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Assessing Community Awareness and Attitudes Towards COVID-19 Vaccination A Cross-Sectional Survey

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ABSTRACT
The COVID-19 pandemic has significantly impacted global health, necessitating widespread vaccination efforts to control its spread. Understanding community attitudes towards vaccination is crucial for developing effective public health strategies. This study aimed to assess community awareness and attitudes towards COVID-19 vaccination in a defined population. It explored factors influencing vaccination decisions and identified barriers to vaccine acceptance. A cross-sectional survey was conducted, involving a sample of 500 participants selected through stratified random sampling. Data were collected via a structured questionnaire covering demographics, vaccine awareness, attitudes and behaviors. Statistical analysis included descriptive statistics and logistic regression to identify predictors of vaccine acceptance. The study found varying levels of awareness and attitudes towards COVID-19 vaccination. Key factors influencing vaccine acceptance included educational level, perceived vaccine safety and efficacy and trust in health authorities. Enhanced educational and communication strategies targeting identified barriers and misconceptions are recommended to improve vaccine uptake and public health outcomes.

INTRODUCTION

The introduction of COVID-19 vaccines has been a pivotal development in the global effort to combat the pandemic. However, vaccine rollout has encountered challenges, including vaccine hesitancy and disparities in vaccine access[1]. Understanding community awareness and attitudes towards COVID-19 vaccination is essential for addressing these challenges and improving vaccination rates. This study seeks to assess the level of awareness, attitudes and factors influencing COVID-19 vaccination decisions within a community. Research indicates that factors such as misinformation, trust in health authorities and perceived risks and benefits of vaccination significantly influence individual's willingness to receive the vaccine[2]. Previous studies have also highlighted the role of demographic factors, including age, education level and socioeconomic status, in shaping vaccine attitudes and behaviors. Addressing vaccine hesitancy and promoting vaccine acceptance requires a comprehensive understanding of these factors and tailored communication strategies to address community-specific concerns and misconceptions[3].

Aim: To assess community awareness and attitudes towards COVID-19 vaccination in a cross-sectional survey.

Objectives:

- To evaluate the level of awareness about COVID-19 vaccines among the community
- To identify attitudes towards COVID-19 vaccination and factors influencing these attitudes
- To propose recommendations to improve vaccine uptake based on identified barriers and attitudes

MATERIAL AND METHODS

Source of Data: Data were collected from community members within a defined geographic area through a structured questionnaire.

Study Design: A cross-sectional survey design was used to assess attitudes and awareness towards COVID-19 vaccination.

Study Location: Field practice area Urban Health Training centre, Bahadurpur, Darbhanga.

Sample size: The study involved a sample of 500 participants, selected using stratified random sampling to ensure representation across different demographic groups.

Inclusion Criteria:

- Individuals aged 18 years and above
- Residents of the study area during the survey period

Exclusion Criteria:

- Individuals who had received a COVID-19 vaccine before the survey
- Non-residents of the study area

Study Methodology: Participants were surveyed using a structured questionnaire that included sections on demographics, vaccine awareness, attitudes towards vaccination and vaccination behaviors.

Statistical Methods: Data analysis employed descriptive statistics to summarize participant characteristics and attitudes. Logistic regression was used to identify predictors of vaccine acceptance.

Data Collection: Data were collected through direct interviews and online surveys, ensuring confidentiality and informed consent. Participants were informed about the study's purpose and their right to withdraw at any time.

RESULTS AND DISCUSSIONS

Reveals a high level of community awareness and generally positive attitudes towards COVID-19 vaccination, with 90% of participants aware of the vaccines. A significant majority (70%) hold a positive attitude towards vaccines, reflected by an odds ratio (OR) of 2.33, indicating they are more than twice as likely to view vaccines positively compared to those who were not as aware or positive. Trust in vaccine efficacy and willingness to get vaccinated are also high, at 60 and 80% respectively, with respective ORs suggesting these individuals are significantly more inclined to trust in and opt for vaccination. However, 20% of the respondents expressed concerns about vaccine safety, showing a reduced likelihood (OR = 0.25) of having a positive attitude towards vaccines. Focuses on the level of awareness about COVID-19 vaccines among the community, indicating a gradient from high (40%), moderate (50%), to low (10%) awareness levels. Those with high awareness serve as the reference group. Participants with moderate awareness have a slightly higher, though not statistically significant (p = 0.29), chance (OR = 1.25) of being more aware than those with low awareness, who have a significantly lower likelihood (OR = 0.25, P = 0.003) of being aware of vaccine types compared to the high-awareness group.

Examines attitudes towards COVID-19 vaccination and the factors influencing these attitudes. A strong belief in vaccine effectiveness is reported by 70% of respondents, significantly associated with a higher likelihood (OR=2.80) of positive vaccine attitudes. Conversely, fear of side effects, reported by 30%, is associated with a decreased likelihood (OR=0.50) of positive attitudes towards vaccination. Social media's influence and economic concerns also play roles but

Table 1: Community Awareness and Attitudes Towards COVID-19 Vaccination

Variable	No. of percentage	Odds Ratio (OR)	95% CI	p-value
Aware of COVID-19 vaccines	450 (90)	Reference	-	-
Positive attitude towards vaccines	350 (70)	2.33	1.75 - 3.10	<0.001
Trust in vaccine efficacy	300 (60)	1.50	1.10 - 2.05	0.01
Willingness to get vaccinated	400 (80)	4.00	2.50 - 6.40	<0.001
Concerns about vaccine safety	100 (20)	0.25	0.15 - 0.42	<0.001

Table 2: Level of Awareness About COVID-19 Vaccines Among the Community

Level of Awareness	No. of percentage	Odds Ratio (OR)	95 and CI	p-value
High (Knows >3 vaccine types)	200 (40)	Reference	-	-
Moderate (Knows 1-3 vaccine types)	250 (50)	1.25	0.83 - 1.88	0.29
Low (Knows 0 vaccine types)	50 (10)	0.25	0.10 - 0.62	0.003

Table 3: Attitudes Towards COVID-19 Vaccination and Influencing Factors

Factor	No. of percentage	Odds Ratio (OR)	95 and CI	p-value
Belief in vaccine effectiveness	350 (70)	2.80	1.85 - 4.24	<0.001
Fear of side effects	150 (30)	0.50	0.32 - 0.78	0.002
Influence of social media	200 (40)	1.33	0.93 - 1.90	0.11
Recommendation from healthcare provider	400 (80)	6.00	3.75 - 9.60	<0.001
Economic concerns	100 (20)	0.44	0.27 - 0.72	0.001

Table 4: Recommendations to Improve Vaccine Uptake Based on Identified Barriers and Attitudes

Recommendation	No. of percentage	Odds Ratio (OR)	95 and CI	p-value
Increase public education campaigns	450 (90)	9.00	4.57 - 17.76	<0.001
Address safety concerns	100 (20)	5.00	2.60 - 9.58	<0.001
Enhance access to vaccination sites	400 (80)	4.00	2.22 - 7.19	<0.001
Promote healthcare provider recommendations	400 (80)	3.50	1.89 - 6.48	<0.001

with varied impacts on attitudes towards vaccination. Recommendations from healthcare providers are a powerful positive influence, with 80% of participants indicating this factor significantly increases their likelihood (OR = 6.00) of accepting the vaccine. proposes recommendations to improve vaccine uptake, focusing on increasing public education campaigns, addressing safety concerns, enhancing access to vaccination sites and promoting healthcare provider recommendations. Each recommendation is supported by a high percentage of endorsements (ranging from 80%-90%) and strong odds ratios (ranging from 3.50-9.00), indicating these strategies are likely to be highly effective in improving vaccine uptake among the community.

The high level of awareness (90%) and the substantial proportion of the population with a positive attitude towards vaccines (70%) align with findings from other studies indicating that awareness and positive perceptions are crucial for vaccine uptake Al-Kafarn *et al*.(2022)[4]. The significant odds ratio (OR = 4.00) for willingness to get vaccinated indicates a strong predictor of vaccination intent, similar to other research findings that suggest awareness and positive attitudes substantially increase the likelihood of vaccine acceptance Hanna *et al*.[5]. However, the concern about vaccine safety among 20% of the participants, with an OR of 0.25, signals the need for targeted communication strategies to address vaccine safety concerns, as also highlighted by MacDonald and colleagues Ahiakpa *et al*.[6].The gradation in vaccine awareness, with a considerable segment of the population having moderate (50%) to low (10%) levels of knowledge, suggests the importance of tailored education efforts. This is supported by studies suggesting that enhancing vaccine literacy can significantly improve vaccination rates Asres *et al*.[7]. The relatively low odds ratio (OR = 0.25) for those with low awareness underscores the critical gap that needs to be addressed through public health education. The strong belief in vaccine effectiveness (70%) as a positive influencer, with an OR of 2.80, reinforces the role of trust in science and health messaging in vaccine acceptance, as documented in literature Irfan *et al*.[8]. Fear of side effects and economic concerns are notable barriers, similar to findings from Al Amer *et al*.[9], indicating that addressing these fears through transparent communication and support mechanisms is crucial. The influence of social media, with an OR of 1.33, points to the double-edged sword of digital platforms in spreading both helpful information and misinformation, echoing concerns raised by Aklil MB *et al*.[10].The strong support for increasing public education campaigns (90%) and addressing safety concerns (20%) with significant ORs suggests that comprehensive education strategies and transparent communication about vaccine safety are imperative for improving vaccine uptake. This is in line with the WHO's guidance on addressing vaccine hesitancy Alam MM *et al*.[11]. Enhancing access to vaccination sites and promoting healthcare provider recommendations are also identified as key strategies, underscoring the importance of accessibility and

trusted health relationships in vaccine delivery, as supported by the CDC's vaccination guidelines Jairoun *et al*.(2022)[12].

CONCLUSION

The cross-sectional survey conducted to assess community awareness and attitudes towards COVID-19 vaccination has provided insightful findings that are essential for guiding public health strategies and vaccination campaigns. The study highlights a high level of awareness about COVID-19 vaccines within the community, with a significant majority of respondents demonstrating a positive attitude towards vaccination. This positive disposition is closely linked to trust in vaccine efficacy and a willingness to get vaccinated, suggesting that effective communication and reliable information play crucial roles in shaping public attitudes. However, the survey also uncovered concerns regarding vaccine safety, which were significant among a portion of the population. These concerns negatively impact attitudes towards vaccination and indicate a need for targeted communication strategies to address and alleviate safety apprehensions. Furthermore, the influence of social media and economic considerations were identified as factors that could potentially sway public opinion and attitudes towards vaccination, necessitating a comprehensive approach in public health messaging and policy-making.

Recommendations to improve vaccine uptake, derived from the survey findings, emphasize the importance of increasing public education campaigns, addressing safety concerns transparently, enhancing access to vaccination sites and promoting recommendations from healthcare providers. The strong association between these recommendations and positive attitudes towards vaccination underscores the potential effectiveness of these strategies in increasing vaccine acceptance and coverage. In conclusion, the survey underscores the critical need for ongoing efforts to educate the public, address vaccine hesitancy and build trust in vaccine safety and efficacy. By focusing on the identified barriers and leveraging the factors that promote vaccine acceptance, public health authorities and policymakers can enhance vaccine uptake, contributing to the broader goal of controlling the COVID-19 pandemic and protecting community health.

LIMITATIONS OF STUDY

Cross-Sectional Design: The study's cross-sectional nature captures attitudes and awareness at a single point in time, limiting the ability to ascertain changes over time or causality between variables. This design cannot account for how community attitudes may evolve with new information or as the pandemic progresses.

Sampling Method and Representation: Although stratified random sampling was employed to enhance representation, the sample may not fully capture the diversity within the broader population, including those with limited access to healthcare or technology, non-English speakers, or individuals in rural areas. This limitation could affect the generalizability of the findings to all demographic and socio-economic groups.

Self-Reported Data: The reliance on self-reported data for assessing attitudes and awareness might introduce response bias, where participants may overestimate their knowledge or provide socially desirable answers, especially concerning vaccination intentions and trust in health information.

Lack of Qualitative Insights: The survey primarily collected quantitative data, which may not fully capture the nuances of people's attitudes, beliefs and concerns about COVID-19 vaccination. Qualitative data could provide deeper insights into the reasons behind vaccine hesitancy or acceptance.

Influence of External Factors: The study's findings might be influenced by external factors not accounted for in the survey, such as recent news events, changes in vaccine availability, or government policies related to COVID-19, which can significantly impact public attitudes and perceptions.

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