Short Communication

Co-constructing fishbone diagram to understand the barriers to immunization in an urban community in Mysuru, Karnataka: A brief report of a qualitative study

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ABSTRACT

Background: Despite improvements in immunization coverage during the 1990s, full immunization coverage for 12–23 months according to National Family Health Survey 4 still remains low. To change the quality of care outcome within a system, quality improvement initiatives must first understand the causes contributing to the outcome and accordingly can administer the changes. **Objectives:** The objective of this study were as follows: (1) To understand the barriers to Routine Immunization among Caregivers and health personnel through participatory group discussions and (2) cocreation of a fishbone diagram illustrating the barriers, in an Urban Primary Health Center in Mysuru, Karnataka. **Materials and Methods:** The barriers to immunization were unveiled by participatory focus group discussions conducted among caregivers and health workers in an urban primary health center in Mysuru. A fishbone diagram depicting the root causes of delayed immunization/drop-outs was constructed with the participants. **Results:** The barriers include social factors, individual/family factors, barriers associated with private clinics, and problems in the public health system. The major cause was information system which did not reach the parents periodically by health workers, carelessness by the parents for delaying or skipping, migrating population, and non-accounting of child immunization in private clinics. **Conclusion:** Lack of timely administration and drop-outs of key childhood vaccines and improper functioning of the health system remains a major challenge in this area. An effective, regular, and universal monitoring of the sessions are necessary for appropriate action which is very much essential.

KEY WORDS: Immunization; Barriers to Vaccination; Fishbone Diagram

INTRODUCTION

Routine immunization (RI) is the utmost cost-effective service for vaccination, which is the right of every child.[1] The percentage of children receiving diphtheria, tetanus, and pertussis vaccine (DTP) is often used as an indicator of how well countries are providing RI services.[1] In 2017, global coverage rates for the third dose of DTP vaccine (DTP3) reached 85%, up from 72% in 2000 and 21% in 1980.[1] India has a massive burden of 10 million unimmunized children which are the highest in the world.[2] United Nations International Child Relief Fund – Coverage Evaluation Survey India 2009 revealed that 61% of children were fully vaccinated nationally, whereas >78% were fully vaccinated in Karnataka.[3] According to National Family Health Survey 4 (NFHS 4), children aged 12–23 months fully immunized (Bacillus Calmette Guerin, measles, and three doses each of polio and DTP) consisted of a total of 46.7% (rural 38.6% and urban 52.1%) in Mysuru district, Karnataka.[4]

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The burden of non-compliance to immunization can be tackled only with a clear understanding of the hindrances toward the program. Hence, we attempted to understand the barriers to RI among caregivers and health personnel through participatory group discussions and cocreation of a fishbone diagram illustrating these barriers, in an Urban Primary Health Center (UPHC), in Mysuru, Karnataka.

MATERIALS AND METHODS

A qualitative study was conducted in the field practice are of an urban primary health center in Mysuru, Karnataka, in August 2019. JSS AHER Institutional Ethics Committee approval was taken before the conducted of the study. Two separate focus group discussions were conducted for the parents and health workers in the UPHC during the study period to understand the barriers to immunization. The first discussion was conducted in the health center and was consisting of ten parents purposively selected from the area. The interview was limited to within gender members and being the primary caregivers, mothers were invited to the interview. The members of the discussion were identified with the help of the health workers and included mothers from different social contexts within the area. Mothers permanently residing in the area for at least 5 years and currently rearing a child <3 years were included and not willing to participate in the discussions were excluded from the study. The second focus group discussion was conducted for six health workers, including the medical officer, three Auxiliary Nurse midwifery, and two Accredited Social Health Activist (ASHA) workers working in the UPHC. The data collection was concluded on the data saturation and formation of a complete fishbone diagram depicting the barriers to immunization in the area.

After obtaining informed consent, briefing about the study process was done, wherein steps in the construction of a fishbone diagram were explained to draw the problem or effect which was displayed at the head or mouth of the fish. Possible contributing causes were listed on the smaller "bones" under various major cause categories which were created with participants through the iterative process. After various causes were determined by the fishbone diagram, the next step was to understand the relationship between causes. This involved tracing a precursor to a cause back to the original cause (root cause). The initial fishbone diagram constructed with the mothers was then expanded with the insights from health workers. The final output of the fishbone diagram was drawn by the researchers which were later verified by selected study participants and coresearchers (data triangulation). A de-briefing was done after the completion of the study.

RESULTS

Through participatory discussions of parents and health workers' lived experiences and field level difficulties, five categories of barriers were identified. The barriers include social factors, individual/family factors, barriers associated with private clinics, and problems in the public health system.

The Social Barriers to Immunization

One of the major reasons for delayed immunization and drop-outs from RI quoted by mothers was a lack of motive. The health workers associated this with high rates of illiteracy among the urban poor in the area. Lack of reminders about the immunization dates due to absent field workers adds on to illiteracy in increasing the coverage gap in the area. Other social factors like alcoholism among fathers of children also were shown as a barrier to proper care and immunization by mothers. The constant migration among the urban residents in and out of the regions makes the tracking difficult for the health workers.

Individual/Family Level Barriers

The most common hindrance to proper immunization according to the participants was lack of adequate knowledge about it. The lack of knowledge often leads to carelessness by the parents which affect the care to children. Several health beliefs among the residents also contribute to less adherence to the regular immunization like the fears of AEFI, pain, and the belief that immunization causes disabilities are examples of such trust issues.

Private Clinics and Immunization

A major share of the immunizations and antenatal check-ups in the area happens in various private clinics. Lack of adequate accounting and reporting of child immunizations and antenatal TT injections causes operational difficulties for the health workers in the area.

Barriers Associated with the Public Health System

The major barriers associated with the health system can be further re-categorized into problems associated with supplies and human resources. Unavailability and delayed supply of certain vaccines interfere with the proper implementation of routine immunization. Health workers also shared their concerns about the over workload due to inadequate human resources in the Urban Primary Health Center according to the national standards. The inadequate staffing of the UPHC makes the clerical works and record-keeping exhausting for the field level health workers. As many programs are running parallelly with insufficient staff, the proper implementation of RI is often affected. Health workers also shared their concerns about the low incentives they receive for the heavy task of immunization [Figure 1].

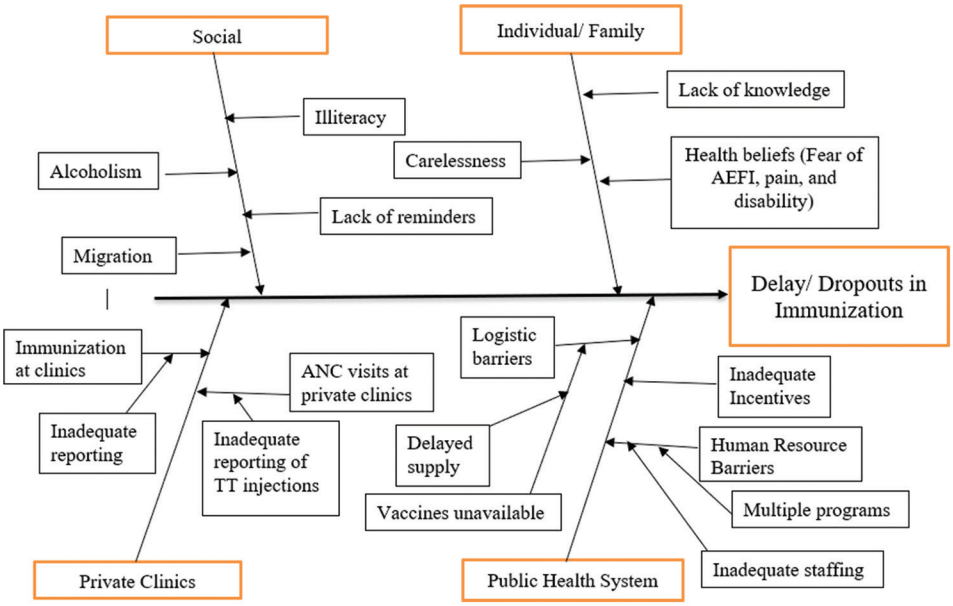

Figure 1: Fishbone diagram on immunization delay/drop-outs. The fishbone diagram grouped causes into major categories to identify the sources of variation. The categories typically included environment, people, private clinics, equipment/supplies, and human resources

DISCUSSION

Lack of timely administration and drop-outs of key childhood vaccines and improper functioning of the health system remains a major challenge in this area. The barriers identified include social factors, individual/family factors, barriers associated with private clinics, and problems in the public health system. The literature supports for lack of timely administration and drop-outs of key childhood vaccines which remain a major challenge.

A systematic review done by Rainey *et al.* among 202 relevant articles abstracted 838 reasons associated with under-vaccination; 379 (45%) were related to immunization systems, 220 (26%) to family characteristics, 181 (22%) to parental attitudes and knowledge, and 58 (7%) to limitations in immunization-related communication and information.[5] Similar to our observations, "parents belief in vaccines" effectiveness was a major reason for delayed or drop-outs in RI. Fear about vaccines and considering illness more protective than vaccine were barriers to complete vaccination. Parents misinformation about the role of vaccination in disease prevention is reportedly related to under- or non-vaccination.[5] A study in China reported caregiver's attitude toward vaccination as a significant predictor of timely routine vaccination of children.[6] It was found in our study that education of parents had higher impact on the knowledge to fully vaccinate their children, which was similar to that observed in NFHS-4[4] and coverage evaluation surveys of 2009,[7] 2005,[8] and 2002,[9] where maternal education was directly related with vaccination status. The reason for non-availability of vaccines and delayed supply of vaccines from the District Health Office supply chain was not mentioned in any of the studies as mentioned in our study which highlights the recommendation to strengthen the health system to support the National Immunization Program held in rural and urban areas throughout our country. This enabled to see what approximately 20% of cases were causing 80% of the problems and where efforts should be focused to achieve the greatest improvement.

The use of the fishbone diagram for the participatory study was the major strength as we could get into the root causes. As the data were collected from the purposively selected respondents, the representativeness of the community in the study is limited. A more elaborate approach with a wider sample size rigorous data collection is required for a comprehensive understanding of the subject. The study is an effective precursor to such extended qualitative studies, whereby more transferability can be achieved.

The above study has given literature support for lack of timely administration and drop-outs of key childhood vaccines which remain a major challenge in the study area and in India as a whole and likely contributes to the significant burden of Vaccine-Preventable Disease (VPD)-related morbidity and mortality in children. An effective, regular, and universal monitoring of the sessions are necessary for appropriate action which is very much essential more so in the view for the operational short comes in the health care delivery system for VPDs control program.

Recommendations

Taking appropriate steps at the grass-root level through continuous health education using the health belief model

and follow-up by the ASHA, Anganwadi workers, and other healthcare personnel would bring a significant change in the immunization rates in this area.

CONCLUSION

Lack of timely administration and drop-outs of key childhood vaccines and improper functioning of the health system remains a major challenge in this area. An effective, regular, and universal monitoring of the sessions are necessary for appropriate action which is very much essential.

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