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Review Article

Vaccine hesitancy in India-the challenges: a review

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ABSTRACT

Immunization is the most cost-effective scientific method of reducing childhood morbidity and mortality. In India the national immunization programme has not been able to attain complete coverage of the eligible children and hence mortality due to vaccine preventable diseases is approximately 5 lakhs annually. Every year, 89 lakhs children are at risk to develop vaccine preventable diseases due to lack of immunization. While most people vaccinate according to the recommended schedule, this success is challenged by individuals and groups who delay, hesitant or refuse vaccines due to various reasons. Despite the realization of compulsory scheduling of vaccines, there are an alarming number of parents who do not permit the vaccination of their children as scheduled. Vaccine hesitancy refers to a delay in acceptance or refusal of vaccines despite the availability of vaccination services. WHO in 2019 listed vaccine hesitancy as one of the ten global health threats. The recent vaccination coverage evaluation studies have shown that there is a perceptible drop in the vaccine coverage in most parts of India and also that the disparity in the urban-rural coverage is also widening. Hence an evaluation of the reasons for vaccine hesitancy is vital at present to strengthen the universal immunization program. The authors are trying to trace the present status and reasons for vaccine hesitancy reported in recent times, which can lead to outbreaks of already controlled vaccine preventable diseases and to identify strategies which are being implemented to overcome the vaccine hesitancy.

Keywords: Immunization, Refusal, Delaying, Prevention

INTRODUCTION

Outbreak of diphtheria

There were newspaper reports which came during the early period of July 2019 stating that school children between the ages of 8 and 16 years, admitted to a medical college hospital in Tamil Nadu, brought with symptoms of severe infection were diagnosed with diphtheria. Later information showed that at least 50 people had been admitted to the same medical college hospital with diphtheria and two children succumbed to diphtheria. Around this time, several cases of diphtheria were being reported from the other parts of the state. Tamil Nadu's director of public health at that time had informed in a press meet that the current spike in the number of cases had to do with lack of adequate immunization coverage in the affected areas.[1,2]

In another district in Tamil Nadu, two children died of suspected diphtheria during January 2018. These reports come as a shock since there had not been a diphtheria-related death in the state in recent years, owing to improved vaccination coverage.[3] While several parents had skipped vaccinating their children at a young age, many others had not ensured that the booster dose was taken at a later age. In light of recent outbreaks, State health department officials have increased immunization efforts for both adults and children.

Earlier in the neighboring state of Kerala, 533 cases of diphtheria have been identified in 11 districts in 2016. A

surge in reporting of suspected diphtheria cases was noticed from May 2016 onward and a total number of 527 cases occurred in time period of 31 May 2016 to 30 November 2016.[4,5] Epidemiological investigations revealed that there was a sharp decline in the vaccination coverage in the affected areas.

Outbreak of measles

Outbreaks of infectious diseases were reported from the western world as well. More people in Europe were infected with measles during the first six months of 2018. Over 41,000 children and adults have been infected with measles since January, and 37 people have died. Seven countries in Europe reported over 1,000 cases of measles, including travel hotspots like France and Italy. A drop in vaccination rates is behind many measles outbreaks. About 40% of people in France incorrectly believe vaccinations are unsafe, as do 25% of people in the Ukraine.[6]

The WHO has reported that a total of 229,068 cases of measles were reported in 2018, in 183 member states, which is nearly double the number of infections contracted in the previous year. The Americas recorded nearly 17,000 cases of measles in 2018, and 22,000 cases were reported in the eastern Mediterranean. Europe reported 82,596 infections in 47 out of 53 countries, which is ahead of south-east Asia (73,133) and the western Pacific (23,607) regions. To prevent further outbreaks and eliminate measles, the WHO urged countries to sustain high immunization coverage with two doses of measles vaccine.[7]

Recent studies have found that, at least one in 20 parents in Chennai are hesitant about vaccination of their children, specifically when the vaccines are newly introduced.[8] As per the national family health survey (NFHS) data, in Tamil Nadu, the vaccine coverage has drastically dropped from 89% in 1998-99 to 69% in 2015-16.[9] This 20% decrease was followed by a sudden spike in diseases like whooping cough and diphtheria which were serious and important vaccine preventable diseases.[8]

In view of this alarming background in spite of the best efforts taken by each nation worldwide, in achieving universal immunisation coverage, there seems to be a perceptible laxity and hesitancy among the people in immunising children and vulnerable people in the society. Through this review article the authors are trying to trace out the probable reasons for the emerging vaccine hesitancy reported in recent times which can lead to outbreaks of already controlled vaccine preventable diseases.

VACCINE HESITANCY- THE CHALLENGES

Vaccine hesitancy is defined as reluctance or refusal to vaccinate despite the availability of vaccines. Vaccine hesitancy threatens to reverse the progress made in tackling vaccine-preventable diseases.[10] WHO in 2019, listed vaccine hesitancy as one of the top 10 threats to global health. The vaccines advisory group to WHO identified complacency, inconvenience in accessing vaccines, and lack of confidence among the people as key reasons underlying vaccine hesitancy.

In India, various states had various aspects and reasons over vaccines and vaccination coverage. For example, during 2000's Muslims in Uttar Pradesh had a misconception over oral poliovirus vaccines (OPV) causing infertility and that the vaccine was 'ineffective' as well. Due to this reason there was a 5 times low uptake of OPV. Similar to this reason in 2016 there was a low uptake of diphtheria vaccine among the muslins in Kerala. One of the reasons could be because of the propaganda that vaccine was derived from animal products which is forbidden by Islamic law.[10]

Though Tamil Nadu and Karnataka always showed high levels of vaccine acceptance, there was low uptake of measles and rubella (MR) vaccine when introduced in 2017. This was probably due to spread of news over social media about adverse effects following post vaccination which was intense than the awareness over the benefits of the vaccine.[10]

Despite H1N1 (swine flu) becoming a seasonal flu virus strain in India even during summer, the uptake of flu vaccine in India is poor; the reason why thousands of cases and deaths get reported each year. As on November 2019, there have been 28,109 H1N1 influenza cases and 1,203 deaths this year in India. The number of H1N1 influenza cases (42,592) and deaths (2,991) in India peaked in 2015.[10]

Despite its effectiveness varying from one season to another, several studies have shown that the flu vaccination can reduce the risk of flu illness by 40-60% when there is good match between the strains used in the vaccine and the circulating virus. A study in 2017 that looked at flu seasons between 2010 and 2014 found that vaccination reduced flu-associated deaths by 65% among healthy children. The vaccine can also prevent hospitalization, reduce the severity of illness and 'prevent severe, life-threatening complications' in children.[10]

These incidents showed that vaccine hesitancy is a huge challenge for India with its varied geo-socio-political variations.

VACCINE HESITANCY: A MAJOR PUBLIC HEALTH THREAT IN 2019

WHO has declared vaccine hesitancy as one among the 10 global health threats and is defined as delay in acceptance or refusal of vaccination despite availability of vaccination services. To understand the concept of vaccine hesitancy, WHO came up with the 3C model

which includes complacency, convenience and confidence.[11]

Complacency occurs in situation where in the risks of vaccine-preventable disease (VPD) are less. As the vaccine preventable diseases go uncommon, immunization program can result in complacency, further leading to hesitancy, as the people begin to consider the risk of vaccination greater than the disease per se.

Confidence in other words is trust over the community on aspects of effectiveness of the vaccine, safety of vaccines, health care delivery system, reliability of health services, competence of health care providers, bold policy making decisions.

Convenience deals with affordability, availability, acceptability of vaccine and vaccination program. Quality of service provided, like the place where vaccination is done or other cultural factors may also lead to vaccine hesitancy.

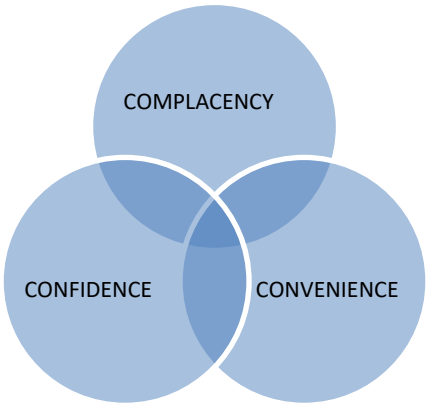

Figure 1: The interplay between complacency, convenience and confidence in vaccine hesitancy.

Vaccine hesitancy deals with the question of vaccine safety, trust over workers delivering the vaccine including trust among the health system on approval and other factors which restrain them from accepting the vaccine. Vaccine hesitancy differs from vaccination hesitancy where in the former deals with vaccine related issues and the latter implies inclusion of broad factions like knowledge about the VPD, injection anxiety etc.

Vaccine hesitancy is observed in various situations like system failure, lack of availability, lack of accessibility etc. Vaccine hesitancy broadly occurs under 2 circumstances, either due to an increased demand or complete refusal of vaccine. With increase rates of hesitancy, the levels of demand are low but not necessarily the vice versa.

In Uttar Pradesh, community demanded access for Japanese encephalitis (JE) vaccination to reduce the outbreak of this disease legally as it was associated with high mortality among children. Similarly, in Canada, human papillomavirus (HPV) vaccines were prohibited by the catholic schools, but community demand overturned this ban as children were successfully vaccinated against HPV. To achieve high individual and community vaccine demand, context, community and vaccine specific strategies beyond those aimed at addressing hesitancy need to be developed. Communication also plays a role in vaccine hesitancy. Lacks of communication can create a negative influence over vaccines thereby leading to vaccine hesitancy.[11]

Vaccine hesitancy affects motivation and thereby leading to opposition of vaccines. Hence forth each country should develop a strategy to increase acceptance and demand for vaccination, which should include ongoing community engagement and trust-building, active hesitancy prevention, regular national assessments of concerns, and crisis response planning.[12] In order to overcome the increasing trend of vaccine hesitancy, the WHO and strategic advisory group of experts (SAGE) came up with recommendations to combat vaccine hesitancy in the long run.[13]

VACCINE HESITANCY: PRESENT STATUS

In 2009, when HINI pandemic occurred, most of American were vaccinated. But there was refusal of vaccination among the pregnant women. In spite of increased mortality rates due to the disease, pregnant women hesitated to take up influenza vaccine for various reasons. Refusal of measles vaccine among Europeans, HPV vaccines among Indians, polio vaccine among Nigerians are few examples of vaccine hesitancy.[13]

From a study in 2018, it was found that more than 90% of the countries had reported vaccine hesitancy. There was a consistent reduction in with no vaccine hesitancy over 5 years with south east Asia region showing relatively lesser no vaccine hesitancy status. Globally 3 main reasons were quoted for vaccine hesitancy; concern over vaccine safety, anxiety over adverse effects following immunization, followed by lack of awareness towards vaccine benefits and traditional cultural beliefs.[14]

A study done by Dasgupta et al in-slum areas of Siliguri, India during 2018 reported that almost 83% were vaccine hesitant. Low socio economic status, reluctance to vaccinate and lack of awareness were the major reasons highlighted by them.[15] As per NFHS 1 (1992-93) data, there was 65 % vaccine coverage, which rose to 82% in NFHS 2 (1998-1999) followed by 81% as per NFHS 3 (2005-2006) and to a reduction to 69% as per the NFHS 4 (2015-16) data in Tamil Nadu. Major reason for this drastic reduction in a high performing state can be due to vaccine hesitancy. A study conducted in Tamil Nadu by Sankaranarayanan et al reported that 61.4% of mothers were suspicious over the newer vaccines, nearly 91% were worried about the adverse effects following

immunization, and almost 85.3% felt vaccines to be unnecessary as the VPD are rare.[16]

STRATEGIES TO OVERCOME VACCINE HESITANCY

Understanding of the strategies to overcome vaccine hesitancy should be intensified at global national and local levels. Strategic Advisory Group of Experts (SAGE) on Immunization established by the director-general of the WHO in 1999 is the principal advisory group to the WHO for vaccines and immunization.As per WHO and SAGE guidelines, there are three categories under which vaccine hesitancy can be dealt with.[12]

First, a strong understanding about the magnitude of problem is important before dealing with it in population. Further identification of root cause and surveillance should be done.

Secondly, capacity building is considered. For this knowledge of experts from various fields were required.

Thirdly, implementation of new tools to deal effectively with vaccine hesitancy as its s an emerging phenomenon was included.

As vaccine hesitancy is an evolving public health threat, research activities have to be intensified toward this topic. Prevalence studies, evaluating its determinants and interventional studies needs to be encouraged to understand the problem better. Relying on information from social media, rather than from health care professionals could be a reason for increase in vaccine hesitancy. To combat this, information, education and communication (IEC) activities should be intensified among fathers rather than mothers as they spend more time over social media to get information on vaccinations.

IEC should be strengthened by two-way process. Interactive sessions with health care providers, asking questions, clearing doubts would be of great help. Perception of community and their opinion are equally important. Interventions based on behavioural change are vital. Mass media should be used as a platform to project the benefits of vaccination, rather can portraying the minor side effects post vaccination, which becomes a misinterpretation towards vaccine efficacy and creates fear among community towards vaccination.

ROLE OF PRIMARY CARE/FAMILY PHYSICIANS

According to a study done in Canada, it is estimated that nearly 63% of parents look for vaccine related information over the Internet. Most of the information regarding vaccines are often inaccurate and propagate negative messages. On the other hand, remaining parents consult their family physicians for information on vaccines. Having interactive sessions and clearing doubts helped them to received sufficient information and therefore family physicians are key persons in counselling vaccine hesitant parents.[17]

This model of interactive sessions on vaccination strategies and advantages can be emulated by our health care delivery system. Separate counselling rooms can be organised in the health care centres and paediatric wards were vaccine hesitant parents can get their doubts cleared and move step forward towards vaccine acceptance. Here the counsellor can use practical or evidence-based tips in addition to statements which will encourage parents. Health care providers should be updated with commonly asked questions and online resources to provide up to date information, which will help parents gain trust towards them.

If vaccine hesitant parents are identified earlier during antenatal check-up, counselling session can be started much earlier. Stepwise prenatal, postnatal educational interventions can improve vaccine acceptance. Stories and images highlighting VPD can improve the attitude towards vaccine acceptance.

CONCLUSION

Even after three decades of the start of India's universal immunization programmed, the target of achieving universal coverage (100%) of the eligible under five children and pregnant women is still a long way to go even in spite of the best efforts taken by the government and other agencies to implement it in full capacity. At this juncture, a new development in the form of vaccine hesitancy, which is reluctance or refusal to vaccinate despite the availability of vaccines is threatening to reverse the progress made in tackling vaccine-preventable diseasesthe world over due to varied reasons. Several measures have been initiated to counter and overcome this issue of vaccine hesitancy through appropriate IEC and behavior change continuum initiatives.

Medical professionals and health workers, especially those in the communities, remain the most trusted advisors and influencers of vaccination decisions, and they must be supported to provide trusted, credible information on vaccines through personal contact and media. Having interactive sessions and clearing doubts by medical professional, health workers and counsellors will help parents to recieve sufficient information and thereby motivate parents to accept routine vaccination. Primary health care and family physicians are key persons in counselling vaccine hesitant parents to motivate and to quell the myth of vaccine hesitancy. The services of celebrities as brand ambassadors should be used to spread the correct message to motivate the people for vaccination.

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