

Original Research Article

Adverse events following immunization: orchestrated outcome of mothers' knowledge and behavior on vaccination practices

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ABSTRACT

Background: Adverse events following immunization (AEFI) are a common occurrence in children after vaccination and can lead to loss of trust in the immunization program. Fear of AEFIs is a major factor implicated in 'Vaccine Hesitancy' as seen in countries with high vaccination coverage and low burden of vaccine preventable diseases. The study aimed at assessing the knowledge, attitudes and practices of mothers regarding AEFI and its impact on vaccination of their children

Methods: A descriptive, cross sectional survey was conducted at the immunization clinic of a tertiary care hospital of western India. Mothers attending the immunization clinic were interviewed using a validated questionnaire. A sample size of 221 was derived based on the incidence of common AEFIs.

Results: Awareness of AEFI was present in 86.4% participants while only 28% mothers confirmed that information regarding AEFIs was given to them at the time of immunization. Though awareness of minor side effects like fever (98%) and local reaction (85%) was good, less than 15% of the mothers were aware of serious AEFIs such as seizures and anaphylaxis. Only 66% mothers indicated that they would first consult their doctor in case of an adverse effect. Knowledge regarding true contraindications to vaccination was poor.

Conclusions: Awareness of the possibility of AEFI was good and trust in immunization as a vital health intervention was intact. Awareness about serious AEFIs which necessitate prompt management was inadequate while that for minor side effects was satisfactory. Healthcare seeking behavior of mothers to serious AEFIs was appropriate.

Keywords: Adverse events, Attitudes and practices, Immunization, Mothers knowledge

INTRODUCTION

Universal routine immunization has been the simplest and most cost-effective intervention for the reduction of global childhood morbidity and mortality. Despite significant improvements in immunization coverage, there are still a large proportion of children who are either incompletely vaccinated or not vaccinated.¹

Adverse Events Following Immunization (AEFI) may play an important role in non-compliance to vaccination. An AEFI is any untoward medical occurrence which

follows immunization and which does not necessarily have a causal relationship with the usage of the vaccine.²

The serious side effects though very rare, can be enough to compromise public trust in an immunization program, if not dealt in an effective manner as to dispel public mistrust and apprehension.³

Vaccine hesitancy, which is the reluctance or refusal to vaccinate despite the availability of vaccines, threatens to reverse progress made in tackling vaccine-preventable diseases.⁴ Hence, paradoxically, one reason for vaccine hesitancy among parents may be the widespread success

of immunization.⁵ With increasing vaccination coverage in India coupled with the introduction of newer vaccines, inadequate knowledge about AEFIs may affect the compliance to vaccination.

In today's date and age when the world desperately seeks a vaccine to arrest the coronavirus pandemic, success and acceptability of any new vaccine will also depend on the information related to anticipated adverse effects and their severity. Knowing that side effects to vaccination are an important factor in development of 'Vaccine Hesitancy' it becomes crucial to know the existing attitudes and practices relating to AEFIs.

METHODS

This is a descriptive cross-sectional study using a pre-designed validated questionnaire conducted in an urban setting of a tertiary care hospital of western India from Feb 2018 to Jan 2019. The aim of the study was to analyse the existing awareness levels, attitudes and practices of mothers following an AEFI in their child and to observe if awareness levels of AEFIs had any impact on vaccination compliance.

Ethical approval from the institutional ethics committee was obtained before starting the study. The study sample size was based on the 2011 census data of the population of Pune Cantonment area, the birth rate and infant mortality rate of Pune city to arrive at the overall sample population.

Using this total population at 90% confidence interval and 5% relative precision, sample size required for this study was 221. Accordingly, 230 mothers of children attending the immunization clinic constituted the sample for this study. The mothers were explained the rationale of the study and informed consent was taken.

Responses by the participants were recorded in a pre-validated questionnaire. The questionnaire included basic demographic data and questions related to perception regarding vaccination, knowledge, awareness, attitude and coping mechanisms of parents towards AEFIs. The questionnaire included single response, multiple response and rating scale-based questions.

Mothers who were not conversant or had difficulty in reading or understanding the questionnaire were assisted in recording of responses by the investigator. Data was tabulated and analyzed for each individual question pertaining to knowledge, attitudes and practices using Microsoft office version 2016.

RESULTS

A total of 230 mothers took part in the study out of which data from 220 proformas were evaluated. Proformas for 10 participants were incomplete due to inadequacy of

responses. The results based on various attributes is described as under:

Attitudes towards immunization

Ninety-five percent of mothers (210/220) believed that vaccination was not harmful in any way to the health of a child. Further, 97% (213/220) mothers claimed to have adhered to the immunization schedule.

Knowledge and awareness towards immunization and AEFIs

Eighty-six percent (190/220) of the mothers are well aware of the anticipated AEFIs and agreed that their child can suffer from some side-effects post immunization. Ninety-eight percent of the mothers (216/220) are aware that vaccination may be accompanied by low grade fever, 85% (186/220) mothers are aware about local reaction and approximately 57% (125/220) of the mothers' state that vaccination may lead to irritability.

The awareness and knowledge about serious side effects including seizures, persistent (>3hrs) inconsolable screaming/crying, anaphylaxis/allergic reaction and hypotonic hypo-responsive episodes was present in less than 15% of the mothers interviewed. Counselling and information regarding AEFI was not provided to 28% (58/209) mothers at the time of vaccination.

Nearly 77% (169/220) mothers reported that their child suffered from side-effects following vaccination at least once during the entire course of immunization till date. Further out of 58 mothers that did not receive information about the possible side-effects post immunization, in 38 cases (65%) the child actually fell sick. The commonly reported side effects in children are illustrated in Figure 1.

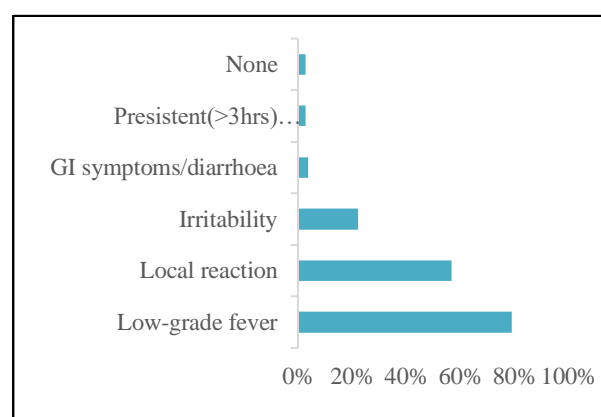


Figure 1: Adverse effects experienced in the study population.

Awareness about contraindications to vaccination was known to 57% (125/220) of the mothers and the most of the commonly indicated conditions (fever, cough or cold, diarrhea or vomiting) were not true contraindications as

depicted in Figure 2. Almost all of the mothers (99.54%) strongly agreed that they would take their child to a doctor if the side-effects do not resolve within 3-4 days post immunization.

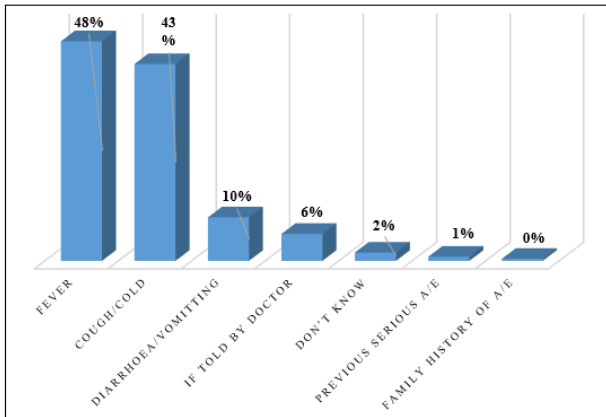


Figure 2: Conditions where the mothers felt vaccination should be avoided.

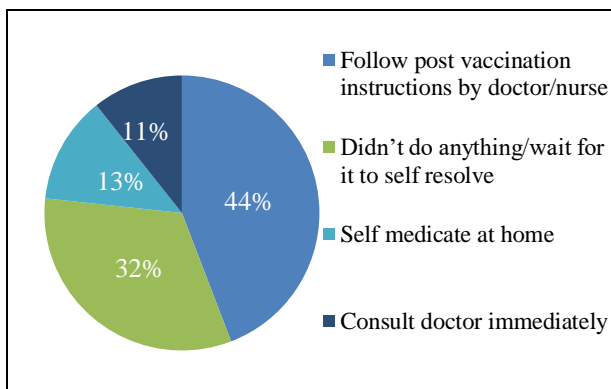


Figure 3: Response of mothers following AEFI.

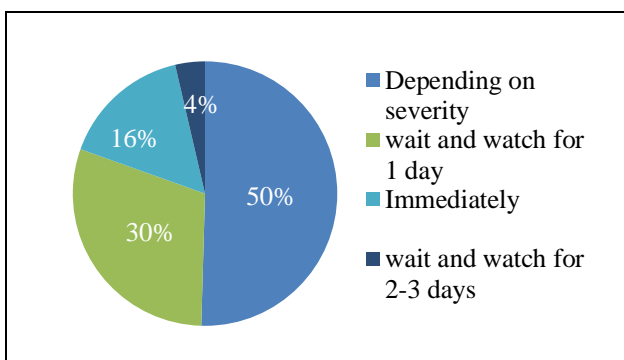


Figure 4: Attitude in bringing side effect to medical attention.

Practices by mothers towards AEFIs

Mothers' responses and coping behaviors towards AEFIs is depicted in Figure 3. Further, 66% (145/220) mothers indicated that they would first consult their doctor in case of an adverse effect, while 33% (73/220) felt they would

seek help of family & friends. Medical help seeking behavior of the mothers is depicted in Figure 4.

Nearly all mothers indicated that they would consult a doctor if the side effects of vaccination are seizure (97%), allergy (96%) or lethargy (95%). Diarrhea (80%) and persistent / inconsolable crying or screaming (75%) were also reported as symptoms warranting medical help.

DISCUSSION

In our study awareness of the possibility of AEFI has been shown to be present in a large majority of mothers (86.4%) which is line with other studies conducted in India and abroad.^{6,7} Hospitals are the key source of awareness to mothers about vaccination and its side effects. This finding has been reestablished in our study as well wherein 72% of the participants claim to be informed about AEFI by a healthcare provider. It has been found that the babies born out of institutional deliveries were more likely to be completely immunized.⁸

Childbirth is the key teaching moment for spreading information about vaccinations. Apart from healthcare facilities role of media and internet is substantial. A mechanism to counter misinformation on social media and unverified websites needs to be devised so that right messages are disseminated.

Findings from our study also show that despite being aware of the possibility of AEFI, the attitude regarding immunization is positive and vaccination is considered to be essential to the child's good health as reflected by the high compliance (97%) towards immunization. This reaffirms the existence of faith in the immunization program despite knowledge of possible side effects associated with vaccination. This is so in most developing countries, which have only in recent years managed to stem the scourge of deadly infections such as diphtheria, whooping cough, polio or are still fighting against them.^{6,9}

While awareness about the common minor AEFIs such as fever, local reaction and pain at injection site is good, awareness about serious adverse effects which warrant prompt medical care, is poor (15%). Similar findings have been found by many other authors.^{7,10,11} Though there are a multitude of AEFIs, awareness for more than a couple of them is lacking in majority of mothers.⁶ The most frequent side effect reported in our study population was fever followed by local reaction and irritability, similar to other studies.^{12,13}

Information regarding AEFI was provided to only about 72% of the mothers at the time of immunization. Of the 28% that were not informed about the possible AEFIs, in 65% of their children AEFI took place. This may lead to anxiety in un-informed mothers and can erode trust in the vaccination program.⁴ Thus there is a need for dissemination of correct information to the parents at the

time of immunization.¹⁴ Accurate information regarding serious AEFIs also helps in restricting the outflow of rumors and misinformation. A significant proportion (48%) of mothers cited minor illnesses as the reasons for postponement of vaccination. This knowledge gap is detrimental to the immunization schedule as it excludes several children being vaccinated. Delivery of immunization program can get compromised especially when held on specified days.¹⁵

Practices related to management of AEFI reveal that while 44% of mothers followed the post-vaccination instructions, nearly 32% mothers waited for the symptoms to resolve on its own. Healthcare assistance seeking behavior in case of AEFI indicated that only about two-thirds would approach their doctors while the rest would approach their friends or relatives. Apart from under reporting of AEFI this may also lead to delay and improper management.

CONCLUSION

While most mothers have a general idea about AEFIs, accurate information about AEFIs is not comprehensively extended to all mothers by healthcare providers. A clearly comprehensible and uniform AEFI information chart needs to be available to mothers, complete with instructions on identification and management of AEFIs. There exists a valuable trust in nationwide government promoted immunization program in Pune region of Western India, and awareness about AEFIs does not cause mothers to shy away from vaccination. Mothers perceive the potential benefits of vaccination to outweigh the risk of its adverse effects.

A significant proportion of mothers lack proper knowledge about contraindications to vaccination or situations in which vaccination should be avoided. This entails immunization program to incorporate an efficient communication system to prevent development of vaccine hesitancy. The possibility of handing over pamphlets to parents during vaccination, containing information relating to the AEFIs, their danger signs and management or printing the same on the vaccination logbook itself, should be considered.

In today's date and age when the world desperately seeks a vaccine to arrest the coronavirus pandemic, information related to vaccination is in public domain like never before. Knowing that side effects to vaccination are an important factor in development of 'Vaccine Hesitancy', it becomes crucial to know the existing attitudes and practices relating to AEFIs in order to develop strategies to counter misinformation regarding vaccination and thus, maintain public trust in immunization programmes.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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