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Parents ' Attitudes Toward Childhood Vaccinations: A descriptive study

Ebeveynlerin Çocukluk Aşılarına Yönelik Tutumları

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Abstract

Aim: In this study aims to Examine parents ' knowledge levels regarding childhood vaccines, their attitudes towards immunization services, and their hesitancy towards vaccination ; and to determine the vaccination rates of children .

Material and Method: Correlation analysis was used to Examine the relationship between the mean scores obtained from the scales. The study included 250 participants were 73.2% female and 26.8% were male. Participants ' ages ranged from 18 to 65. 68.8% of participating parents received information about vaccination from nurses and other healthcare personnel, 22.8% from doctors, and 8.4% from newspapers and magazines. Higher scores on the scales indicate greater vaccine hesitancy. Higher scale scores indicate higher vaccine hesitancy.

Results: As a result, the vaccine level instability in newspaper and television vaccine-related information is higher than that of doctors, nurses and other medical personnel.

Conclusion: The level of behavior hesitant about vaccination varies Accordingly to gender, marital status, family type, education status, co-education status, location of vaccination, income status.

Keywords: Parents, vaccines, anti- vaccine, vaccine attitudes, children

Öz

Amaç: Bu çalışmada, ebeveynlerin çocukluk çağı aşıları hakkındaki bilgi düzeyleri, bağışıklama hizmetlerine yönelik tutumları ve aşıya karşı tereddütleri incelenerek çocukların aşılanma oranlarının belirlenmesi amaçlanmıştır.

Gereç ve Yöntem: Ölçeklerden alınan ortalama puanlar arasındaki ilişkiyi incelemek için korelasyon analizi kullanılmıştır. Çalışmaya 250 katılımcı katılmıştır. Katılımcıların %73,2'si kadın, %26,8'i erkektir. Katılımcıların yaşları 18 ile 65 arasında değişmektedir. Katılımcı ebeveynlerin %68,8'i aşı hakkında hemşirelerden ve diğer sağlık personelinden, %22,8'i doktorlardan ve %8,4'ü gazete ve dergilerden bilgi almıştır. Ölçeklerdeki yüksek puanlar aşı tereddüdünün daha fazla olduğunu göstermektedir. Ölçek puanlarının yüksek olması aşı tereddüdünün daha fazla olduğunu göstermektedir.

Bulgular: Sonuç olarak, gazete ve televizyondaki aşı ile ilgili bilgilerde aşı instabilitesi düzeyi, doktorlar, hemşireler ve diğer sağlık personelinin bilgisinden daha yüksektir.

Sonuç: Aşı konusunda tereddütlü davranış düzeyi cinsiyete, medeni duruma, aile tipine, eğitim durumuna, karma eğitim durumuna, aşılama yerine ve gelir durumuna göre değişmektedir.

Anahtar Kelimeler: Ebeveynler, aşılar, aşı karşıtlığı, aşı tutumları, çocuklar

INTRODUCTION

Vaccines are biological products that provide protection against many infectious diseases that threaten human health by stimulating the immune system and generating resistance to pathogens. In this respect, they enable individuals to gain immunity before contracting a disease and play a key role in protecting public health by preventing the spread of infections from person to person. Due to their capacity to enhance immune response, vaccines not only offer individual protection but also contribute to the development of herd immunity within the community. This, in turn, facilitates the control and, in some cases, the complete eradication of infectious diseases.[1]

Immunization programs, particularly those implemented during childhood, have led to a significant reduction in mortality and morbidity rates associated with diseases such as measles, diphtheria, pertussis, and poliomyelitis. This success clearly demonstrates the importance of vaccines within preventive healthcare services. Vaccines are considered one of the most effective, economical, and sustainable public health interventions in modern medicine and are regarded as fundamental tools in preventing epidemics, reducing the burden on healthcare systems, and improving quality of life.[1,2]

As one of the most successful applications of immunology, vaccines generate not only health-related benefits but also social, economic, and political impacts. Immunization directly contributes to reducing poverty, improving access to healthcare, enhancing the efficiency of health systems, and promoting equity in health services. Therefore, vaccination is not merely a medical procedure but also a means of achieving social justice, public welfare, and sustainable development.[2]

The Centers for Disease Control and Prevention (CDC) identifies the expansion of immunization as one of the greatest public health achievements of the 20th century. According to reports by the World Health Organization (WHO) and the CDC, the widespread use of vaccines has resulted in dramatic declines in infectious diseases. For instance, smallpox — a disease that caused millions of deaths throughout history — has been completely eradicated, while diseases such as poliomyelitis and measles have been either eliminated or brought under substantial control in many countries.[2,3]

One of the most remarkable features of vaccines is their dual impact at both the individual and societal levels. Widespread vaccination not only protects vaccinated individuals but also provides indirect protection for vulnerable populations who cannot be vaccinated. However, this success is directly dependent on immunization rates. In recent years, decreased public confidence in vaccination, the spread of misinformation, and the growing influence of anti-vaccine narratives, particularly through social media, have increased vaccine hesitancy and led to declining immunization rates. Vaccine opposition has thus become a serious public health concern that threatens not only individual well-being but also community health.[3]

Public perceptions of vaccination are shaped by levels of knowledge, beliefs, cultural values, and personal experiences. In the context of childhood immunizations, parents' knowledge, attitudes, and decisions play a crucial role, as children's vaccination is directly determined by parental choices. Therefore, understanding parents' attitudes and decision-making processes regarding vaccination is critical for enhancing the effectiveness of immunization programs. Nurses play an essential role in guiding parents, increasing their knowledge about childhood vaccines, and alleviating their concerns regarding immunization.[3]

The aim of this study is to evaluate parents' knowledge levels regarding childhood vaccinations, their perspectives on immunization services, and their hesitations toward vaccination, as well as to determine how these factors influence their vaccination decisions.

MATERIAL AND METHOD

Ethics Committee Approval

Approval was obtained from the Dicle University Social and Human Sciences Ethics Committee to conduct the research (Date; 10.12.2023-No:613525).

Individuals who met the study inclusion criteria and agreed to participate voluntarily provided both verbal and written informed consent. Participants signed the Informed Consent Form and provided written informed consent.

Type of Research

The research is cross-sectional and relationship-seeking descriptive type.

Place and Time of Research

The study was conducted between December 2023 and July 2024 in the emergency outpatient clinic of State Hospital in Province.

Study Population and Sample

The population of the study consisted of parents who applied to the Hani District State Hospital in Diyarbakır Province and had children aged between 0 and 18 years. To determine the sample size, the following formula recommended for cases with an unknown population size was used.[3]

- **n**: Sample size
- **t**: Significance level (for *a=0.05*, *t=1.96*)
- **d**: Sampling error (set at 0.05 for this study). For a 95% confidence interval, *d=μ×0.05*; for a 99% confidence interval, *d=μ×0.01*.
- **σ**: Standard deviation (of the population or the sample)

$$n = \frac{(t^2 \times \sigma^2)}{d^2}$$

$$n = \frac{(1.96^2 \times 6.7^2)}{(19.0 \times 0.05)^2} = 190$$

In a study conducted in the literature (53), the mean score and standard deviation of the Parental Vaccine Hesitancy Scale were reported as 19.0±6.7. Based on the findings of that study, calculations were performed considering a 95% confidence level and a 5% margin of error, resulting in a minimum sample size of 190 participants.

In addition, to account for potential sample loss, an additional 30% of participants were included in the study. This process was carried out using the calculation formula below:

- Additional sample=(Sample size/Error %)×100
- Additional sample=(190/30)×100
- Additional sample=57 participants

After calculating the number of additional participants, this value was added to the minimum sample size to determine the total sample size of the study. As a result, the minimum number of parents to be included in the study was set at 247 (190 + 57 additional participants).

Inclusion Criteria

- Parents who applied to the specified hospital and had children aged 0–18 years.
- Parents without hearing, comprehension, or vision impairments.
- Parents who voluntarily agreed to participate in the study.

Data Collection Tools

Personal information form: The form was designed by the researchers to include personal information such as the participants' age, gender, educational level, household members, and the occupations of both the mother and father.

Parental attitudes toward childhood vaccinations scale: During the development of the PACV (Parental Attitudes Toward Childhood Vaccinations) scale, a literature-based item pool was created, focus group discussions were conducted, expert opinions were obtained regarding the items, and a pre-test was carried out with a study group composed of parents. As a result of this process, an 18-item scale was initially developed. The developed scale was subsequently applied in another study to parents of children aged 19–35 months to evaluate its structural validity and reliability. The final version of the scale consists of 15 items and includes three sub-dimensions: safety and efficacy, general attitudes, and behavior. A validation study was also conducted to determine the PACV scale's ability to predict parents' future vaccination behaviors. This study demonstrated the predictive validity of the PACV as well as its test–retest reliability.[4]

The items on the scale are answered using three different response formats: closed-ended (yes/no/don't know), a 5-point Likert scale (strongly agree/agree/undecided/disagree/strongly disagree), and a 0–10 scoring format. When scoring the items, hesitant responses are assigned a value of 2, undecided responses a value of 1, and non-hesitant responses a value of 0. The total score is calculated by summing the scores from each item without weighting. A simple linear transformation table is used to manage missing data. The minimum possible score on the scale is 0, and the maximum is 100, with higher scores indicating greater vaccine hesitancy.

For the adaptation of the Parental Attitudes Toward Childhood Vaccinations Scale into Turkish, a confirmatory factor analysis (CFA) was conducted to verify the accuracy of the three-dimensional structure previously developed by Opel et al. Before conducting the analysis, the scale items with different rating levels were scored between 0 and 2, as in the original version, and the factor analysis was performed based on these scores. During the CFA, a robust maximum likelihood estimation method based on the asymptotic covariance matrix was employed. The confirmatory factor analysis was conducted using LISREL 8.80 software. To assess the reliability of the obtained measurements, Cronbach's alpha and McDonald's omega coefficients were calculated. The reliability coefficients were computed using Jamovi (Version 0.9.5.12) [Computer Software].

In this study, the Parental Attitudes Toward Childhood Vaccinations Scale was adapted into Turkish and administered to 242 parents. Validity and reliability analyses of the scale were conducted, and the 15 items from the original scale were retained in the Turkish version. Factor analyses indicated that the Turkish-adapted scale preserved a three-factor structure, consistent with the original form. While the Cronbach's alpha values of the original scale ranged between 0.74 and 0.84, the Cronbach's alpha reliability coefficient of the Turkish version was calculated as 0.84.[4]

Vaccine hesitancy scale: Önal et al. conducted validity and reliability studies for the Turkish version of the Vaccine Hesitancy Scale.

The questionnaire, prepared by the researchers, was administered using a face-to-face data collection method. The data collection instrument consists of two sections. In the first section, participants' sociodemographic characteristics (age, gender, educational level, marital status, and presence of social health insurance) were assessed, similar to the study in which the scale was originally developed. The second section included the original 9-item form of the Vaccine Hesitancy Scale developed by Shapiro et al.[4]

The Vaccine Hesitancy Scale is designed as a Likert-type instrument, with each item rated on a 5-point scale: strongly disagree (1), disagree (2), undecided (3), agree (4), and strongly agree (5). The scale consists of 7 positively worded items (items 1, 2, 3, 4, 6, 7, and 8) and 2 negatively worded items (items 5 and 9). The total score of the scale ranges from 9 to 45, and the overall total score is recommended for evaluation. In scoring the scale, similar to the original version, scores for the Lack of Confidence sub-dimension (items 1, 2, 3, 4, 6, 7, 8) are reverse-coded, while scores for the Risks sub-dimension (items 5 and 9) are added directly. Consequently, higher scores indicate greater vaccine hesitancy. The Vaccine Hesitancy Scale does not have a cutoff point.[5]

In the original scale, a two-factor structure consisting of Lack of Confidence (Cronbach's alpha=0.92) and Risks (Cronbach's alpha=0.64) was established. Other fit indices of the original scale were reported as follows: Root Mean Square Error of Approximation (RMSEA)=0.09, Comparative Fit Index (CFI)=0.95, and Non-Normed Fit Index (NNFI)=0.94. For the adaptation of the scale into Turkish, permission was obtained from one of the original scale developers.[5]

Analysis of Data

Data were analyzed using SPSS version 27.0. Means were compared and correlation analyses were conducted using the Information Form, the Vaccine Hesitancy Scale, and the Parental Attitudes Toward Childhood Vaccinations Scale. Quantitative data were statistically evaluated with percentages, means, t-tests, and one-way analysis of variance (ANOVA) for parametric tests, and Kruskal–Wallis, Mann–Whitney U tests, and correlation analyses for non-parametric tests. The relationships between the mean scores obtained from the scales were examined using correlation analysis.

Limitations of the Study

A limitation of the study is that it was conducted in a single city and at a single institution, which restricts the generalizability of the findings.

RESULTS

Table 1. Descriptive Characteristics of Parents

Variable/Category	N	%
Gender		
Woman	183	73.2
Male	67	26.8
Marital status		
Married	236	94.4
Single	14	5.6
Family type		
Nuclear family	223	89.2
Extended family	20	8
The broken family	7	2.8
Education status		
Primary school	48	19.2
Middle school-high school	64	25.6
University	138	55.2
Spouse educational status		
Primary school	40	16
Middle school-high school	80	32
University	130	52
Where to get information about the vaccine		
Doctor	57	22.8
Nurses and other healthcare professionals	172	68.8
Newspaper and television	21	8.4
Income status		
Income less than expenditure	44	17.6
Income equals expenditure	140	56.0
Income more than expenditure	66	26.4

Variable	Min-Max	x̄	ss
Age	18-65	35.02	9.03
Child age	0-18	7.17	6.67
Number of children	1-4	2.11	1.2

When examining the gender of the participants, 26.8% were male and 73.2% were female. Regarding marital status, 94.4% were married and 5.6% were single. In terms of family type, 89.2% lived in a nuclear family, 8% in an extended family, and 2.8% in a divorced/separated family. For educational level, 19.2% of participants had primary school education, 25.6% had middle or high school education, and 55.2% had a university degree. Regarding the spouse's educational level, 16% had primary school, 32% had middle or high school, and 52% had a university degree. Concerning the source of vaccine-related information, 22.8% reported doctors, 68.8% reported nurses and other health professionals, and 8.4% reported newspapers and television. In terms of income status, 17.6% of participants had income less than expenses, 56% had income equal to expenses, and 26.4% had income greater than expenses.

The age of the participants ranged from 18 to 65 years, with a mean of 35.02±9.03. The age of their children ranged from 0 to 18 years, with a mean of 7.17±6.67. The number of children per participant ranged from 1 to 4, with a mean of 2.11±1.2.

Table 2. Means, Normality, and Reliability Results for the Variables

Variable	x̄	ss	Skew	Kurtosis	Cronbach's α
VHS	21.64	6.3	0.716	0.301	.84
PACV Behavior	3.72	0.7	-1.273	1.417	.71
PACV General Attitude	30.92	5.8	-0.614	1.364	.73
PACV Güvenlik	11.93	3	-0.095	-0.058	.70
PACV Total	46.7	6.7	-0.009	0.515	.71

x̄:average; ss: Standard deviation; VHS; Vaccine Hesitancy Scale; PACV: Parental Attitudes Towards Childhood Vaccinations Scale

The mean score of the Vaccine Hesitancy Scale (VHS) used in the study was 21.64±6.3, while the mean score of the PACV scale was 46.7±6.7. For the PACV sub-dimensions, the behavior sub-dimension had a mean score of 3.72±0.7, the general attitudes sub-dimension had a mean score of 30.92±5.8, and the safety sub-dimension had a mean score of 11.93±3.0.

Table 3. Correlation Analysis of the Scales Used in the Study

	(1)	(2)	(3)	(4)	(5)
VHS (1)	1	-.238**	-.174*	-.367**	.140*
PACV (2)		1	.305**	.899**	.491**
PACV (Behavior) (3)			1	.283**	-.115
PACV (Genel tutum) (4)				1	.100
PACV (Safety/effectiveness) (5)					1

**p< .001; *p< .05; VHS:Vaccine Hesitancy Scale, PACV: Parental attitudes towards childhood vaccinations scale

According to the VHS scale guidelines, higher scores on the VHS indicate greater vaccine hesitancy. According to the PACV scale guidelines, higher scores indicate that individuals are more hesitant regarding vaccination.

In the present study, a significant negative correlation was found between the VHS and PACV scales (r=-0.238; p<0.001). This finding suggests that as vaccine hesitancy increases, the level of vaccine-related hesitancy measured by PACV decreases.

A significant negative correlation was found between the VHS scale and the behavior sub-dimension of the PACV scale (r=-0.174; p<0.05). This finding indicates that as vaccine hesitancy increases, the level of hesitant behavior regarding vaccination decreases.

A significant negative correlation was also observed between the VHS scale and the general attitudes sub-dimension of the PACV scale (r=-0.367; p<0.001). This suggests that as vaccine hesitancy increases, hesitant general attitudes toward vaccination decrease.

Conversely, a significant positive correlation was found between the VHS scale and the safety/effectiveness sub-dimension of the PACV scale (r=0.140; p<0.05). This result indicates that as vaccine hesitancy increases, concerns regarding the safety and effectiveness of vaccines also increase.

Finally, positive and statistically significant correlations were observed among the PACV scale and its sub-dimensions (p<0.001). This finding shows that as vaccine hesitancy increases, hesitant behaviors, attitudes, and doubts regarding vaccine safety and effectiveness also increase.

Table 4. Differences in vhs mean scores according to parents' descriptive characteristics				
Variable/ Category	**N**	**X**	**ss**	**Significance**
Gender				
Male	67	20.60	5.66	t: -1.572
Woman	183	22.02	6.55	p: .117
Marital status				
Married	236	21.64	6.39	Z: -.179
Single	14	21.64	5.72	P: .858
Family type				
Nuclear family	223	21.64	6.42	KW: .071
Extended family	20	21.40	5.72	p: .965
Broken family	7	22.14	6.47	
Education status				
Primary school	48	24.04	6.95	F: 6.298
Secondary-high school	64	22.30	5.76	p: .002
University	138	20.49	6.14	
Spouse's educational status				
Primary school	40	23.53	6.50	F: 7.000
Secondary-high school	80	22.96	6.63	p: .001
University	130	20.24	5.81	
Where to get information about the vaccine				
Doctor	57	21.65	6.09	KW: 12.849
Nurses and other healthcare professionals	172	21.03	6.17	p: .002
Newspaper and television	21	26.52	6.61	
Income status				
Income less than expenditure	44	23.27	7.49	F: 4.334
Income equals expenditure	140	21.96	6.33	p: .014
Income more than expenditure	66	19.86	5.12	

X: average; ss: standard deviation; t: independent samples t test; z: mann whitney u test; kw: kruskal wallis h test; f: anova analysis; * bonferoni correction was made (p<0.0166 Was considered significant); a>b; sct: vaccine hesitancy scale.

The mean VHS score for married participants was 21.64±6.39, while that for single participants was 21.64±5.72. The Mann–Whitney U test revealed no statistically significant difference between the two groups (Z=-0.179; p>0.05), indicating that the level of vaccine hesitancy does not vary according to marital status.

Regarding educational level, participants with primary school education had a mean VHS score of 24.04±6.95, those with middle or high school education had a mean score of 22.30±5.76, and university graduates had a mean score of 20.49±6.14. ANOVA analysis indicated a statistically significant difference between groups (F=6.298; p<0.05). Post hoc Tukey analysis showed that vaccine hesitancy was highest among primary school graduates and lowest among university graduates.

For the spouse's educational level, participants whose spouses had primary school education had a mean VHS score of 23.53±6.50, those whose spouses had middle or high school education had 22.96±6.63, and those whose spouses had a university degree had 20.24±5.81. ANOVA results indicated a statistically significant difference between groups (F=7.000; p<0.05). Post hoc Tukey analysis revealed that vaccine hesitancy was higher among participants whose spouses had primary, middle, or high school education compared to those whose spouses were university graduates.

Concerning the source of vaccine information, participants who obtained information from doctors had a mean VHS score of 21.65±6.09, those who obtained it from nurses or other health professionals had 21.03±6.17, and those who obtained it from newspapers and television had 26.52±6.61. The Kruskal–Wallis H test revealed a statistically significant difference between groups (KW=12.849; p<0.05), indicating that participants who received information from newspapers and television had higher levels of vaccine hesitancy than those who received information from doctors, nurses, or other health professionals.

Regarding income status, participants whose income was less than their expenses had a mean VHS score of 23.27±7.49, those whose income equaled their expenses had 21.96±6.33, and those whose income exceeded their expenses had 19.86±5.12. ANOVA analysis showed a statistically significant difference between groups (F=4.334; p<0.05). Post hoc Tukey analysis indicated that participants with income less than expenses had higher vaccine hesitancy than those whose income equaled or exceeded their expenses.

The mean PACV score for participants with primary school education was 7.78±1.12, for those with middle or high school education it was 5.52±0.69, and for university graduates it was 6.55±0.56. ANOVA analysis revealed a statistically significant difference between groups (F=4.609; p<0.05). Post hoc Tukey analysis indicated that participants with primary school and university education exhibited higher levels of hesitant attitudes toward vaccination compared to those with middle or high school education.

Table 5. Differences in PACV Mean Scores According to Parents' Characteristics				
Variable/ Category	N	X	ss	Significance
Gender				
Male	67	46.52	5.85	t: -.180
Woman	183	46.69	6.94	p: .857
Marital status				
Married	236	46.55	6.52	Z: -1.255
Single	14	48.36	8.75	P: .209
Family type				
Nuclear family	223	46.43	6.61	KW: 3.847
Extended family	20	47.75	4.78	p: .146
Broken family	7	50.29	11.40	
Education status				
Primary school	48	7.78	1.12	F: 4.609
Secondary-high school	64	5.52	0.69	p: .011
University	138	6.55	0.56	
Spouse's educational status				
Primary school	40	48.03	7.59	F: 2.775
Secondary-high school	80	45.30	6.88	p: .064
University	130	47.05	6.10	
Where to get information about the vaccine				
Doctor	57	47.65	7.77	KW: 4.055
Nurses and other healthcare professionals	172	46.63	6.09	p: .132
Newspaper and television	21	44.05	7.46	
Income status				
Income less than expenditure	44	47.14	6.76	F: 1.212
Income equals expenditure	140	46.08	6.76	p: .299
Income more than expenditure	66	47.53	6.34	

A positive and statistically significant correlation was found between age and the safety/effectiveness sub-dimension of the PACV scale (r=0.154; p=0.015). This result indicates that as age increases, concerns regarding the safety and effectiveness of vaccines also increase.

No statistically significant correlations were observed between age and the VHS, PACV total score, PACV (behavior), or PACV (general attitudes) (p>0.05), suggesting that age is not associated with vaccine hesitancy or hesitant attitudes and behaviors toward vaccination.

A positive and statistically significant correlation was found between child's age and the PACV total score (r=0.176; p=0.005), indicating that hesitant attitudes toward vaccination increase as the child's age increases.

Furthermore, a positive and statistically significant correlation was observed between child's age and the safety/effectiveness sub-dimension of the PACV scale (r=0.228; p<0.001), suggesting that as the child grows older, hesitant attitudes regarding vaccine safety and effectiveness also increase.

DISCUSSION

The findings of this study indicate that individuals' attitudes toward vaccine hesitancy can vary significantly according to various demographic variables. Although no statistically significant difference was observed, female participants were found to have higher mean scores on the Vaccine Hesitancy Scale (VHS) compared to male participants. The mean score for male participants was 20.60±5.66, while that for female participants was 22.02±6.55. This finding is consistent with some studies in the literature, which suggest that women may experience higher levels of hesitancy because their sense of responsibility for child health is greater than that of men, leading to more emotional and cognitive evaluation in vaccination decisions.[6] Additionally, other studies have indicated that mothers play a more decisive role in children's health-related decisions, which may explain why vaccine hesitancy is more pronounced among women.[7]

When evaluated in terms of educational level, it was observed that as the level of education increased, individuals' vaccine hesitancy decreased. This finding is consistent with numerous studies in the literature, which report that individuals with higher education tend to place greater trust in scientific evidence and recommendations from health authorities, and therefore exhibit more positive attitudes toward vaccination. [8] Conversely, individuals with lower educational levels have been found to demonstrate higher levels of negative attitudes and hesitancy toward vaccines, which in some cases may even be associated with vaccine refusal.[9] This phenomenon can be explained by factors such as limited access to information, lower levels of scientific literacy, and greater susceptibility to misinformation.

When examined in terms of income level, it was found that families whose income was lower than their expenses had higher vaccine hesitancy scores. In other words, as income level increases, vaccine hesitancy decreases. The literature also indicates that individuals with lower economic status face greater barriers in accessing health services, health literacy, and reliable information, which may contribute to increased vaccine hesitancy.[7,8] Additionally, limited trust in the healthcare system among low-income individuals may facilitate the spread of misinformation regarding vaccines.

Another important finding of the study is the impact of individuals' information sources on vaccine hesitancy. The results indicate that participants who obtained information from healthcare professionals experienced lower levels of vaccine hesitancy compared to those who relied on media or social media sources. This finding underscores the importance

Table 6. Differences in PACV Mean Scores According to Age, Child's Age, and Number of Children										
Variable	VHS		PACV		PACV (Behavior)		PACV (General attitude)		PACV (Safety/effectiveness)	
	r	p	R	P	r	P	r	p	r	P
Age	.042	.505	.104	.100	-.090	.350	.054	.394	.154	.015
Child age	.022	.729	.176	005	-.010	.870	.097	.127	.228	.000
Number of children	.058	.360	.036	.567	-.036	.570	-.012	.809	.117	.065

of healthcare professionals as a reliable source of information. The literature also highlights that healthcare workers play a critical role in shaping individuals' attitudes toward vaccination, and that face-to-face counseling, trust-building, and scientific explanations are effective in reducing hesitancy. [9] Conversely, the potential of media, especially social media, to disseminate misleading or incomplete information may increase individuals' hesitancy.

Overall, the findings of this study indicate that vaccine hesitancy is a multidimensional phenomenon, with demographic factors, socioeconomic status, educational level, and sources of information playing significant roles. The results suggest that strategies aimed at reducing vaccine hesitancy should not be limited to increasing individuals' knowledge alone; rather, they should also include policies that facilitate access to reliable information, strengthen the advisory role of healthcare professionals, and reduce socioeconomic inequalities.

CONCLUSION

This study demonstrates that vaccine hesitancy and levels of doubt are multidimensional phenomena, influenced not only by lack of knowledge but also by various factors such as socioeconomic status, educational level, sources of information, and age. It is therefore critical for public health policies to develop comprehensive and targeted interventions that take this multidimensional nature into account in order to ensure the sustainability of community immunity.

Based on these findings, the following recommendations can be proposed to reduce vaccine hesitancy and enhance trust within the community:

1. **Targeted communication strategies should be developed.** For individuals with lower educational levels, informational materials should be simple, clear, and supported with visual aids, whereas for those with higher educational levels, the focus should be on presenting scientific evidence in a detailed and transparent manner.

2. **The role of healthcare professionals should be strengthened.** Communication between individuals and healthcare personnel, as reliable sources of information on vaccines, should be enhanced, and healthcare workers should receive training in effective communication and persuasion techniques.

3. **The quality of media content should be improved.** Traditional and digital media should be actively utilized to disseminate accurate and up-to-date information on vaccines, and regulatory measures should be implemented to counter misleading or incomplete information.

4. **Special programs should be implemented for economically disadvantaged groups.** Free informational sessions, community-based health services, and accessible counseling programs should be established for individuals whose income is below their expenses.

5. **Age- and parenthood-specific approaches should be developed.** Targeted informational interventions should be designed for older adults and parents of older children to reduce perceived risks and address concerns about side effects using scientific evidence.

ETHICAL DECLARATIONS

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