

Immunization coverage in children 2 years of age in slum area of Multan

Uzma Arshad,¹ Muhammad Kamran Adil,² Samina Badar,¹ Rabia Islam³

Abstract

Background: Immunization to children benefits a lot to children and helps to stay healthy.

Objective: To determine the immunization coverage, dropout rate and the factors influencing drop out in children of two years of age in slum area of Multan.

Methodology: A cross sectional study was carried out in urban slum of Multan (Jahangirabad) from 1st to 30th April 2018, after taking approval from institutional review board. Sample size a calculated for survey at 95% confidence level, 5% margin of error and anticipated population proportion of 48% was 384. Closed ended questionnaire was used to collect data from 384 children of two years of age using non probability convenient sampling technique.

Results: In this study, 73% children were fully immunized. BCG coverage was maximum i.e. (98.9%) followed by OPV(91.2%) pentavalent (81.3%) and least coverage for measles vaccine (65.9%). Dropout rate was 22% and 9.9% of children have delayed vaccination. Family constrains were the major cause of drop out (51.7%). On applying chi square test there was significant association between mother education and dropout rate.

Conclusion: Major proportion of children had completed their vaccination before their first birthday. There was strong association between dropout and mother education. Appropriate counseling during immunization campaigns could further improved immunization coverage.

Key Words: Immunization, Children, Slum area, Coverage.

Introduction

Vaccine preventable disease are the important cause of mortality and morbidity in children under five years of age all over the Pakistan.¹ Although under 5 mortality rate has reduced to half from 1990 (mortality of about 12.7 million), about 6.3 million still die annually and a quarter of these deaths are due to vaccine preventable disease.² Measles alone was reported to be responsible for 145,700 deaths in 2013.³ The Global Expanded Program of immunization was launched in 1974 with the objectives of reducing morbidity and mortality from diphtheria, pertussis, tetanus, eoliomyelitis, tuberculosis and measles to negligible level by making immunization against these diseases.⁴ WHO ensured availability of quality vaccines to masses through program run by various national health services.

Pakistan started this program after conducting a field survey in June - July 1978, in collaboration with WHO and UNICEF. Pakistan is a developing country with the population of approximately two hundred million and estimated infant mortality rate of 80/1000 live births. Previously the EPI schedule included vaccines against 8 diseases, but

now it has incorporated vaccines against two more disease that is Pneumococcal vaccine and rotavirus vaccine. It is also recommended to give inactivated polio vaccine (IPV) along with oral polio vaccine (OPV) at 14th weeks of age. Adding at least one dose of IPV is to ensure that significant proportion of population is protected against type 2 serotype.⁵ In spite of all government efforts the immunization coverage rate in Pakistan is very much disappointing that is 4 in 10 children are a not fully immunized in first year of life.⁶

Immunization assists to keep our children alive and healthy by protecting them against vaccine preventable disease. It is one of the most successful and cost-effective public health intervention by which we can save our future generations.⁷ The objectives of this study was to determine immunization coverage, dropout rate and the factors influencing dropout in children of 2 years of age in slum area of Multan.

Methodology

This cross-sectional study was conducted in urban slums of Multan city (Jahangir Abad) from 1st April to 30th April 2018. After taking ethical approval from

1. Multan Medical & Dental College, Multan, Pakistan.

2. Children Complex and Institute of Child Health, Multan, Pakistan.

3. Community Medicine, Rashid Latif Medical College, Lahore, Pakistan.

Correspondence: **Dr. Uzma Arshad**, Senior Demonstrator, Ibn-e-Siena Hospital, Multan, Pakistan.

Email: uzmaar84@gmail.com

Received: 20-02-2019

Accepted: 11-03-2019

Published: 29-06-2019

hospital ethical committee, children under two years of age were taken in study. Sample size calculated for survey at 95% confidence level, 5% margin of error and anticipated population proportion of 48%,⁷ was 384.

Out of selected area, 384 children eligible for study were drawn by non probability convenient sampling technique. Data was collected through a preformed close ended questionnaire. Family constrain: elder's beliefs prohibiting the child to get vaccinate.

Myths: False beliefs that if a child get vaccinate he or she may suffer from infertility or is against religion. Uneducated: A person who is not ever registered in school. Educated: A person who is registered in school and get education at least up to primary level.

Full immunized: Infants who received one dose of BCG vaccine three doses of pentavalent vaccine and one dose of measles vaccine before reaching one year of age. BCG Vaccination: In countries where T.B is common one dose is recommended in healthy babies as close to time of births as possible.

Mean and SD was calculated for age. Frequency and percentage was calculated for qualitative variables i.e. gender, mother education, father education, nearest health facility, immunization coverage, dropout rate and causes of dropout rate. Stratification with respect to mother education and father education was done. Post stratification chi-square test was applied by taking $P \leq 0.05$ as significant.

Results

Mean age of children was 1.64 with SD ± 0.57 . In this study 68.1% of mothers were un-educated and 56.1% of fathers were un-educated. Nearest health facility was BHU.

Fully immunized children were 73%, BCG coverage was 98.9%, OPV 91.2%, Pentavalent 81.3% and measles 65.9% the main reason for dropout for family constraints 51.7%. On applying chi-square test there was a significant association between mother education and dropout rate. (Table I) Out of total 78% male and 76% female children were immunized.

Table I: Frequency of immunization coverage, causes of drop out

Vaccines	Response	Percentage	
BCG	380	98.9%	
OPV	350	91.2%	
Pentavalent	312	81.3%	
Measles	253	65.9%	
Causes of dropout	Frequency	Percentage	
Illness	17	20.6%	
Family constraints	43	51.7%	
Lack of information	12	13.79%	
Myths	12	13.79%	
Mother education vs dropout	Dropout	No dropout	Total
Educated	8	114	122
Non educated	76	186	262
Total	84	300	384

Discussion

Child hood vaccination has proven to be one of the most effective public health strategy to control and prevent disease.^{8,9,10} The study was carried out to assess the immunization coverage in an under developed urban slums of Multan. Vaccination coverage is one of the most important indicators of child health outcome in all countries. Immunization coverage is determined by multiple factors at individual, family and community level along with health system. However, some parents avoid to vaccinate their children because of medical, religious, philosophical or socioeconomic reasons.^{11,12,13,14} In this study, immunization coverage was 73%, which can be compared with the study conducted by Badar S, which showed immunization coverage 48%,⁷ with BCG vaccine coverage 86% and coverage for measles vaccine was 84%. Our study showed that coverage of BCG vaccine was maximum (98.9%) as it would be done within few days after births in hospitals setting while measles vaccine had the lowest coverage rate of 65.9%. These findings are consistent with study conducted by Sheikh AR in which BCG coverage was highest (97%) while first dose of measles vaccine was received by 88% children.¹⁵ This can be due to the forgetting the appointment date of vaccine as there is significant gap in the pentavalent and measles

vaccine or taking least interest by the parents on the part of their child's health. Our study finding revealed that there was no evidence to support that birth order and sex of child had any impact on full immunization of children. In our study 76% of females and 78% of males are fully immunized. But there were societies where gender discrimination that is disfavoring female children, exist most strongly.^{16,17} Male child has more chances of getting vaccinated than female child. In many countries especially with low socioeconomic status parents take more interest in health of their male issue. There are studies which show that as birth order increase the likelihood of child being un-immunized increased.^{18,19}

The maternal education was one of the factors that was significantly associated with immunization coverage.²⁰⁻²³ Dropout among children of non-educated mothers are also relatively high (68%). While the dropout rate among children of educated mothers relatively low, these findings are comparable with study conducted in Rajasthan which also showed that vaccination coverage was related to parent's education.²⁴ In another study⁷ conducted in Bahawalpur 59.2 % mothers had intermediate and above education who completed their child immunization schedule and 63.3% fathers were educated of fully immunized children. Maternal education leads to development of literacy skills and enhanced health seeking behavior for their children which impose them to improve vaccination status of their children.

Routine immunization is a building block of strong primary health care and parents should play their role in immunization of their children. The knowledge regarding importance of vaccines in saving and improving the life of children, play an important role in decision making about vaccination.²⁵ Government should also play its role to improve immunization coverage by multiple steps like improving access of general public to health facilities, reducing inconvenience and flexible health facility timing and location and female empowerment as if females have more control over family decision making, there are more chances that their children are to be vaccinated.

Conclusion

Although a large proportion of study population is

vaccinated but still there is some lag in coverage which can be improved by maternal education and health education campaigns by mass media and LHWs. This requires strong collaboration between government, program makers and implementers. It is recommended that all children should be vaccinated before their first birthday, follow up to detect dropout cases, efforts should be accelerated to remove the myths and family constraints and improve parental information about vaccination.

Authors Contribution: **UA:** Design of work, revising, and final approval. **MKA:** Conception of work, interpretation of data, revising and final approval. **SB:** Acquisition of data, revising and final approval. **RI:** Design of work, interpretation of data, drafting and final approval.

All the authors gave final approval for publication and agreed to be accountable for all aspect of work.

Conflict of Interest: None

Sources of Funding: Self

References

1. Hussain S, Omer SB, Routine immunization services in Pakistan: seeing beyond numbers. *EMHJ*; 2016; 22 (3); 201-11.
2. UNICEF. Level and trends in child mortality. New York: UNICEF; 2014
3. World health organization. Measles. 2015. [01/02/2015] available form: <http://www.who.int/mediacentre/factsheets/fs286/en/>.
4. Siddiqui MI. Immunology and Immunization. IN: Time publisher. Public health and Community Medicine. Karachi; 2016 pp 677.
5. Park K. Epidemiology of Communicable diseases .IN; Bhanot BM, publishers. Park textbook of preventive and social medicine Jabalpur. 2018 pp 217.
6. Shah F, Bahir –ul-Haq, Navaratne KV, Inaam-ul-Haq TM, Kostermans K, Presthus G et al. Situation analysis: New vaccine introduction in an underperforming program – a dilemma for Pakistan. *J Pak Med Assoc*. 2013 ;63(8):997-1002.
7. Badar S , Qadri SK, Shaikh MS, Hussain W. Childhood Immunization coverage in Urban Slums of Bahawalpur city. *JUMDC*; 2016; 7(2):35-40.
8. Campos –Outcalt D. Immunization update: what's changed, what's on the way. *J Fam Pract*. 2015; 64(3) :177-180.
9. Dempsey AF, Zimet GD. Intervention to improve adolescent vaccination : What may work and what still needs to be tested. *Vaccine*. 2015; 33 (suppl 4) :D106 –D113.
10. Kao CM, Schneyer RJ, Bocchini JA. Child and adolescent immunizations: selected review of recent U.S. recommendation and literature. *Curr Opin Pediatr*. 2014 ;26 (3):383-395.

11. Anderson E. Recommended solutions to the barriers to immunization in children and adults. *Mo Med*. 2014;111(4): 344-8.
12. Centers for disease controls and prevention Measles cases and out breaks. May 2,2016. Available at: www.cdc.gov/measles/cases-outbreaks.html. Accessed February 29,2016.
13. Oldfield BJ, Stewart RW. Common misconceptions, advancements, and updates in pediatric vaccine administration. *South Med J*. 2016;109(1):38-41.
14. Wang E, Clymer J, Davis – Hayes C, Bутtenheim A. Non medical exemptions from school immunization requirements: A systematic review. *Am J Public Health*. 2014; 104:e62-e84.
15. Sheikh AR, Mehmood F, Hayat M. Immunization coverage in rural area. *JRMC*. 2016;20(1): 48 -52.
16. Merten S, Martin Hilber A, Biaggi C, Secula F, Bosch-Capblanch X, Namgyal P et al. Gender determinations of Vaccination status in children: evidence from a meta ethnographic systematic review. *Plos one* 2015; 10(8): eo 135222.
17. Salman A, Iftkhar-ul Husnain M, Kahlon TM. Estimating oral polio vaccine coverage dropout for equitability: evidence from Pakistan. *Pak Armed Forces Med J*. 2018;68 (2):316-20.
18. Herliana P, Douiri A. Determinants of immunization coverage of children aged 12-59 months in Indonesia: A cross-sectional study. *BMJ Open* 2017 ,7:e015790. Doi:10.1136/bmjopen-2016-015790.
19. Mukungwa T. Factors associated with full immunization coverage amongst children aged 12-23 months in Zinbabwe. *African population studies*. 2015;29(2); 1761-1774.
20. Imran H, Raja D, Grassly NC, Wadood MZ, Safdar RM. Routine immunization in Pakistan: Comparison of multiple data sources and identification of factors associated with vaccination. *International Health*. 2018; 10 (2):84-91.
21. Rehman SU, Siddque AR, Ahmed J, Fatmi Z, Shah SM, Rehman A et al. Coverage and Predictors of routine immunization among 12-23 months old children in disaster affected communities in Pakistan. *IJHS*. 2017; 11(1):3-8.
22. Sykes S, Wills J, Rowland G, Popple K. Understanding critical health literacy: A concept analysis. *BMC Public health*. 2013;13(1):150.
23. Wado YD, Afework MF, Hindin MJ. Child hood vacation in rural south western Ethiopia: the nexus with demographic factors and women's autonomy. *Pan Afr Med J*. 2014;17(Suppl1):9
24. Manjunath U, Pareek RP. Maternal knowledge and perception about routine immunization programme: A study in semi urban area in Rajasthan. *Indian J Med. Sci*.2003;57(4):158-63.
25. Khalid M, Lorenz C. Influencing factors on vaccination update in Pakistan. *J Pak Med Assoc*. 2012;62(1); 59-61.

Article Citation: Arshad U, Adil MK, Badar S, Islam R. Immunization coverage in children 2 years of age in slum area of Multan Pakistan. *JSZMC* 2019;10(2): 1630-1633