

Demand and Supply Side Factors Affecting Utilization of Immunization Services in an Urban Village Of Delhi

Akanksha Rathi^{1*} and GS Meena²

¹Baba Saheb Ambedkar Medical College and Hospital, Delhi, India

²Department of community medicine, Maulana Azad Medical College, New Delhi, India

Abstract

Even after introducing the Universal Immunization Program (UIP) three decades ago, India is still far from achieving the target 4 of Millennium Development Goals. The target is to reduce the under-five mortality by two-thirds by 2015 end but India still hasn't achieved that. Undoubtedly, raising the immunization coverage will contribute towards bringing down the mortality rate of children. This short commentary tries to throw light on the various demand and supply side factors that play a role in determining the immunization. The factors influencing immunization are education level of parents, socio-economic status, family structure, family size, immunization card, migrant population, healthcare delivery service quality, institutional deliveries, tetanus immunization of expectant mothers, contraception use, supply of vaccines and motivation of healthcare personals providing vaccination services.

Keywords: Immunization services; UIP; Vaccines

Universal Immunization Program and Coverage

The government of India launched Expanded Program on Immunization (EPI) with the objective of reducing the mortality and morbidity resulting from vaccine preventable diseases of childhood and to achieve self-sufficiency in the production of vaccines. Universal Immunization Program was launched in 1985. It has two vital components: immunization of pregnant women against tetanus and immunization of children in their first year of life against the six vaccine preventable diseases. Significant achievements have been made under this program. In 1985, vaccine coverage ranged between 29% for BCG and 41% for DPT. By the end of 2008, coverage levels have gone up significantly 87% BCG, 66% for DPT 3 doses, 70% measles and 67% for OPV 3 doses [1]. The vaccination coverage is a little better in the national capital, Delhi. According to the District level Household and facility Survey (DHLS)-3, the percentage of fully immunized children is 67%, BCG coverage is 92%, OPV 3 and DPT 3 coverage is 76.7% and Measles coverage is 83% [2]. However India is still far from achieving the target 4 of Millennium Development Goals, according to which the under-5 mortality rate should have been reduced by two-thirds by 2015 end. Undoubtedly, raising the immunization coverage will contribute towards bringing down the mortality rate of children.

This short commentary tries to throw light on the various demand and supply side factors that play a role in determining the immunization acceptance and utilization.

Situation Analysis-Immunization Coverage at Barwala (Rural Area of Delhi)

A rural area Barwala that lies in north-west district of Delhi having a population of 6500 was chosen to study the various factors by the author who was the medical officer in-charge of a government run health center that provided health services to the village including weekly immunization. Apart from the government run health center in the area there were various private practitioners and nursing homes in the vicinity that provide immunization services.

A survey was planned and executed with the help of field workers and interns to determine the number of children (less than 3 years so that coverage of primary and booster immunization can be determined), immunization coverage (both primary and booster doses), place

of immunization (preference, reasons, follow up mechanism) and knowledge, attitude and practice of the caretaker of the children. A pre-coded, pre-tested and semi structured questionnaire was used to collect the information. All the houses of the area having children 1 to 3 years of age were visited, informed consent was taken and information was gathered. If a house was found locked then two more attempts were made to find the missing child but if the child was not found even on the 3rd visit then he/she was excluded from the study. The children, whose parents refused to give consent, were also excluded from the study. The data was later entered in Microsoft excel and descriptive statistics were derived.

The results of the survey showed that there are 120 infants in the area and 260 children between 1 to 3 years of age. The primary immunization coverage amongst children 12-23 months of age was found out to be 84.4%. The coverage for various vaccinations has been depicted in Table 1.

The dropout rate between BCG and measles was 10.3% and between DPT-1 and DPT-3 was 3.7%. Thus the immunization coverage came out to be much higher than the national figures. As evident from the table, the figures are also higher than immunization coverage of other urbanized villages of Delhi [3].

Hence we should understand the various demand and supply factors that have led to high immunization coverage and try and build a similar model for other areas that are not doing so well.

Factors Influencing Utilization of Immunization Services

Just like any other healthcare service, there are many factors that affect seeking and utilization of immunization services. As we know that

***Corresponding author:** Akanksha Rathi, MD, Assistant Professor, Baba Saheb Ambedkar Medical College and Hospital, Delhi, India, Tel: +919911214187; E-mail: akanksharathi.dr@gmail.com

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S. No.	Vaccination	Coverage in study area (%)	Coverage in other urbanized villages
1.	BCG-Birth Dose	97	82.7
2.	OPV-0 Dose	80	-
3.	Hep-B-0 Dose	74	-
4.	OPV-1 st Dose	93.3	81.5
5.	DPT-1 st Dose	93.3	81.5
6.	Hep-B-1 st Dose	91.1	-
7.	OPV-2 nd Dose	93.3	76.8
8.	DPT-2 nd Dose	93.3	76.8
9.	Hep-B-2 nd Dose	91.1	-
10.	OPV-3 rd Dose	89.6	70.7
11.	DPT-3 rd Dose	89.6	70.7
12.	Hep-B-3 rd Dose	87.4	-
13.	Measles Dose	86.7	68.3
14.	DPT Booster*	74	-
15.	OPV Booster*	74	-

*This was seen amongst children between 18-36 months, while for primary vaccinations coverage is seen between 12-23 months

Table 1: Immunization coverage of various vaccinations in the study area (Barwala) and in other urbanized villages of Delhi.

preventive services like immunization are elastic as compared to other health care services so people would rather prefer free governmental services for the same rather than paying for them. As the utilization of immunization services in Barwala is quite high, various factors have come out to be important for affecting the same.

Demand side factors influencing immunization

Education status of mothers: It is seen that literate mothers are more likely to get their children vaccinated than the illiterate ones. Though Barwala is a village but 82% of the mothers were literate with majority having education at least till middle school. Other studies have also shown that mother's education is strongly related to the immunization status of the child [3-6].

Education status of fathers: It has been noted that father's education affects the immunization status of children more than the mother's. Around 88% of the fathers were literate and though mothers are the primary caregivers for the children but fathers are the decision makers and often accompany the children for immunization. Another study corroborates with our findings [3].

Socioeconomic status: Higher socioeconomic status is directly associated with higher immunization rate. It often acts as a proxy for educational status and higher awareness of the stakeholder's felt needs. Around half of the households of Barwala belong to middle and upper middle strata that explain the higher utilization of services by the same.

Family structure: Joint families are associated with higher immunization coverage. As opposed to the popular belief that mothers have more work and are busy in joint families and thus pay less attention to the children, it is seen that joint families are good for the immunization coverage of the community. Around half of the families of Barwala are joint families and apart from the mothers, other members of the family take care of the immunization of the child in case the mother is busy. Grandparents share close relationship with the children and often accompany them for immunization.

Presence of immunization card: Loss of card is seen to be associated with partial or no immunization. Majority of the children had immunization cards that indicate the importance the parents

associated with the card. They knew that it is an important document for the child's admission in schools and it also acted as a reminder for the next immunizations. The findings are consistent with NFHS study subject reports [7-9] and other studies [10-12].

Small family size: The term indicates the number of children that the couple has rather than the total number of members in the family. Though half of the families of Barwala are joint families but more than 3/4th have 1 or 2 children. More number of children indicates lower education status and more negligence of the children leading to partial or no immunization. Studies done using NFHS data have also concluded that birth order has inverse relationship with immunization [7,8,13].

Migrant population: If a community has a higher proportion of migrant population then the immunization coverage is low. Migrants are usually manual labors having low socio economic and education status. They have often lost or misplaced their children's immunization cards, are unaware of the health facilities available in the area and do not visit the healthcare facility due to fear of loss of daily wage. Due to all these reasons the immunization coverage of such population is low. Barwala is an old village with majority of the population as natives and very few are migrants.

Knowledge of vaccine preventable diseases: It was found that the proportion of people knowing about VPDs were much lower as only 24.7% could name Polio, 18.4% could name Measles, 21.4% knew about DPT and 29.9% about BCG. Despite of that they were motivated to get their children immunized. However, grey literature on epidemiology of unimmunized children states that knowledge of parents about VPDs is often low but it doesn't affect the behavior much [14].

Supply side factors influencing immunization

Effective delivery of services at the health center: More than 85% of the children of Barwala are vaccinated at the health center and only a few go to the private practitioners. An important finding was that the proportion of fully immunized children was more amongst the one that were immunized at the health center.

- i) It was noticed that parents were being treated well by the two Auxillary Nurse Midwives (ANM) that are posted at the health center.
- ii) They are working in that place since many years and people had lot of confidence in their services.
- iii) They are informing the parents about the next immunizations.
- iv) The information about minor side effects along with PCM for fever is also being given.
- v) There is less waiting time due to the effective division of labor amongst the ANMs and interns.
- vi) The record maintenance is commendable as the children who fail to show up for immunization are contacted and brought for immunization.

All these factors are missing at the private clinics.

Tetanus immunization of the mothers during antenatal care: Mothers seeking antenatal care for themselves are more likely to seek healthcare and immunization services for their children [4]. Most of the other studies have found out a positive relationship between usage of antenatal services and full immunization of the child [9,15,16]. Majority of mothers of Barwala had received tetanus immunization from the health center and thus seek immunization for their children.

Institutional delivery of the baby: The institutional delivery rate of the small village is high and only a few are home deliveries. All the pregnant females are registered at the health center and are advised to go to the nearest government hospital for delivery that is about 1 km away. Institutional delivery encourages the family for immunization as the same starts at birth and further information is also given. Even the ones that deliver at home are being visited by ANMs and advised for the timely immunization of the child. Other studies have also stated that institutional delivery encourages immunization [3,13,17].

Availability of contraceptive methods: Lower unmet need of contraception leads to empowering of women and ultimately families. The women can take better care of themselves and their children if they can regulate their fertility.

Barwala fortunately has high contraception utilization rate due to various factors like:

- i) Specific days dedicated to contraceptive services
- ii) Availability of barrier methods, IUDs and emergency contraceptive methods
- iii) Adequate privacy
- iv) Motivation and fear effective Behavior Change Communication (BCC) by the ANMs

Uninterrupted supply of vaccines and other logistics: The doctors coming from the medical college ensure the supply of vaccines to the center of Barwala. In case the vaccines don't come from the college, they are brought from the nearby hospital. Very rarely any vaccine falls short as the calculation of the doses required is done effectively and according to that the vaccines are brought.

Proactive healthcare personnel: The healthcare delivery system largely depends on its personnel and his/her motivation. A motivated health worker is like a catalyst that ignites the fire of change in health care indicators very fast. Barwala is manned by two highly motivated ANMs who not only do their center activities well but also deliver the outreach services effectively. They make home visits for postnatal care and follow up children who miss their immunization. They play a big role in improving and maintaining the high immunization coverage of the village.

The demand side factors cannot be largely influenced apart from education and awareness of the stakeholders but the supply side factors can be well taken care of. If all the above-mentioned factors are given due importance then immunization coverage can definitely improve.

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