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Parents' attitudes towards vaccines

Key words:

vaccine,
parents,
attitudes,
difference

Abstract

Introduction: Children immunization, as a form of specific prevention, is conducted according to the mandatory vaccination calendar, in the Republic of Srpska. Vaccination status data are written in the health charts, immunization charts, and other health records.

Objective: Inquire after the attitudes and knowledge of the parents of children up to eighteen years of age, on the matter of vaccination and search for the factors influencing their attitudes.

Methods: Cross - sectional study included 300 parents. The research was performed in County outpatients' clinic, Bjeljina (central object and six larger remote clinics), by the family medicine teams of Educational center, during March 2015. Survey was anonymous and the questionnaire was specifically made for this purpose.

Results: Out of the total number of the participants, 218 were females and 82 males; the majority of the parents lived in the country, 173, and 127 lived in the city. Participants' residence played an important role and it showed a statistically significant difference concerning these issues: whether the vaccination was necessary if the disease was eradicated ($p=0.003$), should the children with chronic diseases get vaccinated ($p=0.050$), should parents buy the vaccine if it's recommended by a doctor even if it's not covered by health insurance ($p=0.002$). The majority of the participants (96.3%) believe that children being vaccinated regularly is useful, 1.7% were not quite sure and 2% disagreed with the statement. Participants' residence was not of the significance when it came to their opinion on the vaccine's benefit.

Conclusion: The majority of the participants have got a positive attitude towards vaccination. Physicians should use scientifically proven arguments to reassure parents who have doubts or refuse to have their children vaccinated.



Introduction

According to WHO definition, vaccines as means of specific prevention in the primary prevention setting represent one of the most important means in fighting people's mortality and morbidity from contagious diseases, especially in the youngest who are the most vulnerable; it is the quickest, the most efficient and the cheapest measure for prevention, repression, elimination, and eradication of contagious diseases¹.

Vaccines are immunobiological preparations, which, when inoculated, stimulate the host's immunological response.

Word 'vaccination' derives from Latin 'Vacca', meaning cow, since first vaccines were made from relatively harmless 'cowpox' virus in order to develop immunity against contagious and deadly cowpox disease. British physician Edward Jenner was the first to use the word in 1796^{2,3}.

Vaccines may contain alive, but attenuated bacterial or viral strains, dead or inactivated pathogens, isolated proteins or detoxicated toxins of these pathogens.

Characteristics of an ideal vaccine: induces production of only the protecting antibodies, does not cause side effects, has no risk of virulence, the application is easy, it is consistent and cheap.

Vaccine contraindications may be general and specific. General contraindications are: acute illness or acute aggravation of the chronic disease, febrile state, allergy to some of the vaccine compounds. Specific contraindications are conditioned by the characteristics of the vaccines. Pregnancy and immunodeficiency are also contraindications, as far as live viral vaccines are concerned⁴.

Children immunization, as a form of specific prevention, is conducted according to the mandatory vaccination calendar, in the Republic of Srpska. The program of mandatory immunization is conducted according to the Decree of mandatory immunization for the current year and the professional methodological instruction⁴.

Evidence of the vaccination status is kept in health insurance card, health chart, immunization chart, and other health records⁴.

Beside these, there's also the vaccination of the international passengers, should the country they travel to require so⁴.

According to the Institute of Public Health, of the Republic of Srpska (April 2015), 85 – 90% of children are vaccinated. In order to avoid disease epidemics, it is recommended that 90 – 95% of the population should be vaccinated⁵.

Considering, we're living in the world of electronic communication, the idea behind this research was to make parents have a positive attitude towards vaccines.

Objective

- Inquire after the attitudes and knowledge of the parents of children up to eighteen years of age on vaccines
- Search for the factors influencing parents' attitudes.

Method

The cross-sectional study included 300 parents, 20 years of age and older. Participants were chosen randomly, during their child's doctor visit in the Educational center of County outpatients' clinic, Bjeljina, and six larger remote clinics: Batkovic, Velika Obarska, Donje Crnjelevo, Brodac, Dragaljevac, and Dvorovi, during March 2015.

The survey was anonymous. The participants were informed of the study aims and were asked for their oral consent to participate in the study. The questionnaire made specifically for the purpose of this study consisted of six general questions about participant's gender, residence, age, education, employment status, and the number of children, and fifteen questions on parents attitudes and knowledge about vaccines. Parents were able to circle one of the five offered answers for the questions regarding their attitudes towards vaccines (1. I agree completely, 2. I partly agree, 3. I don't know, 4. I partly don't agree, 5. I don't agree at all).

The acquired data were processed in an SPSS statistical program, using descriptive and analytical statistical methods. As for the descriptive statistical methods, variability measures were used, and as for analytical statistical methods, χ^2 test was used.

Results

Participants' sociodemographic characteristics

The study included 300 participants, 20 years of age or older, of whom 218 (72.7%) were women and 82 (27.3%) men. Participants' average age was 33.55 years. There wasn't a statistically significant difference between participants, considering their age and gender ($\chi^2=5.388$; $p=0.068$) (Table 1).

Table 1. Participants' age and gender

Табела 1. Годиште и пол учесника

Gender	Age (Number %)			Total (Number %)	χ^2	p
	20 - 30	31 - 40	41 - 50			
Men	27 (9)	36 (12)	19 (6.3)	82 (27.3%)	5.388	0.068
Women	85 (28.3)	106 (35.3)	27 (9)	218 (72.7)		
Total (Number %)	112 (37.3)	142 (47.3)	46 (15.3)	300 (100)		

More than half of the participants live in the country (57.7%), while the rest (42.3%) live in the city. The majority of the participants finished high school (69%), 10% finished only primary school while the rest (20.7%) had a higher education, (Table 2).

Table 2. Participants' residence and education

Табела 2. Место становања и образовање испитаника

Subject	Available answer	Number (%)
Residence	City	127 (42,3)
	Country	173 (57,7)
Education	Primary school	31 (10,3)
	High school	207 (69)
	University	62 (20,7)

Out of the total number of the participants, more than half is unemployed (53.7%), 26.7% have one child, 56.3% have two children, 16% have three children, and three of the participants (1%) have four or more children. (Table 3)

Table 3. Participants' employment status and the number of children

Табела 3. Запослење и број деце испитаника

Subject	Available answer	Number (%)
Employment status	Employed	139 (46,3)
	Unemployed	161 (53,7)
Number of children	One child	80 (26,7)
	Two children	169 (56,3)
	Three children	48 (16)
	Four and more children	3 (1)

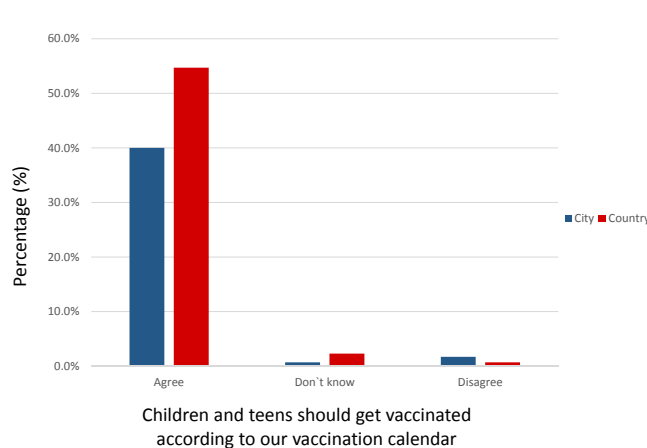
The majority of the participants (96.3%) believe that children's regular vaccination is a useful procedure, 1.7% are not sure, while 2% think children's vaccination is not useful. Participants' residence was not of the significance when it came to their opinion on the vaccine's benefit (Table 4). Table 4 shows that 91.7% of the participants agreed children vaccination led to lower morbidity and mortality from contagious diseases, 6% were not sure this was true, while the rest 2% didn't agree with this statement. There is no statistically significant difference between participants living in the country or in the city, concerning the statement that past vaccinations led to less diseased or dead from contagious diseases.

Table 4. Parents' opinion on the vaccination benefits and vaccines influence on the decrease of diseased and dead from contagious diseases

Табела 4. Ставови родитеља о корисности вакцинације и утицају вакцина на смањење броја оболелих и умрлих од заразних болести

Subject	Available answer	Residence (number%)		Total number (%)	χ^2	p
		City	Country			
Vaccination is a useful procedure	Agree	121 (40,3)	168 (56)	289 (96,3)	0,809	0,667
	Don't know	3 (1)	2 (0,7)	5 (1,7)		
	Disagree	3 (1)	3 (1)	6 (2)		
Vaccination led to decrease in diseased and dead from contagious diseases	Agree	117 (39)	258 (52,7)	275 (91,7)	0,093	0,954
	Don't know	7 (2,3)	11 (3,7)	18 (6)		
	Disagree	3 (1)	4 (1,3)	7 (2,3)		

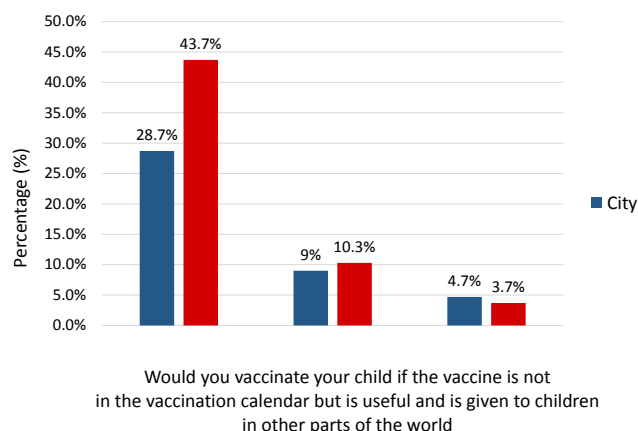
Graph 1 shows that the majority of the participants (94.7%) believes that children and teens should get vaccinated according to vaccination calendar, that's being currently used in our country. 3% of the participants is not sure of this statement, while the rest 2.3% disagrees with the statement. Among the participants with different residence, there was no statistically significant difference concerning parents' attitudes towards the need for vaccination, according to our vaccination calendar.



Graph 1. Parents' attitudes towards our vaccination calendar ($\chi^2=3,919$; $p=0,141$)

Графикон 1. Ставови родитеља о календару вакцинације ($\chi^2=3,919$; $p=0,141$)

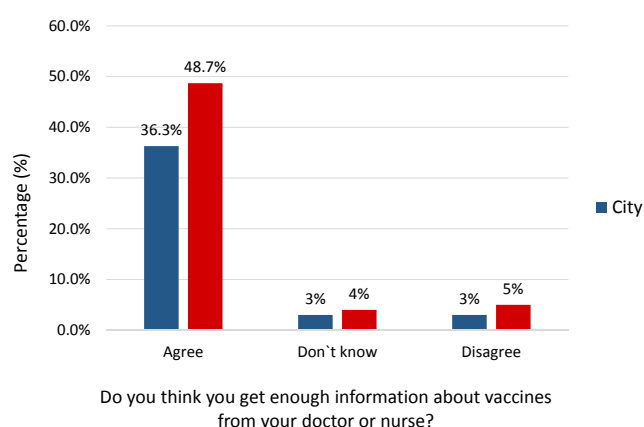
72% of the participants stated they would have no problem vaccinating their children with the vaccine which is not in the vaccination calendar if it was proved to be useful and was used in other countries. 19% of the participants didn't know how they would act in this situation and the rest 8% wouldn't vaccinate their children in this case.



Graph 2. Parents' attitudes towards the use of the vaccines used in other countries, but which are not in our vaccination calendar ($\chi^2=2,984$; $p=0,225$)

Графикон 2. Ставови родитеља о употреби вакцина које се користе у другим земљама, а нису у нашем календару вакцинације ($\chi^2=2,984$; $p=0,225$)

Figure 3 shows that 85% of the participants believe that they get sufficient information from their doctors and nurses, 7% are not sure of this and 8% think they do not get enough information on the vaccines from the medical staff. There wasn't a statistically significant difference among participants with different residence concerning this issue.



Graph 3. Parents' knowledge on vaccines supplied by doctors and nurses ($\chi^2=0,250$; $p=0,883$)

Графикон 3. Родитељско познавање вакцина уз помоћ информација добијених од лекара и сестара ($\chi^2=0,250$; $p=0,883$)

Majority of the participants (47.3%) do not agree that vaccines may be harmful to children, 30.7% think they may be somewhat harmful and 21.7% of parents doesn't know whether vaccines may harm their children. 57% of the participants think vaccines may have side effects, 34.3% disagrees with this statement, while 18.7% have no knowledge on the matter. The majority of parents (88%) agrees child should not get vaccinated if he's got cold, 9.3% doesn't know whether it's true, while 2.7% think child may be vaccinated even if he's got cold. There was no statistically significant difference concerning parents' knowledge and attitudes on the vaccine harmfulness, side effects and their use in children with cold.

Table 5. Parents' attitude and knowledge on vaccine harmfulness, side effects and getting vaccinated when a child has already got a cold

Табела 5. Родитељски ставови и познавање штетности вакцина, нежељених ефеката и ситуације да ли се дете може вакцинисати ако је прехлађено

Subject	Available answer	Residence Number (%)		Total Number (%)	χ^2	p
		City	Country			
Vaccine may be harmful to child's health	Agree	46 (15,3)	46 (15,3)	92 (30,7)	3,328	0,198
	Don't know	26 (8,7)	39 (13)	65 (21,7)		
	Disagree	55 (18,3)	88 (29,3)	143 (47,7)		
Vaccine may have side effects	Agree	69 (23)	102 (34)	171 (57)	6,043	0,186
	Don't know	20 (6,7)	36 (12)	56 (18,7)		
	Disagree	36 (12)	37 (12,3)	73 (24,3)		
If a child has a cold, he should not be vaccinated	Agree	111 (37)	153 (51)	264 (88)	4,008	0,135
	Don't know	10 (3,3)	18 (6)	28 (9,3)		
	Disagree	6 (2)	2 (0,7)	8 (2,7)		

75% of the participants think children should be vaccinated even though the disease has been eradicated, 9.3% disagrees with this statement and 15.7% of parents don't know whether this is true. Among the participants with a different residence, there was a great statistical difference ($\chi^2=11,654$; $p=0,003$), concerning the need for vaccination in the case the disease has already been eradicated. 3.3% of the parents residing in the city and 12.3% residing in the country didn't know whether this was true.

Table 6 shows 67.3% of the participants think children with chronic diseases (epilepsy, diabetes) should be vaccinated regularly, according to the vaccination calendar, 4.7% disagrees, while 28% don't know whether this is true. There was a statistically significant difference among the participants with different residence on the matter of vaccination of children with chronic diseases. ($\chi^2=6,005$; $p=0,050$), and a larger percentage of country residents (43%) agreed with the statement, while only 26.3% of city residents agreed with it.

Table 6 also shows that 55% of the participants would buy the vaccine if recommended by a doctor, even if it's not listed with Health insurance company, 30.7% don't know what they would do in such situation and 13.7% of parents wouldn't buy the vaccine. There was a big statistically significant difference ($\chi^2=12,646$; $p=0,002$) among the participants with different residence on the matter of buying the vaccine if it wasn't listed with health insurance.

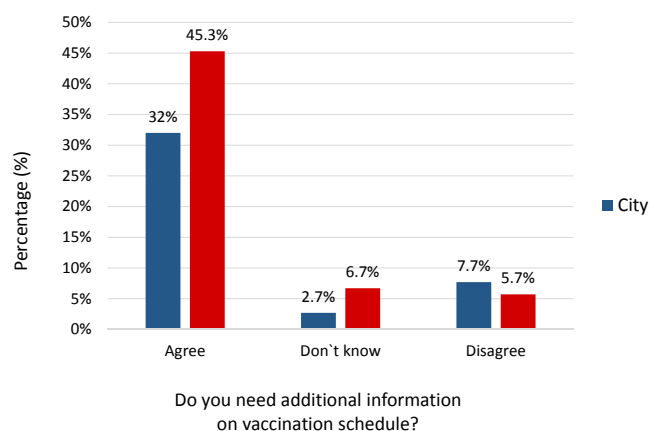
Table 6. Parents' attitudes towards child vaccination in the case the disease was eradicated, the need for vaccination in children with chronic diseases and buying vaccine if it's not listed with health insurance

Табела 6. Ставови родитеља о вакцинисању деце у случају када је болест искорењена, потреби за вакцинацијом деце са хроничним болестима и куповини вакцине када она није покривена здравственим осигурањем

Subject	Available answer	Residence Number (%)		Total Number (%)	χ^2	p
		City	Country			
Do you think children should be vaccinated even though the disease was eradicated?	Agree	101 (33,7)	124 (41,3)	225 (75)	11,654	0,003
	Don't know	10 (3,3)	37 (12,3)	47 (15,7)		
	Disagree	16 (5,3)	12 (4)	28 (9,3)		
Do you think children with chronic diseases should be vaccinated according to vaccination calendar?	Agree	79 (26,3)	123 (41)	202 (67,3)	6,005	0,050
	Don't know	38 (12,7)	46 (15,3)	84 (28)		
	Disagree	10 (3,3)	4 (1,3)	14 (4,7)		
Would you buy the vaccine if recommended by a doctor, even if it's not listed with health insurance?	Yes	75 (25)	92 (30,7)	167 (55,7)	12,646	0,002
	Don't know	27 (9)	65 (21,7)	90 (30,7)		
	No	25 (8,3)	16 (5,3)	41 (13,7)		

Graph 4 shows 77.3% of parents believe they should get additional information on vaccine schedule, and the major-

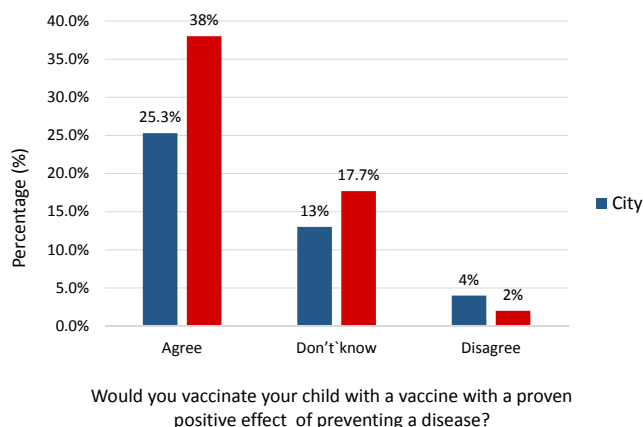
ity with this opinion were from the country (45.3%), while 32% were from the city. Among the participants with a different residence, there was a significant statistical difference ($\chi^2=6,028$; $p=0,049$) concerning the matter of getting additional information on the vaccines, (Graph 4).



Graph 4. Parents' attitudes towards getting additional information on the vaccine schedule ($\chi^2=6,028$; $p=0,049$)

Графикон 4. Ставови родитеља о добијању додатних информација о календару вакцинације ($\chi^2=6,028$; $p=0,049$)

The majority of the participants (63.3%) would vaccinate their child with a certain vaccine if it was proved to be effective in preventing the disease, 30.7% wouldn't know what to do in this situation, while 6% wouldn't vaccinate their child in this case. Among the participants with a different residence, there wasn't a significant statistical difference concerning the use of the vaccine if it was proven to have a positive effect in preventing the disease.



Graph 5. Parents' attitudes towards the need for vaccination using the vaccine with proven positive effect in preventing the disease ($\chi^2=4,790$; $p=0,091$)

Графикон 5. Ставови родитеља о потреби за вакцинацијом, користећи вакцину са доказаним позитивним ефектом у превенцији болести ($\chi^2=4,790$; $p=0,091$)

Discussion

The aim of this survey was to inquire after attitudes, knowledge and environmental factors influencing parents' opinions on vaccines. The majority of the participants in County outpatients' clinic, Bjeljina stated they lived in the country 57.7% (in family medicine teams of Educational center). Out of the total number of the participants, 53.7% said they were unemployed and still it didn't influence the fact that they would buy the vaccine even if it wasn't listed with a health insurance company. The total number of those who would buy the vaccine was 55%, and 30.7% resided in the country and 25% in the city. Parents showed a great level of medical education, since 75% stated children should be vaccinated, even though the disease was eradicated, 15.7% didn't know the answer (12.3% resided in the country and 3.3% in the city). 88% of the participants agree children should not get vaccinated if they've got cold, compared to 2.7% who think they should. More than half of the parents 67.3% agrees children with chronic diseases (epilepsy, diabetes) should be vaccinated (a bigger percentage of the parents from the country thought so 41%). Out of the total number of the participants, 77.3% think they still need additional information on vaccine schedule (45.3% of parents residing in the country and 32% residing in the city).

Similar research was done in Lithuania (Vilnius, 2011) and Sicily (city of Catania, Italy, 2007) and Belgrade (Serbia, 2007)^{6,7,8}. In Vilnius only 42.3% of parents would buy the vaccine.

Participants from the County outpatients' clinic, Bjeljina said the vaccination is a useful procedure, in 96.3%, while the participants from Vilnius stated so in 80.7%. In Belgrade, 84% of parents think vaccines have a positive effect on child's health. Comparing the results from similar surveys we found that 92.2% of Vilnius participants think doctors are the main information source, while in Sicily 74.4%, Bjeljina 85%, Belgrade 69.5% share the same opinion. Compared to Sicily, where children are under the supervision of the pediatrician up to the age of fourteen, in the Republic of Srpska it's until six years of age and after they are under the care of family medicine doctors. There is a great difference in parents' information on vaccines and it shows the advantage of family doctors in Bjeljina. 94.7% of parents from Bjeljina think children should be vaccinated according to the vaccination calendar, and the same goes for 97.6% in Sicily, 92% in Belgrade and 88.6% in Vilnius. These data show no significant difference in parents' attitudes towards regular vaccination in Bjeljina and Catania, but the difference is more prominent compared

to Vilnius. While in Catania 53% of parents disagree vaccine may be harmful to children, in Bjeljina it's 47.7%. As far as vaccine side effects go, 73.1% of parents from Catania said they had pretty good knowledge on the matter, in Bjeljina 57% and 25% of parents from Belgrade said vaccines may have side effects.

Polish research in 2016 showed the majority of information on vaccines parents get from doctors, but this information is not sufficient (16.9% of the participants said so, unlike 85% of the parents from Bjeljina who said they receive sufficient information from doctors and nurses⁹. One Russian research showed that less than 50% of the participants receive vaccine information from the medical staff¹⁰.

Similar research was performed in Zagreb and out of the total number of the participants 72.6% were of the opinion vaccination should stay mandatory, 36.3% said vaccination may have side effects. Also, 38% of Zagreb participants said vaccination may be dangerous to children's health, unlike 30.7% of parents from Bjeljina¹¹.

In Canada, parents who had faith in doctors and health system had more positive attitudes towards vaccines¹².

Conclusion

1. The majority of the participants have positive attitudes towards vaccination (it led to less morbidity and mortality from contagious diseases, children should get vaccinated according to the vaccination calendar, even though the diseases was eradicated)
2. The majority of parents would buy the vaccine if so advised by a doctor.
3. A great percentage of parents get information on importance and vaccination procedure from their family doctor.
4. Family medicine should raise awareness on vaccine importance and advantages on the worldwide level and it can be done through media, lectures, promotions.
5. Family medicine doctor should reassure parents who have doubts or refuse to vaccinate their children with scientifically supported arguments.
6. Our study results led to the conclusion that parents' positive attitudes towards vaccination were mostly influenced by parents' residence and gender because mothers living in the country had more opportunities to exchange their opinions on vaccines through their get-together.

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Ставови родитеља о вакцинама

Кључне речи:

вакцина,
родитељи,
ставови,
разлика

Сажетак

Увод. Имунизација деце као мера специфичне превенције, спроводи се у Републици Српској према обавезном календару. Евиденција о вакциналном статусу се води у здравственом картону, картону имунизације и другој медицинској документацији.

Циљ рада. Испитати ставове и знања родитеља деце узраста до 18 година и испитати факторе који утичу на формирање тих ставова.

Метод. Студија пресека је обухватила 300 родитеља. Анкетирање је спроведено у марту 2015. године у ЈЗУ Дом здравља Бијељина, у тимовима породичне медицине Едукативног центра у централној згради и шест већих секторских амбуланти. Анкетирање је било анонимно а упитник је састављен за потребе истраживања.

Резултати. Од укупног броја родитеља, било је 218 жена и 82 мушкарца; већи број родитеља живи у селу – 173, у граду 127. Међу испитаницима различитог места становања уочена је високостатистички значајна разлика ($p=0,003$) у погледу потребе за вакцинацијом ако је болест искорењена, као и на питање да ли деца са хроничним болестима треба да се редовно вакцинишу ($p=0,050$), а такође и на питање које се односи на препоруку лекара за куповину вакцине ако није на листи Фонда за здравствену заштиту ($p=0,002$). Највећи број испитаника (96,3%) сматра да је редовна вакцинација деце користан поступак, 1,7% испитаника није у то сигурно, док се 2% испитаника не слаже са тврдњом да је вакцинација деце користан поступак. Између испитаника различитог места становања не постоји статистички значајна разлика у погледу става о вакцинацији као корисном поступку.

Закључак. Већина испитаника има позитивне ставове према вакцинацији, лекари треба да доказаним научним аргументима разубере родитеље који се двоуме или одбијају да њихова деца приме вакцину.

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Примљен • Received: 30.06.2018.
 Исправљен • Corrected: 06.02.2019.
 Прихваћен • Accepted: 13.03.2019.