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PARENTAL POSITIVE DECISION-MAKING ON CHILDREN'S VACCINATION

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Abstract. The purpose of this research was to evaluate the main motives, mostly influencing the parental decision to vaccinate their children. The results of the survey show that the majority of parents vaccinate their children with all childhood vaccines. The main motives to immunize the children were protection from infectious diseases and creation of long-lasting immunity. The majority of respondents vaccinated their children with tick-borne encephalitis and flu vaccines, one forth of respondents vaccinated their children with Meningococcal B vaccine, although these vaccines were non-reimbursed. The greatest demand for reimbursement was expressed for tick-borne encephalitis, flu and varicella vaccines. Less than a half of parents indicated adverse postvaccine reactions, which usually included fever, swelling, redness, pain in the vaccination area and irritability. More than a half of health care providers always inform the parents about side effects. The majority of parents always inform health care institution about side effects. The main parental sources of information about immunoprophylaxis were doctor, internet and television.

Keywords: childhood vaccinations, decision-making, vaccination coverage, adverse reactions.

INTRODUCTION

One of the greatest public health challenges today concerns suboptimal vaccine uptake rates. In 2017, measles affected 21,315 people and caused 35 deaths. The surge in measles cases in 2017 included large outbreaks in 15 of the 53 countries in the European regionm (World Health Organisation, 2018). In 2019 there were 834 cases of measles reported in Lithuania. In 2018, there were 40 cases of meningococcal infection and 5 of them were fatal, including 4 children under 5 years of age. In 2019, there were 26 cases of meningococcal infection in Lithuania, 4 of them were fatal (Čaplinskas et al., 2019). This is a result of suboptimal vaccination coverage (World Health Organisation, 2019): in many areas, the coverage of common vaccines have decreased below 90% that is postulated as the minimum to herd immunity, the effective halting of the spread of measles and other vaccine-preventable diseases. Childhood vaccination coverage in Lithuania was rather high until 2009, reaching 94-99% in all age groups. In 2009-2018 childhood vaccination coverage in Lithuania was constantly decreasing. In 2018, the majority of administrative regions of Lithuania had childhood vaccination coverages above 90% (Čaplinskas et al., 2019). While some children cannot be vaccinated for medical reasons and in some areas vaccines are not readily available, a growing number of children are not vaccinated or are vaccinated late largely depending on their parents' conscious decision. Parental vaccine hesitancy is a growing problem with a significant public health impact. Challenges to maintaining adequate vaccination coverage include overcoming negative vaccine- and individual-specific attitudes and beliefs amidst a continual barrage of external factors such as vaccine controversies and evolving vaccination schedules that can also affect vaccination acceptance. While strategies such as enforcing school mandates for immunisation, minimising policies that promote non-medical exemptions, and maintaining public health and financial support for vaccination have a positive impact on vaccination rates, additional, novel strategies are also needed to counteract the growing negativity of parental vaccination attitudes (Gowda & Dempsey, 2013; World Health Organisation, 2014). Immunisation Agenda 2030 sets an ambitious, overarching global vision and strategy for vaccines and immunisation for the decade 2021–2030. It was co-created with thousands of contributions from countries and organisations around the world, and will come into effect by the end of 2020. It draws on lessons from the past decade and acknowledges continuing and new challenges posed by infectious diseases (e.g. Ebola, COVID-19). Through collective endeavour, countries and partners will achieve the vision for the decade: a world where everyone, everywhere, at every age, fully benefits from vaccines for good health and well-being. (World Health Organisation, 2019). To better combat vaccine hesitancy and optimise interventions, factors associated with pro-vaccination decisions of the parents need to be identified and investigated.

The object of the study: Parental positive decision-making on children's vaccination.
Objective of the study: To analyse parental positive decision-making on children's vaccination.
Tasks of the study:
To identify parental motives to immunise their children.
To evaluate the coverage of childhood vaccination and non-reimbursed vaccination of children.
To assess the distribution of paid-for vaccinations and demand for the reimbursement.
To assess the post-vaccine adverse reactions and their frequency.
To reveal the major parental sources of information concerning children immunoprophylaxis.

RESEARCH METHODOLOGY

The quantitative research method was chosen. An anonymous survey was conducted at the Primary Health Care facility, in 2019 autumn – 2020 winter. The permission to conduct the survey has been obtained from the institution. A questionnaire based on scientific literature was created. The questionnaire contained demografic information (gender, age, employment status, educational level, number of children in family) and questions, concerning children's immunoprophylaxis rates, side effects, major motivation to vaccinate children, information about vaccination and potential side effects. The study involved 112 parents, who had children up to 18 years of age. The majority of respondents were females. 10 parents were against any vaccination, so further data were obtained from 102 questionnaires, as the goal of the study was to reveal the major factors, influencing parental pro-vaccination decisions. Data was evaluated and processed using the Microsoft Office Excel software.

RESULTS AND DISCUSSION

Pro-vaccination decisions are made based on perceived benefits of vaccines, attitudes toward vaccines, and socioeconomic status (Ma et al., 2013; Ahmad et al., 2013), and previous vaccinations of the child (Boes et al., 2017). Continued parental acceptance of childhood vaccination is essential for the maintenance of herd immunity and disease prevention. The results of the survey revealed that majority of respondents were aged 20-39 years (79,5%), employed females (87,5%) with higher (70,5 %) education, living in urban regions (87,5%), so having high or higher socioeconomic status. The majority of parents had small families with one or two children (see Figure 1):

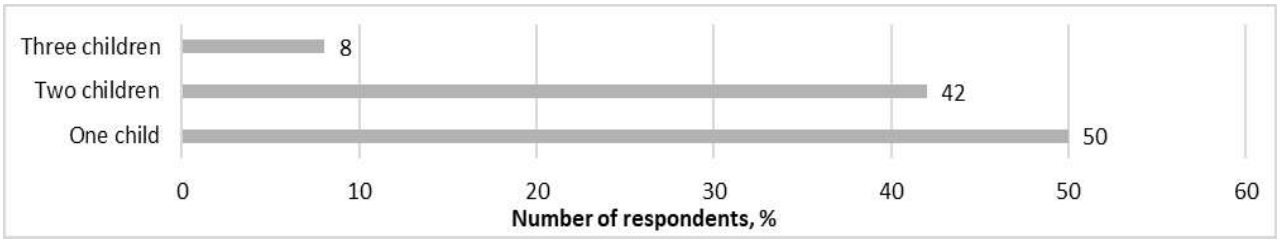

Figure 1. **The number of children in family**

The survey data revealed that the majority of parents (91,1%) vaccinate their children. Figure 2 demonstates that the majority of respondents choose their children to have all childhood vaccinations, whereas less than one tenth of respondents are against any vaccination:

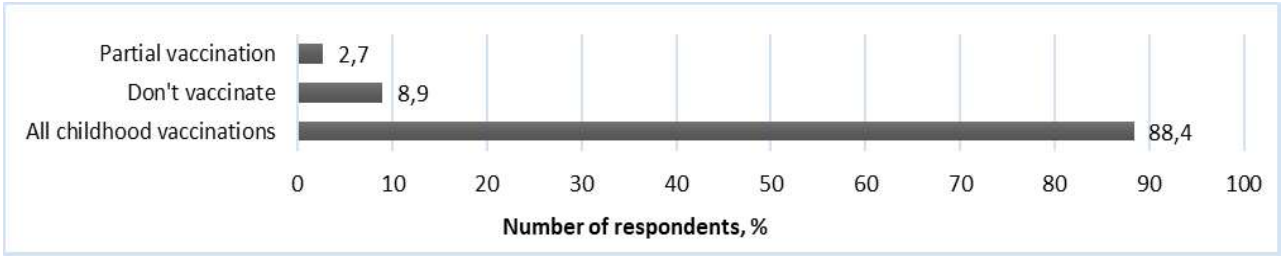

Figure 2. **The distribution of childhood vaccination**

Concerns about the immediate or short-term side effects of vaccines are significant drivers of vaccine delay and/or refusal (Gowda & Dempsey, 2013). These results coincide with our survey results, as 10 parents, who were not immunising their children, pointed out the same reasons. As 10 respondents were

not immunising their children, we excluded these respondents from further data collection. Presently, 28 diseases are vaccine-preventable (Čaplinskas, 2016). According to Childhood Vaccination Shedule of the Republic of Lithuania, children are provided the following 14 vaccines reimbursed by the state: tuberculiosis, hepatitis B, pertussis, diftheria, tetanus, haemophilus influenzae B type , poliomyelitis, pneumococcal, measles, epidemic parotitis, rubeolla, human papilomavirus, B tipe meningococcal infection, and rotaviral infection (Ministry of Health of the Republic of Lithuania, 2018). In many countries, the coverage of common vaccines have decreased below 90% that is postulated as the minimum to herd immunity and effective halting of the spread of vaccine-preventable diseases (World Health Organisation, 2019). Until 2009 childhood vaccination coverages in Lithuania were rather high, reaching 94 – 99% in all age groups. During the 2009 – 2018 year period childhood vaccination coverages in Lithuania were constantly decreasing. The majority of administrative regions of Lithuania reported childhood vaccination coverages above 90% (Čaplinskas et al., 2019). Parents were asked if they at this time vaccinate their child according to the official vaccination schedule, when vaccines are reimbursed by the state. The majority of respondents immunise their children with all reimbursed vaccines. Exeptions were due to the different ages or current diseases of children (see Figure 3):

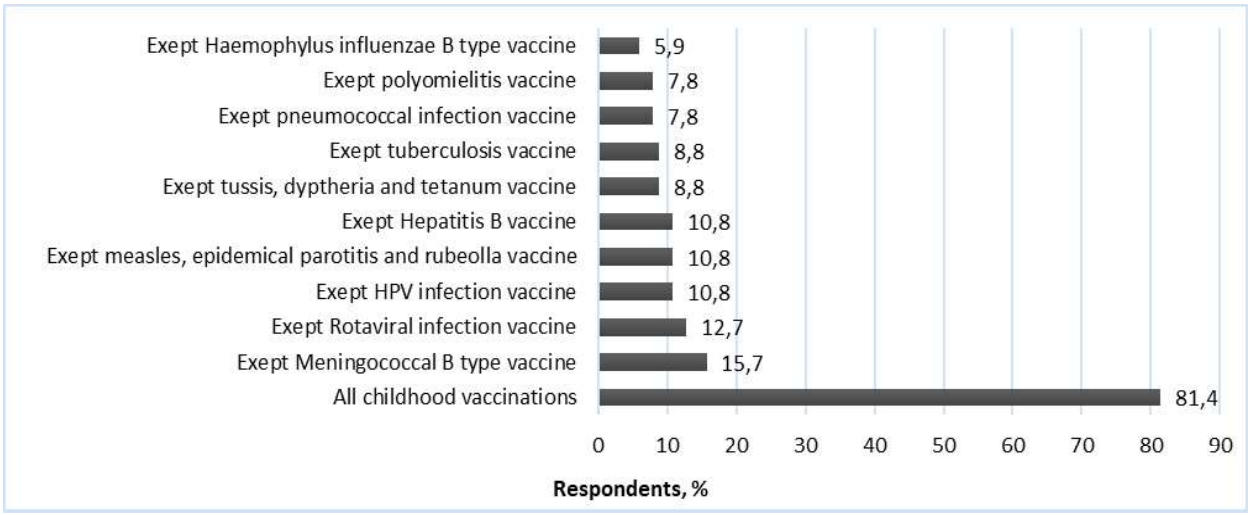

Figure 3. **The coverage of reimbursed childhood vaccination**

Figure 4 shows that the main factors determining decision to vaccinate the children were protection from infectious diseases and creation of long-lasting immunity. One fifth of respondents pointed out that vaccinations were necessary for attending kindergarten and other educational institutions, though immunisation programme in Lithuania is not mandatory.

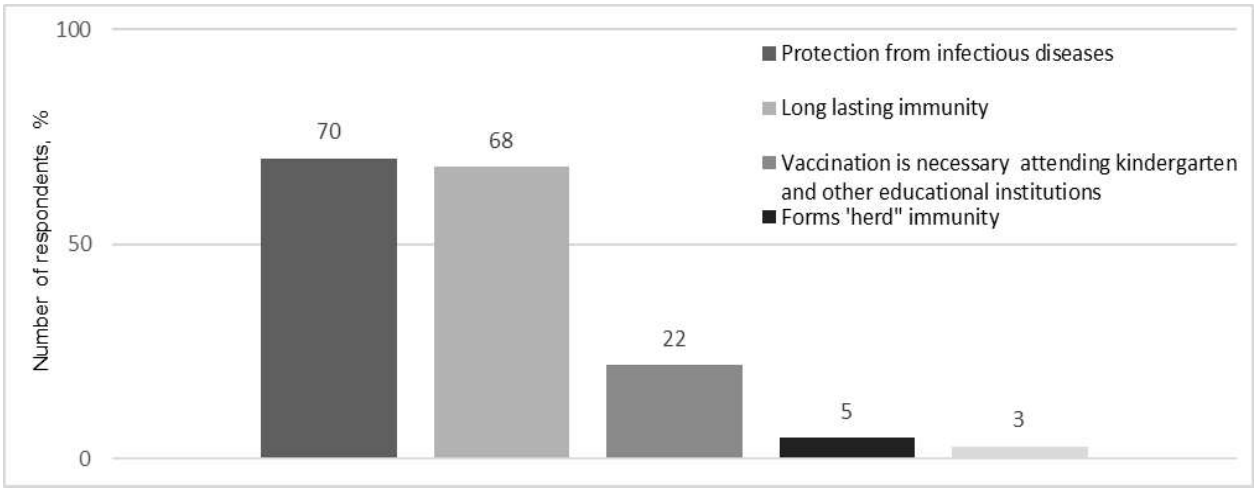

Figure 4. **The parental pro-vaccination motives**

The administration of vaccines may be associated with common local reactions like pain, swelling, and redness at the injection site. Systemic reactions, including fever, irritability, drowsiness, and rash, may also occur (Ma et al., 2013). In 2018, as much as 60,2% of childhood vaccinations adverse reactions were

reported for children up to one year of age (Čaplinskas et al., 2019). Parents might overrate the immediate side effects of vaccines, such as rashes or swelling, and use these side effects as justification to avoid vaccinating their child (Callender, 2016). In line with this, parents might judge the quality of the potential decision to vaccinate their child based on the consequences of this decision experienced previously by them or by the sources they are in contact with. The results of the survey show, that less than a half of parents (47,1%) indicated that their children experienced adverse post-vaccine reactions, mostly once during the entire vaccination period (see Figure 5):

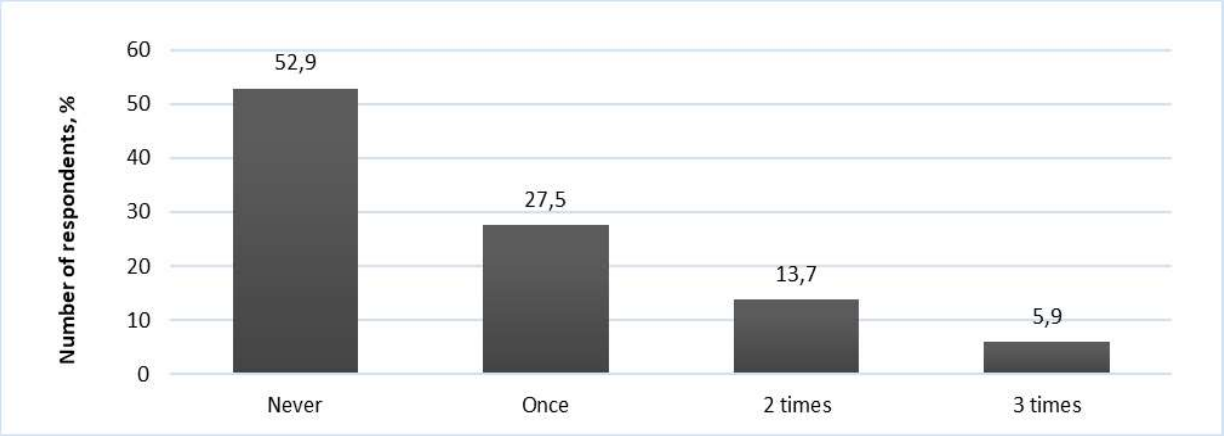

Figure 5. **The frequency of vaccination adverse events**

One hundred and three cases of post-vaccine adverse reactions were reported in Lithuania in 2018, 81 (78,6 %) were mild and 22 (21,4 %) were severe. Among those, tuberculosis vaccine caused 48,5 % of all adverse reactions (Čaplinskas et al., 2019). The research results reveal that most often the adverse reactions were caused by pneumococcal (58,8%), B type meningococcal (32,4%), tick-borne encephalitis (21,6%), and flu vaccines (18,6%), rare adverse events were observed after uptake of rubeolla, measles and parotitis vaccine (12,7%). Parents reported mild adverse events and usually these reactions were fever, swelling, redness, pain in vaccination area and irritability (see Figure 6):

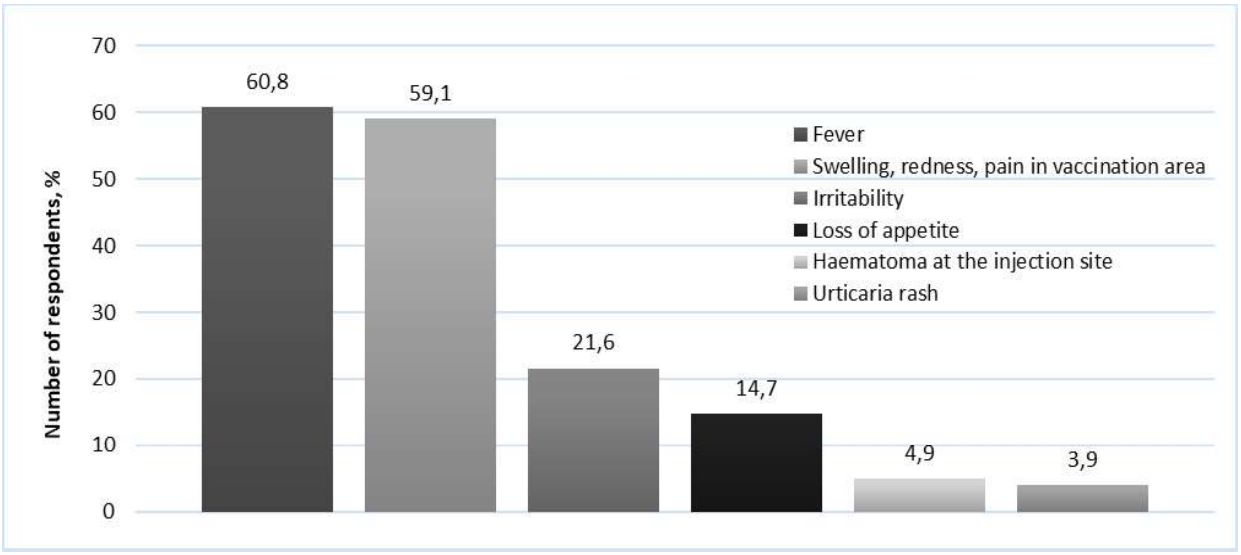

Figure 6. **The post-vaccine adverse reactions**

Moreover, knowledge has been identified as an important factor in shaping the parents' decisions (Ma et al., 2013). Figure 7 shows that more than a half of health care providers always inform the parents about potential side effects. The majority of parents always reported side effects to the health care institution.

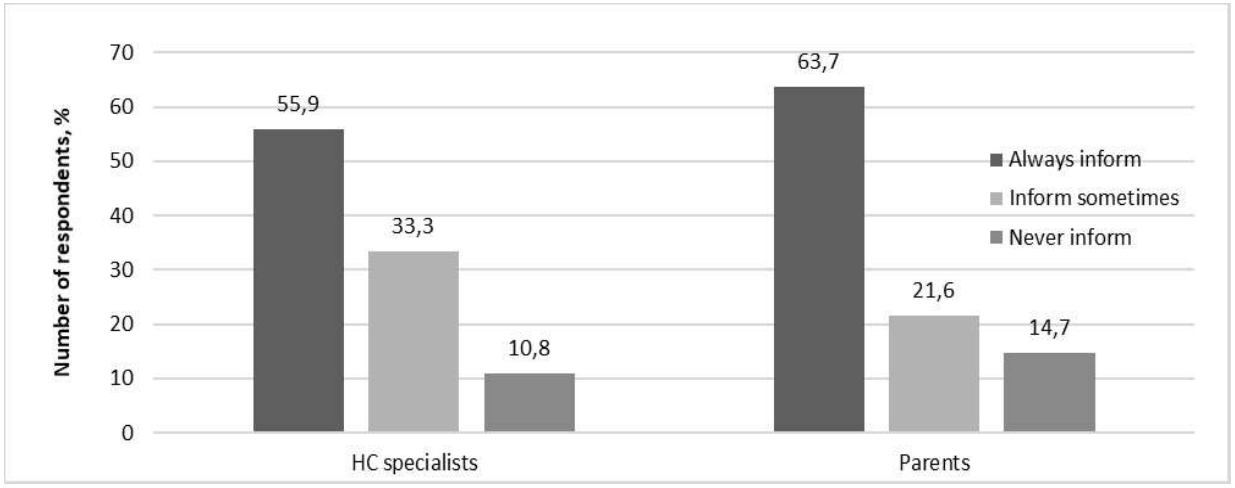

Figure 7. **The information about side effects**

According to the National Childhood Vaccination Shedule (Ministry of Health of the Republic of Lithuania, 2018), Meningococcal B vaccine is administered thrice: at the age of 3, 5 and 12 – 15 months. Meningococcal B vaccine was nonreimbursable until 2018 in Lithuania. For children, who were born before July 2018, Meningococcal B vaccination was not reinbursed by the state. The research findings show, that this vaccine was non-reimbursed for majority of respondent's children. Only one fourth of parents vaccinated their children by their own expenses (see Figure 8):

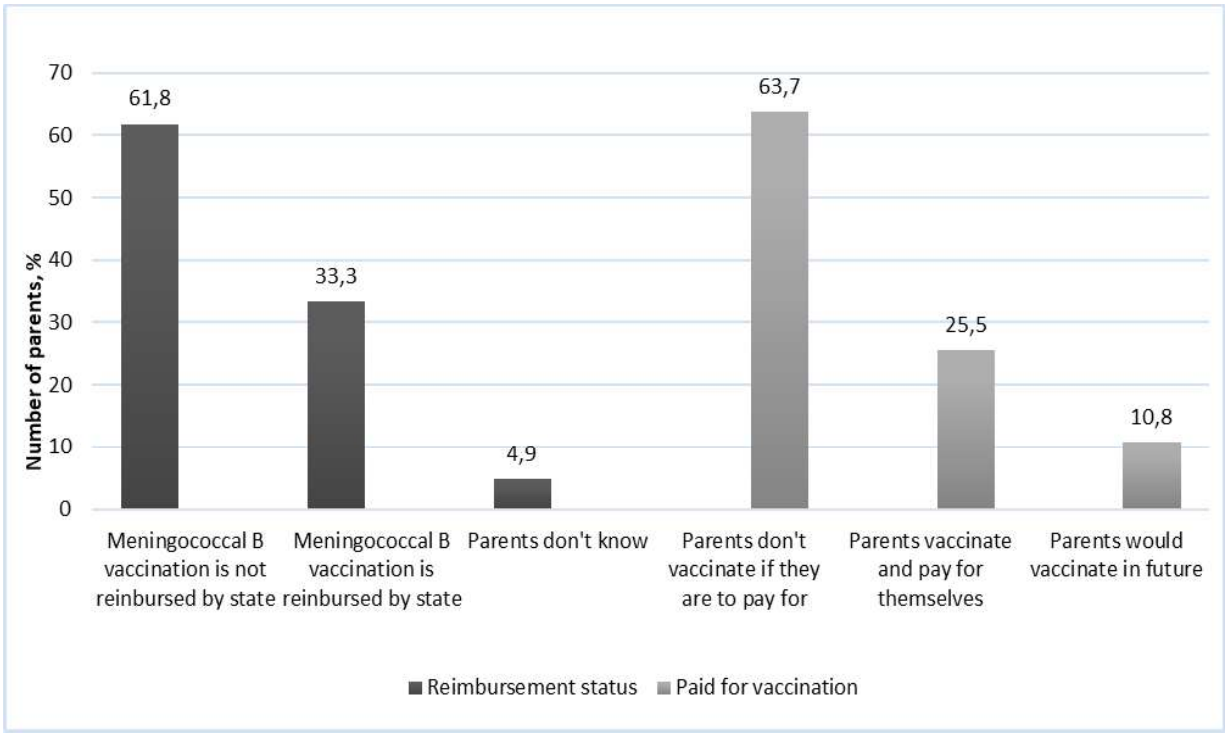

Figure 8. **The distribution of Meningococcal B vaccination and reimbursement**

The number of cases of tick-borne ecephalitis in Lithuania is the greatest in Europe (Čaplinskas et al., 2019). Aware of the threat and danger for their children lives and health, parents are choosing to have their children vaccinated with the tick-borne encephalitis vaccine at their own expenses. 2756 persons were vaccinated with varicella vaccine at their own expences in 2018, in 2019 there were vaccinated 3847 persons, representing a substantial increase of 39,6%. In 2018, the majority of those vaccinated (81,4%) were children up to 18 years of age (Čaplinskas et al., 2019). The results of survey revealed that the majority of respondents vaccinated their children with tick-borne encephalitis and flu vaccines, and one forth of respondents vaccinated their children with Meningococcal B vaccine, although these vaccines were non-reimbursed and expensive. The greatest demand for reimbursement was expressed for tick-borne encephalitis, flu and varicella vaccines (see Figure 9):

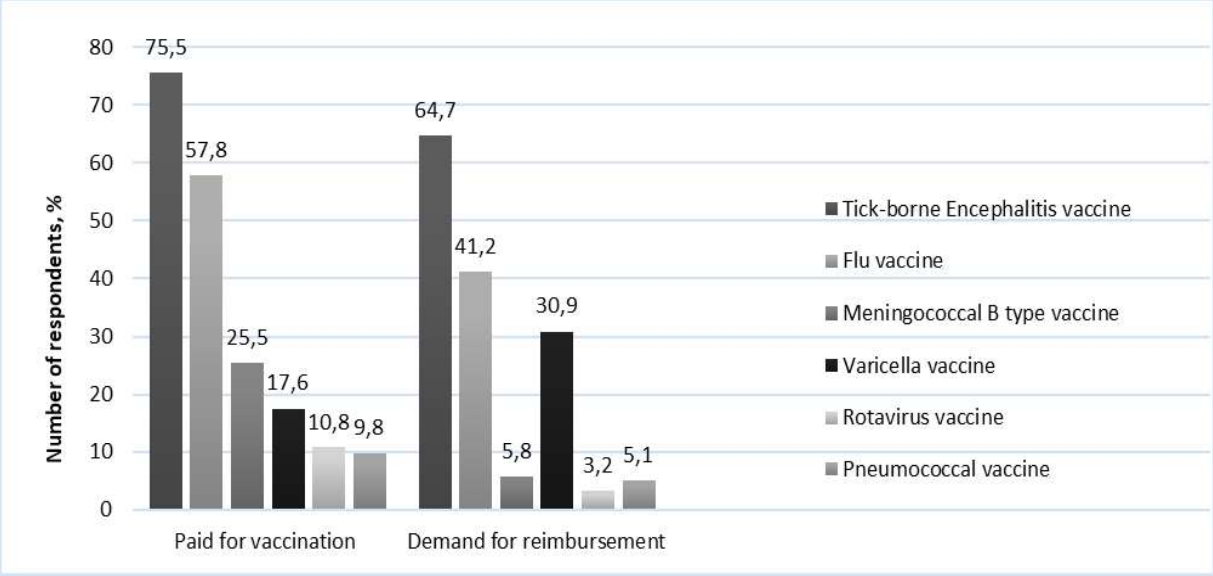

Figure 9. **The distribution of Meningococcal B vaccination and reimbursement**

A higher number of sources of information has been related to a higher perceived level of knowledge in the frame of decision-making about vaccination (Brunson, 2013a). Many parents are seeking additional information, with most preferring to use the internet rather than consulting a doctor, and would use a general search engine instead of an official or medical website. The results strongly suggest that social networks, and particularly parents' people networks, play an important role in parental vaccination decision-making (Brunson, 2013b). The results of the survey, conducted in Saudi Arabia, revealed a significant association between parents' educational level and knowledge and attitudes on childhood immunisation. Higher educational level, definitely, helps the parents to understand the educational messages. Moreover, such parents have better chances to come across considerable knowledge about immunisation in the media (Ma et al., 2013). The majority of repondents of our investigation (70,6%) pointed out that their knowledge about immunoprophylaxis was sufficient. The survey data reveals that the main parental sources of information about immunoprophylaxis, vaccines, side effects were doctor, internet and television. The respondents of our survey, who were mostly well educated and employed females, having access to internet and social networks, pointed out doctors as the major source of information about immunoprophylaxis (see Figure 10), indicating high trust in health care professionals and the knowledge they provide:

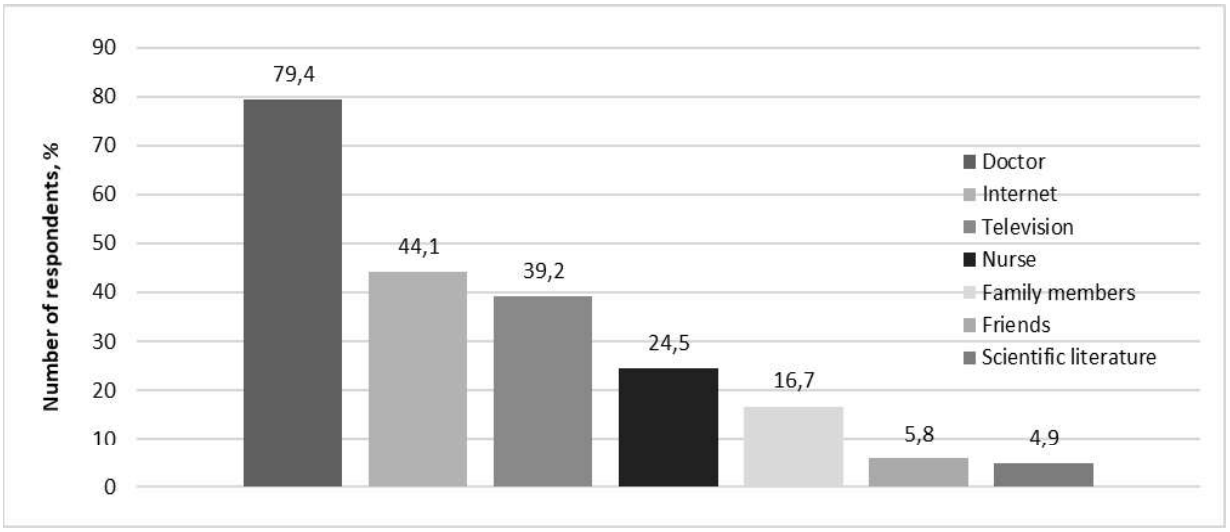

Figure 10. **The sources of information**

When discussing vaccination and immunisation, the emphasis is on its purposefulness, potential side effects, and efficacy of vaccination (Miton & Mercier, 2015). The survey data revealed that main factors motivating the parents to immunise their children were efficacy, purposefulness, reimbursement by state and

access to research-based information about potential side effects of vaccination. At the start of 2019 the National Immunoprophylaxis Programme for the period 2023 – 2019 was approved by the Minister for Health of the Republic of Lithuania with the aim to continue with an extensive, nation-wide vaccination to keep the level of the inoculated child population at 90 percent (and in the cases of measles and rubella above 95 percent). The main goals of the programme are: vaccination of children and adults with state reimbursed vaccines; providing scientific based information about immunoprophylaxis; ensuring safety and efficacy of vaccinations to the media (Ministry of Health of the Republic of Lithuania, 2019). These goals meet the expectations of the majority of respondents of our survey. Public awareness on vaccine issues, scientific evidence-based information, provided by public health professionals greatly influence the effectiveness of pro-vaccination programmes and parental decision to vaccinate children.

CONCLUSIONS

1. The majority of parents vaccinate their children. The majority of respondents immunize their children with all childhood vaccines.

2. The main motives to immunize children are: protection from infectious diseases and creation of long-lasting immunity. One fifth of respondents pointed out that vaccinations were necessary for attending kindergarten and other educational institutions.

3. The majority of respondents vaccinated their children with tick-borne encephalitis and flu vaccines, one forth of respondents vaccinated their children with Meningococcal B vaccine, although these vaccines were non-reimbursed. The greatest demand for reimbursement was expressed for tick-borne encephalitis, flu and varicella vaccines.

4. Less than a half of the parents indicated adverse postvaccinal reactions, mostly once. Usually these reactions were fever, swelling, redness, pain in vaccination area and irritability. More than a half of health care providers always inform the parents about the side effects of vaccination. The majority of parents always inform health care institution about side effects.

5. The majority of repondents pointed out that their knowledge about immunoprophylaxis was sufficient. The main sources of information about immunoprophylaxis, vaccines, side effects were doctor, internet and television.

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