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Reasons for refusal of newborn heel-prick screening and associated factors

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MAIN POINTS

- There is a connection between heel-prick blood test refusal and vaccine refusal. Heel-prick blood test refusal appears to arise from a "general distrust of health interventions."
- The most important reasons for refusal of heel-prick blood screening are lack of information and misinformation. Misinformation and digital disinformation appear to influence parents' decisions.
- The underlying reason for vaccine refusal is a trust issue. It is seen that parents' perception of trust is more decisive than access to information.
- 63.2% of families did not have heel-prick tests done on their previous children either. The refusal behavior has become a permanent attitude and behavior pattern among parents.

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ABSTRACT

Aim: This study was conducted to examine the reasons for refusal among families who declined newborn heel-prickheel-prick screening, determine the relationship between heel-prickheel-prick screening and childhood vaccination, identify factors influencing this refusal.

Materials and Methods: The cross-sectional study was conducted from January to February 2026. The study included 171 parents who refused heel-prick screening in Şanlıurfa province during 2024-2025. Data were collected using a 14-item structured information form. The analysis used descriptive statistics, univariate analyses, chi-square tests (Pearson chi-square, continuity correction, Fisher chi-square), and a logistic regression model.

Results: Of the babies who did not have a heel prick blood test, 54.4% had not received their childhood vaccinations. 84.0% of parents stated that vaccines were not safe, and 70.2% expressed concern about the vaccine content. 63.2% of families who refused heel-prick screening did not have heel-prickthe screening performed on their other children. The most common reason for refusing the heel-prick test was suspicion about its purpose. According to the logistic regression model, the decision to vaccinate the current child was positively associated with the vaccination status of other children (odds ratio = 51.2). The vaccination variable was associated with an 8.6-fold increase in heel screening among other children (p<0.001).

Conclusion: Families do not consider newborn heel-prick screening and childhood vaccination safe. This demonstrates parents' distrust of preventive health services and highlights the importance of effective communication skills among healthcare personnel.

Keywords: Newborn screening, Vaccine refusal, Attitude, Preventive health services

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INTRODUCTION

Screening programs are implemented to facilitate the early diagnosis of certain congenital diseases that are predominantly autosomal recessive and can be fatal if left untreated. Newborn heel-prick screening tests are at the forefront of these programs [1]. Although the scope of testing varies, newborn heel-prickheel-prick screening is performed to detect congenital diseases in Europe, North America, and Australia. The test is mandatory for all infants, particularly in the United Kingdom, France, Italy, and Germany. Phenylketonuria is the most commonly screened disease worldwide under these programs [2]. Turkey is known as one of the countries that implement mandatory newborn heel-prick screening. In Turkey, newborn heel-prick screening is used to screen for phenylketonuria, hypothyroidism, cystic fibrosis, biotinidase deficiency, and adrenal hyperplasia [1]. Unlike Turkey, many countries, including those in Europe and the US, include Glutaric Acidemia type 1, Maple Syrup Urine Disease, and medium-chain acyl-CoA dehydrogenase (MCAD) deficiency in their screening programs. In our country, where consanguineous marriage is prevalent at a rate of 25%, it is reported that many diseases will be detected and, if necessary, addi-

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tional diseases will be added to the screening list [2]. Indeed, Spinal Muscular Atrophy (SMA), a disease frequently heard of in recent years, has been added to the newborn heel-prick screening program starting in 2022 [3]. Heel blood screening, a critical component of health policy in many countries, cannot be performed on all newborns despite all improvements in health services due to economic, administrative, personnel training, and social barriers [4]. Recently, there have been concerns that some families in Turkey and around the world are hesitant about heel-prick screening, with participation rates falling below 99% [5]. Misinformation circulating on social media and unscientific opinions from non-experts are causing confusion among parents and preventing them from having their children screened [1,6,7]. On the other hand, the belief that the procedure is painful for the baby, views that place greater importance on alternative medicine, and prejudices against childhood vaccinations are leading families to refuse heel-prick screening [5]. Furthermore, false positives in the tests and the lack of sufficient information and psychological support for parents regarding the possibility of disease detection increase anxiety about the test [8]. There is limited information in the literature regarding parents' current perceptions of heel-prickheel-prick screening. Research on the reasons for refusing heel-prick screening and combating concerns about the spread of opposition is crucial [5]. In this regard, the study aims to determine the reasons why families in Şanlıurfa province refuse newborn heel-prick screening in 2024 and 2025, the relationship between heel-prick refusal and childhood vaccination, and the factors influencing that refusal.

MATERIALS AND METHODS

Research design

The cross-sectional study was conducted in the province of Şanlıurfa from January to February 2026. Permission to conduct the study was obtained from the Harran University Clinical Research Ethics Committee (Approval number: 25.20.05, Date: 15.12.2025). The research was conducted with the consent of the families. The study was conducted in accordance with the Declaration of Helsinki and data protection principles.

Research population and sample

The study population comprised the parents of 500 infants in Şanlıurfa province who did not undergo heel-prickheel-prick screening in 2024–2025. The sample size was calculated as 113, assuming 80% power, 95% confidence interval, and a level of finding heel-prick screening to be ineffective of 8% [9]. The aim was to contact the parents of 113 infants selected by simple random sampling from the list of 500 newborns. Parents from families who refused screening were assigned random numbers, and odd-numbered parents were included in the study sequentially. The study included 171 parents who were randomly selected and volunteered to participate.

Variables of the study

The dependent variables are heel-prickheel-prick screening and childhood vaccination status. The independent variables are age, gender, marital status, educational status, socioeconomic status, employment status, social security status, number of children, family type, childhood vaccination status of the current child, childhood vaccination status of other children, and heel-prickheel-prick test status.

Research criteria

Inclusion criteria

- Residing in Şanlıurfa province
- Having refused heel blood screening in 2024-2025 and agreeing to participate in the study,
- Possessing the cognitive ability to understand and answer questions,
- Being 18 years of age or older is an inclusion criterion.

Exclusion criteria

- Incomplete questionnaires, invalid responses (answers that do not align with the question and do not provide sufficient information for evaluation),
- Difficulty understanding the questions (despite being asked repeatedly, providing incorrect interpretations, incomplete answers, or inconsistent statements),
- Refusal to participate at any stage of the study.

Data collection tools

Data were collected using a structured information form created by researchers. The information form included the following: age, gender, marital status, educational status, socioeconomic status, occupation, social security, number of children, family type, childhood vaccination status, reasons for not vaccinating, heel-prickheel-prick test status, and reasons for refusing the heel-prickheel-prick test.

Data collection method

Data were collected by researchers through face-to-face interviews with each parent, lasting an average of 15 minutes. Interpreters were provided for parents who did not speak Turkish.

Statistical analysis

Data were evaluated using the IBM SPSS Statistics 25.0 software package. $P<0.05$ was considered statistically significant. Descriptive statistics (count, percentage, minimum, maximum, mean, standard deviation) and univariate analyses (chi-square tests: Pearson chi-square, continuity correction, Fisher's exact test) were used in the study. Logistic regression analysis was applied to variables found to be significant in univariate analysis. A logistic regression model was

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Table 1. Distribution of sociodemographic characteristics according to vaccination status.

Variables	N (%)	Vaccination status of the current child		X^2	P
		Yes N (%)	No N (%)		
Age					
30 years old and under	92 (53.8)	46 (50.0)	46 (50.0)	0.571	0.450
31 years old and over	79 (46.2)	34 (43.0)	45 (57.0)		
Parent gender					
Male	39 (22.8)	18 (46.2)	21 (53.8)	0.000	1.000
Female	132 (77.2)	62 (47.0)	70 (53.0)		
Number of children					
2 and under	99 (57.9)	47 (47.5)	52 (52.5)	0.003	0.954
3 and over	72 (42.1)	33 (45.8)	39 (54.2)		
Family type					
Nuclear	144 (84.2)	67 (46.5)	77 (53.5)	0.000	1.000
Extended	27 (15.8)	13 (48.1)	14 (51.9)		
Income status					
Income lower than expenses	53 (31.0)	28 (52.8)	25 (47.2)	2.957	0.228
Income equal to expenses	101 (59.1)	45 (44.6)	56 (55.4)		
Income higher than expenses	17 (9.9)	5 (29.4)	12 (70.6)		
Education status					
Literate and below	17 (10.0)	9 (52.9)	8 (47.1)	3.817	0.431
Elementary school graduate	23 (13.5)	10 (43.5)	13 (56.5)		
Middle school graduate	27 (15.8)	16 (59.3)	11 (40.7)		
High school graduate	46 (26.9)	21 (45.7)	25 (54.3)		
University graduate and above	58 (33.8)	22 (37.9)	36 (62.1)		
Employment status					
Employed	70 (40.9)	25(35.7)	45 (64.3)	4.031	**0.045**
Unemployed	101 (59.1)	53(52.5)	48 (47.5)		
Social security					
Yes	140 (81.9)	67 (47.9)	73 (52.1)	0.159	0.690
No	31 (18.1)	13 (41.9)	18 (58.1)		
Vaccination status of other children*					
Yes	91(73.4)	56 (61.5)	35 (38.5)	31.064	**<0.001**
No	33(26.6)	1 (3.0)	32 (97.0)		

*47 parents with one child did not answer the question.

Table 2. Distribution of reasons for vaccine refusal.

	Yes N (%)	No N (%)
I don't think vaccines are safe / I have concerns about side effects	79 (84.0)	15 (16.0)
I have concerns about the contents of the vaccine	66 (70.2)	28 (29.8)
I was influenced by negative things I read or heard about vaccines in the media	41 (43.6)	53 (56,4)
I didn't think getting vaccinated was necessary	37 (39.4)	57 (60.6)
I don't think vaccines protect against disease (are effective)	36 (38.3)	58 (61.7)
I had a bad experience with previous vaccinations / developed an adverse reaction	16 (17.0)	78 (83.0)
Someone else told me the vaccine is not safe.	16 (17.0)	78 (83.0)
Someone else told me their child had a bad reaction after vaccination.	15 (16.0)	79 (84.0)
Due to my other beliefs / preferences related to traditional medicine.	9 (9.6)	85 (90.4)
I did not get vaccinated for religious or faith-related reasons.	8 (8.5)	86 (91.5)
Due to previous bad experiences with healthcare personnel or healthcare institutions.	4 (4.3)	90 (95.7)
I am afraid of getting injections.	3 (3.2)	91 (96.8)

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Table 3. Distribution of reasons for refusing heel blood screening.

	Yes N (%)	No N (%)
I have doubts about the real purpose of the test (collection of my genetic information, creation of a database, etc.).	93 (54.4)	78 (45.6)
I was concerned that my baby would suffer because the blood would be taken from the heel.	71 (41.5)	100 (58.5)
Negative posts I saw on social media made me anxious about this.	55 (32.2)	116 (67.8)
My concerns about vaccines prevented me from having the heel prick test done.	48 (28.1)	123 (71.9)
I thought it would negatively affect breastfeeding or my baby's natural development.	25 (14.6)	146 (85.4)
I was concerned that the intervention on the heel would affect my child's sexual health.	14 (8.2)	157 (91.8)
I thought that if one of the screened diseases was detected, I would face financial or emotional hardship.	14 (8.2)	157 (91.8)
I find heel prick screening unnecessary.	35 (20.5)	136 (79.5)
The healthcare personnel said it would cause pain.	13 (7.6)	158 (92.4)
I was not sufficiently informed about heel prick screening.	7 (4.1)	164 (95.9)
I did not like the behavior of the healthcare personnel.	7 (4.1)	164 (95.9)
I did not have it done because my baby was unwell.	4 (2.3)	167 (97.7)
The obstetrician advised me not to have it done.	3 (1.8)	168 (98.2)
I could not go for the vaccination because my financial situation was poor.	2 (1.5)	169 (98.5)

Table 4. Distribution of heel prick screening status among children according to variables.

Variables	The situation of having heel prick blood tests done on other children		X^2	P
	Yes N (%)	No N (%)		
Age				
30 years old and under	47 (82.5)	10 (17.5)	1.330	0.249
31 years old and over	61 (91.0)	6 (9.0)		
Parent gender				
Male	26 (83.9)	5 (16.1)	*	0.544
Female	82 (88.2)	11 (11.8)		
Number of children				
2 and under	43 (82.7)	9 (17.3)	0.945	0.331
3 and over	65 (90.3)	7 (9.7)		
Family type				
Nuclear	90 (88.2)	12 (11.8)	*	0.482
Extended	18 (81.8)	4 (18.2)		
Income status				
Income lower than expenses	36 (92.3)	3 (7.7)		
Income equal to expenses	60 (84.5)	11 (15.5)	1.390	0.499
Income higher than expenses	12 (85.7)	2 (14.3)		
Education status				
Literate and below	13 (92.9)	1 (7.1)		
Elementary school graduate	18 (90.0)	2 (10.0)		
Middle school graduate	16 (84.2)	3 (15.8)	1.942	0.746
High school graduate	29 (90.6)	3 (9.4)		
University graduate and above	32 (82.1)	7 (17.9)		
Employment status				
Employed	40 (83.3)	8 (16.7)	0.516	0.472
Unemployed	68 (89.5)	8 (10.5)		
Social security				
Yes	87 (87.0)	13 (13.0)	*	0.626
No	21 (87.5)	3 (12.5)		
Vaccination status of other children*				
Yes	86 (94.5)	5 (5.5)	*	**<0.001**
No	22 (66.7)	11 (33.3)		

**Fisher's Chi-Square.

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Table 5. Distribution of variables affecting the status of heel prick screening and vaccination according to Logistic Regression analysis.

Have heel prick tests done for other children					
	B	Standard Error	P	O.R	95% Confidence Interval
Vaccinate other children (yes)	2.1	0.5	**<0.001**	8.6	2.7-27.3
Get the current child vaccinated					
	B	Standard Error	P	O.R	95% Confidence Interval
Vaccinate other children (yes)	3.9	1.0	**<0.001**	51.2	6.6-391.6

established using employment status and other children's vaccination status as predictors of the current child's vaccination status, and using other children's vaccination status as a predictor of whether other children have undergone heel-prick blood testing. The backward stepwise (conditional) method was used in logistic regression analysis.

RESULTS

57.9% of the participants reside in the three central districts. 53.8% of parents are aged 30 years or younger, and their ages range from 20 to 44 years. 42.1% of families have 3 or more children, with the number of children ranging from 1 to 8. 77.2% of participants are female, and 33.8% have a university degree or higher. 15.8% of families are extended, and 31.0% have incomes lower than their expenses. Of the participants, 13.5% are workers, 20.5% are civil servants, 5.8% are tradespeople, and 60.2% are not employed. 54.4% of infants who did not undergo heel-prick testing did not receive childhood vaccinations. Vaccination rates were higher among parents who were not employed (p=0.045) and lower among families who did not vaccinate their other children (p<0.001). The effects of age, parental gender, number of children, family type, income status, educational status, and social security variables on vaccination status could not be determined (p>0.05; Table 1).

Among parents who did not vaccinate one or more of their children, 84.0% stated that vaccines are not safe, and 70.2% expressed concern about the contents of vaccines (Table 2).

63.2% of participants did not have heel-prickheel-prick screening performed for their other children. The reasons for refusal were examined: the three most common were doubts about the purpose of the test (54.4%), concern that the baby would suffer during the screening (41.5%), and concern about negative posts on social media (32.2%) (Table 3).

In the study, 63.2% of families who did not have heel blood taken from their babies had not had heel blood screening for their previous children. The level of heel-prick-prick screening among children vaccinated by their families was higher than among those whose families did not vaccinate (p<0.001). The effect of other variables on heel-prick testing status could not be determined (Table 4).

A logistic regression model was fitted using variables that affect the decision to vaccinate the current child. The variable 'vaccinating other children' had a 51.2-fold positive effect. Vaccination was found to have an 8.6-fold positive effect on the decision to have heel-prick screening performed on other children (p<0.001) (Table 5).

DISCUSSION

This study examines the attitudes of families in Şanlıurfa province preventive health services, heel-prickspecifically newborn heel-prick and vaccination services.

The study found that a significant proportion (54.4%) of infants who did not undergo heel-prick testing also did not receive childhood vaccinations. This indicates that families' decisions to undergo heel-prickheel-prick screening are influenced by their refusal of vaccinations. Indeed, the study found that childhood vaccination status positively influenced families' decision to undergo heel-prickheel-prick screening by a factor of 8.6. The findings reveal a strong, statistically significant association between heel-prickrefusal of heel-prick screening and refusal of vaccination. This situation is thought to be related to parents' overall trust in the healthcare system. The study results are consistent with other studies in the literature showing that families with negative attitudes toward screening programs also take a distant approach to vaccination practices [5,7,10].

Parents' first contact with the healthcare system begins with newborn screening programs, and reports indicate that trust formed at this stage is critical in childhood vaccine refusals. Families' behaviors towards healthcare practices and their decisions regarding newborns are shaped by their experiences [9]. Indeed, in this study, the vaccination status of other children positively influenced the decision to vaccinate the current child by 51.2 times [7]. The study results support the notion that screening programs are seen as the foundation for trust in childhood vaccinations [7].

This study found that the vast majority of parents believe that vaccines are unsafe and therefore refuse vaccination because of serious concerns about vaccine content. This result is consistent with the findings of national and international studies highlighting vaccine safety perceptions and content concerns as factors in vaccine refusal [5,6,11]. The study found that negative social media posts about childhood vaccines affect families. It is reported that scientifically unfounded information spread on digital platforms increases parents' perception

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of risk and fuels vaccine hesitancy [1,5]. Furthermore, families' decisions to vaccinate are influenced by other parents' negative experiences and by their relatives' negative statements about vaccines. It has been determined that, even at a low level, preferences for traditional medicine, families' religious beliefs, and previous difficulties with healthcare institutions or personnel influence the decision to vaccinate children. It is thought that families are easily influenced by negative behaviors and misinformation they are exposed to through the media due to their lack of knowledge about vaccination practices and their purpose [5]. In a study conducted by Topuz and colleagues, it was emphasized that some mothers had a positive attitude towards newborn screening tests but lacked sufficient information about the purpose, scope, and results of the tests [6]. A lack of information in the literature is cited as one of the key determinants of screening refusal, leading families to perceive screening tests as a "mandatory procedure" and to develop distrust and anxiety about the test [12].

In this study, the majority (63.2%) of families who refused heel-prickheel-prick screening had also not had their previous children screened. When evaluating heel-prickreasons for refusal of heel-prick screening, the most frequently reported reason was suspicion about the actual purpose of the test. Parents' concerns that genetic information would be misused, that a database would be created, or that data would be stored for commercial purposes are frequently highlighted in the literature [5,8]. In the study by Van der Pal and colleagues, it was reported that parents' decisions to refuse screening tests were mostly based on ethical and privacy concerns rather than the technical content of the test [5]. This situation indicates that in addition to the medical benefits of the test, data security and privacy issues must be addressed in detail during the information process.

Concern that the baby would experience pain was the second most common reason for heel-prickrefusal of heel-prick blood sampling in our study. Some studies in the literature have also reported that parents perceive heel-prick blood sampling as invasive and traumatic, and that this perception influences their refusal of the test [6]. In contrast, reports of negative attitudes or of insufficient information provided by healthcare personnel were less frequent. This finding suggests that parental decisions are mostly shaped by pre-existing perceptions and information from external sources.

Notably, the study found no significant effect of sociodemographic variables on vaccination and heel-prickheel-prick screening rates. Although some studies in the literature have associated low educational level and low socioeconomic status with vaccine refusal [4], recent studies show that vaccine and screening refusal can be widespread in different socioeconomic groups in society [5,7]. This situation highlights that the problem is not specific to certain risk groups and that interventions targeting the general population are needed.

In the literature, the reasons for newborn screening refusal include fears of false positive results, ethical concerns about genetic testing, religious or cultural beliefs, distrust of government intervention, and general skepticism about the healthcare system [5,13-15]. The relatively low rate of religious or traditional reasons reported in our study suggests that the current trend of vaccine refusal is driven more by misinformation, a lack of clear and adequate information, and trust issues than by beliefs or culture.

The role of healthcare professionals is particularly emphasized in the literature. It has been reported that mothers mostly obtain information about screening tests from healthcare personnel, but that the likelihood of refusal increases when the content and method of information provision are inadequate [16]. A large proportion of families in our study reported that they were not sufficiently informed about screening test results and their long-term benefits, which is consistent with these findings.

Limitations

This study has some limitations. The research results apply only to families who refused heel blood screening and thus cannot be generalized to the entire parent population. The calculation of the minimum number of participants needed to be representative of the population may have yielded an insufficient sample size. Furthermore, self-reported data may have introduced recall bias. However, the use of face-to-face interviews and exceeding the target sample size are strengths of the study.

CONCLUSION

This study demonstrates that heel-pricknewborn heel-prick screening and childhood vaccine refusal are shaped by a common foundation of issues related to trust and knowledge. It is crucial for healthcare workers, especially during pregnancy and the early postpartum period, to establish evidence-based, transparent, and empathetic communication with parents and to provide systematic counseling on the purpose, benefits, and safety of screening and vaccination programs. This approach is considered an effective strategy for restoring trust in preventive healthcare services and reducing refusal rates. In this regard, expanding in-service training programs that strengthen healthcare professionals' communication skills can effectively address vaccine hesitancy and refusal to undergo screening.

Ethics Committee Approval: Permission to conduct the study was obtained from the Harran University Clinical Research Ethics Committee (Approval number: 25.20.05, Date: 15.12.2025).

Informed Consent: Written informed consent was obtained from all parents for the study.

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REFERENCES

1. Karagöz MI, Gafarlı L, Barutçu A. A drop of blood: newborn heel blood screening programmes, innovations, and contrary voices in Türkiye and the world: heel blood screening: innovations and oppositions. *Sci Rep Med.* 2025;2(1):231-41. doi: 10.37609/srinmed.49.
2. Fidan Ç, Örün H, Alper AB, et al. Expanded newborn bloodspot screening: developed country examples and what can be done in Turkey. *Intractable Rare Dis Res.* 2022;11(2):63-9. doi: 10.5582/irdr.2022.01039.
3. Turkish Ministry of Health, General Directorate of Public Health. Newborn Screening Program [Internet]. Ankara: Ministry of Health; [cited 2026 Feb 22]. Available from: saglik.gov.tr.
4. Pinheiro JMF, Flor TBM, Marinho CDSR, et al. Prevalence of the five newborn screening tests. *PLoS One.* 2021;16(9):e0257282. doi: 10.1371/journal.pone.0257282.
5. van der Pal SM, Wins S, Klapwijk JE, et al. Parents' views on accepting, declining, and expanding newborn bloodspot screening. *PLoS One.* 2022;17(8):e0272585. doi: 10.1371/journal.pone.0272585.
6. Topuz Ş, Taşgıt A, Cilesiz E, et al. Views of mothers about national newborn screening tests performed in Turkey. *Iran Red Crescent Med J.* 2021;23(5):e507. Available from: researchgate.net.
7. Erdal İ, Kahraman AB, Yıldız Y, Yalçın SS. Newborn screening programs promote vaccine acceptance among parents in Turkey: a cross-sectional study. *Postgrad Med.* 2025;137(5):423-38. doi: 10.1080/00325481.2025.2504866.
8. Chien Y-H, Hwu W-L. The modern face of newborn screening. *Pediatr Neonatol.* 2023;64(Suppl 1):S22-S29. doi: 10.1016/j.pedneo.2022.11.001.
9. Tal O, Ne'eman Y, Sadia R, et al. Parents' attitudes toward children's vaccination as a marker of trust in health systems. *Hum Vaccin Immunother.* 2021;17(11):4518-28. doi: 10.1080/21645515.2021.1971472.
10. Nowak SA, Gidengil CA, Parker AM, Matthews LJ. Association among trust in health care providers, friends, and family, and vaccine hesitancy. *Vaccine.* 2021;39(40):5737-40. doi: 10.1016/j.vaccine.2021.08.035.
11. Foster PJ, Laverty AA, Filippidis FT. Perceptions of the safety of vaccines and vaccine associated knowledge levels in Europe: a 2019 cross-sectional study in 28 countries. *Prev Med.* 2022;159:107071. doi: 10.1016/j.ypmed.2022.107071.
12. Wang X, Sun Y, Zhao JY, et al. Utility, benefits, and risks of newborn genetic screening carrier reports for families. *J Glob Health.* 2024;14:04044. doi: 10.7189/jogh.14.04044.
13. National Academies of Sciences, Engineering, and Medicine; Health and Medicine Division; Board on Health Sciences Policy; Board on Children, Youth, and Families; Committee on Newborn Screening: Current Landscape and Future Directions. Newborn screening in the United States: a vision for sustaining and advancing excellence. Washington, DC: *The National Academies Press (US)*; 2025. doi: 10.17226/29102.
14. Botkin JR, Rothwell E, Anderson RA, Stark LA, Goldenberg A. What parents want to know about the storage and use of residual newborn bloodspots. *Am J Med Genet A.* 2014;164A(11):2739-44. doi: 10.1002/ajmg.a.36694.
15. Goldenberg AJ, Dodson DS, Davis MM, Tarini BA. Parents' interest in whole-genome sequencing of newborns. *Genet Med.* 2014;16(1):78-84. doi: 10.1038/gim.2013.76.
16. Tluczek A, Orland KM, Nick SW, Brown RL. Newborn screening: an appeal for improved parent education. *J Perinat Neonatal Nurs.* 2011;25(4):326-34. doi: 10.1097/JPN.0b013e3181a1bc1f.