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Hesitancy for Adult Vaccines Among Healthcare Providers and their Family Members in Delhi, India: A Cross-Sectional Study



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ABSTRACT

Objectives: Adult immunisation has recently emerged as an area of emphasis in research and policy. Increasing life expectancy, outbreaks like COVID-19, and the endemic nature of diseases like dengue, malaria have underscored its importance. Therefore, this study was carried out to assess hesitancy and the factors influencing the uptake of vaccines in adults.

Methods: A descriptive cross-sectional study was conducted among the medical students and doctors affiliated to a medical college and tertiary care hospital in Delhi, India and their immediate family members in January 2021. Online data collection was done using the Google Form platforms. Data on awareness and perceptions regarding adult vaccination and immunisation status of participants was collected. The dataset was exported in the Microsoft Excel format and analysed with IBM SPSS Version 25 (Armonk, NY: IBM Corp).

Results: A total of 461 adults responded to the survey. The most common reasons for vaccine hesitancy were fear of side effects (51.41%), lack of awareness of vaccines (49.46%), and the lack of national guidelines on adult vaccination (32.97%). Hesitancy for vaccines among those who were informed by healthcare workers of vaccine availability was highest for zoster vaccine (97.80%) and least for tetanus toxoid (57.62%). Significant hesitancy was also observed for pneumococcal, human papillomavirus, influenza and varicella vaccines.

Conclusions: Reduced vaccine uptake due to vaccine hesitancy in adulthood is a major health concern. Framing national guidelines for adult vaccination in India and awareness generation to create a public demand for adult vaccination warrants prioritization.

Introduction

Vaccination is the cornerstone for the prevention of infectious diseases. However, adult vaccination is not prioritised unlike childhood immunisation in lower-middle-income countries (LMICs) including India. Currently, the only nationally recommended vaccines for adults in India are tetanus toxoid in pregnant women and that for COVID-19; although other adult vaccines including that for influenza are available on prescription through the private sector. There is limited information available on the awareness and attitude towards adult vaccines and vaccination. Vaccine hesitancy is defined as a delay in the acceptance or refusal of vaccines despite the availability of vaccination services [1]. Vaccination against COVID-19 in the adult population worldwide including India was negatively impacted by hesitancy driven by vaccine-related misconceptions, fear of adverse effects, and perceived lack of vaccine efficacy [2]. It is imperative to quantify and lessen vaccine hesitancy to augment the coverage

of adult vaccines in India. Therefore, this study was undertaken with the objective to ascertain the hesitancy for adult vaccines and its reasons, and to identify the factors influencing the uptake of adult vaccines in India.

Methods

This descriptive cross-sectional study was conducted among the medical students and doctors affiliated with a government medical college and tertiary care hospital in Delhi, and their immediate family members in January 2021 before the initiation of the COVID-19 vaccination drive in the country. The inclusion criteria were adults aged 20 years or older. The study group was identified purposively since the barriers of poor knowledge or cost were likely to be absent in this group, which facilitated the identification of the presence of vaccine hesitancy in this population. At 95% confidence levels, 5% precision, expecting 50% prevalence of vaccine

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hesitancy, and considering a 20% non-response rate, the sample size was calculated to be 460.

The data for this study was collected conveniently through an online self-administered questionnaire delivered by the Google Forms platform. The questionnaire collected information on demographic characteristics, sources of health information, vaccines recommended or prescribed and those received, and the reasons for vaccine hesitancy and vaccine confidence in the participants. Within each family household, no more than three members responded to the survey. The questionnaire included a list of vaccines that are globally advocated for adults and were available locally through private pharmacies.

In this study, a pragmatic operation definition considered vaccine hesitancy to be present if the participant was recommended vaccination with any age-appropriate vaccine by a healthcare provider but opted not to receive it. This was feasible since all the participants belonged to upper socioeconomic status, and the cost of vaccines was unlikely to be a barrier for vaccination. The dataset was exported in Microsoft Excel format, cleaned, and analysed with IBM SPSS Version 25 (Armonk, NY: IBM Corp).

Results

A total of 461 adults responded to the survey including 255 (55.3%) males and 206 (44.7%) females, with a median (interquartile range) age of 25 (22, 52) years. Healthcare providers were reported as the most common source of health information (75.05%) among the participants. In this study, 65.70% of the participants had received vaccination in adulthood (≥20 years) while 73.50% were willing to receive newer vaccines.

Self-protection from disease was the most common reason (79.18%) attributed to vaccine confidence by those who had been vaccinated in adulthood (n=303). Among those who had never received vaccination in adulthood (n=158), the most common reasons for vaccine refusal were the fear of side effects (51.41%), lack of awareness of vaccines (49.46%), and lack of availability of official national guidelines (32.97%) (Table 1). The most common vaccines recommended to the participants by healthcare providers were tetanus toxoid (51.84%), influenza (22.56%), varicella (24.51%), human papillomavirus (9.98%), pneumococcal (9.98%) and zoster (5.21%). Vaccine hesitancy was highest for the zoster vaccine (97.80%) and lowest for tetanus toxoid (57.62%) (Table 2). We found that 27% of the participants had a chronic disease of which 72.9% were vaccinated at least once in adulthood.

Discussion

The coverage of adult immunisation in India is suboptimal despite the availability of vaccines in the private sector. Although healthcare providers are more likely to advocate the influenza vaccine in the elderly population, this study population consisted of a low median age and the coverage of the influenza vaccine in this study corroborated with the evidence from

Table 1
Barriers to Adult Immunisation.

| Reasons for refusing vaccination | Number of people with vaccine hesitancy (n) | Percentage (%) |
|---|---|----------------|
| Fear of side effects | 237 | 51.41% |
| Unaware of vaccine | 228 | 49.46% |
| Lack of national immunisation schedule | 152 | 32.97% |
| Distrust in pharmaceutical companies | 108 | 23.43% |
| High cost | 81 | 17.57% |
| Fear of injections | 68 | 14.75% |
| Cultural and religious beliefs | 62 | 13.45% |
| Unpleasant past experience with vaccination | 51 | 11.06% |
| Time/effort/distance make it difficult | 49 | 10.63% |
| Not recommended by healthcare workers | 36 | 7.81% |

Table 2
Hesitancy for Adult Vaccines.

| Vaccine | Informed about the vaccine (x) | Informed but opted not to receive the vaccine(y) | Vaccine hesitancy (y/x * 100) |
|--|--------------------------------|--|-------------------------------|
| Zoster | 91 | 89 | 97.80% |
| Pneumococcal | 124 | 113 | 91.13% |
| Human papillomavirus (for 20-40 years) | 72 | 63 | 87.50% |
| Influenza | 138 | 110 | 79.71% |
| Varicella | 136 | 108 | 79.41% |
| Tetanus | 151 | 87 | 57.62% |

previous studies conducted in India [3,4]. A study reported that 6% of their patients in the outpatient department had received the pneumococcal vaccine while we found the coverage rate to be 9.98% [4]. This could be attributed to the selection of doctors in our study group who were more aware and had a higher risk of contracting the disease while treating suspected patients.

A study conducted among undergraduate students found human papillomavirus (HPV) vaccine coverage to be 5.5% but we found it to be higher in this study (14.4%), probably because of the selection of doctors in our study who were likely to be more aware [5]. Recently, Sikkim became the first Indian state to introduce a free human papillomavirus vaccine in its routine immunisation programme for all girls between 9-14 years of age and achieved a high coverage of 97% [6]. In our study, only one in ten participants eligible to receive the HPV vaccine had received it despite advocacy from a healthcare provider. This is indicative of hesitancy in the absence of country-level recommendations. Nevertheless, a previous study had observed low levels of HPV vaccine hesitancy amongst the parents of adolescent girls in a rural part of Southern India [7]. This suggests divergent pathways of hesitancy for the HPV vaccine in adult individuals and as parents which warrants further exploration.

In the present study, nearly one in three participants were vaccine hesitant as there was an absence of national guidelines for adult immunisation. Previous studies from outside India have also stated the lack of recommendation for adult vaccination by healthcare providers as a major drive for hesitancy [8]. As healthcare providers represent a highly trustable source of information [9], their training and sensitisation towards encouraging awareness of adult immunisation, especially in high-risk vulnerable groups are urgently warranted.

The strength of this study is that it estimated vaccine hesitancy associated with adult vaccines just before the introduction of COVID-19 vaccines in India. We also identified barriers that could be effectively addressed through public policy interventions such as the development of adult vaccine guidelines and policy, even if the public sector is unable to provide these vaccines free of cost, unlike the under-five vaccines. Furthermore, our use of a utilitarian definition of vaccine hesitancy is consistent with that recommended after a systematic review of 422 studies that defined vaccine hesitancy “as a state of indecisiveness regarding a vaccination decision” [10].

A limitation of this study is the lack of representativeness and diversity of the sample compared to the general population. The participants included doctors, medical students and their immediate family members that represent a relatively affluent group in whom the awareness of vaccines and their cost were a less likely barrier contributing to vaccine hesitancy compared to the general population [11].

Conclusion

The hesitancy towards adult vaccination in the Indian population must be addressed to augment the coverage and accentuate public demand by formulating national guidelines, communicating information to the public through awareness campaigns and encouraging healthcare providers to recommend vaccination to their adult clients.

Ethical approval

The study was approved by the Institutional Ethics Committee, Maulana Azad Medical College & Associated Hospitals (F.1/IEC/MAMC/82/10/2020/No302). Electronic informed consent was obtained from the participants.

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Declaration of Competing Interest

The authors declare that there are no conflicts of interest.

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