

ORIGINAL PAPER

ATTITUDES AND KNOWLEDGE ABOUT IMMUNIZATION AMONG UKRAINIAN REFUGEE MOTHERS

Milena Dimitrova Karcheva^{1(A,C,D,E)}, **Vanya Margaritova Nedkova-Milanova**^{1(B,C,E,F)},

Mariyana Rasheva Stoyanova^{1(A,G)}

¹Faculty of Public Health, Medical University-Pleven, Bulgaria

Dimitrova Karcheva M, Margaritova Nedkova-Milanova V, Rasheva Stoyanova M. Attitudes and knowledge about immunization among Ukrainian refugee mothers. Health Prob Civil. <https://doi.org/10.5114/hpc.2025.149316>

Tables: 1

Figures: 2

References: 16

Submitted: 2025 March 5

Accepted: 2025 Apr 2

Address for correspondence: Milena Dimitrova Karcheva, Faculty of Public Health, Medical University-Pleven, 1 Kliment Ohridski Str., 5800 Pleven, Bulgaria, e-mail: doc.dr.karcheva@gmail.com, phone: +359 888740120

ORCID: Milena Dimitrova Karcheva <https://orcid.org/0000-0003-3562-094X>, Vanya Margaritova Nedkova-Milanova <https://orcid.org/0000-0001-7257-3930>, Mariyana Rasheva Stoynovska <https://orcid.org/0000-0002-8621-8232>

Copyright: © John Paul II University in Białą Podlaska, Milena Dimitrova Karcheva, Vanya Margaritova Nedkova-Milanova, Mariyana Rasheva Stoynovska. This is an Open Access journal, all articles are distributed under the terms of the Creative Commons AttributionNonCommercial-ShareAlike 4.0 International (CC BY-NC-SA 4.0) License (<https://creativecommons.org/licenses/by-nc-sa/4.0>), allowing third parties to copy and redistribute the material in any medium or format and to remix, transform, and build upon the material, provided the original work is properly cited and states its license.

Summary

Background. Migration flows of people seeking refuge in other countries for various reasons are a prerequisite for public health problems to emerge. The aim of the study was to analyze the socio-demographic profile of Ukrainian refugee mothers residing in Bulgaria and their attitudes towards immunizations.

Material and methods. A cross-sectional survey was conducted among 124 Ukrainian citizens (women residing with their children as refugees on the territory of the Republic of Bulgaria) in February 2025. A sociological survey regarding socio-demographic indicators and attitudes and knowledge about immunizations was conducted.

Results. The surveyed group of Ukrainian citizens consisted of women with an average age of 33 years, ranging between 19 and 49 years ($sd \pm 7.083$), with higher education – 86 (69.35%), mostly having one child in the family – 71 (57.26%), who received temporary protection in Bulgaria. The children they live with in our country are of preschool and school age, which requires their

immunization according to the Immunization Schedule of Bulgaria. Mothers have good knowledge about the role of immunization for the health of their children – 109 (87.90%), but 55 (44.35%) express doubts about the quality and effect of vaccines.

Conclusions. Migration has posed a challenge to public health in Bulgaria.

Keywords: Ukrainian refugees, immunization, attitudes, mothers, knowledge

Introduction

Migration flows of people seeking refuge in other countries for various reasons are a prerequisite for the emergence of public health problems. Since the beginning of the hostilities (2022) on the territory of Ukraine, millions of Ukrainian citizens have been forced to leave their homes and head for neighboring countries [1,2]. Over 50,000 Ukrainian citizens, mostly women and children, have reached Bulgaria. With the help of state institutions and non-governmental organizations, persons with temporary residence status obtain access to health care, education, social assistance, legal aid and access to the labor market [3,4]. Those in need of medical care are provided with the necessary medical treatment under the same terms and conditions as Bulgarian citizens. In order to guarantee that there will be no outbreaks and epidemics of vaccine-preventable infectious diseases, it is necessary for all children with missing data or incomplete immunization status to be vaccinated. This requires active cooperation with their parents. Immunization with modern vaccines is the safest and most effective way to protect against a number of infectious diseases [5-7]. Immunization programs save the lives of millions of children and adults. Making a decision to vaccinate is a process that depends on the parents of the children, involving emotional, social, spiritual and political issues.

Aim of the work

The aim of the study was to analyze the socio-demographic profile of Ukrainian refugee mothers residing in Bulgaria and their attitude towards immunization.

Material and methods

A cross-sectional survey was conducted in February 2025 among 124 Ukrainian citizens (mostly women residing with their children as refugees on the territory of the Republic of Bulgaria – in the city of Pleven, the city of Ruse, and the Sunny Beach resort). Contact was established and a questionnaire was distributed among them to collect information. The participation of the women was anonymous and voluntary. Informed consent was obtained from all participants. The questionnaire contained: (1) demographic data about the families of the refugees (mother's age, distribution of mothers by age group, marital status, number of children in the family, gender and age of the children, distribution of children by age group, place of residence in the home country, education level of the parents); (2) closed-ended questions were included to assess the attitudes and knowledge of women regarding immunization.

Statistical analyses – general information about the participants in the survey – are presented as averages, deviations, and numbers, in percentages. Attitudes and knowledge about vaccines are presented as numbers and percentages. The relationship between attitudes and knowledge and socio-demographic profile was investigated utilizing the Kruskal-Wallis (KWT) Multiple-Samples Comparison Test. The level of significance was identified at a p -value < 0.05 .

IBM SPSS Statistics 25 was used for statistical calculations. The results obtained were summarized and presented in tables and figures.

Results

Demographic characteristics of women

During the study period, 124 women from Ukraine with temporary protection status in Bulgaria were surveyed, with an average age of 33 years, ranging between 19 and 49 years ($sd \pm 7.083$). They reside with their children, who amounted to 162 in total and are of varying ages. Preschool and school-age children predominated: 4-7 years old – 59 (36.41%) and 8-18 years old – 47 (29.01%). The remaining distribution was as follows: up to 1 year – 22 (13.59%), 1-3 years – 34 (20.99%). The gender distribution of children was follows: male – 73 (45.06%), female – 89 (54.94%).

The demographic characteristics of the study participants are presented in Table 1. Women residing in our country with temporary protection status are educated, mostly married, with urban residence, and within active age. Most of them have one child in the family, which coincides with the European family pattern and the deepening demographic crisis.

Table 1. Demographic characteristics of the study population (n=124 refugee mothers)

Characteristics		Number	Percentage
Age group	Under 20 years	4	3.23
	20-29 years	39	31.45
	30-39 years	55	44.35
	Over 40 years	26	20.97

Marital status	Married	4	3.23
	Single	39	31.45
	Widowed	55	44.35
	Separated	26	20.97
Residence in the home country	Urban	82	66.13
	Rural	42	33.87
Education level of the mothers	Higher education	86	69.35
	Secondary education	33	26.62
	Intermediate education	5	4.03
*Education level of the fathers	Higher education	64	64.65
	Secondary education	34	34.34
	Intermediate education	1	1.01
Number of children in the family	One	71	57.26
	Two	43	34.68
	Three	10	8.06

Notes: * Available information of 99 fathers.

Knowledge of the surveyed women about vaccines and immunizations

The main source of information about vaccines and immunization is the doctor (n=99, 79.84%), as seen in Figure 1. Parents also confide in information from the Internet and media to form their knowledge (n=11, 8.87%). The role of the latter increases when making a decision for immunization – 70 (56.45%). The participants in the survey witnessed positive discussions about vaccines in the media in 57.72%.

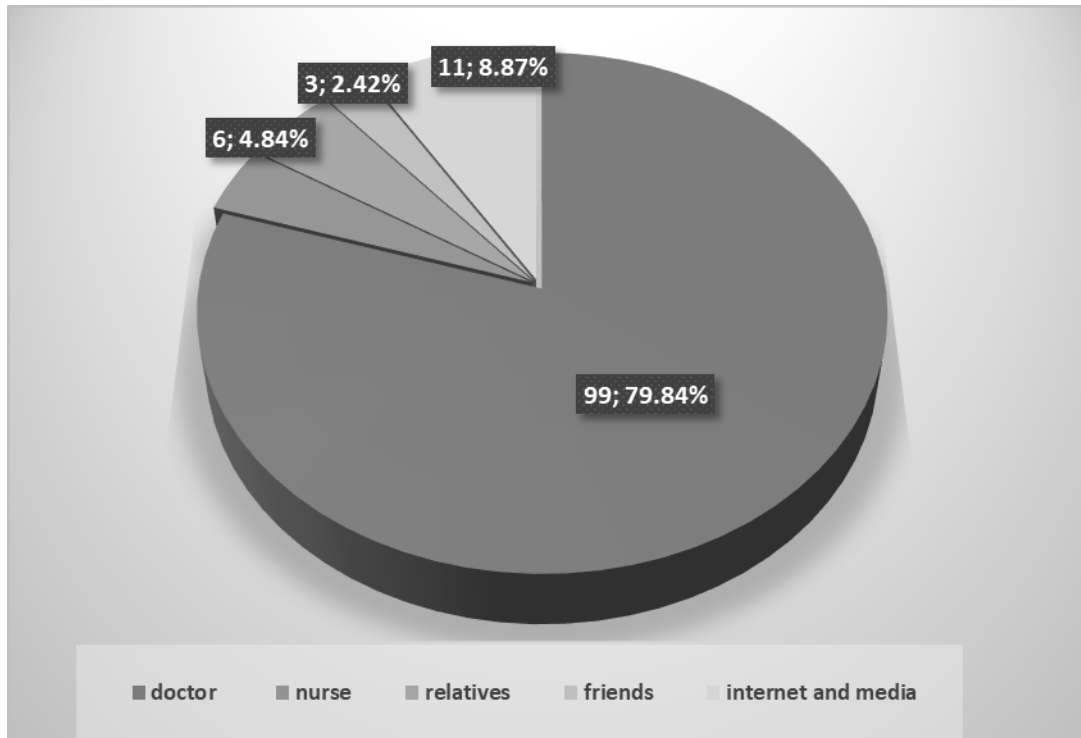


Figure 1. Source of information about vaccines and immunization among the study population (n=124 refugee mothers)

Respondents were aware of the importance and the role of vaccines in building protection against infectious diseases – 109 (87.90%). However, some mothers – 55 (44.35%) – were inclined to let their children acquire natural immunity (after recovering from an illness). This tendency is probably related to the concern about the occurrence of adverse reactions after vaccination, which 81 (65.32%) of women fear. The prevailing opinion is that vaccinated children protect others in the group – 85 (68.55%). Parents were aware of the risk to their children in the presence of unimmunized people in their environment – 65 (52.42%).

Attitudes of the surveyed women about vaccines and immunizations

The reasons why mothers would refuse childhood vaccination are shown in Figure 2. The data shows that doubt in the benefits of vaccines may discourage parents from immunization – 29 (23.39%), followed by “due to medical contraindications” – 27 (21.77%) – and “doubt in the quality of the vaccine” – 26 (20.97%). We performed separate Kruskal-Wallis tests to examine the influence of maternal education, age, and marital status on vaccine knowledge and concerns about adverse effects and refusal. While no significant relationship was found between these factors and vaccine knowledge ($KWT=53.520$, $p>0.99$), a strong association was observed with concerns and refusal ($KWT=124.786$, $p<0.001$). Older mothers demonstrated more positive attitudes toward vaccination, suggesting that experience and accumulated knowledge may play a role.

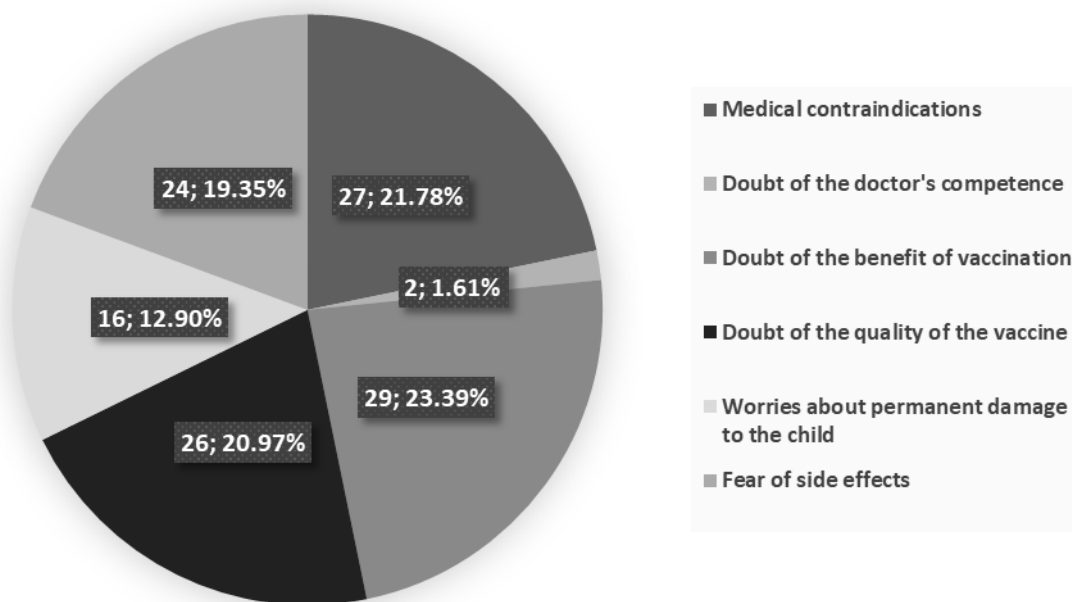


Figure 2. Reasons mothers would refuse childhood vaccination (n=124 refugee mothers)

Discussion

The ongoing war in Ukraine has forced thousands of people to seek refuge in other countries. This has posed additional challenges to the healthcare systems of the host countries. In addition to providing refugees with shelter and access to basic necessities, another need was to ensure their access to medical services. Very often the language barrier was important for healthcare providers [8-10].

Bulgaria's health policy regarding vaccination includes providing comprehensive care and promoting vaccination among refugees. Similar immunization schedules of Bulgaria and Ukraine facilitate the vaccination process. The level of education, personal attitudes, and the level of knowledge were elements that influenced the decision to immunize. Documents regulating healthcare processes were also important. The influx of unvaccinated people created a risk of outbreaks of infections with epidemic potential.

During the study period, the 124 Ukrainian women surveyed had temporary protection status in Bulgaria. They were within active age (predominant age group 30-39 years), educated (with higher education – about 70%), trust the doctor, who was the main source of information, as shown by the survey data (about 80% of respondents). A 2021 paper by Ganczak et al. found that Ukrainian migrants in Poland preferred to visit health professionals rather than family doctors [6,7].

The participants in the study reside in our country with their children, who were of varying ages. The need to attend childcare and educational institutions requires mandatory immunizations, which are well organized in Bulgaria. Ukrainian citizens actively contributed to faster and more complete inclusion in public life. The lack of a language barrier facilitates communication with Bulgarian health institutions. Social networks and media influenced vaccination decision-making

for most of the respondents. Positive information campaigns are needed to strengthen the role of social media [11,12].

Respondents were aware of the importance of vaccines and their role in protecting the community from infectious diseases. They accepted vaccines in the Immunization Schedule, even as an obligation, which showed responsible thinking/mindset about the collective risk of spreading infectious diseases. Mothers had good knowledge about the role of immunizations for the health of their children, but some of them expressed doubts about the quality and effect of vaccines, which would be a reason for refusing immunization.

Despite the uncertainties about the safety of vaccines, Ukrainian mothers trust the healthcare system in Bulgaria and identify the doctor as the main source of information. Healthcare professionals should provide patients with the knowledge they need to make informed decisions [13,14]. It is also essential to improve communication between patients and healthcare providers, building vaccine literacy based on scientific evidence and shared experience [15,16].

Conclusions

The war in Ukraine has led to difficulties in the organization and the supply of vaccines, which, together with hesitations about immunization, has led to low vaccination coverage and outbreaks of epidemics there. Migration flows from Ukraine to Bulgaria are a challenge to the immunization practice in the country. Vaccination is an effective means of preventing infectious diseases among migrant populations and their host communities. A multifunctional approach is needed to allow vaccination to be understood as a social policy and practice by the entire community.

Disclosures and acknowledgements

The authors declare no conflicts of interest with respect to the research, authorship, and/or publication of this article.

This study is financed by the European Union-NextGenerationEU, through the National Recovery and Resilience Plan of the Republic of Bulgaria, project no. BG-RRP-2.004.

The study received the approval of Research Ethics Committee of Medical University-Pleven (819/2025).

Artificial intelligence (AI) was not used in the creation of the manuscript.

References:

1. Stefanelli MA, Cecilia C. Women refugees in Italy during the Russian-Ukrainian conflict. Emerald. 2025; 30: 121-136. <https://doi.org/10.1108/S0895-993520250000030009>
2. WHO. Vaccines and immunization [Internet]. Geneva: WHO; 2024 [access 2025 March 10]. Available from: https://www.who.int/health-topics/vaccines-and-immunization#tab=tab_1
3. WHO. Report on refugee health: assessment of the Bulgarian health system's needs within the context of the crisis in Ukraine [Internet]. Geneva: WHO; 2023 March 21 [access 2024 Dec 15]. Available from: <https://www.who.int/publications/i/item/9789240070707>

4. Ociepa-Kicinska E, Gorzalczynska-Kockodaj M. Forms of aid provided to refugees of the 2022 Russia-Ukraine war: the case of Poland. *Int. J. Environ. Res. Public Health* 2022; 19(12): 7085. <https://doi.org/10.3390/ijerph19127085>
5. ILO. Extending social protection to migrant workers, refugees and their families. a guide for policymakers and practitioners [Internet]. Geneva: ILO; 2021 [access 2025 Feb 20]. Available from: <https://www.ilo.org/publications/extending-social-protection-migrant-workers-refugees-and-their-families>
6. Ganczak M, Bielecki K, Drozd-Dąbrowska M, Topczewska K, Biesiada D, Molas-Biesiada A, et al. Vaccination concerns, beliefs and practices among Ukrainian migrants in Poland: a qualitative study. *BMC Public Health*. 2021; 21: 93. <https://doi.org/10.1186/s12889-020-10105-9>
7. Lewtak K, Nitsch-Osuch A, Dzielska A, Maciejewski T, Atif (Nurzynska) A, Sochon-Latuszek A, et al. Healthcare professionals perspectives on the challenges in the vaccination of Ukrainian child migrants and war refugees: findings from a qualitative study in Poland. *International Journal of Occupational Medicine and Environmental Health*. 2024; 37(6): 602-616. <https://doi.org/10.13075/ijomeh.1896.02478>
8. Biesiada A, Mastalerz-Migas A, Babicki M. Response to provide key health services to Ukrainian refugees: the overview and implementation studies. *Soc Sci Med*. 2023; 334: 116221. <https://doi.org/10.1016/j.socscimed.2023.116221>
9. Brinkmann F, Friedrichs A, Behrens GM, Behrens P, Berner R, Caliebe A, et al. NU(M)KRAINE Study Group. Prevalence of infectious diseases, immunity to vaccine-preventable diseases and chronic medical conditions among Ukrainian refugees in

- Germany – a cross sectional study from the German Network University Medicine (NUM).
J Infect Public Health. 2024; 17(4): 642-649. <https://doi.org/10.1016/j.jiph.2024.02.003>
10. Scarso S, Marchetti G, Russo ML, D'Angelo F, Tosti ME, Bellini A, et al. Access to vaccination for newly arrived migrants: developing a general conceptual framework for understanding how to improve vaccination coverage in European countries. Int J Public Health. 2023; 68: 1605580. <https://doi.org/10.3389/ijph.2023.1605580>
11. Cavit L, Charania NA. Exploring factors that influence vaccination uptake for children with refugee backgrounds: an interpretive description study of primary healthcare providers' perspectives. Vaccine. 2023; 41(45): 6690-6699. <https://doi.org/10.1016/j.vaccine.2023.09.055>
12. Sana S, Fabbro E, Zovi A, Vitiello A, Ola-Ajayi T, Zahoui Z et al. Scoping review on barriers and challenges to pediatric immunization uptake among migrants: health inequalities in Italy, 2003 to mid-2023. Vaccines. 2023; 11(9): 1417; <https://doi.org/10.3390/vaccines11091417>
13. Rzymiski P, Falfushynska H, Fal A. Vaccination of Ukrainian refugees: need for urgent action. Clin Infectious Diseases. 2022; 75(6): 1103-1108. <https://doi.org/10.1093/cid/ciac276>
14. Tankwanchi AS, Bowman B, Garrison M, Larson H, Wiysonge CS. Vaccine hesitancy in migrant communities: a rapid review of latest evidence. Curr Opin Immunol. 2021; 71: 62-68. <https://doi.org/10.1016/j.coi.2021.05.009>
15. Kardas P, Babicki M, Krawczyk J, Mastalerz-Migas A. War in Ukraine and the challenges it brings to the Polish healthcare system. Lancet Regional Health – Europe. 2022; 15: 100365. <https://doi.org/10.1016/j.lanepe.2022.100365>

16. Ludvigsson JF, Loboda A. Systematic review of health and disease in Ukrainian children highlights poor child health and challenges for those treating refugees. *Acta Paediatr.* 2022; 111: 1341-53. <https://doi.org/10.1111/apa.16370>

ONLINE FIRST