2023 لسنة 9 العدد
No. 9 – May 2023
المجلة العراقية للبحوث الانسانية والاجتماعية والعلمية
Iraqi Journal of Humanitarian, Social and Scientific Research
Print ISSN 2710-0952-Electronic ISSN 2790-1254

Evaluation Of Immunization Program Of Children Under 5 Years In Al-Diwanyia Governorate,Iraq

Fadel Mohammed Jasem[1] , Ali Hussein Al-Hafidh[2]

1- Middle Technical University College of Health & Medical Technology, Baghdad, Iraq
2- Middle Technical University College of Health & Medical Technology, Baghdad, Iraq

Corresponding author; Fadel Mohammed Jasem (fad0fadh@gmail.com)

abstract:

Background: Immunization against infectious diseases is one of the most successful public health interventions, it is safe and economically feasible. The aim of the vaccination process is to prevent death or disability resulting from diseases that can be prevented by vaccines. Smallpox was completely eradicated in the previous period using vaccination programs, and now the world is close to eradicating polio.

Objectives: to evaluate the Expanded Program on Immunization for children under five years of age in Diwanyia Governorate / Iraq.

Subjects and Methods: cross-sectional descriptive study and included randomly selecting (21) out of (42) primary health care centers distributed over all geographical areas of Diwanyia governorate .The study was carried out for the period from January 3, 2020 to March 27, 2021.

Results: The results showed that the evaluation scores of immunization units in primary health care centers were (good) in 12 out of 21 health facilities (57%), and the mean scores for evaluating all health centers were (108.8 ± 5.5), which is also (good) (≥ 80% or ≥ 108)

Conclusion: the evaluation of health facilities with regard to the expanded program of immunization was good.

Keywords: Immunization; Expanded Program of Immunization; Immunization Evaluation

تقييم برنامج تحصين الاطفال دون سن الخامسة في محافظة الديوانية العراق

فاضل محمد جاسم 1 علي حسين الحافظ 2

1- الجامعة التقنية الوسطى ، كلية الصحة والتكنولوجيا الطبية ، بغداد ، العراق

2- الجامعة التقنية الوسطى ، كلية الصحة والتكنولوجيا الطبية ، بغداد ، العراق

الكاتب المراسل. فاضل محمد جاسم (fad0fadh@gmail.com)

خلاصة:

الخلفية: التحصين ضد الأمراض المعدية هو أحد أنجح تدخلات الصحة العامة ، فهو آمن ومجدي اقتصاديًا. الهدف من عملية التطعيم هو منع الوفاة أو العجز الناتج عن أمراض يمكن الوقاية منها باللقاحات. تم القضاء على الجدري بشكل كامل في الفترة السابقة باستخدام برامج التطعيم ، والآن يقترب العالم من القضاء على شلل الأطفال.

الأهداف: تقييم البرنامج الموسع لتحصين الأطفال دون سن الخامسة في محافظة الديوانية / العراق.

الموضوعات والطرق: دراسة مقطعية وصفية وتضمنت اختيار عشوائي لـ (21) من أصل (42) مركز رعاية صحية أولية موزعة على جميع المناطق الجغرافية لمحافظة الديوانية ، وأجريت الدراسة للفترة من 3 كانون الثاني (يناير) 2020 إلى 27 آذار (مارس). ، 2021.

النتائج: أظهرت النتائج أن درجات تقييم وحدات التحصين في مراكز الرعاية الصحية الأولية كانت (جيدة) في 12 منشأة صحية من أصل 21 (57٪) ، ومتوسط درجات تقييم جميع المراكز الصحية (108.8 ± 5.5) ، والتي كانت (108.8 ± 5.5). هي أيضًا (جيدة) (80٪ أو 108)

الخلاصة: كان تقييم المرافق الصحية فيما يتعلق ببرنامج التحصين الموسع جيدًا.

كلمات مفتاحية: تحصين؛ برنامج التحصين الموسع ؛ تقييم التحصين

Introduction

Infectious diseases are considered one of the biggest challenges in the world that stand in the way of human progress and threaten their survival, as they are considered one of the causes of disability and death in the world (Nii-Trebi, 2017).

Since 1974, the Expanded Program on Immunization has achieved progressive results in controlling communicable diseases by reducing mortality and morbidity rates for children less than five years (Greenwood, 2014).

Immunization is considered one of the most successful interventions in the field of public health it is safe and economically effective (Bradford & Mandich, 2015).

Itis aims to protect against death and disability from diseases that can be protected by vaccinations. Smallpox disease has been eradicated previously, and the world is now very close to the eradication of polio, as well as a significant reduction in the number of cases of the disease, the disabled, and deaths that result from infection with measles, whooping cough and tetanus(Iraqi Ministry Of health, 2015).

In Iraq, the Expanded Program on Immunization was established in 1985 and since that date began to deliver vaccination services to the target groups. Indicators of health status for two decades have been improving, especially with regard to controlling the Vaccine Preventable Diseases, and this reflects the high

standards of the achievements of the EPI program (Iraqi Ministry Of health, 2015) .

The EPI program has made remarkable progress during the period of time since its inception to the present day in terms of including more vaccines in the national vaccine routine schedule, rates of vaccination coverage and disease reduction, and has developed its own surveillance system, adopted the highest standards in the field of cold chain, and introduced a mechanism for field supervision a system for periodic follow-up, an evaluation strategy, and a guarantee of the availability of the appropriate number of trained manpower at all levels in the country (Iraqi Ministry Of health, 2020).

In addition to the traditional vaccines, the Expanded Program on Immunization has included a number of new vaccines in its schedule, such as the mixed measles vaccine (against measles, mumps and rubella (MMR)) in 1988, and the hepatitis B virus (HepB) vaccine in 1994, Haemophilus influenzae type b (Hib) vaccine and rotavirus vaccine in 2012, glaucoma polio vaccine (IPV) in 2016 and conjugated pneumococcal conjugate vaccine PCV13 in 2017. These vaccines are available for children (ages 0 to 59 months) based on The vision is that every child born in or present in Iraq should have access to full, safe and high-quality EPI services and that all vulnerable groups must be protected from vaccine-preventable diseases. In addition to the availability of routine vaccinations, the EPI program (Iraqi Ministry Of health, 2020).

Aims of the study

To evaluate the expanded program of immunization for children under 5 years in Al- Diwanyia governorate .

Materials and Methods

Study design:

Across-sectional study was implemented on (21 out of 42) primary health care centers randomly selected (a multi-stage random sample) in the Al-Diwanyia governorate.

Period of the study: Data were collected during the period from January 3, 2021, until March 27, 2021.

Sampling Technique

The number of primary health care centers in the government of Diwanyia governorate are 42 primary health care centers, which are distributed over five health districts. The sample was taken with multi-stage samples, then a random sample of 50% of the number of primary health care centers for each health district was taken. Sample size (21 care centers Primary health).

Data collection technique:

The data were collected through the Expanded Program on Immunization evaluation questionnaire taken from the World Health Organization website and presented to experts and modified in accordance with the requirements and objectives of the research. (WHO, 2020)

Scoring Criteria

The scale of the three levels was rated on the 3 points (Likert respondent scale) it was scored as a scoring of agreed about by assigning 3 score for "Sufficient", 2 score for "Partially or somewhat sufficient". 1 score for "Insufficient"

The questions in each sub domain 6, 4, 7, 8, 10, 6, 4 & total 45 questions so the Minimum total Score = 45, Maximum total Score = 135, and the 80% Score recommended by WHO & UNICEF <108 as poor while ≥108 as good score. (J. A. R. Zayer & Chiad, 2020) (WHO & Unicef, 2018).

Results

Program Management and Financing

Table (1) represents the evaluation of program management and financing of immunization unit in the health center, the results showed that one indicator had a full evaluation score (100%) in all studied HCs about availability of immunization schedule (up-to-date and clear). The mean of program management and financing was 11.8±1.9.

Table (1):Frequencies, percents, and summary statistics of " Program Management and Financing " items for the studied PHCCs

Program Management & Financing	Insufficient		Somewhat sufficient		Sufficient	
	No	**%**	**No**	**%**	**No**	**%**
The Health Facility (HF) have an immunization field guide or job aide	**1**	**4.8**	**2**	**9.5**	**18**	**85.7**
The Health Facility (HF) have an up-to-date and clear immunization schedule	**-**	**-**	**-**	**-**	**21**	**100**
The Health facility (HF) have a high quality and up-to-date micro-plan (work plan)	**10**	**47.6**	**4**	**19.0**	**7**	**33.3**
Have a budget detailing funds needed to conduct immunization activities	**12**	**57.1**	**9**	**42.9**	**-**	**-**

The funds received(government and donor) sufficiently cover all immunization activities including to reach hard-to-reach populations	**17**	**81.0**	**4**	**19.0**	**-**	**-**
In the past 12 months, the funding sufficient to cover all critical activities for the immunization program	**10**	**47.6**	**11**	**52.4**	**-**	**-**
Mean ±SD (Range)	**11.8±1.9 (9-15)**					

Human Resource Management

Table (2) shows the evaluation of human resource management of the immunization unit in the health center. The results of this study indicated that only one indicator had a full evaluation score (100%) regarding (There any observed evidence of supervisory visits to the Health facility that have been received in the last 6 months). The mean of human resource management was 10.9±0.9.

Table (2):Frequencies, percents, and summary statistics of " Human Resource Management " items for the studied PHCCs

Human Resource Management	**Insufficient**		**Somewhat sufficient**		**Sufficient**	
	No	**%**	**No**	**%**	**No**	**%**
There sufficient staff to cover all aspects of the Expanded program of immunization (EPI)	**-**	**-**	**8**	**38.1**	**13**	**61.9**
Has the staff received sufficient training to cover all aspects of the EPI program	**1**	**4.8**	**12**	**57.1**	**8**	**38.1**
In the last 6 months, The Health facility (HF) received an immunization-related supervisory visit	**-**	**-**	**1**	**4.8**	**20**	**95.2**
There any observed evidence of supervisory visits to the Health facility (HF) that have been received in the last 6 months	**-**	**-**	**-**	**-**	**21**	**100**
Mean ±SD (Range)	**10.9±0.9 (9-12)**					

Vaccine Supply, Quality, and Logistics

Table (3) the results of this study indicated that 95.2% and 90.5% of the study centers had cold storage sufficient (function, space), and a sufficient way to receive vaccines respectively. While The mean of vaccine Supply, quality, and Logistics was 18.6±1.2.

Table (3):Frequencies, percents, and summary statistics of " Vaccine Supply, Quality, and Logistics " items for the studied PHCCs

Vaccine Supply, Quality, Logistics	Insufficient		Somewhat sufficient		Sufficient	
	No	**%**	**No**	**%**	**No**	**%**
The Health facility (HF) have a person responsible for vaccine supply and management in place and adequately trained	**-**	**-**	**3**	**14.3**	**18**	**85.7**
The Health facility (HF) cold storage sufficient (function, space)	**-**	**-**	**1**	**4.8**	**20**	**95.2**
The Health facility (HF) have the process of forecasting vaccine needs sufficient	**1**	**4.8**	**12**	**57.1**	**8**	**38.1**
The vaccine stock management tools properly filled in	**1**	**4.8**	**4**	**19.0**	**16**	**76.2**
The Health facility (HF) have a sufficient way to receive vaccines	**-**	**-**	**2**	**9.5**	**19**	**90.5**
In the past 6 months, there sufficient stocks of all EPI vaccines	**-**	**-**	**19**	**90.5**	**2**	**9.5**
The current practice of waste management in the Health facility sufficient	**-**	**-**	**6**	**28.6**	**15**	**71.4**
Mean ±SD (Range)	**18.6±1.2 (16-20)**					

Evaluation of Service Delivery in Immunization unit

Table (4) demonstrates the evaluation of service delivery in the immunization unit. There are two indicators that had a full evaluation score (100%) for all PHCCs about (the health facility has a sufficient number of fixed immunization sessions per week for the past three months, were all fixed immunization sessions held as scheduled). As for other indicators were somewhat sufficient for most of PHCCs.

Table (4):Frequencies, percents, and summary statistics of " Service Delivery in Immunization unit" items for the studied PHCCs

Service Delivery	Insufficient		Somewhat sufficient		Sufficient	
	No	**%**	**No**	**%**	**No**	**%**
The Health facility (HF) have a map showing communities in the catchment areas including outreach sites if outreach is conducted	**-**	**-**	**14**	**66.7**	**7**	**33.3**
There any geographic areas or communities with many under-vaccinated children	**7**	**33.3**	**7**	**33.3**	**7**	**33.3**
The health facility has a sufficient number of fixed immunization sessions per week	**-**	**-**	**-**	**-**	**21**	**100**
During the past three months, were all fixed immunization sessions held as scheduled	**-**	**-**	**-**	**-**	**21**	**100**
The outreach vaccination sessions implemented sufficient to vaccinate all dropout children in remote areas	**6**	**28.6**	**13**	**61.9**	**2**	**9.5**
The Health facility vaccinate a 22-month old child if they never received any vaccines	**-**	**-**	**2**	**9.5**	**19**	**90.5**
The Health facility (HF) tracks children who have been vaccinated at this Health facility (HF) in the past but are now missing vaccinations (defaulters). Select the	**10**	**47.6**	**6**	**28.6**	**5**	**23.8**

option that best describes the response.						
How Health facility (HF) reaches children who are missing vaccinations. Select the option that best describes the response.	**9**	**42.9**	**9**	**42.9**	**3**	**14.3**
Mean ±SD (Range)	**18.5±1.8 (15-22)**					

Coverage Monitoring

The results of this study found that 90.5% of the health facilities had the person responsible for data management and use in place and adequately trained. As for other items, the study found that most PHCCs were sufficient and somewhat sufficient as explain in table (5).

Table (5):Frequencies, percents, and summary statistics of " Coverage Monitoring " items for the studied PHCCs

Coverage Monitoring	Insufficient		Somewhat sufficient		Sufficient	
	No	**%**	**No**	**%**	**No**	**%**
The person responsible for data management & use in place and adequately trained	**-**	**-**	**2**	**9.5**	**19**	**90.5**
There is no confusion or problems with the forms related to vaccine	**2**	**9.5**	**7**	**33.3**	**12**	**57.1**
If a child receives DTP3 at 22months should be recorded and reported on all the forms	**8**	**38.1**	**5**	**23.8**	**8**	**38.1**
During the previous 12 months, All government matters for data recording and reporting tools are available	**1**	**4.8**	**5**	**23.8**	**15**	**71.4**
Do you feel the official estimates for <1 year olds in your catchment areas accurate	**1**	**4.8**	**4**	**19.0**	**16**	**76.2**
Are monthly reports sent on the appropriate dates to the next level	**-**	**-**	**3**	**14.3**	**18**	**85.7**
A vaccination coverage	**-**	**-**	**8**	**38.**	**13**	**61.9**

accurately calculated and plotted on monitoring chart in the last 12 months at this Health facility (HF)				**1**		
DTP1-DTP3 drop-out accurately calculated over the last 12 months	**1**	**4.8**	**11**	**52.4**	**9**	**42.9**
The availability of Immunization and dropout data used by the health facility for program development	**14**	**66.7**	**5**	**23.8**	**2**	**9.5**
The Health facility receive feedback on your immunization summary forms	**3**	**14.3**	**3**	**14.3**	**15**	**71.4**
Mean ±SD (Range)	**24.6±2.6 (20-30)**					

Surveillance and AEFI Monitoring

Table (6) represents the evaluation of surveillance and AEFI monitoring in the health facilities. A high percentage (95.2) of the studied centers were sufficient to have all the forms and supplies required to investigate and report an acute flaccid paralysis (AFP) or suspected measles case .The mean of Surveillance and AEFI Monitoring was 15.6±2.3.

Table (6):Frequencies, percents, and summary statistics of " Surveillance and AEFI Monitoring " items for the studied PHCCs

Surveillance & AEFI Monitoring	**Insufficient**		**Somewhat sufficient**		**Sufficient**	
	No	**%**	**No**	**%**	**No**	**%**
The person responsible for surveillance activities in place and adequately trained	**4**	**19.0**	**1**	**4.8**	**16**	**76.2**
Have a surveillance field guide or standard operating procedures	**7**	**33.3**	**-**	**-**	**14**	**66.7**
Work with the community to identify diseases	**-**	**-**	**6**	**28.6**	**15**	**71.4**
Have all the forms and supplies required to investigate and report an acute flaccid paralysis (AFP) or suspected measles	**-**	**-**	**1**	**4.8**	**20**	**95.2**

case						
The Health facility HF have written guidance on what to do if an Adverse event following immunization (AEFI) takes place	**5**	**23.8**	**1**	**4.8**	**15**	**71.4**
preparedness of the Health facility HF do if an Adverse event following immunization (AEFI) takes place	**1**	**4.8**	**8**	**38.1**	**12**	**57.1**
Mean ±SD (Range)	**15.6±2.3 (11-18)**					

Demand Generation

The results of this study indicated that 81.0% of the studied centers were sufficient regarding (the absence of significant instances of the individual or community-level resistance to vaccination in this district.The mean of demand generation was 8.8±1.8. Table (7)

Table (7):Frequencies, percents, and summary statistics of " Demand Generation " items for the studied PHCCs

Demand Generation	**Insufficient**		**Somewhat sufficient**		**Sufficient**	
	No	**%**	**No**	**%**	**No**	**%**
The Health facility HF have a person responsible for communication & social mobilization who is in place and adequately trained	**6**	**28.6**	**2**	**9.5**	**13**	**61.9**
There no significant instances of individual or community-level resistance to vaccination in this district	**-**	**-**	**4**	**19.0**	**17**	**81.0**
All the information about the EPI program given to the community	**7**	**33.3**	**10**	**47.6**	**4**	**19.0**
The Health facility HF coordinate with local authorities, community	**8**	**38.1**	**9**	**42.9**	**4**	**19.0**

leaders and local partners (i.e. religious groups) to support advocacy for immunization						
Mean ±SD (Range)	**8.8±1.8 (5-12)**					

The final evaluation is considered (good ≥ 80%) where the health facilities received a Mean score 108.8±5.5.

Table (8): Overall score of health facilities in relation to immunization units

Overall score of health facilities in relation to immunization units	
Mean ±SD (Range)	**108.8±5.5 (99-118)**

Classification of primary health care centers according to the evaluation scores

Table (9) The table shows that 12 out of 21 primary health care centers scored (good≥108), while the rest of the centers got a result (Poor<108).

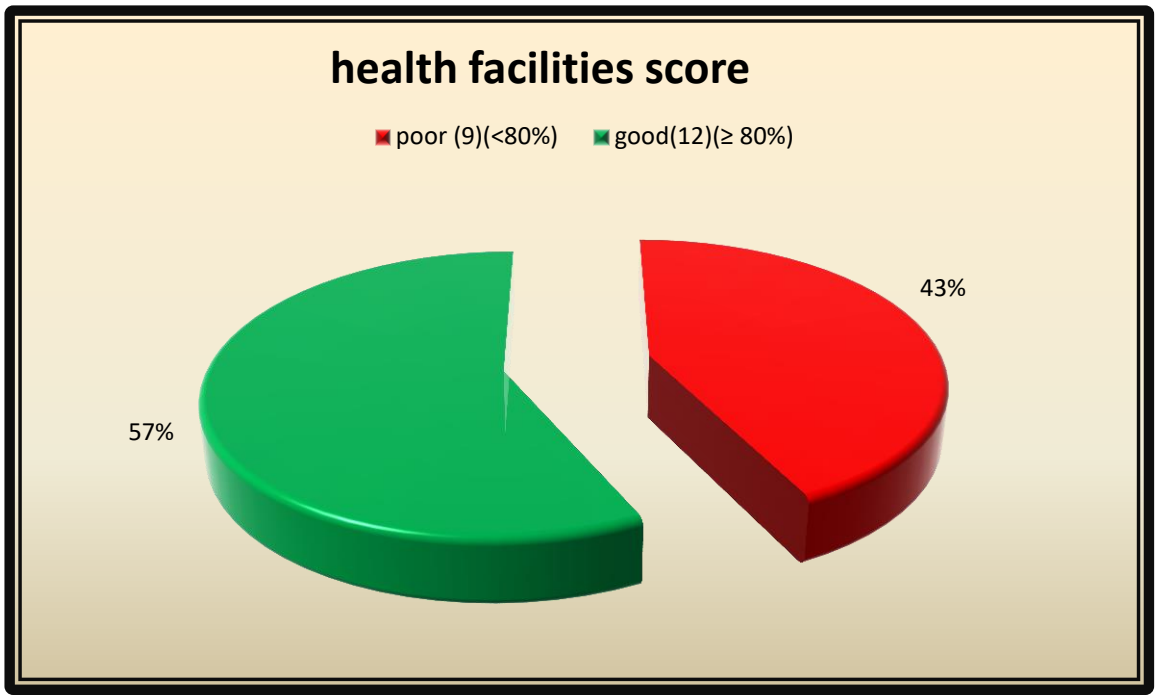
Table (9): Classification of primary health care centers according to the evaluation scores from lowest to largest and as a result of the evaluation

No.	PHCCs	Score	Result
1.	Al Taleia health Center	99	Poor(<108)
2.	Al Shafia1 health Center	100	Poor(<108)
3.	Al Sania 1 health Center	103	Poor(<108)
4.	Al Bder 1 health Center	103	Poor(<108)
5.	Al Oroba health Center	104	Poor(<108)
6.	Sumer health Center	104	Poor(<108)
7.	Al Sadr 4 health Center	106	Poor(<108)
8.	Al Sadr 2 health Center	106	Poor(<108)
9.	Al wehda health Center	107	Poor(<108)
10.	Al Salahia health Center	108	Good(≥108)
11.	Afak 2 health Center	108	Good(≥108)
12.	Al Jomhori health Center	109	Good(≥108)
13.	Al Sader health Center	111	Good(≥108)
14.	Al Jazair health Center	112	Good(≥108)
15.	Al Sadiq health Center	113	Good(≥108)
16.	Gamas 1 health Center	113	Good(≥108)
17.	Al Shanafia 1 health Center	114	Good(≥108)
18.	Al Judaida health Center	115	Good(≥108)
19.	Al Iskan AL Kadeem health Center	116	Good(≥108)

20.	Al Hamza 2 health Center	116	Good(≥108)
21.	Al Shamia 1 health Center	118	Good(≥108)
Total		108.8	Good(≥108)

The percentages score of health facilities regarding EPI

Figure (1) shows that 57% of primary health care centers have agood assessment score



Figure(1) The health facility score about expanded program of immunization

Evaluation of the main domains for immunization program

The current results showed that 95.2% of PHCCs had a good evaluation score (≥80%) for human resource management, and (90.5%) for vaccine Supply, quality, and logistics. While about 95.2% had a poor evaluation score (<80%) for program management and financing. Also, the results appeared that 57.1% of the studied centers were good for all mentioned main domains in this study as explained in the table (10).

Table (10) Evaluation scores of the main domains for immunization program in studied primary health care centers

main domains for immunization program	Poor (<80%)		Good (≥80%)	
	No	%	No	%

Program Management & Financing Score	**20**	**95.2**	**1**	**4.8**
Human Resource Management Score	**1**	**4.8**	**20**	**95.2**
Vaccine Supply, Quality, Logistics Score	**2**	**9.5**	**19**	**90.5**
Service Delivery Score	**14**	**66.7**	**7**	**33.3**
Coverage Monitoring Score	**8**	**38.1**	**13**	**61.9**
Surveillance & AEFI Monitoring Score	**5**	**23.8**	**16**	**76.2**
Demand Generation Score	**12**	**57.1**	**9**	**42.9**
Total main domains for immunization program Score	**9**	**42.9**	**12**	**57.1**

Significant association found in the three main domains are service delivery (p =0.044), coverage monitoring (p =0.020) and demand generation (p =0.011) as shown in (table 11).

Table (11): The association between the main domains of Studied PHCCS and Total immunization program services Score

		Total immunization program services Score				P value
		Poor (<80%)		Good (≥80%)		
		No	%	No	%	
Program Management & Financing Score	**Poor (<80%)**	**8**	**88.9**	**7**	**58.3**	**0.125**
	Good (≥80%)	**1**	**11.1**	**5**	**41.7**	
Human Resource Management Score	**Poor (<80%)**	**1**	**11.1**	**-**	**-**	**0.237**
	Good (≥80%)	**8**	**88.9**	**12**	**100**	
Vaccine Supply, Quality, Logistics Score	**Poor (<80%)**	**1**	**11.1**	**1**	**8.3**	**0.830**
	Good (≥80%)	**8**	**88.9**	**11**	**91.7**	
Service Delivery Score	**Poor (<80%)**	**7**	**77.8**	**4**	**33.3**	**0.044 ***
	Good (≥80%)	**2**	**22.2**	**8**	**66.7**	
Coverage Monitoring Score	**Poor (<80%)**	**6**	**66.7**	**2**	**16.7**	**0.020 ***
	Good (≥80%)	**3**	**33.3**	**10**	**83.3**	

Surveillance & AEFI Monitoring Score	**Poor (<80%)**	**3**	**33.3**	**2**	**16.7**	**0.375**
	Good (≥80%)	**6**	**66.7**	**10**	**83.3**	
Demand Generation Score	**Poor (<80%)**	**8**	**88.9**	**4**	**33.3**	**0.011 ***
	Good (≥80%)	**1**	**11.1**	**8**	**66.7**	
*Significant difference between percentages using Pearson Chi-square test (χ^2-test) at 0.05 level.						

Discussion

Regarding the availability of immunization schedule (up-to-date and clear) in the health facility, the study showed that all PHCCs (100%) had a full evaluation score. This result is consistent with the results of another study in Sudan (Babiker, 2013), which found that all PHCCs had immunization schedule.

the study found that 95.2% of PHCCs had a poor score (<80%) for program management and financing. This result is consistent with the previous study result in Wasit (J. A. Zayer, 2020), which found that all the health centers had a poor score regarding program management and financing . The possible reason for the poverty of this aspect of the program is that the health office does not provide all necessary administrative needs, especially financial.

The current study showed that 95.2% of the health centers had a good score (>80%) for the health facility received an immunization-related supervisory visits. This result disagreed with the previous study findings done by (Ibrahim, 2019) in Somalia , which found that only 22.2% of the study samples had good score . The possible explanation for this result is the availability of a sufficient number of health workers in the health facilities to cover all the activities of the program with good supervision from the facilities of the highest administrative level.

In this study, a high percentage (85.7%) of PHCCs has a person responsible for vaccine supply and management in place and adequately trained. This finding is consistent with the similar study results done in Babylon governorate (Kareem & Alalawe, 2020) , which found that 95.7% of PHCCs had a good score for the presence of a person responsible for vaccine supply and management in place and adequately trained. While these results does not agree with another study in Iraq (Shabila et al., 2012), which found that 68.6% of the studied sample, there are no experienced personnel trained to work in immunization in health facilities.

Concerning the vaccine stock management tools properly filled in, the study found that 76.2% of the health facilities were sufficient. This result disagreed with another study findings were done in Ghana(Yawson et al., 2017), who found that stock out of vaccines in the health facilities. The interpretation of this result may be related to a previous result in the same current study, where found 85.7% of health centers have a vaccination management officer who is present and trained

There are two indicators that had a full evaluation score (100%) for all health facility about (the health facility has a sufficient number of fixed immunization sessions per week for the past three months, were all fixed immunization sessions held as scheduled). This in agreement with the previous study findings was done by (Parmar et al., 2014), which found that all sessions were held according to micro plan. But, these results disagreed with the study findings done in Cameroon(Ebile Akoh et al., 2016), which found that (69.0 %) health facilities carry out one vaccination session per month. It may be because there are orders from higher authorities to manage the program to carry out fixed vaccination sessions throughout the week.

The results of this study demonstrated that 90.5% of PHCCs were sufficient for the person responsible for data management and use in place and trained. This result is in agreement with the findings of a similar study conducted in Thi-Qar governorate (AL-Sarray, 2018) which found that all PHCCs (100%) had a good score for the person responsible for data management and use in place and trained. But these results inconsistent with another similar study done in Babylon governorate (Kareem & Alalawe, 2020), which found that (56.5 %) of PHCCs had a fair score for the person responsible for data management and use in place and trained. This may be due to the lack of distribution of staff in a way to ensure the presence of sufficient staff in the immunization units in health facilities.

This study showed that 76.2% of the centers had a person responsible for surveillance activities in place and adequately trained. This result disagreed with the recent study done in Al-Najaf governorate (Kamel, 2021), who found that that only (25.0%) of studied PHCCs have members trained in disease surveillance and epidemic management. It may be due to the difference in human resources management in the health office between the governorates of Diwanyia and Najaf .

The current study proved that 61.9% of PHCCs were sufficient regarding the presence of a person responsible for communication and social mobilization (adequately trained). This result is in agreement with the previous study findings conducted in Baghdad City (Saadoon, 2013), which showed that 69.7% of PHCCs had a good score regarding the presence of trained staff in

communication skills. But these results disagreed with the study findings done in Wasit (Amily & Lami, 2018), who observed that only 36.0% of the study samples had communication with clients and caregivers.

Conclusions

1. The current study showed that most of the immunization units are in health facilities had a good score, despite found some poor indicators with regard to the results of our study in evaluating the expanded program of immunization in vaccination units in health facilities.
2. The study demonstrated that most of the PHCCs were good for Surveillance and AEFI Monitoring during vaccination sessions. While Demand Generation was poor in more than half the health centers.

6.2 Recommendations:

1- There are some health facilities that received a (poor) evaluation, which need more efforts and support to raise the level of their evaluation to (good).
2- Intensifying efforts by health centers and increasing the number of health teams to follow up on vaccine dropouts children in remote areas.
3- The immunization Program development needs to provide roles from the Ministry of Health on supervision and address some poor indicators.
4- Intensifying community awareness to increase coverage rate of immunization.

References

AL-Sarray, A. A. H. M. (2018). Evaluation of Application of Quality Improvement Program Among a Samples of Primary Health Care Centers In Thi-qar Governorate. *University of Thi-Qar Journal Of Medicine*, *15*(1), 12–28.

Amily, A., & Lami, F. (2018). Assessment of Immunization Session Practices in Primary Healthcare Centers-Wasit Province, Iraq. *Iproceedings 4.1*.

Babiker, A.-B. A. A. M. (2013). *Assessment of Vaccination Services at Elengas Health Centre, Gezira State, Sudan (2011-2012)*. University of Gezira.

Bradford, W. D., & Mandich, A. (2015). Some state vaccination laws contribute to greater exemption rates and disease outbreaks in the United States. *Health Affairs*, *34*(8), 1383–1390. https://doi.org/10.1377/hlthaff.2014.1428

Ebile Akoh, W., Ateudjieu, J., Nouetchognou, J. S., Yakum, M. N., Djouma Nembot, F., Nafack Sonkeng, S., Saah Fopa, M., & Watcho, P. (2016). The expanded program on immunization service delivery in the Dschang health district, west region of Cameroon: A cross sectional survey. *BMC Public Health*, *16*(1), 1–8. https://doi.org/10.1186/s12889-016-3429-7

Greenwood, B. (2014). The contribution of vaccination to global health: Past, present and future. *Philosophical Transactions of the Royal Society B:*

Biological Sciences, *369*(1645). https://doi.org/10.1098/rstb.2013.0433

Ibrahim, S. S. (2019). *Study to assess knowledge, attitudes and practices of parents about immunization Erigavo City , the faculty of health sciences in partial Somaliland. MSc (Thesis) Gollis Unversity,*.

Iraqi Ministry Of health. (2015). *National Immunization Plan Of Iraq for 2015 Table of Contents*. *December 2014*.

Iraqi Ministry Of health. (2020, March 28). *MOH*. https://moh.gov.iq/upload/upfile/ar/1310.pdf

Kamel, M. A.-H. (2021). *Evaluation of the epidemiological activities surveillance program for communicable diseases at the primary health care centers in Al-Najaf Governorate. MSc (thesis) of Middle Technical University/College of Health and Medical Technology/Baghdad*.

Kareem, Q. A., & Alalawe, S. M. (2020). Evaluating the Quality of Primary Health Care Services in Babylon Governorate, Iraq. *Annals of Tropical Medicine and Public Health*, *23*(09). https://doi.org/10.36295/ASRO.2020.23933

Nii-Trebi, N. (2017). Emerging and Neglected Infectious Diseases: Insights, Advances, and Challenges. *BioMed Research International*, *2017*, 1–15.

Parmar, A., Parmar, N., Pandya, C., & Mazumdar, V. S. (2014). Process evaluation of routine immunization (RI) and growth monitoring services during mamta day (village health and nutrition day) in sinor block of Vadodara district, Gujarat, India. *Natl J Community Med*, *5*(4), 378–382.

Saadoon, N. Y. (2013). Evaluation of Staff Variable as Component of Quality Improvement for Maternal and Child Health Promotion in Baghdad City's. *Mosul Journal of Nursing*, *1*(2), 35–39.

Shabila, N. P., Al-Tawil, N. G., Al-Hadithi, T. S., & Sondorp, E. (2012). A qualitative assessment of the Iraqi primary healthcare system. *World Health & Population*, *13*(3), 18–27. https://doi.org/10.12927/whp.2012.22817

WHO. (2020). WHO | A guide for conducting an Expanded Programme on Immunization (EPI) Review. *WHO*. http://www.who.int/immunization/documents/WHO_IVB_17.17/en/

WHO, & Unicef. (2018). *Global data analysis*. *December*, 5–7.

Yawson, A. E., Bonsu, G., Senaya, L. K., Yawson, A. O., Eleeza, J. B., Awoonor-Williams, J. K., Banskota, H. K., & Agongo, E. E. A. (2017). Regional disparities in immunization services in Ghana through a bottleneck analysis approach: implications for sustaining national gains in immunization. *Archives of Public Health*, *75*(1), 1–10.

Zayer, J. A. (2020). *Evaluation of Application of Effective Vaccine Management in Wassit Governorate. MSc (Thesis) of Middle Technical University /College of Health and Medical Technology/Baghdad*.

Zayer, J. A. R., & Chiad, I. A. (2020). Evaluation of application of effective vaccine management in Wassit Governorate, Iraq. *International Journal of Pharmaceutical Quality Assurance*, *11*(2), 245–249.

https://doi.org/10.25258/ijpqa.11.2.9

AL-Sarray, A. A. H. M. (2018). Evaluation of Application of Quality Improvement Program Among a Samples of Primary Health Care Centers In Thi-qar Governorate. *University of Thi-Qar Journal Of Medicine*, *15*(1), 12–28.

Amily, A., & Lami, F. (2018). Assessment of Immunization Session Practices in Primary Healthcare Centers-Wasit Province, Iraq. *Iproceedings 4.1*.

Babiker, A.-B. A. A. M. (2013). *Assessment of Vaccination Services at Elengas Health Centre, Gezira State, Sudan (2011-2012)*. University of Gezira.

Bradford, W. D., & Mandich, A. (2015). Some state vaccination laws contribute to greater exemption rates and disease outbreaks in the United States. *Health Affairs*, *34*(8), 1383–1390. https://doi.org/10.1377/hlthaff.2014.1428

Ebile Akoh, W., Ateudjieu, J., Nouetchognou, J. S., Yakum, M. N., Djouma Nembot, F., Nafack Sonkeng, S., Saah Fopa, M., & Watcho, P. (2016). The expanded program on immunization service delivery in the Dschang health district, west region of Cameroon: A cross sectional survey. *BMC Public Health*, *16*(1), 1–8. https://doi.org/10.1186/s12889-016-3429-7

Greenwood, B. (2014). The contribution of vaccination to global health: Past, present and future. *Philosophical Transactions of the Royal Society B: Biological Sciences*, *369*(1645). https://doi.org/10.1098/rstb.2013.0433

Ibrahim, S. S. (2019). *Study to assess knowledge, attitudes and practices of parents about immunization Erigavo City , the faculty of health sciences in partial Somaliland. MSc (Thesis) Gollis Unversity,*.

Iraqi Ministry Of health. (2015). *National Immunization Plan Of Iraq for 2015 Table of Contents*. *December 2014*.

Iraqi Ministry Of health. (2020, March 28). *MOH*. https://moh.gov.iq/upload/upfile/ar/1310.pdf

Kamel, M. A.-H. (2021). *Evaluation of the epidemiological activities surveillance program for communicable diseases at the primary health care centers in Al-Najaf Governorate. MSc (thesis) of Middle Technical University/College of Health and Medical Technology/Baghdad*.

Kareem, Q. A., & Alalawe, S. M. (2020). Evaluating the Quality of Primary Health Care Services in Babylon Governorate, Iraq. *Annals of Tropical Medicine and Public Health*, *23*(09). https://doi.org/10.36295/ASRO.2020.23933

Nii-Trebi, N. (2017). Emerging and Neglected Infectious Diseases: Insights, Advances, and Challenges. *BioMed Research International*, *2017*, 1–15.

Parmar, A., Parmar, N., Pandya, C., & Mazumdar, V. S. (2014). Process evaluation of routine immunization (RI) and growth monitoring services during mamta day (village health and nutrition day) in sinor block of Vadodara district, Gujarat, India. *Natl J Community Med*, *5*(4), 378–382.

Saadoon, N. Y. (2013). Evaluation of Staff Variable as Component of Quality Improvement for Maternal and Child Health Promotion in Baghdad City's.

Mosul Journal of Nursing, *1*(2), 35–39.

Shabila, N. P., Al-Tawil, N. G., Al-Hadithi, T. S., & Sondorp, E. (2012). A qualitative assessment of the Iraqi primary healthcare system. *World Health & Population*, *13*(3), 18–27. https://doi.org/10.12927/whp.2012.22817

WHO. (2020). WHO | A guide for conducting an Expanded Programme on Immunization (EPI) Review. *WHO*. http://www.who.int/immunization/documents/WHO_IVB_17.17/en/

WHO, & Unicef. (2018). *Global data analysis*. *December*, 5–7.

Yawson, A. E., Bonsu, G., Senaya, L. K., Yawson, A. O., Eleeza, J. B., Awoonor-Williams, J. K., Banskota, H. K., & Agongo, E. E. A. (2017). Regional disparities in immunization services in Ghana through a bottleneck analysis approach: implications for sustaining national gains in immunization. *Archives of Public Health*, *75*(1), 1–10.

Zayer, J. A. (2020). *Evaluation of Application of Effective Vaccine Management in Wassit Governorate. MSc (Thesis) of Middle Technical University /College of Health and Medical Technology/Baghdad*.

Zayer, J. A. R., & Chiad, I. A. (2020). Evaluation of application of effective vaccine management in Wassit Governorate, Iraq. *International Journal of Pharmaceutical Quality Assurance*, *11*(2), 245–249. https://doi.org/10.25258/ijpqa.11.2.9