

Assessment of the Knowledge Attitude and Practices of Mothers Having Children in the Age Group of 9 to 36 Months regarding Measles and its Vaccination

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Abstract

Background: Measles is a contagious viral disease. Despite the availability of safe and cost-effective vaccine which is given free of cost through EPI to all children under 12 months of age, measles outbreak continue to occur in Pakistan raising questions on the awareness of the parents about this disease and its prevention.

Objectives: To assess the knowledge, attitude and practices of mothers having children in the age group of 9 months to 3 years about measles and its vaccination.

Study design, settings and duration: A community based cross sectional study for a period of 12 months from April 2014 to April 2015 carried out at PHRC Research Centre NHRC, Shaikh Zayed Medical Complex, Lahore.

Subjects and Methods: House to house survey was conducted in 10 union councils of Lahore city. House to house survey was done. After taking informed written consent from eligible mothers for their voluntary participation in the study, information regarding their knowledge, attitude and practices was collected by the trained data collectors on a semi-structured questionnaire.

Results: A total of 828 mothers of children aged between 9 to 36 months were enrolled and their data was collected. Due to incomplete information, data of 73 mothers was not analysed leaving 755 mothers. Though 98.7% mothers knew that vaccination for measles is a preventive measure but the schedule of its vaccination was correctly known by 80.9% mothers and 77.5% knew that the child can suffer from measles if not vaccinated. The complications like death, pneumonia, diarrhea, unconsciousness, fits and weakness as a result of measles were known by less than 6% mothers. Although 95% children were vaccinated for measles as per verification of their immunization cards but despite vaccination almost 22.3% mothers reported that their children suffered from measles. Most of such cases (68.1%) were between 2-5 years.

Conclusion: In spite of 95% immunization coverage in Lahore, repeated measles outbreaks is asking for a revisit to the vaccination schedule.

Policy message: EPI vaccination schedule for measles needs to be reviewed while public awareness about the importance of childhood vaccination needs to be enhanced.

Key words: Measles, vaccination, children, immunization.

Introduction

Measles is a vaccine preventable viral disease and is also a leading cause of death in children under 5 years of age.^{1,2} According to WHO, before the launch of measles vaccine approximately 2.6 million children die

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Authors Contribution

FG has done the conceptualization of project and literature search. FG and SNM did the data collection. MA did the statistical analysis. Drafting, revision and writing of the manuscript were done by FB and SNM.

each year but lately globally this figure has decreased to around 71% i.e. from 548000 to 158000.³ Major complications of measles leading to death in children under 5 years of age are pneumonia, severe diarrhea, dehydration, ear infections and encephalitis.⁴

There have already been 25,401 reported cases of measles less than four months this year. At least 146 children across the country have lost their lives due to the disease and no effective steps to prevent the disease have been witnessed so far. According to a report out of 7,000-plus laboratory confirmed measles cases in 2012, a staggering 60% of children were not given even a single dose of the measles vaccine, while 20% were inoculated with only one dose.⁵

Pakistan being the member of WHO EMRO region adopted a resolution in 1947 to eliminate measles by 2010.^{6,7} This target could not be achieved as WHO reported that Pakistan is among the top five countries in

the world which has the highest number of unvaccinated children. Pakistan Demography and Health Survey (PDHS) has also reported a 50–60% measles coverage in the country.⁸ A national survey on protective measles antibodies titers in school going children aged 5–7 yrs showed 83% protection in Sindh, 80% in Baluchistan, 74% in Punjab and 75% in Khyber Pakhtunkhwa (KPK) province.⁹ In 2012 over 7,000 cases confirmed by laboratory tests revealed that almost 60% children did not receive a single dose of measles vaccine.⁵

This study was undertaken to assess the knowledge, attitude and practices of mothers of children aged between 9-36 months regarding the importance of measles vaccination with the intention to identify the gaps in the knowledge and practices and to make strategies to build public confidence on the immunization.

Subjects and Methods

For this study a three stage stratified cluster sampling was performed. Stage One: Four towns, two from East and Two from west of Lahore city were selected at random.

Stage Two: Ten union councils from each town were selected at random.

Stage Three: From each union council a cluster of 20 households each with a mother and at least one child in the age group 9 months to 3 years were selected at random.

Door to door survey was done and objectives of the survey were explained to the eligible mothers and written informed consent was obtained for their voluntary participation. Those who consented to participate in the study were interviewed using a semi structured questionnaire which was filled by the trained data collector. The questionnaire contained information regarding socio-demographic characteristics (age, qualification, family size, family income and number of children) and participant's knowledge, attitude and practices on measles and its vaccination.

SPSS version 20 was used to analyze the data. The data for age, family size, family income were described, using mean \pm SD or median and inter quartile range. Data for KAP regarding measles, its vaccination were reported using frequency and percentages. Cross tabulation was done by converting population in three socioeconomic classes on the basis of household income and structure.

Ethical approval of Institutional Review Board, Shaikh Zayed Medical Complex, Lahore was taken. Written informed consent was obtained from the heads of ten randomly selected union councils.

Results

The study was conducted in ten union councils of Lahore. A total of 828 mothers of children aged 9-36 months were enrolled after taking their informed written consent. The data was recorded on a questionnaire by the data collector. Data of 73 mothers was incomplete therefore these were not analyzed leaving data of 755 mothers for analysis.

Majority of mother (434 =57.5%) were between 26-35 years and only 13 (1.7%) were over 45 years of age. Only 188 (24.9%) mothers were uneducated while rest were educated. Most mothers (747=98.9%) were housewives and 398 (52.7%) mothers had a maximum family size of 6-10 members and monthly income ranged between Rs. 10,000 to Rs. 25000 in 565 (74.4%) families (Table-1).

Table 1: Socio Demographic characteristics of participating mothers.

Demographic Characteristics	Years	n	%
Age	<= 25	177	23.4
	26 - 35	434	57.5
	36 - 45	131	17.4
	46+	13	1.7
	Total	755	100.0
Education	Uneducated	188	24.9
	Primary	86	11.4
	Middle	122	16.2
	Matric	188	24.9
	Intermediate	83	11.0
	Graduate	62	8.2
	Masters	26	3.4
	Total	755	100.0
Employment status	Working women	8	1.1
	House Wife	747	98.9
	Total	755	100.0
Family size	<= 5	312	41.3
	6 - 10	398	52.7
	11 - 15	37	4.9
	16+	8	1.1
	Total	755	100.0
Family income (Rs)	<= 10000	60	7.9
	10001 - 25000	565	74.8
	25001 - 40000	97	12.8
	40001+	33	4.4
	Total	755	100.0

Most mothers had knowledge about measles and 91% had seen patients suffering from measles, 84.2% knew that measles is contagious and 74.2% were of the view that measles can affect at a specific age. The reasons for suffering from measles were known to 27% and spread of measles was known to 56% mothers. The complications of measles like death, pneumonia, diarrhea, unconsciousness, fits and weakness were known in few mothers (Table-2).

Table 2: Knowledge of participating mothers about measles.

Knowledge about Measles	Response	n	%
Have you ever seen patient suffering with measles?	Yes	687	91.0
	No	68	9.0
	Total	755	100.0
Is measles contagious?	Yes	636	84.2
	No	61	8.1
	Don't Know	58	7.7
Do measles attack at any specific age?	Total	755	100.0
	Yes	560	74.2
	No	99	13.1
Do you know reasons for measles attack?	Don't Know	96	12.7
	Total	755	100.0
	Yes	202	26.8
Do you know how do measles spread?	No	552	73.2
	Total	754	100.0
	Yes	424	56.2
Are you aware of the complications of measles	No	330	43.8
	Total	754	100.0
	Yes	29	3.8
Death	No	726	96.2
	Total	755	100.0
	Yes	15	2.0
Pneumonia	No	740	98.0
	Total	755	100.0
	Yes	14	1.9
Diarrhea	No	741	98.1
	Total	755	100.0
	Yes	2	0.3
Unconsciousness	No	753	99.7
	Total	755	100.0
	Yes	15	2.0
Fits	No	740	98.0
	Total	755	100.0
	Yes	44	5.8
Weakness	No	711	94.2
	Total	755	100.0
	Yes	44	5.8

Vaccination as a preventive measure was known to 98.7% mothers while 86.4% knew about measles vaccination and 81% knew its schedule and 77.5% knew that child can suffer from measles if not vaccinated. The vaccination cards revealed that 95% children were vaccinated and 4.1% were not vaccinated while 0.9% mothers did not have the vaccination cards or were not aware about the vaccination status of their child. The reasons for not vaccinating their child ranged from child sickness (32.3%) to lack of information where to take the child for vaccination (19.4%), vaccination being dangerous (12.9%) to long distances of hospital dispensaries (3.2%), expensive to reach EPI centre (3.2%). In 29% cases there was no reason to keep the child unvaccinated (Table-3).

Though 103 mothers said that their child is not vaccinated for measles but their vaccination cards showed that 88 children were vaccinated. Almost 22.3% mothers of children who were vaccinated for measles reported that their child suffered from measles. Most of these children (109=68.1%) were between ages 2-5 years while 78 (48.8%) were below 2 years of age (Table 4).

The source of information for measles vaccination for both uneducated or educated class were doctors (631=83.6%) followed by news paper (26=3.4%) (Table-5).

Table 3: Awareness and practices of participating mothers about measles vaccination.

Awareness and Practices about vaccination	Reponses	N	%
Do you believe in vaccination?	Yes	745	98.7
	No	6	0.8
	Don't Know	4	0.5
Do you know about vaccination for measles?	Total	755	100.0
	Yes	652	86.4
	No	103	13.6
If you know, are you aware of schedule for measles vaccination?	Total	755	100.0
	Yes	611	80.9
	No	41	5.4
What are the effects if child is not vaccinated for measles ?	NA	103	13.6
	Total	755	100.0
	Measles	585	77.5
Is your child vaccinated for measles?	Nothing wrong	3	0.4
	Don't Know	64	8.5
	NA	103	13.6
Vaccination is dangerous	Total	755	100.0
	Yes	717	95.0
	No	31	4.1
Hospital dispensary are at a distance	Don't Know	7	0.9
	Total	755	100.0
	Yes	4	12.9
It is expensive to reach EPI Centre	No	31	4.1
	Don't Know	7	0.9
	Total	755	100.0
Not aware of the place for vaccination	Vaccination is dangerous	4	12.9
	Hospital dispensary are at a distance	1	3.2
	It is expensive to reach EPI Centre	1	3.2
Child was sick	Not aware of the place for vaccination	6	19.4
	Child was sick	10	32.3
	No reason	9	29.0
Total	Total	31	100.0

The vaccination status of children of participating mothers was over 90% at all levels of education of mothers however frequency of unvaccinated children was high among uneducated mothers. The uncertainty about measles vaccination in their child was similar in uneducated mothers and those having low education (Table-6).

Discussion

The present study showed that majority of mothers know that vaccination for measles is a preventive measure but very few know that their child can die from the complications of measles if not vaccinated. Though 95% children were vaccinated for measles as per verification of their immunization cards but still 22.3% suffered from measles. Most of such cases (68.1%) were between 2-5 years of age.

Table 4: Memory recall of enrolled mothers about the measles suffering of their children.

Measles suffering history of children of enrolled mothers		Vaccination status of children of enrolled mothers					
		Yes		No		Don't Know	
		N	%	n	%	N	%
Has any of your child ever suffered from Measles	Yes	160	22.3	8	25.8	3	42.9
	No	557	77.7	23	74.2	4	57.1
	Total	717	100.0	31	100.0	7	100.0
If yes							
No. of children suffered from Measles below the age of 2 yrs		78	48.8	5	62.5	0	0.0
No. of children suffered from Measles between the age of 2 to 5 yrs		109	68.1	8	100.0	3	100.0
No. of children suffered from Measles between the age of >5 to 10 yrs		36	2.2	3	37.5	2	66.7
No. of children suffered from Measles between the age of >10 to 20 yrs		3	1.9	3	37.5	0	0.0

Table 5: Source of information about measles vaccination with reference to educational status of participating mothers.

Source of information	Educational Status of Responding Mothers															
	Uneducated		Primary		Middle		Matric		Intermediate		Graduate		Masters		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	N	%
Media	14	7.4	16	18.6	16	13.1	51	27.1	26	31.3	13	21.0	0	0.0	136	18.0
Doctor	153	81.4	66	76.7	100	82.0	159	84.6	71	85.5	57	91.9	25	96.2	631	83.6
LHV	28	14.9	18	20.9	26	21.3	34	18.1	20	24.1	8	12.9	2	7.7	136	18.0
Friend/relative	36	19.1	16	18.6	28	23.0	37	19.7	16	19.3	8	12.9	3	11.5	144	19.1
News paper	0	0.0	0	0.0	3	2.5	8	4.3	7	8.4	4	6.5	4	15.4	26	3.4

Table 6: Vaccination status of children of participating mothers.

Educational level of participating mothers	Is your child vaccinated for measles							
	Yes		No		Don't Know		Total	
	N	%	n	%	n	%	n	%
Uneducated	171	91.0	15	8.0	2	1.1	188	100.0
Primary	79	91.9	6	7.0	1	1.2	86	100.0
Middle	117	95.9	3	2.5	2	1.6	122	100.0
Matric	182	96.8	4	2.1	2	1.1	188	100.0
Intermediate	81	97.6	2	2.4	0	0.0	83	100.0
Graduate	62	100.0	0	0.0	0	0.0	62	100.0
Masters	25	96.2	1	3.8	0	0.0	26	100.0
Total	717	95.0	31	4.1	7	0.9	755	100.0

Chi-square= 20.24, p-value = 0.063

The low knowledge about complications of measles also reported from Northern Nigeria which concluded that regular campaigns on basic health education are required to improve the vaccination and reduce the morbidity and mortality due to measles.¹⁰ The present study showed that though 98.7% mothers were in favor of vaccination as preventive measure for different diseases, however, the measles vaccination was known to 86.4% only. Two other studies from Karachi also reported that over 90% respondents were aware about the benefits of vaccination and were in favor of vaccination^{11,12} while another study from Karachi gave different results i.e. it reported that mother's knowledge about vaccination was insufficient and they were willing to immunize their children if it was provided free of cost,

however they were not aware of routine practice for vaccination.^{13,14} In Pakistan; illiteracy has been the major reason for low immunization coverage¹⁴ and this was shown in a study from Karachi where over 93% educated mothers tried to vaccinate their children for measles.¹⁵ Survey in four districts (Khairpur, Haripur, Khanewal and Sialkot) of Pakistan also showed that any formal education of the mothers makes them conscious to protect their children from preventable diseases while the uneducated mothers considered measles vaccination dangerous for their children.¹⁶

The Nigerian study showed that mothers believed, that the vaccination is not preventive because despite vaccination their children suffered from measles in later years.¹⁷ Nigerian mothers often base their

decision on their past experience, therefore they think that vaccine is dangerous and harmful to infants. When dangerous side effects of vaccine in relation to encephalitis and convulsion were discussed many mothers thought that vaccination is not good.¹⁸⁻²⁰ In another survey done by National Immunization Program Centre for Disease Control and Prevention Atlanta Georgia, one respondent strongly believed that immunization is injurious, whereas 36% felt, it could be so²¹ thus indicating that the concerns of the community about immunization safety are globally prevalent.

In this study physicians were the major source of information about the measles vaccination (83.6%) and least was newspaper (3.4%). Another national study also showed a sharp increase in vaccine acceptance due to the advocacy of the local health educator and mass media such as TV programs.²² A study from Cardiff, UK, also suggested that media can play a great role in promotion of immunization.²³ There is a need for continuous education and awareness to promote primary health care. This was also confirmed by a study from Aga Khan University Hospital Karachi.¹² A study conducted in India observed, deficient knowledge of doctors about immunization and recommended the need to educate doctors.²⁴ One study evaluated the KAP on immunization among family physicians and identified major deficiencies and recommended frequent and meaningful educational programs for practicing physicians and for masses.¹² The major reason of the low immunization coverage in Pakistan is illiteracy and the lack of mother's knowledge about the importance of vaccination and Child health care¹⁴ this is also shown in other studies where children who were not vaccinated mostly belonged to socioeconomically disadvantaged groups and it is evident that prevalence of measles outbreak is mostly seen in the lower socioeconomic groups.^{25,26}

In the present study 22.3% mothers of vaccinated children reported that their child suffered from measles at some point. Almost 68% such children were between ages 2-5 years while 49% were below age of 2 years. A national study conducted by Pakistan Medical Research Council in four provinces and federal capital of Pakistan also reported that measles protection was 78% in children between the age of 5-7 years with 22% children showing no protection⁸ genetic studies may be undertaken to see any genetic variant causing low or no protection against measles vaccination.

Conflict of interest: None declared.

References

1. Duke T, Mgone CS. Measles: not just another viral exanthema. *Lancet* 2003; 361:763-73.

- Murray CJ, Lopez AD. Mortality by cause for eight regions of the world: global burden of disease study. *Lancet* 1997;349:1269-76.
- Cliff J, Simango A, Augusto O, Van DPL, Bielik R. Failure of targeted urban supplemental measles vaccination campaigns (1997-99) to prevent measles epidemics in Mozambique (1998-2001). *J Infect Dis* 2003;187:51-7.
- Xpharm. The comprehensive pharmacology reference. Roselyn Cerutis 2008:1-5.
- Coverage RV, Coverage SV. Progress toward measles. Elimination – Eastern Mediterranean Region 1980-1998. (Accessed on 06th June 2017) Available from URL:<https://www.cdc.gov/mmwr/preview/mmwrhtml/mm4847a2.htm>
- Gaafar T, Moshni E, Lievano F. The challenge of achieving measles elimination in the Eastern Mediterranean region by 2010. *J Infect Dis* 2003;187:164-71.
- National Institute of Population Studies (NIPS) [Pakistan] and Macro International Inc. 2008. Pakistan Demographic and Health Survey 2006-7. Islamabad Pakistan: National Institute of Population Studies and Macro International Inc; 2008. (Accessed on 06th June 2017) Available from URL:<https://dhsprogram.com/pubs/pdf/FR200/FR200.pdf>
- Sadaruddin A, Ghafoor F, Alam SE, Naz S, Khan IM, Mohyuddin G, et al. Seroprevalence of measles antibodies in school going children in Pakistan. *Pak J Med Res* 2012;51(2):38-43.
- Sayani A. Sleeping authorities will make Pakistan isolated. (Accessed on 13th June 2013) Available from URL: <http://www.aaj.tv/2013/05/sleeping-authorities-will-make-pakistan-isolated>.
- Ambe JP, Omotara BA, Mandu-Baba M. Perceptions, beliefs and practices of mothers in sub-urban and rural areas towards measles and measles vaccination in Northern Nigeria. *Trop Doct* 2001;31(2):89-90.
- Mansuri FA, Baig LA. Assessment of immunization service in perspective of both the recipients and the providers: a reflection from focus group discussions. *J Ayub Med Coll* 2003;15:14-8.
- Qidwai W, Ali SS, Ayub S, Ayub S. Knowledge, attitude and practice regarding immunization among family practice patients. *JDUHS* 2007;1(1):15-9.
- Nisar N, Mirza M, Qadri MH. Knowledge, attitude and practices of mothers regarding immunization of one year old child, Karachi. *Pak J Med Sci* 2010;26(1):183-6.
- Nisar S. Pakistan, politics and polio. *Bull WHO. World Health Organization*; [Online] 2010;88:159-60 (Accessed on 03th January 2013) Available from URL:<http://www.who.int/bulletin/volumes/88/2/09-066480.pdf>.
- Siddiqi N, Khan A, Nisar N, Siddiqi AA. Assessment of EPI (Expanded Program of Immunization) vaccine coverage in a peri-urban area. *J Pak Medical Assoc* 2007;57:391-5.
- Cockcroft AN, Andersson K, Omer NM, Ansari A, Khan UU, Chaudhry U, et al. One size does not fit all: Local deterrents of measles vaccination in four districts of Pakistan. *Inter. Health Human Right* 2009;9(1):4-15.
- Odebiyi I, Ekong SC. Mothers' concept of measles and attitudes towards the measles vaccine in Ile-Ife, Nigeria *J Epidemiol Community Health* 1982;36:209-13.

18. Hendrikse RG, Monteflore D, Sherman P, Van Der Wall HM. Studies in measles vaccination in Nigerian children. *Br Med J* 1964; 1(5381): 470-4.
 19. Morley D, Woodland M, Martin WJ. Measles in Nigerian children. *J Hyg* 1963; 61:115-33.
 20. Measles Vaccine Committee, Medical Research Council. Vaccination against measles: a study of clinical reactions and serological responses of young children. *Br Med J* 1965; 1(5438): 817-23.
 21. Smith PJ, Kennedy AM, Wooten K. Association between health care providers' influence on parents who have concerns about vaccine safety and vaccination coverage. *Pediatrics* 2006;118:1287-92.
 22. Isomura S, Ahmed A, Dure-Samin A, Mubina A, Takasu T. Epidemiological studies on measles in Karachi, Pakistan--mothers' knowledge, attitude and beliefs about measles and measles vaccine. *Acta Paediatr Jpn* 1992;34(3):290-4.
 23. Speers T, Lewis J. Journalists and jabs: media coverage of the MMR vaccine. *Commun Med* 2004;1:171-81.
 24. Kumar R, Taneja DK, Dabas P. Knowledge about tetanus immunization among doctors in Delhi. *Indian J Med Sci* 2005;59:3-8.
 25. Ogunmekan DA. The socio-economic factors influencing the utilization of health services in Nigeria. In: Akeredolu-Ale A, ed. *Proceeding of the Conference on Social Research and National Development in Nigeria*. Ibadan: Nigerian Institute of Economic and Social Research, University of Ibadan 1975, II: 934-47.
 26. Halmers. Quoted in Morley DC. Measles round the world. *Maternal and Child Care* 1966; 2:207-15.
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