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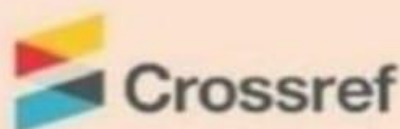


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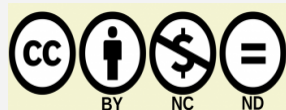
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Evaluating the Government Hospitals' Efficiency and Their Impact on Human Development in Iraq

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Abstract:

Actually, hospitals are considered most important and prominent healthcare institutions providing healthcare services. They are the cornerstone upon which a city relies to obtain these services, as they care for people's health and psychological well-being, enabling them to perform their duties effectively. They also provide all medical and consulting specialties. Given their importance, they are located in an urban area that is a convenient location to ensure accessibility for residents, as well as ensuring access to all their treatment and hospitalization needs.

The current study aims to examine the reality of healthcare services in terms of number and geographical distribution, achieving balanced growth between the number of government hospitals and healthcare personnel on the one hand, and the quality of healthcare services on the other. It also aims to achieve human and health development to meet the community's needs for health services, both quantitatively and qualitatively. The study has found that the highest percentage of government hospitals was concentrated in the Iraqi capital (Baghdad), with (35) hospitals, including (9,297) doctors with various specialties. This was in addition to the unfair distribution of government hospitals among the Iraqi governorates, with Muthanna and Kirkuk governorates recording the lowest number of government hospitals.

Keywords: Operational Efficiency ,Government Hospitals ,Human Development , Iraq ,Performance Evaluation

Introduction:

The supply of health services through government hospitals is deemed one of the most prominent services provided by states to their citizens, as they meet a basic need for treatment and prevention of various diseases. Their importance lies in the facilities provided by health institutions to their clients within the scope of their services and at symbolic prices. These institutions are supported by the state, which entrusts them with the task of opening and establishing them in a location within their geographical area, according to specifications and standards set by Ministry of Health.

Studying the reality of government hospitals and the health services provided therein has become essential in geography, and it is of a social nature. Among the health services provided in these hospitals, which have developed in recent years, are urban geography.

Study Problem: The study problem can be summarized in the following questions:

1. Has the inefficiency of health services provided in government hospitals hindered health progress?
2. Has the lack of justice and equality in the distribution of hospitals across Iraqi governorates reflected in the deterioration of health services provided and their inability to accommodate patients?
3. Is there a correlation between the number of government hospitals and the population size in each of the Iraqi governorates under study?

Study Hypothesis: The research hypothesis can be summarized by answering the aforementioned questions, the validity of which we seek to verify:

1. The inefficiency of health services provided in government hospitals has led to a lack of health progress.
2. The deterioration of health services provided in government hospitals is a result of the inequality in the geographical distribution of these hospitals across Iraqi governorates.
3. The number of government hospitals in Iraqi governorates is not consistent with their population size.

Study Objectives:

1. To improve the efficiency of health services provided to the population to achieve health progress, enhance economic growth, and identify the most important factors contributing to health development.
- 2- Identify the quality of health services provided in government hospitals and the extent to which they focus on essential aspects rather than formal and superficial aspects of health service provision.
- 3- Examine the reality of health services in terms of number and geographical distribution, and analyze the most significant economic and social problems resulting from the poor level of public health.
- 4- Achieve balanced growth in health services, including the number of government hospitals, health personnel, and the quality of health services provided in these hospitals.
- 5- Improve human development and health development indicators to meet the community's needs for health services, both quantitatively and qualitatively.

Study Methodology:

- 1- The descriptive and analytical approach: This approach aims to describe and analyze the phenomenon and investigate its causes. This approach involves desk research and reviewing books, periodicals, and reports relevant to the study topic.
- 2- The regional approach: This approach involves studying a geographical area with its natural and human characteristics and highlighting the spatial relationship of the study topic (Iraqi governorates).
- 3- Thematic approach: This approach focuses on studying the distribution of government hospitals across Iraqi governorates, making the most of this geographical population distribution, and assessing the efficiency of health services provided in government hospitals.

Study Methods:

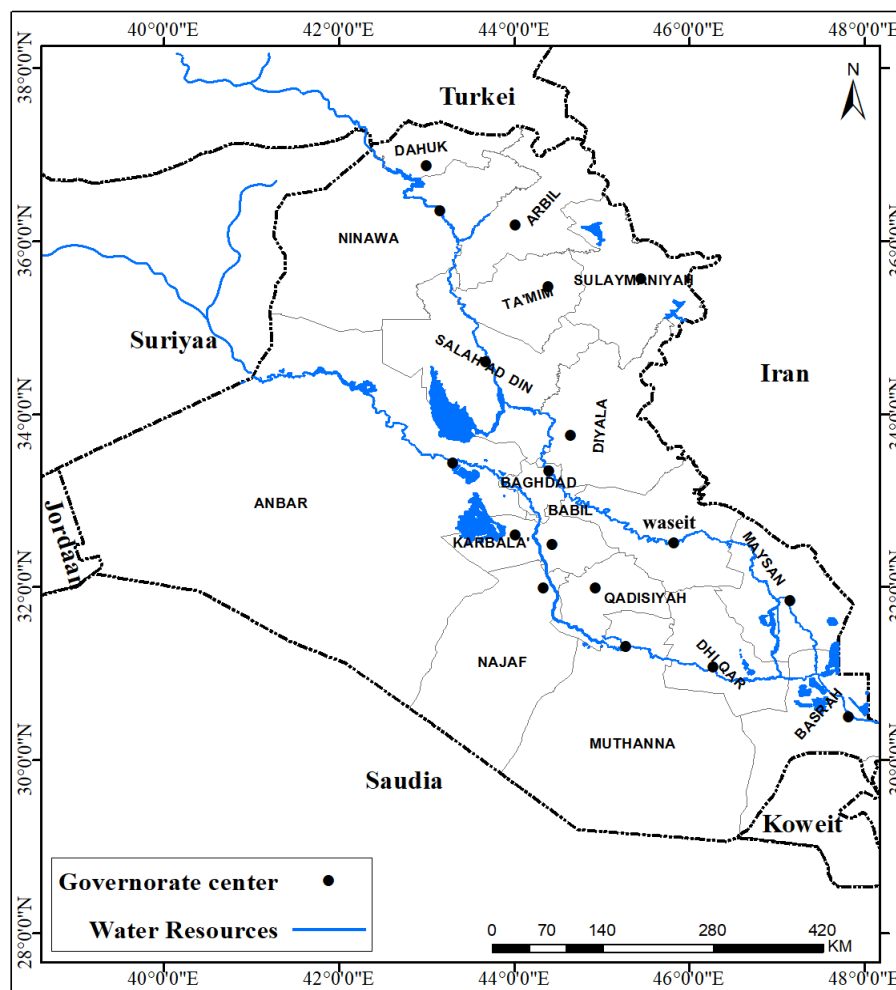
- 1- The statistical approach: Quantitative and statistical methods are used to process data by arranging, classifying, and tabulating it statistically according to statistical indicators. This stage concludes with the analysis and correlation process.

2- The cartographic approach: This involves presenting a set of maps and graphs, and representing and distributing data on maps relevant to the study topic.

First: The geographical importance of Iraq's location:

Geographical assets are among the most important factors influencing the provision of public services. Natural assets alone are insignificant if humans do not develop and invest in them optimally. Humans also play a role in integrating natural and human assets together (Girgis et al., 2021). A state's greatness and political power depend on its geographical location and material resources, as well as the characteristics and skills of its population. A state with limited resources is geographically unfavorable and cannot reach and maintain its peak (Roor Bach, 2022,). Natural and human geographical obstacles are a basic element in current and future development plans in any city in the world, and thus their impact appears in all areas of economic activities (Al-Hadithah, 2006,). Iraq is located in the southwest of the Asian continent between latitudes 2, 27, and 39 north, and between longitudes 39, 38, 36, and 48 east, and the latitudes occupy an extension of about 925 km between north and south.

(Map No. (1) Iraq's astronomical location)



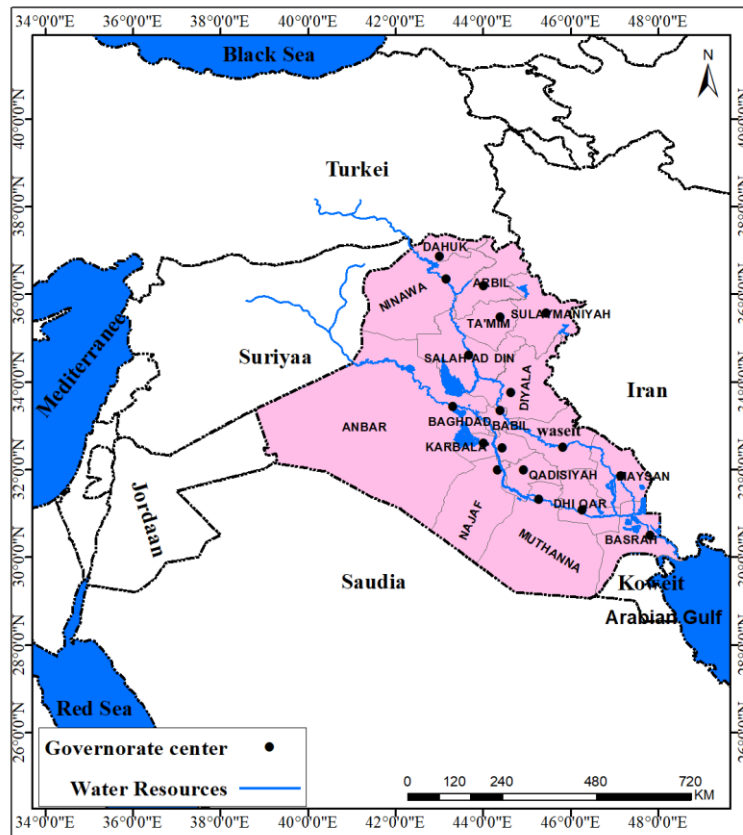
Source: Researcher, based on an administrative map of Iraq at a scale of 1:100,000.

The horizontal extension along the east-west longitude lines is approximately 950 km, meaning the horizontal and vertical extensions are convergent (Al-Haiti, 2023,) (See Map No. 1). The effects of Iraq's geographical location are highlighted through:

1. The effect of Iraq's location relative to the latitude on the amount of solar radiation reaching the Earth's surface through its control over the length of the theoretical day and the angles of solar incidence. The theoretical length of the day increases during the summer months due to the sun's rays falling at angles close to the vertical (Al-Maliki, 2013,).
2. Iraq is located in the western part of the Asian continent within the Middle East region, occupying the northeastern part of the Arab world. It is surrounded by five countries: Republic of Iran to the east, Turkey to the north, the Syrian Republic and the Hashemite Kingdom of Jordan to the west, and the southwest and south. It is bordered by the Kingdom of Saudi Arabia, Kuwait, and the Arabian Gulf (Al-Hassani, 2020,) (Map No. 2)
3. Iraq overlooks one body of water (the Arabian Gulf) from the far southeast on one side and four bodies of water in its territorial waters on the other. Other bodies of water are bordered by the Mediterranean Sea to the west and northeast, and surrounded by the Caspian Sea. To the south and west, it is surrounded by the Red Sea. The importance of both the Black Sea and the Caspian Sea is negligible due to their distance from Iraq and the interruption of their influence due to the mountains that act as barriers preventing their influence. The Red Sea, however, has no influence due to the interruption of its influence due to the desert barrier on the one hand and the movement of winds, which are either north or south, on the other.
4. Iraq's location is of great importance due to its direct relationship to the organization of the economic life of the population (Al-Aqar, 1969,). Given the significant economic importance of the city's location, urban, economic, and social studies have focused more on location than on the limited area of land on which the city is established, where it grows and develops (Smailes, 1953,). This can be observed from the perspectives of Ibn Khaldun, von Thönsch, Christaler, and others through the theories that addressed this aspect (HOHNSON, 1973,).
5. Air masses influence Iraq's climatic characteristics, defined as "a large portion of the air that is homogeneous in terms of temperature and humidity characteristics and maintains these characteristics when moving" (NIZAMUDDIN, KHAN, 2001,).
6. The impact of location is evident in the role it plays in attracting large numbers of people to settle and engage in various economic activities. This has been reflected in the emergence of some of the problems that the city suffers from, especially the health aspect, which is the subject matter of study (HARTSHORN, 1979,).
7. Iraq is located in a region with varying elevations from north to south, which has led to significant variations in rainfall, humidity, and evaporation values, as well as variations in atmospheric pressure levels (Al-Hassani, 2020,) (See Map No. 3).
8. Iraq's climate is affected by the air masses formed over Asia during the summer and winter. Its lands extend from east to west at a distance of 8 degrees of latitude. This has resulted in high temperatures for more than 6 months of the year due to its proximity to the Tropic and the equator. The far south of Iraq is (6) degrees away from the Tropic of Cancer, while the far north of Iraq is (14) degrees away from the Tropic of Cancer. As for the distance from the equator, the far south of Iraq is (29)

degrees away, while the far north is (37.5) degrees away. Iraq's distance from the Arctic Circle is (29) degrees of latitude, while its southernmost part is (37) degrees of latitude (Al-Dazbi, 2013,).

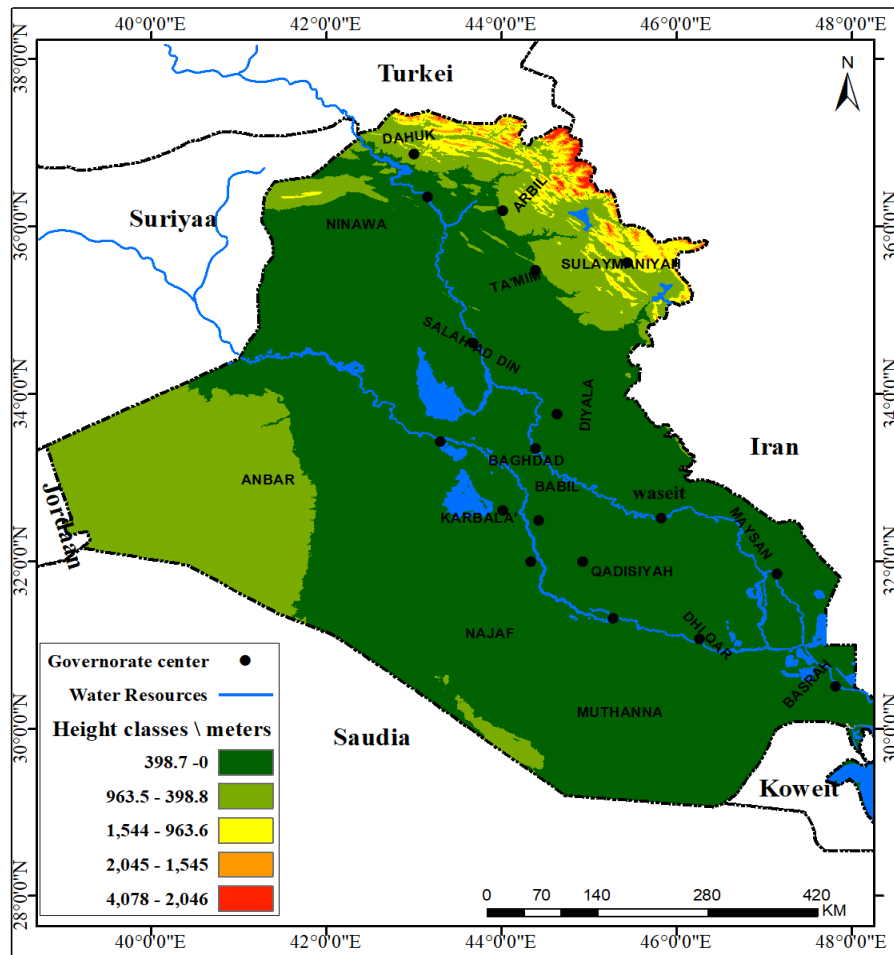
(Map No. (2) Iraq's location on land and water)



Source: Researcher based on a map of Iraq at a scale of 1:100,000

9. Iraq shares borders with six countries (Kuwait, Saudi Arabia, Jordan, Syria, Turkey, and Iran) and has a small sea border crossing (the Arabian Gulf). Iraq is approximately twice the size of Doha (Malinowski, 2013,).
10. Iraq's climate is characterized by the presence of three types of climates, depending on the different terrain that prevails. The first is characterized by being rainy and not dry in the northern regions and is called the Mediterranean climate. The semi-arid climate is the middle link between the dry desert climate and the humid Mediterranean climate and prevails in the central regions. The third is the dry desert climate, which includes the southern and western regions (Mahdi, 2016,).
11. A feeling of comfort usually stems from avoiding high temperatures and humidity, as well as gentle winds that contribute to this. Conversely, a feeling of discomfort stems from high temperatures and humidity, as our bodies heat the air molecules around us. Furthermore, the wind blows and pushes the layer of air in contact with the skin away from the body, and the faster its speed increases, the more quickly the heat is transported away (Derived Variables in Davis Weather Products).
12. Much of the Middle and southern of the country is also cudgeled by soaring temperatures in summer, so they also fall in the hot desert type of climate. Winter is mild and there is a big day-to-night temperature range. This is due to detachment of the region from the sea influences (Al-Khafaji, 2010).

Map No(3)



Source: Researcher based on a digital elevation model (DEM) with a resolution of 30 meters.

Second: The numerical, relative, and qualitative distribution of Iraq's population.

It is well-known that populations are not evenly distributed across the Earth's surface, nor even regionally, no matter how small the region. This is because the presence or absence of populations in an area, and their high or low density, are controlled by several factors that interact in a complex manner (Al-Khafaf, 2007.). As Professor John Claddagh emphasizes, we cannot rely on the viewpoint of those who advocate geographical determinism as the basis for population distribution. Natural factors alone are incapable of explaining this distribution wherever they occur, because humans, everywhere, exercise a degree of control and supervision over the location and manner of their distribution. This is because many social, demographic, economic, political, and historical factors must be taken into account as intertwined factors to establish this distribution (Clark, 1972.).

Awareness of the general picture of population distribution, and thus the extent of their density, is one of the important issues. It has a direct relationship with the quality of life that people seek to achieve in light of the resources available to them, and thus the extent of its effectiveness in pushing or limiting a better future (Abu Luqma, 1993.).

Currently, the geographer or demographer is no longer the only one interested in this cognitive aspect, but rather official bodies have also become in need of knowing the population distribution due to its major role in developing plans and programs and its importance in determining the success of these plans and programs in achieving the goals for which they were established. (Sahouna, 2003,).

The current numerical distribution of the population represents the connection between the population and the resources available in each region, given that these resources are divided in a form of change in quantity and quality. Therefore, do not expect the numerical distribution of the world's population to take the same current form after (50) or (100) years to come. (Al-Khafaf, 2007,). The phenomenon of uneven population distribution is an extremely complex issue, which has made geography lack a general theory to explain the heterogeneous distribution of the world's population. It is not possible to rely on a natural factor in isolation from other factors to understand population distribution or density. Factors are diverse and their effects vary, but they form a group that is deeply intertwined such that the single highest factor does not change with the change of other factors (Labib, 2004,). The relative distribution of the population in each continent of the world's population and according to each category that represents the total world population (Al-Khafaf, 2007,) is useful. We note from Table No. (1) and Map No. (4) that the relative and qualitative distribution of Iraq's population varies among the Iraqi governorates. In 2020, the highest population percentage was in Baghdad Governorate, amounting to % (24.7). It was followed in second place by Nineveh Governorate, with a percentage of %(11.3).

The third place was occupied by Basra Governorate with a percentage of %(9). As for the governorates with the lowest percentage of population, Muthanna Governorate came with a percentage of %(2.3). It was followed in second place by Maysan Governorate with a percentage of %(3.4), and in third place by Karbala Governorate with a percentage of %(3.7). When studying the population of any country or region in the world, it is necessary to know the number of males and females therein , and the extent of the difference between them, because the numerical differences between them have effects on the type of economic and social problems, on the labor force, and on the rates of births, deaths, and marriage. It has been scientifically proven after an extensive study of different societies in the continents of the world that (105) or (106) males are born for every (100) females, and any difference from this rate is due to other reasons, migration from one place to another, or wars that break out in certain areas (Al-Khafaf, 2007,).

In general, the factors affecting the balance or imbalance of the sizes of each of the sexes vary, and migration explains the differences. The main migration pattern is between regions. Whether temporary or long-term, migration involves men more than women in developing countries due to social factors that prevent women from moving away from the family circle. This is different in developed countries, where women's jobs are provided in urban centers (Labib, 2004,).

The importance of gender composition can be explained by (Smit, 2009,):

1. Whether an individual is male or female determines their needs and is consistent with their economic and social activity.
2. They have a direct impact on births, deaths, marriage, and migration.

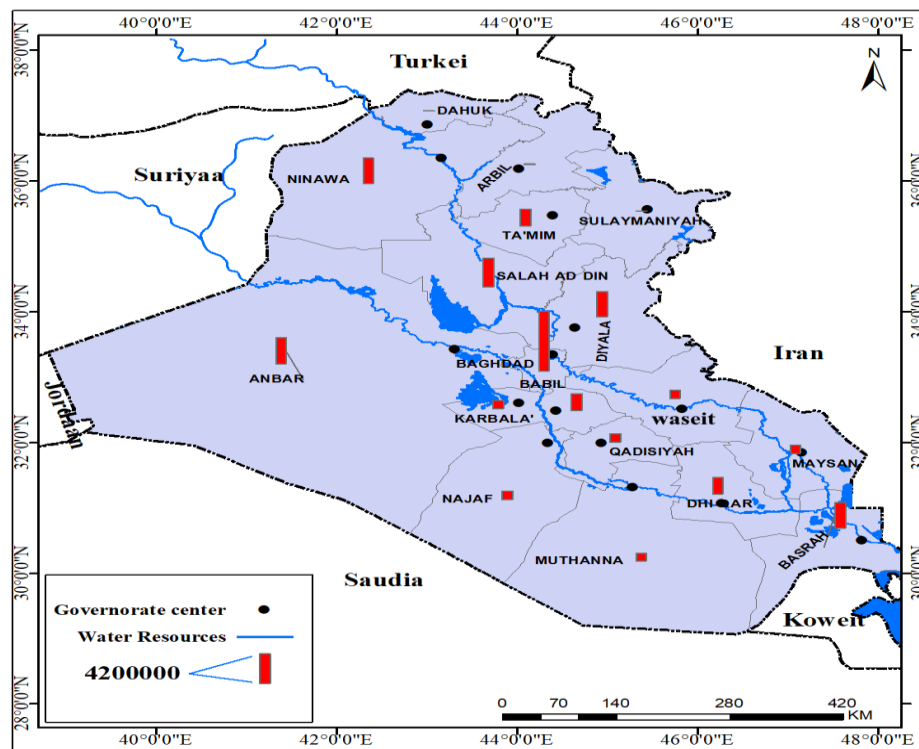
(Table No. (1) The numerical distribution of the Iraqi population by gender in the Iraqi governorates for the year 2020.)

Governorate	Number of males		Number of Female		Total	Structure %
	Number	%	Number	%		
Nineveh	1872638	48,9	1955559	51,1	3828197	11,3
Kirkuk	814404	47,7	825549	50,3	1639953	5
Diyala	831508	49,5	848820	50,5	1680328	5
Anbar	884174	48,6	934144	51,4	1818318	5,4
Baghdad	4108515	49,3	4232196	50,7	8340711	24,7
Babylon	1048506	49,5	1070897	50,5	2119403	6,3
Karbala	619831	49,6	630975	50,4	1250806	7,3
Wasit	700676	49,5	714358	50,4	1415034	4,2
Salah al-Din	810207	49,5	827025	50,5	1637232	4,8
Najaf	753091	49,9	757247	50,1	1510338	4,5
Qadisiyah	657196	49,6	667835	50,4	1325031	4
Muthanna	415805	49,7	419992	50,3	835797	2,3
Dhi Qar	1071016	49,8	1079322	49,8	2150338	69,4
Maysan	573063	50,2	568903	50,2	1141966	3,4
Basra	1485476	49,8	1499597	50,2	2985073	9
Total	16646106	49,5	17032419	50,5	33678525	100

Source: Researcher's own work based on: Republic of Iraq, Ministry of Planning and Development Cooperation, Central Statistical Organization and Information Technology, Iraq Population Estimates 2020.

Table (1) shows a higher proportion of males than females in all Iraqi governorates, with the exception of Maysan Governorate, where the proportion of males reached (50.5%) compared to (49.5%) for females in 2020.

(Map No. (4) Numerical distribution of the population of Iraq)



Source: Researcher based on Table No. 1.

Third: The Geographical Distribution of Government Hospitals in Iraq

Hospitals represent the most important and prominent healthcare institutions that provide healthcare services. They are the cornerstone upon which cities rely to obtain these services (Katea, 2017,). They care for people from a health and psychological perspective, enabling them to perform their duties effectively (PASTEUR, 2007). They also provide all medical and advisory specialties and all types of treatments. Given their importance, they are located in an urban area that is a convenient location, ensuring access for residents, as well as ensuring that all medical and hospitalization requirements are met (Al-Hiti, 2013).

Government hospitals have witnessed a relative quantitative development in their various institutions and medical staff in recent years. However, the number of hospitals in Iraq is progressing at a slower pace than the growing population. Despite the increase in medical staff in government hospitals in Iraq, this does not reflect actual health problems, and is also quantitatively insufficient. Furthermore, the level of performance and quality of service remain below the desired level. Furthermore, many rural areas in Iraqi governorates lack government hospitals.

The city is a purely social phenomenon and a case of interaction between human communities, created by humans to meet their economic, political, and social activities. Cultural factors have played an important role in the emergence and formation of cities, as cities have grown thanks to the cultural accumulations that humans have worked to create, thereby creating these cities (Al-Tayf, 2017,).

There are four official objectives that express the services that government hospitals seek to provide, as follows (Al-Asadi, 2018):

1. Achieving comprehensive and quality care for patients.
2. Providing healthcare to the local community served by the hospital.
- 3- Working to develop and improve healthcare services in hospitals.
- 4- Facilitating education in medical and nursing colleges and institutes and encouraging health research beneficial to community health.

From Table No. (2), it appears that hospitals (general/educational hospital) were clearly concentrated in Baghdad, on both sides of Karkh and Rusafa, where they occupied the first place in terms of number, amounting to (17) hospitals, with a percentage of %(15) of the general hospitals in Iraq, and they were distributed over (8) hospitals on the Karkh side, represented by the Martyr Muhammad Baqir al-Hakim Hospital, Imams al-Kadhimiya Hospital in the city of Kadhimiya, Yarmouk Hospital, Karama Hospital, Furat Hospital (Mansour), Karkh Hospital, Mahmoudiya Hospital, Abu Ghraib Hospital, and Tarmiya Hospital. As for the Rusafa side, the number of hospitals (general/educational) reached (9) hospitals, represented by the Martyr al-Sadr General Hospital, Imam Ali Hospital in Sadr City, al-Numan Hospital in al-Adhamiyah, Ibn al-Khatib Hospital in al-Zafaraniyah, the al-Madaen General Hospital in the Madaen District, al-Zafaraniyah Hospital in the city of al-Zafaraniyah, the Martyr Dari al-Fayyadh Hospital in al-Husayniyah District, Ibn al-Qaf Hospital in Baladiyat District, and Sheikh Zayed Hospital in Rusafa.

Regarding the numerical distribution of specialized government hospitals, Baghdad Governorate ranked highest in terms of the number of hospitals, with a percentage of (35)%, while Nineveh, Babylon, Karbala and Najaf Governorates ranked second with (4) specialized hospitals in each governorate, with a percentage of (10.8)%. As for the governorates with a smaller number of these hospitals, they were distributed among Salah al-Din, Qadisiyah and Maysan Governorates, with (2) hospitals, with a percentage of (5.4)%. The specialized hospitals in Baghdad Governorate are

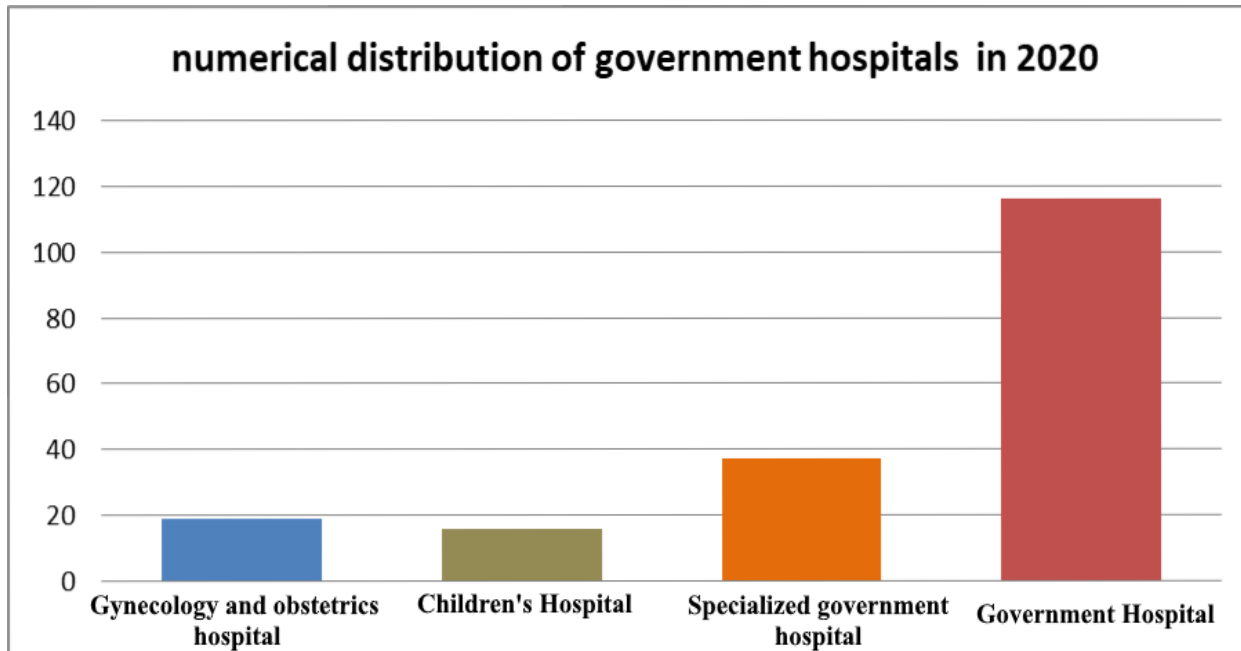
represented by Ibn al-Bitar Hospital on the Karkh side, Al-Alawiya Teaching Hospital, Ibn al-Azhar Hospital, Ibn al-Nafis Hospital, Ibn al-Haytham Hospital, Ibn Rushd Hospital, Al-Rashad Hospital for Psychiatry, Neurosurgery Hospital, Jamal al-Samarrai Hospital, Al-Wasiti Hospital, Dr. Saad al-Watri Hospital, Al-Ata Hospital and Al-Shaab Hospital on the Rusafa side. As for Nineveh Governorate, it was represented by Ibn Saif Hospital, Al-Jumhuriya Hospital, Oncology and Nuclear Medicine Hospital in Mosul. Regarding the numerical distribution of the governorate, Babylon was represented by Marjan Medical City Hospital, Al-Sadiq Hospital, Babylon Center Hospital for Oncology Treatment, and Martyr Majid Center for Digestive System in Hillah. Ain Al-Tamr Hospital, Karbala Specialized Hospital for Heart Diseases, Zainab Al-Kubra Hospital for Eye Diseases, and Karbala Center for Liver and Digestive System Diseases were represented. Najaf Governorate was represented by Martyr Hassan Al-Haimi Hospital for Diseases and Transition, Open Heart Surgery Hospital, Al-Furat Al-Awsat Center for Neurosciences, Kidney Diseases and Transplant Hospital, Al-Furat Al-Awsat Oncology Hospital, Burns Hospital, and Hemodialysis Hospital. From the same table, we find that (5) governorates do not contain specialized hospitals, and they are Kirkuk, Diyala, Anbar, Wasit, and Muthanna. As for the numerical distribution of children's hospitals, Babylon Governorate had the highest number of children's hospitals, with (4) hospitals and %(25) of the total number of hospitals in Iraq, while Nineveh, Anbar, and Baghdad came in second place with (2) hospitals and %(6.2), while Kirkuk, Karbala, Wasit, Qadisiyah, Dhi Qar, and Basra came in third place, with one hospital for children in each governorate. The governorates that lacked hospitals for children were Diyala, Salah al-Din, Najaf, Muthanna, and Maysan. Regarding the numerical distribution of women's and maternity hospitals, Baghdad Governorate ranked first in terms of number with (3) hospitals, while Diyala and Babylon Governorates ranked second with (2) hospitals, while the rest of the governorates had one hospital at a rate of %(5.2). Note that these hospitals also specialize in treating newborn babies.

(Table No. (2)Geographical and numerical distribution of government hospitals in Iraq in 2020)

Governorate	Government Hospital		Specialized Government Hospital		Children's Hospital		Gynecology and Obstetrics Hospital	
	Number	%	Number	%	Number	%	Number	%
Nineveh	11	9,5	4	10,8	2	12,6	1	5,2
Kirkuk	6	5,2			1	6,2	1	5,2
Diyala	8	6,8					2	10,8
Anbar	9	7,7			2	12,6	1	5,2
Baghdad	17	15	13	35	2	12,6	3	16
Babylon	7	6	4	10,8	4	25	21	10,8
Karbala	4	3,4	4	10,8	1	6,2	1	5,2
Wasit	6	5,2			1	6,2	1	5,2
Salah al-Din	9	7,7	2	5,4			1	5,2
Najaf	8	6,8	4	10,8			1	5,2
Qadisiyah	4	3,4	2	5,4	1	6,2	1	5,2
Muthanna	4	3,4					1	5,2
Dhi Qar	6	5,2	1	2,8	1	6,2	1	5,2
Maysan	6	5,2	2	5,4			1	5,2
Basra	11	9,5	1	2,8	1	6,2	1	5,2
Total	116	100	37	100	16	100	19	100

Source: Researcher's work based on: Republic of Iraq, Ministry of Planning and Development Cooperation, Central Statistical Organization and Information Technology, Iraq population estimates for 2020.

Figure No. (1)



Source: Based on Table No. 2

Fourth: Evaluating the Numerical Efficiency of Government Hospitals in Iraq

The process of evaluating efficiency can be conceptualized as a stage of monitoring and planning, as it reveals deviations from objective goals. It is also a stage of planning, serving as a rationalizing tool for making successful decisions that ensure the achievement of objectives (Al-Deeb, 2010, p. 41).

The foundations adopted in service planning are to provide services to all residents equally. This is planned according to population distribution, meaning that efficiency in service provision must be achieved for all residents in a manner consistent with the reality of population distribution (Ghadban, 2022, p. 63). Roberts defines evaluation as the process of constructing a model by considering different methods of work based on the specific merits of each method, and drawing conclusions based on them (Margaret, 1977, p. 125). The importance of performance evaluation can be summarized as follows

1. Humans is seen as One of the main factors of the efficiency of the services of a health system, especially to the degree which the system can do such for their population's necessities. It is seen as rudimentary benchmark to differentiate weaknesses from strengths (Farhan, 2022).
2. The distribution of Health centers is significantly impacted by the characteristic of administrative boundaries based on population approach. The same is true in the distribution of medical specialties to graduates (Al-Kaabi, 2021).

First: Population/Number of Hospitals

This criterion illustrates the discrepancy between population and number of hospitals. Generally, populations increase in developing countries, ranging between 50,000 and 100,000 per hospital, while populations decrease to 60,000 per hospital in developed countries such as Sweden, Norway, Japan, Germany, and Britain (Al-Obaidi, 2013, p. 111).

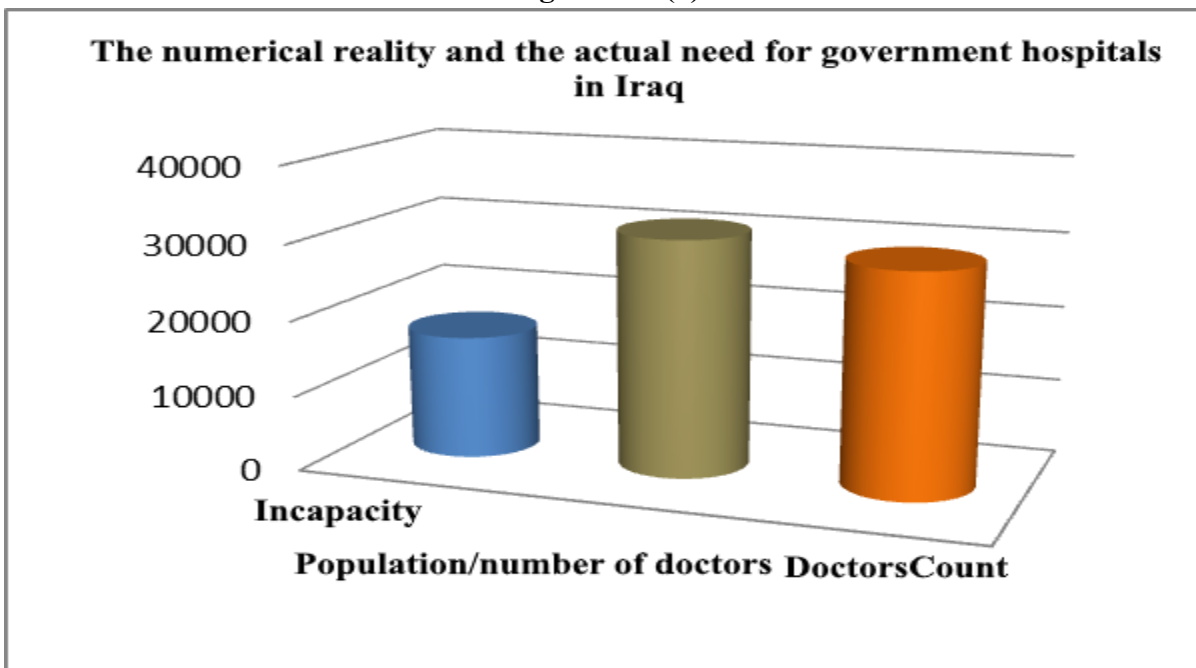
The Iraqi criterion for this indicator set (50) thousand people per hospital. When this criterion is applied to Iraqi governorates, Table (3) reveals a significant deficit in the number of government hospitals across all Iraqi governorates. The total number of hospitals reached (188), and according to the specified planning standard, there is a need for (673) hospitals. Therefore, the Iraqi governorates under study require (485) hospitals. This creates pressure on the actual number of government hospitals, which in turn affects the quality of health services provided to their populations.

Table (3) Numerical reality and actual need for government hospitals in Iraq

Governorate	Numerical Reality	Hospital need	Deficit
Nineveh	18	76	58
Kirkuk	8	32	24
Diyala	10	33	23
Anbar	12	36	24
Baghdad	35	166	131
Babylon	17	42	25
Karbala	10	25	15
Wasit	8	28	20
Salah al-Din	12	32	20
Najaf	13	30	17
Qadisiyah	8	26	18
Muthanna	5	16	11
Dhi Qar	9	43	34
Maysan	9	22	13
Basra	14	59	45
Total	188	673	485

Source: Republic of Iraq, Ministry of Health and Environment, Health Facilities Guide, 2024

Figure No. (2)



Source: Based on Table No. 3

Second: Population/Number of Doctors

The World Health Organization indicates that countries with fewer than 23 doctors per 10,000 people will not be able to achieve adequate health service coverage rates according to the priorities of the Millennium Development Goals (Kittan, 2003, p. 122).

In Iraq, the Ministry of Health set the standard of (1,000 people/doctor). When compared with the reality shown in Table No. (4), we find that Muthanna Governorate was the only Iraqi governorate that topped the list in terms of its lack of need for doctors. The remaining governorates had a population increase above the planned Iraqi standard.

Table No. (4) Numerical reality and actual need for doctors in Iraqi government hospitals

Governorate	Number of doctors	Population \ number of doctors	Deficit
Nineveh	974	3930	2930
Kirkuk	504	1639	639
Diyala	553	1680	680
Anbar	798	1818	818
Baghdad	5091	8340	7340
Babylon	1062	2119	1119
Karbala	592	1250	250
Wasit	388	1415	415
Salah al-Din	385	1637	637
Najaf	781	1510	510
Qadisiyah	384	1325	325
Muthanna	213	835	Need not
Dhi Qar	408	2150	1150
Maysan	115	1141	141
Basra	548		1985
Total	12796	33774	18939

Source: Ministry of Health, Planning Department, Health and Life Statistics Division, unpublished data, 2024.

Third: Number of Dentists Per Pollution

The ministry of health has set the slandered ratio for equipping one dentist per every 10,000 people. Table no. 5 shows the number of dentists in relation to the population in each governorates suffer from the table that some governorates suffer from a clear shortage in the number of dentists, which highlights the need for health planning in these areas to provide dentists in various specialization.

It becomes evident from the table that there is a noticeable disparity in dentist distribution across the governorates. While some areas enjoy a surplus of dental professionals, others face a clear shortage. These findings emphasize the need for more effective health planning strategies to ensure equitable access to dental care across the country, especially in underserved regions.

Table(5) Distributions and estimated need of dentists in government hospitals across Iraqi governorates

Governorate	No. of Dentists	population	Dentists needed	shortage
Baghdad	3,740	7,429,370	743	+2,997
Kirkuk	439	1,398,934	140	+299
Anbar	394	1,872,219	187	+207
Nineveh	474	3,836,807	384	+90
Diyala	220	1,818,188	182	+38
Babil	414	2,119,727	212	+202
Karbala	250	1,250,100	125	+125
Wasit	415	1,451,684	145	+270
Salah al-din	377	1,371,719	137	+240
Najaf	412	1,833,557	183	+229
Qadisiyyah	225	1,354,191	135	+90
Muthanna	114	835,888	84	+30
Dhi Qar	403	2,948,506	205	+198
Maysan	188	1,149,446	115	+73
Basrah	548	3,185,609	319	+229
Total	8,644	39,237,944	3,924	+4,729

*Based on the standard of one dentist per 10,000 residents.

Source: Ministry of Health, Department of Planning-Health Statistics and Information Division, Unpublished Data, 2024.

Fourth: Population / Number of Pharmacists

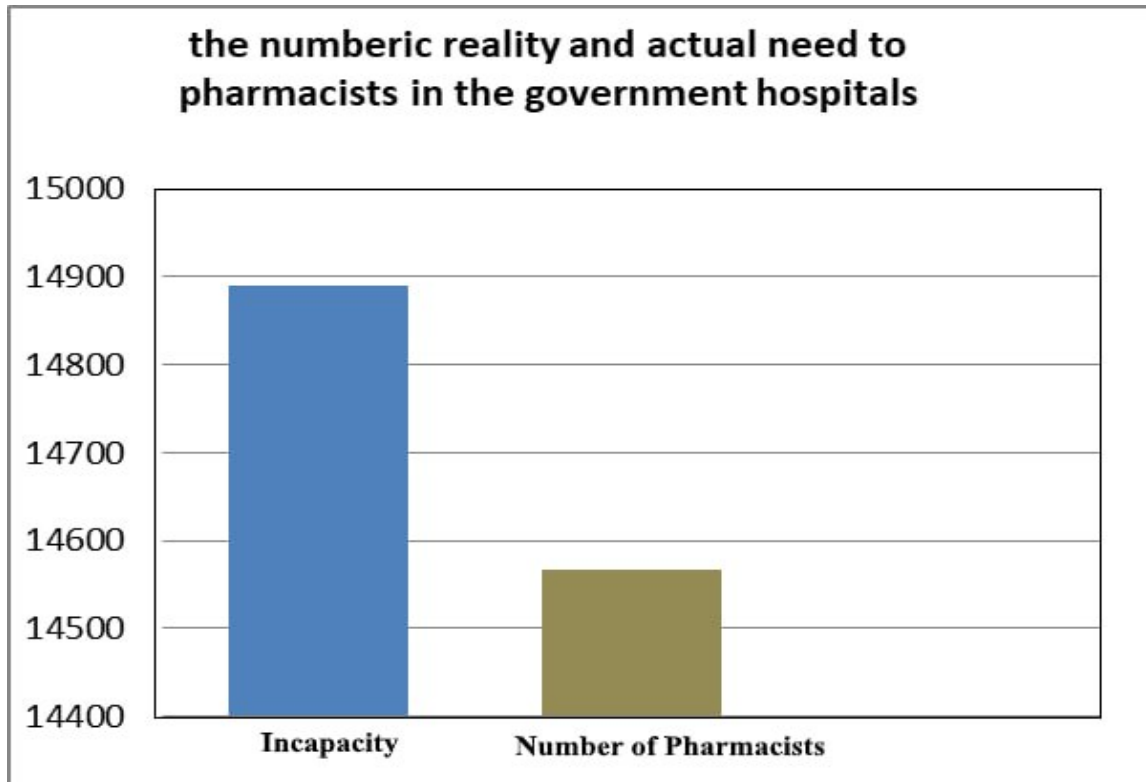
The Ministry of Health has set the standard for the number of pharmacists at (one pharmacist/2,000 people). Table No. (6) shows that no shortages were recorded in Baghdad, Babil, and Karbala governorates. However, a number exceeding the specified standard was recorded in some Iraqi governorates. This demonstrates the efficiency of the services provided by pharmacists in government hospitals.

Table No. (6) Numerical reality and actual need for pharmacists in Iraqi government hospitals

Governorate	Number of pharmacists	Population \ number of pharmacists	Deficit
Nineveh	1010	3790	1790
Kirkuk	555	2954	954
Diyala	553	3038	1038
Anbar	574	3167	1167
Baghdad	5107	1633	لا يوجد عجز
Babylon	1274	1663	لا يوجد عجز
Karbala	937	1334	لا يوجد عجز
Wasit	500	2830	830
Salah al-Din	582	2813	813
Najaf	1040	1452	لا يوجد عجز
Qadisiyah	601	2204	204
Muthanna	307	2722	722
Dhi Qar	714	3011	1011
Maysan	212	5386	3386
Basra	600	4975	2975
Total	14566	42972	14890

Source: Ministry of Health and Environment, Planning Department, Health and Life Statistics Division, unpublished data, 2024

Figure No. (3)



Source: Based on Table No. (6)

Fifth: The Role of Government Hospitals in Human Development

Modernizing and developing the health system is one of the important foundations for the health progress of any country, especially in Iraq. The scope of this effort must be supported by a national health policy, the most important component of which is strengthening the work of the components of the health system according to scientific and practical foundations and within mechanisms that take into account all epidemiological and demographic variables and field developments. These principles were taken into account in preparing the National Health Policy Document (Republic of Iraq, Report (2014-2023),).

Ministry of Health is developing its capacity in the field of medium- and long-term human resources planning and forecasting its needs in terms of quantity and quality according to time frames and based on health needs at work and population size, in order to ensure the provision of a qualified workforce in all specialties from within Iraq, in cooperation with the Ministry of Higher Education or from outside it, and to ensure a fair distribution of this workforce to health departments in all governorates according to need. Ministry of Higher Education is increasing the number of graduates in the medical and nursing professions who hold... Bachelor's degrees and health professions commensurate with their quality (Republic of Iraq, Report 2014-2023,).

The provision of government hospitals and their fair distribution across cities is an essential requirement for achieving human development, including economic and social development, leading to comprehensive development. Health development is part of sustainable development.

The health development situation in most Iraqi governorates suffers from a significant shortage in the number of government hospitals, especially in rural areas. Therefore, a sufficient number of health facilities and their specialized staff must be provided, and efforts must be made to facilitate access to these hospitals by opening short main roads that connect hospitals within a short distance. The importance of the numerical distribution of government hospitals and the health services provided therein plays a significant role in the human development process, given their direct connection to human health and activity. Since the human being is the target and purpose of development, attention must be paid to their health, which is reflected in their contribution to the utilization and development of resources.

Therefore, planning for the development of health services must be a priority in the development process. A study of the current numerical and spatial distribution of government hospitals in Iraq revealed a clear shortage in government hospitals, medical personnel, and beds. Therefore, careful planning is required, including the development of government hospitals in all Iraqi governorates through:

1. Working to modernize a large number of government hospitals and distribute them in a manner commensurate with the population size of each governorate, while developing a plan for future expansion of the number of hospitals in a manner commensurate with population growth.
2. Building trust in the health services provided by government hospitals among the population is essential to ensure they receive the necessary medical care to maintain good health.
3. Training health professionals to ensure they keep pace with developments in the health sector.
- 4- Improving access to government hospitals, which is one of the most important factors influencing the improvement and development of the level of health services, to ensure that the patient receives appropriate health care at the appropriate time and place.
- 5- Providing female cadres within government hospitals, especially in delivery rooms.
- 6- Providing government hospitals with medicines, advanced medical equipment, laboratories, ambulances, and the necessary supplies to treat emergency medical conditions such as suffocation, burns, and diabetes.

Conclusions:

- 1- Comparing the population size with the number of hospitals in the Iraqi governorates revealed a significant shortage in the number of hospitals across the Iraqi governorates studied, indicating the country's need to establish a greater number of hospitals.
- 2- The study showed that the highest percentage of government hospitals was concentrated in the Iraqi capital, Baghdad, with (35) hospitals, including (9,297) doctors in various specialties. It also ranked first in the number of dentists and pharmacists, with (5,091) and (5,107) dentists and pharmacists, respectively.
- 3- The unfair distribution of government hospitals across the Iraqi governorates. Muthanna and Kirkuk governorates had the fewest number of these hospitals, with (5) and (8) government hospitals, respectively.
- 4- The increase in the number of doctors in the Iraqi capital, Baghdad, was a result of the migration of doctors toward the capital, which resulted in the availability of government and private hospitals, clinics, and medical and scientific centers.

5- The increasing population requires health services that meet their needs, particularly in government hospitals. This requires increasing the number of doctors and health professionals of various professions and levels, in order to achieve a balance in the proportion of workers in government hospitals with the continuous increase in population.

Recommendations:

- 1- Work to establish primary and secondary hospitals and health centers in most of the governorate's districts, commensurate with the needs of the population in each governorate. These buildings must be equipped with all modern and advanced medical standards and equipment.
- 2- The need to balance the natural growth rate with the state's capabilities, so that balanced population policies can be developed to address the population growth rate in Iraq.
- 3- Strengthening healthcare institutions with medical and healthcare personnel in numbers consistent with the standards set by the relevant authorities.
- 4- Enacting laws obligating medical specialists to provide the best healthcare services to citizens in government hospitals and holding negligent individuals accountable.
- 5- Providing modern medical equipment and repairing faulty medical equipment available in hospitals, as well as addressing shortages in medicines, materials, and laboratory equipment, and providing the necessary quantities of x-ray films.

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Conflicts of Interest Statement.....

Evaluating the Government Hospitals' Efficiency and Their Impact on Human Development in Iraq Manuscript title

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