

The Efficiency of Private Hospitals Services in the City of Hilla, Using Geographic Information Systems Technology (GIS)

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Abstract

Many researches and studies have dealt with the importance of planning services in the city mainly for the development and growth of the urban environment, as a minimum of these services must be provided, which is considered a place of stability for the population, who consider the most important dimension in the development of modern and human settlements. It highlights the seriousness of the disparity and inconsistency in the distribution of (private hospitals) and their services provided to the population between the different neighborhoods of the city in size and density, which transcend to the districts and areas of Babel Governorate. This research deals with the study of the efficiency of private hospitals services in the city of Hilla, knowing the factor are which affecting on the level of service provided, with the development of a comprehensive database for private hospitals and their multiple services, using (GIS) technology. Which contributes to building a base capable of continuously updating according to health and population variables, and by relying on a questionnaire form to determine the efficiency of the services provided in each of them.

Keywords

Public Health, Efficiency, GIS, Private hospital

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Literature Review

Health services are considered one of the basic elements in the processes of social and economic development of any country in the world, although its trends differ, but it is in the service of the person who is the most valuable in terms of the country's resources.

Problem of the Statement

The current study is trying to answer the following questions:

1. What is the spatial reality of private hospitals in the city of Hilla, in terms of the reality of their workers, their departments and their whereabouts?
2. What is the effectiveness and functional efficiency of private hospitals?
3. What is the degree of the regional relationship of private hospitals in terms of the number of visitors from inside and outside the city of Hilla?

Hypothesis of the Study

The hypothesis of the study is based on the reality that the distribution of private hospitals in the city of Hilla did not take into account the variation in population size and the differences in the standard of living in the municipal units of the city of Hilla.

Aims of the Study

The current study aims at:

- Determine the distribution and pattern of private hospitals in the city.
- Preparing a population and health database for private hospitals using (GIS).
- Application of standards to know the efficiency of private hospitals.

Limits of the Study

The spatial limits include the city of Hilla according to the basic assessment (2006-2030), which consists of four sectors, while the temporal limits, they represent data and information for the period (2013-2017) and the field study for the year (2018).

Methodology of the Study

The researchers based on the descriptive approach in order to identify the phenomenon studied, the quantitative analytical approach is supported by the applied study of the reality and efficiency of private hospitals services, the geographical information systems (GIS) program was used to locate hospitals, and building a population health database for private hospitals in the city.

Data of the Study

The study was required the preparation of a questionnaire form that included (8) questions they were distributed to clients to private hospitals, another for hospital directors and medical staff, in order to know the functional characteristics of the private hospital service, the total of the forms was (250) forms.

Definition of the Terms

There are many terms which are related to the current study:

- 1.The concept of public health (Abawi, 2018)
- 2.The Efficiency (Al Hilfi et al., 2013).
3. Geographical information system(GIS): (Al-Obaidy et al., 2016).
4. Spatial competence: (Antoniou, 2010)
5. Law of establishing private hospitals: It is a law that aims to expand the provision of medical

services and benefit from the expertise of doctors, the establishment of private hospitals is currently based on Public Health Law No. 89 of 1981, as well as the Law on Establishing Private Hospitals No. 25 of 1984, so far, no hospital has been established according to the last Law No. 25 of 1984, but rather it was established on the first Law No. 89 of 1981. (Brandon, 1970).

Structure of the Study

The study included three sections, it was summarized with a number of conclusions and recommendations on the subject of the study, to develop appropriate solutions.

The Spatial Distribution of Private Hospitals in the Four Sectors of the city

1. (Astronrical Location(

The city of Hilla is located at an intersection site with longitude (26-44) east and latitude (29-32) north, geographical location of the neighboring territories (Situation), the city of Hilla represents the administrative center of Babel Governorate, as shown in Map (2), which clarifies the administrative divisions of the governorate as they are linked with mutual employment relationships that contributed to the city's growth and development (Cerviño et al., 2008). The area of the city of Hilla is (5681) hectares, or (34%) of the area of the center of Hilla, which has an area of (16709) hectares, and the city includes (98) residential neighborhoods, Map (1).

2. Spatial Distribution of Private Hospitals in the Sectors of the City of Hilla

Modern applied geographic studies focus on the field of geography of services to provide the best services to it easily (Cueto, 2004). Geography is the science of distributing non-isolated things that are arranged together (Fields et al., 2020), the concepts of geography and its processes that are related to spatial organizations and distributions are prepared by integration and spatial interaction and related spatial processes (Glass Jr & Jackson, 1998). The city of Hilla includes (5) private hospitals distributed into its three sectors, as shown in Map (3) and Table (1)

Table (1).

Distribution of the Private Hospitals and the Number of Visitors for the Year (2017-2018)

No.	Name of Hospital	Location	Patents No.	Sector	Percentage of visitors	No. of Family	Percentage of Family No.
1.	Al-Hayat private	Al.jazaar N.	1048	Al.Frdous	12 %	20	11
2.	Al-Faihaa private	Aljamaaya N.	893	Al.Faihaa	11%	20	11
3.	Al-Salam private	Alkhusrwaya	2832	Al.Firdous	33 %	70	39
4.	Tiba private	Hamza Aldali	2492	Al.zehoor	29 %	50	28
5.	Babil private	Hamza Aldali	1257	Al.zehoor	15 %	20	11
Total			8522		100 %	180	100%

Source: Researchers depending on the Ministry of Health, Babil Health Presidency, Planning, Manpower, unpublished data, 2018.

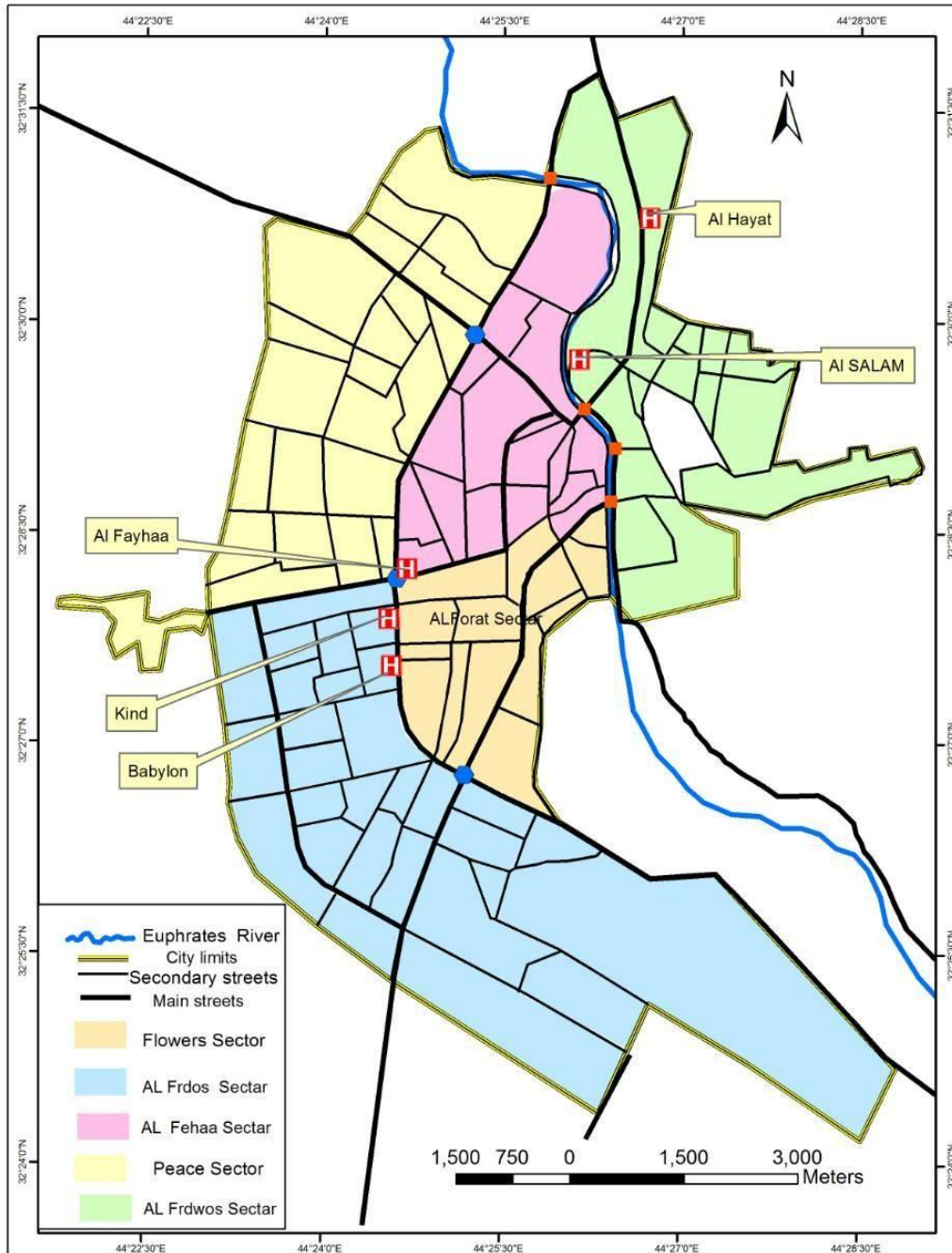
Firdous sector:

Sector (2) includes a private hospital, the proximity of this sector to the city center, ease of access, the concentration of doctors' clinics and laboratories is a major factor in its opening, factor of the relative rise in the income level of visitors of the residential neighborhoods close to them was also , it is Al-Hayat Private Hospital founded 2007 and Al-Salam private Hospital and was founded 2016, the private hospitals in the sector are the most important of all private hospitals, as it contains the most famous doctors in it, the area of Al-Hayat Hospital reached (1000 square meters), the number of annual visitors is reached (2832) for the year 2018, at a rate of (12)%, it is the largest area from Al- Salam Hospital (750 square meters), the number of victors reached (2832), at a rate of (33)%

of the number of visitors, this spatial disparity is linked to the rise in the price of the land, which determines the hospital administrations from taking large areas or renting in an area with a very suitable location and the presence of government buildings that occupy most of the land area in the best places suitable for services.

Map (1).

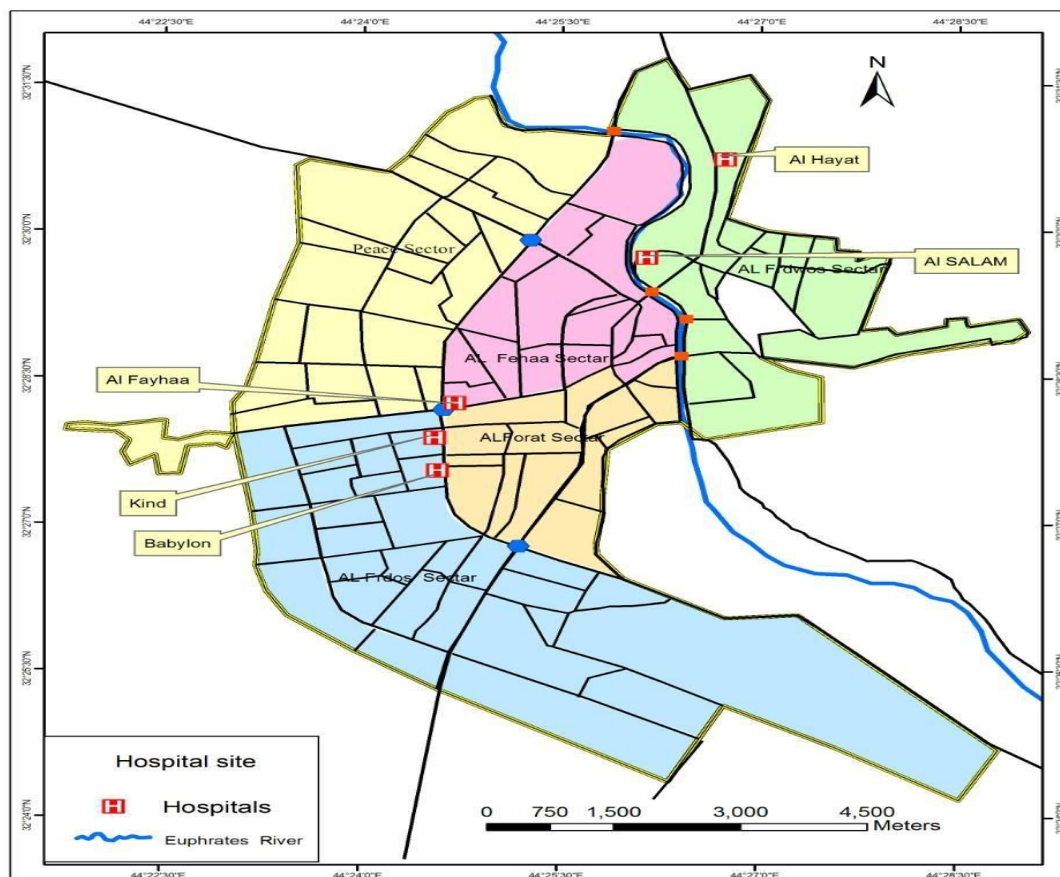
Sectors of Hilla City for the year 2018



Source: Work of the researchers based on maps, the General Commission for Survey, Department of Map Production, a map of the residential neighborhoods of the city of Hilla, 2017 based on a satellite image of the city 2014.

Map (2)

Spatial distribution of private hospitals in Hilla for the year 2018



Source: From the work of researchers, based on Table (1)

Al-Zehoor sector:

Sector (2) includes a private hospital, it is relatively far from the city center despite easy access, as it is located on a main road linking the governorate with Baghdad on one side and the central Al-Furat provinces on the other, it is the Private Hospital of Babel, founded in (2010), while Tiba Private Hospital was established in (2016). Its location on the main streets linking the city is easy to move and transport, the number of visitors reached (1257) for the year 2018, at a rate of (15) %, Tiba Hospital (1000 square meters), the number of auditors reached (2,492) visitors, at a rate of (29) %, and the spatial variation is related to the rise of price of the land.

Al-Faihaa sector:

It includes one hospital, its location is easily accessible. The area of the hospital is (1500 square meters), with insufficient space for future expansion, the number of its visitors for the year 2018 is (893), and a percentage (11) % the total number of visitors, being dedicated to performing surgical operations (Gong & Hassink, 2019).

Functional characteristics of private hospitals in Hilla

Hospitals are the pillar of the state's health system due to the vital and essential role they play in achieving the state's social and health goals, as an essential part of a social and health system whose function is to provide completely care for the population, the hospital also guarantees the inpatient a shelter in which to receive medical care and nursing (Gong & Hassink, 2019).

Table (2) and Map (3) are illustrated in defining the functional characteristics of health services provided in private hospitals, in which several important indicators will be addressed.

Table (2)

doctors reached (1), As for Tiba Hospital, the number of doctors reached (4) male doctors, with different specialties.

2. The number of beds in each hospital: Single bed occupancy is one of the indicators for assessing the adequacy of hospital bed use and indicators of the amount of disrupted energy, from the analysis of table (2) data, the number of actual hospital beds for sleep in the city of Hilla was reached about (180) beds distributed over five hospitals, the total of this indicator was about (1/3576) persons per bed, it is considered a high indicator and far from the national scale of (1/200) people per bed (9), which calls for increasing the number of families in hospitals.

3. The number of Nurses in each hospital: The number of nurses varies in each hospital, their number reached (68) nurses, distributed in five hospitals, in Al-Hayat Hospital (16) nurses, in Al-Salam Hospital (11) nurses, as for the number of nurses in Al-Fayhaa Private Hospital, it reached (16), while the Private Hospital of Babylon, the number of nurses reached (14) nurses, while the Hospital of Tiba reached (21) nurses.

4. The number of visitors patients (male - female) in private hospitals: It is clear from the analysis of the data of table (1), the extent of the discrepancy between private hospitals with regard to the fallows (males and females), the highest rates were recorded for them in (Al-Fayhaa Hospital) for the period (2013-2017) respectively, and the lowest rates were recorded for them in (Al-Salam and Tiba Hospital). The reason for this increasing in the rate of fallows people for both sexes is due to a clear shortage and a decrease in the economic level, matched by a clear lack of medical services provided by government hospitals, the field study has showed that most of the visitors came from the districts and sub-districts of Babel governorate, so the answer of the patients was (35%) from the city, (10%) outside the governorate, (55) %, districts and sub-districts.

The numerical and relative distribution of discharged patients in private hospitals

The study of the relative distribution of the population of any region according to its administrative units is one of the most widespread and used methods, the role of the geographer is determined by analyzing that importance and stating its causes, evolution and change, depending on the data of various censuses (Katz & Kahn, 1978). Table (3) indicates that the numerical and relative distribution of the age groups of the inpatient population in private hospitals in the city of Hilla varies between their age groups in time in the period (2013-2017), Al-Hayat Hospital ranked first in the age groups (less than one year - 14 years), with a rate of (10.2), and the age group (15-64) of the incoming patients, Babylon Hospital recorded a rate (88%) and the bigger group than 65, so, at Al-Faiha Hospital was registered (8.4%), the numerical distributional picture of patients in private hospitals was clearly different, Al-Hayat Hospital was continued to monopolize it in the first rank, the number of patients were reached (2796) people, Al-Fahya Hospital has achieved the second rank, as the number of the fallows have reached about (2,614) people, while the third rank was represented by Babel Hospital by about (2,488) people, accordingly, Al-Hayat Hospital acquired the highest numerical and relative indicators of the fallows in 2013 and its continuation continues in this way.

Table (3)

The numerical and relative distribution (for age groups) of the patients referred to the private hospitals of Al-Hillah city for the year 2013.

Age categories	Alhayat. H		Al fayha H.		Babel H.	
	No.of patients	percentage	No.of patients	percentage	No. of patients	percentage
Less than 14	182	2001	231	9	216	9
15-64	1542	8708	2163	83.7	2192	88
65 & more	45	201	220	8.3	80	3
Total	1712	%200	2614	%100	2488	%100

Source: Researchers depending on the Ministry of Health, Babil Health headquarter, Health

Statistics section and life, workforce, unpublished data, (2013-2017)

The numerical and relative distribution pictures of patients who were discharged in the private hospitals of (Lang et al., 2009) differ from the distribution in the previous year in numerical terms. The numerical and relative distribution type of patients who were discharged in the private hospitals of (Li et al., 2013) differ from the distribution in the previous year in numerical terms and in numerical proportions. , As the first age group was represented (less than one year -14 years), so Al-Hayat Hospital and Babil were (10%) respectively, and the middle group (15-64) years, so Al-Fayha Hospital was (88%) and the largest percentage was 65 years, so Al-Fayha Hospital was at a percentage (6.2%), and the reason for this is that the hospital has the availability of all medical devices, which made it a focal point for attracting patients coming to it from inside and outside the governorate, and in most cases the main factor for the visitors to private hospitals is a result of the process of requesting the doctor treating them in his private clinic And associated with the hospital Thus, the rates of discharged patients in private hospitals has increased, while the rest of the other age groups witnessed a decrease in the hospital (Al-Hayat, Al-Fayhaa, and Babel).

Table (4)

The numerical and relative distribution (for age groups) of the patients referred to the private hospitals of Al-Hillah city for the year 2014.

Age categories	Alhayat.H		Al fayha H.		Babel H.	
	No.of patients	percentage	No.of patients	percentage	No. of patients	percentage
Less than 14	302	20	341	9	241	10
15-64	2641	88	2925	83.9	2100	87.4
65 &more	69	2	222	6.4	160	2.6
Total	3012	%200	3488	%100	2401	%100

Source: The researchers rely on the Ministry of Health, Babil Health headquarter, Health and Life Statistics section, Manpower, Unpublished data, (2013-2017).

Table (5) data indicates the percentage of discharged patients in private hospitals in Al-Hillah city, which increased in 2015 compared to what it was in 2013 and 2014, while the number of customers reached (7898) in 2013, it reached (8901) in 2014. And it increased in 2015 to (9,875) customers. The patients rates are varied periodically, however they are varied spatially as well on the level of privet hospitals. Table (5) illustrates this case. The Al-Fayha hospital has the first position among other privet hospitals in Hilla and for all age groups. It comes round (3863) this because of the on variety of specialties in the Al Fayha hospitals such as surgery specialty, and caesarean surgery is the highest rate. the Al Hayat hospital has the second position the number of patients comes round (3470) of different age groups. The third position is taken by Babel hospital (2542) patients of different age groups for 2015. The first age group in Al Fayha hospital (%10.7) and the group (15-64) years was in Babel hospital (%87.1) the third age group which represents 65 years and more in AlFayha hospital (%6.2) this because of several criterion : the far distance from the hospital , variety of specialties in each hospital , the availability of medical instruments and comfort things. etc.

The situation of the numerical and relative distribution of patients attending private hospitals for the years (2016-2017) differ from the change in the previous years in terms of numerical terms. 2016-2017) compared to what it was in the years 2013 and 2014-2015, while the number of patients in 2015 reached (9875) patients. The number of patients increased to (15146) and (16235) for the year 2016-2017, which differ in time and place also at the level of private hospitals affiliated to them.

Table (5)

The numerical and relative distribution (for age groups) of patients referred to private hospitals in Al-Hillah city for the year 2015

Age categories	Al-Hayat.H		Al-Fayha H.		Babel H.	
	No.of patients	percentage	No.of patients	percentage	No.of patients	percentage
Less than 14	505	14.5	408	10.7	255	10
15-64	2909	83.8	3213	83.1	2216	87.1
65 & more	56	1.7	242	6.2	71	2.9
Total	3470	%200	3863	%100	2542	%100

Source: The researchers rely on the Ministry of Health, Babil Health headquarter, Health and Life Statistics section, Manpower, Unpublished data, (2013-2017).

Table (6.5) shows this. Other private hospitals in Al-Hillah city for all age groups have reached (4446), and Al-Hayat Hospital ranked second as it reached (4041) from the number of patients reviewing in different age groups for the year 2016, while the third place was represented by Babil Hospital as it reached (3934) from the number of patients reviewing in different age groups for the year 2016, and Al Salam Hospital ranked fourth as it reached (2725) patient. In (2017) Al-Hayat Hospital ranked first in the number of patients referred to it in different age groups, as it reached (4502) patients, while Al-Fayha Hospital ranked second, reaching (4216), as Al-Salam Hospital ranked third with (3865) The number of patients referred to it in different age groups, the fourth rank was represented by Babil Hospital (2980) patients, and Taiba Hospital ranked fifth, reaching (672) of the number of patients referred to it in different age groups. . The reason for this is due to many things, including the diversity of specialties within each hospital and the extent of the availability of comfort and modern medical devices, etc., as well as the increase in the number of private hospitals to five hospitals after it was by three hospitals for the year (2013, 2014, 2015). Al-Ahlia Hospitals for the preparation of patients for the years (2016-2017) indicated that there were different medical specialties, so the first age group was (less than a year -14) years of (14.4) .In Al-Salam Hospital, which is in the first rank, and the second age group (15-64) years in Al-Fayhaa by (86%) years, and the third category of 65 years and over, it was in Al-Faiha Hospital by (8%). Hospital (Al-Hayat, Al-Fayhaa, Babel, Al-Salam, and Tiba) for the years 2016-2017.

It is noticed from Table (6) that the age groups varied in their proportions, the first category recorded the highest percentage in Tiba (22%), the second group (15-64) years old recorded the highest percentage in Al Salam Hospital (83.8%) and the third group the highest rate recorded in Tiba at a rate (8%) for the category 65 and over.

Table (6)

The numerical and relative distribution (for age groups) of the patients referred to the private hospitals of Al-Hillah for the year 2016

Age group	Al-Hayat H.		Al-Fayha H.		Babel H.		Al Salam H.	
	No. of patients	percentage	No. of patients	percentage	No. of patients	percentage	No. of patients	percentage
Less than 14	436	10.9	508	11.4	443	11.2	393	14.4
15-64	3282	81.1	3844	86.4	3364	84.4	2127	78
65-69	323	8	49	2.2	127	4.4	205	7.6
Total	4041	%100	4446	%100	3934	%100	2725	%100

Source: The researchers rely on the Ministry of Health, Babil Health headquarter, Health and Life Statistics section, Manpower, Unpublished data, (2013-2017).

Table (7)

The numerical and relative distribution (for age groups) of the patients referred to the private hospitals of Al-Hillah for the year 2017

Age group	Al Hayat		AlFayaha		Babel		Asalam		Tiba	
	Patient No.	Per.	Patient No.	Per.	Patient No.	Per.	Patient No.	Per.	Patient No.	Per.
Less than 14	585	12.9	575	2201	517	2207	515	12.8	148	22
15-64	3818	84.8	3414	80.9	2261	75.9	3241	83.8	471	70
65-69 & over	102	2.3	328	7.8	222	7.4	130	3.4	53	8
total	4502	%100	4216	%100	2980	100	3865	100	672	100

Source: The researchers rely on the Ministry of Health, Babil Health headquarter, Health and Life Statistics section, Manpower, Unpublished data, (2013-2017).

Reasons of cases admitted to private hospitals for 2017

Studying the cases and analyzing them according to the causes leading to them is one of the important topics that have attracted the attention of demographers and geographers for their primary role in identifying the precise impact of each case on patients, showing the extent of the impact of different diseases on the population, and identifying the risks of death among members of the community with different ages, diseases, or accidents causing death (13) (MacLeod, 2013). Diseases that affect the population differ between countries. There has been a clear shift in the types of diseases and causes of death. After whether the communicable and endemic diseases prevail and affect health, it has been replaced by degenerative diseases in many countries. The statistical study of the causes of disease cases is very useful in revealing the facts about a great impediment to human activity, a hindrance to production, a waste of a lot of money and effort, namely diseases (14) (Ojah et al., 2019). In its timeframe, the main categories of diseases mentioned in the International Classification of Diseases (Tenth Revision) (15) were relied on (Qtiashat et al., 2018). It is evident through the analysis of the data of Table (8) and Appendix (1) that the causes of sicknesses of hospitalized patients Eligibility according to diseases varied in terms of relative importance. Single cesarean deliveries and thyroid disorders took the first rank. Diseases mentioned in the same table for admitted patients in private hospitals took fewer numbers in some private hospitals and others took more numbers.

Table (8)

Causes of admitted patients in private hospitals in Hilla for the year (2017).

Cases	Hospitals				
	Al Hayat H.	Al.Fayha.H	Babel .H	Al-Salam .H	Tiba.H
Tumor	2	1	57	1	1
Thyroid Disorders	250	137	124	59	70
Tonsillitis	210	257	167	187	42
Sinusitis	96	58	64	42	2
زائدة لحمية	50	49	31	53	33
Boil abscess	17	16	11	44	1
	210	101	189	99	22
Appendicitis					
Chronic appendicitis	75	52	33	28	35
Inguinal hernia	151	103	262	108	2
Umbilical hernia	105	36	66	57	5
mushroom	54	61	37	40	1
Abscess in the anal and ovarian areas	40	1	1	1	1
Cholelithiasis	460	63	308	262	38
Other digestive disorders	50	10	0	20	38
Boil abscess	6	7	1	48	0

Vesicular bags of the skin	22	55	0	28	0
Breast enlargemen	97	120	98	139	1
Inflammatory disease of the uterus	93	55	41	26	4
Missing abortion	94	138	102	121	0
A single caesarean delivery	1475	1827	1052	1684	231
Undescended testicle	37	18	33	25	3
Congenital malformations of the nose	61	78	12	31	0

Source: Researchers relying on: - Ministry of Health, Babil Health headquarter, Health and Life Statistics Division, Manpower, Unpublished data, (2013-2017).

The efficiency of private hospitals in Hilla for 2018

The concept of efficiency for health service is one of the oldest concepts used to evaluate the performance of a social unit (Shafi et al., 2018).

The linguistic interpretation of efficiency as stated in the Webster's Dictionary means the accomplishment of some work with little or little wasted efforts ((i.e., efficiency means the ratio of energy used from the dynamic system to the energy available to it during the work cycle)).

That is, the efficiency ratio shows how much energy is invested in all forms needed for each unit of output (Abawi, 2018). The costs also include furniture, amenities, aesthetic elements, etc. They acquire a large percentage of Private Hospital costs. They are important components of their quest drawing on that element as well as on Medical Specialist (18) (Al Hilfi et al., 2013).

Indicators for measuring the efficiency of private hospitals in Hilla for 2018

A study of the conditions of the private health service provided by Private Hospital alone cannot be adopted to measure the efficiency of private hospitals unless other indicators are used for measurement. Therefore, the measurement of the efficiency of the service of private hospitals can be done by calculating the actual use of workers in private hospitals, doctors, workers of health professions, the number of beds for each doctor, and the patients reviewed and comparing them with international standards. The existence of private hospitals has to do with the availability of conditions that allow a doctor or a group of doctors, or a partnership between medical professionals with money owners, and the establishment of the project, which requires several things, including the appropriate price and environment, according to specific controls from the Ministry of Health.

Standards for measuring the efficiency of private hospitals in Hilla for 2018

The criteria by which the efficiency of private hospitals is measured include several elements as follows:

The ratio between the number of admitted patients and the number of doctors.

It is clear from the analysis of table (9) that the general average of private hospitals is that there is a doctor for each 387 patients for 2018. The general average is variant. The highest rate is in Babil Hospital; a doctor for each 1257 patients. The lowest rate is in Fayhaa Hospital; a doctor for each 149 patients. One of the reasons for this discrepancy is the differences in the number of incoming patients in each hospital affected by geographical, economic, and social matters ... etc., such as the dimension and the different service nature in each hospital that is positively or negatively reflected on services in general in the region. The difference in wages also affects the number of patients in hospitals. It also affects the attraction of patients. The relationship between a doctor or health professionals and patients inside private hospitals increases their reassurance and increases the care (19) (Al-Obaidy et al., 2016). The global standard adopted by the World Health Organization is a doctor for each 20 inpatients. Thus, it is above the global average.

Table (9)

number of admitted patients, doctors and the average for Hilla city 2018.

Hospital name	Admitted patients No.	Doctors No.	Average of patient to each doctor
Al-Hayat	1048	4	262
Al-Fayha	893	6	149
Al-Salam	2832	7	406
Tiba	2492	4	623
Babel	1257	1	1257
Average	8522	22	387

Researchers, based on data from Babil Health Directorate, Non-Governmental Institutions Division, 2018, unpublished data.

Average number of beds per doctor.

The increase in the rate indicates an increase in the number of beds allocated to one doctor, which has a negative impact on the quality of service provided to inpatients. The reason for this is that the average time spent in examination, diagnosis, and treatment in this case will be less than what is the case when this rate decreases (20) (Antoniou, 2010.).

The standard adopted by the World Health Organization reached 5-6 beds per doctor. Comparing it with the general rate for the same standard in private hospitals shows that it reached 1.8 representing less than half the global average.

Table (10)

the number of beds and doctors in private hospitals in Hilla city and the average number of beds for each doctor in 2018

Municipality unit	Beds No.	Total No. of doctors	Average of beds to doctor	No. to doctor
Al-Hayat	20	4	5	
Alfayha	20	6	3	
Al-Salam	70	7	10	
Tiba	50	4	13	
Babel	20	1	20	
Average	180	22	8	

Source: Researchers, based on data from Babil Health Directorate, Non-Governmental Institutions Division, 2018, unpublished data

Average number of people with health professions compared to those with medical professions.

The rate of health professionals per doctor is one of the indicators and that any breach in this structure will necessarily negatively affect the efficiency of its use. Thus, the efficiency of the performance of Private Hospital in general is part of the health sector (21) (Brandon, 1970).

It is evident from the analysis of table (11) that there is a variation in the average rates among private hospitals. It rises in Babil Hospital to reach (1: 14) and decreases in Al Salam Hospital (1: 1.6) of those with health professions. The standard adopted by the World Health Organization amounts to 3-4/1 health professions per doctor. Comparing it with the general average for the same standard in private hospitals shows that it has reached half the standard approved by the World Health Organization.

The index of the number of inpatients to the number of health professions.

It is evident from the analysis of table (12) that the general average reached (125) patients per each health professional. There is a variation between hospitals. The highest rate is in Al-Salam Hospital; 257 patients per each health professional. The lowest rate is in Al-Fayhaa Hospital; (56) patients per each health professional.

Table (11)

The number of beds and health professionals and the rate of health professionals to the number of beds in private hospitals in Hilla for 2018.

Hospital name	Beds No.	Health No.	Profession	Average of Health profession No.to beds No.
Al-Hayat	20	16		4
Al-Fayha	20	16		2,7
Al-Salam	70	11		1.6
Tiba	50	22		6
Babel	20	14		14
Average	180	68		3

This difference is due to the difference in the private and governmental health institutions, which leads to a difference in their absorption of patients. The governmental hospital receives more patients and more health staff, including graduates of medical institutes and medical faculties in governmental institutions. This difference is due to several things, including the difference in the employability of Health professionals in private hospitals because of the differences in the financial returns for each of them, the direct indication of the quality of the salaries received, as well as the difference in specialization that affects the number of patients, the reputation of the doctor, the factor of proximity and distance from population densities etc. The standard adopted by the World Health Organization reached 6/ patients to health professionals. Comparing it with the general average for the same standard in private hospitals shows that it reached (125) patients per each health professional, which is a much greater number than the global average.

The index of the number of beds to the number of health professionals.

Table (13) shows that the total rate of the number of beds to the number of health professionals in Hilla Hospitals for (Cerviño et al., 2008) reached (2.2) beds per each health professional, which is less than the international standard. The number of health professionals varies. In Al-Salam Hospital, it is (1/6) per each health professional. The lowest rate is in Al-Fayha Hospital; (1,2) per each health professional.

Table (12)

The number of inpatients, the number of health professionals, and the average number of inpatients with health professions in private hospitals in Hilla for 2018.

Hospital name	Admitted patients No.	Health profession No.	Average of admitted patients Health profession NO.
Al-Hayat	1048	16	66
Al-Fayha	893	16	56
Al-Salam	2832	11	256
Tiba	2492	22	113
Babel	1257	14	90
Average	8522	68	125

Source: Researchers, based on data from Babil Health Directorate, Non-Governmental Institutions Division, 2018, unpublished data.

Table (13):

Number of beds and health professionals and the rate of health professionals to the number of beds in private hospitals in Hilla for 2018.

Municipality name	unit	Beds No.	Health professions No.	Average of Health profession NO. To beds No.
Alhayat		20	16	1.2
Al-Fayha		20	16	1,2
Al-Salam		70	11	6
Tiba		50	22	2,2
Babel		20	14	1,4
Average		180	68	2.6

Source: Researchers, based on data from Babil Health Directorate, Non-Governmental Institutions Division, 2018, unpublished data.

This discrepancy is due to many reasons, including the general income of the hospital, on which the spending budget is determined. Part of that income is given as salaries to health professionals. The hospital administration employs a small or appropriate number of them. The standard adopted by the World Health Organization has reached 1/3 beds / health professional. Comparing it with the general average for the same standard in private hospitals shows that it reached less than the average in the international standard (22) (Cueto, 2004).

Conclusions

1. The distribution of hospitals varies in the city quarters. There are (2) hospitals in Al-Firdaws quarter, (2) hospitals in Al-Zuhoor quarter, and (1) hospital in Al-Fayhaa. In Al-Salam quarter, there is no hospital. The number of doctors reached (22); (387) patients per each doctor.
2. The number of beds reached (180) beds. The highest number is in Al-Salam Hospital. Al-Faiha Hospital and Babel Al-Fayhaa contain (20) beds each; 387 patients per doctor, which is much higher than the international standard of (20) patients per doctor.
3. The numerical and relative variation of patients and the number of health professionals is (68); 3: per doctor, which is less than the 9 standard for each doctor.

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