

Assessment of Routine Vaccination Coverage among Selected Sample of Children less Than Five Years

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Abstract

Background: Immunization is today one of the safest, most cost-effective, and powerful means of preventing deaths and improving lives. Over the years, all countries of the world have incorporated an increasingly broad immunization agenda in their public health interventions.

Objective: To assess the coverage rate of routine vaccination among selected sample of children under five years of age in the Baquba City, and to determine the relationship between routine vaccination coverage rate and some socio- demographic factors in addition to the causes for in-complete or un-vaccination.

Patients and Methods: A cross sectional study was conducted in the Baquba City, center of Diyala Province, for the period from 1/9/2016- 1/2/2017. Data of vaccination coverage of children less than 5 years of age was extracted from child' vaccination coverage card or by recall information from mothers attending Al-Batul teaching hospital and some PHC centers in Diyala province.

Results: A total of 130 cases were studied, of them 23.1% (30) cases were fully immunized (they had been given all the vaccines required for their age in the immunization schedule). Partially immunized were found in 71.1 % (95) and 3.8% (5) cases of them were un – vaccinated. High statistically significant relationship was found with gender, and non – significant relation with age, residence, displacement and location of health center. Low awareness of mother to the schedule, congenital anomalies and family instability were main causes for non-vaccination.

Conclusion: The rate of fully immunized children was low in comparison with those of partially immunized, and a low rate for non-vaccinated children. Hence, it is important to promote vaccination system by the efforts of health officers and the community.

Keywords: vaccination; immunization programs; immunization schedule; health care surveys.

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Introduction

Immunization remains one of the most important and cost-effective public health interventions to reduce child mortality and morbidity. It is estimated that vaccinations prevent 2.5 million child deaths per year, if existing vaccines were made available to 90% of the global under-five population, it will save an additional 2 million children [1]. Immunization programmes are now routinely reaching over 80 percent of children under one year of age. Children under 5 years (“young”) and especially under 2 years (“very young”) are at high risk for complications of several diseases that could be prevented by vaccination simply because of their age [2]. They have an increased risk of influenza-related hospitalizations, and doctor, urgent care, and emergency department visit. Influenza in children also affects family members and caregivers, causing substantial parental work absenteeism, and community epidemics [3]. The Advisory Committee on Immunization Practices (ACIP) recommends routine vaccination by age 24 months against 14 potentially serious illnesses. Coverage remained high and stable overall, exceeding 90% for ≥ 3 doses of poliovirus vaccine, ≥ 1 dose of measles, mumps, and rubella vaccine (MMR), ≥ 3 doses of hepatitis B vaccine (HepB), and ≥ 1 dose of varicella vaccine. Several factors are associated with poor vaccination coverage in countries [4].

Through the Expanded Programme on Immunization (EPI) initiated by the World Health Organization (WHO) in 1974, vaccinations against six target diseases (measles, polio, diphtheria, tetanus, pertussis,

and tuberculosis). More vaccines are added to the schedules in many countries, like Hepatitis B, Haemophilus influenza, Pneumococcal, and Rotavirus, as they become available[5]. Surveys can collect other data on vaccinations, such as reasons and risk factors for not being vaccinated, and other health information [7]. Coverage surveys can be vital in the evaluation of emergency vaccination campaigns by influencing both current and future immunization strategies [8]. This study aims to determine the coverage rate of routine vaccination and to assess the relationship between routine vaccination coverage rate and socio-demographic characteristics in addition to identify the causes for unvaccination among a selected sample of children less than five years in the Diyala Province.

Patients and Methods

A cross-sectional study was conducted in selected health facilities of the Diyala Province, including Al-Batul teaching hospital and some Primary Health Care centers (PHCc), for the period from the 1st September, 2016 to the 1st February, 2017. The study sample included (130) children less than (5) year of age attending consultation clinic of Al-Batul teaching hospital in Baquba City, center of Diyala province in addition to PHCc.

Data collected by a special questionnaire designed by the researcher in coordination with EPI manager in the Diyala DOH. Data of vaccination coverage rate for children less than 5 years of age was extracted from child's vaccination coverage cards or by recall

information from the mothers in Al-Batul teaching hospital and some PHC centers in the Baquba City.

Statistical analysis

Data analysis was done using the SPSS program to study the rate, and relationship between the variables.

Results

Table (1): Distribution of children less than 5 years according to vaccination status and gender

Vaccination variables		Gender					
		No. % male		No. % female		No. % Total	
Vaccination status	vaccinated	9	12.7%	21	35.6%	30	23.1%
	partial	59	83.1%	36	61.0%	95	73.1%
	un vaccinated	3	4.2%	2	3.4%	5	3.8%
Total		71	100%	59	100%	130	100%
χ^2		9.54					
P-value		0.008**					

Table (2): Distribution of children < 5 years according to vaccination tatus Age

Vaccination variables			Age period (months)					Total
			1-12	12-24	25-36	37-48	49-60	
Vaccination status	vaccinator	N	8	12	7	1	2	30
		%	26.7%	40.0%	23.3%	3.3%	6.7%	100.0%
	partial	N	30	36	19	2	8	95
		%	31.6%	37.9%	20.0%	2.1%	8.4%	100.0%
	un vaccinated	N	5	0	0	0	0	5
		%	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Total		N	48	26	3	10	130	
		%	36.9%	20.0%	2.3%	7.7%	100.0%	
χ^2			11.08					
P-value			0.109 ^{NS}					

Table (3): Distribution of children less than 5 years according to vaccination status and residence

Vaccination variables		Residence					
		No. % Urban		No. % Rural		No. % Total	
Vaccination status	vaccinator	24	27.9%	6	13.6%	30	23.1%
	partial	60	69.8%	35	79.5%	95	73.1%
	un vaccinated	2	2.3%	3	6.8%	5	3.8%
Total		86	100%	44	100%	100	100%
χ^2		4.471					
P-value		0.107 ^{NS}					

Table (4): Distribution of children less than 5 years according to vaccination status and displacement of child' family

Vaccination variables		Internal displacement					
		IDPs*		Non IDPs		Total	
Vaccination status	vaccinator	1	9.1%	29	24.4%	30	23.1%
	partial	10	90.9%	85	71.4%	95	73.1%
	un vaccinated	0	0.0%	5	4.2%	5	3.8%
Total		11	100%	119	100%	100	100%
χ^2		2.121					
P-value		0.367 ^{NS}					

*IDPs: Internally displaced people

Table (5): Distribution of children < 5 years according to vaccination status and District

Vaccination variables			Health centre					Total
			Baquba	khalis	Baldrose	Mugdadia	khanakin	
Vaccination status	vaccinated	N	21	2	1	3	3	30
		%	70.0%	6.7%	3.3%	10.0%	10.0%	100.0%
	partial	N	72	0	0	16	7	95
		%	75.8%	0.0%	0.0%	16.8%	7.4%	100.0%
	un vaccinated	N	4	0	0	1	0	5
		%	80.0%	0.0%	0.0%	20.0%	0.0%	100.0%
Total		N	97	2	1	20	10	130
		%	74.6%	1.5%	8%	15.4%	7.7%	100.0%
χ^2		11.49						
P-value		0.175 ^{NS}						

Table (6): Distribution of children less than 5 years according to vaccination status and and Childs' family size

Vaccination variables			family size.					Total
			1-6	7-12	13-18	19-24	26-30	
Vaccination status	vaccinator	N	26	3	0	1	0	30
		%	86.7%	10.0%	0.0%	3.3%	0.0%	100.0%
	partial	N	65	19	8	2	1	95
		%	68.4%	20.0%	8.4%	2.1%	1.1%	100.0%
	un vaccinated	N	5	0	0	0	0	5
		%	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Total		N	97	22	8	3	1	130
		%	74.6%	16.9%	6.2%	2.3%	.8%	100.0%
χ^2		7.32						
P-value		0.502 ^{NS}						

Table (7): Response of mothers to vaccination and Causes for non-vaccination

Variables related to the Family about vaccination		vaccination			Total	
		vaccinated	partial	un vaccinated		
Causes	Interesting family	N	30	0	0	30
		%	100.0%	0.0%	0.0%	100.0%
	Fear of side effect	N	0	11	0	11
		%	0.0%	100.0%	0.0%	100.0%
	Family too busy	N	0	24	0	24
		%	0.0%	100.0%	0.0%	100.0%
	child ill brought but not given immunization	N	0	13	0	13
		%	0.0%	100.0%	0.0%	100.0%
	Place of immunization too far and vaccine not available	N	0	17	0	17
		%	0.0%	100.0%	0.0%	100.0%
	Unaware of need to return for 2 nd or 3 rd dose	N	0	22	2	24
		%	0.0%	91.7%	8.3%	100.0%
child problem like congenital anomaly	N	0	3	3	6	
	%	0.0%	50.0%	50.0%	100.0%	
instability of family housing	N	0	5	0	5	
	%	0.0%	100.0%	0.0%	100.0%	
Total		N	30	95	5	130
		%	23.1%	73.1%	3.8%	100.0%
χ^2		168.77				
P-value		<0.001***				

Discussion

An Expanded Program of Immunization (EPI) of children against dangerous diseases (tuberculosis, diphtheria, Pertussis, tetanus, polio, and measles, hepatitis -B, haemophilus influenza and Rotavirus) is crucial to diminish childhood mortality and morbidity across the world [1]. Unquestionably improving access to and utilization of routine immunization services are the best option for the prevention and control of vaccine-preventable diseases (VPDs) [2].

Immunization is considered one of the most powerful and cost-effective of all health interventions. It also believed to prevent debilitating illness and disability and save millions of lives every year. Currently, immunization decreases an estimated two to three million deaths every year in all age

groups from diphtheria, tetanus, pertussis (whooping cough), and measles. Moreover, immunization contributes a lot to reduce the risk of disability from infectious diseases such as poliomyelitis [3]. The researcher assessed the routine vaccination coverage according to gender, vaccinated females more than males and totally about a quarter had complete vaccination and about three quarters were partially vaccinated with a low percentage for non-vaccinated. This is in-agreement with Monique and Jacqueline, as their results showed that males and females have approximately the same coverage rates with very little difference for males [4]. Vaccination coverage was assessed by card only and by card plus parents' recall reveals that children under two years of age have the highest percentage for complete and

partial vaccination. As shown in Table 2, the vaccination coverage observed in this study that the families concentrate on essential vaccination during the first two years then pay no attention to the other booster doses of the vaccine. These results agreed with Holly et al [5]. (Among children born in 2015 and 2016, coverage was high and stable for most vaccines. There were socio-demographic disparities in coverage, especially by health insurance status. The proportion of completely unvaccinated children remained small.) . Children in rural areas in addition to that partial vaccination coverage reported by immunization surveys in rural areas were higher than that in urban areas. These results were in agreement with Maina et al ' results [5, 9]. The reported vaccination coverage rate for Internally displaced persons (IDPs), was in agreement with Ismail T. et all, as their results showed that vaccination coverage as revealed by showed vaccination card alone was 63.4% while it was increased to 82.2% when both history and cards were used. Some (5.6%) of children were completely non-vaccinated. The factors contributing to the low vaccination coverage were found to be mother's illiteracy, in-accessibility and attitude problems [6,7].

Children whose mother attended antenatal care and those from urban areas were more likely to complete their immunization schedule, these results were in agreement with (Sebahat D &Nadi B.), as they stated that the complete vaccination rate for the study population was 84.5% and 3.2% of all children were totally non-vaccinated. Reasons for non-vaccination were as follows: being in the village and couldn't reach health

care services; having no knowledge about vaccination; the father of the child didn't allow vaccination; inter-current illness of child during vaccination time; missed opportunities like not to shave off a vial for only one child. In logistic regression analysis, paternal and maternal levels of education &immigration time of both parents were found to influence whether children were completely vaccinated or non-vaccinated [9,10]. Globally vaccination coverage – the proportion of the world's children who receive recommended vaccines – has remained the same over the past few years. During 2019, about 85% of infants worldwide (116 million infants) received 3 doses of diphtheria-tetanus-pertussis (DTP3) vaccine, protecting them against infectious diseases that can cause serious illness and disability or be fatal[11].

Limited differences were found in vaccination coverage when assessed by card plus parents' recall or by card only. An expected tendency of highest vaccination coverage values when assessed by card plus parents' recall was observed, in accordance with WHO [10, 12]. Studying the relationship between vaccination and health district, P-value was non-significant. Studying the relationship between vaccination and the number of family members, P-value was non-significant. The most common cause of partial immunization was that the families were too busy, the second most common cause was unaware of the need to return for 2nd and 3rd dose, other causes include fear of side effect, the child brought ill but not given immunization, vaccine not available, child problems like congenital anomalies and

instability of family housing. Among the 130 cases, the most two common causes of lack of vaccination were child problem like congenital anomalies and family neglect.

Conclusions

Vaccination coverage in the studied area was low compared to the national coverage

Recommendations

The recommended more efforts to increase vaccination converge by the efforts of health officers and the community, completion of the scheduled plan should focus on caregivers about the risk of non or partial vaccination and strengthening the EPI for children in rural as well as urban areas.

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