

SUMMARY

Background: Vaccines are one of the greatest achievements of medicine. Globalization contributes to the rapid spread of infectious diseases. The world needs immunization to prevent a global decline in human health. Many people have never witnessed the debilitating diseases that vaccines protect against.

People are also concerned about the safety of the composition of vaccines, which builds a negative assessment of the obligation to vaccinate children. Additionally, the activity of vaccine opponents has contributed to an increase in the percentage of parents who avoid immunization. The World Health Organization (WHO) has listed aversion to vaccination as one of the greatest global threats to public health. Therefore, the topic of the work carried out is important for the health of the population. Parents' attitudes towards immunization are shaped by many factors. Understanding the different needs of populations and the incentives that shape parents' attitudes toward vaccines can contribute to increasing society's global collective resilience.

Objective: Analysis of selected factors that determine parents' attitudes toward the vaccination schedule.

Material and methods: 1032 parents participated in the study, divided into two groups (parents waiting for the birth of a child - 515, respondents with a child up to 24 months of age - 517). The selection of the test sample was random. The study used the diagnostic survey with the use of the questionnaire technique and the estimation method. Five research tools were used: the original questionnaire and four standardized tools: Virtual Social Integration Questionnaire (WIS), Ten Item Personality Inventory (TIPI-PL), Multidimensional Scale of Health Control Locations (MHLC), Inventory for Measuring Coping with Stress (Mini-COPE). In order to verify the reliability of the research tools and to assess the understanding of the the content of statements and questions of the respondents, a pilot study was carried out in a group of 100 respondents. The main study was conducted from April to December 2019 in randomly selected clinics, birth schools, nurseries, and a hospital in Podkarpackie Province. Participation in the research was voluntary. Each participant expressed their informed consent to participate in the study after having previously read information about the research project. Parents received questionnaires to be completed at home in order to obtain as many reliable and conscientiously completed questionnaires as possible. The research project received a positive opinion from the UR Bioethics Committee (Resolution No. 32/02/2019 of

14/02/2019). The following methods and statistical tests were used to analyze the obtained results: chi-square test of independence (Pearson's chi-square test, χ^2), Spearman's rho-correlation coefficient, Student's t-test, multivariate logistic regression using the progressive step method. In the study, the significance level for the tests was assumed to be $p = 0.05$.

Results: Most often parents were characterized by positive attitudes toward the vaccination schedule (82.9%), 12.3% of parents showed indifference, and 4.8% negative attitudes. 5.1% of all parents avoided immunization. The respondents were more often of average level of knowledge about vaccinations (56.5%). Parents who had positive attitudes towards vaccination most often presented a high level of knowledge on the subject (97.4%). On the other hand, respondents with negative attitudes (22.4%) and indifferent (25.5%) had a low level of knowledge about the vaccination schedule. Respondents with positive attitudes more often obtained a higher WIS index than those with negative attitudes towards preventive vaccinations ($M = 32.52$ vs $M = 28.86$, $p = 0.011$). Parents with positive attitudes compared to respondents with neutral attitudes were more agreeable ($M = 5.42$ vs $M = 5.07$, $p = 0.001$) and conscientious ($M = 5.59$ vs $M = 5.33$, $p = 0.009$). Positive attitudes towards vaccination schedule were most often held by parents who believed that their health depends on the influence of other people (91.8%). The health status of respondents with negative attitudes was mainly dependent on their own actions (10.7%, $p = 0.000$). Parents with positive attitudes towards children vaccination, more often than people with negative attitudes in stressful situations sought emotional ($M = 2.15$ vs $M = 1.85$, $p = 0.007$) and instrumental support ($M = 2.05$ vs $M = 1.69$, $p = 0.003$). Respondents with positive (53.3%) and negative (24%) attitudes towards vaccination schedule most often vaccinated their children with free vaccines ($p = 0.000$). Commercial highly combined vaccines were chosen most often by subjects with a low level of knowledge about vaccination (42%, $p = 0.000$). The respondents with positive attitudes towards preventive vaccinations did not come across vaccine adverse events, while respondents who encountered such a reaction most often presented negative attitudes and a low level of knowledge about the vaccination schedule at home, family or friends (91.7%), while the parents who encountered this reaction most often presented negative attitudes (17.5%) - $p = 0.000$. Multivariate logistic regression showed that positive attitudes towards the vaccination schedule were presented by conciliatory parents mainly ($OR = 1.36$), who believed that their health was influenced

by other people ($OR = 1.05$) or by chance ($OR = 0.94$), and in stressful situations they stopped their activities ($OR = 0.66$). Negative attitudes appeared more often in respondents coping with difficult situations through positive reevaluation ($OR = 2.34$) and who were open to experience ($OR = 1.80$), and gave control over their health to a random person ($OR = 0.91$) or the influence of others people ($OR = 0.84$).

Conclusions: Most parents had positive attitudes towards vaccination mainly under the age of 25 and over 40 who have secondary education.

Negative attitudes towards vaccination schedule were displayed by 4.8% of respondents, especially people 30-34 year-olds who have basic vocational education. Respondents characterized by positive attitudes towards preventive vaccinations most often presented a high level of knowledge on this subject. On the other hand, parents with negative and indifferent attitudes mainly had a low level of knowledge about vaccination schedule.

Respondents with a high percentage of remote interpersonal communication most often had positive attitudes towards vaccination and a high level of knowledge about preventive vaccinations. On the other hand, respondents with negative attitudes towards population vaccinations and a low level of knowledge on this subject communicated less frequently through the Internet. Positive attitudes were most often presented by conscientious and conciliatory parents with a high level of knowledge about immunization. Negative attitudes appeared amongst extroverted people with a low level of knowledge. Parents with positive and negative attitudes towards vaccination schedule, as well as respondents with a high level of knowledge on this subject, most often believed that their health depends on themselves, pro-health activities and the influence of other people. In stressful situations, respondents with positive attitudes towards children vaccination, most often actively coped with taking actions aimed at improving the situation. They planned to reduce the stress caused by the vaccination process and sought instrumental and emotional support. The respondents with a negative attitude to vaccination in stressful situations coped actively with a problem. They avoided the stressful stimulus by planning and positive reevaluation of problematic situations. Parents with a high level of knowledge about immunization and positive and negative attitudes most often chose free vaccines. The majority of parents with positive attitudes and a high level of knowledge about protective vaccinations did not experience adverse events of vaccination. The respondents who encountered such an organism reaction most often presented negative attitudes and a low level of knowledge about the vaccination schedule. The factors that most often influenced on the positive attitudes of parents were mainly agreeableness, the

influence of other people or a coincidence of health condition and restraint of stressful situations. On the other hand, negative attitudes were shaped by an extroverted personality, openness to experiences, reevaluation of problems, and the impact of chance or, to a lesser extent, the influence of other people on their health.

Keywords: attitudes, children, health, infectious diseases, parents, personality, remote communication, stress, vaccinations, vaccine adverse events, vaccination schedule