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## Perceptions and attitudes towards adult vaccinations: A cross sectional study from Karnataka, India

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### Abstract

**Background:** Since its advent in the 17<sup>th</sup> century, vaccines have come a long way in preventing diseases and raising the standards of health across the globe. In adults, vaccine-preventable diseases such as pneumonia, hepatitis B, tetanus etc. are a source of morbidity and mortality. However, in India, much like the rest of the world, children remain the focus of vaccination and its importance and need in adults is yet to be emphasized.

**Objectives:** A cross-sectional study to gauge the perceptions and attitudes towards adult vaccinations.

**Methods:** Individuals working in the information technology sector of companies were approached. Data was collected via an online and physical questionnaire. Responses were documented in Microsoft Excel following which data compilation and analysis was carried out.

**Results:** In our study population (N=171), only 31.57% were aware of adult vaccines. 6.43% believed that vaccines do not prevent illness. 13.11% believed that vaccines themselves caused illnesses. 54.38% of individuals believed in herd immunity. 70.76% of the study population did not keep a record of the vaccines they have taken. 75.43% answered that taking vaccinations does not add a financial burden. 59.64% did not know where to go in order to take the vaccines. Most commonly received vaccines were Hepatitis B and Varicella while the majority of the participants had not been recommended pneumococcal, Tdap/Td, HPV or typhoid vaccines.

**Conclusion:** Our study shows that the perceptions towards adult vaccines stems from lack of knowledge and not from hostility towards adult vaccines. Research and surveillance systems are required to assess ways to optimize immunization coverage in target populations. Individuals and health care providers must be educated on the importance of adult vaccines in order to increase its reception.

**Keywords:** adult vaccination, health literacy, health care providers, immunization, perceptions

### Introduction

Vaccination is a major public health victory around the world. Vaccination of infants and children has resulted in a decline in vaccine-preventable deaths. Adults, in general, are not the focus of vaccination campaigns. Even in developed nations, there is a lack of optimization of adult vaccination strategies <sup>[1]</sup>. India is burdened by a high incidence and prevalence of vaccine-preventable diseases (VPDs) <sup>[2]</sup>. Vaccinating the adult population can be a powerful tool to reduce the disease burden of the country, decreasing morbidity and mortality, enhancing the productivity of the working class, increasing the longevity of life and ultimately uplifting the nation to a better state of wellbeing.

The Expert Group of the Association of Physicians of India on Adult Immunization in India of 2009 convened to bring forth the much-needed recommendations on adult vaccinations (all the while bearing in mind that tailoring these vaccines based on a patient to patient requirement is necessary) in addition to pointing out the deficiencies of the communicable disease database and studies on the effectiveness of these vaccines by health care professionals. The group further suggested that the data should be regularly updated, reviewed and published <sup>[1]</sup>.

A decade following these recommendations, the importance of adult vaccination has been reiterated several times but data on communicable diseases is yet to be updated and safety and efficacy of vaccines are yet to be reported by health care practitioners <sup>[3-5]</sup>. We believe that India still has a long way to go before adult vaccinations can be fully incorporated into routine health care practices.

Much of the perceived barriers to vaccination stems from the dearth of information on continuing immunization into adulthood, absence of its awareness among health care providers themselves as well as limitation of resources in developing nations like India. We decided to explore another important barrier namely the conceptions and misconceptions regarding adult vaccinations among individuals of the general population [6]. There is no data from India in this area. While our study focuses on a certain population of people, similar studies on other populations can shed light on preconceived notions and solutions can be implemented to tackle the same. We believe that this is a matter of public importance that needs to be urgently addressed.

### Materials and Methods

This study is a cross-sectional study using a postal/questionnaire method. A standardized questionnaire was developed and pilot-tested on 20 individuals for clarity and correction of unclear questions. The questionnaire was approved on face validity [7].

Data was collected via both online and physical questionnaire. The questionnaire focused on 1) socio-demographics 2) knowledge and perceptions towards adult vaccines 3) Vaccination status and related questions. The study was designed to maintain the anonymity of the participant. The study population chosen were individuals working in the information technology sector of companies by way of health care talks and accessibility.

Responses were entered into Microsoft Excel and data compiling and analysis was carried out.

### Results

The total number of participants in our study were 171. The socio-demographics of the population have been described in Table 1. Questions detailing the perceptions towards adult vaccines and knowledge/awareness regarding the same have been described in Table 2. The adult vaccination status of the participants has been summarized in Table 3.

There was no significant relationship between responses on vaccine perceptions and age, gender, education, having children or residence.

### Discussion

Immunization is an effective means to curtail many infectious diseases in developing countries. For simplicity, we have stratified our findings and the factors influencing them into the following subheadings:

**1. Health literacy:** A term used to describe an individual's ability to comprehend information related to health care in order to take informed decisions, has been demonstrated by studies to be lacking across all educational levels [8]. Only 31% of our study population were aware of adult vaccines. Majority of the individuals believed that vaccines would prevent illnesses in adults (66%) while a small proportion of individuals believed that vaccines themselves caused illnesses (13%). This is a reflection of the gaps in knowledge and misconceptions regarding adult vaccines among participants of this educated study population. In a Turkish study by Devrim El Alici *et al.* on barriers to adult immunization, one of the three of fundamental components hindering vaccination is individual perceptions of the same (the others being knowledge of health care

providers (HCPs) and thirdly, support by the government and regulatory bodies) [9]. This responsibility of ensuring that patients are well informed lies in the hands of health care professionals. The benefits of adult vaccination should be conveyed in an intelligible language; fears and misconceptions should be addressed. In addition, community awareness campaigns can raise the health literacy of the population and draw attention to the need for adult vaccinations [9]. Common misbeliefs such as vaccine side effects, believing oneself to be healthy and therein not requiring vaccination, concerns regarding vaccines should be carefully tackled by HCPs [10].

### 2. Socio-economic status and health care accessibility:

According to our study, >75% of the participants did not believe that vaccines would cause a financial burden. This is mirrored in other studies that note that costs are not an impediment to vaccination [10, 11]. This could be because of insurance coverage in the companies this study was conducted. It is important to study the financial effect on vaccine reception among paying out-of-pocket patients.

60% of our study population did not know where to go in order to receive adult vaccines. We believe that access to these vaccines should be widespread. Hospitals and health care providers should advocate its availability and necessity thereby enhancing its reception and coverage. It is also prudent to study its receptivity in rural India where populations can present unique challenges distinct from the urban population. In such scenarios, accessibility and awareness can emerge as major obstacles to adult immunization. Additionally, patients should be advised to keep a record of the vaccines they receive. We believe this is essential in India where records are not maintained electronically and patients do not have a fixed primary care provider.

**3. Recommendation by HCPs:** Research shows that a doctor's recommendation has a strong influence on patients' decision to get vaccinated [12]. In our study, Hepatitis B and Varicella were the most commonly received vaccines while the majority of the participants have not been recommended pneumococcal, Tdap/Td, HPV or typhoid vaccines. In an American study by Johnson DR *et al.*, ~85% of the study population said they would receive a vaccine if their doctor recommended it. Despite available data on HCPs roles in vaccination, most of the vaccines have not been recommended to patients [13, 14]. The could be a result of doctors' deficient knowledge and their own misgivings about the cost, vaccine safety, vaccine availability, national recommendations and the scale of VPDs in the nation and the urgent need to curb it [15, 16]. HCP education is as important as educating the public about adult vaccination.

It is interesting to note that ~20% of every vaccine has been recommended to the study group but they have not received it. We believe HCPs should spend time educating the patients, lay emphasis on its importance and incorporate recall/reminder systems for vaccines and their booster doses [17].

The above-mentioned categories should be addressed conjointly as they present as overlapping challenges often with similar solutions. Furthermore, bureaucratic support, uninterrupted funding, utilization of existing resources and infrastructure set forth by the Universal Immunization Program, would allow for expansion of services to include

adult immunization. In 2019, the Center for Disease Control (CDC) updated its recommendations for vaccinating adults based on age, medical conditions and individuals in special situations.<sup>18</sup> This schedule should be tailored to the meet the needs of the Indian population and the government should prioritize its incorporation into a standardized national immunization schedule.

### Limitations

Since individuals of the general public were approached, their health status was not asked. Hence its correlation to vaccination status could not be made. Additionally, several questions on the survey were subject to recall bias.

**Table I: Socio-demographics**

1	Age	Frequency	%
a	<30 y	106	61.98
b	>=30	65	38.01
2	Gender		
a	Male	97	56.72
b	Female	74	43.27
3	Education		
a	Graduates	171	100
4	Children		
a	Yes	57	33.33
b	No	114	66.67
5	City		
a	Bangalore City	159	92.98
b	Other cities in Karnataka or unknown	12	7.01

**Table 2: Perceptions and knowledge/awareness of adult vaccines**

1	Are you aware of the adult vaccines? (N=171)	Frequency	%
a	Yes	54	31.57
b	No	75	20.46
c	Partially	42	24.56
2	Do you believe vaccines prevent illnesses in adults? (N=171)		
a	Yes	113	66.08
b	No	11	6.43
c	Unsure	47	27.48
3	Do you believe vaccines themselves cause illnesses? (N=61)		
a	Yes	8	13.11
b	No	31	50.81
c	Unsure	22	36.06
4	Do you think if a large number of people in a community are vaccinated, it could prevent the occurrence of disease in non-vaccinated individuals as well? (N=171)		
a	Yes	93	54.38
b	No	43	25.14
c	Unsure	35	20.46
5	Do you keep a record of vaccines you have received? (N=171)		
a	Yes	32	18.71
b	No	121	70.76
c	Partially	18	10.52
6	Do you believe taking vaccines adds a financial burden? (N=171)		
a	Yes	42	24.56
b	No	129	75.43
7	Do you know where to go in order to receive adult vaccines? (N=171)		
a	Yes	53	30.99
b	No	102	59.64
c	Unsure	16	9.35

**Table 3: Adult vaccination status**

		Received (%)	Have been recommended/Aware of it but have not taken it (%)	Have not been recommended/Unaware of it/Unsure (%)
1	Hepatitis B	63 (36.84)	32 (18.71)	76 (21.05)
2	Varicella	70 (40.93)	31 (18.12)	70 (40.93)
3	Pneumococcal	28 (16.37)	31 (18.12)	111 (64.91)
4	Tdap/Td (Tetanus, Diphtheria, acellular Pertussis)	46 (26.90)	28 (16.37)	97 (56.72)
5	HPV (Human Papillomavirus)	16 (9.35)	31 (18.12)	124 (72.51)
6	Typhoid	40 (23.39)	38 (22.22)	93 (54.38)

### Conclusion

Our study shows that the perceptions towards adult vaccines stems from lack of knowledge and not from hostility towards adult vaccines. Research and surveillance systems are required to increase feedback on adverse effects, schedule adherence rates and to assess ways to optimize immunization coverage in target populations. In light of the success of childhood vaccinations, there is indeed room for increasing the reception of adult vaccines as well.

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