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The Impact of Parents' Perceptions of Health News on Vaccine Hesitancy

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ABSTRACT

This research was conducted to investigate the effect of parents' perceptions of health news on vaccine hesitancy. This descriptive study was conducted on 187 parents living in Elazig city center who had a baby between 0-24 months of age registered in 3 Family Health Centers determined as a result of random sampling. The research data were collected through a three-part questionnaire. In this form, a questionnaire form indicating the sociodemographic characteristics of the parents, the Health News Perception Scale, and a form consisting of vaccine hesitancy questions were included. As a consequence of the analysis, 81.3% of the participants were women. The mean age of the parents was 29.89±5.25 years. The mean score of parents' perception of health news was found as 79.42±10.94. Also, 92.0% of parents stated that vaccines were safe for their children. 97.9% of parents get their children vaccinated regularly. It was stated by 72.7% of the participants that they did not hesitate about vaccination. As a reason for hesitation, hearing negative news about vaccines and the idea that vaccines are not useful are in the first rank. No effect was found on the score obtained from the health news scale on vaccine hesitancy. As a result of the analysis, parents' perceptions of health news were not found to have a significant effect on vaccine hesitancy presence and reasons.

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INTRODUCTION

Vaccination is at the forefront of the most effective, efficient, cost-effective, and reliable public health practices against infectious and non-infectious diseases in ensuring herd immunity (1). It is intended to get in the way of disease-related morbidity and mortality through vaccination programs. According to 2019 data from the World Health Organization (WHO), nearly 3 million deaths can be prevented by vaccination (2). Vaccination is as important socially as it is individually in preventing diseases. Therefore, in terms of health protection, vaccination needs to be considered on a societal scale (2,3).

The number of individuals experiencing hesitation to decide on the vaccine is growing day by day and this is affecting public health on a global scale. In 2019, the WHO added vaccine hesitancy to the list among the top 10 threats to global health (4). As vaccine hesitancy increases, so does vaccine rejection. In 2012, the WHO Strategic Advisory Group of Experts on Immunization (SAGE) established Vaccine Hesitancy Working Group (WG) to scrutinize the definition and scope of vaccine hesitancy and what are the factors causing it. The WG group developed a definition of vaccine hesitancy. According to this definition, vaccine hesitancy means a delay in accepting or rejecting vaccination despite the availability of vaccination services. Thus, social immunity is adversely affected (4). Due to unreliable written or oral sources related to childhood vaccines, diseases that have not been seen for many years have resurfaced. While the number of children with measles in Turkey was 84 in 2017, this number reached 700 in 2018 (5).

The purpose of health journalism in public health is to inform society, create awareness, create healthy living behavior, and help improve the quality of life. Health journalism has a wide range of areas such as making health-related programs on television and publishing health news in newspapers and magazines and in social media.

Table 1. Descriptive Characteristics of the Parents Participating in the Study.

		Number (n)	Percent (%)
Age	20-25 years old	43	23.0
	26-30 years old	66	35.3
	31-35 years old	53	28.3
	36+ years old	25	13.4
Gender	Woman	152	81.3
	Man	35	18.7
Education status	Primary school graduate	60	32.1
	Secondary school graduate	52	27.8
	College graduate	69	36.9
	Postgraduate	6	3.2
Occupation	Health staff	24	12.8
	Housewife	101	54.0
	Worker	9	4.8
	Tradesmen	3	1.6
	Officer	29	15.5
	Other	21	11.3
Income status	More income than expenses	14	7.5
	Income equal to expenses	86	46.0
	Less income than expenses	87	46.5
Social Assurance Presence	Yes	159	85.0
	No	28	15.0
Number of children	1	158	84.5
	2	29	15.5
Using social media	Yes	127	67.9
	No	58	32.1
Time consumed in social media	0 m	58	31.0
	30m-2hrs	75	40.1
	3 hrs-5 hrs	40	21.4
	6 hrs -12 hrs	14	7.5
	Total	**187**	**100.0**

Having such a large area can affect society's view of health-related issues, attitudes, beliefs, and behaviors (6,7). However, this news can be misunderstood by causing information pollution and can become dangerous if it is open to manipulation. It can cause people to be in a dilemma about which news is true or false and which news they should believe, so some irreparable situations can occur (8-10). Research has shown that parents who refuse to get their children vaccinated are more likely to search for vaccines in the media and pay more attention to anti-vaccine rhetoric in the written or visual media (11-14). This research was conducted to examine the effect of parents' perceptions of health news on vaccine hesitancy.

METHODS

Type of Research

This is a descriptive type of research.

Target Population and Sampling of the Research

This research was conducted in Abdullahpaşa No. 1 FHC, Ataşehir No. 1 FHC and Rüstempaşa FHC no. 1, which were determined as a result of a random sampling draw among 53 Family Health Centers (FHCs) located in the city center of Elazig. The number of babies aged 0-24 months registered in Rüstempaşa FHC No. 1 is 342, in Abdullahpaşa FHC No. 1 it is 174, and in Ataşehir FHC No. 1 it is 184, and a total of 700 parents were studied.Cluster sampling method was used in selecting the sample from the universe and each institution was represented in the sample in proportion to the number of healthcare professionals.The sample of the study was determined to be 187 with a 0.05 error level, 0.95 confidence interval, and 0.8 effect size through the power analysis.Criteria for inclusion in the study were determined as follows: Participants having children between 0-24 months, Participants not having any disability that would prevent communication (hearing disability, visual disability, etc.), Volunteering to participate in the research.

Table 2. Distribution of parents' knowledge, attitudes, and behaviors about vaccination according to HNPS score averages.

		Number (n)	%	HNPS X±SD	Test value
1. Vaccines protect my child from diseases	Yes	173	92.5	79.30±11.11	F=0.515 p=0.598
	I'm ambivalent	9	4.8	77.40±11.61	
	No	5	2.7	82.77±6.97	
2. Vaccines are useful and safe for my child.	Yes	172	92.0	79.29±11.14	F=0.671 p=0.512
	I'm ambivalent	8	4.3	83.62±6.78	
	No	7	3.7	77.85±9.66	
3. All childhood vaccinations included in the vaccination schedule of the Ministry of Health will benefit my child	I agree	162	86.6	79.30±11.36	F=0.087 p=0.917
	I'm ambivalent	19	10.2	80.42±8.09	
	I disagree	6	3.2	79.33±7.65	
4. I don't believe childhood vaccinations are beneficial for my child, and I have concerns about that.	I agree	11	5.9	81.09±8.17	F=0.145 p=0.865
	I'm ambivalent	10	5.3	79.80±9.78	
	I disagree	166	88.8	79.28±11.20	
5. Do you have your child vaccinated regularly according to the vaccination schedule of the Ministry of Health?	Yes	183	97.9	79.42±11.04	t=-0.201 p=0.841
	No	4	2.1	81.00±7.07	
6. Do you consider yourself knowledgeable about childhood vaccinations?	Yes	55	29.4	81.41±12.83	F=1.724 p=0.181
	Partially	77	41.2	77.85±10.51	
	No	55	29.4	79.61±9.20	
7. Where do you get information about vaccines?	From Doctor/health worker	134	71.7	79.46±10.93	F=0.148 p=0.931
	From individuals in my close circle	8	4.3	78.12±6.81	
	From television, newspapers, internet media	31	16.6	78.90±11.50	
	From scientific writings	14	7.5	80.92±12.48	
8. Would you get your child vaccinated with a vaccine recommended by your doctor but not on the vaccination schedule?	Yes	27	14.4	78.81±13.37	F=1.171 p=0.312
	I'm ambivalent	41	21.9	81.73±9.81	
	No	119	63.6	78.76±10.69	
9. Do recently released new types of vaccines carry a greater risk than older vaccines?	I agree	72	38.5	75.75±11.15	F=7.740 **p=0.001**
	I'm ambivalent	86	46.0	81.05±9.74	
	I disagree	29	15.5	83.68±11.40	
10. Adequate information from my doctor or healthcare provider about childhood vaccinations may prevent me from approaching vaccines hesitantly.	I agree	140	74.9	79.12±10.60	F=1.551 p=0.215
	I'm ambivalent	16	8.6	83.93±14.88	
	I disagree	31	16.6	78.41±10.37	
11. Does getting positive or negative written or verbal news about childhood vaccinations from television, the media, or other mass media affect your decision on vaccination?	Yes	90	48.1	76.97±10.13	F=4.617 **p=0.01**
	I'm ambivalent	22	11.8	82.68±9.47	
	No	75	40.1	81.40±11.73	

HNPS: Health News perception scale.

Data Collection Tools

Study data were collected through a three-part questionnaire. These forms include a questionnaire form indicating the sociodemographic characteristics of parents, a "Health News Perception Scale" and a vaccine hesitancy questions form. The sociodemographic Characteristics Questionnaire Form consists of 9 questions including parents' age, gender, number of children between 0-24 months, education status, occupation, income status, social security presence, social media use, and how many hours a day they spend on average on social media.

Health News Perception Scale: It was developed by Çınar et al. (2018). The total number of items on the Health News perception scale (HNPS) is 26. The scale, which has 5 sub-dimensions, was prepared as a 5-point Likert-type scale. Scale questions are scored from 1 to 5. The highest score that can be obtained is 130 and the lowest score is 26. The high score obtained from the scale shows that the perception of health news of individuals increases positively. The Cronbach alpha value of HNPS was found to be 0.84 (7). In our research, the Cronbach alpha coefficient value of HNPS was determined to be 0.82.

Question Form on Vaccine Hesitancy: Through the question form on vaccine hesitancy, a twelve-question about vaccine hesitancy was used by the researcher to determine the knowledge and attitudes of parents about childhood vaccines and whether the parents have vaccine hesitancy.Parents' vaccine hesitancy includes "vaccines protect my child from diseases", "vaccines are useful and safe for my child", "I do not believe that childhood vaccines are beneficial for my child and

I have concerns about this", "all childhood vaccines included in the vaccination calendar of the Ministry of Health are beneficial for my child" " and " Have you ever hesitated or refused to vaccinate your child?" Contains questions. While some answers to vaccine hesitancy questions include agree, undecided and disagree, some answers consist of yes and no. These answers were coded numerically in SPSS and statistical analysis was performed in this way.

Data Collection Method

In this study, the data were collected through the questionnaire form with a face-to-face interview technique. Data were collected from parents with children aged 0-24 months who applied to family medicine for any reason.

Evaluation of Data and Statistical Analysis

SPSS 22.0 package software was used for statistical analysis. While evaluating the research data, descriptive statistical methods (number, percentage, mean, standard deviation) were employed, and whether the data expressed normal distribution or not was evaluated by the Shapiro-Wilk test. ANOVA, Student's t-test, Cronbach alpha, correlation, and regression analysis methods were used if the data expressed normal distribution. Statistical significance was evaluated at $p<0.05$. While some answers to vaccine hesitancy questions consist of "agree", "undecided" and "disagree", some answers consist of "yes" and "no". Numerical scoring was scored as 1 for "agree", 2 for "undecided", and 3 for "disagree". The answer "yes" was scored as 1, "undecided" as 2, and "no" as 3. For answers consisting only of "yes" and "no", "yes" was scored as 1 and "no" was scored as 2. These answers were coded numerically in SPSS and statistical analysis was performed in this way. The score goes from low to high, indicating that vaccine hesitancy is high.

Ethical Aspect of the Research

Before this research, the necessary institutional permissions were obtained from Fırat University Social and Human Research Ethics Committee and Elazig Provincial Health Directorate in line with the Research Permit Requests numbered (E.483).

RESULTS

The descriptive characteristics of the parents who participated in the study are given in Table1.

The average age of the parents was found to be 29.89±5.25 years (table 1).According to the descriptive characteristics of the parents participating in the study, 81.3% of them were women. 35.3% of parents were between the ages of 26 and 30. According to the educational status of the parents, 36.9% of them were college graduates (Table 1). According to the occupational groups of the parents, 54.0% were housewives. According to the income status of the parents, it was determined that the income of 46.5% was less than their expenses. 85.0% of parents have social assurance. It was determined that 84.5% of the parents had a child. It was determined that 67.9% of the parents participating in the study use social media. When the social media usage time of the parents was examined, it was determined that 40.1% of them used social media for 0.5-2 hours (Table 1).

It was stated by 46.0% of the parents who participated in the study that they were ambivalent on the view that the new types of vaccines carry a greater risk than the old vaccines. Parents who did not agree with this view had higher HNPS scores, which made a significant difference ($p<0.05$). The result of this data shows that parents with high perceptions of health news question the accuracy of health news in the media and are aware of that (Table 2).

Table 3. Distribution of vaccine hesitancy of parents and its reasons.

Vaccine hesitancy of parents	**Yes**		**No**	
	n	**%**	**n**	**%**
Have you ever been hesitant to vaccinate your child or refused it?	51	27.3	136	72.7
Distribution of parents' reasons for vaccination hesitations	**Yes**		**No**	
	n	**%**	**n**	**%**
I've heard unfavorable news about childhood vaccines.	40	21.4	147	78.6
I think vaccines have negative effects.	27	14.4	160	85.6
Vaccines are not safe in my opinion.	21	11.2	166	88.8
I think vaccine providers are making commercial profits.	17	9.1	170	90.9
I didn't get enough information about childhood vaccines.	15	8.0	172	92.0
My child had side effects after the vaccine administration, so I have hesitations.	15	8.0	172	92.0
I don't know where to get the vaccine.	3	1.6	184	98.4
My religious beliefs made me hesitant to approach the vaccine.	4	2.1	183	97.9
I don't think it's effective to protect my child against diseases that are not very common in society anymore.	7	3.7	180	96.3
I could not get my child's vaccinations regularly because I was away from the health care facility.	1	0.5	186	9.5
People around me have had negative experiences with the vaccine administration	5	2.7	182	97.3

Table 4. The Average Health News Perception Scale (HNPS) Score of the Parents Participating in the Study (n=187).

Scale	X±SD	Min score	Max score
Commercial Concern and Advertising	21.16±4.74	11	34
Orientation towards consumption	9.84±2.76	3	15
Behavior Change	25.17±4.24	13	35
Exploiting health behavior	16.67±3.56	7	26
Belief in health news	7.83±2.00	3	15
HNPS Total	79.42±10.94	48	119

X: Mean, SD: Standard deviation, Min: Minimum, Max: Maximmum, HNPS: Health News perception scale.

It was stated by 48.1% of the parents who participated in the research answered "yes" to the question “does getting positive or negative written or verbal news about childhood vaccines from television, media or other mass media would affect your decision on vaccination?”. The average HNPS score of the parents who answered "yes" was 76.97±10.13. The mean HNPS score of the parents who answered "I am ambivalent" was found to be 82.68±9.47 and there was a significant difference ($p<0.05$) (Table 2).

It was stated by 72.7% of the parents participating in the study that they do not hesitate or refuse to vaccinate their children (Table 3).

According to the reasons for the hesitation of the parents participating in the research, the rate of those who think that "vaccines have negative effects" was 14.4%, "Hearing negative news about childhood vaccines" was 21.4%, and "vaccines are not safe in my opinion" rate was 11.2% as a reason for hesitation (Table 3). These results show that parents are influenced by the news in the written or visual media and respect them.

The total HNPS scores of parents participating in the research averaged 79.42±10.94 score. When the average score of the sub-dimensions is examined, the average score of the commercial concerns and advertising sub-dimension is 21.16±4.74 score, the average score of the sub-dimension of orientation towards consumption is 9.84±2.76 score, the average of the behavior change sub-dimension score is 25.17±4.24 score, the average of the exploiting health behavior sub-dimension score is 16.67±3.56 score and the mean of the sub-dimension of the belief in health news is 7.83±2.00 score. The mean score of the health news perceptions of the parents who participated in our research was found as 79.42±10.94 score (Table 4). This average score shows that parents' perception of health news is at a positive level.

As a result of the correlation analysis, no significant relationship was found between parents' perceptions of health news and vaccine hesitancy presence and reasons (Table 5).

Using the regression analysis, no significant relationship was found between parents' perceptions of health news and vaccine hesitancy and reasons (Table 5).

After all the analyzes, no significant effect of the health news perceptions was found on vaccine hesitancy and its reasons (Table 5).

DISCUSSION

In this section, research questions and results are discussed within the scope of the literature to determine the effect of parents' perceptions of health news on vaccine hesitancy. Our research was conducted with 187 parents, 81.3% of whom (n=152) were women. 35.3% (n=66) of the parents are between 26-30 years old, and 28.3% (n=53) are between 31-35 years old. In this study, it was determined that the parents' total mean score of SHAS was 79.42±10.94 points. This average score shows that parents' perceptions of health news are at a positive level. 72.7% of the parents participating in the study stated that they "did not hesitate or refuse to vaccinate their child".

In the study conducted by Ünsal (2020), which investigated the reasons for parents' refusal of vaccines, it was determined that 90.4% of the 260 parents participating in the research had their children vaccinated regularly and 9.6% did not (15). These data show that parents are sensitive to vaccine administrations for protecting the health of their children, as in our study.

Taşar et al. determined that 97.5% of parents consider health workers as a source of information about vaccines (16). In the study conducted by Topçu et al., social media was determined as the source of information for parents who refused vaccination at the rate of 39.3%, magazines and newspapers at the rate of 27.3%, and social media with the rate of 36.3% (17). These results are similar to our research. In our research and literature, health professionals and media, television, and the internet have an important place as vaccine information sources for parents. For this reason, the media and health workers can affect the attitudes and behaviors of parents toward vaccination. Therefore, it is thought that if the written and visual media and health professionals provide accurate information, it can make parents sensitive to vaccines.

In the study conducted by Hasar et al., 27.4% of individuals stated that they were influenced by vaccine news in the media, while 14.4% were undecided (18). In the study of Karaca, 65.2% of the participants stated that news about vaccines on social media made them decide on the vaccine (12). In a thesis written by Sayman, 85.2% of the individuals who encountered negative news about vaccines stated that the source of this situation was the media (13). In our study, the average HNPS score of parents who were hesitant about vaccination due to media reports about childhood vaccines was found to be higher and constituted a significant difference ($p<0.05$) (Table 3). This result shows that the media is not very strong in parents' decision on vaccination and shows that as the perception of health news increases, the effect of health news in the media decreases.

In a study conducted by Dube et al.,in Canada, ignorance, distrust for the content of vaccines and vaccine providers, and the presence of negative information about vaccines in the media were cited as the three most important factors for vaccine hesitancy (19). In the study conducted by Burghouts et al., the idea that vaccines have serious side effects was cited as a reason for hesitation (20). In a study conducted by Ertuğrul et al. with 279 parents, he determined that 13 parents were hesitant against vaccination. He stated that the reason for vaccine hesitancy is the side effects of vaccines and the problem of trust in the vaccine (21). In a study by Paterson in the UK, it was stated that 60% of parents do not trust vaccines (22). In the study conducted by Topçu et al., among the reasons for the hesitation of 33 parents who experienced vaccine hesitancy, there was the belief in vaccine-caused autism, infertility, and the idea that it would be better to be immune naturally, their children were not in the risk group, so vaccine administration was unnecessary and vaccines would not provide benefit (17). In the study conducted by Hasar et al., investigating the opinions about vaccine refusal, 96.7% of the reasons for vaccine refusal were the fear of side effects related to vaccines, so the problem of trust in vaccines ranked first, and media news ranked second with 86.9% (18) . Özceylan et al. determined that the top two factors in vaccine hesitancy were distrust of vaccine providers and negative news in social media and the press (23). The reasons for vaccine hesitancy seen in foreign and domestic studies are similar to our research and the reason for vaccine hesitancy is mostly based on ignorance and trust problems about vaccines (17-19,21-24).

The fact that the research was conducted in FHCs in certain regions in Elazig city center is the limitation of the research. Therefore, the results of this research can only be generalized to this region.

As a result of statistical analysis, no significant relationship was found between parents' perceptions of health news and vaccine hesitancy presence and reasons.

As a result of the studies, we determined that parents used doctors and health workers more as a primary source of information followed by the internet and media, and it was seen that they gave more credence to health news in the mass media and social media.

Table 5. Correlation and regression analysis between vaccine hesitancy and perception of health news.

Variable	**Constant**	**B**	**S_{error} B**	**β**	**t**	**p**	**r**	**R^2**	**F**
Have you ever been hesitant to vaccinate your child or refused it?	81.012	-2.502	1.794	-.102	-1.395	.165	.102	0.10	1.945
I think vaccines have negative effects.	76.381	2.280	0.069	0.069	0.937	0.350	0.069	0.005	0.879
After the vaccine administration, my child had side effects and this caused me to hesitate about the vaccine.	76.267	5.266	2.932	0.131	1.796	0.074	0.131	0.017	3.266
I've heard unfavorable news about childhood vaccines	76.143	2.557	1.950	0.096	1.312	0.191	0.096	0.009	1.720
I didn't get enough information about childhood vaccines, their effects, and side effects	76.419	3.381	2.947	0.084	1.148	0.253	0.084	0.007	1.317
I don't know where to get the vaccine	76.549	8.784	6.360	0.101	1.381	0.169	0.101	0.010	1.907
Some religious reasons made me hesitant about vaccination	76.601	4.149	5.543	0.055	0.748	0.455	0.055	0.003	0.560
My distance from the health care provider prevented me from getting my child's vaccinations regularly.	76.661	5.339	11.007	0.036	0.485	0.628	0.036	0.001	0.238
Vaccines are not innocent in my opinion	76.675	0.135	2.544	0.004	0.053	0.958	0.004	.000	0.003
I don't think it's effective to protect my child against diseases that are not very common in society anymore.	76.439	6.704	4.203	0.116	1.595	0.112	0.116	0.014	2.545
I think vaccine providers are making a commercial profit.	76.382	3.382	2.783	0.089	1.215	0.226	0.089	0.008	1.477
People around me have had negative experiences with the vaccine administration	76.685	0.134	3.716	0.003	0.036	0.971	0.003	0.000	0.001

These results affect individuals' attitudes and behaviors toward vaccination. Although our research found no significant relationship between health news perceptions and vaccine hesitancy presence and reasons, parents should act consciously about health news, question the accuracy of the news in the written and visual media, and act carefully to reach the right information. When making health news, it is extremely important to transfer unbiased and accurate information to society. It is extremely important to eliminate misinformation about vaccines in the media, websites, and health news, to raise public awareness, to increase the level of education, and to increase awareness about health news. People should question the accuracy of the health news that is followed in the written or visual media, and they should also act more sensitively and carefully in this regard. For this, the number of health-conscious parents should be increased. Conscious parents are aware of healthy living behaviors and are more selective about which health news reflects reality.

Conflicts of Interest

The authors declare that they have no conflict of interest.

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Congress

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