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The Relationship Between Rotavirus Vaccine Hesitancy, Vaccine Knowledge Level, and Health Literacy Among Healthcare Workers

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Abstract

Objective: This study aimed to evaluate the relationship between healthcare workers' attitudes towards vaccination, their vaccination behaviors, their vaccine hesitancy regarding the rotavirus vaccine, their level of vaccine knowledge, and their health literacy.

Methods: Conducted as a descriptive cross-sectional study with 300 participants, the data were collected through face-to-face interviews and analyzed using SPSS 25, employing correlation and multiple regression models.

Results: Univariate analyses showed that socioeconomic status, routine vaccination practices, professional roles, and the functional, communicative, and critical dimensions of health literacy were significantly associated with vaccine hesitancy ($p<0.001$). According to the regression analysis, the overall model was statistically significant ($p<0.001$), with occupational group emerging as the only independent predictor of vaccine hesitancy.

Conclusion: It is noteworthy that vaccine hesitancy is high among healthcare workers despite their low level of knowledge about the rotavirus vaccine and adequate health literacy. Although knowledge level and vaccine health literacy were associated with vaccine hesitancy in univariate analyses, these associations were not retained in the multivariable model. The direction of the relationship between knowledge level, vaccine health literacy, and vaccine hesitancy indicates that vaccine hesitancy cannot be explained solely by a lack of information. Our study emphasizes the importance of re-evaluating vaccine education for healthcare workers.

Keywords: Rotavirus vaccine, healthcare workers, vaccine hesitancy, health literacy, knowledge level

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Sağlık çalışanlarında Rotavirüs Aşısı Tereddütü, Aşı Bilgi Düzeyi ve Sağlık Okuryazarlığı arasındaki ilişki

Öz

Amaç: Bu çalışmada, sağlık çalışanlarının aşılamaya yönelik tutumları, aşılama davranışları, rotavirüs aşısına ilişkin aşı kararsızlıkları, aşı bilgi düzeyleri ve sağlık okuryazarlıkları arasındaki ilişki değerlendirilmesi amaçlanmıştır.

Yöntemler: 300 katılımcı ile tanımlayıcı kesitsel bir çalışma olarak yürütülen çalışmada, veriler yüz yüze görüşmeler aracılığıyla toplanmış ve korelasyon ile çoklu regresyon modelleri kullanılarak SPSS 25 ile analizler yapılmıştır.

Bulgular: Tek değişkenli analizlerde sosyoekonomik durum, rutin aşılama uygulamaları, meslek grubu ile sağlık okuryazarlığının işlevsel, iletişimsel ve eleştirel boyutlarının aşı kararsızlığı ile anlamlı düzeyde ilişkili olduğu saptandı ($p<0,001$). Regresyon analizine göre model genel olarak istatistiksel olarak anlamlıydı ($p<0.001$) ve meslek grubu, aşı kararsızlığının tek bağımsız belirleyicisi olarak bulundu.

Sonuç: Sağlık çalışanlarının rotavirüs aşısı hakkındaki bilgi düzeylerinin düşük ve sağlık okuryazarlıklarının yeterli olmasına rağmen, aşı kararsızlığının yüksek olması dikkat çekicidir. Tek değişkenli analizlerde bilgi düzeyi ve aşı okuryazarlığı ile aşı kararsızlığı arasında anlamlı ilişki saptanmış; ancak bu ilişki çok değişkenli analizde anlamlılığını korumamıştır. Bilgi düzeyi, aşı sağlık okuryazarlığı ve aşı kararsızlığı arasındaki ilişkinin yönü, aşı kararsızlığının yalnızca bilgi eksikliğiyle açıklanamayacağını göstermektedir. Çalışmamız, sağlık çalışanlarına yönelik aşı eğitiminin yeniden değerlendirilmesinin önemini vurgulamaktadır.

Anahtar kelimeler: Rotavirüs aşısı, sağlık çalışanları, aşı kararsızlığı, sağlık okuryazarlığı, bilgi düzeyi

INTRODUCTION

Rotavirus is one of the most common causes of gastroenteritis in children[1]. Severe rotavirus gastroenteritis is usually seen in unvaccinated children with weakened immune systems between the ages of 6 months and 2 years[2]. In addition, a patient infected with rotavirus can cause other individuals in the household to become infected[3]. Rotavirus is a major health concern in regions with large child populations due to easy transmission, poor hygiene, and crowded living conditions. Rotavirus infection is the second leading cause of death from vaccine-preventable diseases in children under 5 years of age, after pneumococcal pneumonia[4]. Therefore, the main goal of vaccination in different countries is to reduce the incidence of infectious diseases and to achieve their eradication. In addition, it is to control vaccine-preventable diseases and to prevent permanent sequelae and mortality that may develop due to these diseases. Rotavirus vaccines are one of the most effective methods in protecting children's health and preventing rotavirus infections. There has been a significant decrease in the number of rotavirus cases after vaccination[5]. There are two vaccines currently in use whose safety and efficacy studies have been completed. According to the Global Vaccine Promotion and Implementation Report, as of April 2025, the rotavirus vaccine is reported to be included in the national vaccination schedule and administered in 131 countries[6]. However, vaccines for this disease are not included in the national vaccination program in Turkey. Rotavirus vaccines are licensed in Turkey. The rotavirus vaccine, which is among the vaccines in the "Private Vaccines" group, is administered by families using their own means or under private health insurance. While many infectious diseases are prevented by vaccines in this period, anti-vaccination sentiment and hesitancy are becoming increasingly widespread in society recently, and this situation reduces the success of vaccines[7]. Although the rotavirus vaccine is a vaccine that eliminates the negative consequences that may occur, rotavirus vaccination is not carried out at the desired

level for various reasons. This situation increases hospitalizations due to rotavirus infection. Rotavirus, which is highly contagious, also threatens patients hospitalized for other reasons besides rotavirus. Studies in children in Turkey have shown that rotavirus-induced gastroenteritis is common in early childhood, therefore, it has been suggested that the decision to adopt vaccination programs to prevent rotavirus infection in Turkey may be beneficial[8]. By identifying the reasons that prevent sufficient rotavirus vaccination, a larger population can be reached.

The relationship between vaccine literacy and vaccine hesitancy has been clearly highlighted in numerous studies. In particular, the World Health Organization has identified vaccine hesitancy as one of the major threats to global health. The fact that parents prefer healthcare professionals as a source of information shows that healthcare professionals are an influential factor in vaccination rates[9]. This study investigates the relationship between healthcare professionals' rotavirus vaccine knowledge, vaccine health literacy, and vaccine hesitancy, and identifies factors influencing these variables.

METHODS

This is a descriptive cross-sectional study. A formal sample size calculation was not performed. Instead, the target sample size was determined based on methodological recommendations suggesting the inclusion of 5–30 participants per scale item in studies using psychometric scales. Since the Vaccine Hesitancy Scale, which was the primary outcome measure of this study, consists of 7 items, a minimum target of 210 participants was established. To account for potential data loss and ensure adequate power for the planned analyses, at least 300 healthcare professionals were planned for inclusion.

Data were collected through face-to-face interviews between 1 October 2025 and 30 November 2025, after obtaining informed consent. The study included healthcare professionals (Professor, associate professor, assistant professor, specialist physician, general physician, resident physician, midwife, pharmacist, nurse, deputy director, health technician) working at Harran University Research and Application Hospital who had at least one child and agreed to participate. Participants serving as deputy directors were healthcare professionals (e.g., physicians, nurses, or midwives) who were employed in administrative positions at the time of the study. Healthcare professionals who did not complete the questionnaires or declined to participate were excluded from the study.

The Personal Information Form consisted of 15 questions covering age, gender, education, occupation, number of children, and childhood vaccination history.

Approval for the study was obtained from the Harran University clinical research ethics committee (no. 2024/15, dated 7 October, 2024) This study was conducted in accordance with the principles of the Helsinki 2024 Declaration. Permissions for the use of the scales used in the study were obtained, and written informed consent was obtained from all participants.

Rotavirus Knowledge Level Questionnaire

To assess the level of knowledge regarding rotavirus, a knowledge questionnaire consisting of 14 items, created by the researchers in line with the relevant literature, was used[10,11]. The questionnaire items consisted of multiple-choice/true-false questions. For each item, correct answers were worth 1 point, and incorrect or "I don't know" answers were worth 0 points. The total knowledge score of the participants was calculated on a scale of 0–14. In the analyses,

total knowledge scores were divided into two categories based on the median value, and participants were classified as "low knowledge level" and "high knowledge level". For statistical analysis, total scores were dichotomized using the median value of 7 as the cut-off point. Participants scoring below the median (<7) were categorized as having a 'low level of knowledge', while those scoring equal to or above the median (≥7) were classified as having a 'high level of knowledge

Childhood Vaccine Literacy Scale

This scale was developed to assess parents' health literacy regarding childhood vaccinations[12]. The Turkish validity and reliability study of the scale was conducted in 202313. The Vaccine Literacy Scale consists of 3 sub-dimensions and 13 items in total: Functional Health Literacy (5 items), Communicative Health Literacy (5 items), and Critical Health Literacy (3 items). The items in the scale are answered as follows: 1: Never, 2: Sometimes, 3: Frequently, 4: Most of the time. There is no total score in the scale; each sub-dimension is evaluated within itself. A score is obtained by dividing the answers given to the questions in the sub-dimension by the number of items. While a score close to 1 in the Functional Health Literacy sub-dimension is interpreted as high health literacy; A total score close to 4 on the Communicative and Critical Health Literacy subscales is interpreted as high health literacy. The Cronbach's alpha values of the scale were reported as 0.877 for the functional health literacy subscale, 0.886 for the communicative health literacy subscale, and 0.882 for the critical health literacy subscale[13].

Vaccination Hesitancy Scale for Parents of Children Under Five (VHS)

This scale was developed in 2015 in collaboration with the World Health Organization SAGE Vaccine Hesitancy Working Group; a Turkish validity and reliability study was conducted for children aged 9-16 years[14,15]. The Turkish validity and reliability study of the "Vaccination Hesitancy Scale for Parents of Children Under Five" was conducted in 2022[16]. The scale indicates the level of vaccine hesitancy among parents of children under five years of age. The Vaccine VHS Years of Age consists of 7 items. For each question posed to the participant, one of the following answers is selected: “strongly disagree”, “disagree”, “neutral”, “agree”, and “strongly agree”. The scoring of the answers given to the questions in the scale is as follows: strongly disagree 1 point, strongly agree 5 points. There is no reverse question or cutoff value in the scale. The scale consists of a single sub-dimension, and when evaluating the scale, it should be reverse-coded according to its original range, and then the scale scores should be summed. The total score is divided by the number of scale items to obtain the Vaccine Hesitancy Scale score. A low Vaccine Hesitancy Scale score indicates low vaccine hesitancy among parents of children under five years of age, while high scores indicate increased vaccine hesitancy[16].

Statistical Analysis

The SPSS 25 software package was used for data analysis in this study. Skewness, skewness coefficient, orthogonality, orthogonality coefficient, and Shapiro-Wilk test were used to evaluate the suitability of the data to a normal distribution. Since the test results indicated that the data did not conform to a normal distribution, nonparametric tests were preferred. Univariate data were analyzed using the Mann-Whitney U test and the Kruskal-Wallis test. Then, linear regression analysis was performed to determine which factors were truly significant variables, based on the Mann-Whitney U test and the Kruskal-Wallis test.

RESULTS

The socio-demographic characteristics of the healthcare professionals included in the study, such as age, gender, occupation, occupational group, and education level, as well as factors related to vaccine hesitancy, are presented in Table 1.

Table I: Distribution of Socio-Demographic Characteristics of Healthcare Workers and Examination of Factors Affecting Vaccine Hesitancy

Parametres		n (%)	Vaccine Hesitancy		Z/X^2	P
			Mean±SD	Middle (Min.-Max.)		
Age	≤20	2 (0.67%)	18±14,14	18 (8-28)	2,697	0,260
	20-40	250 (83.33%)	29,86±6,23	32 (7-35)		
	≥40	48 (16%)	28,9±7,86	32 (7-35)		
Gender	Women	174 (58%)	29,66±6,31	32 (7-35)	-0,692	0,489
Professions	Professor	1 (0.33%)				
	Associate Professor	2 (0.67%)				
	Assistant Professor	5 (1.67%)				
	Specialist physician	22 (7.33%)				
	General Physician	31 (10.33%)				
	Resident Physician	62 (20.67%)				
	Midwife	19 (6.33%)				
	Pharmacist	1 (0.33%)				
	Nurse	155 (51,67%)				
	Deputy Director	1 (0.33%)				
	Health technician	1 (0.33%)				
Job	Doctor	123 (41%)	31,8±5,69	35 (7-35)	-6,187	<0,001
	Healthcare auxiliary personnel	177 (59%)	28,11±6,8	28 (7-35)		
Years in the profession	≤5	82 (27.33%)	29,28±6,68	31 (7-35)	2,621	0,270
	5-10	105 (35%)	30,86±4,81	32 (7-35)		
	≥10	113 (37.67%)	28,73±7,8	31 (7-35)		
Education level	High school	32 (10.67%)	27,94±6,82	28,5 (8-35)	7,562	0,056
	Associate's Degree	23 (7.67%)	28,26±7,71	30 (7-35)		
	Licence	177 (59%)	29,79±6,24	32 (7-35)		
	Postgraduate	68 (22.67%)	30,46±7,01	34,5 (7-35)		
The child's gender	Girl	135 (45%)	30,21±5,49	32 (7-35)	-0,201	0,841
Economic situation assessment					16,916	<0,001
	Low[a]	84 (28%)	28,48±6,21	28,5 (7-35)	-1,539	p^{ab}=0,124
	Middle[b]	131 (43.67%)	29,38±6,72	31 (7-35)	-3,990	p^{ac}<0,001
	High[c]	85 (28.33%)	31,14±6,64	35 (7-35)	-2,981	p^{bc}=0,003
Is the child following the routine vaccination schedule?	Yes	290 (96.67%)	29,86±6,42	32 (7-35)	-2,867	0,004
If childhood vaccinations weren't mandatory, would you still vaccinate your child?	Yes	248 (82.67%)	30,34±6,33	33 (7-35)	-4,800	<0,001
Are you getting your child's specific vaccinations?	Yes	172 (57.33%)	31,1±5,69	34 (7-35)	-4,876	<0,001
Have you experienced any unwanted side effects after your child's vaccination?	Yes	33 (11%)	29,52±6,71	32 (7-35)	-0,239	0,811

*n: Number; %: Distribution percentage Mean: Average; S.S.: Standard Deviation; Min.: Minimum; Max.: Maximum; *Z: Mann Whitney U test; **X2: Kruskal Wallis H-test; p: significance (<0.05); pab: significance between groups a and b.*

Economic status was reported as income lower than expenses in 28% (n=84), equal in 43.67% (n=131), and higher in 28.33% (n=85). Vaccine hesitancy scores differed significantly according to perceived economic status (p<0.001). Pairwise comparisons showed that vaccine hesitancy scores were significantly higher among healthcare workers with high economic status than among those with low or middle economic status (p < 0.001 and p = 0.003, respectively), whereas no significant difference was found between the low and middle groups (p = 0.124).

Among healthcare workers, 96.67% (n=290) reported that their children received routine vaccinations, while 3.33% (n=10) did not. Those whose children were vaccinated had significantly higher vaccine hesitancy scores than those whose children were not (p = 0.004).

Overall, 82.67% (n=248) of healthcare workers stated they would vaccinate their child even if it were not mandatory, while 17.33% (n=52) would not. Those willing to vaccinate despite the absence of a mandate had significantly higher vaccine hesitancy scores than those who would not (p < 0.001).

Overall, 57.33% (n=172) of healthcare workers reported having their children receive special vaccines, while 42.67% (n=128) did not. Those who chose special vaccines had significantly higher vaccine hesitancy scores than those who did not (p <0.001).

Eighty percent (n=240) stated they would vaccinate their child against rotavirus if it were included in the national schedule, whereas 20% (n=60) would not. Those willing to vaccinate under this condition had significantly higher hesitancy scores (p <0.001).

Based on the rotavirus knowledge cut-off, 52.67% (n=158) had low knowledge and 47.33% (n=142) had high knowledge. Participants with knowledge levels above the median demonstrated higher vaccine hesitancy (p <0.001). Based on Functional Health Literacy values, 56% (n=168) had scores ≤1.8 and 44% (n=132) >1.8; those with lower Functional Health Literacy levels showed higher vaccine hesitancy (p = 0.001). For Communicative Health Literacy, 52.67% (n=158) scored ≤3 and 47.33% (n=142) ≥3; higher communicative levels were associated with greater hesitancy (p <0.001). Regarding the Critical Health Literacy, 58.67% (n=176) scored ≤3 and 41.33% (n=124) >3; higher Critical Health Literacy scores were linked to increased vaccine hesitancy (p = 0.002).

Descriptive statistics regarding the continuous variables of healthcare workers are given in Table 2. The mean and standard deviation values of the continuous variables of healthcare workers were calculated as follows: number of children (1.67±0.79), functional health literacy (1.8±0.66), communicative health literacy (3.09±0.73), critical health literacy (3.09±0.79), vaccine hesitancy (29.63±6.62) and rotavirus knowledge (6.64±3.49), respectively.

Table II: Descriptive Statistics of Continuous Variables

	Mean±SD	Middle (Min.-Max.)
Number of children	1,67±0,79	2 (0-6)
Functional Health Literacy	1,8±0,66	1,8 (1-4)
Communicative Health Literacy	3,09±0,73	3 (1-4)
Critical Health Literacy	3,09±0,79	3 (1-4)
Vaccine Hesitancy	29,63±6,62	32 (7-35)
Rotavirus Knowledge	6,64±3,49	7 (0-14)

Avg.: Average; S.D.: Standard Deviation; Min.: Minimum; Max.: Maximum

In the linear regression analysis including variables significant in univariate tests, the model showed a moderate association with vaccine hesitancy (R = 0.450) (Table 3). The explained variance was 20.2% (R^2 = 0.202),

with a standard error of 6.02. The Durbin–Watson value (2.05) indicated no autocorrelation, and the overall model was statistically significant.

Among the predictors, only occupation was statistically significant (p = 0.006), indicating that belonging to the relevant occupational group increased vaccine hesitancy scores by approximately 2.24 points. Child's gender, routine vaccination status, intention to vaccinate against rotavirus if included in the schedule, and communicative health literacy did not remain statistically significant in the multivariable model, although they showed trends toward significance (0.05<p<0.10). Economic status, willingness to vaccinate if not mandatory, special vaccination, rotavirus knowledge cut-off, critical health literacy cut-off, and functional health literacy cut-off were not significant predictors (p> 0.10).

Overall, the model explained approximately 17–20% of the variance in vaccine hesitancy, with no evidence of autocorrelation or multicollinearity.

Table III: Linear Regression Analysis

Variable	B	Std. Hata	Beta	t	P	95% GA lower	95% GA upper	Tolerance	VIF
Constant	19.117	2.003	—	9.544	<0.001	15.174	23.059	—	—
Job	2.23**7**	0.812	0.167	2.757	0.006	0.640	3.835	0.759	1.318
Child gender	1.295	0.708	0.098	1.829	0.068	-0.099	2.688	0.975	1.026
Economic situation	0.724	0.833	0.049	0.869	0.385	-0.915	2.364	0.858	1.166
Getting routine vaccinations	3.696	2.106	0.100	1.755	0.080	-0.450	7.842	0.845	1.183
Willingness to vaccinate in the absense of a mandate	1.490	1.057	0.085	1.410	0.160	-0.590	3.569	0.756	1.323
Private vaccination	0.655	0.874	0.049	0.750	0.454	-1.065	2.375	0.647	1.546
Intention to vaccinate against rotavirus if included in the national schedule	2.035	1.073	0.123	1.897	0.059	-0.077	4.146	0.656	1.524
Rota cut off	0.821	0.735	0.062	1.118	0.265	-0.625	2.268	0.898	1.114
Communication Health Literacy cut off	1.485	0.860	0.112	1.727	0.085	-0.207	3.176	0.656	1.524
Critical Health Literacy cut off	0.837	0.870	0.062	0.961	0.337	-0.876	2.550	0.658	1.520
Functional Health Literacy cut off	1.000	0.752	0.075	1.329	0.185	-0.481	2.480	0.867	1.154

DISCUSSION

Vaccines are one of the most effective protective interventions for maintaining health and preventing complications that may arise from infectious diseases. Rotavirus, an infectious virus, is one of the most important causes of diarrhea in infants and young children worldwide, with fatal consequences[17]. Although sanitation and hygiene play an important role in preventing diarrhea, rotavirus infection can be fatal due to its prevalence and the fact that most infected individuals are infants. Therefore, vaccination against rotavirus infection is considered a critical control strategy[18].

Healthcare professionals working in family health centers in Turkey report a significant increase in the number of individuals and parents refusing both routine and special vaccinations over the past 15 years. Vaccination is one of the most effective, safe, and economical methods for protecting child health and preventing infectious diseases; therefore, it should be considered a public

health issue, and the reasons for refusal should be examined. As the number of those refusing vaccination increases, their reasons and the ways they express them have also diversified; this situation has made routine vaccination services more difficult, and has made the training, information, persuasion, and counseling processes more complex and time-consuming for healthcare professionals.

The results showed that the model had acceptable explanatory power for the sample (adjusted R^2=0.172). VIF values between 1.02–1.55 and an appropriate level of tolerance revealed that there was no high correlation between the independent variables and no multicollinearity problem. Furthermore, our findings suggest that factors beyond knowledge alone may contribute to vaccine hesitancy among healthcare professionals. The limited number of studies in the literature makes our study stand out.

The study determined that healthcare professionals participating in the research had a high level of vaccine health literacy. Vaccine literacy involves individuals acquiring, processing, and understanding basic health information to make appropriate health decisions about vaccines[19]. Healthcare professionals have an important role in conveying accurate information about vaccines[20]. Although the length of time spent in the profession may affect the level of knowledge, in our study, physicians' years of professional experience were not significantly associated with vaccine hesitancy.

Similar results were observed in two studies conducted in our country. One study found that individuals with lower levels of education and income experienced more hesitation regarding vaccination[21]. Another study found that parents with lower levels of education were more hesitant about vaccination[22]. In another study, individuals with higher education levels were more concerned about vaccine efficacy, possible vaccine side effects, and costs[20]. In our study, participating healthcare workers had high education levels but also high vaccine hesitancy. Reliable information sources are crucial, as misinformation—especially on social media—significantly influences decisions against routine and optional vaccines. This may lead to differences in scientific study outcomes.

Our study determined that the knowledge levels of healthcare workers regarding the rotavirus vaccine were below average. A study examining parents' knowledge levels found that the most well-known non-routine vaccine was the rotavirus vaccine[23]. A study conducted to determine parents' knowledge level about rotavirus found that 57.6% of parents were knowledgeable about rotavirus infection and 51.1% were knowledgeable about the rotavirus vaccine[24]. The study found that while family medicine residents had sufficient knowledge about rotavirus infection, their knowledge about rotavirus vaccines was limited[25]. One study found that the majority of nursing staff had a moderate level of knowledge about rotavirus diarrhea and its vaccines[26]. In our study, since there were healthcare workers from different groups, the knowledge level and perspective on the vaccine could be different.

In the univariate analyses, vaccine hesitancy was higher among physicians and healthcare workers with better socioeconomic status and higher vaccine literacy and rotavirus knowledge. However, in the multivariable analysis, only occupation remained an independent predictor of vaccine hesitancy. This finding suggests that vaccine hesitancy may be associated with heightened risk perception and critical evaluation rather than with lack of information alone. The exclusion of the rotavirus vaccine from the national immunization schedule may further reinforce this hesitancy. Some studies have associated higher socioeconomic status with higher levels of vaccine literacy[27]. Another study, similar to our findings, revealed significant inequalities in vaccine knowledge among individuals with different educational levels[28]. Vaccine literacy is a fundamental component of health literacy and is considered a promising technique for eliminating vaccine hesitancy.

Improving vaccine literacy is an important step in helping the public understand the value of vaccination, increasing trust and inclination towards vaccination[29]. It has been shown that individuals with higher income and education levels exhibit higher rates of vaccine hesitancy compared to other segments of the population[30].

The study found that healthcare professionals' thinking styles influenced vaccine attitudes. Lower Functional Health Literacy scores were associated with more negative vaccine attitudes. This finding may indicate an association between functional thinking, cost–benefit evaluation, and vaccine acceptance. Higher Communicative Health Literacy scores were linked to greater vaccine hesitancy, highlighting the strong influence of communication skills on vaccine decisions. Similarly, higher Critical Health Literacy scores were associated with higher hesitancy, suggesting a possible association between critical evaluation of vaccine-related information and vaccine hesitancy. Overall, vaccine hesitancy appears to be related not only to insufficient knowledge but also to individuals' cognitive and communicative characteristics. These findings highlight the potential importance of strengthening critical thinking and effective communication skills, in addition to providing accurate information, when addressing vaccine hesitancy.

Limitations include the single-center tertiary hospital setting, which limits generalizability; the cross-sectional design, which prevents causal inference; convenience sampling and potential selection bias; self-reported data and possible social desirability bias; and the restricted study period, which does not capture temporal variations.

CONCLUSION

Although participants had high education and vaccine health literacy, their vaccine hesitancy scores were higher than expected. In univariate analyses, hesitancy was particularly pronounced among physicians, those with higher socioeconomic status, and those with greater rotavirus knowledge. However, in the multivariate analysis, only occupation remained an independent predictor of vaccine hesitancy. These findings suggest that vaccine hesitancy may be associated with heightened risk perception, concerns about side effects, and stronger critical evaluation rather than with knowledge level alone. In multivariate analysis, occupation emerged as the only independent significant predictor, suggesting that professional role may be associated with vaccine attitudes. Higher hesitancy among physicians may reflect differences in clinical experience and risk assessment approaches. The findings also suggest that vaccine hesitancy may be associated with multiple interacting factors.

Ethical approval: Approval for the study was obtained from the Harran University clinical research ethics committee (no. 2024/15, dated 7 October, 2024) This study was conducted in accordance with the principles of the Helsinki 2024 Declaration.

Conflict of Interest: The author(s) declare that there is no financial conflict of interest related to this article.

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