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The correlation between identifying needs and choosing the appropriate productive art for use / primary health care centers as an example

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Abstract

The purpose of the study is to identify the need to improve health services in Iraq by determining the efficiency of service in health care centers and working on exploiting limited resources through choosing the most efficient technological art represented by using precast concrete technology to fill the shortfall in the establishment health centers for primary care and to explain the impact of this on saving resources, time, and increasing production efficiency. To achieve this, the quantitative analysis adopted as methodology in the study by determining the size of the deficit in the infrastructure of health centers for primary care according to the standard of a health center / 10.000 people with an estimate of the future need for the next ten years depending on the population growth rate estimated by (2.6%). In addition to exploiting the available resources and achieving stability for the population through providing productive employment opportunities within the medium and long term. This makes the study distinguished by originality, as it linked the diagnosis of the problem to finding solutions using the modern technical method that encourages private investment.

Paper type: Technical paper.
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I-Introduction

Primary public health services are preventive and curative services simultaneously because it provide vaccines to prevent epidemics as well as therapeutic medical advice to recover from diseases. The economic downturn in Iraq because of successive wars, the economic blockade, and administrative and financial corruption, as well as low production efficiency, That led to decline in health services provided to the individual, Part of it is the lack of primary health services centers according to the locally approved standard. Therefore, the study aimed to improve the reality of the sector, which faced the limited resources that assume preparation two options to exploit these resources according to the priority of needs .To achieve this, the study methodology was divided into four sections, which included reviewing the literature by identifying the needs and importance of the health sector first. As for the second, choosing the appropriate productive art for the optimal use of resources according to the available wealth in Iraq and choosing the productive art by comparison between the traditional building method and the use of precast concrete technology. The third included data analysis by analyzing the reality of the health sector in Iraq. While the fourth (last section) included discussing the results related to finding a solution to the problem of the shortage in the buildings of primary health care centers by choosing precast concrete technology method through (vision to the reality of the health service in Iraq 2030, Determine the need from concrete blocks to implement the design of primary health care centers).

Previous studies (Abboud, Adel Abdul-Amir): (2011) Spatial variation of health development indicators and their sustainable prospects in Basra Governorate - a study in the geography of development.(Jabouri, Hassoun Abboud Daboun): (2009) Efficiency of geographical distribution of primary health care centers .These studies dealt with determining the size of the deficit in health services according to the spatial analysis for a specific province in detail and for several health statistic indicators , also measure the satisfaction of the governorate residents with the medical service provided within short period. (C.Sivapriya & S.Senthamilkumar): (2016) Building Cost Comparison of Precast Concrete Construction with Conventional Construction. (Jumea,Antsar qdwry): (2011) A comparative study of the use of precast concrete (light weight) instead of traditional blocks in the construction of partitions. (Sarhan, Maysoon Mohi Hilal): (2011) A Study of the Efficiency of Performance of Prefabricated Building. An Applied Research on the Building of the Department of Civil Engineering - Tikrit University.

The studies above shown that the uses of precast concrete are not confined to the construction of traditional buildings (houses, offices, hospitals, and schools), also included a comparison between traditional construction and precast concrete in terms of technologies used, environmental effects, cost, and implementation period. Our study was comprehensive for the governorates of Iraq, which is (15) governorates, with the exception of the Kurdistan Region, focused on the need for primary health infrastructures represented by health care centers today and in the future according to the standard of (a health center / 10.000 people) by calculating the expected population growth up to 2030, adopting the precast concrete technology, that characterized by efficiency, speed of implementation, and relying on available local resources.

II-Literature review / The correlation between defining the needs in the health sector and Choosing the right productive art

• Defining needs in the health sector.

Economics defined as (the science of scarcity) - according to both Castle and Robins - This means it is a science that interferes where the money is scarce in relation to the needs, meaning that the means are scarce in relation to the goals. What made economics based on solving the problem of choice, i.e. utilitarian calculation, and that is represented in four basic conditions for the individual (multiple goals, different importance, time and means necessary to achieve this, and specific and subject to different uses). These presuppose the individual to choose between unlimited desires while time is limited and the outside world does not provide enough opportunities for full gratification as life is short and resources are limited. Moreover, life, natural resources and services can be used to accomplish multiple goals. (Al Mahjoub, 1977: 20-21).

To determine priorities based on needs, the individual's desires are divided according to the following: (Tolba, 2007: 3-4)

− A necessary need: the one that a person's life depends on satisfying, such as the need for food and treatment.

− Individual need: It relates to the individual's life directly, such as his need for housing and treatment.

− A collective need: It arises from the presence of the individual among the group, such as defense, security, disease control and epidemics.

− The future need: It is the need that is expected to arise in the future.

To find a solution to the economic and social problem with the lowest possible costs to achieve future goals requires use the planning, being sound logic and a rational method that achieves a maximum return for society with the least amount loss of resources. (Salman and Hasson, no date: 13). This is done by taking the decision to choose the best available alternatives to achieve the goals set in the most efficient way. (Ibrahim, 2004: 72)

• The importance of the health sector / primary health care centers.

The deteriorating global health conditions, represented by the triad of underdevelopment of nations (poverty, ignorance, disease), called for the adoption of a primary health care strategy to achieve the goal of health for all. Health promised according to the constitution of the World Health Organization a basic human right, which made it a goal at the global and national levels, which necessitated that it must mobilize all potentials and therefore it was worked out that health care should be a component of economic and social development. considering the State's limited ability to bear health care costs, which was reflected in the limited budget[1] allocated to the health sector, Especially in the underdeveloped and the poorest countries, as well as the high costs in industrialized countries, so resorting to means to contain these costs was establishing primary health centers from which about 90% of the population benefit and it cost only 15% of government expenditures for health centers while 10% of the population benefit of hospitals and cost 8% of government

[3] **(6) trillion Iraqi dinars were allocated from the total budget of 133 trillion dinars, which represents 4.5% of the total budget for the health and environment sectors in 2019. (Alwan, 2019: 8)**

expenditures. (for see more Group of specialists in health management science, 2007: 411-405).

On the basis of the foregoing primary health care centers are considered an integral part of the health system of the country, therefore its more prevalent representing the first level in the health system, due to its direct relationship with providing curative and preventive services to community members. On this basis, primary health care centers were defined (the basic health care that depends on the methods of technology that are scientifically sound and socially acceptable as well as facilitating it for all individuals and families in society and at costs that can be provided at every stage of its development)-According to the World Health Organization-.(Abboud, 2016: 101). These centers carry out missions (Mother and child care, basic vaccinations, control of communicable diseases, control of non-communicable diseases, awareness and health education, elderly care, psychological care, curative services, oral and dental health services, promotion of healthy nutrition for the individual and society, emergency services, Laboratory and diagnostic services).

It is managed by a group of employees (Community doctor, family medicine doctor, practitioner doctor, dentist, medical assistant, dental technician or preventive dental assistant, pharmacist, pharmacist assistant, radiographer, nurses, bacteriologist, laboratory assistant in addition to some other necessary specialties). (Bilal and Rashid, No Date: for more see 13-18 and 50 respectively).

• Primary Health Care Center requirements (WHO standards and the Iraqi Ministry of Health).

a) Site requirements:

• It is preferred that the project be located on a main street.

• It should be located at least 1,000 m from the nearest health center or hospital.

• Consider the environmental conditions at the project site.

b) Design: Conditions that must be observed in design of the health center:

• The entrance and exit of the building should be on the main street.

• The width of the internal corridors shall not be less than 2 m.

• The width of the stairs must be not less than 1.5 m.

• Service and treatment halls are directed from the northeast to the northwest towards the north.

• Adoption of natural luminescent sunlight.

• A separate entrance for pedestrians and another for cars.

c) Parts of the health center: The main entrance, reception, waiting area, director room, doctor room, examination room, nursing room, pharmacy, dentist room, laboratory, radiology rooms, bathrooms.

III- <u>Choosing the right productive art for the optimal use of resources.</u>

1) The available resources (mineral wealth in Iraq): Over half a century of continuous work by Iraqi geological staff, The mineral exploration operations showed that Iraq possesses many mineral ores and industrial rocks which considered Iraq one of the rich countries in natural mineral resources that can be investe in many projects, these materials ((Limestone deposits suitable for making cement, gypsum deposits, feldspar sands, clays (kaolin, bentonite, atletite,

and porcelainite) and iron). (For more, see General Company for Geological Survey and Mining, 2003: 1).

The above materials are available in large quantities and qualities, ranging from good to high purity in the Western Desert / Anbar Governorate[2]. It can be reached through paved roads linked to dirt roads, where it is proposed to establish a pre-cast concrete project in this governorate.(see more Mohammed&Mahmood,2020)

2) Choosing the appropriate productive art for optimal use through a comparison between the traditional building method and the precast concrete technology:For the purpose of determining the most appropriate production art for use by comparing two building styles, namely traditional construction and pre-cast concrete technology. first show what is intended by traditional building style and pre-cast concrete technology.

Mean be traditional construction, a building that humanity has known since ancient times and has been used in building their homes and other life requirements. It uses bricks, stone, and other materials. This method has evolved with the passage of time until reached what it is now. precast concrete, also known as precast concrete or Pre-tensioned ready casting concrete, It is a building product made by pouring cement into molds of certain designs and treated in specific conditions, then transported to the building site. It is made in the factory under conditions of quality control and manufacturing technology, Do not transferred to the site unless it has completely hardened and reached the required resistance.

There are many buildings made of precast concrete where the building consists of many separate casted parts away from the construction site, then transferred to the construction site and constructed there.

For the purpose of showing which method is better when planning to choose the appropriate productive art, a comparison will be made between the traditional building method and the precast concrete technique according to several criteria (technical, environmental, and economic) and through the indicators of each criterion.(Sivapriya&Senthamilkumar,2016:5-7)

Table 1: Standards and indicators for comparison between traditional building method and precast concrete technique.

Standards	indicators	traditional building	precast concrete
Technique	Hardness	Less stiffness, low quality, and increased defects.	Obtaining concrete hardness with high build quality and avoiding most faults.
	Insulation	Less dielectric relative to sound and heat.	The best in thermal and acoustic insulation
	Design	flexibility in design, and also possible to add modifications to the building after	Less flexibility in design and difficulty in modifying the

[4] The mining and quarrying sector in Al-Anbar Governorate is considered one of the most productive economic activities and Contributes to the formation of the GDP of 2013. (Ministry of Planning, 2017: 10)

		implementation.	design after implementation.
	Implementation	Less accurate to implement, especially if the design is complex.	Speed and accuracy in implementation.
Environmental	Optimal use of resources	- Losses in the soil of agricultural lands, which are used as a raw material for brick making, as well as the environmental impact of brick factories. - Misuse of raw materials and consequently affect the environment from harmful building dust and waste	- It has no effect on agricultural land. - Optimal use of raw materials from iron, sand and gravel without any waste
	Energy savings	Lowest thermal insulation and therefore the highest energy consumption	Energy conservation due to good thermal insulation and consequently low energy consumption.
	Social factors	Loudest noise being the lowest sound absorbing.	Noise reduction being the highest sound absorption.
Economic[3]	Use raw materials	Misuse of raw materials, thus consuming larger quantities so increasing in costs.	Optimal use of materials and thus reduce the quantities consumed so the resulting is cost reduction
	Energy savings	Less efficient heat insulation and therefore higher energy consumption in heating and cooling so the resulting increased costs.	Good thermal insulation, thus reducing energy consumption for heating and cooling so the resulting is cost reduction.
	cost of foundation construction	The weight of the building is greater and consequently	Reducing the extra weight of the building, and

[5] Basic building materials (sand, gravel, and reinforcement steel) represent between 50% to 60% of the construction cost.

		needs greater foundations sothe resulting is increased costs for the foundations.	therefore you need fewer foundations so the resulting isreduced costs for the foundations.
	durability	Less durability and consequently lower build life so the result is increased costs for restoration or reconstruction.	Greater durability and longer life for the building, resulting in reduced costs.
	Skilled human resource	More unskilled labor and the resulting increase in costs.	Reducing unskilled labor and the resulting cost reduction.

References: Nitterhouse,2006: 1.

Table 2: A comparison through the time period and stages of construction work between the traditional building method and casting.

traditional building	1	2	3	4	5	6	7
Implementation phases	Site leveling	Preparing foundation building materials	Building the foundations	Providing building materials	Building construction	Pour concrete over windows and doors	Pour the roof
precast concrete	1	2	3	4	5		
Implementation phases	Site leveling	Preparing foundation building materials	Building the foundations	Concrete cutting processing	Installation the parts		

We find from the main criteria and secondary indicators in Tables (1) and (2) above following:

✓ Technically: precast concrete method With high quality, The fact that its production stages are subject to inspection and control when preparing raw materials and production to verify its conformity with the approved[4] technical specifications and work procedures at the factory for the purpose of reducing the costs of production failure.

✓Environmentally: The precast concrete technology is of very little environmental impact. Compared to traditional construction.

✓Economically: Reducing the total cost of the construction precast concrete technology compared to traditional construction, by calculating the lower operating costs that result from the short implementation period providing labor costs and quality in specifications and performance.

✓Duration and implementation stages: Table (2) shows that traditional construction requires more time to complete construction.Whereas, prefabricated

[4] **Standards and specifications adopted in precast concrete:**
- **Compressive strength of test samples ISO 4012: 78.**
- **Flexion resistance of test samples ISO 4013: 78.**
- **Typical horizontal separators between walls ISO 7728: 85.**
- **Typical vertical separators between walls ISO 7729: 85.**
- **Carbon steel anchor bolts with a large head ASTM A 307: 97.**
- **Carbon steel sheets ASTM A361 M: 97a.**

casting construction is characterized by its rapid construction process as it reduces the construction period.

Therefore, we find that using the precast concrete method is the best productive art for use in the construction of primary health care centers.

3) Justifications for using pre-cast concrete parts and working methods.

The precast concrete technology project is one of the projects that achieve the goal of the National Development Plan (2018-2022) with its contribution to restoring stability, development and reconstruction and being one of the projects that generates job opportunities[5] in order to achieve the goal of voluntary return of the displaced to their areas of origin. (Ministry of Planning, 2018: 49)

a) Advantages of using precast concrete parts:(Sarhan,2011:4-5)(Jumea, 2010:5-6).

- high quality: Where control is made at all stages of manufacturing, which gives high efficiency through the establishment of an independent laboratory accredited to oversee and audit the process of manufacturing concrete parts.

− Aesthetic: Where it has a smooth surface and free from defects.

− Construction Speed: The concrete pieces are prepared to the project site and installed according to the required design and this takes a limited time.

− Reducing the number of manpower.

− Cleanliness of the work site.

− The shelf life of the building is longer.

− Ease of organizing work on site.

− The possibility of direct finishing after installation and the low cost of finishes, as the surfaces are flat.

− Combustion resistance and limited vulnerability to weathering.

b) Defects of precast concrete parts:

- Less flexibility in the event of an amendment to the designs during and after implementation.

- Periodically treat spacers between concrete parts.

4) Building methods using precast concrete parts: There are several ways to build using precast concrete.

Techniques	Work style
Walls bearing	In this method, structural panels are used to bear the weight of the building in addition to the weight of the plate. The load distribution in this method is in a direction parallel to the direction of the longitudinal or transverse building, or both.
Frame system	In this method, bridges and columns bearing the weight of the building and for filling the walls and ceilings using prefabricated panels.
Box system	The units in this method are in the form of a single space box with different dimensions and according to the design. These units also include all services.

The building consists of one or two floors, so any of the above methods can be adopted.

[5] The National Development Plan within the spatial distribution of unemployment rates at the governorates level indicated that Al-Anbar Governorate occupied the first place with the unemployment rate which reached (19.6%). (Ministry of Planning, 2018: 52)

5) The steps of manufacturing precast concrete parts [6] :The manufacturing method used should give the final required architectural form in addition to achieving all constructional requirements in terms of bending, tensile and shear resistance. The molds shall be provided with the means of lifting and supporting at the specified lifting points. The molds shall be provided with all required accessories. The surface of the molds shall be painted with a coating that facilitates the removal of molds from concrete before the Rebar tying process.

IV-Data analysis/The reality of the health sector in Iraq.

A. The reality of primary health services.

During the past three decades, the health sector in Iraq has suffered from a severe deterioration in its infrastructure and performance due to the war, economic sanctions, and finally the low health priority in the government budget. This was directly reflected in the following: (for more, see Al-Alwan, 2019: 2-10)

a) At the level of global health indicators: Insufficient infrastructures from hospitals and primary health centers, which if any lack management and poor distribution as well as limited human resources, resulting in large gaps in curative and preventive health services that have emerged clearly within the World Bank's evaluation of the human capital index, According to the health, educational and social situation, as Iraq's index fell below the Middle East and North Africa (MENA) rate and the average of similar countries in the economic and social levels.

b) At the level of community members: Inability to reach good health and increasing financial difficulties, which was reflected in the increase in poverty as a result of direct spending on health services. As the costs of health care borne by the patient or his family are (70%)While the percentage approved internationally by the World Health Organization is no more than (30%) to ensure avoidance of destitution, given that the poverty rate in Iraq reached (22.5%) in 2014 to reach (40%) in the provinces affected by terrorism and (50%) In a number of southern governorates (Al-Muthanna, Al-Diwaniyah, Maysan)

As a result, Iraq failed in 2015 to reach the sustainable development goals, especially with regard to maternal, child health and deaths due to the low level of primary health care services.

B. Analysis of statistical indicators.

For the purpose of analyzing the extent to which primary health care services in Iraq conform to the standards approved locally by the Ministry of Health / Environment, These criteria were analyzed as shown:

a) The current and future population:Estimates the population of Iraq for the year 2019 reached (33.678.525 million people, with an annual growth rate of (2.6%). It is expected that, it will reach (44.655.688.34) million people in 2030. See Table (3). Baghdad Governorate ranked first in terms of high population density, as it reached (8.340.711) people, while Al-Muthanna Governorate was the least densely populated (835.797) people for 2019.

[6] Technological path (see more Mahmood& Mohammed ,2020)

Table 3: Population in iraq at 2019 and expected for 2030.

No	Governorate	Population 2018	Population 2019	Annual population growth rate*[8]	Population 2030*[7]
1	Al-anbar	1.771.656	1.818.318	2.6%	2.411.519.658
2	Al-dewaniya	1.291.048	1.325.031		1.757.304.445
3	Al-muthanna	814.371	835.797		1.108.464.468
4	Al-najaf	1.471.338	1.510.338		2.003.065.348
5	Babylon	2.065.042	2.119.403		2.810.829.567
6	Baghdad	8.126.755	8.340.711		11.061.755.17
7	Basrah	2.908.491	2.985.073		3.958.912.698
8	Diala	1.637.226	1.680.328		2.228.512.286
9	Kerbela	1.218.732	1.250.806		1.658.864.542
10	Kirkuk	1.597.876	1.639.953		2.174.965.489
11	Maysan	1.112.673	1.141.966		1.514.516.964
12	Nineveh	3.729.998	3.828.197		5.077.094.501
13	Salah Al-Deen	1.595.235	1.637.232		2.171.356.799
14	Thi-Qar	2.095.172	2.150.338		2.851.856.693
15	Wasit	1.378.723	1.415.034		1.876.669.707
	Total	32.814.336	33.678.525		44.665.688.34

References: Ministry of planning/ Central Statistical Organization - Directorate of Population and Manpower.

*** Calculated by the baha.**

b) Primary health care centers: The total number of health centers for primary care in the (15) governorates for the year 2018 (1868) centers, Baghdad Governorate ranked first in the number of centers, which amounted to (251) centers. While the Karbala Governorate ranked the lowest, which reached (62) centers, followed by the governorates of (Muthanna, Maysan, Najaf and Diwaniyah) respectively (70, 82, 82, and 84). For the purpose of verifying the efficiency of the health service provided within the first level, the following criteria have been verified:

b-1 - Standard (individual / Health Center): Al Anbar Governorate matched the planning standard, as it reached (9.681) inhabitants for the year 2018.

b-2- Standard (Health center/10.000): Table (4) shows the lack of conformity with the planning criterion adopted in determining the adequacy of health care centers for (14) governorates of Iraq covered by the study from (15) governorates for the year 2018. As the governorate of Baghdad was the highest non-conforming, as the standard reached a center for each (3). It was followed by the governorates of (Basra, Nineveh and Karbala) with (5),while Al-Muthanna Governorate was the least in non-conformity with the standard (9).

This reflects in poor performance and efficiency of the health service currently provided, as well as the continued decline in the future with increasing population growth.

[7] **Annual population growth rate=(p2-p1)/p-1*100.P1: population in once year, P2: population in last year**

[8] **$P1=p0(r+1)^n$. P1: Subsequent population, p0: Population in the base year, r: Annual population growth rate, n: The number of years.**

Table(4): Determining the size of deficit, actual and future need of the primary health care centers depending on the population.

No.	Governorate	Population 2018	Health Center number	Population / health center	Health center /10.000 population	Actual need 2019[11] *	Current deficit 2018[10] *	Population 2030*	Future need[9] *
1	Baghdad	8.126.755	251	32.378	3	812.6755	561.676	8.896.997	638.6997
2	Basrah	2.908.491	143	20.339	5	290.8491	147.8491	3.184.186	175.4186
3	Nineveh	3.729.998	182	20.494	5	372.9998	352.5058	4.083.514	226.3514
4	Maysan	1.112.673	82	13.569	7	111.2673	29.2673	1.218.128	39.8128
5	Al-dewaniya	1.291.048	84	15.370	7	129.1048	84	1.413.387	57.3387
6	Diala	1.637.226	104	15.743	6	163.7226	59.7226	1.691.535	65.1535
7	Al-anbar	1.771.656	183	9.681	10	177.1656	-5.8344	1.939.639	10.9639
8	Babylon	2.065.042	121	17.066	6	206.5042	85.5042	2.260.742	105.0742
9	Kerbela	1.218.732	62	19.657	5	121.8732	59.8732	1.334.198	71.4198
10	Kirkuk	1.597.876	135	11.836	8	159.7876	24.7876	1.749.353	39.9353
11	Wasit	1.378.723	77	17.905	6	137.8723	60.8723	1.509.443	73.9443
12	Thi-Qar	2.095.172	165	12.698	8	209.5172	44.5172	2.293.770	64.377
13	Al-muthanna	814.371	70	11.634	9	81.4371	11.4371	891.504	19.1504
14	Salah Al-Deen	1.595.235	125	12.762	8	159.5235	34.5235	1.746.424	49.6424
15	Al-najaf	1.471.338	84	17.519	6	147.1338	63.1338	1.611.738	77.1738
	Total	32.814.336	1868	248.651	-	3281.4336	1413.4336	35.925.416	1714.4558

References: Ministry of Health/ Environmental,2018.tabe(1-1),p5&.tabe(1-4),p79.
*** Calculated by the baha**

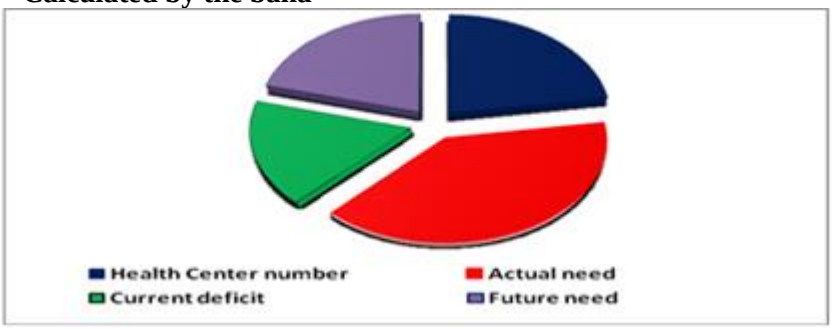

Figure 1: showing the size of the deficit, actual and future need of health care centers.

V-Results and Discuss/Requirements for establishment primary health care centers using precast concrete pieces (applied study).

A. Reality vision of the health service in Iraq at 2030.

According to the vision for 2030, the Iraqi Ministry of Health / Environment targeted the achievement of universal health coverage and implementation of the road map for reforming the health system, through all members of society obtaining high-quality basic health care without individuals bearing financial burdens on that. This service includes (preventive services, treatment and rehabilitation, and health promotion). (Al-Alwan, 2019: 33)

To enable it to achieve the goal of coverage according to the standard of a center / 10.000 people, it required the establishment of (3281.4336) health centers in 2019,

[9] Future need = population / 10000 – Health Center number
[10] Calculated according to: deficit = actual need - number of health centers
[11] Calculated according to: actual need =population 2019/ 10000

while the study identified the future need for 2030 health care centers at (17245.416) health centers, see Table (4).

B. Determine the need from concrete blocks to implement the design of primary health care centers.

The expected quantities for establishing a health care centers by adopting typical design with one and two floors in area of 370 m^2, based on the lack of health centers at the present time (1413) center and the future need until 2030 (17.245) center, see Table (5), as follows:

Table 5: The total need of walls and roofs.

Details	Quantity
Walls m^2	2629120
Roofs m^2	1431040

Reference: prepared by researchers.

VI- Conclusions:

The study indicated a decline in the performance of the provided health services, both in quantity and quality, As a result of the mismatch between the number of health centers and the population, the deficit reached (1413) health centers in 2019, while the future need reached (17145) health centers in 2030.And the deficiency in building construction is solved by using precast concrete technology, as it is more efficient, speed of implementation, as well as lower cost due to lower waste of resources.

VII- Recommendations:

Possibility of completing the study with using the precast concrete method to solve the deficit Problem in the buildings of the education and higher education sector.

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المستخلص

جاء الغرض من الدراسة بيان الحاجة لتحسين الخدمات الصحية في العراق بتحديد مدى كفاءة الخدمة في مراكز الرعاية الصحية اولا والعمل على توظيف الموارد المحدودة باختيار الفن التكنولوجي الأكثر كفاءة المتمثل في استخدام تقنية الصب الجاهز لسد النقص في إنشاء مراكز الرعاية الصحية الأولية ثانيا وشرح تأثير ذلك على توفير الموارد والوقت وزيادة كفاءة الإنتاج. ولتحقيق ذلك تم تبني التحليل الكمي كمنهجية في الدراسة من خلال تحديد حجم العجز من البنية التحتية لمراكز الرعاية الصحية الأولية وفقًا لمعيار المركز الصحي / 10,000 شخص مع تقدير الحاجة المستقبلية للعشر سنوات المقبلة في ضوء معدل نمو سكاني يقدر بـ (2,6٪). بالإضافة إلى استغلال الموارد المتاحة وتحقيق الاستقرار للسكان من خلال توفير فرص عمل منتجة على المدى المتوسط والطويل. وهذا يجعل الدراسة متميزة بالأصالة ، حيث ربطت بين تشخيص المشكلة وإيجاد الحلول باستخدام الطريقة التقنية الحديثة التي تشجع الاستثمار الخاص.

المصطلحات الرئيسية للبحث: مراكز الرعاية الصحية الاولية، الفن الانتاجي.