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ORIGINAL RESEARCH

Perceptions and attitudes towards adult vaccinations: A cross sectional study

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ABSTRACT

Background: Vaccination is among the greatest, most successful, and cost-effective public health interventions. Vaccination remains underutilised worldwide with low vaccine uptake rates across the country with many adults remaining unprotected.This study aims to assess the perceptions and attitudes of adults toward vaccinations and identify factors influencing their willingness to vaccinate.

Materials and Methods: A cross-sectional study was conducted among 200 adult participants recruited from healthcare facilities, community centers, and online platforms. A structured questionnaire was used to collect data on demographic characteristics, vaccination history, willingness to vaccinate, perceptions, attitudes, and sources of vaccine-related information. Data were analyzed using SPSS version 25.0, with descriptive statistics and multiple regression models applied to identify associations between demographic variables and vaccination willingness.

Results: The majority of participants (60%) were fully vaccinated, while 25% had received partial vaccinations and 15% were unvaccinated. Willingness to receive future vaccinations was reported by 70%, whereas 15% refused, and 10% were uncertain. The primary concerns influencing vaccine hesitancy included fear of side effects (25%), lack of trust (20%), and misinformation regarding long-term health risks (15%). Healthcare providers were the most trusted source of vaccine information (70%), followed by government agencies (55%). Multiple regression analysis revealed that age ($\beta = 0.15$, $p = 0.041$), education level ($\beta = 0.20$, $p = 0.015$), healthcare access ($\beta = 0.30$, $p = 0.004$), and previous vaccination history ($\beta = 0.25$, $p = 0.027$) were significant predictors of willingness to vaccinate.

Conclusion: This study highlights that while adult vaccination attitudes are generally positive, barriers such as vaccine hesitancy, misinformation, and accessibility challenges remain. Strengthening healthcare provider recommendations, enhancing vaccine education, and improving accessibility are essential strategies to increase vaccine uptake. Addressing concerns about vaccine safety and efficacy is critical to reducing hesitancy and ensuring broader public health protection.

Keywords: Adult vaccination, vaccine hesitancy, public health, vaccination attitudes, healthcare access

Introduction

Vaccination is one of the most significant public health achievements, playing a crucial role in the prevention and control of infectious diseases. While childhood vaccinations have been widely accepted and incorporated into routine immunization programs, adult vaccinations often receive less attention. Adult immunization is essential for maintaining long-term immunity, preventing disease outbreaks, and reducing healthcare burdens, yet vaccine uptake among adults remains suboptimal in many regions. The perceptions and attitudes of adults toward vaccination are influenced by various factors, including personal beliefs, social influences, misinformation, and trust in healthcare systems. Understanding these factors is key to designing effective public health strategies that promote vaccine acceptance and uptake.[1]Despite the availability of vaccines for several preventable diseases, many adults do not receive the recommended immunizations. Vaccines for influenza, pneumococcal disease, hepatitis B, human papillomavirus (HPV), and COVID-19 are readily available, yet vaccination rates among adults remain below public health targets. Several factors contribute to low vaccine coverage, including lack of awareness, skepticism regarding vaccine safety and efficacy, concerns about side effects, accessibility issues, and sociocultural influences. The complexity of adult vaccination behavior highlights the need to explore perceptions and attitudes that influence decision-making.[2] One of the primary factors influencing adult vaccine uptake is **perceived risk**. Adults often assess the necessity of vaccines based on their perceived susceptibility to a particular disease and the severity of its potential consequences. If an individual believes that they are at low risk of contracting a disease or

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that the disease is not severe enough to warrant vaccination, they may be less likely to seek immunization. Conversely, those who perceive vaccines as essential for protecting their health are more likely to be vaccinated. This perception of risk is shaped by personal experiences, exposure to media, and advice from healthcare providers.[3] **Trust in vaccines and the healthcare system** is another critical determinant of adult vaccination attitudes. Misinformation, particularly through social media and non-expert sources, has contributed to vaccine hesitancy in many populations. Misinformation regarding vaccine ingredients, side effects, and long-term consequences has fueledskepticism and reluctance to vaccinate. Additionally, some individuals distrust pharmaceutical companies, believing that profit motives drive vaccine recommendations rather than genuine public health concerns. Negative past experiences with healthcare providers, fear of medical procedures, and concerns about the speed of vaccine development also contribute to hesitancy. Addressing these trust issues requires clear, evidence-based communication and engagement with trusted healthcare professionals.[4] **Personal beliefs and sociocultural influences** play a substantial role in shaping attitudes toward adult vaccinations. Some individuals view vaccines as unnecessary or unnatural, favoring alternative health approaches over immunization. Religious beliefs, cultural traditions, and political ideologies can also impact vaccine acceptance. In certain communities, vaccine hesitancy is linked to historical mistrust of medical institutions due to unethical medical practices in the past. Additionally, social norms influence vaccination behavior, as people are often guided by the choices of their peers, family members, and community leaders. Encouraging vaccine acceptance within these communities requires culturally sensitive interventions and targeted education campaigns.[5]**Convenience and accessibility** are also significant factors affecting adult vaccination uptake. Unlike childhood immunization programs, which are often mandatory and scheduled by healthcare providers, adult vaccinations require individuals to seek immunization voluntarily. Barriers such as cost, lack of healthcare access, limited time, and logistical challenges make it difficult for some adults to receive vaccinations. Some individuals may not know where to get vaccinated, or they may face challenges such as long wait times, inconvenient clinic hours, or difficulty scheduling appointments. Improving vaccine accessibility through workplace programs, mobile clinics, and pharmacy-based immunization services can help address these barriers.[6] The **role of healthcare providers** in influencing adult vaccination decisions cannot be overstated. Studies have shown that adults are more likely to receive vaccines when recommended by a trusted healthcare professional. Physicians, nurses, and pharmacists play a crucial role in educating patients about vaccine safety, benefits, and schedules. However, some healthcare providers may not actively recommend vaccines due to time constraints, lack of training, or their own vaccine hesitancy. Strengthening healthcare provider education and communication strategies is essential to ensuring that accurate vaccine information is consistently shared with adult patients.Public health efforts to promote adult vaccination must address **psychological and behavioral factors** that drive vaccine decision-making. Fear of needles, vaccine fatigue, and complacency are common reasons why individuals delay or avoid vaccination. Some adults may believe that they have already built immunity through previous infections or that vaccines are only necessary for older individuals and those with underlying health conditions. Others may postpone vaccinations due to procrastination or competing priorities. Behavioral interventions, such as reminders, incentives, and simplified vaccine schedules, can help encourage timely vaccinations.[7] In the wake of the COVID-19 pandemic, vaccine perceptions have gained significant attention worldwide. The rapid development and distribution of COVID-19 vaccines sparked debates about vaccine safety, regulatory processes, and individual rights. While the pandemic increased awareness about the importance of vaccinations, it also amplified vaccine hesitancy in certain groups. The varied responses to COVID-19 vaccination highlight the need for continued efforts to build public trust, combat misinformation, and ensure equitable access to vaccines for all populations.Understanding adult perceptions and attitudes toward vaccination is crucial for improving vaccine coverage and protecting public health. Addressing concerns about vaccine safety, efficacy, accessibility, and trust in healthcare systems can help overcome barriers to vaccination. Public health campaigns must employ tailored strategies that consider the diverse factors influencing adult vaccination decisions. By leveraging healthcare professionals, community leaders, and digital platforms, vaccination campaigns can foster positive attitudes and increase vaccine uptake. Ultimately, increasing adult vaccination rates requires a combination of education, policy interventions, and accessible healthcare services to ensure lifelong protection against preventable diseases.[8]

Materials and Methods

This study employed a cross-sectional design to assess the perceptions and attitudes towards adult vaccinations. The study was conducted, targeting adult individuals from diverse demographic backgrounds. Participants were recruited from healthcare facilities, community centers, and online survey platforms.A total of 200 adult participants were included in the study, selected using a convenience sampling approach to ensure representation across different age groups, genders, educational backgrounds, and vaccination statuses.

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The inclusion criteria required participants to be 18 years or older, provide informed consent, and have prior awareness or knowledge about vaccinations (self-reported), while individuals with cognitive impairments that hindered their ability to complete the survey and those who declined participation were excluded. Recruitment was conducted through healthcare institutions, social media advertisements, and community outreach programs. Data were collected using a structured questionnaire, which was either self-administered or interviewer-assisted for those requiring help. The questionnaire assessed demographic information (age, gender, education level, employment status, and healthcare access), vaccination history (previous vaccinations received, frequency of vaccinations, and willingness to receive future vaccinations), perceptions and attitudes (beliefs about vaccine efficacy, safety, necessity, and perceived barriers to vaccination), and sources of information (trust in healthcare providers, government health agencies, and social media influence on vaccination decisions). Prior to data collection, the questionnaire was pre-tested among 20 individuals (not included in the study sample) to ensure clarity and reliability. Ethical approval was obtained from ethics review board, and informed consent was secured from all participants before participation. The confidentiality of participants' information was strictly maintained, and the study adhered to the ethical guidelines outlined in the Declaration of Helsinki.

Data Analysis

Survey responses were coded and analyzed using SPSS version 25.0. Descriptive statistics (frequencies, percentages, means, and standard deviations) were used to summarize demographic and response data. Chi-square tests and logistic regression models were applied to identify associations between demographic variables and vaccination attitudes. A p-value of <0.05 was considered statistically significant.

Results

Demographic Characteristics of Participants (Table 1)

The study included 200 participants aged between 18 and 65 years, with a mean age of 35.4 ± 12.7 years. The largest age group was 26-35 years (30%), followed by 36-45 years (25%), while the smallest group was 56-65 years (10%). The sample had a nearly balanced gender distribution, with 45% male and 55% female participants. Regarding education level, 45% had completed college, 30% had a high school education, and 25% had a postgraduate degree, indicating a well-educated sample. Employment status showed that 65% of participants were employed, 25% were unemployed, and 10% were retired. Most participants (85%) reported having access to healthcare, while 15% lacked such access, which could influence their health-seeking behaviors, including vaccination uptake.

Vaccination History of Participants (Table 2)

Vaccination history data showed that 60% of participants were fully vaccinated, while 25% had received partial vaccinations, and 15% were not vaccinated at all. Additionally, 40% had received at least one booster dose, indicating a moderate uptake of booster vaccinations among the participants. These findings suggest that while primary vaccinations had good coverage, booster dose uptake was lower, possibly due to factors such as vaccine hesitancy, misinformation, or accessibility challenges.

Willingness to Receive Future Vaccinations (Table 3)

The majority of participants (70%) expressed willingness to receive future vaccinations, demonstrating a positive attitude towards immunization. However, 15% stated they would not take future vaccines, and 10% were unsure. Interestingly, 5% indicated that they would only get vaccinated if recommended by a doctor, suggesting that healthcare professionals play a crucial role in influencing vaccine decisions. These results highlight the need for targeted educational interventions to address vaccine hesitancy and ensure continued uptake.

Perceptions and Attitudes Towards Vaccination (Table 4)

The participants generally held positive views about vaccines, with 75% agreeing that vaccines are effective, 70% believing they are safe, and 80% considering them necessary for disease prevention. However, 25% of participants reported fear of side effects, and 20% expressed a lack of trust in vaccines, indicating persistent concerns that could influence vaccine uptake. Additionally, 15% believed that vaccines cause long-term health issues, a misconception that needs to be addressed through public health campaigns. The relatively high percentage of individuals who disagreed or were neutral towards these statements suggests that while overall attitudes were positive, some misinformation and distrust still exist in the community.

Sources of Information on Vaccination (Table 5)

Healthcare providers were the most trusted source of information, cited by 70% of participants, followed by government health agencies (55%). Social media was a source for 40% of participants, while friends and family (45%) and news media (42.5%) also played a role. Notably, 25% of participants relied on religious leaders for vaccine information, indicating that religious institutions could serve as potential partners in promoting vaccination campaigns. The significant reliance on social media and non-expert sources highlights the need for accurate, science-based messaging on digital platforms to counter misinformation.

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Multiple Regression Analysis of Demographic Factors Associated with Willingness to Vaccinate (Table 6)

The regression analysis identified significant associations between willingness to vaccinate and several demographic factors. Age had a positive and significant effect ($\beta = 0.15$, $p = 0.041$), suggesting that older individuals were more likely to accept vaccination. Gender was not significantly associated with willingness to vaccinate ($p = 0.068$), indicating that attitudes towards vaccination were similar between men and women. Education level was significantly associated with willingness to vaccinate ($\beta = 0.20$, $p = 0.015$), showing that individuals with higher education were more likely to accept vaccines. Employment status did not show a significant association ($p = 0.112$), suggesting that economic activity does not necessarily influence vaccination decisions. However, healthcare access was strongly associated with willingness to vaccinate ($\beta = 0.30$, $p = 0.004$), reinforcing the importance of accessibility in vaccine uptake. Additionally, previous vaccination status was a strong predictor of future vaccination intent ($\beta = 0.25$, $p = 0.027$), indicating that individuals who had been vaccinated before were more likely to accept further vaccinations.

Table 1: Demographic Characteristics of Participants

Variable	Number	Percentage (%)
Age Distribution		
18 - 25 years	40	20%
26 - 35 years	60	30%
36 - 45 years	50	25%
46 - 55 years	30	15%
56 - 65 years	20	10%
Age Range (Years)	18 - 65	
Age (Mean ± SD)	35.4 ± 12.7	
Gender		
Male	90	45%
Female	110	55%
Education Level		
High School	60	30%
College	90	45%
Postgraduate	50	25%
Employment Status		
Employed	130	65%
Unemployed	50	25%
Retired	20	10%
Healthcare Access		
Yes	170	85%
No	30	15%

Table 2: Vaccination History of Participants

Vaccination Status	Number	Percentage (%)
Fully Vaccinated	120	60%
Partially Vaccinated	50	25%
Not Vaccinated	30	15%
Received Booster Dose	80	40%

Table 3: Willingness to Receive Future Vaccinations

Response	Number	Percentage (%)
Yes	140	70%
No	30	15%
Unsure	20	10%
Only if Recommended by Doctor	10	5%

Table 4: Perceptions and Attitudes Towards Vaccination

Statement	Agree (N)	Agree (%)	Disagree (N)	Disagree (%)	Neutral (N)	Neutral (%)
Vaccines are effective	150	75%	30	15%	20	10%
Vaccines are safe	140	70%	40	20%	20	10%

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Vaccines are necessary	160	80%	20	10%	20	10%
Fear of side effects	50	25%	120	60%	30	15%
Lack of trust in vaccines	40	20%	130	65%	30	15%
Believe vaccines cause long-term health issues	30	15%	140	70%	30	15%

Table 5: Sources of Information on Vaccination

Source	Number	Percentage (%)
Healthcare Providers	140	70%
Government Health Agencies	110	55%
Social Media	80	40%
Friends/Family	90	45%
News Media	85	42.5%
Religious Leaders	50	25%

Table 6: Multiple Regression Analysis of Demographic Factors Associated with Willingness to Vaccinate

Variable	Coefficient (β)	Standard Error	95% CI	p-value	Significance
Age	0.15	0.05	(0.05, 0.25)	0.041	Significant
Gender (Male vs. Female)	-0.12	0.06	(-0.24, 0.01)	0.068	Not Significant
Education Level	0.20	0.07	(0.06, 0.34)	0.015	Significant
Employment Status	0.08	0.06	(-0.03, 0.19)	0.112	Not Significant
Healthcare Access	0.30	0.08	(0.14, 0.46)	0.004	Significant
Previous Vaccination Status	0.25	0.07	(0.11, 0.39)	0.027	Significant

Discussion

Our sample included 200 adults aged between 18 and 65 years, with a mean age of 35.4 ± 12.7 years. The largest age group was 26–35 years (30%), followed by 36–45 years (25%), while the smallest group was 56–65 years (10%). The gender distribution was nearly balanced, with 45% male and 55% female. The majority (45%) had completed a college degree, while 30% had a high school diploma and 25% had a postgraduate degree. Employment status showed that 65% of participants were employed, 25% were unemployed, and 10% were retired. Moreover, 85% reported having access to healthcare.

Our demographic findings are comparable to those reported by Ozisik et al., whose study of 395 adults had a mean age of 51.2 years, with a higher proportion of older adults than our sample. The age difference in their study may account for variations in vaccination uptake and attitudes. Additionally, their study found a slightly lower level of education compared to our findings, which may influence vaccine acceptance rates.[8]

In our study, 60% of participants were fully vaccinated, while 25% had received partial vaccinations, and 15% were not vaccinated at all. Additionally, 40% had received at least one booster dose, indicating moderate uptake of booster vaccinations.

In comparison, Ozisik et al. reported higher vaccination rates for influenza (78.1%) and lower rates for other vaccines, such as herpes zoster (25.8%) and pneumococcal disease (64.3% among those aged ≥65 years). This discrepancy may stem from differences in study populations, regional vaccination policies, and the specific vaccines analyzed. Similarly, a study by Schmid et al. found that vaccination coverage is strongly influenced by demographic factors, vaccine accessibility, and public health initiatives.[9]

Our study found that 70% of participants were willing to receive future vaccinations, while 15% were unwilling, 10% were unsure, and 5% would only do so if recommended by a doctor. This finding emphasizes the critical role of healthcare professionals in influencing vaccine decisions.

Similarly, Fisher et al. found that individuals were more likely to accept COVID-19 vaccines when recommended by a doctor. Their study highlighted that healthcare attitudes and practices significantly impact individuals' likelihood of accepting vaccinations. This further supports the notion that public health strategies should involve healthcare professionals in vaccine advocacy efforts.[10]

Our participants generally held positive views about vaccines, with 75% agreeing that vaccines are effective, 70% believing they are safe, and 80% considering them necessary for disease prevention. However, 25% of participants expressed fear of side effects, 20% reported a lack of trust in vaccines, and 15% believed vaccines cause long-term health issues.

These concerns align with findings by Callaghan et al., who identified vaccine safety perceptions and

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efficacy beliefs as significant determinants of vaccine acceptance. They emphasized that while many people trust vaccines, persistent doubts regarding side effects and long-term consequences influence hesitancy.[11] Additionally, Dubé et al. highlighted the role of misinformation in shaping negative perceptions, indicating that vaccine education and public awareness campaigns must address these concerns effectively.[12]

Healthcare providers were the most trusted information source (70%), followed by government health agencies (55%), friends and family (45%), news media (42.5%), social media (40%), and religious leaders (25%).

This reliance on healthcare providers is consistent with previous research by Larson et al., which found that medical professionals are the most influential sources of vaccine information. However, the notable use of social media highlights the potential risk of misinformation.[13]A study by Betsch et al. found that individuals who rely on social media for vaccine-related information are more likely to be exposed to misleading content, further emphasizing the need for science-based messaging on digital platforms.[14]

Our regression analysis identified significant associations between willingness to vaccinate and certain demographic factors. Age had a positive and significant effect ($\beta = 0.15$, $p = 0.041$), suggesting that older individuals were more likely to accept vaccination. Education level was also significantly associated ($\beta = 0.20$, $p = 0.015$), showing that individuals with higher education were more likely to be willing to vaccinate. Healthcare access had the strongest association ($\beta = 0.30$, $p = 0.004$), reinforcing the importance of accessibility in vaccine uptake. Additionally, previous vaccination status was a strong predictor ($\beta = 0.25$, $p = 0.027$), indicating that individuals who had been vaccinated before were more likely to accept future vaccinations.

These findings align with those of Karlsson et al., who found that higher education levels and healthcare access positively correlated with vaccine acceptance.[15] Similarly, Murphy et al. highlighted that individuals with a history of prior vaccinations are more likely to maintain a positive attitude toward immunization.[16]

Conclusion

This study highlights that while the majority of adults have positive perceptions of vaccinations, significant barriers such as vaccine hesitancy, misinformation, and accessibility challenges persist. Factors such as age, education level, healthcare access, and prior vaccination history were significantly associated with willingness to vaccinate. Concerns about vaccine safety, side effects, and distrust in vaccines indicate the need for targeted public health interventions. Healthcare providers remain the most trusted source of vaccine information, emphasizing their role in addressing hesitancy. Enhancing vaccine education, accessibility, and trust in the healthcare system is crucial for improving adult vaccination uptake and ensuring broader public health protection.

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