

The Role of Healthcare Leaders in Promoting Vaccine Acceptance in Saudi Arabia

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Background: Several vaccines have been recommended by the health authorities in recent years and have been opposed by debates, lack of public trust, and variable levels of hesitance that resulted in increased anti-vaccination advocacy and a subsequent reduction in vaccination rates worldwide.

Purpose: This study aimed to explore the community's perceptions of the role of healthcare leadership in promoting vaccine acceptance.

Methods: This cross-sectional study used a validated questionnaire designed according to the study's objectives for a heterogeneous purposive sample of individuals over 18 years old in Saudi Arabia. Participants completed the questionnaire online via a link provided by multiple social media platforms.

Results: The study included 7159 participants with various demographical features. On a five-point Likert scale, the average level of agreement on the role of healthcare executives in promoting vaccines was 3.76. The average level of agreement about the role of healthcare leaders in promoting vaccines was 3.76 out of five. Men were more likely than women to agree on healthcare worker's influence, 63.6% and 58.6%, respectively ($P < 0.001$). The ages of participants showed a favorable correlation with their level of agreement on the role of healthcare leaders in promoting vaccines ($P < 0.001$). The level of agreement on healthcare leader's role in promoting vaccines was inversely proportional to the education level ($P < 0.001$). The retired group reported the highest score, followed by the employed ones ($P < 0.001$).

Conclusion: Unlike other political and religious leaders, this study indicates that healthcare professionals significantly impact vaccine hesitancy and uptake. Despite rising vaccine hesitancy, healthcare leaders remain more trustworthy providers of guidance and influence over vaccination decisions than others. In addition, the health leader's factual message boosts people's self-esteem and helps them decide to be vaccinated.

Keywords: vaccine hesitancy, healthcare leadership, Saudi Arabia

Introduction

In recent years, the health authorities have recommended several vaccines to protect against major infectious diseases. However, these recommendations have been met with opposition from various quarters due to differing reluctance, arguments, public mistrust, and variable levels of hesitance. As a result, there was an increased anti-vaccination advocacy and a subsequent reduction in vaccination rates worldwide. The US vaccination rates for recommended vaccines are still suboptimal after decades of incremental progress, with the childhood combined 7-vaccine series coverage of 70.4% and 34.2% for seasonal influenza among adults.¹ Similar suboptimal vaccination coverage is seen worldwide, thus contributing to the persistence and resurgence of infectious diseases, millions of avoidable deaths, and financial costs.² Vaccine hesitance has recently been reported in Saudi Arabia,³ with 17% of the public being reluctant to receive the influenza vaccine and 20% of parents being unwilling to immunize their children.⁴

Vaccine hesitancy is a delay in acceptance, or refusal, of vaccines despite the availability of vaccine services and supporting evidence.⁵ Vaccine hesitancy is not recent and has existed since the first vaccine was administered about 200 years ago. There have been varying degrees of vaccine refusal around the globe for various reasons. For example,

hepatitis B virus vaccine hesitancy among nursing and midwifery undergraduate students in Switzerland,⁶ large-scale boycotts of wild polio immunization campaigns in Pakistan,⁷ oral polio vaccine boycott in Nigeria,⁸ seasonal influenza vaccine refusal by pregnant women in France,⁹ and high refusal rates of COVID-19 vaccine by among Afghan pregnant women.¹⁰

Vaccination decisions can be influenced by a range of conditions, including lack of knowledge, prior healthcare experiences, family histories, and barriers connected to religion, culture, gender, or socioeconomic issues.¹¹ The growing distrust of health experts, the pharmaceutical industry, and the government is the most critical predictor of vaccination reluctance.¹¹

COVID-19 vaccines have been confronted with unprecedented debates and a lack of public confidence.^{12,13} Determinants of vaccination decisions for different diseases vary across the literature. However, the COVID-19 pandemic has made its consequences more noticeable than before.¹⁴

The development and severity of vaccine hesitancy are individualized and depend on one's exposure to various social, political, and environmental influences. One of the contextual elements influencing a person's behavioral decision to accept, delay, or refuse some or all vaccinations is influential leaders.¹⁵ One multicomponent intervention that may successfully promote vaccination acceptance is including religious and community leaders to encourage vaccination uptake.¹⁶ Religious leaders and healthcare providers greatly influenced vaccination uptake.¹⁷ Most frequently, healthcare providers were found to have a favorable impact on vaccine uptake, highlighting the significance of their involvement in encouraging vaccinations.¹⁸

However, several studies have indicated a varied range of the tendency to follow preventive measures according to an individual's socio-demographic factors (eg, age, gender, educational level, and income), trust in several entities (eg, scientists, government, and medical system), perceived threat and risk of the coronavirus disease, and political ideologies.¹⁹

The impact of political and religious leadership has been discussed recently in popular literature, and the significant impact of the leadership has been highlighted in developing trust/mistrust among individuals.^{18,20,21}

Leaders in the healthcare industry are experts who make decisions related to healthcare promotion; they do not necessarily need to hold a formal managerial position. Healthcare leadership involves influencing and inspiring the medical personnel to contribute to the success and efficacy of medicine, patient care, and the healthcare industry. Healthcare leadership typically involves establishing priorities, providing strategic guidance to a wide range of stakeholders in the health system, and motivating the health sector to improve the healthcare delivery system.^{22,23} With the advancements in the healthcare sector, effective health leadership and management play a pivotal role in efficiently redirecting the workforce to respond to emerging issues, including vaccine hesitancy. The influence of political and medical leaders on parental decisions towards child vaccination rather than adults has been investigated before.¹⁸ However, the impact of healthcare leadership still needs to be studied. The capacities of health managers and leaders to respond to current and emerging issues related to vaccine hesitancy need to be better understood. This study aimed to explore the community's perception of the role of healthcare leadership in promoting vaccine acceptance and the impact of social norms on the persistence of vaccine hesitancy.

Methods

This cross-sectional study used a structured questionnaire developed by the researcher according to the study's goals after a thorough literature analysis of similar studies. The Prince Sultan Military College Dhahran's Ethics Review Board has approved this study of Health Sciences (IRB Number IRB-2024-CLS-011). This study was conducted by the principles of the Declaration of Helsinki. Informed consent was obtained from each participant on the opening page of the online questionnaire. Demographic information such as age, gender, educational level, employment status, and household monthly income were all included in the questionnaire. The questionnaire included an evaluation of the participants on the role of the healthcare leaders in vaccine promotion on a five-point Likert scale ranging from strongly agree to strongly disagree. The study included a heterogeneous purposive sample of the community, comprising individuals over 18 years old living in Saudi Arabia during the study period. Participants completed the questionnaire online via a link provided by multiple social media platforms media (Facebook / X / WhatsApp) between February 1 and April 30, 2023. The anonymity of the questionnaire and the fact that the information gathered was only utilized for this study's objectives guaranteed confidentiality. The study's purpose and objectives were explained to the respondents, who were invited to participate after electronically submitting their signed consent.

Before distributing the questionnaire, 50 responses, not part of the study, were used to validate the questions. Cronbach's alpha reliability coefficient, which showed a value of 0.76, was used to assess the internal consistency dependability of the questionnaire based on data gathered from the pilot test.

Statistical Analysis

The participant's perception was measured by questions on a five-point Likert scale rating, ranging from strongly agree (5), agree (4), neutral (3), disagree (2), and strongly disagree (1). The mean score was calculated out of five. Descriptive statistics (frequencies) were completed for all items. The data were processed with SPSS software version 20.0 (SPSS, Chicago, Illinois). Cronbach's alpha assessed the questionnaire's internal consistency, with ≥ 0.74 coefficients indicating acceptable reliability. We used chi-square test for significant variations caused by different demographic variables. Statistical significance was determined at $P < 0.05$ for all analyses.

Results

The participant's demographical features and socioeconomic status are shown in [Table 1](#). The study included 7159 participants, 51.9% males and 48.1% females. Most participants (87.3%) were between 18 and 54 years old. More than half of the participants were employed (52.8%). Most of our participants have a university degree or more (85.3%). Most of them have an average monthly income of 3001–5000 US\$. [Table 2](#) shows the participant's average score (out of 5) with the standard deviation on the five-point Likert scale and the total of those who strongly agreed or agreed, undecided,

Table 1 Demographical and Socioeconomic Characteristics of the Participants and Their Percentage Between Parenthesis (n = 7159)

Gender	Male	3715 (51.9)
	Female	3444 (48.1)
Age	18–24	1418 (19.8)
	25–34	1870 (26.1)
	35–44	1617 (22.6)
	45–54	1345 (18.8)
	55–64	724 (10.1)
	65–74	165 (2.3)
	75 and above	20 (0.3)
Education	Primary School	26 (0.4)
	Elementary School	109 (1.5)
	High School	916 (12.8)
	University	4641 (64.8)
	Postgraduate	1467 (20.5)
Employment status	Employed	3781 (52.8)
	Student	1287 (18.0)
	Retired	925 (12.9)
	Unemployed	1166 (16.3)

(Continued)

Table 1 (Continued).

Household monthly income in (US\$)	Below 2000	603 (8.4)
	2001–3000	1573 (22.0)
	3001–5000	2310 (32.3)
	5001–10,000	1552 (21.7)
	10,001–15,000	469 (6.6)
	More than 15,000	652 (9.1)

Table 2 The Participant's Average Score (Out of 5) with the Standard Deviation on the 5-Point Likert Scale and the Total of Those Who Strongly Agreed or Agreed, Undecided, and Disagrees or Strongly Disagreed (n = 7159)

Demographical Feature		Average Score $\pm$ SD	Disagree	Undecided	Agree	P-value
Gender	Male	3.79 $\pm$ 1.2	651 (17.5)	700 (18.8)	2364 (63.6)	< 0.001
	Female	3.66 $\pm$ 1.2	690 (20.0)	735 (21.3)	2019 (58.6)	
Age	18–24	3.67 $\pm$ 1.3	310 (21.9)	261 (18.4)	847 (59.7)	< 0.001
	25–34	3.57 $\pm$ 1.3	437 (23.4)	397 (21.2)	1036 (55.4)	
	35–44	3.76 $\pm$ 1.2	290 (17.9)	330 (20.4)	997 (61.7)	
	45–54	3.84 $\pm$ 1.1	192 (14.3)	268 (19.9)	885 (65.8)	
	55–64	3.87 $\pm$ 1.1	95 (13.1)	149 (20.6)	480 (66.3)	
	65–74	4.10 $\pm$ 1.0	13 (7.9)	27 (16.4)	125 (75.8)	
	75 and above	3.80 $\pm$ 1.4	4 (20.0)	3 (15)	13 (65.0)	
Education	Primary School	4.04 $\pm$ 1.1	3 (11.5)	5 (19.2)	18 (69.2)	< 0.001
	Elementary School	3.93 $\pm$ 1.1	13 (12.0)	22 (20.4)	73 (67.6)	
	High School	3.84 $\pm$ 1.2	151 (16.5)	167 (18.3)	597 (65.2)	
	University	3.71 $\pm$ 1.2	878 (18.9)	951 (20.5)	2811 (60.6)	
	Postgraduate	3.66 $\pm$ 1.2	296 (20.2)	286 (19.5)	884 (60.3)	
Employment Status	Employed	3.77 $\pm$ 1.2	661 (17.5)	768 (20.3)	2352 (62.2)	< 0.001
	Student	3.64 $\pm$ 1.3	291 (22.6)	230 (17.9)	766 (59.5)	
	Retired	3.90 $\pm$ 1.1	118 (12.8)	175 (18.9)	632 (68.3)	
	Unemployed	3.54 $\pm$ 1.3	271 (23.2)	262 (22.5)	633 (54.3)	
Household Monthly Income in US\$	Below 2000	3.61 $\pm$ 1.3	131 (21.7)	119 (19.7)	353 (58.5)	< 0.001
	2001–3000	3.65 $\pm$ 1.3	317 (20.2)	346 (22)	910 (57.9)	
	3001–5000	3.79 $\pm$ 1.2	415 (18.0)	424 (18.4)	1471 (63.7)	
	5001–10,000	3.75 $\pm$ 1.2	263 (16.9)	335 (21.6)	954 (61.5)	
	10,001–15,000	3.69 $\pm$ 1.2	94 (20.0)	90 (19.2)	285 (60.8)	
	More than 15,000	3.73 $\pm$ 1.3	121 (18.6)	121 (18.6)	410 (62.9)	
Total		3.76 $\pm$ 1.2	1341 (18.7)	1435	4383 (61.2)	

disagreed or strongly disagreed. On a five-point Likert scale, the average level of agreement about the role of healthcare leaders in promoting vaccines was 3.76 ± 1.2 out of five. Men were more likely than women to agree on the influence of healthcare workers ($P < 0.001$). The ages of participants showed a favorable correlation with their level of agreement on the role of healthcare leaders in promoting vaccines ($P < 0.001$). The level of agreement on healthcare leader's role in promoting vaccines was inversely proportional to the education level ($P < 0.001$). The retired group reported the highest score, followed by the employed ones ($P < 0.001$). Similarly, the level of agreement increased with the household's monthly income.

Discussion

Despite immunization's ability to reduce the frequency of preventable diseases, reluctance to immunize has jeopardized public health worldwide. Vaccinees were formerly described as acceptors, who rely primarily on broad social norms to make their vaccination decisions; reliers, who rely mainly on other people for information and guidance; and searchers, who seek information on their own, primarily from published sources.²⁴ Our findings show that healthcare leaders significantly influence vaccine hesitance and uptake. In contrast to past research, we find that leaders have a negative influence on boosting the use of health services.^{25,26}

Out of the 7159 participants, 61.2% demonstrated positive perceptions of the role of healthcare leaders in combating vaccine hesitancy and would receive the vaccine if asked to do so. Previous studies have reported that political leaders, religious leaders, and celebrities have significantly negatively impacted vaccination acceptance.²⁷ Other studies investigated the role of healthcare providers rather than healthcare leaders.^{1,17,28} Though healthcare providers frequently need more knowledge or training support to adequately answer vaccinee's inquiries, healthcare provider's capacity, and confidence are nonetheless strained by time restraints, an increasing workload, and a need for more resources.²⁸

The underlying mistrust of political leaders, religious leaders, elites, and celebrities drives vaccine reluctance.²⁹ Healthcare professionals, especially the leaders, continue to be more reliable sources of advice and influence over vaccination decisions than others in the face of growing vaccine reluctance.²⁸ The likelihood of vaccination was higher in individuals whose healthcare provider inquired about the vaccine than in those whose provider did not.¹⁷ This may suggest that the respondents trust the healthcare provider and value their advice.

The study also investigated different socioeconomic factors about the influence of healthcare leadership on vaccination acceptance. There have been significant differences between the participant's agreement on the role of the healthcare leaders in promoting vaccine uptake and demographical factors of age, gender, education, employment status, and income. Men agreed more on the role of healthcare leaders in promoting vaccines than women. Usually, Women had lower vaccination intentions than men, according to a comprehensive review and meta-analysis.³⁰ A previous study reported no gender difference in the positive perception towards vaccination but a significant income and educational level increase.³¹

Older age groups have more agreed on the role of healthcare leaders than younger ones. Similar findings were reported in the USA regarding the sociodemographic factors and trends in vaccine acceptance.³² The findings are consistent with previous studies showing that more education can safeguard against refusing vaccinations. In populations with lower levels of formal education, there is a greater degree of mistrust toward medical practitioners. Lack of education also makes it more difficult to have accurate immunization information.³³ Education is vital in encouraging immunization and maximizing attempts to overcome individual hesitation.³⁴

Previously, several demographic and socioeconomic characteristics have been associated with COVID-19 vaccination reluctance. More specifically, a recent systematic analysis found a relationship between lower vaccine uptake and socioeconomic factors, including living in poor or rural locations and having a lower income.³⁵

Remarkably, vaccine willingness is unaffected by income. However, a study that compared the income mean of the vaccinated and unvaccinated groups indicated that higher-income families were more likely to accept vaccination than lower-income households.²⁷

A more significant percentage of self-employed or business owners (53.1%) expressed reluctance to receive the vaccination.²⁷ One of the leading causes of vaccine hesitation among self-employed people is mistrust of the government; they are also somewhat more worried about vaccine safety.³⁶

Among the methods to increase vaccination acceptance rates was direct engagement with communities through influencers, such as local healthcare leaders and healthcare providers, and communication about vaccine benefits.³⁷ Healthcare professionals are essential in advocating and promoting vaccine acceptance among the general public. The conduct and communications of healthcare providers greatly influence people's receptivity and vaccine uptake.

The strong consensus of healthcare provider's recommendations on vaccine uptake has been consistently reported worldwide.³⁸

While logistical obstacles such as a lack of time had a detrimental impact, having encouraging information about vaccines from trustworthy healthcare experts enhanced healthcare provider's confidence and consequently their probability of suggesting vaccines.

According to a report, West Virginia's competent leadership team and well-thought-out strategic plan enabled the state to lead the nation in COVID-19 immunization rates and lower early death rates.³⁹

Several times, it has been reported that political and community leaders have a limited influence in driving behavioral health regarding vaccine reluctance.²⁷

People's distrust of political leaders may develop a negative perception that could impact their willingness to take vaccines.²⁹ On the other hand, encouraging behavior is perceived as usual or the "right thing to do" and socially responsible.²⁴

Healthcare providers and public health agencies were critical in addressing immunization against COVID-19 with their patients.⁴⁰

Furthermore, the health expert's accurate message contributes to individual confidence in national safety monitoring systems, reducing disease spread and assisting people in deciding to be vaccinated. Public health scholars must build trust with vaccinees who are hesitant to be vaccinated. Skilled healthcare executives inspire their employees to perform to the best of their abilities to foster community trust. Effective provider education is crucial to enabling healthcare providers to influence patient's vaccine acceptance.

The study's limitations align with those typical of survey research, such as possible biases resulting from self-reporting and non-random sampling.

Conclusion

Our findings show that healthcare leaders significantly influence vaccine hesitance and uptake. Healthcare leaders continue to be more reliable sources of advice and influence over vaccination decisions than others in the face of growing vaccine reluctance. The likelihood of vaccination due to healthcare leader's trust was higher in men with higher education levels and income. Furthermore, the health expert's accurate message contributes to individual confidence in national safety monitoring systems, reducing disease spread and assisting people in deciding to be vaccinated.

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