Original Article

Overview of Immunization Coverage and Determinants for Children

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ABSTRACT

Objective: To determine the vaccination coverage rate for Basrah's infants and toddlers aged 0–2 in 2024.
Study Design: Descriptive / cross-sectional study
Place and Duration of Study: This study was conducted at the Community Health Nursing, College of Nursing, University of Basrah, Iraq from January 2024 to November 2024.
Methods: The descriptive (cross-sectional) investigation into the factors influencing vaccination coverage in Basrah City's primary care facilities. One hundred and fifty women were interviewed directly between January 2024 and November 2024. A sample was used to select from four primary healthcare centers in the Basrah Center.
Results: The immunization coverage, the coverage of immunization for children was 95 (63%) completed immunization, while 55 (36%) of the sample had partial immunization.
Conclusion: The coverage rate is good, though the defaulters' rate is relatively high due to fear of vaccines and the mothers being busy.

Key Words: Immunization, Coverage, Determinants, Children

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INTRODUCTION

Many people consider vaccination to be one of the greatest advancements in public health throughout the 20th century.[1] Depending on the vaccine-preventable disease, 90 to 95% of the population must be immunized for it to be effective.[2] The number of children who receive late vaccination doses throughout their first year of life is used to estimate coverage.[3,4] To guarantee that all children, in all nations, received life-saving immunizations, the 27th World Health Assembly decided in May 1974 to build on the achievements of the smallpox eradication program and created the Expanded Program on Immunization (EPI).[5] As understanding of the disease's immunological components grew, new vaccines were created and added to the EPI's list of suggested vaccinations.[5] EPI was well-established in Iraq in 1985, providing vaccination services to certain populations.[6] EPI is thought to have prevented 2 million lives worldwide in 2003.[7]

Evaluating vaccination coverage aids in determining how well program goals are being met and how well services are being provided.

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Furthermore, the assessment of vaccination coverage shows whether significant strides are being made in reaching vaccination goals.[8] A population's vaccination coverage is the percentage of its members who have received vaccinations during a specific time frame. For both single and multi-dose vaccines, it is approximated[9], for every dose (e.g., a vaccine containing diphtheria, tetanus, and pertussis; DTP1, DTP2). Usually, a percentage of the targeted children is used to display it. The dropout rate indicator between the first and last doses of the vaccine during the children's first year of age is used to measure the health system's ability to finish the child's vaccination course.[10] 10% is the highest allowable dropout rate. Higher rates worldwide point to ineffective health care, service interruptions at fixed posts, mothers not being informed about returning for follow-up dosages, and outreach or mobility teams not making follow-up visits.[11]

Other factors that contributed to dropout rates included sex, marital status, and having children. Two approaches are used to monitor immunization programs: surveys conducted in the community and an administrative institution-based approach.[12] The purpose of this study was to determine the vaccine coverage rate for Basrah children aged 0–2 in 2024. It also looks at the reasons behind partial immunization and the vaccine dropout rate.

Immunization is a procedure that is artificially initiated in which a person's immune system is protected from disease by the development of protective factors for the exclusion of a particular antigen following the introduction of the immunogenic.[13] The immunological response is triggered when the immune system reacts outside of the microorganism's molecules. The immune

system then gains the capacity to react swiftly to a subsequent encounter with the new agent because of immunological memory.[14]

METHODS

The descriptive (cross-sectional) study about the determinants of immunization coverage in primary care centers of Basrah city were conducted from January 2024 to November 2024. Data was collected via direct interviews with 150 mothers using an Arabic questionnaire. The sample was selected from four primary care centers in the Basrah Center. The researcher developed the following tools for the study in two parts; part one is demographic characteristics including (gender, child birth order, mother education, mother occupation, mother age group, family type, and place of birth). The causes of incomplete vaccination are covered in Part 2. The data was entered and analyzed through SPSS-25.

RESULTS

Maximum proportion of mothers 58.6% were in the age range of 21-30 years, followed by 31-40 years were 26.6% and those under 20 years were 14.6%. There were 80 (53.3%) males and 70 (46.6%) females. The childbirth orders was 4th i.e. 55 (36.6%) and 3rd i.e. 20 (13%), the place of delivery the high percentage in the hospital 145 (96.6%) the lower percentage 5 3.3% (Tables 1-2). The immunization coverage, the coverage of immunization for children 95 (63%) completed immunization while 55 (36%) of the sample had partial immunization. The type of vaccine (BCG) has a coverage rate of 150 (100%) while the lower coverage is 120 (80%) measles (Table 3). The high percentage of 27 (49%) reasons for the other causes, 7 (12.7%) children were ill 6 (10.9%) mothers were too busy 5 (9.09%) family problems (Table 4).

A high percentage of mothers were educated at secondary school (92.5%) and had complete immunization, while a high percentage of partial immunization for children (86.1%) was illiterate. Where the mothers were unemployed (66.4%) completed immunization for mothers' children, while (33.5%) had partial immunization. Mothers employed (62.5%) had partial immunization, while (37.5%) had complete immunization. The family type of the sample has a high percentage of single-generation families (84.9%), where complete immunization and a lower percentage (15%) of partial immunization. The multi-generation had a high percentage (51.5%) of complete immunization, and the lower percentage (48.4%) was partial immunization. In the childbirth order of the study sample, the high percentage (90.9%) was 2nd while the lower percentage (22.2%) 4th was complete immunization, but the high percentage (77.7%) partial immunization was the childbirth order 4th while the lower percentage (9%) were the childbirth order 2nd (Table 5).

Table No.1: Sociodemographic data of the mothers (n=150)

Variable	No.	%
Age (years)		
< 20	22	14.6
21-30	88	58.6
31 – 40	40	26.6
Gender		
Level of Education		
Illiterate	36	24.0
Primary	39	26.0
Secondary	54	36.0
Graduate and higher	21	14.0
Occupation		
Housewife	134	89.4
Worker	16	10.6
Family type		
Single generation	53	36.0
Multi generation	97	64.0

Table No.2: Sociodemographic data of the children (n=150)

Variable	No.	%
Gender		
Male	80	53.4
Female	70	46.6
Child birth order		
1st	30	20.0
2nd	55	36.6
3rd	20	13.0
4th	45	30.0
Place of delivery		
Hospital	145	96.6
Home	5	3.4

Table No.3: Immunization coverage (n=150)

Immunization coverage	No.	%
Overall immunization status		
Complete	95	63.0
Partial	55	37.0
Unimmunized	-	-
Type of vaccine		
BCG, OPV0, HepB1	150	100.0
DTP1, OPV1, HepB2	141	94.0
DTP2, OPV2	136	90.0
DTP3, OPV3, HepB3	129	86.0
Measles	120	80.0

Table No.4: Causes of partial immunization (n=55)

Cause	No.	%
Mother too busy	6	10.9
Place of immunization not known	2	3.6
Child too young	1	1.8
Child ill	7	12.7
Family problem	5	9.1
Vaccine not available	1	1.8
Unaware of the need for immunization	1	1.8
Fear of side effects	4	7.2
Not faith in immunization	1	1.8
Other causes	27	49.1

Table No.5: Association of sociodemographic data with state of immunization

Variables	Complete Immunization	Partial Immunization
Mother's education		
Illiterate(n =36)	5 (13.8%)	31 (86.1%)
Primary(n=39)	30 (76.9%)	9 (23.07%)
Secondary (n =54)	50 (92.5%)	4 (7.4%)
Graduate (n =21)	10 (47.6%)	11 (52.3%)
Mother's occupation		
Unemployed (n=134)	89 (66.4%)	45 (33.5%)
Employed (n=16)	6 (37.5%)	10 (62.5%)
Family type		
Single generation (n=53)	45 (84.9%)	8 (15.09%)
Multi-generation (n=97)	50 (51.5%)	47 (48.45%)
Childbirth order		
1st (n=30)	25(83.3%)	5 (16.6%)
2nd (n=55)	50 (90.9%)	5 (9.1%)
3rd (n=20)	5 (25%)	15 (75%)
4th (n=45)	10 (22.2%)	35 (77.7%)

DISCUSSION

Sociodemographic characteristics of mothers in the present study showed 58.6% of the mothers' between 21-30 years, 26.6% between 31-40 years, and 14.6% were age group <20. This results are consistent with previous studies[15,16] which reveals that most of the ages were between 31-40 years.

This study showed that a high percentage of children were males, 80 (53.3%), and the lower were females, 70 (46.6%). The results are inconsistent with others researchers[17,18] which reveal that most of the participants were females.

The childbirth orders showed a high percentage was 4th stage 55 (36.6%), and the lower percentage was 3rd 20 (13%). The results of this study are consistent with previous research[19] which reveals that most of the participants were from the 4th stage.

The highest percentage of children was delivered in the hospital 96.6% in the present study. This results are consistent with other studies[20,21] which reveal that most of the participants were delivered at the hospital.

This study shows the immunization coverage, coverage of immunization for children 95 (63%) completed immunization while 55 (36%) had partial immunization. The type of vaccine (BCG) had a coverage rate of 150 (100%), while the coverage of measles was lower at 120 (80%). The results of this study are consistent with Tiryag et al[22] which reveal that most of the participants complete immunization.

In this study a high percentage of 27 (49%) reasons for the fear of the vaccines, 7 (12.7%) children were ill 6 (10.9%) mothers were too busy and 5 (9.09%) family problems. This study's results are consistent with previous research[23], which reveals that most of the participants fear immunization.

In the current study, a high percentage of mothers were educated at secondary school 92.5% and had complete immunization, while a high percentage of partial immunization for children 86.1% were illiterate. The findings of this study agree with Mohammad et al[24], which reveal that most of the participants had secondary school.

Where the mothers were unemployed 66.4% completed immunization for mothers' children, while 33.5% had partial immunization while mothers were employed 62.5% had partial immunization, while 37.5% had complete immunization. This study's results are consistent with Mohammad et al[25], which reveal that most of the participants were unemployed.

This study showed that family type has single-generation families was 84.9%, where complete immunization was 15% of partial immunization. In the multi-generation, 51.5% had complete immunization and 48.4% had partial immunization. The results of this study are consistent with Mohammad et al[26] which reveals that most of the participants were single-generation.

According to childbirth order of this study, 90.9% was 2nd while 22.2% was 4th was complete immunization, but 77.7% has partial immunization was the childbirth order 4th while 9% were the childbirth order 2nd. The results of this study are consistent with Asuman et al[27] which reveal that most of the participants had 2nd childbirth order.

In 2015, Maki et al[6] reported that vaccination coverage rate was 80.7%, while the dropout rate was 19.3%, which is quite high. The primary reasons for the dropout were mothers' inability to attend Primary Health Care Centers (50%) and their lack of knowledge

(31%). In another study, Odusanya et al[28] indicated the 339 children and 339 mothers participated in the study; each mother had one eligible child. Except for breathing difficulties (a sign of diphtheria), the majority of mothers (99.1%) had highly positive views toward vaccination, and more than half (>55%) were typically aware of the signs of diseases that can be prevented by vaccination.

The rate of full immunization was substantially linked with mothers' vaccination at a privately funded health institution ($p<0.001$) and their awareness of immunization ($p = 0.006$), according to multiple logistic regression. In another study in Kenya by Gupta et al[29], the mother's age, literacy level, place of delivery, and birth order all significantly influence how often Kenyans use vaccination services, at a 5% significance level. The use of immunization services was positively correlated with the mother's age, literacy, and place of delivery, whereas the immunization of children was adversely correlated with birth order.

CONCLUSION

The coverage rate is good, although the default rate is relatively high. The reasons for that were fear of the vaccine, also the other reason the mothers were busy.

Author's Contribution:

Concept & Design or acquisition of analysis or interpretation of data:	Hajer S. Essa, Hazim N. Waheeb
Drafting or Revising Critically:	Hajer S. Essa, Hazim N. Waheeb
Final Approval of version:	All the above authors
Agreement to accountable for all aspects of work:	All the above authors

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