Punjab University Journal of Zoology

34(1): 21-25 (2019)
http://dx.doi.org/10.17582/journal.pujz/2019.34.1.21.25

OPEN ACCESS

Research Article

Barriers Faced by Mothers in Completion of EPI

Syeda Beenish Bukhari[1], Sidra Khalid[1]*, Shahid Bashir[1], Riffat Mehboob[2], Humaira Waseem[2]

[1]University Institute of Diet and Nutritional Sciences, Faculty of Allied Health Sciences, The University of Lahore, Pakistan
[2]Research Unit, Faculty of Allied Health Sciences, The University of Lahore, Pakistan

Article History
Received: October 11, 2018
Revised: November 23, 2018
Accepted: December 29, 2018
Published: January 23, 2019

Authors' Contributions
SBB collected the data and reviewed the literature. SK wrote the article. SB designed and supervised the study. RM reviewed the article critically. HW did statistical analysis.

Keywords
Barriers, Mothers, Immunization, Children.

Abstract | Present study was conducted to determine the barriers of immunization among mothers attending Pediatric and Gynecological Department of the Sir Ganga Ram Hospital Lahore. For this, 150 mothers were selected randomly; relevant data were collected through pre-tested questionnaire. Data were tabulated and analyzed with the help of SPSS version 21.0. Results of current study showed that barriers to complete vaccination course were lack of information, myths, un-availability, non-affordability, fear of side effects and fear of lack of safety of vaccination procedure/ dirty needles. Analysis revealed a significant association between maternal education and barriers to complete vaccination course.

To cite this article: Bukhari, S.B., Khalid, S., Bashir, S., Mehboob, R. and Waseem, H., 2019. Barriers faced by mothers in completion of EPI. *Punjab Univ. J. Zool.*, **34(1)**: 21-25. http://dx.doi.org/10.17582/journal.pujz/2019.34.1.21.25

Introduction

Immunization is a defensive procedure whereby a man is made invulnerable or resistant to an infectious disease, by the administration of a vaccine (Arora, 2018). It is one of the most cost-effective and secure public health interventions in reducing the childhood mortality and morbidity (Mathew G *et al.,* 2017; Shashidhara and Jeyalakshmi 2018). The expanded program on immunization was introduced in 1974 by world health organization (WHO) to give general access to a set of life saving vaccines (Owais *et al.,* 2013; Hu *et al.,* 2018). The national Expanded Program on Immunization (EPI) goals to immunize all children in the range of 0 and 23 months against eight vaccine preventable diseases that include newborn tuberculosis, poliomyelitis, diphtheria, pertussis, neonatal tetanus, hepatitis B, Haemophilus influenza type b (Hib), and measles (Masud *et al.,* 2012). Pakistan's Expanded Program on Immunization (EPI) plan includes administrating single dose of 0.05ml to 0.1ml of BCG/OPV during childbirth, 3 doses of 0.5ml of DPT/OPV/Hepatitis B antibodies at 6, 10 and 14 weeks of age, and 2 doses of 0.5ml of measles immunization at 9 and 15 months of age (Owais *et al.,* 2011; Tariq K and Tariq R 2018; Khan and Aslam 2017; IHMA 2017). The Expanded Program on Immunization (EPI) in Pakistan every year focuses around 5.8 million children aged under 1 year to ensure against 8 antibody preventable illnesses and 5.9 million pregnant ladies to shield them and their new-born from tetanus through routine vaccination administrations (Rasheed *et al.,* 2014). The maternal immunization provides greater protection to pregnant women and their new-born against infectious diseases

***Corresponding author: Sidra Khalid**
sidrakhalid.uaf@gmail.com

during the initial couple of long stretches of life (Vojtek *et al.,* 2018; Perrett and Nolan 2017). Other vaccines used for children and older age people are hepatitis A and B vaccination, Haemophilus influenzae type b, meningococcus, pneumococcus, rotavirus, human papilloma infection and varicella (Okwo-Bele and Cherian 2011). Barriers to complete immunization include poor financial status, lower education level, non-utilization of maternal child health services, missed immunization opportunities and dropped immunization sessions (Sodha and Dietz 2015). Other factors associated with incomplete immunization are little access to services, health staff behavior and practices, trustworthiness of services, false contraindications, parents' practical knowledge of vaccination, fear of side effects, conflicting priorities and parental beliefs (Favin *et al.,* 2012). Absence of parent awareness and powerless administration also acted as barriers to complete vaccination (Mutua *et al.,* 2017). Cantuária *et al.* performed a study in 2016 to find the factors associated with incomplete or delayed vaccination across countries. They reasoned that the inoculation status is affected by factors identified with the youngster, parental attitude or knowledge, social context of the family and health care services (Cantuária *et al.,* 2016). Bbaale E in 2013 demonstrated that 50% of youngsters in Uganda were completely vaccinated. Furthermore, 89%, 24%, 52%, and 64% got BCG, DPT, polio and measles immunizations separately. Factors of incomplete vaccination include maternal education, introduction to media, maternal age, occupation, regional and local peculiarities (Bbaale 2013). Rainey *et al.* conducted a study in 2011 and inferred that the most possible factors of incomplete vaccination were poor access, insufficient antibody supply, wellbeing specialist accessibility and information, missed chance to immunize, vaccinator absent at the booked time for inoculations, place of home (Rainey *et al.,* 2011). Sheikh A in 2013 concluded that the most common primary reason for non-vaccination was lack of information, and the most common secondary reason was religious taboos (Sheikh *et al.,* 2013). Glatman-Freedman A *et al.* in 2012 revealed that the barriers associated with complete vaccination were parental absence of knowledge regarding benefits of vaccinations, fear of adverse reaction, belief that vaccination is not beneficial or causes harm, absence of motivation, mistrust of health care system and social or cultural pressure against vaccinations (Glatman-Freedman *et al.,* 2012). Negussie A *et al.* performed a study in 2015 revealed that the barriers to complete vaccination course include child's birth order, mother's age, information about immunization benefits and perception of vaccine side effects (Negussie *et al.,* 2015). The current study was conducted to determine the barriers faced by mothers in completion of immunization.

Materials and Methods

A cross sectional study was conducted at Pediatric and Gynaecological Department of the Sir Ganga Ram Hospital, Lahore, over a period of 4 months, after obtaining the ethical approval from the The University of Lahore. A total number of 150 mothers having children under five years of age with multigravida were selected through non probability convenient sampling technique. Mothers having children above five years of age and non cooperative mothers were excluded from the study. Data were collected through pre-tested data collection tool (questionnaire/ Proforma). Data were tabulated and analyzed with the help of SPSS version 21.0. Frequencies were calculated and Pearson chi-square test was applied to evaluate the association of maternal education with the barriers to complete Expanded Program on Immunization. P-value less than 0.05 was considered to be significant.

Results and Discussions

This study reveals that the awareness about EPI among mothers was 99.3%. Similar results were found by Rachna *et al*, in 2010 also concluded that 85% of mothers were aware about immunization (Rachna *et al.,* 2010). The major source of information about EPI were media (8.7%), relatives (40%), health workers/ medical staff/clinics (49.3%) while remaining (2%) had no known source of information. Kaoje *et al*, in 2017 demonstrated that the source of information about EPI was from health workers (29.8%), radio (43.8%), television (10.7%), workshops, seminars, training (2.7%), newspaper (1.3%), friends, relatives (11.5%), and lectures from school (0.2%) (Kaoje *et al.,* 2017). Analysis revealed that, 30% mothers were uneducated, 38% were below matric while 32% were above matric. Khan and Aslamin 2017; Ahmad *et al.* 2017; Legesse and Dechasa in 2015 concluded that all the categories of mother's education had positive impact on the probability of immunization of children (Khan and Aslamin 2017; Ahmad *et al.,* 2017; Legesse and Dechasa 2015). In current study 68.7% mothers were taking EPI as their prime responsibility while 31.3% mothers just succeeding the society. Favin *et al*. in 2012 concluded that parents lacking interest and low perceived importance of vaccination for child's health were the key factors of not vaccinating their children (Favin *et al.,* 2012). Current results concluded that 13.3% mothers were having fear of side effects of EPI. Similar results were shown by Ahmed *et al*. in 2013, that mothers thought that immunization could cause infertility, fever, deformity, convulsions and diarrhea (Ahmed *et al.,* 2013). Current results showed that 60% of mothers completed the vaccination course (Tetanus Toxoid) during pregnancy. Lambo and Nagulesapillaiin 2012 reported that maternal tetanus is responsible for at least 5% of maternal deaths (Lambo and Nagulesapillai 2012). 65.3% mother were completed the vaccination course of their children while 34.7% stopped EPI course. Mabrouka and Bofarrajin 2011, showed that 81% mothers completely immunized their children and

19% partially immunized them (Mabrouka and Bofarraj, 2011). Out of 34.7% mothers, 24% declared that barriers to complete vaccination course were lack of information, 9.3% had myths, 0.7% had un-availability and 0.7% had non-affordability. Similar results were found by Srivastava and Shankar, in 2017 and Hasan *et al*. in 2010 showed that the major cause for faire of vaccination was found to be lack of awareness (Srivastava and Shankar, 2017; Hasan *et al*., 2010)

Table 1: Education level of Mother

Sr. No.	Education Level	Frequency	Percentage
1	Uneducated	45	30
2	Under matric	57	38
3	Above matric	48	32
4	Total	150	100

Table 1 represents the education level of 150 mothers having children less than five years of age. Among those 30% were uneducated, 38% were under matric and 32% were above matriculation

Table 2: Source of information about EPI

Sr. No.	Source of information about EPI	Frequency	Percentage
1	Electronic & Print Media	13	8.7
2	Relatives	60	40
3	Health workers	74	49.3
4	Some other/Unknown source	3	2
5	Total	150	100

Table 2 represents the EPI source of information of mothers having children less than five years of age. Among those 13 (8.7%) mothers were aware about EPI through media, 60 (40%) through relatives, 74 (49.9%) through health workers and only 3 (2%) were aware through some other unknown source.

Table 3 represents, 60% mothers have completed their Tetanus Toxoid course during pregnancy while 40% mothers dropped their Tetanus Toxoid course during pregnancy. Out of 60% mothers: 6.7% were uneducated, 26.7% were undermatric while 26.7% were above matric. 65.3% mothers had completed vaccination course of their children and 34.7% mothers dropped EPI. Out of 65.3% mothers: 10.7% were uneducated, 29.3% were undermatric while 25.3% were above matric. There was a strong association between education level of mothers and their status of vaccination of Tetanus Toxoid during pregnancy and a robust association between education level of mothers and the status of vaccination course of their children as well.

Table 3: Association between education and status of Tetanus Toxoid course during pregnancy and status of EPI course of children

Education Level	Status of TT course during pregnancy		Total	P-value
	Yes	No		
Uneducated	10 (6.7%)	35 (23.3%)	45 (30%)	0.000
Under matric	40 (26.7%)	17 (11.3%)	57 (38%)	
Above matric	40 (26.7%)	08 (5.3%)	48 (32%)	
Total	90 (60%)	60 (40%)	150 (100%)	
Education Level	**Status of EPI course of children**		**Total**	**P-value**
	Yes	**No**		
Uneducated	16 (10.7%)	29 (19.3%)	45 (30%)	0.000
Under matric	44 (29.3%)	13 (8.7%)	57 (38%)	
Above matric	38 (25.3%)	10 (6.7%)	48 (32%)	
Total	98 (65.3%)	52 (34.7%)	150 (100%)	

Table 4 represents a strong association between education level of mothers and barriers faced to complete vaccination course of their children. Out of 34.7% mothers: 9.3% mothers had not completed vaccination course of their children due to myths, 24% due to lack of information, 0.7% due to unavailability and 0.7% due to non-affordability.

Table 5 represents the association between education level of mothers and fear of side effects of EPI. 20 (13.3%) mothers had a fear of side effects of EPI while 130 (86.7%) mothers had no fear about EPI. Out of 20 (13.3%) mothers: 8.7% were uneducated, 2% were undermatric while 2.7% were above matric.

Conclusions

Based on the results of the current study, mother's awareness, willingness towards immunization and source of information regarding the benefits of immunization significantly affected for completion of recommended immunization within due date and time. Mothers were not aware about the diseases for which their children are being vaccinated. Lack of information and knowledge, myths, un-affordability, un-availability and fear of side effects of vaccination acted as barriers for incomplete immunization.

Table 4: Association between education and barriers of incomplete vaccination

Education Level	Barriers of incomplete vaccination course of children					Total	P-value
	Myths	Lack of Information	Un-available	Non- Affordability	Non		
Un-educated	9 (6%)	20 (13.3%)	0(0.0%)	0 (0.0%)	16 (10.7%)	45(30%)	0.000
Under matric	2 (1.3%)	10 (6.7%)	0 (0.0%)	1 (0.7%)	44 (29.3%)	57 (38%)	
Above matric	3 (2%)	6 (4%)	1 (0.7%)	0 (0.0%)	38 (25.3%)	48 (32%)	
Total	14 (9.3%)	36 (24%)	1 (0.7%)	1 (0.7%)	98 (65.3%)	150 (100%)	

Table 5: Association between education and fear of side effects of EPI

Education Level	Fear of side effects of EPI		Total	P-value
	Yes	No		
Uneducated	13 (8.7%)	32 (21.3%)	45 (30%)	0.001
Under matric	03 (2%)	54 (36%)	57 (38%)	
Above matric	04 (2.7%)	44 (29.3%)	48 (32%)	
Total	20 (13.3%)	130 (86.7%)	150 (100%)	

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