

Assessing the efficiency of health services in Al-Musayyab city

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Abstract

Assessment is an important indicator for studying health services because it focuses on measuring the impact of the service on the population. It is of great importance in improving and rebuilding the health service. The present aims to assess the efficiency of the 2017 health services in Al-Musayyab city, through a number of efficiency standards and their application to determine the degree of their efficiency and estimate the future needs of health services in the city.

Keywords Service efficiency, Al-Musayyab city, infrastructure, standard, health institutions.

Introduction

Health services are among the infrastructure services that the state is interested in providing and supervising because their availability is a necessity and not a luxury (Khaleel, 2015: 198). In their progress and development, countries of the world depend on the development of health services for their members in various aspects, with a great focus. Therefore, it is necessary to provide them in a manner that conforms to the planning standards and specifications. These services are now receiving the attention of researchers, especially in the sciences of geography, sociology, economics, management, planning, and development. Despite the difference in interest in those services, most researchers agree upon identifying them on their efficiency.

Studying the efficiency of health services in Al-Musayyab city is important in revealing the

areas of discrepancy in the distribution of health institutions in the city through the use of scientific methods in geographical distribution, which are related to the population presence in the city and the varying degree of its quantitative sufficiency and its practical and spatial efficiency during the contemporary stage 2017.

Determining the study area

As shown in Map (1), the study area is geographically located in the center of Al-Musayyab District, one of the districts of the Babylon province. On the north, it is bordered by Al-Iskandaryya, on the south, it is bordered by Saddat Al-Hindia, and on the west, it is bordered by Jurf Al-Nasr.

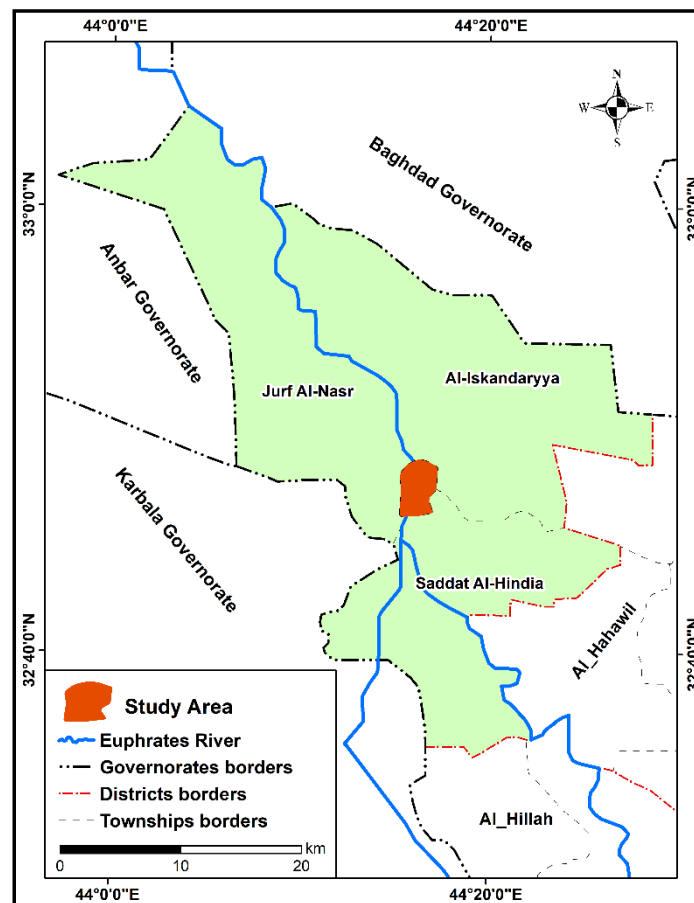
The study area is astronomically located between two latitudes 32°44'32"-33°48'58" in the north and two longitudes 44°14'44"-44°18'22" in the east. As for the area of the

study area, it is 11 km², which is equivalent to 1.1% of the area of Al-Musayyab district, which is 1008 km² (ministry of agriculture, Babylon Gneral directorate of agriculture, unpublished 2014).

The population of Al-Musayyab city reached (40779) people according to the 1997 census. It also reached (124318) people according to

estimates of 2017 (Ministry of Planning, 2018), i.e., with an increase of (83539) people during twenty years, with an annual growth rate of 5.7%. It is expected that in 2037, the population will increase to (378993), i.e., an increase of (254675) people.

Map (1) The geographical location of the study area in relation to Al-Musayyab District.



Source: Ministry of Water Resources, Directorate of Public Survey, Administrative Map of Babylon, at 1:250,000 scale, for 2010.

The research problem

The problem is formulated in light of the following questions:

1. Are health services in Al-Musayyab city commensurate with the population size?
2. What is the efficiency level of spatial distribution of health services in the city's neighborhoods?

The research hypotheses

1. There is no balanced relationship between the services and health capabilities provided in Al-Musayyab city and the size of the population in it according to local standards.
2. The state of confusion experienced by the planning authorities in Al-Musayyab city contributed to the lack of an ideal distribution of health services in the city.

The significance of the present study

Source: Ministry of Municipalities and Public Works, General Directorate of Urban Planning, Directorate of Al-Musayyab Municipality, basic design map of Al-Musayyab city 2010-2035 at a scale of 1:10000.

Section one

Spatial distribution of health services in Al-Musayyab city

To assess the efficiency of health services in Al-Musayyab city, it is necessary to study the reality of health institutions and their geographical distribution. Health institutions include (hospitals, health centers, popular clinics) with an area of (0.35) km² out of the city's total area of (11) km², i.e. (3.2%). The population of the city is (124318) people according to population estimates for 2017 (Ministry of Planning, 2018).

Health services consist of elements that complement each other. The health institution aims to cure and delight the patient by providing all or part of these elements combined to form the health services provided. Health institutions can be divided into:

First; Hospitals

1. Al-Musayyab General Hospital

This hospital is located in the center of Al-Musayyab city, Al-Qasbah Al-Qadeema as shown in map (3). It was founded in 1941. It comes first in terms of importance by providing services to the city and its regions, with an area of (7332) m². It includes a number of departments. As for the number of doctors, there are (39) with a percentage of (48.8%) of the total doctors in the city. The number of dentists is (10), with a percentage of (62.5%). The number of pharmacists is (19) at a rate of (45.2%). The number of pharmacists is (19) at a rate of (45.2%). There are (347) health professionals with a percentage of (47.3%). There are also (72) beds with a percentage of (39.6%) as shown in Table (1) and Figure (1).

An increase in numbers is noted due to the increase in visitors from the city and the

neighboring districts that belong to Al-Musayyab district.

2. Ibn Saif Hospital for children

This hospital was founded in 1989. It is located in Al-Shuhada neighborhood in the northern part of the city. Its previous location after being left to be reconstructed was opposite to Al-Zahraa Hospital for Gynecology and Obstetrics at the northern end of the city as shown in map (3). The area of the hospital is (6079) square meters. The number of doctors in it is 21 doctors with a percentage of (26.3%). The number of dentists is (6) doctors with a percentage of (37.5%). The number of pharmacists is (9) with a percentage of (21.4%). The number of people with health professions is (144) professionals with a percentage of (19.1%). The number of beds reached (58) beds with a percentage of (31.8%) as shown in Table (1) and Figure (1).

3. Al-Zahraa Hospital for Obstetrics and Gynecology

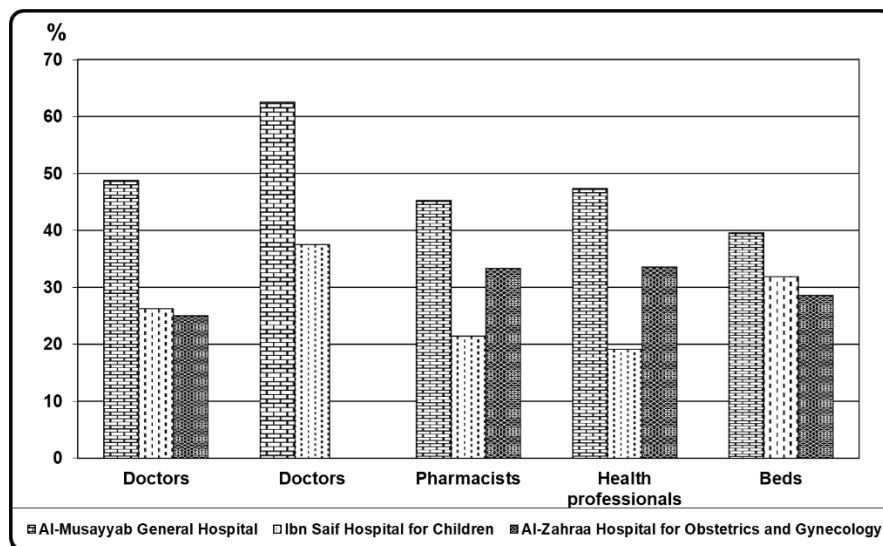
This hospital was established in 2009. It is located at the northern end of Al-Musayyab city as shown in map (3). The area of the hospital is (13833) square meters. It includes several departments, including obstetrics, preterm children, and internal medicine. This hospital includes specialized dental units. The number of pharmacists is (14) with a percentage of (33.3%), and (246) professionals with a percentage of (33.6%). It includes (52) beds with a percentage of (28.6%). It has gained great importance because this hospital is the only one specialized in obstetrics and gynecology in the city and district of Al-Musayyab, which attracts patients from all areas of the city and district for treatment as shown in Table (1) and Figure (1).

Hospitals	Area/km ²		Doctors		Dentists		Pharmacists		Health professionals		Beds	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Al-Musayyab General Hospital	7332	26.9	39	48.8	10	62.5	19	45.3	347	47.3	72	39.6
Ibn Saif Hospital for Children	6079	22.3	21	26.2	6	37.5	9	21.4	140	19.1	58	31.8
Al-Zahraa Hospital for Obstetrics and Gynecology	13833	50.8	20	25	—	—	14	33.3	246	33.6	52	28.6
Total	27244	100	80	100	16	100	42	100	733	100	173	100

Table (1) Hospitals, their areas, staffs, and beds in Al-Musayyab city for 2017.

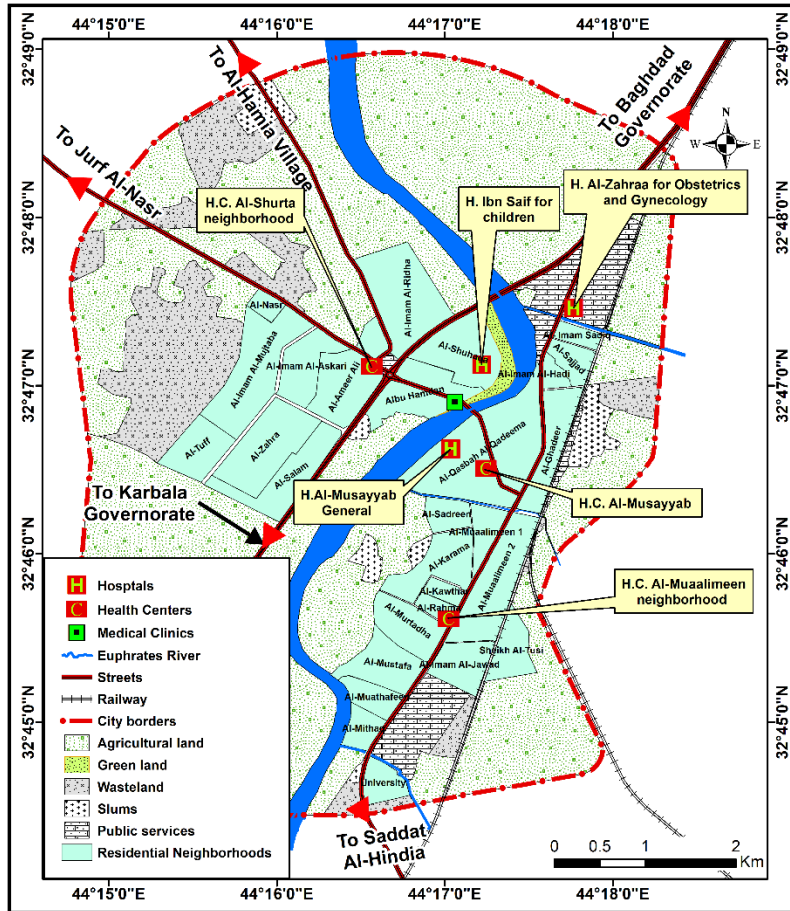
Source: Ministry of Health, Babylon Health Department, Health and Life Statistics Department, unpublished data, 2019.

Figure (1) Relative distribution of staffs and beds in Al-Musayyab city for 2017.



Source: Table (1).

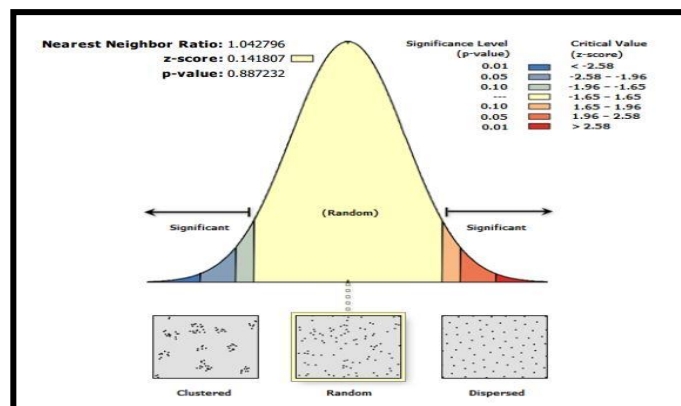
Map (3) The geographical distribution of health services in Al-Musayyab district for 2017.



Source: 1- Ministry of Health, Babylon Health Department, Health and Life Statistics Department, unpublished data, 2019.

2- Ministry of Health, Babylon Health Department, Musayyib Sector, Statistics Department, unpublished data, 2019.

Figure (2) Distribution of hospitals in Al-Musayyab for 2017.



analyzing the geographical distribution of hospitals in the city, using the (ArcGIS10.6.1) as shown in Figure (2), it is observed that the pattern of their distribution is random. These results indicate that there is a clear deficiency in the spatial distribution of these health institutions.

Second; Primary Health Care Centers

Primary health care centers rank second in the hierarchy after hospitals for the health services (142) professionals as shown in table (2).

they provide to the city. There are (3) centers distributed in the city. There are two centers in the eastern part of the Euphrates River and one center in the west of the Euphrates River as shown in map (3), with a total area of (7264 m2 with a percentage of (20.9%) of the total area allocated for health services in the city. The number of doctors is (16). The number of dentists is (14). The number of pharmacists is (8). The number of those with health professions is

Primary care health centers	Location	Area /m2	Doctors		Dentists		Pharmacists		Health professionals	
			Number	%	Number	%	Number	%	Number	%
Al-Musayyab	Al-Qasabah Al-Qadeema	2612	5	31.3	7	50	5	62.5	63	44.3
Al-Muaalimeen neighborhood	Al-Rahma neighborhood	4277	5	31.3	7	50	1	12.5	41	28.9
Al-Shurta neighborhood	Al-Ameer Ali neighborhood	375	6	37.4	—	—	2	25	38	26.8
Total		7264	16	100	14	100	8	100	142	100

Source: Ministry of Health, Babylon Health Department, Al-Musayyab Sector, Statistics Department, unpublished data, 2019.

1. Al-Musayyab Health Center

It is located in the old Kasbah, with an area of (2612) square meters, representing (36.9%) of the total area of primary health care centers in the city.) Physicians constitute (31.3%) of the total physicians of the health centers, (7) dentists at (50%) and (5) pharmacists with a percentage of (62.5%), while the number of health professionals is (63) professionals at (44.3%) of the total People with health professionals in a city, as shown in Table (2).

2. Al-Muaalimeen neighborhood Health Center

It is located in Al-Rahma neighborhood. Its area is (4,277) m2. It provides its services to the residents of (Al-Sadreen neighborhood, Al-Muaalimeen Al-Oula, Al-Muaalimeen Al-Thania, Al-Karama, Al-Kawthar, Al-Rahma, Al-Murtadha, Al-Imam Al-Jawad, Sheikh Al-Tusi,

Al-Mustafa, Al-Muathafeen, Al-Mithaq and the University as shown in map (3). The center includes (5) physicians with a percentage of (31.3%). Of the total number of doctors of primary health care centers in the city. It also includes (7) dentists, (50%) and (1) pharmacist (12.5%). The number of health professionals is (41) with a percentage of (28.9%), as shown in Table (2).

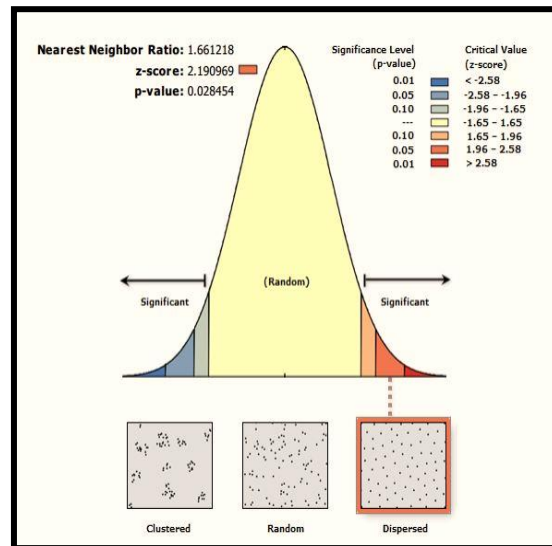
3. Al-Shurta neighborhood Health Center

It is located in the Al-Ameer Ali neighborhood. Its area is (375) m2. It serves the residents of the western side of the Euphrates River (Albu Hamdan, Al-Shuhada, Al-Imam Al-Ridha, Al-Ameer Ali, Al-Salam, Al-Askari, Al-Zahra, Al-Nasr, Al-Imam Al-Mujtaba and Al-Tuff) as shown in map (3). It includes (6) physicians with a percentage of 37.5(%). Due to the lack of dental treatment, it does not contain dentists.

The number of pharmacists is (2) pharmacists with a percentage of (25%). Those with health

professions are (38) professionals with a percentage of (26.8%) as shown in Table (2).

Figure (3) Distribution of health centers in Al-Musayyab city for 2017.



By analyzing the geographical distribution of health centers in the city using the (ArcGIS10.6.1) as shown in Figure (3), it is observed that the pattern of their distribution is Dispersed. These results indicate that there is a spacing in the distances between health centers and it is not consistent with the size of the population of the city that is concentrated in areas rather than others.

Third; Popular medical clinics

This type is one of the supportive health institutions. Like other institutions, it provides health services to the population. The main objective of its establishment is to provide health care for individuals at the lowest costs and treatments for chronic diseases, which made them centers that meet the needs of specific numbers of patients. The city includes one popular medical clinic, which is located in Albu Hamdan’s side as in Map (3).

Section two

Measuring the efficiency of health services in Al-Musayyab city for 2017

To assess the efficiency of health services in the city, it must be measured on the basis of the

efficiency of workers in health institutions (doctors, dentists, pharmacists, and health professionals), by calculating the percentage of actual use of them after introducing other indicators such as the number of population and the number of beds. It was based on comparing existing ones with local standards to assess their efficiency. These criteria include the following:

First; The Standard of Health Institutions/Population (Urban housing criteria, 2010)

1. Hospital/people

This criterion explains the relationship between the number of population and the number of hospitals. The number of hospitals in Al-Musayyab city is (3) hospitals. The standard used in measuring the amount of pressure on hospitals by the population served is (1/50000) hospitals/people. By applying the criterion, it is found that the city does not suffer from a shortage in hospitals. The average share of one hospital in the city is (41439) people.

From Table (3) and Figure (4), it becomes clear that the distribution of the served population is uneven. It exceeds the standard in Al-Musayyab Hospital due to its average location in the city

center. The standard is less in the case of Al-Zahra Hospital due to the lack of medical staff.

2. Health center / peopleze

The number of primary health centers in Al-Musayyab city reached (3) centers. The standard used in measuring the pressure on primary health centers by the serviced population is (1/10000) health center/people. By applying the criterion, it is found that the city suffers from a deficit in Primary health care centers. The average share of one health center in the city reached (41439) people, which is almost four times higher than the standard.

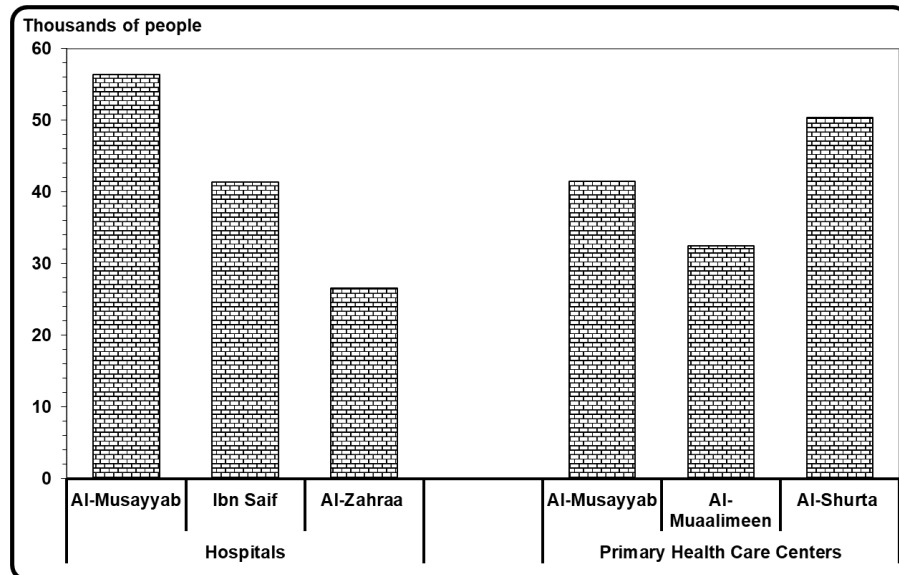
By analyzing Table (3) and Figure (4), it appears that there is a discrepancy in the size of the served population among the health centers in the city. This indicates the imbalance in the spatial distribution of health centers. It is found that the number of serviced population in Al-Shurta district health center exceeds the standard by (40345 people) as a result of the large number of residential neighborhoods it serves. In the health center of Al-Muaalimeen neighborhood, it exceeded the standard by (22510) as a result of its proximity to Al-Musayyab health center. Analyzing the distribution reveals that the city has a large deficit. It needs (9) primary health centers to meet the need of primary health centers.

Table (3) Indicators of health personnel for Al-Musayyab city for 2017.

Health institutions		No. served people	doctors			Dentist			Pharmacists			Paramedics		
			stuff	Actual need	Deficit or surplus	stuff	Actual need	Deficit or surplus	stuff	Actual need	Deficit or surplus	stuff	Actual need	Deficit or surplus
hospitals	Almusiyab	56398	39	56	-17	10	28	-18	19	3	16	347	113	+234
	Ibn saif	41349	21	41	-20	6	21	-15	9	2	7	140	83	+57
	Alzahra	26571	20	27	-7	0	13	-13	14	1	13	246	53	+193
total		124318	80	124	-44	16	62	-46	42	6	36	733	249	+484
Health centers	Almusiyab	41463	5	41	-36	7	21	-14	5	2	+3	63	83	-20
	Al mua;lmeen neighbourhood	32510	5	33	-28	7	16	-9	1	2	-1	41	65	-24
	AL Shuorta	50345	6	50	-44	0	25	-25	2	3	-1	38	101	-63
total		124318	16	124	-108	14	62	-48	8	7	+1	142	249	-107

Source: 1. Ministry of Health, Babylon Health Department, Health and Life Statistics Department, unpublished data, 2019.
2. Ministry of Health, Babylon Health Department, Al-Musayyab Sector, Statistics Department, unpublished data, 2019.

Figure (4) Number of people served in health institutions in Al-Musayyab city for 2017.



Source: Table(3).

Second; The area criterion

This criterion is used to clarify the per capita share of the total area occupied by the various health services institutions, whether hospitals or health centers.

1. Hospitals

As shown in Table (1), the total area of hospitals in the city amounted to (27244) m² comprising (182) beds, meaning that the amount of occupancy of each bed is (150) m² which is higher than the allocated standard of (100-75) m² per bed. Al-Zahra Hospital area increased from the local standard by nearly three times (266) m² per bed, which was built in recent years and which took into account in its design the spatial standards for green spaces and the capacity of treatment units.

It is found that the share of one bed of the population amounted to (683) people, which exceeds the local standard of (1/200) beds / people and the local standard for the amount of space for each bed, which is (1/100) m². This

shows that the city needs (440) beds and an area of (44000) m² to accommodate the number of beds.

2. Health centers

The total area of the health centers in the city reached (7264) m² with a percentage of (2421) m² for each health center. The local planning standard of (5000) m² for each health center shows that there is a large difference from the standard of up to (2579) m². Thus, there is a clearly negative reflection of the spatial efficiency on health centers, which must be considered and the difference between them and the standard should be taken into account.

Third; Professional Standards

1. Physicians

As in Table (3), the efficiency of the service provided by physicians is determined

according to their specialization. They can be divided into the following:

1. Physician/Resident Standard

One of the criteria used in assessing health services is the criterion of a physician/person, i.e. how many people the share of each physician is. It was determined according to the local criterion of (1/1000) physicians/people. The number of physicians in hospitals in the city reached (80) physicians. By applying the criterion reveals that it does not conform to the standard. Thus, the city suffers from a deficit of (44), which means that the city needs (124) physicians. Thus, the share of one physician reached (1/1554). The deficit includes all of the city's hospitals. In Al-Musayyab Hospital, deficit reached (17) physicians, in Ibn Saif, it reached (20) physicians, and in Al-Zahra' hospital, it reached (7) physicians. As for primary health centers, the local criterion for measuring efficiency is (1/1000) physicians/people. There is a large shortage in the number of physicians in primary health centers. The number of physicians reached (16). The actual need is (124) physicians. There are (36) physicians in Al-Musayyab health center. In Al-Muaalimeen neighborhood it is (28) physicians. In Al-Shurta district, it is (44) physicians. With this criterion, the distribution of physicians must be reconsidered to fill the shortage of the city's actual need for physicians.

2. dentist/resident criterion

The number of dentists in the hospitals in the city reached (16) dentists as shown in Table (3), which is less than the standard of (1/2000) dentists/people. The city suffers from a deficit of (46) dentists. The actual need is (62) . This means that the share of one dentist is (1/7769) dentist/person. This deficit included all the city's hospitals. The deficit in Al-Musayyab Hospital reached (18) dentists, (15) dentists in Ibn Saif Hospital, and (13) dentist in Al-Zahraa Hospital, which should be sought to fill the large deficit of dentists and health units with advanced efficiency. The number of dentists in health centers amounted to (14) dentists as shown in Table (3). Applying the standard of (1/2000) dentist/person reveals a large deficit of up to

(48) dentists. This means that the city needs (62) dentists in the primary health centers, meaning that each dentist has (8880) people, which indicates a deficit in the provision of dental treatment in the city.

By analyzing the data, it is clear that the city suffers from a very large deficit of dental treatment units in all institutions, including hospitals and primary health centers.

3. Pharmacist/people standard

This criterion shows the relationship between the number of pharmacists who work to provide medicine to the patient after the doctor diagnoses the disease. Therefore, pharmacists represent a cornerstone in the health service. It is noted from Table (3) that there is a surplus in the number of pharmacists in the hospitals amounting to (36) pharmacists according to the local standard of one pharmacist for every 20,000 people, through which the city needs (6) pharmacists, while there are (42) pharmacists within the city's hospitals, meaning that the share of one pharmacist is (2960) people, which is less than the standard by (17040) people. This shows the number of graduates within the Pharmacology faculties appointed within this district. It is clear from Table (3) that health centers are close to efficiency. There is only one surplus that varies between one health center and another that can be rebalanced to reach the desired efficiency.

4. Inpatient doctor/patient standard

This criterion can only be achieved in hospitals and it cannot be applied to primary health centers because the latter is not designated for inpatient treatment. If there is a sick case that deserves inpatient treatment, it is transferred to hospitals located within the geographical area. The criterion assigned to evaluate it is (1/20) doctor/inpatient. The number of inpatients reached (13,450)(Ministry of Health, 2019). The share of one doctor is (168) inpatients, which is a very high percentage of patients that puts great pressure on doctors, which constitutes a negative aspect for them in providing the best care. Health care includes follow-up and

accurate diagnosis to achieve the health level of patients.

2. Health professionals

Health professionals are important pillars of interconnected health services that complement each other to meet the population's need for curative service and health care for patients. Assessment can be through several criteria, including:

1. Health professionals / people criterion

This criterion measures the adequacy of health professionals for the service they provide to the population. The local standard is (1/500-400) with health professions/people. By applying the criterion as shown in Table (3), it was found that (hospitals) need (249) professionals, while There are (733).

There is a surplus of up to (484) professionals, meaning that the share of one professional is (170) people. It becomes clear that the city does not need health professionals as there is a surplus of them. As for health centers, they are unlike hospitals. They suffer from a deficit that reaches (107) professionals. There are (142) professionals, while it needs (249) professionals. This means that the share of one professional is (875), which is much higher than the specified standard. So, the planning of the actual need for people with disabilities must be reconsidered in health centers to fill their deficit from surplus hospitals to achieve health efficiency in them.

2. Health professionals/doctor criterion

To determine the measurement of this criterion, (1/3) professional/doctor was adopted. This means that one doctor needs three health professionals. By applying the criterion to (hospitals) it appears as (9/1). This means that each doctor has nine health professions, i.e. Availability of sufficient health professionals. Hospitals need (240) professionals compared to (80) doctors, while in fact, there are (733) professionals in hospitals. The same is the case in health centers. There was an increase of (9/1) nine professionals compared to one doctor. The health centers actually need (48)

professionals. In fact, there are (142) professionals. Thus, the surplus of (94) professionals becomes clear.

An assessment of this criterion in each of the city's primary health centers and hospitals reveals that there is no shortage of health professionals. On the contrary, there are enough of them to cover the service provided by these institutions.

3. Health professionals / inpatients criterion

The criterion of (1/6) health professionals/inpatients was adopted to measure the adequacy of hospitals with health professions for inpatients to show the efficiency of health professionals for the number of inpatients within hospitals, because their deficiency is considered a defect in the efficiency of the health service in the city. By applying the criterion, it becomes clear that (18) inpatient are assigned for every professional, which exceeds the standard. This leads to a failure to provide the service to the inpatients. Thus, it negatively affects them. Therefore, it is necessary to plan to reach the standard in order to obtain the best service for the inpatients.

3. Beds

This criterion reflects the number of beds in hospitals against a number of people. Numbers have varied from one country to another. In developing countries, they are between (300-500) people / bed. In developed countries, they are between (80-120) people / bed. Perhaps , In poor countries, the number is more than in developing countries and reaches more than (600) people / bed (Ghadhban, 2013). The number of beds in the hospitals of Al-Musayyab reached (182). From the number of beds, it is possible to determine the criteria for determining the efficiency of the health service in Al-Musayyab city, which are as follows:

1. Bed/people standard

The criterion shows the amount of beds needed for the number of inpatients of the population, which is (1/200) beds / people. With this

criterion, it is found that the city needs (1/683) people / bed, which is higher than the standard, and even higher than the level of poor countries. This indicates a significant shortage of beds. It requires providing (440) beds to reach the actual need for the population of (622) beds to fill the shortfall in the number of beds in hospitals.

2. Bed/Doctor Standard

This criterion shows the amount of service provided by one doctor for each bed so that each doctor can provide the best service. The criterion reached (6-5/1) bed/doctor. Applying the criterion to the city reveals that (2/1) bed/doctor, which is a very indicator compared to reality . But with a shortage in the number of beds, amounting to (622) beds, the standard is (1/8) bed/doctor. In contrast, there is a shortage in the number of doctors, amounting to (124) doctors, so the standard becomes (5/1) bed/doctor. This is what should be provided and accessed to achieve the best health service for the city in the case of providing the number of beds (622) with the number of doctors (124).

3. Bed/Health Professions Criterion

This criterion clarifies the amount of attention that corresponds to each bed of health professionals. The criterion was set at (1/3) beds/professionals. It appeared that each bed had (4) health professionals. This is an indicator that shows the extent of care that each bed receives within the city's hospitals. It possesses enough health professionals.

Source: field study 3/2/2019.

Fifth; The criterion of the population's degree of satisfaction with health services

In assessing health services, it is necessary to determine the extent of the population's satisfaction with the service provided to them through health institutions, whether hospitals, health centers, and popular clinics. The questionnaire showed that the highest percentage of residents' satisfaction with the service

Fourth; Spatial Standards (Ease of Access)

The location of health services is vital so that people can access primary and secondary care, emergency medicine, preventive care, diagnosis, treatment, surgery, physiology and public health. Of them, access to health services is better, which increases the likelihood that they will use health services (Kanaroglou, P., Delmelle, E., & Páez, A. 2015).The distance traveled by the population and health institutions was determined at 800 m² according to the local standard.

In order to assess the distance that the population travels to obtain the health service in the city through the results of the questionnaire as shown in Table (4), it was found that (38%) of the sample members take less than (10) minutes to reach the nearest health institution and (33%) take them 15-10 minutes, while (29%) of the sample members reached the time required to reach which is more than (15) minutes. This explains the difficulty in reaching health institutions in the city, as (31%) of the sample reach The health institution on foot, while (69%) of them travel to it by means of transportation. Thus, the distribution of health service institutions should be planned in accordance with the standard for an easy access to achieve the greatest benefit for the city's residents.

Table (4) Percentage of time taken to reach the nearest health institution in Al-Musayyab city.

Time	Less than 10 minutes	10-15 minutes	More than 15 minutes
Frequency %	38	33	29

provided by Before hospitals, (38%) of the sample members are satisfied with a medium degree, while (32%) are satisfied with a good degree, while the degree of satisfaction (15%) is very good, which is equal to a poor degree about the level of service provided to them.

As for the degree of satisfaction with the health centers, the percentage of their satisfaction was (37%) with a medium degree and (36%) with a good degree, which is close to the degree of

satisfaction. It is found that (15%) with a very good degree and (12%) with a poor degree of satisfaction. The degree of satisfaction of the popular clinic, the highest degree of satisfaction was medium (38%), followed by (22%) with a poor degree, which shows the lack of service provided in it, with a degree of (21%) good. The lowest satisfaction rate is very good (19%) due to the lack of means. The medical facility is limited to the simple treatment it offers, compared to other health institutions.

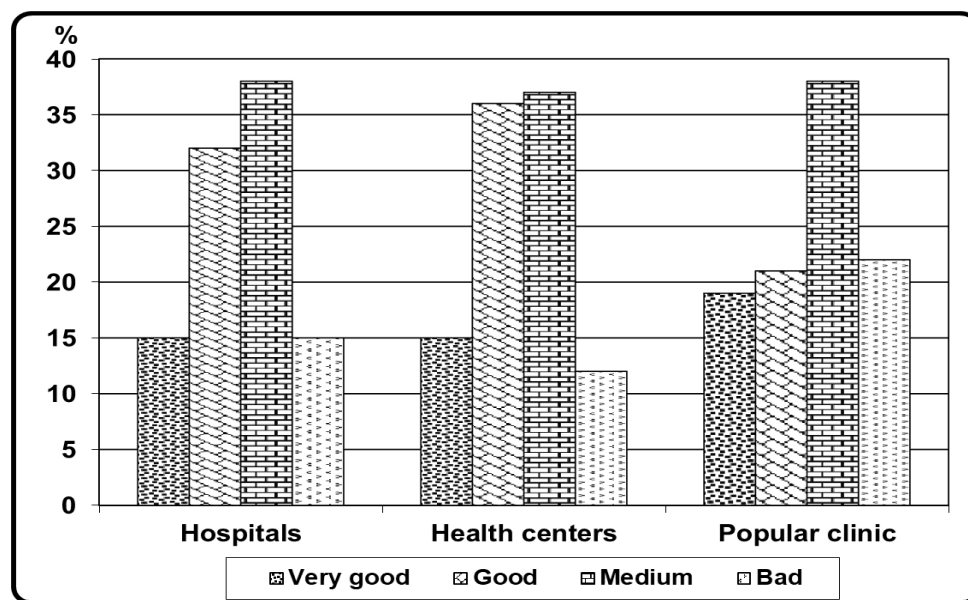
It is clear from the above that the highest average degree of satisfaction with health services in Al-Musayyab city was (38%) medium, followed by (30%) good, while the lowest was (16%) with a very good and poor degree.

Table (5) Percentage of the degree of satisfaction with health services in Al-Musayyab city.

Health institutions	Very good	Good	Medium	Bad
Hospitals	15	32	38	15
Health centers	15	36	37	12
Popular clinic	19	21	38	22
Average	16	30	38	16

Source: field study 3/2/2019.

Figure (5) Percentage of the degree of satisfaction with health services in Al-Musayyab city



Source: Table (5).

Section three

Estimating future needs of health services in Al-Musayyab city

The planning of health services is an important part of the city's planning and a serious step in the field of spatial balance between the available services and the number of residents in Al-

Musayyab city and the convenience of the population benefiting from it on the other hand. Table (6) shows the estimates of the needs for health services in the city of Al-Musayyib until 2037, according to population estimates.

Table (6) Estimating the needs of Al-Musayyab city for health services until 2037.

Years	Population	Hospitals	Health centers	Physicians	Dentists	Pharmacists	Health professionals	Beds
2017	124318	2	12	124	62	6	249	622
2022	164270	3	16	164	82	8	329	821
2027	217061	4	22	217	109	11	434	1085
2032	286818	6	29	287	143	14	574	1434
2037	378993	8	38	379	189	19	758	1895

By analyzing Table (6), it is clear that the amount of need for hospitals in Al-Musayyab city amounted to (2) hospitals in 2017. There are (3) hospitals, which means that there is no shortage in them, while the deficit appears from 2027 and continues to increase until it reaches in 2037 to (8) Hospitals Therefore, it is necessary to plan to provide (5) hospitals to suit the population. Hospitals need medical staff, health professionals, and beds. For a year, they need (124) doctors, while there were (80) doctors, meaning that the deficit is (44) doctors, a deficit that increases with the increase in the population until it reaches (379) doctors in 2037. This requires Providing (299) doctors, and the deficit applies to dentists. The city needs (62) dentists, with a deficit of (46) dentists. It increases with the increase in the population, so the deficit is 173 dentists in 2037. Pharmacists show that there is no deficit until 2037, because their number reached (42) pharmacists in 2017, and the need for them is (6) pharmacists, and in 2037 the need for (19) pharmacists, which is less than it was in 2017. Those with health professions recorded the deficit of (25) professionals only Because there are enough health professionals, as their number in 2017 reached (733) professionals. The deficit appears clearly in the number of beds compared to the population, from (449) beds in 2017 to (1722) beds in 2037, which requires the availability of (1885) bed.

As for health centers, the city needs (12) health centers at the present time, while there are (3) health centers in it, which shows the deficit that

reached (9) health centers compared to the population increase estimated from 2022 to 2037 as there is a continuous deficit until it reaches to (35) health centers, which necessitates proper planning for the population numbers in the city. For a year, health centers need (124) doctors, while there were (16) doctors, meaning that the deficit is (108) doctors, which is a deficit that increases with the increase in the population until it reaches in the year 2037 (379) doctors, and this requires the provision of (363) doctors. The deficit applies to Dentists. The city is in need of (62) dentists, and with (48) dentists deficit. It increases with the increase of the population, so the deficit is (175) dentists in 2037. Pharmacists show that there is no deficit until 2017, because their number that reached (8) Pharmacists and the need for them is (6) pharmacists. The deficit appears from the year 2027. The city needs to reach (19) pharmacists, which requires the provision of (11) pharmacists. As for those with health professions, the deficit appears in them in 2017 at (107) professionals only, 142) professionals are required until the deficit reaches (616) professionals.

Results

The present study dealt with the subject of assessing the efficiency of the 2017 health services in Al-Musayyab city.

1. The distribution of health services in Al-Al-Musayyab city was directly related to the distribution of the population, which varied between the residential neighborhoods of the

city due to the variation in the area and the pattern of land use. The distribution of hospitals was random. Health centers took a divergent pattern which shows that the city did not reach the required degree in order to perform its health service with good efficiency.

2. The present study revealed that there is a balance between the number of hospitals and the population. On the contrary, there is a significant shortage of health centers in comparison to the number of the population, which is a deficit of (9) health centers.

3. The present study revealed that the city's need of an area allocated to health services according to standards reached (44,000) m² for hospitals and (2579) m² for health centers.

4. By assessing the efficiency of health services in Al-Musayyab city according to local standards, it is positively evident as in the number of hospitals, pharmacists, health professionals in hospitals, and pharmacists in health centers, which are sufficient to provide the required service to the population. Some of them are negative, as in the number of doctors and dentists in hospitals and health centers and health professionals in health centers.

5. According to local standards, there is a deficit in health services for hospitals in terms of the number of doctors (44), dentists (46), and the number of beds (449). The number of pharmacists and health professionals is compatible with the efficiency of the health service. Likewise, the health centers witnessed a shortage in the number of doctors (108), dentists (48), and health professionals (107).

6. The study reached an estimate of the future needs of hospitals and health centers, the number of doctors, dentists, pharmacists, and health professionals, taking into account that the population increase of the city is expected to grow between 2017-2037.

Recommendations

In light of the findings of the study, the researcher proposes the following recommendations, which may help the

concerned authorities in the matter to address some aspects that need solutions regarding the subject of the study:

1. Applying planning principles and standards that must take into account the selection of the appropriate location of health institutions and reducing the disparity in the distribution of health services among residential neighborhoods to achieve the health qualitative and quantitative indicators that development plans aspire to.

2. Increasing the number of health institutions, especially health centers, at a level worthy of the service provided to the population, and equipped with the latest medical devices, in addition to providing them with specialized doctors, not only those with health professions.

3. Defining the areas allocated for health services within the city plans and according to the size of the population in the city.

4. Raising the level and development of the health service in neighborhoods that suffer from low health efficiency by raising the efficiency of health institutions, increasing human powers in accordance with local standards, and addressing the shortage in the numbers of health staffs in which most of the city's health institutions complain of a shortage.

5. Governmental institutions and departments, especially the Ministry of Health must cooperate with researchers and scholars by providing them with accurate information and data, because this would contribute to addressing the imbalance that would help raise the health level of the country in the future.

6. Preparing future plans to accommodate the annual increase in patients (hospitals and health centers) and inpatients (hospitals). Studying the proposals presented in the present study by the Ministry of Health for health services and taking the appropriate proposal into account.

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