Journal of Neonatal Surgery
ISSN(Online): 2226-0439
Vol. 14, Issue 4s (2025)
https://www.jneonatalsurg.com

OPEN ACCESS

Socio-Cultural Influencing Factors Among Mothers Knowledge About Immunization Dropout of Children Under Five Years at Rural and Urban Area: A Comparative Study

Malik Shehab Abboud[1], Abdul Mahdi Abdul Redha Hasan[2]

[*1]Master Student, Pediatric Health Nursing, College of Nursing, University of Babylon. Babylon, Iraq

[2]Assistant Professor, Pediatric Health Nursing, College of Nursing, University of Babylon. Babylon, Iraq.

Email ID: abd_mahdi2003@yahoo.com

[*]**Corresponding author**

Email ID: owner.musa.nurh142@student.uobabylon.edu.iq

Cite this paper as: Malik Shehab Abboud, Abdul Mahdi Abdul Redha Hasan, (2025) Socio-Cultural Influencing Factors Among Mothers Knowledge About Immunization Dropout of Children Under Five Years at Rural and Urban Area: A Comparative Study. *Journal of Neonatal Surgery*, 14 (4s), 892-900

.

ABSTRACT

Background: Vaccination of children is a vital part of worldwide health systems because it is the most successful and cost-effective preventive clinical service for children's health and for the maintenance of public health. Vaccines stimulate the body's own immune system to protect the person against subsequent infection or disease. The aims: to identify the Socio-cultural factors influencing immunization dropout among mothers of children under five years, and to compare between the rural and urban area with regards to the factors influencing immunization dropout among children under five years

Methods: A cross-sectional descriptive study design, conducted in Babylon province from October 4, 2023, to July 1, 2024. Non Probability " convenience " sample of (303) mothers who have children under five years were selected from unit of immunization at primary health care centers (PHCCs), from Babylon province.

Result of the study: Overall, urban mothers had good knowledge about immunization, whereas rural mothers had poor knowledge, and the comparison between mother's Socio-cultural- knowledge Influencing of Immunization Dropout of both group (urban and rural) the recorder mean score shows high significant differences between the responses.

Conclusion & recommendation: Most mothers in both groups received information about childhood immunization from healthcare workers. The findings revealed that overall assessment of mothers live in urban had good knowledge about immunization, whereas rural mothers had poor knowledge. Regarding to the recommendation, develop and expand SMS reminder systems to improve vaccination adherence. Conduct future studies on a larger sample and at a national level to improve postnatal care services.

1. INTRODUCTION

Vaccination of children is a vital part of worldwide health systems because. it is the most successful and cost-effective preventive clinical service for children's health and for the maintenance of public health. Fortunately, vaccinations have increased life expectancy and children's survival, in addition to enhancing economic benefits. Furthermore, vaccination leads to the prevention of permanent disability, premature deaths, and worldwide suffering more than any other medical interventions [1]

There are two main types of immunization, active immunization and passive immunizations. Both types of immunization prepare the body to fight against certain diseases. All countries have national immunization programs, and in most developing countries, children under five years old are immunized with the standard World Health Organization (WHO) recommended vaccines that protect against eight diseases tuberculosis, diphtheria, tetanus (including neonatal tetanus through immunization of mothers), pertussis, polio, measles, hepatitis B, and homophiles influenza [2].

Immunization dropout among children is a term that refers to the situation when children who receive the first dose of a vaccine do not complete the full series of doses required for optimal protection against disease . this can lead to lower immunization coverage and an increased risk of outbreaks of preventable diseases [3].

Therefore mothers awareness and good knowledge regarding vaccination should be improved by health care providers as a correct information about the benefits and risks of vaccines. In addition, immunization providers have positive effects on mother's decision related to immunization. Therefore, as a personal level, health care providers, public health nurses, and

school nurses are in positions to review, provide opportunities for a child to obtain immunization [4].

In Iraq the Expanded program on immunization was established in 1985 . All children in Iraq should receive the following vaccines by the time they turn one BCG vaccination for tuberculosis, three doses of DPT, four doses of polio vaccine, three doses of Hepatitis B (Hep B), and a measles shot at nine months of age. All vaccinations are included in expanded program of immunization (EPI) in Erbil [5] .

Estimated that at least 27 million children and 40 million pregnant women worldwide do not receive the basic package of immunization (as defined by the WHO and UNICEF), and 2 to 3 million children die from vaccine preventable diseases every year [6].

According to the WHO, a dropout rate of >10% is unfavorable and indicates that a health facility has limitations in utilization. In contrast, a low dropout rate is indicative of good utilization and therefore of good service quality [7,8] .

2. METHODOLOGY:

Design of the study: A descriptive (cross-sectional) design study was conducted for the period from October 4, 2023, to July 1, 2024 in Babylon province.

Study Sample: The convenience (non-probability)sample (303) mothers was selected.

Study instrument: A constructed questionnaire was prepared and modified after a thorough review of the relevant literature. This questionnaire covers two parts:

part I: the socio-demographic data included: age\years , educational level, marital status, occupation family monthly income, residence, family type, number of children, source of information.

Part II: Socio-cultural knowledge influencing of immunization dropout is composed of (7) item.

Reliability: the reliability of the items was based on the internal consistency of the checklist was assessed by calculating Cronbach Alpha which was=0,963

Data collection:- Data were collected using the research instrument from February 14 to March 30, 2024. The researcher conducted face-to-face interviews with mothers participating in the study, explaining the study's objectives and importance, providing instructions, and answering any questions. Participants were encouraged to take part and thanked for their cooperation. Interviews lasted 10 to 15 minutes each, the current study data were analyzed by using **SPSS**, version **25.**

3. RESULTS

Table 1:Distribution Demographic Characteristics

Demographic characteristics	Rating & intervals	Urban area mothers		Rural area Mothers		P.Value
		F	%	F	%	
Age / Years	Less than 18	6	3.7	5	3.6	0.355
	18-27	**82**	**50.0**	**92**	**66.2**	
	28-37	63	38.4	37	26.6	
	More than 37	13	7.9	5	3.6	
	M ± Std	27.50 ± 6.477		25.56 ± 5.653		
	Total	164	100.0	139	100	
Educational Status	Un able to Read and write	7	4.3	**0**	**0**	0.932
	Read and write	7	4.3	15	10.8	
	Primary School	36	22.0	**56**	**40.3**	
	Intermediate School	23	14.0	23	16.5	
	Secondary School	18	11.0	20	14.4	
	Diploma and above	**73**	**44.5**	25	18.0	
	Total	164	100.0	139	100.0	

Occupation	Employee	56	34.1	20	14.4	0.182
	Unemployed	**108**	**65.9**	**119**	**85.6**	
	Total	164	100.0	139	100.0	
Marital status	Married	**162**	**98.8**	**137**	**98.6**	0.903
	Divorced	0	0	2	1.4	
	Widowed	2	1.2	0	0	
	Separated	0	0	0	0	
	Total	164	100.0	139	100.0	
Family Monthly Income	Not enough	29	17.7	28	20.1	0.179
	Enough to some extent	65	39.6	**60**	**43.2**	
	Enough	**70**	**42.7**	51	36.7	
	Total	164	100.0	139	100.0	
Family type	Nuclear	**95**	**57.9**	65	46.8	
	Extended	69	42.1	**74**	**53.2**	
	Total	164	100.0	139	100.0	
Number of children	1 – 2	**111**	**67.7**	**91**	**65.5**	
	3 – 4	37	22.5	38	27.3	
	More than 4	16	9.8	10	7.2	
	Total	164	100.0	139	100.0	
1. Source of information for mothers about childhood immunization	TV	No	158	96.3	134	96.4
		Yes	6	3.7	5	3.6
		Total	164	100.0	139	100.0
	Radio	No	163	99.4	139	100
		Yes	1	.6	0	0
		Total	164	100.0	139	100
	Internet	No	115	70.1	110	79.1
		Yes	49	29.9	29	20.9
		Total	164	100.0	139	100.0
	Health care workers	No	54	32.9	59	42.4
		Yes	**110**	**67.1**	**80**	**57.6**
		Total	164	100.0	139	100.0
	Parents, relatives and neighbors	No	123	75.0	96	69.1
		Yes	41	25.0	43	30.9
		Total	164	100.0	139	100.0
	No source	No	155	94.5	123	88.5

		Yes	9	5.5	16	11.5
		Total	164	100.0	139	100.0

This table show that the majority of the mothers age in both groups, 82 (50.0%) and 92 (66.2%) were between the ages of (18-27) years old at mean and standard deviation of 27.50 ± 6.477 and 25.56 ± 5.653. Related to education status 73 (44.5%) of urban mothers were diploma degree and above, while mothers of rural area 56 (40.3%) were primary school. According to their mothers' employment, 108 (65.9%) and 119 (85.6%) of both groups were unemployment. In both groups, 162 (98.8%) and 137 (98.6%) of the mothers were married. the results in this table related to monthly family income show that majority of study sample of urban mothers 65 (39.6%) were enough, while 60 (43.2%) of rural mothers were enough to some extent. Related to family type, this table shows that most Urban areas Mothers 95 (57.9%) were nuclear family, while 74 (53.2%) of rural area mothers were Extended family. Related to Number of children, this table show that most of the study sample in both groups 111 (67.7%), 91 (65.5%) were between 1-2 children as number of children in family. Finally, Source of information for mothers about childhood immunization, both groups, 110 (67.1%) 80 57.6%) were health care worker is a source of information about child immunization.

Table 2: Assessment of the responses of study sample (mothers of urban area child and rural area child) related to mother's Socio-cultural knowledge Influencing of Immunization Dropout.

N	Items	Answers	Mothers of urban area Children				Mothers of rural Children			
			F	%	M	± Std	F	%	M	± Std
1.	I have knowledge about the vaccine schedule	Don't know	30	18.3	2.52	.786	61	43.9	1.95	.915
		Uncertain	18	11.0			23	16.5		
		Know	116	70.7			55	39.6		
		Total	164	100			139	100		
2.	Vaccinating my child protects him from diseases	Don't know	9	5.5	2.81	.510	40	28.8	2.25	.877
		Uncertain	12	7.3			24	17.3		
		Know	143	87.2			75	54.0		
		Total	164	100			139	100		
3.	My child has been given a vaccine before	Don't know	49	29.9	2.36	.913	79	56.8	1.69	.865
		Uncertain	6	3.7			23	16.5		
		Know	109	66.5			37	26.6		
		Total	164	100			139	100		
4.	Providing immunization services in health centers	Don't know	2	1.2	2.89	.343	62	44.6	1.88	.877
		Uncertain	13	7.9			31	22.3		
		Know	149	90.9			46	33.1		
		Total	164	100			139	100		
5.	All my children were fully immunized according to the Iraq schedule	Don't know	15	9.1	2.75	.610	66	47.5	1.82	.861
		Uncertain	11	6.7			32	23.0		
		Know	138	84.1			41	29.5		
		Total	164	100			139	100		
6.	The houswife	Don't know	23	14.0	2.53	.729	66	47.5	1.82	.867

	mother protect her child from drop-out Immunization has benefits for child	Uncertain	31	18.9			31	22.3		
		Know	110	67.1			42	30.2		
		Total	164	100			139	100		
7	Immunization has benefits for child	Don't know	16	9.8	2.76	.615	39	28.1	2.29	.880
		Uncertain	7	4.3			20	14.4		
		Know	141	86.0			80	57.6		
		Total	164	100			139	100		

Cut off point= 0.66, (don't know= 1-1.66), (uncertain = 1.67-2.33), (know =2.34 – 3).

Table 2 display distribution of mothers of urban and rural area related to their Socio-cultural knowledge Influencing of Immunization Dropout, the results in this table shows the general mean and SD for mothers in urban groups were (2.66 ± 0.310) which recording know assessment and (1.96± 0.226) in rural groups which recording uncertain assessment.

Table 3: Overall Assessment of the responses of study sample (mothers of urban area child and rural area child) related to mother's Socio-cultural- knowledge - Influencing of Immunization Dropout.

Main domain	Rating	F	%	M.S	S.D	P. value
Mothers of urban Children	Poor	8	4.9	2.66	0.310	**.0010 H.S**
	Good	**156**	**95.1**			
	Total	164	100.0			
Mothers of rural Children	**Poor**	**76**	**54.7**	1.96	0.226	
	Good	63	45.3			
	Total	139	100.0			

F= frequency, % = percentage, M.S = mean of scale, SD= standard deviation, Mean of scale = (2), Cut of point = (1), poor knowledge (1- 2), good knowledge (2.1 -3).

The results in this table show that overall assessment for mother's Socio-cultural- knowledge - Influencing of Immunization Dropout in urban group were good knowledge at mean and stander deviation (2.66 ± 0.310) and poor knowledge for rural group at mean and stander deviation (1.96 ± 0.226). this recorder mean score shows high significant differences between the responses (P. value = 0.001).

Table 4: Association between Factors Influencing Immunization Dropout with mothers demographical data and General information.

Demographic characteristics & general information	Mothers of urban area children				Mothers of rural area children			
	X^2	D.f	P-Value	Ass	X^2	D.f	P-Value	Ass
Age / Years	22.509	3	.001	**H.S**	4.085	3	.252	N.S
Educational Status	5.382	5	.371	N.S	4.658	5	.324	N.S
Occupation	1.752	1	.186	N.S	.025	1	.875	N.S
Marital status	.104	1	.747	N.S	.124	1	.725	N.S
Family Monthly Income	3.159	2	.206	N.S	11.177	2	.004	**H.S**

Residency	13.061	1	.001	**H.S**	.802	1	.370	N.S
Family type	.072	1	.788	N.S	2.719	1	.099	N.S
Number of children	60.089	2	.001	**H.S**	23.053	2	.002	**H.S**

Related to mothers of urban area children The results in this table show that highly significant association between factors influencing immunization dropout and mothers age, residency and number of children at P- value (0.001,0.001 and 0.001) which are less than 0.01, while remining items recording non-significant association at P-value more than 0.05. In other side related to mothers of rural children, this table show that highly significant association between factors influencing immunization dropout and family monthly income and number of children at p-value 0.004 and 0.002 which are less than 0.01, while remining items recording non-significant association at P-value more than 0.05.

4. DISCUSSION

Socio-Demographic characteristic

The data of the present study in table 1 show that, the mothers were aged between (18-27) years old at mean and standard deviation of 27.50 ± 6.477 and 25.56 ± 5.653. half of the respondent lives in Urban area , Which agree with A cross-sectional study done in Ethiopia [9] who found half of mother (18-35) were between age group, and more than two thirds lives in rural area. It explained by the fact that young women may be more careful about their pregnancy and therefore require institutional care than older women.

In relation education status, the current study results illustrated that more than two fifth of urban mothers were diploma degree graduates and above, while mothers of rural area more than two fifth were primary school. This might be because mothers who are well educated have greater feeling responsibility and aware of motherhood, shifts from conventional views, and control over household resources. This study came in consistent with [10] who found same result. Explained by the fact that educated parents were more aware about importance of vaccination status of their children [21].

Regarding the woman occupation the results indicated more than two thirds of mothers' employed urban area, and majority of rural area mothers groups were unemployed. Due to more utilization in the urban community may be because a majority of mothers in the urban community were unemployed, which help them to have enough time to attend and seek the immunization services. This results supported by a study of [11] which is done in North west Ethiopia.

In regard to the marital status almost these participants were married in both urban and rural mothers. The culture of Iraqi women who tend to seek more women healthcare services after marriage as compared to single women. The findings of this study was inconsistence with conducted by [12] in Uganda who represented that the majority of rural area mothers and less than three quarters urban area were married mothers.

The results in this table related to monthly family income show that less than two fifth of study sample of urban mothers were enough, while more than two fifth of rural mothers were enough to some extent. This means that the current study results and by chance a high percentage of the sample in the urban community were under the high SES than their rural counterparts. The study sample economic status was assessed according to their point of view and satisfaction, as it is an individual perception regardless to the income of the family. This study was agree with [13] who found that majority of the households in the rural community belonged to the low Socio-economic status (SES) quartiles, while a majority of those in the urban community belonged to the high SES quartiles.

Family type, verification as most of urban areas mothers (more than half were nuclear families), while more than half of rural area mothers were lived in (extended). The type of family is well known to affect the awareness about those factors related to and affect immunization coverage rates. This study disagree with study done in Iraq, Basra, by [14] which concluded that less than two third of the children's families were nuclear and the remaining less than two fifth of the families were extended.

Concerning to Number of children, results deliberated that most of the study sample in both groups more than two thirds and less than two thirds were between 1-2 children as number of children in family. The number of children can affect the fact whether or not there is time for mothers to leave the house to get immunization services for their children. The present study disagree with study done in in Ethiopia by [15] who found more than half of mothers live in urban and rural area have more than two as number of children in family.

In terms of source of information for mothers about childhood immunization, both groups, more than two thirds, more than half were health care worker is a source of information about child immunization. This can be explained as most Healthcare workers play a leading role in providing information regarding vaccines in rural areas by conducting sessions campaigns by hand out leaflets which depicts importance of immunization and most Iraqi women, feel more comfortable to discuss their personal matters with their health care providers. These results disagree with study done in in Ethiopia by [11] who found that

more than half of mothers live both urban and rural area have heard information about childhood

Overall Assessment of the responses of study sample (mothers of urban area child and rural area child) related to mother's Socio-cultural knowledge Influencing of Immunization Dropout

Concerning the results of **Table** 3 the overall assessment for mother's socio cultural knowledge influencing the immunization dropout in urban group were good knowledge at mean and stander deviation (2.66 ± 0.310) and poor knowledge for rural group at mean and stander deviation (1.96 ± 0.226). This could be related to the role of health care provider and all of them had high knowledge after the program; therefore, regular health education sessions and reminders among mothers will solve the problems of immunization. This study is supported by evidence in a study carried out as cross-sectional survey on mothers by [5] in Erbil, Iraq who mention that the majority of the mothers lives in urban had good knowledge about vaccination among the mothers of under five years old children in Erbil Governorate. Another study done by [16] who found same result, Due to health education to the mothers about the determinants of immunization drop-out in order to increase their awareness regarding the immunization of the child.

Association between Factors Influencing Immunization Dropout with mothers socio-demographical characteristic and General information.

Regarding the mothers of urban area children, the results in **table (4)** show that there is a highly significant association between factors influencing immunization dropout and mothers age. Older mothers are likely to have more experience raising children and more likely to be knowledgeable about children's health, which may be the possible explanation of improved coverage at this age. This result is agree with Cross-sectional study done in Nigeria by [17] who reported that the immunization dropout rate had strong associations with maternal age live in urban area.

According to mothers of urban area children, the results show that highly significant association between factors influencing immunization dropout and residency. This might be explained by the fact that studied women living in urban areas spend more time on their multiple factors of responsibilities for example, vaccination points are more geographically accessible to families in urban communities than in rural communities rural communities incur higher travel costs to reach vaccination points and rural communities are less aware of the importance of immunization. This result is inconsistent with a cross-sectional study done in Nigeria by [17] who reported immunization dropout rate had strong associations with women residency live in urban area.

Related to mothers of urban area children, the results show that highly significant association between factors influencing immunization dropout and mothers number of children. The mother might become busy fulfilling her children's need as the number of children in the family increase concerning to the study finding, This result is agree with cross-sectional study done in India by [18] who reported that the immunization dropout rate more a significant association between mothers number of children live in urban area ad demographic data.

Regarding the mothers of rural area children, the results demonstration that highly significant association between factors influencing immunization dropout and family monthly income. The socioeconomic state of the family in general can influence the regularity of the visits, women of poor household less likely to complete four or more ANC visits as compared to those in the rich household. This result is inconsistent with cross-sectional study done in Egypt by [19] who reported that immunization dropout rate had strong associations with women residency live in rural area with a significant relationship between socio-economic level and dropout.

Another findings in study a quantitative type included 300 mothers of children selected in rural areas of district Mohali study done in India by [20] who reported that there is recording of non-significant association at P-value more than 0.05 in items toward mothers of rural area children with factors influencing immunization dropout. Related to their point of view and according to their needs and their families requirement.

according to mothers of rural area children, the results show that highly significant association between factors influencing immunization dropout and number of children. The health care provider in vaccine delivery systems, especially at rural levels to reach underserved populations in all areas, to reach number families and children that living in remote locations, affected by each other and that each factor can affect others' commitment to consciousness special vaccination campaigns to compensate for dropout doses are essential, especially for children older than one year who did not receive the full recommended doses. This result is supported by a Community-based cross-sectional study was conducted in the field practice area of the Rural Health Training Centre affiliated to the medical college in Maharashtra, India by [18] who reported that there is a significant association at P-value more than 0.05 in items toward mothers of rural area children with factors influencing immunization dropout

5. CONCLUSIONS

The majority of mothers in both urban and rural areas were aged between 18-27 years. High percentage urban mothers education status were diploma degree and above, while mothers of rural area (40.3%) were primary school. The majority of mothers in both groups were married, and most urban families had sufficient monthly income, whereas rural families had

just enough to some extent. Overall, urban mothers had good knowledge about immunization, whereas rural mothers had poor knowledge. There is a highly significant association with mothers age, residency and number of children at P- value (0.001) and non-significant association at P-value more than 0.05. In other side related to mothers of rural children.

6. RECOMMENDATIONS

Regarding to the recommendation, develop and expand SMS reminder systems to improve vaccination adherence. Conduct future studies on a larger sample and at a national level to improve postnatal care services. Enhance parental education: improve parental knowledge and attitudes towards vaccination through targeted education, communication, and counseling using engaging methods

REFERENCES

[1] Mboussou, F., Kada, S., Danovaro-Holliday, M. C., Farham, B., Gacic-Dobo, M., Shearer, J. C., ... & Impouma, B. (2024). Status of Routine Immunization Coverage in the World Health Organization African Region Three Years into the COVID-19 Pandemic. *Vaccines*, *12*(2), 168.

[2] Omara, A. A., Hossainb, M. S., Abdic, H. A., & Mohamuda, I. A. (2019). Prevalence of dysmenorrhea among female students attending salaam university in mogadishu, Somalia and factors associated with it. *Education*, *2019*.

[3] Tolera, M., Birhanu, A., Regassa, L. D., Getachew, T., Negash, A., Jibro, U., ... & Mussa, I. (2023). Determinants of routine immunizations dropout among children less than five years of age in Ethiopia: A further multilevel analysis from mini 2019 EDHS.

[4] Chung, Y., Schamel, J., Fisher, A., & Frew, P. M. (2017). Influences on immunization decision-making among US parents of young children. *Maternal and child health journal*, *21*, 2178-2187.

[5] Jawad, F. A., & Al-Tawil, N. G. (2023). Implementation And Role Of Health Education Program In Improving The Knowelege About Vaccination Among The Mothers Of Under Five Years Old Children In Erbil Governorate. *Mosul Journal of Nursing*, *11*(2), 337-348.

[6] Singhal, G., Mathur, H., Dixit, M., & Khandelwal, A. (2016). Factors affecting immunization among children of rural population of block Malpura, district Tonk, Rajasthan, India. *Int J Community Med Public Heal.[Internet]*, *3*, 641-6.

[7] Mmanga, K., Mwenyenkulu, T. E., Nkoka, O., & Ntenda, P. A. (2022). Tracking immunization coverage, dropout and equity gaps among children ages 12–23 months in Malawi–bottleneck analysis of the Malawi Demographic and Health Survey. *International Health*, *14*(3), 250-259.

[8] Hailu, C., Fisseha, G., & Gebreyesus, A. (2022). Determinants of measles vaccination dropout among 12− 23 months aged children in pastoralist community of Afar, Ethiopia. *BMC Infectious Diseases*, *22*(1), 376.

[9] Kassa BG and Lul NC (2023) Missed opportunities for immunization among children 0 to 11 months of age that were attended to at debre tabor comprehensive specialized hospital, south gondar zone, Ethiopia. Front. Pediatr. 11:1169328. doi: 10.3389/fped.2023.1169328.

[10] Dhalaria, P., Kapur, S., Singh, A. K., Priyadarshini, P., Dutta, M., Arora, H., & Taneja, G. (2023). Exploring the Pattern of Immunization Dropout among Children in India: A District-Level Comparative Analysis. *Vaccines*, *11*(4), 836.

[11] Chanie, M. G., Ewunetie, G. E., Molla, A., & Muche, A. (2021). Determinants of vaccination dropout among children 12-23 months age in north Gondar zone, northwest Ethiopia, 2019. *Plos one*, *16*(2), e0246018.

[12] Jammeh, A., Muhoozi, M., Kulane, A., & Kajungu, D. (2023). Comparing full immunisation status of children (0–23 months) between slums of Kampala City and the rural setting of Iganga District in Uganda: a cross-sectional study. *BMC Health Services Research*, *23*(1), 856.

[13] Sibeudu, F. T., Uzochukwu, B. S., & Onwujekwe, O. E. (2019). Rural–urban comparison of routine immunization utilization and its determinants in communities in Anambra states, Nigeria. *SAGE open medicine*, *7*, 2050312118823893.

[14] Molan, J. A. S. (2020). Factors influencing compliance with immunization regimen among mothers in Basrah, Iraq. *The Medical Journal of Basrah University*, *38*(1), 37-46.

[15] Asresie, M. B., Fekadu, G. A., & Dagnew, G. W. (2023). Urban-rural disparities in immunization coverage among children aged 12–23 months in Ethiopia: multivariate decomposition analysis. *BMC Health Services Research*, *23*(1), 969.

[16] Shahjahan, M. (2018). *Study on Determinants of the Immunization Dropout Status among under five children in Mogadishu, Somalia* (Doctoral dissertation, Daffodil International University).

[17] Eze P, Agu UJ, Aniebo CL, et al. (2021). Factors associated with incomplete immunisation in children aged 12–23 months at subnational level, Nigeria: a cross- sectional study. BMJ Open. 11:e047445. doi:10.1136/ bmjopen-2020-047445.

[18] Gawade, S. A., Gore, H. D., & Mane, A. B. (2020). Determinants of Immunization Status Among Children Between 13-24 Months of Age in Maharashtra, India–A Community Based Cross-Sectional Study. *Vaccine Research*, *7*(2), 28-33.

[19] Tawfik, E. H. , Arafat, W. A. , Ghattas, V. N. , (2023). Factors Associated with Pregnant Women's Dropout from Antenatal Care Visits in Primary Health Care Facilities. Assiut Scientific Nursing Journal. Vol , (11) No, (43): pp (301 – 416).

[20] Kaur, R., Kumari, K. N., & Kaur, L. (2020). An exploratory study to assess the immunization coverage and factors leading to dropout among mothers of children in selected rural areas of district Mohali, Punjab with a view to develop an information booklet. *Asian Journal of Nursing Education and Research*, *10*(2), 121-126.

[21] Kadim MA, Abdulhasan AF, Abdulrasol ZA, Obaid AF. Dropout of vaccination among Iraqi children. South Asian J Soc Sci Human. 2022;3(6):163-171.