Assessment of immunization and growth monitoring services provided during outreach sessions in selected urban health centers of Ahmedabad, Gujarat, India

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ABSTRACT

Background: Immunization is the great investment as it is a cost effective and successful health intervention, which prevents suffering through sickness, disability and death.The present study was conducted with an objective to assess the effectiveness of Immunization and Growth Monitoring Services delivered during Outreach Sessions.**Methods:** A cross-sectional observational study design was used, with one UHC randomly selected from each of seven zones. Two outreach sessions per UHC were purposively sampled. Data was collected using a pretested proforma and analyzed using Microsoft Excel 2019.**Results:** It was found that 8(57.14%) sites were not having separate area for vaccination. Shakir tape was not available at 10(71.42%) of sites. Overall Cold chain maintenance was satisfactory at all sites. At some sites, Vaccinators were not writing time of reconstitution on BCG &Measles Vials (21.43%), not giving 4 key messages (71.42%), were not informing about other services (78.57%), were not asking beneficiaries to wait for half hour after vaccination (71.42%) and were not knowing Open Vial Policy (35.71%). Growth chart Plotting was satisfactory in 75% ofsessions, only 64 % of them knew how to interpretate it. **Conclusion:** The vaccine, logistics, and cold chain maintenance were deemed satisfactory. However, despite accurate weighing of children, a subset of Healthcare Providers (HCPs) experienced challenges in accurately plotting and interpreting growth charts. While immunization quality was consistently high across all centers, opportunities for improvement and refinement were identified. To address these gaps, periodic training sessions for HCPs are recommended, focusing on immunization techniques, growth chart plotting, and interpretation to enhance their skills.

Key words: Growth monitoring, Outreach sessions, Routine immunization

Introduction

Immunization represents a prudent investment in present and future public health, yielding substantial returns through the prevention of morbidity, mortality, and disability. As a highly efficacious and cost-effective health intervention, immunization mitigates the burden of infectious diseases, thereby reducing the incidence of sickness, disability, and premature death.

Vaccination has been instrumental in achieving widespread immunity, leading to the global eradication of smallpox and near elimination of diseases like polio and tetanus.[1]To achieve Sustainable Development Goal 3 (SDG 3) target 3.2 by 2030, Specifically, the goal is to decrease neonatal mortality rates (NNMR) to ≤12 per 1000 live births (currently 18.0 in Ahmedabad) and under-5 mortality rates (U5MR) to ≤25 per 1000 live births (currently 29.5 in Ahmedabad).[2] The vaccination program now covers 12 diseases: tuberculosis, polio, hepatitis, diphtheria, pertussis, tetanus, Haemophilus influenzae type b, measles, rubella, pneumonia, rotaviral gastroenteritis, and Japanese encephalitis.

The efficacy of immunization programs in the field is contingent upon the availability of requisite logistics and the provision of comprehensive training for healthcare personnel. These factors exert a profound impact on enhancing vaccination coverage, mitigating dropout rates, and ultimately, optimizing the quality of immunization services.

Growth monitoring, a crucial component of primary healthcare, involves regular measurement, charting, and interpretation of a child's growth to facilitate early detection of abnormalities and prompt intervention. A systematic review of studies has shown that children with access to growth monitoring, basic healthcare, nutrition, and health education have improved survival rates and nutritional status compared to those without such access.

The present study was conducted with an objective to assess the effectiveness of Immunization and Growth Monitoring Services delivered during Outreach Sessions, encompassing the planning and organization of outreach immunization sessions, cold chain and logistics management during sessions, adherence to appropriate vaccination techniques, and the quality of growth monitoring services provided at the session site, in order to assess the overall quality and effectiveness of these services.

Materials and Method

A cross-sectional observational study was undertaken in Ahmedabad City between 2021-2022 to evaluate the efficacy of Immunization and Growth Monitoring Services delivered during Outreach Sessions. Across seven randomly selected Urban Health Centers (UHCs), representing each of the seven municipal zones. A total of 14 outreach sessions were observed, with two sessions randomly selected from each UHC.The study population consisted of a convenience sample of 14 Vaccinators who were conveniently accessible and present at the outreach session on the day of data collection. Following a thorough explanation of the study's objectives, informed verbal consent was obtained from each participant prior to initiating data collection. Data collection was done through pre-tested and validated questionnaire, encompassing key components such as session planning, cold chain integrity, logistical management, and vaccination technique adherence. Statistical analysis was conducted utilizing Microsoft Excel 2019.This study received ethical approval from the institutional ethic committee.

Results

Table 1: Session Preparedness and Beneficiary Notification at outreach session(n=14)

Component observed	Yes(%)	No(%)
Session held as per microplan	14(100)	0
The beneficiaries have been informed regarding session on previous day	10(71.42)	4(28.57)
IEC material displayed at session site	11(78.57)	3(21.42)
List of expected beneficiaries for session	14(100)	0

Planning component at outreach sessions is depicted in Table 1,All 14 outreach sessions observed were according to micro plan. Beneficiaries were informed on previous day in 10 out of 14 sessions (71.42%). List of expected beneficiaries was available at all sessions (100%), but IEC material was not displayed at 3(21.42%) session sites.

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Table 2: Facilities and amenities available at Outreach Session Sites (n=14)

Session site	Yes(%)	No(%)
Waiting area before and after vaccination for beneficiaries	6(42.85)	8(57.14)
Separate area for vaccination	6(42.85)	8(57.14)
Clean surroundings	9(64.28)	5(35.71)
Breast feeding Corner	1(7.14)	13(92.86)

Table-2 depicts about the facilities available at session siteIt was found that 8 (57.14%) session sites were not having separate area to vaccinate child. Also 57.14% of Session sites were not having Waiting area before and after vaccination. while 92.86% of Session sites were not having breastfeeding corner.

Table 3: Availability of Essential Equipment at Outreach Session Sites (n=14)

Equipments	Yes (%)	No (%)
Shakir tape	4(28.57)	10(71.42)
Magnifying glass	9(61.91)	5(38.09)
UPT kit	11(78.57)	3(21.43)
Hemoglobinometer	11(78.57)	3(21.43)
Thermometer	12(85.71)	2(14.29)
Functional hub cutter	13(92.86)	1(7.14)
Marker	14(100)	0
BMW bags	14(100)	0
Weighing scale	14(100)	0

Table-3 shows availability of equipments at session sites Shakir tape was not available at majority (71.42%) of session sites, followed by magnifying glass (38.09%), UPT Kit (21.43%), Hemoglobinometer (21.43%), Thermometer (14.29%) and Functional Hub Cutter (7.14%).

Overall Vaccines and related logistics were available at all sites except anaphylaxis kit, zinc & paracetamol tablet/syrup and albendazole which were not available at some session sites.

Table 4: Assessment of Immunization Session Practices:(n=14)

Practices observed	Yes (%)	No (%)
Use of zipper bags for storage of vaccine in the vaccine carrier with four conditioned ice pack.	14(100)	0
Presence of freeze-sensitive vaccines in liquid form	14(100)	0
All the vaccines at session within expiry date	14(100)	0
Vaccine Vial Monitor (VVM) stage I or II on all Vaccines	14(100)	0
Reconstitution of each vaccine with the matched diluent	14(100)	0
Time of reconstitution written on BCG & Measles	11(78.57)	3 (21.43)
Knowledge about ddetermine of eligible child for vaccination according to national schedule and possible contraindication	14(100)	0
Handwashing before and after vaccination of child	13(92.86)	1(7.14)
Administration of each vaccine according to recommended technique and correct dose	14(100)	0
Vitamin A given in correct dose	14(100)	0
All AD syringes cut with hub cutter immediately after use	12(85.71)	2(14.29)
Correct method for waste disposal	12(85.71)	2(14.29)
Mamta card filled properly	13(92.86)	1(7.14)

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ANM giving the 4 key messages	4(28.57)	10(71.42)
Informed caretaker about other services given during immunisation session	3(21.43)	11(78.57)
Beneficiaries asked to wait for half an hour following vaccination	4(28.57)	10(71.42)
Maintaining list of children who missed vaccination	12(85.71)	2(14.29)
Provider knew how to read VVM and when to discard the vaccine	9(64.29)	5(35.71)
Vaccinator knew about open vial policy	9(64.29)	5(35.71)
Use any live vaccine after 4 hr of reconstitution	0	14(100)

Table-4 shows Process & Technique evaluation of Vaccination. Overall Cold chain maintenance was satisfactory at all sites. At some session sites Vaccinators were not writing time of reconstitution on BCG & Measles Vaccine Vials (21.43%), not giving 4 key messages (71.42%), were not informing about other services (78.57%), were not asking beneficiaries to wait for half hour after vaccination (71.42%), were not knowing Open Vial Policy and not knowing how to read VVM (35.71%). Also, approximately14% of ANM/Vaccinator didn't know correct method of waste disposal, not filling MAMTA card properly, and when to discard the Vaccines and not maintaining list of beneficiaries who missed vaccination.

Table 5: Growth monitoring observation at session site

Variables	**Yes (%)**	**No (%)**
Growth monitoring done(**n=14**)	8(57.14)	6(42.86)
Observations (n=8)		
Weighed children correctly	8(100)	0
Plotting of weight on growth chart accurately	6(75)	2(25)
Interpretation of growth chart	5(63.63)	3(36.36)
Check for clinical sign of malnutrition	2(25)	6(75)
Explain mother about weight and nutrition	4(50)	4(50)
Follow up of malnourished children	2(25)	6(75)

As shown in Table-5,Only 8 (57.14%) out of 14 session sites, HCPs were monitoring growth of children. All 8 were weighing the children correctly. Among them, plotting was satisfactory in 75% ofsessions, only 63.63 % of them knew how to interpretate growth chart and just 25% of them checked the for clinical signs of malnutrition. 50% of HCPs were not informing the mother about weight and nutritional status of her child. Follow up of malnourished children was very poor and only 2 (25%) of HCPs were doing follow up of malnourished child.

Discussion

The planning of outreach sessions was good with all Urban Health centres having and adhering to the micro plan. Similar observation of all sessions held as per micro plan was also observed in a study done by Kotecha and Singh et al., in Bhavnagar city of Gujarat.[3]Display IEC at the session site is necessary so that the nearby people can come to know the exact location of the session site. Display of banner should be at such a place so that it can be visible to all. It was displayed at 11 sites out of 14session sites visited in present study. contrary to this, it was displayed in 17 out of 19 session study done by K mehta et al., in urben slum of Vadodara city. [4]

Growth monitoring is also one of the essential components of child health services. Although weighing scale for children was present at all sites. Shakir tape which is used for measuring mid-upper arm circumference in children was present at 6(28.57%) sites only.

The different logistics and supplies to vaccinate child should be present in adequate quantity at all the session sites. Vaccines including BCG, MR, pentavalent, td, DPT were found available at almost all sites in this study. Similar finding was observed by Kotecha and Singh et al., and Shah et al., in Bhavnagar and Ahmedabad municipal corporations of Gujarat state respectively. [3,5] While in a study done by Saxena et al., in Uttarakhand district, vaccines were found available at 70% sites only.[6]. Vaccine carrier and four conditioned ice-packs were observed at all session sites visited which was a

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highly appreciable finding. Similar findings were also noted by the studies conducted in urban area by Kotecha and Singh et al., ,[3,]. AEFI kit is very vital in case of any adverse event following immunization. It was not available at only 1 site (4.76%) in present study. A study by Kedar Mehta et al., in urben slum of Vadodara AEFI kit was not available in half of the sites visited which is a major concern.[4]

Coming to the direct process observation of child health services, especially vaccinatore writing of date and time of opening, the vaccine vial is very vital for those vaccines where open vial policy is followed. Moreover, since BCG and measles vaccines have to be used within 4 hours of its reconstitution, it is very important to mention the date and time of reconstitution on these vials as well. Apart from these cold chain indicators, VVM stage of the vaccine vial is also to be checked by the ANM/FHW before giving the vaccine to any child. Such practices of writing date and time on the vaccine vials were observed at 11 (78.57%) session sites. Contrary to this study conducted by by Khandhedia et al., all sessions(100%)writing date and time on vaccine vial.[7]The similar practice of writing the time of reconstitution on vaccine vial was observed at 75% of urban health centers by Naik et al., in Surat city.Sharma et al. reported in his study that Time of reconstitution was mentioned on the vial (BCG/measles) in 82.0% of session sites.[9,10] None of the session sites visited had vaccine without label/unreadable label, with expired date, in frozen state or VVM Stage III/IV. A similar finding was also noticed by Kotecha and Singh et al., and Gandhi et al., in Bhavnagar and Surat Municipal Corporation, respectively.[3,9]

ANM has to give four key messages related to vaccination to the caregivers (parents of beneficiaries) and has to advice to stay for at least 30 min after vaccination, so as to detect and manage AEFIs at the earliest. In this study, only at 4(28.57%) session sites, ANMs were asking the parents of the beneficiaries to stay for 30 min after vaccination, while at 4 (28.57 %) sites, all four key messages were given to the caregivers. Similar findings were observed in studies conducted by Kotecha and Singh et al., and Rajkumari et al.,[3,6] Such findings clearly indicate that there is a need to improve interpersonal communication skills of ANM with the caregivers.

Growth monitoring component was being ignored at some sessions (47.61%). Although all children <5 years were weighed at 8(57.14%) sites, correct plotting of weight in Mamta Card was at 6(75%), however only 63.63 % of HCP correctly interpretate growth chart in present study. Contrary to this study <5 years were weighted at all site, correct plotting of weight in Mamta Card was done at 17 (89.4%) sites was found in study conducted by Kedar Mehta et al., in slum of Vadodara city.and at 9 site (40%) was found in study conducted by Banerjee S et al., in urban primary health centre of Nagpur [4,11].I explained the importance of growth monitoring and plotting which was lacking in few sessions and gave suggestion to team members and made onsite corrections where needed.

Conclusion

The present study was conducted with an objective to assess the effectiveness of Immunization and Growth Monitoring Services delivered during Outreach Sessions, encompassing the planning and organization of outreach immunization sessions, cold chain and logistics management during sessions, adherence to appropriate vaccination techniques, and the quality of growth monitoring services provided at the session site, in order to assess the overall quality and effectiveness of these services.

The present study highlights certain issues in every component of routine immunization program at outreach session. All sessions were according to micro plan and conducted timely. with regard to supply chain, while most essential items were readily available, attention is required to ensure consistent availability of Shakir's strip and magnifying glass, as these items were found to be missing at 10 and 5 sites, respectively. Overall, vaccine and logistics availability were satisfactory, with the exception of the AEFI kit, which was unavailable at one site.

Cold chain maintenance during session was satisfactory but few vaccinators failed to mention date and time of opening on Measles/BCG vaccine vial. While few vaccinators were not aware about open vial policy. With regard to the immunization, although the injection technique was good, the biomedical waste management and communication with the client need to be strengthened, majority of them failed to deliver ‘four important key messages’ after vaccination. Although weighing of children was proper, few AWWs encountered problem in plotting weight on growth chart and

interpretation of growth chart. Immunization quality is well maintained at almost all the sites, but still there are many scopes of improvement and many areas to work upon.

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