ORIGINAL ARTICLE

EVALUATION OF PRIMARY IMMUNIZATION COVERAGE IN MIGRATORY VERSUS NON-MIGRATORY LABOUR POPULATION OF URBAN AREA IN BHOPAL CITY

Anand S, Verma P**, Sinha U***, Mahawar P*****

Abstract

Background: Migrants carry with them a health risk and public health implication due to their epidemiological profile, their exposure to infectious agents, life style related risk factors, and culture based health beliefs.

Aim: To compare the primary immunization coverage in children of migratory and non-migratory labour population. **Material and methods:** The study population was of children aged between 12–23 months whose parents were migratory and non-migratory construction workers. A total of 450 children were selected for the study out of which 200 were of migrants and of non migrants were 250. The child was considered as immunized or not immunized based on information on the immunization card. For those without an immunization card, information from the mother or any other responsible and reliable person in the family stating that the child had been immunized was considered. **Results:** Seventy (35%) migrants and 200 (80%) non-migrants had immunization card. Among migrants, Sixty (30%) were fully immunized, 110 (55%) were partially immunized and Thirty (15%) were not immunized. Among non-migrants, 125 (50%) were fully immunized, 110 (44%) were partially immunized and Fifteen (6%) were not immunized. Fifty five (50%) of the migrants and Forty eight (43.6%) of the non-migrants responded that unawareness is the cause behind the partial immunization. **Conclusion:** By improving the system responsiveness particularly to vulnerable, socio-economically disadvantaged migrants would help in achieving full immunization coverage.

Keywords : Immunization, labours, Migrants, Non-migrants

Introduction :

In an era of globalization, migration is a burning topic of interest to almost all countries and Communities. The term 'migrants' includes the categories of migrant workers and their families, long-term and short-term immigrants, refugees and asylum seekers, victims of human trafficking amongst others. (1) According to present estimates, there are an approximate 214 million international migrants, 740 million internal migrants and an unknown number of migrants in an irregular situation throughout the globe. (2) Migrants carry with them a health risk and public health implication due to their epidemiological profile, their exposure to infectious agents, their genetic and life style related risk factors, and culture based health beliefs. Migrants often have to deal with poverty, marginality, stigmatization and unequal access to social benefits including health care services. Disparities in the access to health care and denial of the migrants' right to health are the major issues at hand. (3)

Vaccination has been regarded as one of the most important achievements of public health. (4) One of the most cost-effective and easy methods for the healthy well-being of a child is immunization. The goal of immunizing children against Tuberculosis (TB), Poliomyelitis, Diphtheria, Pertussis, Tetanus, Hepatitis B, and Measles which are responsible for significant child mortality and morbidity, is indeed a noble one. (5) The migration of children from one region to another had been found to be associated with low vaccination coverage. (6) Less than 70% migrant children of 1–3 years complete their immunizations. (7) Vaccination coverage is hampered by difficulty in accessing medical care, costs, complex transport and storage requirements, and by user characteristics, such as low education, parental knowledge, attitude and family poverty. (8-12) With this background we planned this study to compare the primary immunization coverage in children of migratory and non-migratory labour population living in Bhopal city of Madhya Pradesh, India.

Methods & Materials

The present study is a cross sectional study. Children aged between 12–23 months whose parents were migratory and non-migratory construction workers were included in the study. We have considered migrants as those who moved into the surveyed area during last one year, and non-migrants as those who had lived in the surveyed area continuously for more than one year at the time of interview. Children were excluded if they were born in other provinces and had been living in the surveyed area for less than 3 months, as the chief verification of immunization was done by immunization card and there might be duplication of immunization cards.

The sample size was calculated to be 444, 222 in each group (P=64.3%, d=10%, 95% C.I.) (20) but only 200 children were found in migrant group; hence 250 were included in the non- migrant group. Study duration was of 9 months (May 2013-Jan 2014). All the children were selected from the construction sites located within the 6 km radius of Chirayu Medical College and Hospital, Bhopal. All the children fulfilling the inclusion criteria and whose parents were willing to participate in the study were included in the study. Only one child per family was selected to avoid clustering. When two or more eligible children were in the same household, the youngest child was selected based on World Health Organization (WHO) manual. (13)

Those children who were vaccinated according to National Immunisation Schedule (NIS) (14) were included in the study. The interviewer used a pre-designed and pre-tested, semi-structured questionnaire, questionnaire was pretested with a pilot study of 50 children in each group, which inquired

into demographic characteristics of the surveyed child and their primary caregiver; the primary caregiver's knowledge and attitude toward immunization, including the knowledge about vaccines given to the children for free by government.

Proof of Immunization : A child was considered as immunized or not immunized based on information on the immunization card. For those without an immunization card, information from the mother or any other responsible and reliable person in the family stating that the child had been immunized was considered. If the mother could not remember anything about the vaccination, the child was considered as not immunized with the vaccine under consideration. The child was considered fully immunized if he/she had received one dose of Bacillus Calmette Guerin (BCG) vaccine, three doses of diphtheria, pertussis, tetanus (DPT) vaccines, three doses of oral polio vaccine (OPV), three doses of hepatitis B vaccine (HBV) and one dose of measles vaccine, and as unimmunized if he/she had received none of these vaccines, and partially immunized if some doses were given, but immunization was not complete. The OPV given in pulse polio immunization (PPI) was not considered for classification. In case of a partially/non-immunized child the most important single reason for not immunizing was asked. (15) Immunization received by the children either from the government or private sectors were included in the study.

Ethical considerations : The survey was approved by the Institutional Ethics Committee. Written informed consent was obtained from the participants (child's parents or guardians) prior to participation in the survey, and data collection was conducted confidentially.

Data analysis: Data were entered and analyzed using Microsoft excel 2007.

Results

Out of total 450 study subjects, 200 were migrants (105 males, 95 females) and 250 were non-migrants (140 males, 110 females). One hundred twelve (24.8%) of the parents interviewed had only one child. One hundred three (50.2%) mothers and 114 (46.5%) fathers had received primary education or even less. Of all the surveyed mothers, 140 (68.2%) were 20 to 30 years old and all were unskilled labourers. Regarding the occupation of the head of the household, all were males and unskilled workers.

Distribution of the study subjects according to the status of immunization is shown in table 1. The proportion of immunized children was more in case of non-migrant workers (p value < 0.0001). Thirteen children (2.8%) had received at least 1 dose of their immunization in the private sector. Hospital delivery was present in 140 (70%) of the migrant children and 225 (90%) of the non-migrant children. This reflects in their immunization status as BCG and first dose of OPV was higher in comparison to other vaccines. Only 115 (56%) of the mothers had received minimum of four antenatal visits and 68 (33.17%) received a post-natal visit by a health worker. Distribution of the migrant and non-migrant children according to the individual vaccine status is shown in table 2. Distribution of the subjects according to the cause of partial and non-immunization is shown in table 3.

Discussion

In present study males had better immunization coverage as compared to females which reflects the better affection and care for male children in the society. Similar findings have been reported by Chaturvedi et al (16) in urban area of Agra (coverage among males was 49.7%), Singh et al (17) in BIMARU states (48%), NFHSII (18) (42%) and Rapid house hold survey- RCHII (19) (42%). Percentage of fully immunized among migrants in our study was only 35% and among non-migrants was 58% respectively. In a study conducted by Yadlapalli et al in Delhi in 2010, 64.3% fully immunized children were among recent migrants and 80.8% were settled migrants. (20) This may be because of the better immunization services and awareness regarding immunization in the city of Delhi as it is the capital of India.

The study of individual vaccines revealed that only 77.5% of the migrant children had been given BCG compared to 92% non-migrant children. The coverage of measles vaccine among migrant children was only 30% as compared to 50% of non-migrant children. The difference in the coverage of individual vaccines amongst migrant children was significantly lower than that of the national coverage which is 86.9% for BCG and 74.1% for measles. Another study conducted by Varsha et al in Pune in 2013 showed 81.7% of the children had been given BCG and measles vaccine immunization was only 53.9% in migrant children. (21)

When asked about the reasons for partial immunization, majority of the migrants and of the non-migrants responded that unawareness of the need for complete immunization is the cause behind the partial immunization of their child. Similarly Varsha et al observed main reasons for partial and non-immunization in migrants were unawareness of the parents in 21.8% of the subjects and parents forgot to immunize their child in 23.9% of the subjects. (21)

When asked about the reasons for non-immunization, majority of the migrants and non-migrants responded that ignorance is the cause behind the non-immunization of their child. Similarly in a study done by Chaudhary et al in Bareilly in 2010, they found that ignorance (50%) was the main reason for non immunization in urban area children who were non migrants. (5) To address the above point, health education should be emphasized so as to encourage caregivers to follow the immunization program for their children.

Thus, we suggest that healthcare workers should make house-to-house visit to identify incompletely vaccinated children and immunize them. Special heath workers must be appointed to trace migratory population for immunization status. Electronic immunization information system should be used to facilitate record sharing between clinics, keep track

Table no. 1: Distribution of the study subjects according to the status of immunization.

Immunization status	Male		Female		Total	
	Migrants n=105 (%)	Non migrants n=140 (%)	Migrants n=95 (%)	Non migrants n=110 (%)	Migrants n=200 (%)	Non migrants n=250 (%)
Immunization card	40(20)	120(48)	30(15)	80(32)	70(35)	200(80)
Fully immunized	35(17.5)	70(28)	25(12.5)	55(22)	60(30)	125(50)
Partially immunized	62(31)	60(24)	48(24)	50(20)	110(55)	110(44)
Non-immunized	27(13.5)	8(3.2)	23(12.5)	7(2.8)	30(15)	15(6)

Table no. 2: Distribution of the migrant and non-migrant children according to the individual vaccine status.

Individual Vaccine	Male		Female		Total	
	Migrants n=105 (%)	Non migrants n=140 (%)	Migrants n=95 (%)	Non migrants n=110 (%)	Migrants n=200 (%)	Non migrants n=250 (%)
BCG	82(41)	130(52)	73(36.5)	100(40)	155(77.5)	230(92)
OPV 1	82(41)	125(50)	68(34)	100(40)	150(75)	225(90)
OPV 2	38(19)	88(35.2)	40(20)	80(32)	78(39)	168(67.2)
OPV 3	35(17.5)	80(32)	35(17.5)	75(30)	70(35)	155(62)
HBV 1	30(15)	90(36)	35(17.5)	70(28)	65(32.5)	160(64)
HBV 2	34(17)	75(30)	26(13)	70(28)	60(30)	145(58)
HBV 3	35(17.5)	67(26.8)	29(14.5)	58(23.2)	64(32)	125(50)
DPT 1	38(19)	73(29.2)	32(16)	70(28)	70(35)	143(57.2)
DPT 2	37(17.5)	72(28.8)	31(15.5)	60(24)	68(34)	132(52.8)
DPT 3	40(20)	75(30)	25(12.5)	60(24)	65(32.5)	135(52.8)
Measles	35(17.5)	70(28)	25(12.5)	55(22)	60(30)	125(50)

Table no. 3: Distribution of the subjects according to the reasons of partial and non-immunization.

Reasons for partial and non- immunization	Migrants(n=110) n (%)	Non migrants(n=110) n (%)
Reasons for partial immunization		
Time of immunization inconvenient	13(11.8)	16(14.5)
Child brought in ill, so immunization not given	11(10)	8(7.2)
Unaware of need for complete immunization	55(50)	48(43.6)
Fear of side effects	6(5.4)	9(8.1)
Vaccine not available	0(0)	0(0)
Postponed till another time	18(16.3)	26(23.6)
Misconcepts about contraindication	5(4.5)	3(2.7)
Reasons for non- immunization	**Migrants(n=30) n (%)**	**Non migrants(n=15) n (%)**
Place and time of immunization not known	4(13.3)	0(0)
Services not within reach	0(0)	0(0)
Unaware of need for immunization	7(23.3)	3(20)
Fear of side effects	2(6.6)	2(13.3)
No faith in immunization	3(10)	3(20)
Ignorance	14(46.6)	7(46.4)

*Single response was recorded for each child

of migrant children and avoid vaccine spacing errors. Hospital delivery also should be advocated to increase the immunization opportunities. By improving the system responsiveness particularly to vulnerable, socio-economically disadvantaged migrants would help in achieving full immunization coverage. Investing in education and socioeconomic development, providing secure livelihoods and equitable services are also important for improving and sustaining full utilization of immunization services.

Conclusion

Migrant status favours low immunization uptake and thus services must be delivered with a focus on recent migrants; investments are needed in education, socio-economic development and secure livelihoods to improve and sustain equitable health care services. That the likelihood of full immunization was higher for children of non-migrant mothers as opposed to children of migrants is indicative of alterations in health outcomes of migrants. This emphasizes the need for enhanced community-level measures in communities that would enhance improved full immunization uptake, such as increased female education, increased community health campaigns targeting mothers who deliver at home, and a general improvement of the socio-economic situation of people in urban communities.

Conflict of Interest : None
Funding : None

References :

1. World Health Organization. (WHO). Health of migrants. Available at URL: http://www.who.int/hac/techguidance/health_of_migrants/B122_11-en.pdf. Accessed on 25th April 2014
2. World Health Organization (WHO). Health of migrants: the way forward – WHO report of a global consultation, Madrid, Spain. Available at URL: http://www.who.int/hac/events/consultation_report_health_migrants_colour_web.pdf. Accessed on 25th April 2014
3. Biswas T, Mandal PK, Biswas S. Assessment of Health, Nutrition and Immunisation status amongst under -5 children in migratory brick klin population of periurban Kolkata, India. Sudanese J Public Health. 2011;6;7-11
4. Centers Diseases Control (CDC). Ten great public health achievements: 1990-1999. MMWR.1999;48:241-243
5. Chaudhary V, Kumar R, Agarwal VK, Joshi VK, Sharma D. Evaluation of Primary immunization coverage in an urban area of Bareilly city using Cluster Sampling Technique. NJIRM. 2010; 1:10-5.
6. Sun MP, Liu DW, Liu AH. Investigation of immunization coverage rate of children living in floating population area and affecting factors. Chin J Vaccines Immun. 2002, 8:91-94.
7. Liu DW, Sun MP, Liu WX, Fan CH, Lu L, Liu DL. Comparative study on immunization coverage rates of nine vaccines between local and floating children. Chin J Vaccine Immun 2007, 13:165-169
8. Williams IT, Milton JD, Farrell JB, Graham NM. Interaction of socioeconomic status and provider practices as predictors of immunization coverage in Virginia children. Pediatrics. 1995, 96(3 Pt. 1):439-44.
9. Hutchins SS, Jansen HA, Robertson SE, Evans P, Kin-Farley RJ. Studies of missed opportunities for immunization in developing and industrialized countries. Bull World Health Org. 1993;71:549-560
10. Bardenheier B, Gonzalez MI, Washington ML, Bell BP, Averhoff F, Massoudi MS: Parental knowledge, attitudes, and practices associated with not receiving Hepatitis A vaccine in a demonstration project in Butte County, California. Pediatrics. 2003;112:269-274
11. Luman ET, McCauley MM, Stokley S, Chu SY, Pickering LK. Timeliness of childhood immunizations. Pediatrics. 2002;110:935-939
12. Klevens R, Luman ET. US children living in and near poverty risk of vaccine-preventable diseases. Am J Prev Med. 2001;20(4 Suppl.):41-46
13. The report of sero-epidemiological survey on hepatitis B in Chinese people: Ministry of health of the People's Republic of China, centers for disease control and prevention of China. Beijing: People's medical publishing house; 2011:79.
14. Park K. Immunization. In: Textbook of Preventive and social medicine. 20th edition. Banarsidas Bhanot publication. 2009:113
15. Gupta PK, Pore P, Patil U. Evaluation of immunization coverage in the rural area of Pune, Maharashtra, using the 30 cluster sampling technique. J Fam Med Primary Care 2013; 2:50-54
16. Chaturvedi M, Nandan D, Gupta SC. Rapid assessment of immunization practices in Agra district. Indian J Public Health. 2007; 51: 132-134
17. Singh P, Yadav RJ: Immunization status of children in BIMARU states. Indian J Pediatr. 2001; 68:495-450
18. National Family Health Survey (NFHS 2), India, 1998-99, Mumbai: International Institute for Population Sciences and ORC Macro: 2000: 210.
19. Gulati SC, Bhatt PN, Sharma S. Rapid Household Survey – RCH project phase II, Agra, Uttar Pradesh, Population Research Center, University Enclave, New Delhi, 1999.
20. Yadlapalli S. Kusuma, Kumari R, Pandav CS, Gupta SK. Migration and immunization: determinants of childhood immunization uptake among socioeconomically disadvantaged migrants in Delhi, India. Trop Med Internat Health. 2010;15:1326–1332
21. Varsha MV, Hanumante NM, Joshi AM, Mahajan S. Immunization Status of Under five children in Migrants from Peri-urban Areas of Pune. Natl J Community Med 2013;4: 457-460.

From: *Department of Pediatrics, Chirayu medical college and hospital, Bhopal, **Department of Pediatrics, Peoples College of Medical Sciences and Research Centre, ***Department of Community Medicine, Chirayu medical college and hospital, Bhopal, ****Assistant professor, Department of Community Medicine, MGM Medical College, Indore.

Address for Correspondence: Shweta Anand, Chirayu Medical College and Hospital, Bhopal, Madhya Pradesh, India.

Email : drsa007@yahoo.com

DOI: 10.7199/ped.oncall.2014.35

Quick Response Code