

Mothers Awareness and Attitude Regarding Children Immunization in Rural Area, Lahore

Farhat Shaheen¹, Ejaz Khan², Ghulam Rasool³, Saifullah Soomro⁴

¹ *Nursing Instructor. Doctors Hospital College of Nursing Lahore, Pakistan
Data collection, Writeup*

² *Nursing Instructor. Doctors Hospital College of Nursing Lahore, Pakistan
Manuscript writing, Data collection*

³ *Team Leader, Shauket Khanum Memorial Hospital, Lahore Pakistan
Statistical analysis*

⁴ *Lecturer at Benazir College of Nursing, Shaheed Mohtarma Benazir Bhutto Medical University Larkana Pakistan
Proof reading*

CORRESPONDING AUTHOR

Farhat Shaheen

*Nursing Instructor. Doctors Hospital College of
Nursing Lahore, Pakistan
Email: bscn02171@gmail.com*

Submitted for Publication: 19-07-2022

Accepted for Publication 29-09-2022

How to Cite: Shaheen F, Khan E, Rasool G, Soomro S. Mothers Awareness and Attitude Regarding Children Immunization in Rural Area, Lahore. *APMC* 2022;16(3):202-207. DOI: 10.29054/APMC/2022.1066

ABSTRACT

Background: The most relevant identification of medication is vaccination. It is a distinctive public health attribute that takes into account the greatest cost-effectiveness of reducing the incidence of harmful and transmissible diseases. The vaccine is intended to protect about 2 million and 3 million survivors per year. For an individual, the concept of vaccination is not insufficient, but by preventing the transfer of vaccine-preventable diseases (VPDs), often referred to as immunity, the public's apprehension as a full immunized child is not self-protective to others. A decline in some VPDs remained noted for several years, due to a rise the numeral of unimmunized children recorded in the past. **Objective:** To assess awareness and attitude of the community effects on child immunization. **Study Design:** Cross-sectional descriptive study. **Settings:** The rural community of the Lahore Pakistan. **Duration:** March to May 2022. **Methods:** A validated questionnaire was used to assess awareness and attitude of the community effects on child immunization. Chi square test use for data analysis. **Results:** Most of the 59 (39.3 %) mothers surveyed were aged 21-25 and 58 years of age (38.7%). The respondents were distinguished by a relatively non-homogeneous structure in terms of the level of education. The most of participants were illiterate 46 (30.7%) and others were a mix of Primary 10 (6.7%), Matric 38 (25.3%), Secondary 15 (10.0%), Bachelor's degree 24(16.0%), and Master's degree 11(11.3%). From a total of the study participated the number of children three was 50 (33.3%) others were a mix of 1 child 25(16.7%), 2 children 35 (23.3%), and more than 4 children 40 (26.7%). 117(78.0%) Majority of mothers were complete children immunization status, 15 (10.0%) were incomplete other 18 (12%) continued. 145 (96.7%) majority of the mothers have information about the routine vaccination schedule. **Conclusion:** A supportive attitude towards the vaccination of children was displayed by the most of the mothers. Vaccination played a main role in the many diseases' prevention, they claimed. At the same time, most mothers vaccinate their children with a low awareness indicator, but do not have detailed details about a regular vaccination schedule.

Keywords: Mothers, Immunization, Awareness, Attitude, Child.

INTRODUCTION

The vaccine is intended to protect about 2 million and 3 million survivors per year. For an individual, the concept of vaccination is not insufficient, but by preventing the transfer of vaccine-preventable diseases (VPDs), often referred to as immunity, the public's apprehension as a full immunized child is not self-protective to others. A decline in some VPDs remained noted for several years, due to a rise the numeral of unimmunized children recorded in the past.¹ Apprehension about the protection of vaccines, powered

by bad bits of knowledge or by the media, is the primary goal of these activities.²

Pakistan is one of two states where the prevalence of poliovirus persists. In 2015, in areas of Pakistan that have not ever spread poliovirus intermittently, a community-based vaccination (CBV) method was familiarized, expending native community associates to boost vaccine taking and advance routine vaccination facility distribution. In 2017 and 2018, we carried out house-to-house vaccination investigations through ten CBV spaces to assess the progress of refining routine vaccination. Besides, the level of parental awareness is a significant

explanation for their success (Mohd-Nor & Bit-Lian, 2019). An additional influence associated with vaccination performs is the parent's attitude to vaccines.³ The hard work of a prosperous principal well-being method also has an optimistic effect the studies approve that the great attention of vaccination was extended by the assistance of main well-being.⁴

A study was conducted to analyses information about mothers, then the approach to child vaccination behavior. This determination allows us to identify the causes of imperfect vaccination and other problems involving short immunization numbers. The findings of this study determination are useful for preparatory measures designed to increase the sensitivity and length of the vaccine.⁵ After visiting the community, the researcher found that the community has a lack of mother's awareness and attitude regarding child immunization and it is the major problem of the community. Due to this reason the researcher decides to assess the mother's awareness and attitude and regarding child immunization in the community of Lahore.⁶

Most mothers believe that in cases similar to cold and temperature, their children need not be immunized although if you take a minor an illness with no temperature, like as cough or cold, high fever, or if they have an allergic reaction, such as asthma, it is a fallacy that you take to discourage or postpone your children's vaccine. When your child has a temperature, the antibodies are busy reducing the infection in her body.⁷ The research was performed on the assertiveness of many mothers. Similar findings were recorded by a study seen via.⁸ The majority of mothers choose to be immunized in government hospitals for their infants.⁹ A study on mother vaccination knowledge of less than five children in a selected Mangalore hospital.¹⁰ The number of mothers participating in this research (64.33%) had an acceptable approach to immunization, which is close to the study shown by the study.¹¹ There is no connection between the attitude of mothers and their baby's vaccination status in our study, which is statistically verified by the Chi-square test ($p=0.4217$). More than 70% of mothers have demonstrated successful vaccines among 72 mothers with excellent knowledge. Of the 72 outstanding skills mothers, mothers greater than 70 percent. In their children, better vaccine adherence was seen. The Chi- square test ($p=0.002$) indicates that there is a strong connection between the awareness of the mother about the infant's vaccination and adherence to the vaccination.¹²

In our study, the educational level of mothers has been described as an independent factor in deciding children's vaccination status. With absolute vaccine adherence, mothers with lower primary and diploma educational status were discovered. For mothers that are graduates,

less adherence has been identified. Who discovered that the educational status of mothers and missed opportunities for vaccination are related.¹³

However, it may be the case that the effect of LHWs is underestimated and a literature review has shown some issues and areas that have been ignored. Although LHWs sound like a gold standard and groundbreaking concept for the success of immunization coverage in theory and through government reports, the reality may contradict this. One paper analyzing maternal and neonatal tetanus in Lahore found that 90% of women were unaware of the TT vaccine, believing that vaccinators had never approached their homes or given any vaccine information.¹⁴

The problem was prioritized by looking at various aspects like seriousness, community concern, and mortality rate. The community mothers have poor awareness about signs and symptoms, causes, complications, and prevention. So, considering all these aspects this particular disease was selected for project work. The aim of the study was to assess the awareness and attitude of the mother in the community of Lahore regarding child immunization. Although very few studies have been conducted in Pakistan specifically, there is no published study evaluating the mother's awareness and attitudes regarding child immunization in the rural area there is a need to conduct this kind of research study in Pakistan's community Lahore.

METHODS

A cross-sectional descriptive method of research was used in the analysis. The target population was the rural community of the Lahore from March to May 2022. Permission has been obtained from the Lahore School of Nursing Department. All information of the participants were been protected by confidentiality Permission was taken from the community and a consent form was signed before data collecting the data from the participants. The inclusion criteria were mothers who are residents of the rural community of the Lahore mothers expressed the willingness to participate in this study were included after taking the consent. The exclusion criteria were mothers living in the rural community, do not show the willingness to participate in this study because they are not known about detailed detail about vaccination, and all other people of the community were excluded from the study. Randomly selected sampling techniques were used to collect the data. The sample size was 150 was calculated by taking $N=240$ and margin of error as 0.05 with the help of following formula:

$$n = \frac{N}{1 + N(e)^2}$$

$$n = 150$$

A validated questionnaire was used to assess awareness and attitude of the community effects on child immunization. This questionnaire has three parts section A socio demographic, section B 10 questions on awareness and section C which is 02 question about attitude. Chi square test use for data analysis. The arithmetical study was done by consuming the driver for window version 21 statistical package for social sciences (SPSS).

RESULTS

Table 1: Demographic characteristics of the participants

| Variables | Characteristics | Frequency (%) |
|------------------------|----------------------|-------------------|
| Age | 21-25 years | 59 (39.3%) |
| | 26-30 years | 58 (38.7%) |
| | 31-35 years | 25(16.7%) |
| | 36-40 years | 6 (4.0%) |
| | > 41 years | 2 (1.3%) |
| | Total | 150 (100%) |
| Educational | Primary | 10 (6.7%) |
| | Matric | 38 (25.3%) |
| | Secondary | 15 (10.0%) |
| | Bachelor | 24 (16.0%) |
| | Master | 11 (11.3%) |
| | Illiterate | 46 (30.7%) |
| | Total | 150 (100%) |
| Occupational | Employed | 62 (41.3%) |
| | Unemployed | 88 (58.7%) |
| | Total | 150 (100%) |
| The number of children | 1 child | 25 (16.7%) |
| | 2 children | 35 (23.3%) |
| | 3 children | 50 (33.3%) |
| | More than 4 children | 40 (26.7%) |
| | Total | 150 (100%) |

Most of the 59 (39.3 %) mothers surveyed were aged 21-25 and 58 years of age (38.7%). The respondents were distinguished by a relatively non-homogeneous structure in terms of the level of education. The most of participants were illiterate 46 (30.7%) and others were a mix of Primary 10 (6.7%), Matric 38 (25.3%), Secondary 15 (10.0%), Bachelor’s degree 24(16.0%), and Master’s degree 11(11.3%). The majority of mothers were unemployed 88(58.7%) and 62(41.3%) were employed.

Table 2: Awareness of mothers regarding immunization

| Questions | Options | f (%) |
|--|--------------|-------------------|
| Immunization status | Complete | 117(78.0%) |
| | Incomplete | 15 (10.0%) |
| | Continue | 18 (12%) |
| | Total | 150 (100%) |
| Will you have details on the regular schedule of vaccinations? | Yes | 145 (96.7%) |
| | No | 2 (1.3%) |
| | Don’t know | 3 (2.0%) |
| | Total | 150 (100%) |

| | | |
|--|--------------|-------------------|
| Do you have a good immunization attitude? | Yes | 139 (92.7%) |
| | No | 10 (6.7%) |
| | Don’t know | 1 (.7%) |
| | Total | 150 (100%) |
| By vaccination, diseases may be prevented. | Yes | 139 (92.7%) |
| | No | 4 (2.7%) |
| | Don’t know | 7 (4.7%) |
| | Total | 150 (100%) |
| You are satisfied with the government's immunization programmes initiated by | Yes | 139 (92.7%) |
| | No | 2 (1.3%) |
| | Don’t know | 9 (6.0%) |
| | Total | 150 (100%) |
| Do you know about the child vaccination beginning and completion period? | Yes | 135 (90.0%) |
| | No | 5 (3.3%) |
| | Don’t know | 10 (6.7%) |
| | Total | 150 (100%) |
| Do you think that the vaccine's side effects are dangerous? | Yes | 120 (80%) |
| | No | 25 (16.7%) |
| | Don’t know | 5 (3.3%) |
| | Total | 150 (100%) |
| Do you think that you should vaccinate a child with a common cold? | Yes | 69 (46%) |
| | No | 65 (43.3%) |
| | Don’t know | 16 (10.7%) |
| | Total | 150 (100%) |
| Do you think that you should vaccinate a child with a common cold? | Yes | 25 (16.7%) |
| | No | 81 (54%) |
| | Don’t know | 44 (29.3%) |
| | Total | 150 (100%) |
| Do you think that you should vaccinate a child with diarrhoea? | Yes | 30 (20%) |
| | No | 49 (32.7%) |
| | Don’t know | 71 (47.3%) |
| | Total | 150 (100%) |

INTERPRETATION

From a total of the study participated the number of children three was 50 (33.3%) others were a mix 117(78.0%) Majority of mothers were complete children immunization status, 15 (10.0%) were incomplete other 18 (12%) continued. 145 (96.7%) majority of the mothers have Details regarding the schedule of scheduled vaccines. The most of participants 139 (92.7%) A positive attitude toward immunization was seen and just 10 (6.7%) mothers showed a negative attitude. 139 (92.7%) of respondents thought that immunization could prevent certain diseases, and only 4 (2.7%) thought that vaccination was harmful. 139 (92.7%) The immunization program carried out was met with satisfaction. of 1 child 25(16.7%), 2 children 35 (23.3%), and more than 4 children 40 (26.7%). out by the government. 135 (90.0%) The majority of mothers were informed of the start and completion cycle of child vaccination. 120 (80%) majority of mothers knew about the side effects of the vaccine are dangerous and only 25 (16.7%) were not. Around half 65

(43.3) of Moms felt that they could not vaccinate a child with acute respiratory infections, 81 (54%) considered that a child with a fever should not be vaccinated. around half of mothers 71 (47.3%) were don't know that a child with diarrhea may be vaccinated or not.

Table 3: Association between sociodemographic and awareness of mothers regarding immunization

| Variables | Yes | (%) | No | (%) | X ² | p-value |
|---|-----|------|----|-----|----------------|---------|
| Immunization status | | | | | | |
| Complete | 117 | 78.0 | 8 | 4 | 11.95 | .153 |
| Incomplete | 15 | 10.0 | 0 | 0 | | |
| Continue | 18 | 12 | 0 | 0 | | |
| Will you have details on the regular schedule of vaccinations? | | | | | | |
| Yes | 145 | 96.7 | 4 | 2 | 6.964 | .138 |
| No | 2 | 1.3 | 0 | 0 | | |
| Don't know | 3 | 2.0 | 0 | 0 | | |
| Do you have a good immunization attitude? | | | | | | |
| Yes | 139 | 92.7 | 0 | 0 | 0 | 0 |
| No | 10 | 6.7 | 0 | 0 | | |
| Don't know | 1 | 0.7 | 0 | 0 | | |
| By vaccination, diseases may be prevented. | | | | | | |
| Yes | 139 | 92.7 | 0 | 0 | 6.964 | .138 |
| No | 4 | 2.7 | 0 | 0 | | |
| Don't know | 7 | 4.7 | 1 | 0.5 | | |
| You are satisfied with the government's immunization programmes initiated by | | | | | | |
| Yes | 139 | 92.7 | 4 | 2 | 6.964 | .138 |
| No | 2 | 1.3 | 0 | 0 | | |
| Don't know | 9 | 6.0 | 0 | 0 | | |
| Do you know about the child vaccination beginning and completion period? | | | | | | |
| Yes | 135 | 90.0 | 8 | 4 | 7.792 | .454 |
| No | 5 | 3.3 | 0 | 0 | | |
| Don't know | 10 | 6.7 | | | | |
| Do you think that the vaccine's side effects are dangerous? | | | | | | |
| Yes | 120 | 80 | 8 | 4 | 9.700 | .287 |
| No | 25 | 16.7 | 0 | 0 | | |
| Don't know | 5 | 3.3 | 0 | 0 | | |
| Do you think that you should vaccinate a child with a common cold? | | | | | | |
| Yes | 69 | 46 | 8 | 4 | 5.695 | .681 |
| No | 65 | 43.3 | 0 | 0 | | |
| Don't know | 16 | 0.7 | 0 | 0 | | |
| Do you think that you should vaccinate a child with a common cold? | | | | | | |
| Yes | 25 | 16.7 | 8 | 4 | 16.600 | .035 |
| No | 81 | 54 | | | | |
| Don't know | 44 | 29.3 | | | | |
| Do you think that you should vaccinate a child with diahorrea? | | | | | | |
| Yes | 30 | 20 | 8 | 4 | 11.333 | .184 |
| No | 49 | 32.7 | | | | |
| Don't know | 71 | 47.3 | | | | |

Factors associated with bottle immunization Chi-square analysis were done to identify factors associated with immunization. The Chi-square analysis showed that

there was a significant association between awareness of mothers regarding children immunization with the educational status with do you know about the beginning and completion period of child vaccination $\chi^2 (.347) = .454$, $p > 0.5$ but there is significant association between immunization and several Diseases can be prevented through vaccination and side effects of vaccine are dangerous. That there was a significant association between awareness of mothers regarding children immunization with the educational status with Child with a fever should be vaccinated $\chi^2 (16.6) = .035$, $p > 0.5$. Same as the significant association with other like that Child with diarrhea should be vaccinated Show the above table.

DISCUSSION

In the presented study the most of the surveyed mothers 59(39.3%) It was between the ages of 21-25 and 58(38.7%). In a study conducted in Georgia¹⁵ the most of mothers (48.4%) were between the ages of 26 and 30.it shows that in my study the surveyed mother. Age is 21- 25 and 58(38.7%) is higher as compared to Georgia. The majority of respondents were illiterate 46(30.7%). A study was done in Lebanon.¹⁶ The main results of our research are that there is a level of education higher. In another study conducted in Georgia. Much of the Participants had higher education (master's degree-8%, bachelor's degree 58.5%), one-third had a total secondary education (28.2%). The educational status of the mother in my study is less as compared to Georgia and Lebanon. The most of the mothers were unemployed 88(58.7%) and 62(41.3%) were employed. In a study conducted by Georgia. The majority of mothers were unemployed (77.7%). In the present study, the occupational status of the mother is less as compared to Georgia. From a total of the study participated the number of children three was 50 (33.3%) others were a mix of 1 child 25(16.7%), 2 children 35 (23.3%), and more than 4 children 40 (26.7%). 117(78.0%) Majority of mothers were complete children immunization status, 15 (10.0%) were incomplete other 18 (12%) continued. In a study conducted in Georgia 73% the respondents viewed their children as fully vaccinated (64%) and had 2 children (51.1%). Both studies' results were almost the same. In my study 145 (96.7%) majority of the mother have the Routine vaccination schedule information and most of the respondents 139 (92.7%) A positive attitude toward immunization was shown in a study trained mothers may have a better understanding of good medical practices and therefore be more conscious of the advantages of medical care.¹⁷ In another study conducted in Georgia the most of the participants (66%) A good immunization attitude has been demonstrated. The comparison of both studies almost the same. 139 (92.7%) It was considered by respondents that certain diseases can be avoided by vaccination. In a study

conducted in Georgia.¹⁸ It was considered by respondents that certain diseases can be avoided by vaccination. Over half of the mothers, (60.13%) They supported infant immunization and believed that, as seen in question K1, vaccination would prevent illness, as more than 91% of the respondents provided the correct response. The results are comparable to those of the Al-Ielaomer in which more than 82%. The findings are comparable to those of the Analysis undertaken in which more than in our study, compared to other research, most mothers agree that vaccination. The prevention of diseases plays an important part.¹⁹ Most of the mothers in the present study 139 (92.7%) They were delighted by the immunization campaign carried out by the government. In a survey conducted in Georgia, 71% were satisfied with the government's immunization campaign. Most of the mothers in the latest sample 139 (92.7%) Compared to Georgia, they were pleased with the government-led immunization campaign 135 (90.0%) Majority of mothers in my study Majority of mothers knew about the starting and finishing period of childhood vaccination and the majority of mothers knew about side effects of the vaccine are unsafe. A research conducted in Puducherry to study the awareness of mothers regarding Routine vaccination with a specific emphasis on the pentavalent vaccine, which indicates that 36.7 percent of 215 mothers received a pentavalent vaccine.²⁰ The response of both studies is different in my study show good response toward the starting and finishing period of child immunization as compared to another study. Around half 65 (43.3%) of Mothers felt that they could not vaccinate a child with acute respiratory infections, 81 (54%) It was considered that the vaccination of an It is not mandatory for children with fever to be. Around half of mothers 71 (47.3%) were don't know the vaccination of a child with diarrhea may or may not be. In a study conducted in Georgia Thirty four percent felt that they could not vaccinate a Children suffering from acute respiratory infections, 49% Consider that it is not appropriate to vaccinate a child with fever, 42% they thought a Children with diarrhea can be vaccinated if they are Both studies are almost similar toward the Children suffering from fever need not be vaccinated and Children that have diarrhea might not be vaccinated. In finding of my study show that 135 (90.0%) The respondents found their children to be fully vaccinated. Less understanding of the 2nd or 3rd dose of the vaccine, in addition to the lack of information on the vaccination schedule, 3 (2.0%) It is also possible to note one of the main explanations for the mother's decision to abstain from vaccination. Some respondents felt that vaccination was risky and were fearful of the side effects 4 (2.7%) and some mothers was too busy 8 (5.3%). A study conducted in Georgia 73% the respondents viewed their children as fully vaccinated (64%).²¹ Less understanding of the second or third dose of the vaccine, in addition to the lack of information on the vaccination schedule,

(18.6%) It is also possible to note one of the main factors for the decision of the mother to obtain from immunization. Some participants felt that immunization was risky and were fearful of the side effects (16%).²² Finding of my study were higher as compared to Georgia mostly mothers. In the present study around half 75 (50.0%) Friends and relatives were Sources for the reception of immunization data, 47(31.3%) medical workers, and only 28 (18.7%) through Television.

A significant need for change in this sector also exists here. In order to encourage immunization, Television and other media can be a powerful source, and our study's results illustrate the need for more use of these sources.²³ Finding my study is higher as compared to other studies.

CONCLUSION

A supportive attitude towards the vaccination of children was displayed by the most of the mothers. Vaccination played a main role in the many diseases' prevention, they claimed. At the same time, most mothers vaccinate their children with a low awareness indicator, but do not have detailed details about a regular vaccination schedule. Public understanding of the value of immunization through educational, electronic and mass media services should be increased.

LIMITATIONS

Our analysis, being a cross-sectional study, faces some limitations. With this form of analysis, causal correlations cannot be observed. Also, some prejudices are subject to our study type. Since parents could underestimate or overestimate a question, a non-differential bias may have occurred. Another disadvantage is the likelihood of a recall bias occurring, especially in parents who have not had vaccination cards. Due to the rejection rate and because no distinction could be made between parents who declined and those who chose to participate in this study, a selection bias could be probable. In addition, while our study took many confounding factors into account, other confounding variables may not have taken into account predisposing us to a residual confounding bias. As survey respondents prefer to answer questions in a way that others would favorably interpret, a social desirability bias is also possible.

SUGGESTIONS / RECOMMENDATIONS

This study was on the assess mother's awareness and attitudes regarding the child immunization Community in Lahore. It also brings attention to parents' need to be guided, on the importance of vaccination, particularly for those with lower levels of education. It is necessary to identify new strategies to emphasize the need for immunization and inform parents at the individual and public health level about the benefits of vaccines. Future

studies are required to ensure that in a rural community in Lahore, vaccination coverage increases over time and that adequate steps are taken to enhance parental guidance.

CONFLICT OF INTEREST / DISCLOSURE

There is no conflict of interest declare by author.

ACKNOWLEDGEMENTS

We would like to acknowledge the Lahore School of Nursing, The University of Lahore and data collection team for their support in research.

REFERENCES

- Delany I, Rappuoli R, De Gregorio E. Vaccines for the 21st century. *EMBO molecular medicine*. 2018;6(6):708-20.
- Salmon DA, Dudley MZ, Glanz JM, Omer SB. Vaccine hesitancy: causes, consequences, and a call to action. *Vaccine*. 2017;33:D66-D71.
- Raslan R, El Sayegh S, Chams S, Chams N, Leone A, Hajj Hussein I. Re-emerging vaccine-preventable diseases in war-affected peoples of the eastern Mediterranean region—An update. *Frontiers in public health*. 2017;5:283.
- Aoun M, Sleilaty G, Abou Jaoude S, Chelala D, Moussa R. How do Lebanese patients perceive the ideal doctor based on the CanMEDS competency framework? *BMC Medical Education*. 2019;19(1):1-9.
- Verulava T, Jaiani M, Lordkipanidze A, Jorbenadze R, Dangadze B. Mothers' knowledge and attitudes towards child immunization in Georgia. *The Open Public Health Journal*. 2019;12(1).
- Haskell A. Too Tired to be Fair: Reactive Attitudes and Irrelevant Influences. 2017.
- Mohd-Nor N, Bit-Lian Y. *SciMedicine Journal*.
- Wani RT, Dar H, Raina ZA. Knowledge, attitude and practices of mothers with children under five years of age about vaccination. *J Med Sci Clin Res*. 2017;5(7):24449-54.
- Angadi M, Jose AP, Udgiri R, Masali K, Sorganvi V. A study of knowledge, attitude and practices on immunization of children in urban slums of Bijapur city, Karnataka, India. *Journal of clinical and diagnostic research: JCDR*. 2017;7(12):2803.
- Jose J, Lobo M, Nisha K, Shilpa G, Umarani J. Awareness on immunization among mothers of underfive children. *Int J Innov Res Dev*. 2016;2:620-6.
- Adokiya MN, Baguune B, Ndago JA. Evaluation of immunization coverage and its associated factors among children 12–23 months of age in Techiman Municipality, Ghana, 2016. *Archives of Public Health*. 2017;75:1-10.
- Mugada V, Chandrabhotla S, Kaja DS, Machara SGK. Knowledge towards childhood immunization among mothers & reasons for incomplete immunization. *Journal of applied pharmaceutical science*. 2017;7(10):157-61.
- Negussie A, Kassahun W, Assegid S, Hagan AK. Factors associated with incomplete childhood immunization in Arbegona district, southern Ethiopia: a case-control study. *BMC public health*. 2017;16(1):1-9.
- Hasnain S, Sheikh N. Causes of low tetanus toxoid vaccination coverage in pregnant women in Lahore district, Pakistan. *EMHJ-Eastern Mediterranean Health Journal*, 13 (5), 1142-1152, 2007. 2017.
- Diseases TLI. The imperative of vaccination. 2017. p. 1099.
- Hussain E, Mohammed Z. Parents' Attitudes toward Immunization and its Relation with Pediatric Immunization Compliance at Primary Health Care Centers in Karbala City, Iraq. *Iraqi National Journal of Nursing Specialties*. 2021;34(1):50-8.
- Vikram K, Vanneman R, Desai S. Linkages between maternal education and childhood immunization in India. *Social science & medicine*. 2017;75(2):331-9.
- Verger P, Collange F, Fressard L, Bocquier A, Gautier A, Pulcini C, et al. Prevalence and correlates of vaccine hesitancy among general practitioners: a cross-sectional telephone survey in France, April to July 2014. *Eurosurveillance*. 2016;21(47):30406.
- Qutaiba B Al-lela O, Bahari MB, Al-Qazaz HK, Salih MR, Jamshed SQ, Elkalmi RM. Are parents' knowledge and practice regarding immunization related to pediatrics' immunization compliance? a mixed method study. *BMC pediatrics*. 2018;14:1-7.
- Sankar BK, Rameh S, Sunny A. A study to assess and correlate the knowledge, attitude and practices of vaccination among mothers with educational status in a Teaching Hospital in South India. *Primary Health Care: Open Access*. 2018;8(1):1-6.
- Edwards KM, Hackell JM, Diseases CoI, Practice Co, Medicine A. Countering vaccine hesitancy. *Pediatrics*. 2016;138(3).
- Wasserman C, Postuvan V, Herta D, Iosue M, Värnik P, Carli V. Interactions between youth and mental health professionals: The Youth Aware of Mental health (YAM) program experience. *PloS one*. 2018;13(2):e0191843.
- Selvaraj K, Sarkar S, Daya AP. Knowledge on routine pentavalent vaccines and socioeconomic correlates among mothers of children aged younger than 5 years in Urban Puducherry. *Int J Med Sci Public Health*. 2017;4(2):199-207.