an increase of (6284) over the population.
At 1997, the percentage of the population of the district was (27.78%). In 2017, its population reached (29867) people, with a growth rate of (2.4) and a change rate of (27.9%), with an increase of (6530) over the 2007 census, with a rate of (32.85%) of the district population. Its population is 32,287 people, with a growth rate of (2.6) and a change rate of (8.1%), with an increase of (2420) over the 2007 census, with a rate of (32.85%) of the district population.

Table (1):
Population, growth rates, absolute change, percentage change, and the city percentage of the district in Al-Mishkhab city for the period 1977-2020

Year	Residents of Mishkhab	Mishkhab District residents	Average of growth	% out of district people	Absolute Change	Rate Of change%
1977	9888	32130	-	30.77	-	-
1987	12077	40595	2	29.75	2189	22.1
1997	17053	58668	3.5	29.07	4976	41.2
2007	23337	84003	3	27.78	6284	36.8
2017	29867	90911	2.4	32.85	6530	27.9
2020	32287	98278	2.6	32.85	2420	8.1

Source: Works were conducted by the researcher depending on.

1- (Meade, 2014).
2-Extracting the growth rate according to the geometric mean method :

$$R = \left(t \sqrt{\frac{p1}{p0}} - 1 \right) * 100$$

R = annual growth rate   T = number of years between the two censuses P1 = number of population in the subsequent census
P0 = Population in the previous census
Absolute change = population size in the subsequent census - population size in the previous census (Moazzem Hossain et al., 2018).
3-The percentage of population increase (the percentage of change) was extracted by using the following formula: Percentage of change= ((increase between the two census (subsequent-previous))/(Previous census) = ×100 (Ofori-Atta et al., 2010)

Figure (1) Population growth rate in Al-Mishkhab city for the period (1987-2020)
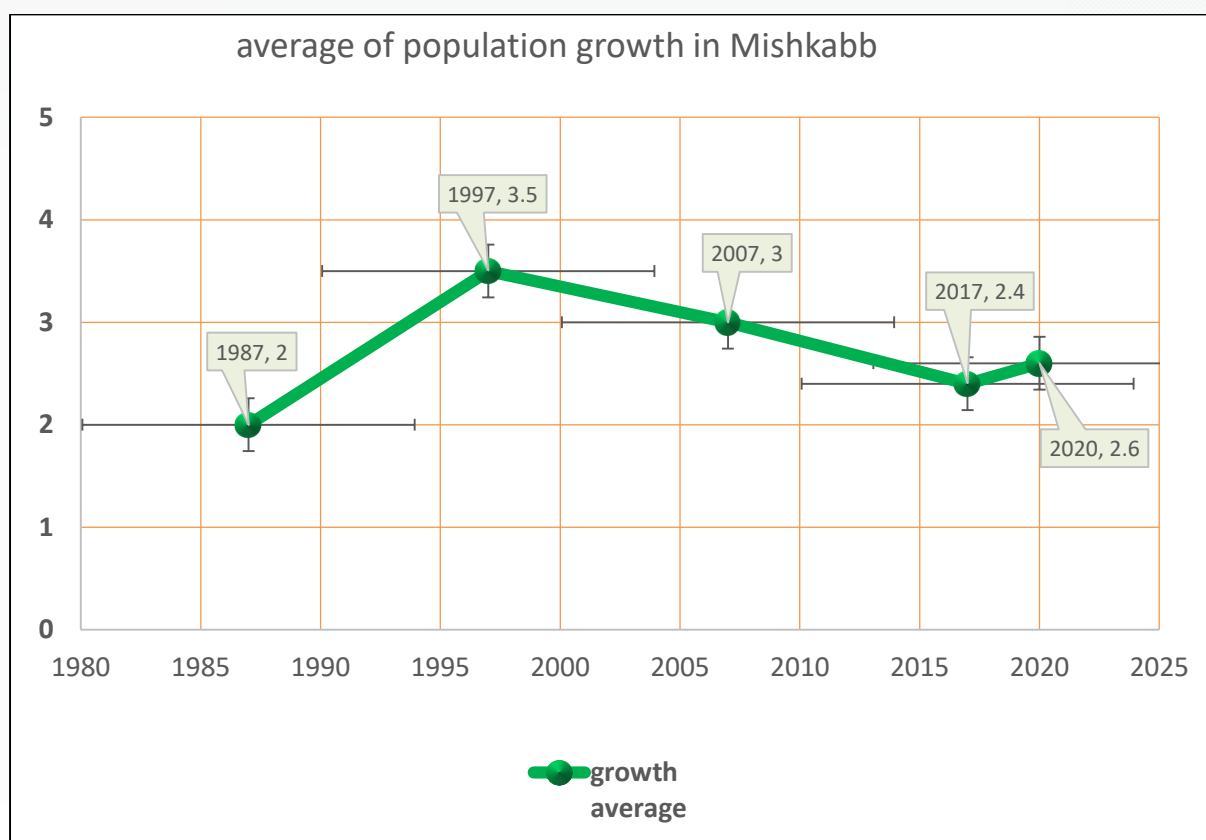
Source: The researcher's work using the program (Microsoft Office2019-Excel) and table (1).

Population distribution

It is a dynamic phenomenon where its causes and effects develop and vary in time and place (Pissourios, 2014). It is the way to formulate strategies and mechanisms to understand the reality of distribution and the degree of its balance in relation to social services. The researcher relied on collecting the population of each neighborhood on the chosen residential neighborhoods in the city, because it was not included in the population censuses and was calculated from the agricultural (rural) areas until the nineties. The population numbers of the city as a whole differ from the estimates of the population in the year 2020, which amounted to 32,287 people, while the neighborhood mayor's statistics were (37,823) people, with a difference of (5536) people. The researcher used the program ArcGIS Desktop 10.7, where the area of residential neighborhoods was extracted to measure the relationship between the size of the population and the populated area. See table (2). We can distribute the city population according to population categories. See Table (3) and Map (2) as follows:

Table (2)
Population and area according to neighborhoods in Al-Mishkhab city in the year 2020

No	Neighborhood	Area/Hectare	Percentage	No. people	Percentage
1	Al-Shahid Al-Sadr	35.4	8.17	3888	10.28
2	Askary	7.7	1.78	1153	3.05
3	Shuhadaa	8.4	1.94	1189	3.14
4	Baghdad	13.3	3.07	1167	3.09
5	Shahid Al-Mihrab	18.5	4.27	3266	8.63
6	Al-Thawra	4.4	1.02	784	2.07
7	Assry	10.8	2.49	1039	2.75
8	ALsarray	8.3	1.92	987	2.61
9	Qudus	12.3	2.84	874	2.31
10	Acer Alswariya	7.6	1.75	1163	3.07
11	Al-Karama	33.8	7.80	3259	8.62
12	Thawra Ishriin	10.2	2.35	1193	3.15
13	Jufflawiya	10.7	2.47	1196	3.16
14	Al-Hassan	20.5	4.73	2017	5.33
15	Al-Hussein	11.3	2.61	1149	3.04
16	AzZahra	32.3	7.46	1093	2.89
17	Dhubaatt	22	5.08	1189	3.14
18	Al-Ghadir	8	1.85	2109	5.58
19	Ayser Aldbinip	14.8	3.42	1230	3.25
20	Ayser Soiree 2	9.5	2.19	987	2.61
21	**Ayman Aldabeeniya**	14	3.23	1243	3.29
22	Ayman Al-Swariya	12	2.77	1187	3.14
23	Rakk Al-Haswa	103	23.78	3676	9.72
24	Abrihi	4.4	1.02	785	2.08
Total		433.2	100	37823	100

Source: the work is conducted by the researcher depending on

1- A field survey of Al-Mishkhab city and obtaining the population numbers of each residential neighborhood from the mayors.
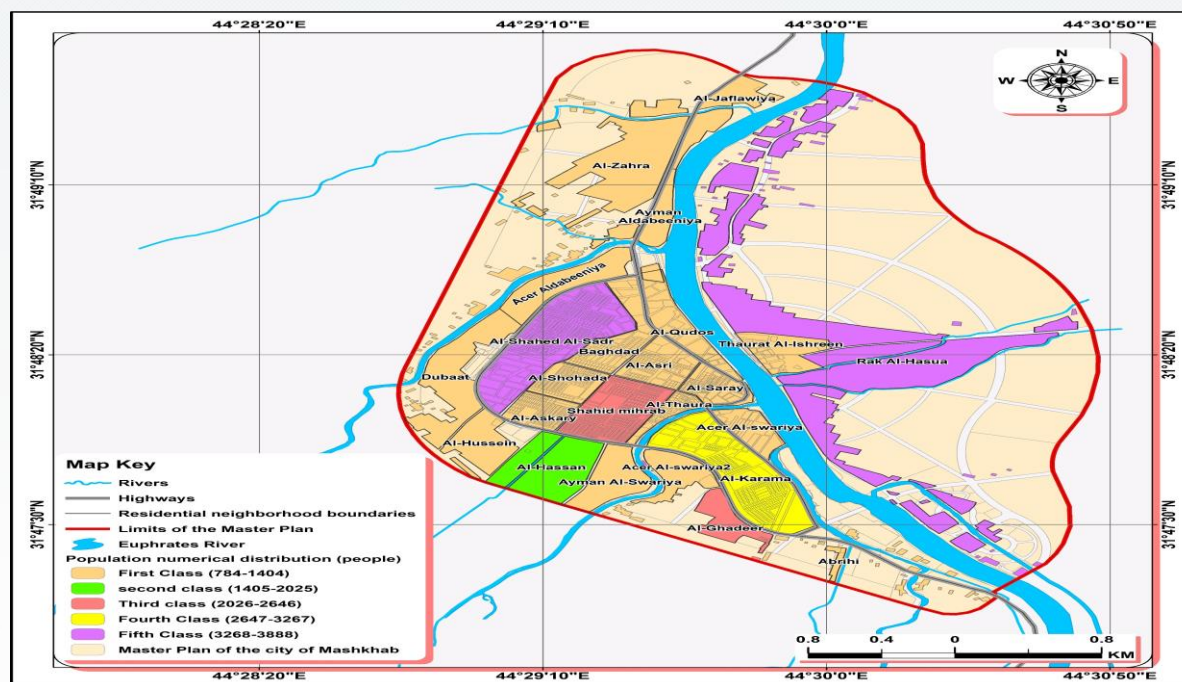
Table (3)
The numerical distribution of the population categories in Al-Mishkhab city in 2020

category/people/hectare	Reiteration	Percentage	Area	People	Rate of area	Rate of population
784-1404	18	75	214	19608	49	52
1405-2025	1	4.17	20.5	2017	5	5
2026-2646	2	8.33	26.5	5375	6	14
2647-3267	1	4.17	33.8	3259	8	9
3268-3888	2	8.33	138.4	7564	32	20
Total	24	100	433.2	37823	100	100

Source: the researcher based on table (2).

The frequency table has been designed in a mathematical way (Potosky et al., 1993).

Map (2) numerical distribution according to population groups of residents of Al-Mishkhab city according to neighborhoods in the year 2020

Source: The work is conducted by the researcher depending on Table (2,3).

The first category (784-1404/people)

represents (18) neighborhoods (Al-Askari, Al-Shuhada, Baghdad, Al-Thawra, Al-Asri, Al-Saray, Al-Quds, Issar Al-Sawaria, Thwrat Ishrin, Al-Jaflawiyeh, Al-Hussein, Al-Zahra, Al-Dhubat, Isser Al-Dabiniyeh, Ayman Al-Dabiniyah Issar al-Swariya 2, Ayman al-Swariya, Abrihi) and it constituted (75%) of the city neighborhoods with an area of (209.6) hectares or (49%) of the city area and a population of (19,608) people or (52%) of the city population.

The second category (1405-2025/people)

It included (Al-Hassan) neighborhood with a percentage of (4%) of the total neighborhoods and an area of (20.5) hectares and (5%) of the total area and its population (2017) people and (5%) of the population city.

The third category (2026-2646/people)

This category was represented by (2) neighborhoods of the total residential neighborhoods in the city (Shahid Al-Mihrab, Al-Ghadeer) and constituted (8%) of all neighborhoods with an area of (26.5) hectares and (6%) of the total area of the city and a population of (5375) people out of the total population of the city and a percentage of (14%).

The fourth category (2647-3267 people)

It represents Al-Karama neighborhood with a percentage of (4%) of the city neighborhoods and an area of (33.8) hectares, with a percentage of (8%) of the city area and a population of (3259) people, and a percentage of (9%) of the city population.

The fifth category (3268-3888/people)

This category was confined to (2) residential neighborhoods (Al-Shahid Al-Sadr, Rak Al-Haswa)

which constituted (8%) of the total neighborhoods and with an area of (138.4) hectares and (32%) of the total area of the city. The population of this category amounted to (7564) people, or (20%) of the city population. We conclude that the sovereignty and dominance of the first category over the residents of Al-Mishkhab city, represented in (18) of the city neighborhoods, constituted (52%) of the city population. The distribution of the population is still in a state of clear imbalance, as the high urban activity and economic levels are among the reasons for the emergence of slums and the expansion of the city to the neighboring agricultural lands. This is clearly manifested in the lack of services and inequality in the distribution of services and their efficiency is the reason for the population increase in any other region.

The second axis: - The reality of the spatial distribution of health services in Al-Mishkhab city

Many geographers studied the spatial aspects and facts of health services, and were interested in obtaining maps of spatial distribution and analyzing their patterns within cities (Pope & Mays, 1995). The health service is one of the criteria for measuring the progress of the state in the field of well-being of its citizens. It is related to the health of the individual and society (Rahaman & Salauddin, 2009). There are two main primary health care centers in Al-Mishkhab city that serve the city and its region. These centers include the starting points at which the patient is evaluated before being referred to the hospital. See map (3) showing its spatial distribution and we will show it as follows: -

Primary Health Care Center (Tuberculosis Unit)

It is located in the Baghdad neighborhood on the main road at the entrance to the city. It occupies an area of 3737 m² equivalent to (0.37 hectares), and its human cadres have (88) employees, (3) doctors and (5) dentists, (11) administrative employees, (30) health professional employees, (36) nursing professional employees, and (3) pharmacists.

Primary Health Care Center in Al-Karamah neighborhood

It is located to the south of the city on the main external road that connects the city with other areas. Its area is (15000 m2) equivalent to (1.5) hectares, its human cadres are (203) employees, including (16) doctors, (15) dentists, (23) administrative employees, (62) health professional employees, (71) nursing professional employees, and (16) pharmacists. Each health center bears a burden of (18911.5) people, which is a higher rate than the planning rate. The city health services cover an area of land use (18737 m²), equivalent to (1.87 hectares), at a rate of (0.43%) of the city total area.

Map (3) The reality of the spatial distribution of primary health care centers in Al-Mishkhab city in the year 2020
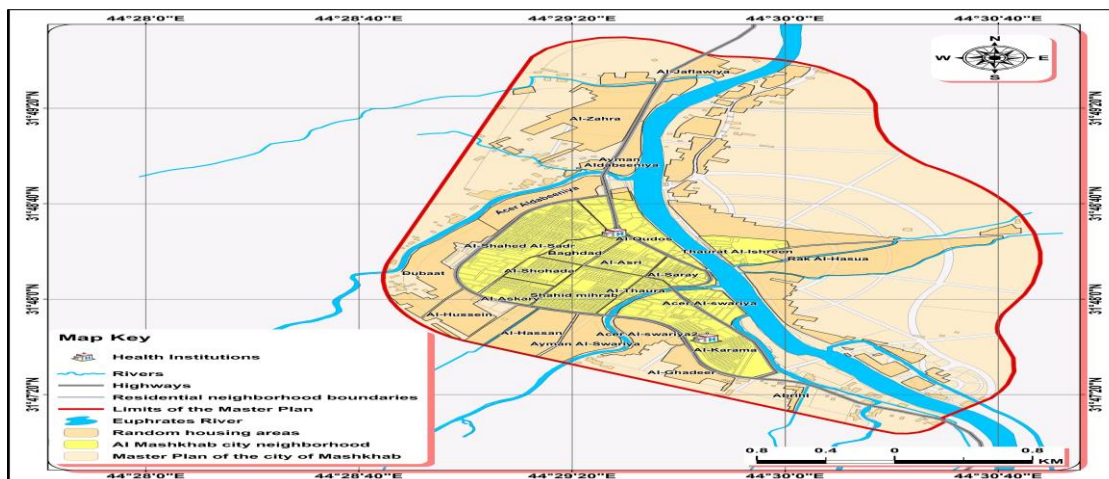
Source: The work is conducted by the researcher depending on.

A field survey of health services in Al-Mishkhab city and the use of a GPS device to determine the coordinates of health centers. Table (4) shows the percentage of human cadres working in each center where the primary health care center in Al-Karama district topped the number of human cadres working in it with a greater percentage than the TB unit center in the Baghdad district. Table (5) shows the number of attendees.

Table (4)
Human cadres working in primary health care centers in Al-Mishkhab city in the year 2020

Human cadres	Al-Karma Center	Percentage	Tuberculosis unit center	Percentage	Total
Doctor	16	7.9	3	3.4	19
Dentist	15	7.4	5	5.7	20
Administrative	23	11.3	11	12.5	34
Health professionals	62	30.5	30	34.1	92
Nursing professional	71	35	36	40.9	107
Pharmacist	16	7.9	3	3.4	19
Total	203	100	88	100	291

Source: The work is conducted by the researcher by depending on. (Trewartha, 1953) (Sun et al., 2013).

Table (5)
the number of attendees for primary health care centers in Al-Mishkhab city in the year 2020

No	Months	Percentage	Tuberculosis unit center	Al-Karma Center	Percentage
1	January	7	2313	688	2.2
2	February	6.5	2133	850	2.8
3	March	4.7	1542	1050	3.4
4	April	3.8	1267	1100	3.6
5	May	4.2	1387	2658	8.6
6	June	7.6	2507	3620	11.7
7	July	10.4	3415	3524	11.4
8	August	9.7	3189	2246	7.3
9	September	11.2	3701	3688	11.9
10	October	11.6	3819	3765	12.2
11	November	11.5	3789	3812	12.3
12	December	11.8	3898	3879	12.6
Total		100	32960	30880	100
Attendees			2746	2573	

Source: - The work is conducted by the researcher by depending on. (Verhasselt, 1993) (Valenčius, 2000).

The number of attendees of the Tuberculosis Unit Center in Baghdad District for the year 2020 was (32960) attendees and a monthly rate of (2746) attendees while Al-Karama neighborhood center (30880) attendees and a monthly rate of (2573) attendees. It is noted that there is variation in the number of attendees during the months of the year. The two centers lack many medicines needed to treat patients, and their lack of modern medical equipment, due to the lack of financial allocation to these institutions. Through a survey of the residents of Al-Mishkhab city (a sample of the research community) in the questionnaire, question No. (16) what is your assessment of the medical examinations and treatments provided by the health center in the city? In Al-Mishkhab city, the answer was (38%) that it is weak, (34%) medium, (18%) good, and (10%) very good. This indicates that it did not reach the level of its residents' ambition in providing health services and spatial analysis of health centers in Al-Mishkhab city. See map (4) when applying the

standard distance and the nearest neighbor, it shows in one case the actual centering point of the two centers and the ideal centering point in Al-Thawra neighborhood and the direction of the distribution cannot be applied.

The third axis: - The efficiency of health services and the current and future needs in Al-Mishkhab city

One of the planners' priorities in planning process for community services is to consider population indicators that identify their needs and suggest a better place for service to achieve a balance in distribution and access (Boykova et al., 2016). Through the indicators of Al-Mishkhab city and its comparison with the planning standard, see table (6). The evaluation of health services depends on several criteria adopted by the researcher, represented by numerical and cadastral indicators and their comparison with the specified criteria, in addition to field observation and questionnaire, which played an important and effective role in covering this axis. The efficiency of health services in Al-Mishkhab city can be measured as follows:

Map (4) the actual and ideal locations of health centers in Al-Mishkhab city in the year 2020
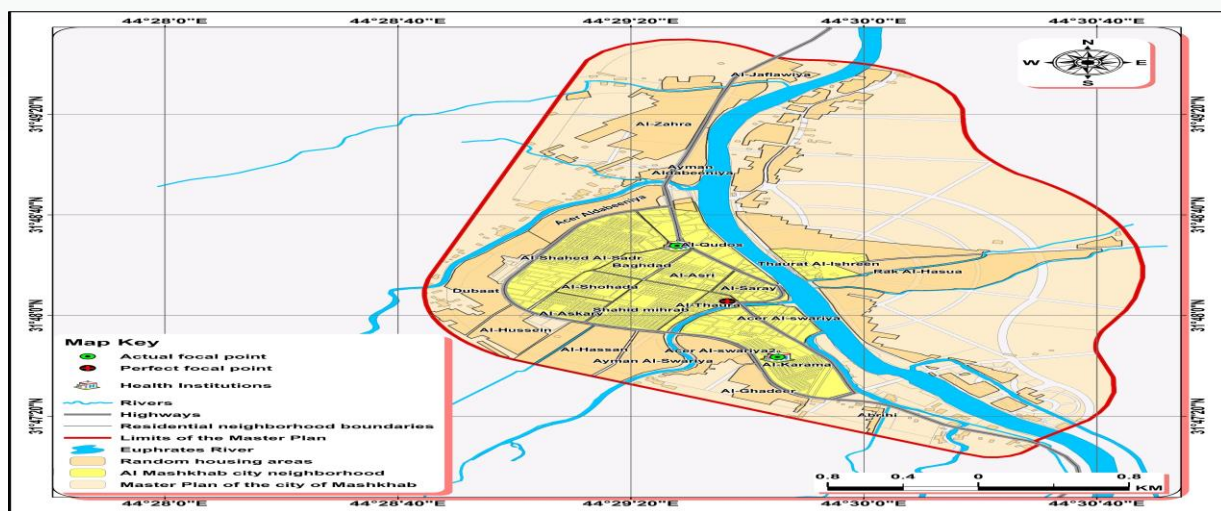
Source: the work is conducted by the researcher by depending on map (3).
Spatial analysis of GIS technology outputs in the program (ArcGIS Desktop 10.7).

Table (6)
Planning indicators and criteria for primary health care centers for the year 2018

No	Indicators of primary health care centers	Standards	
1	Default percentage of the population served	%100	
2	Population / health center	Subordinate4800	superordinate12000
3	Built-up area per person served m^2	312m^2 /0.65m^2	600m^2 /0.5m^2
4	Land area per person served m^2	960m^2/0.20m^2	1800m^2 /0.15m^2
5	Serviced area radius	800m	
6	Max number of floors	2	
7	Max coverage area of the piece	0.3	
8	Doctor / people	1000/1	
9	Dentist / people	10000/1	
10	Pharmacist/ people	/120000	
11	With health professions / people	1000/1	
12	Nursing Profession	1000/1	
13	Nursing/Doctor	3/1	
14	Health Professional/Doctor	3/1	

The efficiency of health services in Al-Mishkhab city

Population indicators for health services

Health center/people

 The ratio of the indicator is a main health center for every (1/12,000) people, and there are two primary health care centers in Al-Mishkhab city. It reaches (3) major health centers, and this puts pressure on the services provided by these health centers and leads to a deterioration in their quality and efficiency. The deficit is (1) a major health center.

Doctor / people

 The standard assigned 1 doctor for 1000 people where there are 19 doctors in the city. The reality according to the criterion is that one doctor per (1990) people, a very high rate, doubles the criterion, causing poor diagnosis and poor work for one doctor, and indicates a shortage in the number of doctors by (18) doctors in Al-Mishkhab city.

Dentist/people

The standard assigned 1 dentist for 10000 people, and there are (20) dentists, at the rate of a dentist/per (1891) people, meaning there is a surplus of dentists estimated at (16) dentist.

Pharmacist / people

The pharmacy provides the necessary medicines and medical supplies. This requires the presence of a pharmacist who organizes medicines according to scientific and practical requirements (Hamaker, 1958). The standard assigns one pharmacist for every (1/20000) people, and there are (19) pharmacists.

Health professional employees / people

they are those who do laboratory work and blood tests and work as medical assistants. The standard is per (1/1000) people. There are 92 health professionals in Al-Mishkhab city serving for every (1/411) people. It is a very low rate than the standard and a surplus of (65) people with health professions.

Nursing professional employees/people

 the standard assigns (1/1000) people and there are 107 of those with nursing professions serving for every (1/353) people, which is a lower rate than the standard with a surplus of (70) of those with nursing professions.

Occupational indicators of the health service

Health professional employees/doctor

 for each doctor (1/3), there are 19 doctors in Al-Mishkhab city, and the number of health professionals is (92) and the indicator is (4.8), which is higher than the standard with a surplus of (35) from those with health professions health professions.

Nursing professional employees/doctor

 for each doctor (1/3), there are (19) doctors, and the number of those with nursing professions is 107, and the indicator is (5.6) higher than the standard with a surplus of (50) of those with nursing professional employees in the city.

Areal criteria

Health Center/Land area/Served Person

The number of health centers in Al-Mishkhab city are two health centers, and their total area is (18737 m²), with a rate of (3737 m2) for the primary health care center (tuberculosis unit) in the Baghdad neighborhood, with two floors and a (15,000 m²) center. Primary health care in Al-Karama neighborhood has two floors. Here, the criterion rate of dividing the health service area depends on the city population, which is an important indicator for evaluating health services compared to the reality and the planning standard (Hudson et al., 1979). It reached more than double the standard, as there is an excess of service space.

Health Center/Built-up Area/Served Person

According to the answers of health center managers in the questionnaire, the built-up area of the Tuberculosis Unit Center reached (1350 m2) and Al-Karama District Center (2750 m²), whose total is 4100 m². The indicator was (0.10 m2), and compared to the standard (0.05 m2), it was twice the standard of the built area.

Spatial criteria

Ease of access

The questionnaire distributed to the community sample amounted to (3783) forms, according to the population percentage of each residential neighborhood. It is clear from (Table-7) that a distance of less than (500 m) obtained (713) answers, at a rate of (19%) of the sample size, which is the distance traveled by residents of neighborhoods close to health centers. As for the distance that ranges between (500-800 m) m, 1247 answers were obtained, with a rate of (33%) of the sample, which are the neighborhoods that surround the city center. While the distance (more than 800 m) got the highest answers (1823) at a rate of (48%) and it is the neighborhoods that are located on the periphery of the city.

Table (7)
The distance that patients travel to reach the health centers according to neighborhoods in Al-Mishkhab city in the year 2020

Sample	Less than 500 m	through800-500 m	More than 800 m
3783	713	1247	1823
10%	19%	33%	48%

Source: - The work is conducted by the researcher depending on the questionnaire form and table (2).

As for the time taken, according to the means used to reach health services in Al-Mishkhab city through table (8), it is clear that a small percentage (7-8%) reach the health centers within (less than 5 minutes) on foot or using a means of transportation. The percentage of arrival time from (5-10) is (13%) on foot and by (22%) using a means of transportation and (from 10-15 minutes) (22%) by walking and (28%) using a means of transport either (from 15-20 minutes). The percentage of those who go on foot is (27%) and the percentage of those who use the means of transportation (22%). As for the percentage of (20 minutes or more), it is (31%) by walking, and (22%) is the percentage of the means of transport.

Table (8)
Time taken according to the method used to reach health services in Al-Mishkhab city in the year 2020

Time	On foot	Rate	By mean of transport	Rate
Less than 5 min	266	7	313	8
5-10	495	13	754	20
10-15	817	22	1066	28
15-20	1024	27	821	22
Over than 20	1181	31	829	22
Total of sample	3783	100	3783	100

Source: - the work is conducted by the researcher depending on the questionnaire form.

Degree of people's satisfaction

The people's opinion is an important indicator for measuring the efficiency of the health function in Al-Mishkhab city. An indicator (not satisfied / slightly satisfied / half satisfied / well satisfied / very satisfied) was determined and the results of the questionnaire showed the degree of satisfaction with the health service in Al-Mishkhab city. Table (9) considers that (1276) are not satisfied with the health service, with a percentage of (33.7%), and that (1217) and with a percentage of (32.2%) are slightly satisfied, and (800) and with a percentage of (21.1%) are moderately satisfied, and (324) are satisfied with a good degree. At a rate of (8.6%), the number of satisfied people reached a very good degree (166) and (4.4%). Through the statistical analysis of the degree of satisfaction of the population in Al-Mishkhab city according to the five-point Likert scale, it is evident that the sample took a trend of (slightly satisfied) with a percentage of (43.6%), an arithmetic mean average (2.18) and a standard deviation (1.12).

Table (9):
The degree of attendee's satisfaction with health services, according to neighborhoods in Al-Mishkhab city in the year 2020

Sample	Not satisfied	Slightly satisfied	Half satisfied	Well satisfied	Very satisfied
3783	1276	1217	800	324	166
%10	33.7	32.2	21.1	8.6	4.4

Source: the work is conducted by the researcher depending on the questionnaire and table (7).

Scope of influence

It is the geographical boundaries that the service covers for the population within the boundaries located in to obtain the service (Lees, 2003) . He looks at map (5) representing the coverage of primary health care centers in Al-Mishkhab city according to the standard (800 m), and it was found that it is concentrated in the center and south of the city, as parts of the residential neighborhoods that did not reach the service appeared (Shahid al-Mihrab, al-Shahid al-Sadr), and the neighborhoods that did not reach them. The service (9) is (Al-Jaflawiya, Al-Zahra, Al-Dhubat, Al-Hassan, Al-Hussein, Ayman Al-Dabiniya, Abrihi, Rak Al-Haswa, Al-Askari) at a rate of (37.5%) of the city 24 neighborhoods, which prompts the service applicant to travel additional distances to reach it.

The current needs in Al-Mishkhab city for health services

The number of health centers in Al-Mishkhab city in the year 2020 is (2) a main health center, and the standard is a main health center for every (1/12,000) people. The city needs a third health center, which is supposed to be located in the Rak Al-Haswa area and the Al-Thawrat Al-Ishrine neighborhood due to its lack of health services with an area of land (1800 m2) to be built on according to the standard. The city needs (18) doctors according to the standard of a doctor

(1/1000) people.

Map (5) of primary health care centers according to the scope of service impact in Al-Mishkhab city for the year 2020
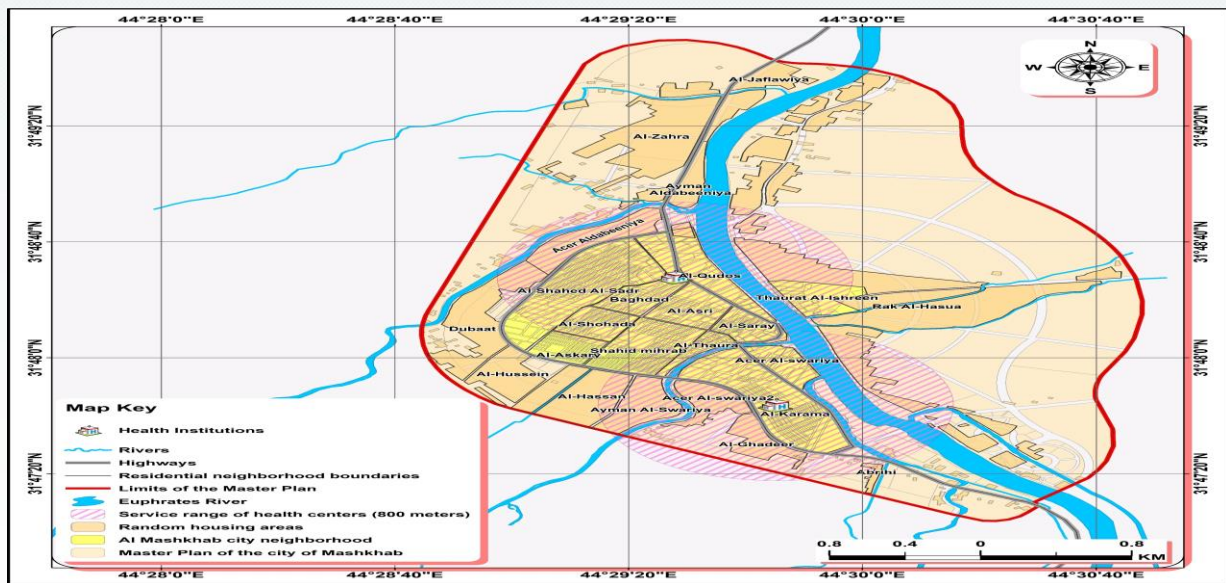
Source: - The work is conducted by the researcher depending on map (3) and table (6).

Future needs in Al Mishkhab city for health services

The demographic variable is a key variable that helps predict the future development trend of health services in the city due to the population impact on urban planning in using areas in the city (Meade, 2014) in order to extract the population growth rate for the years (2007-2020). The population of Al-Mishkhab city was in 2007. (23337) people, according to the estimates of the Directorate of Statistics of Najaf. In 2020, population reached (37,823) people according to the field survey and obtaining the number of residents of each neighborhood Al-Mishkhab city from the mayors. The growth rate reached 3.7%, with the city population in the year 2030 reaching (54,393) people in the city Using the geometric progression to estimate the future population $pn = po(1 + r)^n$ (Moazzem et al., 2018). and the area of the city of Al-Mishkhab amounted to (433.2) hectares, which is equivalent to (4.3) km2 and (4332000 m2). The per capita share of the area of Al-Mishkhab city in 2020 reached (114,5 m2). It is expected that the area of the city will increase in the target year 2030 to reach (623) hectares, equivalent to (6229827 m²) and (6.2) km². It is clear that Al-Mishkhab city needs, in the target year, (5) health care centers. The available of them are (2) and you need (3), two of them are a main center and one is a subsidiary, according to the future population of the city, and it needs (54) doctors. As for the rest of the services available from it, it is sufficient for the target year. It was distributed to residential neighborhoods to cover the service in a way that ensures equal distribution throughout the city.

Conclusions

1- There is a direct relationship between population growth and the increase in health service demand showing the numerical distribution of the population according to neighborhoods into five categories. The first group represented (784-1404/person) the dominance of its dominance over the city, as it formed (18) neighborhoods out of (24) neighborhoods and a rate of (52%) of the city population and it was found that the distribution of the population is in a state of clear imbalance.
2- There is a clear deficit in the number of health centers based on the criterion, which amounted to (1) a major health center, and in the number of doctors it amounted to (18) doctors.
3- There is a surplus in the number of dentists (16) doctors, (17) pharmacists, (65) nursing professional employees and (70) health professional employees, which gives an indication of the imbalance in their distribution among health centers.

4- When applying the standard distance and the nearest neighbor link, the actual centering point for both centers appeared, and the distribution direction could not be applied because the location of one of them in the center of the city tends to the north direction and the other south of the city.

5- The questionnaire revealed, according to the population ratio of each residential neighborhood, that the distance (more than 800 m) obtained the highest answers (1823) at a rate of (48%), and that the impact range according to the criterion (800 m) covers a percentage of (37.5%), which pushes the applicant to travel distances extra to reach. It indicates that the city has a lack of health service.

6- Through the statistical analysis of the degree of satisfaction of the population in Al-Mishkhab city, it is clear that the sample took the direction of (slightly satisfied), and the results showed that (1276) were not satisfied with the health service at a rate of (33.7%).

7- The city future need for health services in the target year is (5) primary health care centers, according to the city future population, and it needs (54) doctors.

Recommendations

1- There is a need for coordination between the local council of the city and the central authority for a future vision for planning health services, providing all facilities and accurate information to meet the needs of the city, and preparing basic plans based on community participation in decision-making.

2- Develop strategic plans for the development of health services according to the population growth of the city and its region, as a third health center should be built to cover the current needs of health services in the city.

3- Observe the conditions of ease of access when building health institutions in Al-Mishkhab city to facilitate the access of the service applicant, and reduce the time it takes to reach.

4- Balanced distribution of health institutions among the city neighborhoods to reduce pressure on health institutions.

5- Work to provide supportive health services from modern medical devices, laboratories and pharmacies.

6- To keep pace with the development in population numbers in the city, it needs, until 2030, of health services to (5) health centers and (54) doctors, and to choose the best places to sign them to cover the service throughout the city.

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