

Development of Health Services in Al-Najaf ‘‘Al Ashraf’’ Governorate-Iraq

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Abstract---Health services have great importance in relation to the health of the population. It is one of the criteria for measuring the state's progress in care; it is also one of the most important factors contributing to sustainable development and one of its indicators both in developed and developing societies. AL-Najaf governorate is one of the most important governorates in Iraq in terms of religious and historical issues, where there is a holy shrine of Imam Ali. This study tries to Diagnosis of weaknesses in the health services in AL-Najaf governorate, and their compatibility with planning standards, and follow the best possible ways and mechanisms for their development. The results of this study indicate that the number of hospitals is very low, where it is noted that some administrative units are empty of hospitals, which are represented in the areas of AL-Mshkaband the Al-Shabka, the indicator (person/ hospital) has reached in AL-Najaf Governorate (110549 person / hospital) in 2018, the indicator (person / health center) reached (20635) in Al-Najaf Governorate and recorded the highest value in the district of Al-Haedreea (58112 people/health center, indicator (person/ doctor) notes that this indicator is good in the governorate and reached a limit close to what was determined by the Ministry of Health, where it reached in the governorate (1012 people/doctor). Weak efficiency of the health system and aging of the infrastructure of health institutions, limited use of administrative governance and the ingredients to update standards of health quality.

Keywords---Population, Sustainability, Health Services, Spatial Distribution, Development

I. Introduction

There has been a growing awareness that improving population health is of significant importance to the development of a society, particularly for developing countries where the health care system is underdeveloped, fragile, or vulnerable. In the past years, health care system reform has been under way in a number of developing countries with a special focus on the poor or disadvantaged groups, who face financial barriers to have access to health care services and are exposed to financial risk due to illness. In the study area (Al-Najaf governorate), which is located in southwestern Iraq, Fig. (1), there are several reasons for poor health services, including ,the number of hospitals (14) hospitals in 2018, as shown by the spatial disparity in the distribution of health hospitals between administrative units, where the center of Najaf district (42.8%), followed by the center of Kufa (21.4%). Then the district of Al-Manathira district by (7.14%), and on the level of districts the rate was similar (7,14) for each side (Al-Haidariya, Abbasiya, Al-Hurriya, Al-Mishkhab, Al-Qadisiyah). As part of the network, hospitals in Najaf and Al-

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Mishkhab are used in hospitals in Al-Manathira district. The number of health centers in the governorate has reached (75) health centers in 2018, shows the spatial disparity in the distribution of health centers between administrative units, where the center of Najaf district (37.3%), followed by the center of Kufa district (14.6%) (13.3%). There are no beds, an operating theater, some laboratories, and fewer specialized doctors. Therefore, the current study aims to diagnose the weaknesses in the health services in AL-Najaf governorate, and their compatibility with the planning standards, and follow the best possible ways and mechanisms for their development.

The study included a review of the reality of the population in Al-Najaf governorate and its prospects for the year 2030, And study the reality of health services and their geographical distribution to all administrative units such as hospitals and health centers and health and medical cadres, The study included measuring the efficiency and evaluation of health services in Al-Najaf governorate based on the Iraqi Ministry of Health and who standards in evaluating the level of health services. Determine the requirements of health services development by administrative units. The study reached several conclusions and made some recommendations. The study relied on the available information and official data as well as the field study, The application of Geographic Information System (GIS) was used in the design and implementation of objective and qualitative maps related to the study.



Fig 1: Site of the AL-Najaf governorate from Iraq

Source: The researcher depending on GIS

II. The Status of the Population in Al-Najaf governorate and its Future expectations for 2030

The reality of the population is of great importance to formulate the necessary plans for regional development, the most important of which is the development of the health sector. The important population indicators are the size and growth of the population which help to determine the needs of society (Mohammed Delaf Al- Dulaimi and Fawaz Ahmed Al – Mousa, 2009:62)

Growth of Population

Population growth as a demographic concept means not only the numerical increase of the population, but also increase and decrease (United Nations: 123), through population growth can be identified the size of the population, which has a significant impact in the development of plans for the development of health services.

Table(1) shows that the population and growth rates have varied in Najaf governorate. In 1977, the population of the governorate reached (389680), and in 1987 the population reached (590078) with an annual growth rate of

(4.2%). In 2014 and 2018, the population of the governorate reached (1389549) Increased to(1547687)respectively. As a result of the growing population, demand for all services, including health services, has increased.

Table 1: Annual Growth of Population of Al-Najaf Governorate (1977 - 2018) .

Census years	Number of Population	Annual Growth Rate ^(*) %
1977	389680	-
1987	590078	4.2
1997	775042	2.7
2007	1081203	3.4
2014	1389549	3.6
2018	1547687	2.7

Source:

1. Ministry of Planning, Central Statistical Organization, the results of the general census of the population for the years (1997,1987,1977).
2. Central Statistical Organization in Najaf, population estimates for 2018, unpublished data 2019.
3. Ahmad NajmAl-Din, Geography of the Population of Iraq, Baghdad, 1982, p20.

(*) The annual population growth rate is extracted using the equation:

$$100 \times \frac{P1 - P0}{T} = R$$

Where:

R= Annual growth rate

T= Years between censuses

P1= Population at last census

P0= Population in the first census

III. Spatial Distribution of the Population in Al-Najaf Governorate

As shown in Table (2) and Fig. (2), the population of Najaf governorate reached (775042) in 1997, and the highest population was recorded in the Najaf district center (390525), and the lowest population in the AL-Shabka area (539) in the year 2007 the population of this governorate was (1081203).

The highest population was recorded in the Najaf district center (535042), the lowest number was in the area of the AL-Shabka and reached (767), but in 2018 the population in the Governorate of Al-Najaf (1547687) and continued Najaf district center has the largest number of population of the Governorate and adults.

The lowest population in the area of the AL-Shabka (487). In general, all administrative units in the governorate have witnessed a population increase and thus all areas of the governorate are areas of population attraction.

Table 2: Population of Al-Najaf Governorate by Administrative Units for Years(1997- 2007- 2014-2018)

Administrative units	Population in years			
	1997	2007	2014	2018
Najaf district center	390525	535042	734819	811926
Al-Haedreea	22011	31531	51544	58112
Al-Shabka	539	767	441	487
Al-Kufa	131882	183507	228452	254502
Al-Abassea	53638	77778	88041	99842
Al-Hureea	18848	26970	29652	33370
Al- Manathraa	63020	89553	125177	140945
Al-Mshkab	58668	84003	87604	98786
Al-Qadissiya	35911	52052	43818	49717
Total	775042	1081203	1389549	1547687

Source :

1. Ministry of Planning, Central Statistical Organization, the results of the general census in 1997, table (22), p. 76.
2. Ministry of Planning, Central Statistical Organization, Annual Statistical Abstract, 2009, Table (2/6), p. 55.
3. Ministry of Planning, Central Statistical Organization, Directorate of Population and Manpower Statistics, Iraq Population Estimates for 2014, Table (32), p. 44, Table (3), p. 19.
4. Ministry of Planning, Central Statistical Organization, Population and Manpower Statistics Directorate, Iraq Population Estimates for 2018, Table (32), p. 44, Table (3), p. 19.

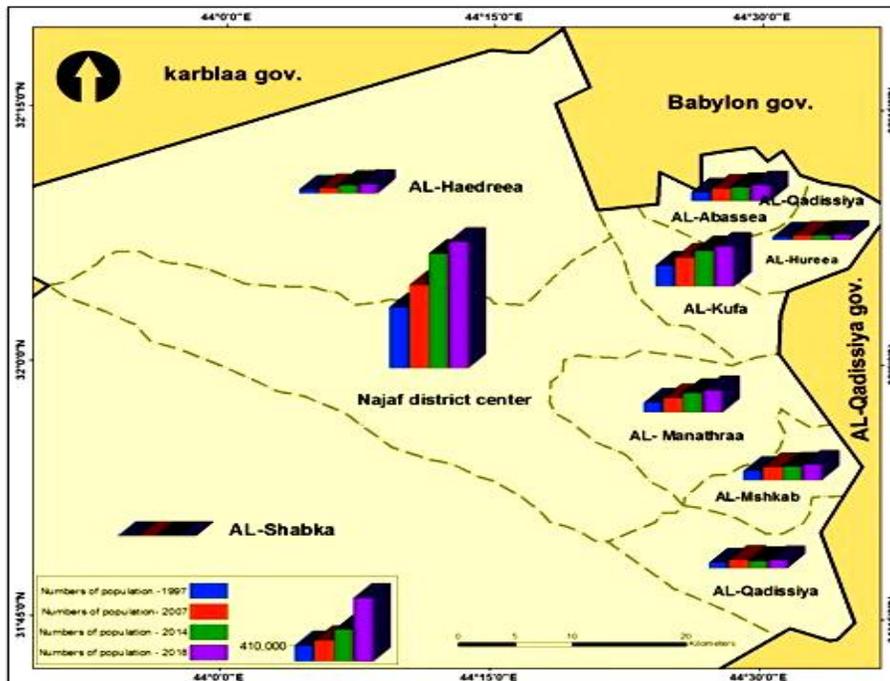


Fig. 2: The numerical distribution of the population of Al- Najaf Gavornorate– Iraq.
 Source: The researcher depending on GIS

Future expectations of the population of Al-Najaf Governorate for 2030

The population of the province is expected to reach (2341335) people, and the center of Najaf district holds the highest population (1270237) followed by Kufa with (362859) people, while the lowest population is in the network area (640) people, Table (3).

Table 3: Population of Al-Najaf Governorate by Administrative Units for the Year 2030

Administrative units	2018 ^(*)	2030 ^(**)
Najaf district center	811926	70237
Al-Haedreea	58112	113023
Al-Shabka	487	640
Al-Kufa	254502	362859
Al-Abassea	99842	131166
Al-Hureea	33370	41826
Al- Manathraa	140945	230920
Al-Mshkab	98786	118110
Al-Qadissiya	49717	72554
Total	1547687	2341335

*Source: *Ministry of Planning, Central Statistical Organization, Directorate of Population and Manpower Statistics in Iraq, Iraq Population Estimates for 2018, Table (32), p. 44, Table (3), p. 19.*

*(**)The expected population is extracted from the following equation:*

$$P_n = p_o (1+R)^N$$

P_n: Population in the extent Year,

p_o: Population in the previous Year ,

R:Growth Rate

N:Number of Years

IV. The Status of Health Services in Al-Najaf Governorate

Health services and institutions

Hospitals and health centers:

Achieving health requires the availability of a range of tools, primarily the presence of hospitals and health centers, which are the main pillar of the health system. It is an integral part of an integrated social and health system whose mission is to provide comprehensive health services to the community in both therapeutic and preventive terms. It includes outpatient clinics that can deliver services to the family in situ, and is a center for training health personnel and conducting medical research(DiaaJafar Abdul Zahra Najm 2016 : 94-95). Illustrated from Table(4) and Fig.(3), The number of hospitals in AL-Najaf Governorate (14) hospitals in 2018, as shown by the spatial disparity in the distribution of health hospitals between administrative units, where the center of Najaf district (42.8%), followed by the center of Kufa (21.4%). Then Al-Manathira district (7.14%), and on the level of districts

the rate was similar (7,14) for each side (Haidariya, Abbasiya, Al-Hurriyah, Al-Mishkhab, Al-Qadisiyah), The other areas that are empty of hospitals, they use the nearby hospitals as the AL-Shabka area uses hospitals located in Najaf district center and Mishkhab district uses hospitals located in the district of Manathira. Health centers are the most prevalent health institutions in rural and remote areas and are located in the cities to provide primary treatment services and difficult cases are referred to hospitals, there is no family and operating theater, and some laboratories, and fewer specialized doctors. And often

health-care centers are often made available comprehensively in the community in ways that they can accept and at affordable costs for community members(World Health Organization 2000 p.57).The spatial variation of the distribution of health centers in the administrative units shows that Najaf district center leads the rest of the units (37.3%), followed by the center of Kufa district (14.6%), and the center of Al-Manathira district (13.3%). The level of districts topped the mashkhab area (13.3%), followed by the Abbasid area (10.6%), followed by Qadisiyah and Hurriya (4%), and the areas of Haidariya and Al-Shabka by (1.3), respectively.

Table 4: Government and private hospitals and health centers in Al-Najaf governorate by administrative units for 2018

Administrative Units	Government Hospitals	Private Hospitals	Total	Percentage	Health Centers	Percentage
Najaf district center	3	3	6	42,8	28	37,3
Al-Haedreea	1	-	1	7,14	1	1,3
Al-Shabka	-	-	-	-	1	1,3
Al-Kufa	1	2	3	21,4	11	14,6
Al-Abassea	1	-	1	7,14	8	10,6
Al-Hureea	1	-	1	7,14	3	4
Al- Manathraa	1	-	1	7,14	10	13,3
Al-Mshkab	-	-	-	-	10	13,3
Al-Qadissiya	1	-	1	7,14	3	4
Total	9	5	14	100	75	100

Source: Ministry of Health, Najaf Governorate Health Department, Planning Department, Health and Life Statistics Division, data for (2018), unpublished 2019.

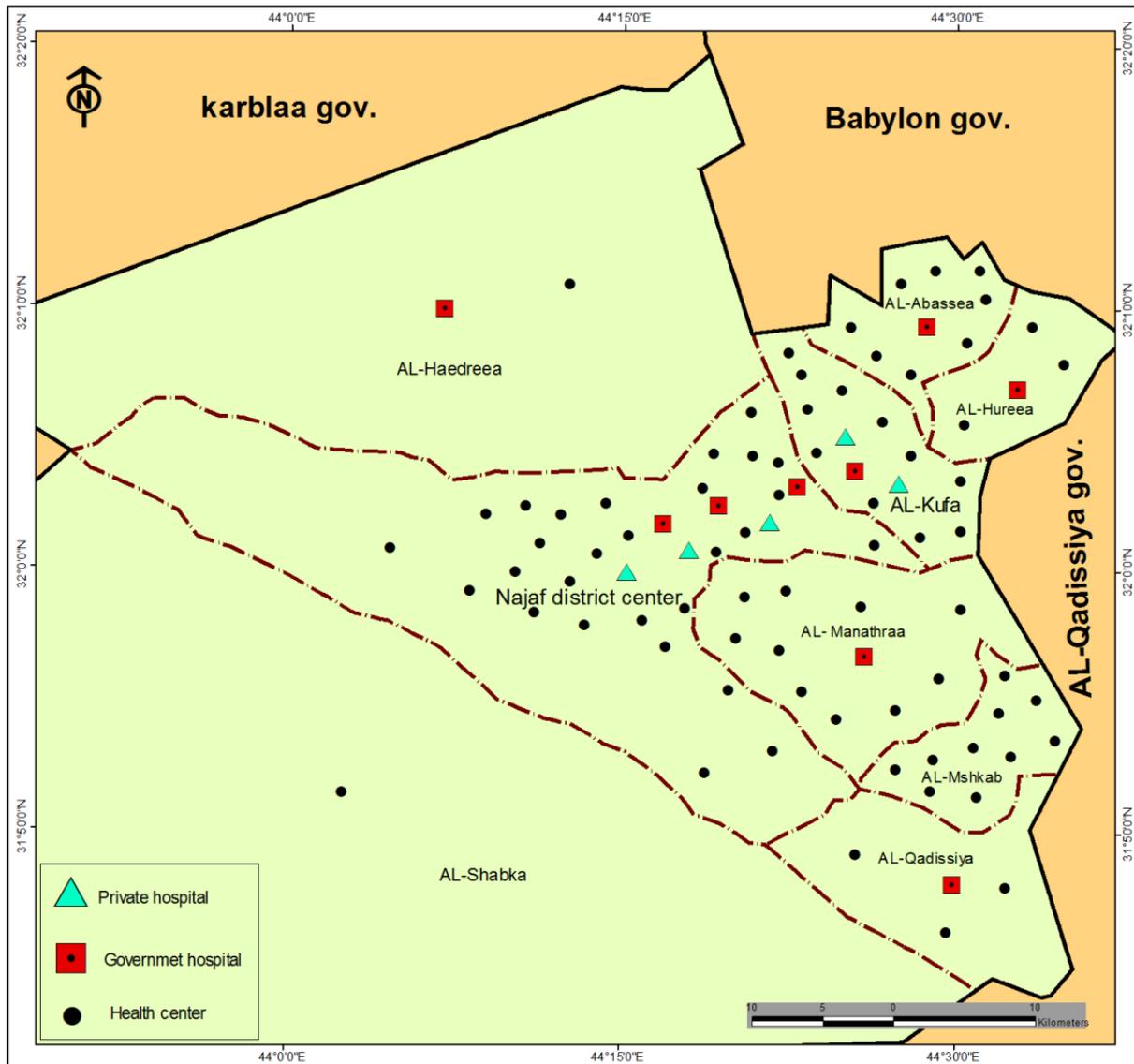


Fig. 3: The geographical distribution of health services in Al- Najaf Governorate

Health and medical staff in Al-Najaf Governorate

The human resources are the main pillar of every social or economic system, and because of the nature of work in the health system and direct and continuous contact with members of the community.

Doctors

The efficiency of the total number of Doctors in each country of the world is measured by the number of Doctors per 100,000 population. This ratio ranges from 1-3 doctors per 100,000 people in developing countries to 200 doctors per 100,000 people in developed countries. To reach the level of developed countries in the world, Najaf needed 2779 doctors per 100,000 inhabitants. It is noted from Table (5) that the number of doctors in the province

(1529) doctors and the most number of doctors was in the center of Najaf (984) doctors, and the lowest number was in the area of Al-Hureea (8) doctors, while there is no doctor in the district the Al-Shabka.

Table (5):Number of medical staff in Al-Najaf Governorate according to Administrative Units for 2018

Administrative Units	Number of Doctors	Number of Dentists	Number of Pharmacists	Number of Health Professionals
Najaf center	984	113	543	6090
Al-Haedreea	57	13	3	98
Al-Shabka	-	-	0	4
Al-Kufa	210	40	116	1354
Al-Abassea	86	15	40	723
Al-Hureea	8	4	3	105
Al- Manathraa	148	20	52	1036
Al-Mshkab	27	13	23	292
Al-Qadissiya	9	3	20	60
Total	1529	221	800	9762

Source:Ministry of Health, Najaf Governorate Health Department, Planning Department, Health and Life Statistics Division, data for (2018), unpublished data, 2019.

Dentists

It is noticed from Table (5) that the number of dentists in Najaf Governorate was (221) doctors, and the Najaf district center recorded the highest number of them (113) doctors, and the lowest number have a record in the Qadisiyah (3)doctors, and at the same time not registered. The Al-Shabka is a dentist.

Pharmacists

The number of pharmacists in this Governorate (800) pharmacists, the highest number was in the Najaf district center (543) pharmacists, and the lowest number in the network area (zero), while the number in Haidariya and AL-Hureea (3) only.

Health professionals

They represent the middle staff in the health sector, including nurses, health assistants, laboratory assistants, radiographers, physiotherapists and anesthetists. It also includes persons working in statistics, computer and administration, The total number in Governorate (9762) people, recorded the highest level in the Najaf district center (6090) people and the lowest level in the AL-Shabka area (4) people.

V. The Efficiency and Evaluation of Health Services in Najaf

Basic quantitative criteria: It is represented by a number of descriptive and quantitative factors that are used to evaluate the efficiency of health services in any place, including those related to the area of each type of health institutions and according to population density as shown in Table (6).

Table 6: Criteria used in evaluating health institutions by number of serve population and area of health institution

Health Institutions	Number of Served Population	Area of Health Institution (M)
Outpatient Clinic	5000-15000	500
Maternity And Child Care Center	5000-15000	750
First Class Health Center	15000-40000	3000
Public Hospital	40000-60000	10000
Children's Hospital	100000	80000
Psychiatric Hospital	200000	5000
Maternity Hospital	200000	10000

Source: Khalaf Hussein Ali Al-Dulaimi, *Community Services Planning and Infrastructure, Anbar University, Part I, 2001, p. 153.*

The other criteria are those that clarify the relationship between the population and the number of health institutions or health professionals, approved in developed or underdeveloped countries, Table 7:

Table 7: Criteria Used in Evaluating Health Services Efficiency

Number	World Health Organization	Developed Countries	Developing Countries	Iraq
1	Hospitals			
	6000 person / hospital	6000 person / hospital	50000-100000 person/hospital	50,000 person / hospital
2	Health centers			
	1500 person / health center	1500 person / health center	—	50,000 person / hospital
3	Human cadres			
3-1	Doctors			
	500 person / doctor	500 person / doctor	100,000 person / 1-3 physician	1000 person / doctor
3-2	Dentist			
	2000 person / dentist	—	—	10000 person / dentist
3-3	Pharmacy			
	2000 person / pharmacist	10000 person / pharmacist	10000-60000 person / pharmacist	20000 person / pharmacist

3-4	Specialized physician			
	—	10000 person / specialist physician	100000-400000 person / specialist doctor	—
3-5	Health professionals			
	200 person / with health professions	—	—	500 person / with health professions
3-6	Number of beds			
	120 person / bed	80-120 person / bed	200-500 person / bed	500 person / bed

Source:

1. *Khalaf Hussein Ali Al-Dulaimi, Planning of Community Services and Infrastructure, Anbar University, Part I, 2001, p. 155-156.*
2. *DiaaJafar Abdul Zahra Najm, the impact of human development in the composition of the population and spatial distribution in Najaf Governorate for the period (1997 - 2014), doctoral thesis (G.), Faculty of Arts, University of Kufa, 2016, p. 94-95.*

Indicators and the reality of health services in Al-Najaf Governorate

After clarifying the criteria or international and local indicators will be clarified Indicators of health services in AL-Najaf Governorate will be illustrated in Table (8). In the sense of studying the reality of the situation and comparing it with the Iraqi standards or the standards of developed countries shown in Table(7):

The population standard (person / hospital) as defined by the Ministry of Health has identified (50,000 people / hospital) as shown in Table (7) while it is noted in Table (8) that this indicator has reached (110549 person / hospital) in Al-Najaf Governorate in 2018, The highest level of this indicator was in Al Manathira (140945 persons / hospital), followed by Najaf district center, and the lowest level recorded in AL-Hureea area (33370 people / hospital). This indicator in AL-Najaf Governorate is higher than the standard of the Ministry of Health, which indicates the need for the Governorate to other hospitals, therefore, the population / hospital index of negative indicators in AL-Najaf Governorate.

As for health centers, the Iraqi Ministry of Health has set an index of (1000 persons / health center), this indicator reached (20635 persons / health center) in AL-Najaf Governorate and recorded the highest value in the district of Al-Haedreea (58112 people / health center), This indicator was high compared to the standards of the Iraqi Ministry of Health except the area of Al-Shabka (487 persons / health center) and Al-Mshkab (9878 persons / health center) as shown in Table (8), It is noted that the actual reality of this Governorate is far from the standard of the Ministry of Health, and therefore requires the ministry to establish health centers. As for the indicator (person / doctor) (1000 people / doctor), it is noted that this indicator is good in the province of Najaf as it reached a limit close to what the Ministry of Health (1012 people / doctor), This indicates a sufficient number of doctors, as the benefit of the practice of doctors graduating from the University of Kufa, Their number varied among administrative

units, with the highest value in Al-Qadissiya (5524 persons / doctors), followed by Al-Hureea (4171 person / doctors) and (952 person / doctors) in Al- Manathraa district.

The index of dentists identified by the Ministry of Health (10,000 people / dentist) is noticed (7003 people / dentist) in the Governorate, which is lower than the Iraqi Ministry of Health and at the level of all administrative units except the AL-Qadissiya area, where this indicator rose very significantly Where (26572 people / dentist), Thus, this indicator has achieved great success, which requires moving in the same direction to reach the requirements of more advanced standards such as the World Health Organization standard of (2000 people / dentist) Or developed countries,

The population standard (person / pharmacist) according to the Iraqi Ministry of Health has specified (20,000 person / pharmacist). It is noted in table (8) that this indicator has reached the level of the Governorate (1934 person / pharmacist) and thus is much lower than the index of the Ministry of Health and this is due Decrease to increase the number of pharmacists in the Governorate, The highest number reached (19370 person / pharmacist) in the district of AL-Haedreea followed by the hand of freedom (11123 people / pharmacist) and the lowest in the district of Najaf (1495 person / pharmacist), therefore this indicator is positive for health services in the province. The highest number (19370 person / pharmacist) in the district of AL-Haedreea and then the AL-Hureea (11123 person / pharmacist) and the lowest in the Najaf district center (1495 people / pharmacist), so this indicator is positive for health services in the Governorate.

The number of population (person / health professions) according to the Ministry of Health standard (500 person / health professions), reached in the Governorate (159 person / health professions) and the highest level was in Al-Qadissiya (828 people / health professions) while the lowest level In the area of the Al-Shabka (122 person / health professionals).

The distribution of health services institutions is also an important indicator to assess the level of services, whether at the level of the state, region or city, must be in accordance with the entitlement of social justice from service to the entire population, and this is achieved by the equitable distribution within specified distances and in places easily accessible, It is often preferred that these institutions be at a distance of not more than 3 km, as taken into account in this area population density, Vertical housing areas are more dense than horizontal housing expansion areas, so in such a case vertical housing areas if they need more than one health center, It is preferable to adopt the method of population as shown in Table (7). Also, the quality of service should be consistent with the current demographic reality and it ranges from the lowest institution to the highest institution, The evaluation also includes the type of construction and its suitability as a health institution and the type of administrative and medical staff working in those institutions and that the quality of service to be a high degree of performance efficiency at the spatial level and in all disciplines(Khalaf Hussein Ali al-Dulaimi p.153-154).

Table 8: Health Services Indicators by Administrative Units in Al-NajafGovernorate, 2018

Health Services Administrative	Hospitals	Health centers	Doctors	Dentist	Pharmacy	Health professionals

units						
Najaf district center	135321	28997	825	7185	1495	134
Al-Haedreea	58112	58112	1020	4470	19370	592
Al-Shabka	—	487	—	—	—	122
Al-Kufa	84834	23136	1212	6362	2193	187
Al-Abassea	99842	12480	1160	6656	2496	138
Al-Hureea	33370	11123	4171	8342	11123	317
Al- Manathraa	140945	14094	952	7047	2710	136
Al-Mshkab	—	9878	3658	7598	4295	338
Al-Qadissiya	49717	16572	5524	26572	2485	828
Total	110549	20635	1012	7003	1934	159

Source: Tables (1, 4, 5,6)

Sustainability of Health Services in Al-Najaf Governorate:

The requirements for the development of health services in Al-Najaf Governorate vary according to the administrative units to suit each of them and their population size. The developmental reality of health services in the governorate in 2018 showed a large deficit in both the number of health institutions or medical and health personnel, so it is necessary to provide sufficient number of health institutions and their competent cadres, especially in rural areas of the governorate (Table 9)

Table 9: The required numbers of health services according to the administrative units in Al-Najaf Governorate for the year 2030

Health Services Administrative units	Hospitals	Health centers	Doctors	Dentist	Pharmacy	Health professionals
Najaf center	25	127	825	7185	64	2540
Al-Haedreea	2	11	1020	4470	6	226
Al-Shabka	—	1	—	—	1	1
Al-Kufa	7	36	1212	6362	18	726
Al-Abassea	3	13	1160	6656	7	262
Al-Hureea	1	4	4171	8342	2	84
Al- Manathraa	5	23	952	7047	12	462

Al-Mshkab	2	11	3658	7598	6	236
Al-Qadissiya	1	7	5524	2657 2	4	145
Total	46	232	1012	7003	119	4681

Based on; the estimated population of 2030 and the planning criteria for health services

Health projects to be provided in the governorate are as follows: Hospitals and specialized centers: (heart surgery, eye, kidney, neurosurgery, dermatology, plastic surgery, dentistry), Laser Medical and Lasik Center, specialized surgery hospital, transplant center, medical center And atomic radiation, a center for radiology and diagnostic tests (rampart, ringing), Sports Medicine and Nutrition Research Center, Deaf and Mute Rehabilitation Center, Fertility and Infertility Treatment Center, Catheterization Center and Open Heart Surgery.

The industrial medical projects to be established in the province (a factory for the production of oxygen and medical gases, a pharmaceutical factory, a factory for medical solutions and nutrients, a factory for the production of injections, disinfectants).

Quality sustainability includes updating health quality standards according to international standards, paying attention to the health services buildings in terms of hygiene and providing green areas spread around the buildings and in the middle, which have positive effects on the psyche of the patient, It should be free from noise and pollution, and work to increase accessibility to hospitals and health centers, as well as the development, modernization, rehabilitation and repair of health infrastructures for hospitals, health centers and administrative buildings, especially water and sanitation services and the process of recycling and treatment of medical waste.

Improving the health prevention system by controlling vectors, as well as implementing epidemiological challenge programs, reducing infection rates and spreading parasites.

Developing the concepts of health economics and the national health account in addition to applying the appropriate mechanisms to maintain the availability of financial liquidity to implement health programs and services, devising ways to maximize financial resources, and providing an attractive investment climate in the health field.

VI. Conclusions

1. The number of hospitals is very low, where it is noted that some administrative units are empty of hospitals, which are represented in Al-Mshkab and Al-Shabka.
2. Weak efficiency of the health system and the aging of the infrastructure of health institutions.
3. Limited use of administrative governance and the ingredients to update standards of health quality.
4. Limited coverage of the total need for health institutions of medicines and supplies and medical devices and services.

Recommendations

1. Attention to the methods and possibilities necessary for the development of hospitals and health centers
2. Training of medical and health staff in the province and their distribution in a balanced manner to the administrative units in the province of Najaf.

3. Increasing the number of hospitals and health centers in all administrative units.
4. Increase the number of medical and health staff in the governorate.

REFERENCES

- [1] Ahmad Najm Al-Din, Geography of the Population of Iraq, Baghdad, 1982.
- [2] Central Statistical Organization in Najaf, population estimates for 2018, unpublished data 2019.
- [3] Demographic and Multilingual Dictionary, United Nations, Economic and Social Commission for Western Asia - International Union for the Scientific Studies of Population, Arab, second edition, Baghdad, Iraq.
- [4] DiaaJafar Abdul Zahra Najm, the impact of human development in the composition of the population and spatial distribution in the province of Najaf for the period (1997 - 2014), doctoral thesis (G.), Faculty of Arts, University of Kufa, 2016.
- [5] Khalaf Hussein Ali Al-Dulaimi, Planning of Community Services and Infrastructure, Anbar University, Part I, 2001.
- [6] Khalaf Hussein Ali Al-Dulaimi, Planning of Community Services and Infrastructure, Anbar University, Part I, 2001.
- [7] Ministry of Health, Najaf Governorate Health Department, Planning Department, Health and Life Statistics Division, data for (2018), unpublished 2019.
- [8] Ministry of Planning, Central Statistical Organization, Annual Statistical Abstract, 2009, Table (2/6).
- [9] Ministry of Planning, Central Statistical Organization, Directorate of Population and Manpower Statistics, Iraq Population Estimates for 2014, Iraq.
- [10] Ministry of Planning, Central Statistical Organization, Directorate of Population and Manpower Statistics in Iraq, Iraq Population Estimates for 2018, Iraq.
- [11] Ministry of Planning, Central Statistical Organization, Directorate of Population and Manpower Statistics in Iraq, Iraq Population Estimates for 2018, Iraq.
- [12] Ministry of Planning, Central Statistical Organization, Population and Manpower Statistics Directorate, Iraq Population Estimates for 2018, Iraq.
- [13] Ministry of Planning, Central Statistical Organization, the results of the general census in 1997, Iraq.
- [14] Ministry of Planning, Central Statistical Organization, the results of the general census of the population for the years (1997,1987,1977).
- [15] World Health Organization, Research for Health - Global Overview, Eastern Mediterranean Regional Office, Alexandria, Egypt, 2000.
- [16] Pratiwi, N., Aziz, I.R., Ismedsyah, Andayani, D., Amin, S. Antidiabetic activity of kemrunggi (*Caesalpinia crista* L.) seeds infusion in Albino rats (*rattus norvegicus berkenhout, 1769*) hyperglycaemic(2018) International Journal of Pharmaceutical Research, 10 (4), pp. 389-393.
- [17] Latha Sivasankari, V., Anuradha, K., & Umamaheswari, K. (2015). Apriori Based Utility Calculation based on Cloud Usage Logs and User Preferences. International Journal of Advances in Engineering and Emerging Technology, 7(8), 548-556.
- [18] Gunasundhari, M., & Induja, S. (2015). Analysis of Banking Sector in Personal Loan against Credit Card Business using Customer Relationship Management in Clustering K-Mean Technique. International Journal of Advances in Engineering and Emerging Technology, 7(8), 557-570.
- [19] Zhang, Y. Enlightenment on vocal music classroom teaching from the perspective of neuroscience (2018) NeuroQuantology, 16 (6), pp. 132-137.
- [20] Yixin, X. Regional energy consumption differences and neural mechanism of environmental risk decision making in china (2018) NeuroQuantology, 16 (6), pp. 164-170.