MEDICAL UNIVERSITY
"PROF. DR. PARASKEV STOYANOV "-VARNA
FACULTY OF MEDICINE
DEPARTMENT OF GENERAL MEDICINE

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"Immunization calendar and vaccinations in Bulgaria - current trends, problems and opportunities for their solution"

ABSTRACT

of dissertation work
for the award of the educational and scientific degree "Doctor"
Specialty: General Medicine

Scientific adviser: Prof. Dr. Valentina Madzhova, Ph.D.
Scientific consultant: Prof. Dr. Dimitrichka Bliznakova, Ph.D.

Varna
2022

The dissertation contains 145 typewritten pages and is illustrated with 26 tables, 45 figures. The list of cited literature includes 196 titles, of which 41 in Cyrillic and 155 in Latin.

The dissertation was discussed and directed for public defense by the Department Council of the Department of General Medicine at the Medical University "Professor Dr. Paraskev Stoyanov" - Varna.

Scientific jury:

External members:

1. Prof. Dr. Arman Postadjian, Ph.D.
2. Assoc. Prof. Dr. Radost Assenova, MD
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The public defense of the dissertation will be held on February 14, 2022 from ……. Hours in …… the city of Varna at an open meeting of the Scientific Jury.

The materials on the defense are published on the website of the Medical University "Professor Dr. Paraskev Stoyanov -Varna" and are available at the Department of General Medicine at MU - Varna.

Note: The numbers of the tables and figures in the abstract do not correspond to those in the dissertation.

CONTENTS

I. INTRODUCTION

Vaccines play an important role in the protection of human health. These are considered to be one of the most important factors influencing healthcare worldwide. Over the past decades, thanks to the introduction of this type of protection as mandatory in many countries, there has been a significant decline in sick and dead newborns and children from many deadly diseases.

There are two major challenges to medicine and society related to vaccines. The first is to create even more reliable and effective vaccines, and the second is to better inform the public about the benefits and risks of the procedure in question - vaccination.

Since immunity is acquired only through the body's encounter with a given antigen (either naturally or through vaccination), it is necessary to develop and maintain an immunization calendar to ensure the creation of collective immunity in a given society.

The immunization calendar occupies an important place in the health care system of each country. Its proper implementation is of great importance especially for the protection of life and health of children, but for public health in general. Over a period of time, the immunization schedule changes, depending on changes in the spread of infectious diseases, as well as the epidemiological situation in the country and neighboring countries.

In recent years, there has been a tendency in Bulgaria to refuse to vaccinate children, not only from the Roma ethnic group, but also among the Bulgarian population. The legislation in the country allows us this type of behavior towards health. An effective policy in the field of protection of children's health must be based on the results of scientific research according to modern evaluation criteria, which are lacking in our country and in most countries. They would identify the specific problems of immunization and vaccination of children in Bulgaria and outline guidelines for future action.

The main prerequisite and motivation for choosing a topic for this dissertation is the lack of serious research in recent years in our country on the application of vaccinations in Bulgaria according to the immunization calendar for the country.

II . PURPOSE, TASKS AND WORKING HYPOTHESES

1. PURPOSE

The purpose of this study is to study and evaluate the practices of immunization and vaccination in our country according to the introduced immunization calendar in Bulgaria in order to reveal current trends and problems in their application, as well as opportunities for their solution.

2. TASKS

To achieve this goal, we set ourselves the following tasks:

2.1. To study the knowledge of the parents of children in infancy and early childhood about the benefits of vaccinations, as well as their attitudes to the implementation of the immunization calendar in Bulgaria

2.2. To study the need to develop and provide information materials related to mandatory and recommended vaccines in our country to parents of children of early and infancy, including future parents

2.3. To determine the level of knowledge of medical professionals and in particular GPs about the immunization calendar and vaccinations in Bulgaria

2.4. To study the need for additional training of GPs on their recommendations for compliance with the immunization calendar of Bulgaria.

2.5. To study the problems in the organization of the children's consultation in order to improve the quality of care in it and implement a more successful model of immunization in infants and children.

2.6. To reveal the possibilities for using the children's consultation at the GP to stimulate the parents to observe the immunization calendar.

3. WORKING HYPOTHESES

3.1. Parents' knowledge of the benefits of vaccines is insufficient and sources of information are unreliable.

3.2. The knowledge and recommendations of GPs for vaccinations of children do not correspond to modern world trends.

3.3. Health policy in our country allows parents the right to choose vaccines for their children, which is why pediatric counseling is an important but underused resource in general medical practice in support of the promotion of immunizations, for a higher level of prevention in children and reaching the target immunization coverage in Bulgaria.

III. MATERIAL, DESIGN AND METHODS

1. MATERIAL

The subject of this study are 142 parents of infants and children aged 0 to 36 months, 28 future parents with reproductive problems and upcoming future in vitro fertilization from the city of Varna and 42 general practitioners from Varna, Burgas and Dobrich.

2. STUDY (DESIGN) OF THE STUDY

The dissertation was approved by KENI of the Medical University - "Prof. Dr. Paraskev Stoyanov "- Varna with Protocol № 92 / 02.04.2020

To achieve the goal and objectives of the dissertation, we conducted two parallel independent studies.

I. IMMUNIZATION CALENDAR STUDY - ATTITUDES TO COMPLY WITH IT AND REASONS FOR HESITATION AMONG PARENTS AND FUTURE PARENTS

The research is aimed at assessing the knowledge about the benefits of vaccination, the attitudes to follow the immunization calendar, the hesitations to place immunizations and the sources of information of the interviewed parents.

Model and duration of the study: a sectional epidemiological study conducted within one year from April 2020 to April 2021.

General population: parents of children from 0 to 36 months of age and future parents who are about to undergo in vitro fertilization at the Medical Center for Assisted Reproduction - "Varna" Ltd. The age interval was chosen taking into account the peculiarities of the immunization calendar in our country.

The sample of the study is formed on a random quota basis from the lists of some GPs participating in the study in the city of Varna and future parents who are about to undergo in vitro fertilization. Their participation is voluntary, subject to the principle of confidentiality.

Field work: the parents and the future parents filled in the questionnaire on their own during a planned children's consultation at the GP, consultation on the forthcoming in vitro fertilization and at home, and they were sent an electronic link to the questionnaire.

The survey was prepared in two versions - on paper and in electronic format, developed on Google forms. The availability of an electronic format of the survey was necessary in order to

facilitate the conduct of the study, due to the declared emergency epidemiological situation in the country related to the spread of COVID - 19.

The toolkit for gathering information is a direct individual survey, including 27 questions. The future parents participating in the survey were not surveyed on the issues of place of birth, number and vaccination status of the child / children, which was taken into account in the statistical processing of the data.

II. OP AND IMMUNIZATION CALENDAR SURVEY

Study of GPs' knowledge of vaccinations, as well as the possibility to use children's counseling as a tool for implementing and complying with the Immunization Calendar in Bulgaria, giving clear recommendations and accurate information to parents.

Model and duration of the study: a sectional epidemiological study conducted within one year from April 2020 to April 2021.

General population: The participants are GPs from Varna, Burgas and Dobrich districts. GPs in these areas were randomly selected from individual and group practices for Primary Care (PMP). A condition for the selection of GPs is the presence of a large percentage (over 50%) of children in their practice, which implies more experience with parents of children aged 0 to 36 months, subject to mandatory immunizations and re-immunizations. Their participation is voluntary with the principle of confidentiality.

Field work: to conduct the study, the RHIF presented lists of e-mail addresses of GP practices from the districts of Varna, Burgas and Dobrich. A questionnaire was sent to the randomly selected medical specialists.

The survey was prepared in two versions - on paper and in electronic format developed on Google forms. The availability of an electronic format of the survey was necessary in order to facilitate the conduct of the study due to the declared emergency epidemiological situation in the country related to the spread of COVID - 19.

The toolkit for gathering the information needed for the purpose of the survey is a direct individual questionnaire containing 15 questions.

3. METHODS FOR INFORMATION PROCESSING

1. Documentary method

For the present work a selection and analysis of literature sources - textbooks, manuals for immunization, articles, publications and regulations related to the problem of compliance with the immunization calendar in Bulgaria and trends in vaccination in Bulgaria and worldwide .

2. Sociological method

We conducted 3 surveys on attitudes and attitudes, fluctuations in the benefits of vaccines and the reason for refusing vaccines in order to solve problems related to compliance with the immunization calendar in the country, from the perspective of GPs, parents and parents.

4. Statistical methods

4.1. Descriptive methods

- *Frequency analysis of qualitative variables* (nominal and ordinal).

In this type of analysis, absolute and relative frequencies are calculated in%, and the results are presented in tabular or graphical form.

4.2. Analysis of variance by the ANOVA method: tabular and graphical methods for presenting the obtained data (simple and multidimensional tables, pie-pie and bar charts).

4.3. Logistic regression analysis: applied to determine the influence of specific factors on the decision to vaccinate children on the part of parents and future parents.

IV. OWN RESULTS

I. IMMUNIZATION CALENDAR STUDY - ATTITUDES TO COMPLY WITH IT AND REASONS FOR HESITATION AMONG PARENTS AND FUTURE PARENTS

1. Demographic profile of the participants in the study

The respondents are 142 parents of infants and children from 0 to 36 months of age and 28 future parents who are about to undergo in vitro fertilization, living in Varna.

2. Demographic profile of the participants in the study

The respondents are 142 parents of infants and children from 0 to 36 months of age and 28 future parents who are about to undergo in vitro fertilization, living in the city of Varna.

- The age distribution of the participants in the study is as follows: Figure. 1 and Figure 2.

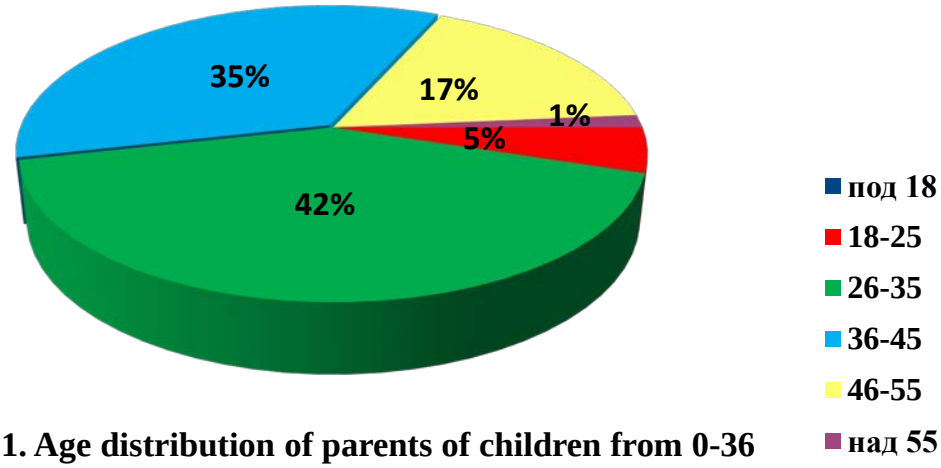

Figure 1. Age distribution of parents of children from 0-36 months of age.

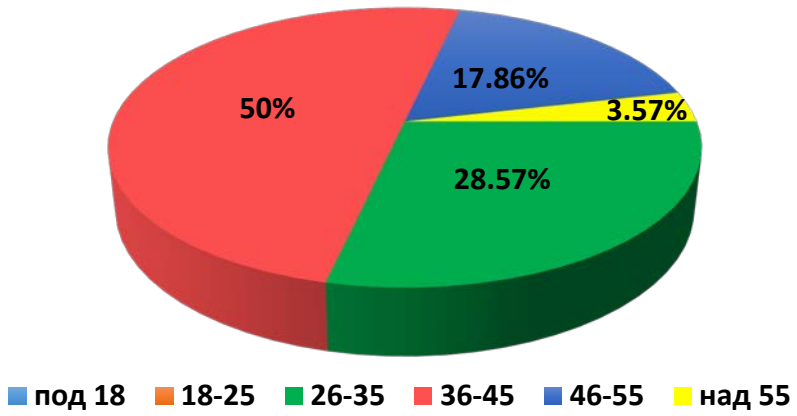

Figure 2. Distribution of future parents from the in vitro center by age

- Gender distribution of study participants

The surveyed parents and future female parents are 74.6% (n = 127) and male parents 25.4% (n = 43) (Figure 3.)

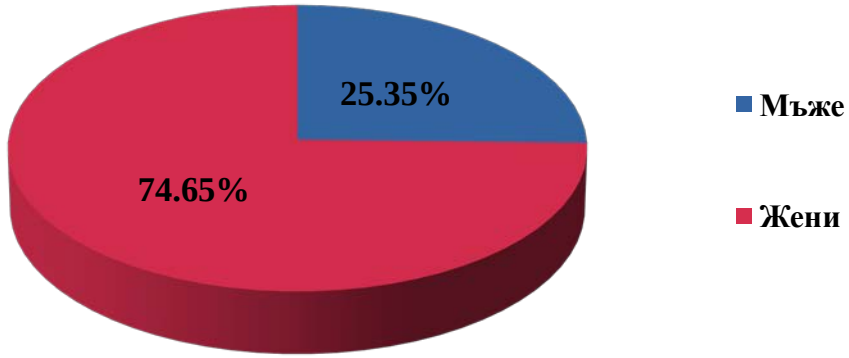

Figure 3. Percentage distribution of the surveyed parents and future parents by sex

- Distribution of the surveyed parents and future parents by education and employment.
- The relative share of the respondents with higher education is the largest - 72.9% (n = 124), the respondents with secondary education are 26.5% (n = 45), and with primary educationare 0.6% (n = 1) (Fig. 4.)

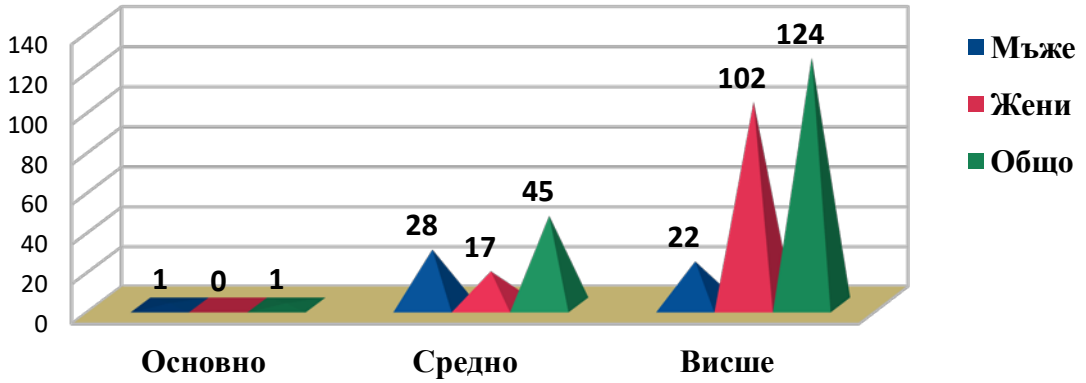

Figure 4. Distribution by education and gender of the surveyed parents and future parents

A large percentage of the surveyed parents and future parents are in permanent employment - 65.88% (n = 112), the unemployed at the time of completing the survey are 8.24% (n = 14), and 11.76% (n = 20) are indicated as housewives. of the surveyed women, 14.12% (n = 24) of the respondents are on maternity / paternity leave (Figure 5.).

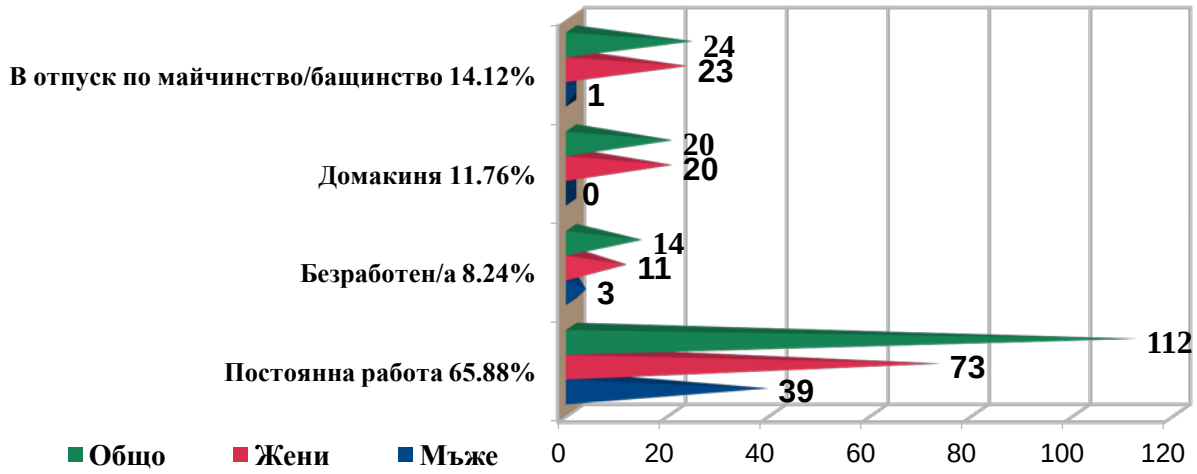

Figure 5. Distribution of the surveyed parents and future parents by employment

- Distribution of the surveyed parents and future parents by ethnicity (Figure 6.).

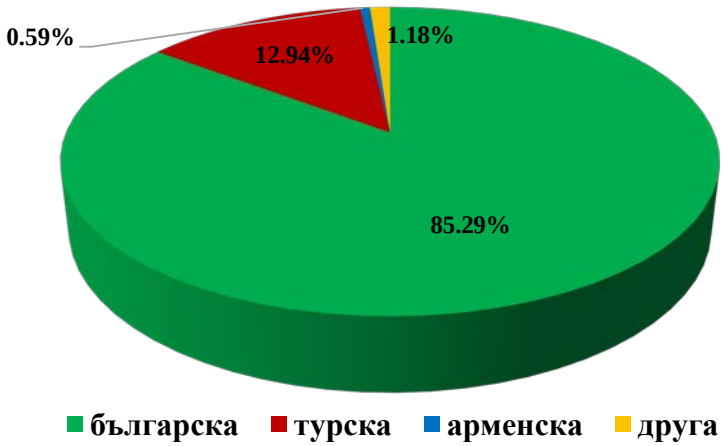

Figure 6. Distribution of the surveyed parents and future parents by ethnicity

- Distribution by marital status of the respondents

The surveyed parents and future parents are divided into three groups according to their marital status - married; unmarried; divorced The highest percentage are civil marriages - 55.88% (n = 95), followed by family partners - 38.24% (n = 65), divorced 5.88% (n = 10), none of the respondents is in the group widower / widow (Figure 7.).

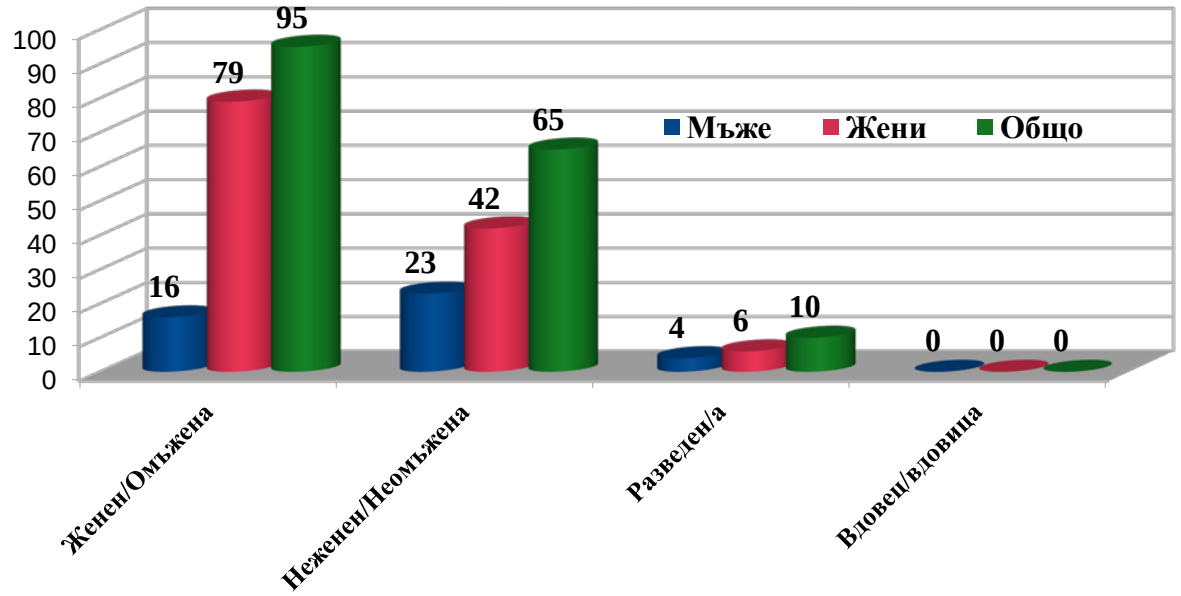

Figure 7. Distribution of the surveyed parents and future parents by marital status

- Distribution of the surveyed parents for the place of birth and the number of their children (Figure 8.).

Figure 8. Distribution of the surveyed parents by place of birth of their children

Parents with two children prevail in the group of respondents with 59.71% (n = 83), in second place are respondents with one child - 28.78% (n = 40), with three children are 10.79% (n = 15), and with four 0.72% (n = 1) of the parents (Figure 9).

1.1.

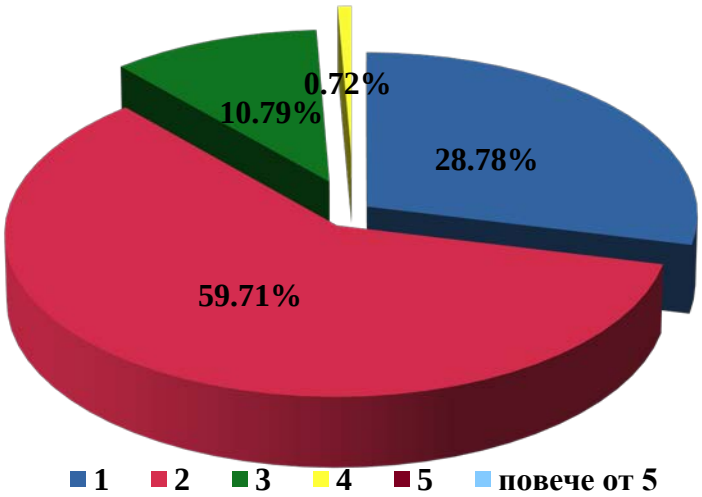

Figure 9. Distribution of the surveyed parents by number of children

Vaccination status and the impact of some socio-demographic factors on

compliance with the immunization calendar in the country.

- Distribution of the surveyed parents and future parents according to their immunization status (Figure 10.).

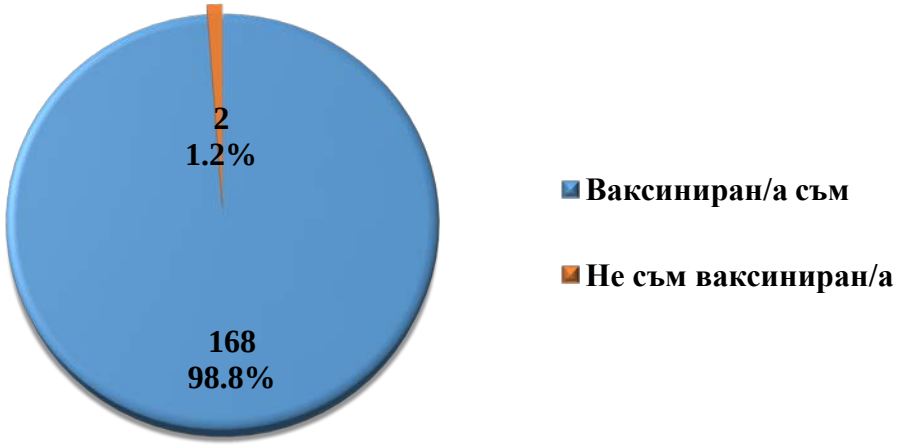

Figure 10. Distribution of the surveyed parents and future parents according to their immunization status

- Distribution of the surveyed parents by immunization status of their children

Among the surveyed parents from the city of Varna, the data show a very good immunization coverage of their children. The share of parents who indicated that their children were vaccinated - 95.1% (n = 135), and those who refused to immunize their children were 4.9% (n = 7) (Figure 11).

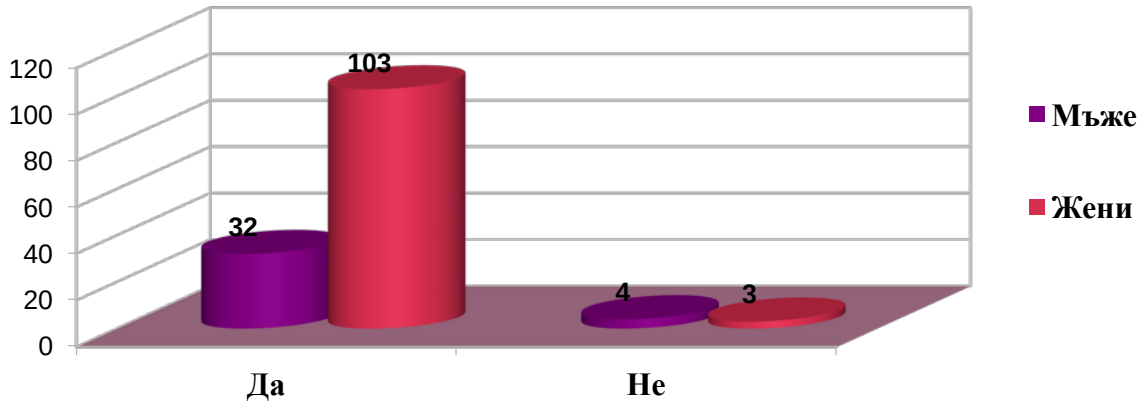

Figure 11. Distribution of respondents on vaccination of their children

- Distribution of respondents by pet ownership and vaccination status

In the course of the study, the question arose whether there is a relationship between the vaccination of children with the vaccination of the pet of the interviewed parents. The data obtained show that 100% (n = 79) of the respondents who have a pet have given all the necessary vaccines to a veterinarian. Of these 79 people, they answered that they had a pet and had vaccinated it 3.16% (n = 4) answered that they had not vaccinated their children (Figure 12).

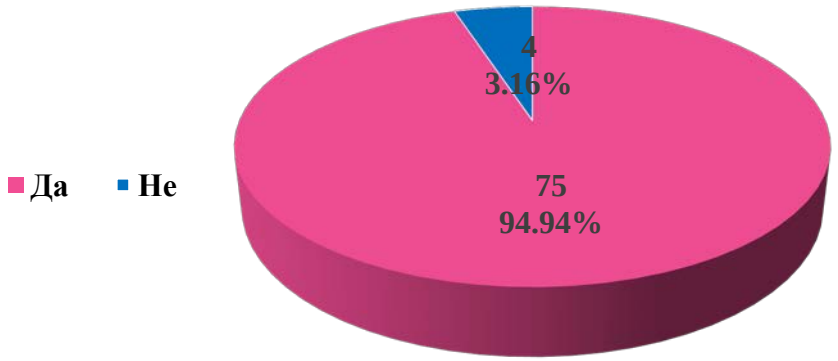

Figure 12. Distribution of the surveyed parents who have a pet with vaccines according to the vaccination status of their children

- Immunization coverage of children according to the age group of the parents

The distribution of parents by age groups who refused vaccination (n = 7) of their children without medical indications is as follows - 42.86% (n = 3) are in the group 26-35 years, in second place with 28.56% n = 2) is the group of 18-25 years, followed by 14.29% (n = 1) of age groups 36-45 years and 46-55 years (Table 7.)

Table 7. Number and relative share in percentages of the surveyed parents by age groups in relation to the immunization status of their children

Age group of parents	With vaccinated children (n = 135)		Refusal of vaccination (n = 7)	
	n	%	n	%
Under 18	0	0	0	0
18-25	5	3.70	2	28.56

26-35	56	41.48	3	42.86
36-45	49	36.30	1	14.29
46-55	23	17.04	1	14.29
Over 55	2	1.48	0	0
Total	135		7	

- Immunization coverage of children according to the marital status of the parents

Children of parents who have a civil marriage, compared to children of parents who live on a family basis without marriage have 5.25% higher immunization coverage (97.56%, n = 80; 92.31%, n = 48, respectively). The children of the surveyed parents who are divorced (n = 8) have 87.50% (n = 7) vaccination coverage (Table 8).

Table 8. Percentage distribution of vaccinated children and children whose parents have refused vaccination according to the marital status of the parents

Marital status of the parents	With vaccinated children (n = 135)		Refusal of vaccination (n = 7)	
	n	%	n	%
married	80	97.56	2	28.57
unmarried	48	92.31	4	57.14
divorced	7	87.50	1	14.29

- Immunization coverage of the children of the surveyed parents according to the level of education and their employment

A higher level of parental education is associated with a higher frequency of immunization of their children. The immunization coverage among the children of parents with higher education is 98% (n = 106), only 2% (n = 2) refuse to immunize their children. Compared to them, the children of parents with secondary education have immunization coverage of 84% (n = 27). Children of parents with secondary education have 14% lower immunization coverage than children of parents with higher education. Only one of the surveyed parents who vaccinated their children has primary education - 0.7% (n = 1) (Figure 13).

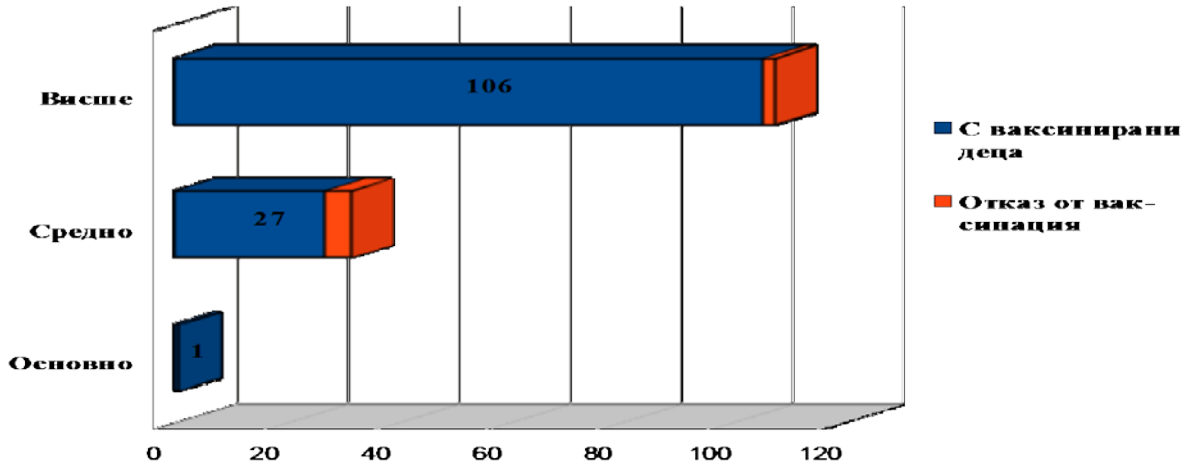

Figure 13. Distribution of the surveyed parents according to the level of education and the vaccination status of their children

Table 9 shows the number and percentage of parents with vaccinated children and those who refused vaccinations according to their level of education. Of all parents who refused to immunize their children, n = 7, 85.71% (n = 6) had secondary education, and only one respondent with higher education, 14.29% (n = 1), refused to be vaccinated.

Table 9. The level of education of parents and the relationship with the refusal to vaccinate their children

Level of education	With vaccinated children (n = 135)		Refusal of vaccination (n = 7)	
	n	%	n	%
Basically	1	0.74	0	0
Average	27	20.00	6	85.71
High	107	79.26	1	14.29

- Immunization coverage of children according to the employment of the surveyed parents

The highest refusal of vaccines was observed among parents who indicated that they are currently unemployed - 8.45% (n = 12) and among mothers who are housewives and do not have employment - 9.15% (n = 13). A total of 5% (n = 7) indicated that they would not vaccinate their

children, the percentage distribution was as follows: 57.14% (n = 4) women indicated that they were housewives and 42.86% (n = 3) of parents indicated that in they are currently carefree. (Table 10.).

Table 10. Relationship between the employment of parents and the refusal to vaccinate their children

Employment	n = 142	Refusal of vaccination	
		n = 7	%
Permanent job	110	0	0
Unemployed	12	3	42.86
Housewife	13	4	57.14
On maternity / paternity leave	7	0	0

- Relationship between the immunization coverage of the children and the number of children in the family of the interviewed parents

Of the surveyed respondents (n = 142), refusal to vaccinate was observed in a total of n = 7 of families with one or two children. Of the surveyed parents with one child - 30.28% (n = 43) the highest refusal rate was found - 71.43% (n = 5), in the group of parents with two children - 58.45% (n = 83) of the respondents, only two refused immunizations, which amounted to 28.57% (n = 2) of all those who did not vaccinate their children (Table 11).

Table 11. Distribution of parents by number of children in the family and refusal of vaccination

Number of children in the family	Number of respondents		Refusal of vaccinations	
	n = 135	%	n = 7	%
1	38	20.74	5	71.43
2	81	60.00	2	28.57
3	15	11.11	0	0
4	1	0.74	0	0
More than 4	0	0	0	0

1.3. Awareness of parents and future parents about immunizations. Factors forming the opinion of parents about vaccinating their children

- Awareness of parents and future parents about the diseases from which the vaccines included in the immunization calendar of Bulgaria protect

The majority of the surveyed parents and future parents answered "Yes", namely that they were informed about which infectious diseases vaccines are given - 77.65% (n = 132), of which 9.09% (n = 12) are male gender and 90.91% (n = 120) are female. With "No" - the respondents are not aware of which infectious diseases the vaccines are against - 22.35% (n = 38), of which 81.58% (n = 31) are male and 18.42% (n = 7) are female. (Figure 14. and Figure 15.)

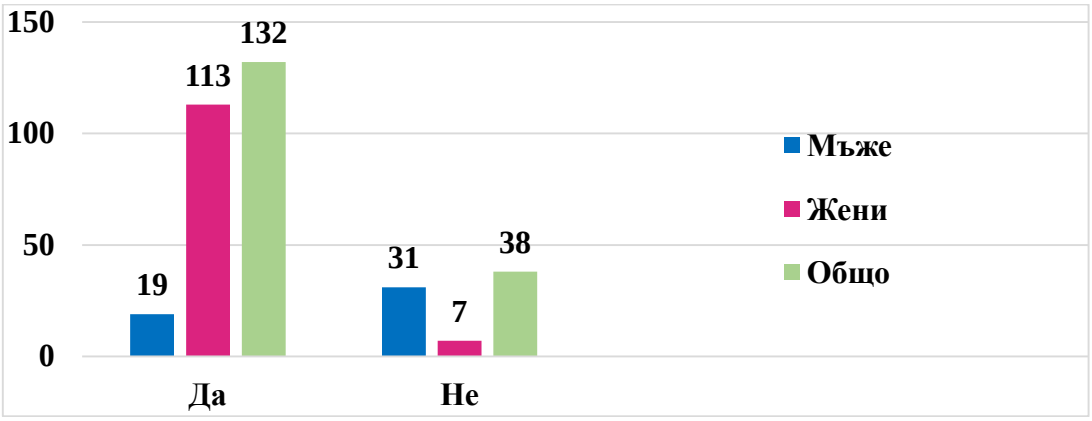

Figure 14. The distribution of respondents by gender according to their knowledge of which infectious diseases protect the vaccines included in the immunization calendar.

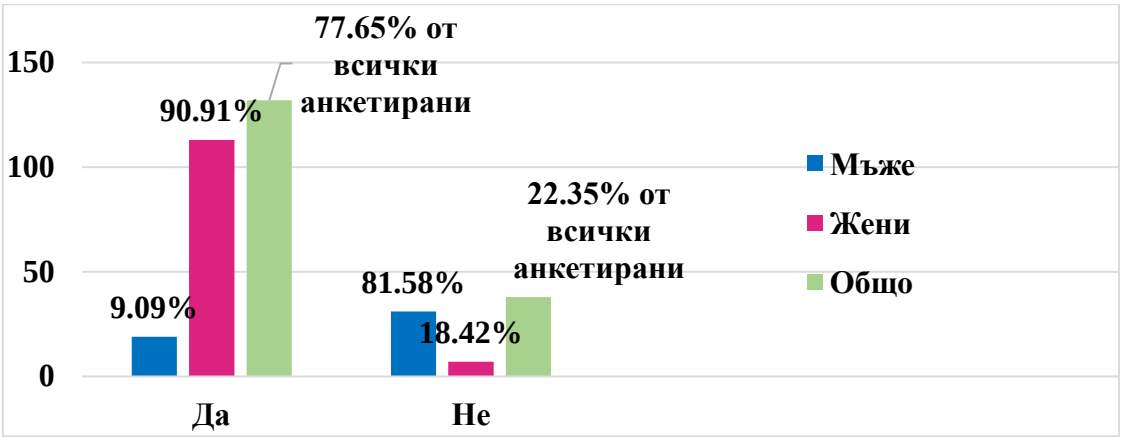

Figure 15. Percentage distribution of the surveyed parents and future parents according to gender and awareness of which diseases the vaccines protect against.

- Level of education of parents and future parents and awareness of the diseases from which the vaccines included in the immunization calendar of Bulgaria protect

The male respondents were n = 43, they answered that they were aware of which diseases the vaccines protect against, n = 12 or 27.91% and n = 31 or 72.09% thought that they were not informed about which diseases the vaccines protect against. According to the education of male respondents with a positive answer, the distribution is as follows: with primary education are n = 1 or 2.33%; with secondary education are n = 2 or 4.65% and with higher education are n = 9 or 20.93%. Compared to the education of male respondents with a negative answer, the distribution is as follows: with secondary education they are n = 18 or 41.86%, and with higher education. Female respondents are n = 127; of them answered that they are familiar with vaccine-preventable diseases are n = 120 or 94.49% and n = 7 or 5.51% think they are not informed. Female respondents with a positive answer are distributed according to their education as follows: with secondary education are n = 18 or 14.17% and with higher education are n = 102 or 80.21%. With a negative answer are a small percentage of respondents 5.51% or n = 7 who have secondary education. Among those who indicated that they were not informed about vaccine-preventable diseases, the respondents with secondary education prevailed with n = 25 or 14.71% of all respondents; and those with higher education are only male - n = 13 or 7.65% of all respondents (Table 12).

Table 12. Level of education of parents and future parents and awareness of diseases from which vaccines protect

Level of education	Awareness of vaccine-preventable male diseases (n = 43)				Awareness of vaccine-preventable diseases - female (n = 127)			
	Yes		No		Yes		No	
	n	%	n	%	n	%	n	%
Basically	1	2.33	0	0	0	0	0	0
Average	2	4.65	18	41.86	18	14.17	7	5.51
High	9	20.93	13	30.23	102	80.31	0	0

- Dependence of employment of parents and future parents and their awareness of vaccine-preventable diseases

The male respondents were n = 43, they answered that they were aware of which diseases the vaccines protect against, n = 12 or 27.91% and n = 31 or 72.09% thought that they were not informed about which diseases the vaccines protect against. Compared to the employment of male respondents with a positive answer are respondents with permanent employment - n = 12 or 27.91% of the surveyed men. Compared to the employment of male respondents with a negative answer, the distribution is as follows: with permanent work are n = 27 or 62.79%, unemployed at the time of the survey are n = 3 or 6.98% and on paternity leave is one of the respondents male or 2.33%. Female respondents are n = 127 or 74.71% of all respondents; of them answered that they are familiar with vaccine-preventable diseases are n = 120 or 94.49% and n = 7 or 5.51% think they are not informed.

Respondents from the female sex whether positive answer is distributed according to their employment as follows: with permanent work are n = 73 or 57.48%, unemployed are n = 8 or 6.30%, as housewives are indicated n = 17 or 13.39%, on leave maternity are n = 22 or 17.32%. With a negative answer are a small percentage of women surveyed 5.51% or n = 7, and the distribution of employment is as follows - the unemployed at the time of the survey and housewives are equal to n = 3 or 2.36%, and those on maternity leave - n = 1 or 0.79%. of the surveyed women. (Table 13.).

Table 13. Employment of the surveyed parents and future parents and awareness of the diseases from which vaccines protect

Employment	Awareness of vaccine-preventable male diseases (n = 43)				Awareness of vaccine-preventable diseases - female (n = 127)			
	Yes		No		Yes		No	
	n	%	n	%	n	%	n	%
Permanent job	12	27.91	27	62.79	73	57.48	0	0
Unemployed	0	0	3	6.98	8	6.30	3	2.36
Housewife	0	0	0	0	17	13.39	3	2.36
On maternity / paternity leave	0	0	1	2.33	22	17.32	1	0.79

- Source of information about vaccines, as a factor in forming the opinion of the interviewed parents and future parents about the placement of immunizations

According to the source of information among the surveyed parents and future parents, the distribution is as follows: the highest percentage is the Internet as the main source - 55.88% (n = 95), followed by other literature with 33.53% (n = 57) and last media and television by 10.59% (n = 18). (Figure 16).

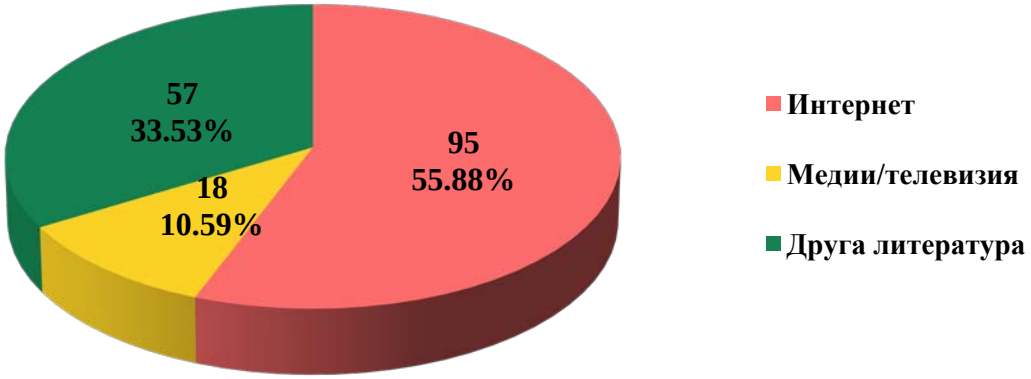

Figure 16. Distribution of parents and future parents by source of information

- Opinion of the surveyed parents about the time spent by their personal physician to acquaint them with the mandatory and recommended vaccines (Figure 17).

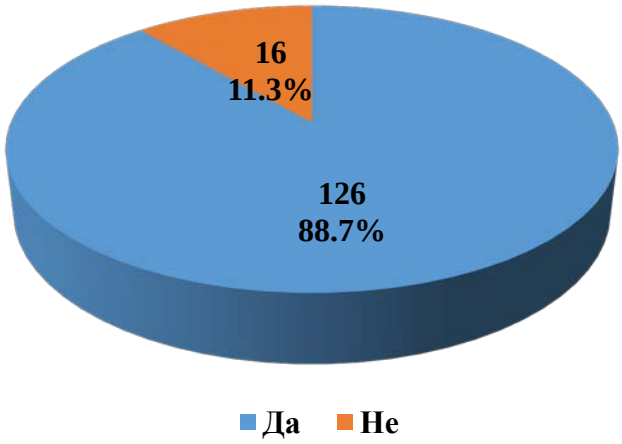

Figure 17. Distribution of the interviewed parents according to the sufficiency of the information received from the personal physician

- Distribution by gender and source of information among the surveyed parents and future parents

According to the gender of the surveyed parents, the main source of information in the largest percentage is the Internet - 69.77% (n = 18) of the surveyed men and 51.18% (n = 65) of the surveyed women (Table 14).

Table 14. Relative share of parents and future parents by sex and source of information

A source of information	Male (n = 43)		Female (n = 127)	
	n	%	n	%
Internet	30	69.77	65	51.18
Media / Television	6	13.95	12	9.45
Other literature	14	32.56	43	33.86

- Relationship between the source of information and the level of education of the surveyed parents and future parents

Among the respondents with higher education with almost equal percentage as a source of information are the Internet and other literature. Respectively, 45.97% (n = 57) and 44.35% (n = 55), and 9.68% (n = 12) indicated media and television. Among respondents with secondary education, the main source of information is the Internet - 82.22% (n = 37), followed by 13.33% (n = 6) and only 4.44% (n = 2) use other literature as a source of information (Table 15.) .

Table 15. Distributed to the surveyed parents and future parents according to the source of information and the level of education

A source of information	Basic (n = 1)		Average (n = 45)		Higher (n = 124)	
	n	%	n	%	n	%
Internet	1	100	37	82.22	57	45.97
Media / Television	0	0	6	13.33	12	9.68
Other literature	0	0	2	4.44	55	44.35

- Relationship between the source of information and employment of the surveyed parents and future parents

The comparison of the surveyed parents and future parents by source of information and employment presented the following data: 66.32% of respondents indicated the Internet as their main source of permanent employment (n = 63), 7.37% of the unemployed indicated at the time of completing the survey n = 7), housewives noted 13.68% (n = 13), and maternity / paternity leave were 12.63% (n = 12). The Internet as a means of information prevails among respondents with permanent jobs. Vaccination awareness media / television is mainly used by women who are 38.89% (n = 7) and 38.89% (n = 7) unemployed at the time of the survey, of those on maternity or paternity leave 22.22% (n = 4) of those who indicated media and television as a source of information. (Table 16.).

Table 16. Dependence between the employment of the respondents and the source of information

Employment	Internet (n = 95)		Media / Television (n = 18)		Other literature (n = 57)	
	n	%	n	%	n	%
Permanent job	63	66.32	0	0	49	85.96
Unemployed	7	7.37	7	38.89	0	0
Housewife	13	13.68	7	38.89	0	0
On maternity / paternity leave	12	12.63	4	22.22	8	14.04

- Distribution of opinion on effectiveness among the surveyed parents and future parents

Respondents' opinion on the effectiveness of vaccines was positive in 68.82% (n = 117) and negative in 31.18% (n = 53) (Figure 18. and Figure 19.)

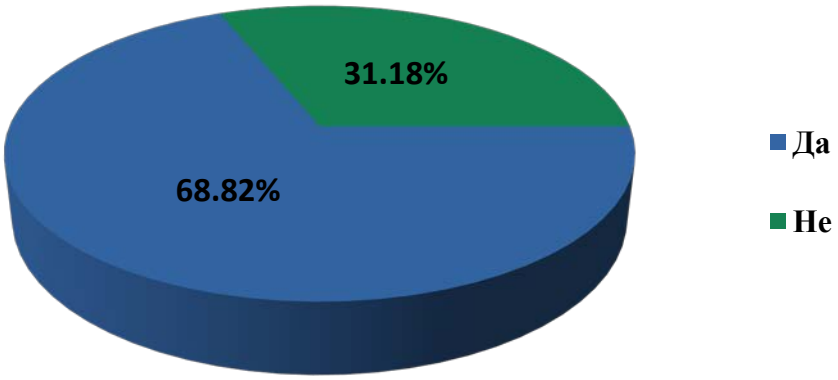

Figure 18. Percentage distribution of parents and prospective parents who believe that vaccines are effective

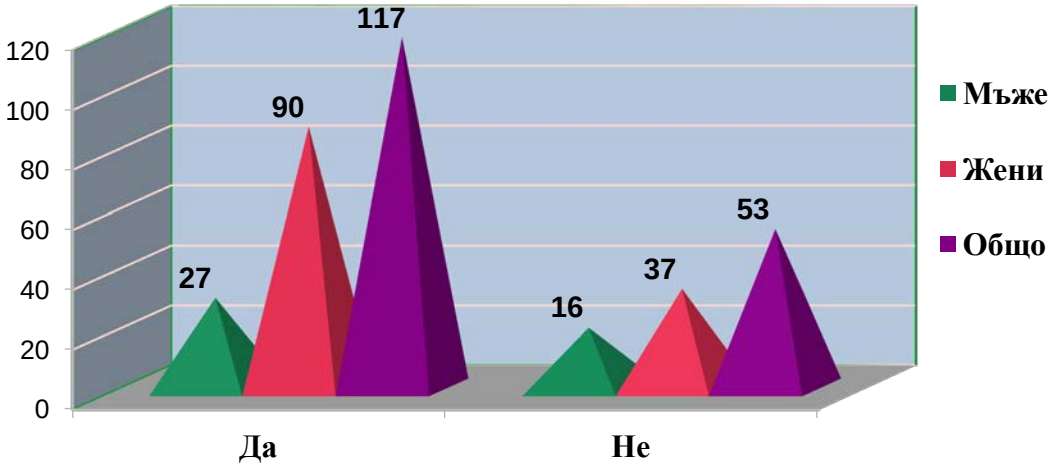

Figure 19. Distribution of surveyed parents and future parents by opinion on the effectiveness of vaccines

- Dependence between the age group of the surveyed parents and future parents on the opinion on the effectiveness of vaccines

Respondents who believe that vaccines are not effective are 31.18% (n = 53), and their distribution by age groups is as follows: in the group 18-25 are 11.32% (n = 6), in the group 26-35 are 58.49% (n = 31), the age group 36-45 were 24.53% (n = 13) and in the age group 46-55 were 5.66% (n = 3). The results show that the greatest fluctuation in efficiency is among respondents in the age group 26-35, followed by the group of 36-45 year olds (Table 17).

Table 17. Distribution of surveyed parents and future parents by age groups and opinion on the effectiveness of vaccines

Age group	Effective (n = 117)		Ineffective (n = 53)	
	n	%	n	%
18-25	1	0.85	6	11.32
26-35	36	30.77	31	58.49
36-45	51	43.59	13	24.53
46-55	26	22.22	3	5.66
over 55	3	2.56	0	0

- Relationship between the source of information and the opinion on the effectiveness of vaccines among the surveyed parents and future parents

Respondents indicated that vaccines are not effective -31.18% (n = 53) cited the Internet as the main source of information - 79.25% (n = 42) and 20.75% (n = 11) media and television (Table 18.) .

Table 18. Distribution of respondents by opinion on the effectiveness of vaccines according to their source of information

A source of information	Effective (n = 117)		Ineffective (n = 53)	
	n	%	n	%
Internet	53	45.30	42	79.25
Media / Television	7	5.98	11	20.75
Other literature	57	48.72	0	0

- Distribution of the surveyed parents and future parents according to the effectiveness of vaccines in relation to their level of education

Of the respondents, 68.82% (n = 117) believe that vaccines are effective, with 94.87% (n = 111) with higher education and 5.13% (n = 6) with secondary education. Respondents who reported vaccines as ineffective were 31.18% (n = 53), of whom 73.58% (n = 39) had secondary education and 24.53% (n = 13) had higher education (Table 19).

Table 19. Distribution of the surveyed parents and future parents by opinion on the effectiveness of vaccines in relation to the level of education

Level of education	Effective (n = 117)		Ineffective (n = 53)	
	n	%	n	%
Basically	0	0	1	1.89
Average	6	5.13	39	73.58
High	111	94.87	13	24.53

- Distribution of respondents by opinion on the effectiveness of vaccines in terms of their employment

Regarding employment, the distribution of respondents indicated that vaccines are ineffective is the following 28.30% (n = 15) are in permanent employment, 20.75% (n = 11) indicate that they are unemployed at the time of the survey, 33.96% = 18) indicate that they are housewives and 16.98% (n = 9) are on maternity leave (Table 20.)

Table 20. Distribution of respondents by opinion on the effectiveness of vaccines and employment rate.

Level of employment	Effective (n = 117)		Ineffective (n = 53)	
	n	%	n	%
Permanent job	97	82.91	15	28.30
Unemployed	3	2.56	11	20.75
Housewife	2	1.71	18	33.96
On maternity / paternity leave	15	12.82	9	16.98

- Distribution of the surveyed parents and future parents according to the opinion about the danger of administered vaccines according to the immunization calendar in Bulgaria

Among the surveyed parents and future parents, the distribution in their opinion about the dangers of vaccines is as follows: 41.76% (n = 71) believe that vaccines are not dangerous, 33.53% (n = 57) say they can not judge and 24.71% n = 42) consider vaccines to be dangerous (Figure 20. and Figure. 21).

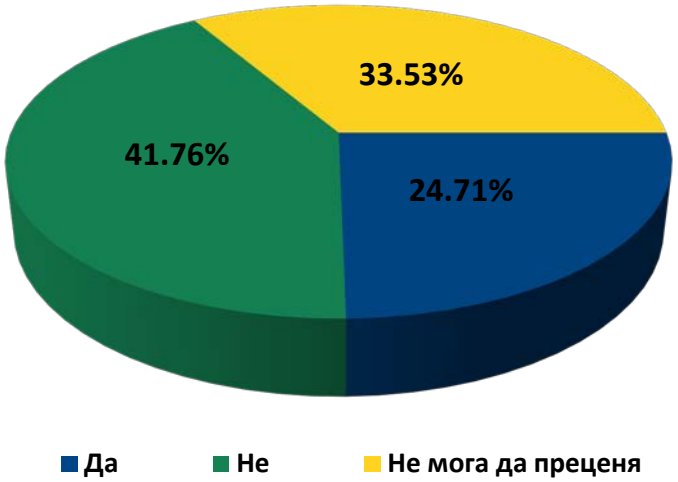

Figure 20. Percentage distribution of parents and prospective parents who consider vaccines to be dangerous

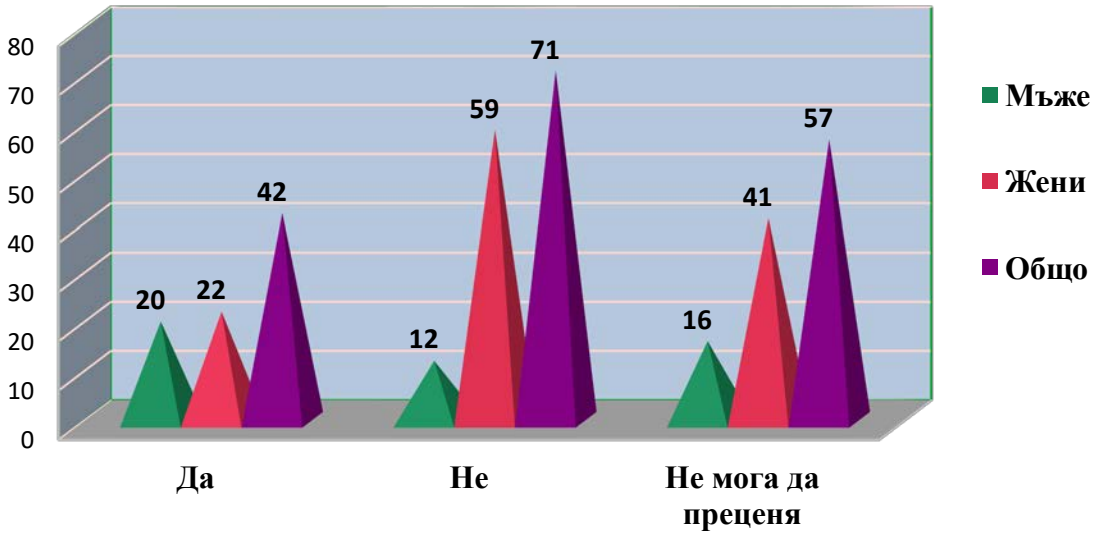

Figure 21. Distribution of the surveyed parents and future parents according to the danger of vaccines

- Distribution of respondents by opinion about the dangers of vaccines according to their age group

Respondents indicating vaccines as dangerous are n = 42, of which 69.05% (n = 29) are in the age group 26-35, 14.29% (n = 6) are in the group 36-45, 11.90% (n = 5) are in the age group the group 18-25 and 4.76% (n = 2) fall into the group 46-55 years old. (Table 21).

Table 21. Distribution of respondents by age groups and opinion on the dangers of vaccines

Age group (n = 170)	Not dangerous (n = 71)		They are dangerous (n = 42)		I can't judge (n = 57)	
	n	%	n	%	n	%
18-25	0	0	5	11.90	2	3.51
26-35	15	21.13	29	69.05	23	40.35
36-45	35	49.30	6	14.29	23	40.35
46-55	19	26.76	2	4.76	8	14.04
over 55	2	2.82	0	0	1	1.75

- Distribution of the surveyed respondents by level of education and opinion about the dangers of vaccines

Of the respondents who indicated that vaccines are dangerous, 90.48% (n = 38) have secondary education, those with higher education prevail, 91.23% (n = 52), and those who say that vaccines are not dangerous have higher education. education in 97.18% (n = 69) (Table 22.).

Table 22. Distribution of respondents in their opinion about the dangers of vaccines according to their level of education

Level of education	Not dangerous (n = 71)		They are dangerous (n = 42)		I can't judge (n = 57)	
	n	%	n	%	n	%
Basically	0	0	1	2.38	0	0
Average	2	2.82	38	90.48	5	8.77
High	69	97.18	3	7.14	52	91.23

- Distribution of the surveyed parents and future parents according to the danger of vaccines in relation to their employment

Less than half of the respondents think that vaccines are not dangerous - 41.76% (n = 71), and in this group the respondents with permanent employment prevail - 84.51% (n = 71).

Of the surveyed parents and future parents who consider vaccines dangerous n = 42 are distributed as follows: 47.62% (n = 20) are in permanent employment, 26.19% (n = 11) are housewives, 19.05% (n = 8) are on maternity leave, 7.14% (n = 3) are unemployed. C I can not judge meet n = 57, divided into the following groups - with permanent employment 56.14% (n = 32), unemployed and housewives respectively by 10.53% (n = 6) and maternity / paternity leave 22.81% n = 13) (Table 23).

Table 23. Distribution of the respondents by opinion on the danger of vaccines in relation to their employment

Employment	Not dangerous (n = 71)		They are dangerous (n = 42)		I can't judge (n = 57)	
	n	%	n	%	n	%
Permanent job	60	84.51	20	47.62	32	56.14
Unemployed	5	7.04	3	7.14	6	10.53
Housewife	3	4.23	11	26.19	6	10.53
On maternity / paternity leave	3	4.23	8	19.05	13	22.81

- Distribution of the surveyed parents and future parents according to their awareness of the need for mass immunization

Only about half of the surveyed parents and future parents are aware of the need for mass vaccination - 48.24% (n = 82). The rest of the respondents are divided as follows into two groups: 12.35% (n = 21) answered that they do not think it is necessary and 39.41% (n = 67) are not sure about the need for mass vaccination (Figure 22).

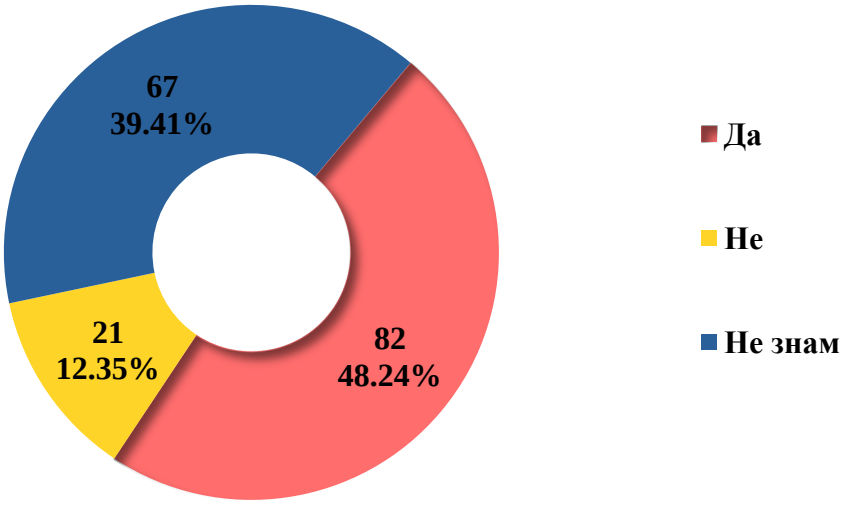

Figure 22. Distribution of respondents regarding their opinion on the need for mass use of vaccines

- Distribution of respondents by the presence of relatives or acquaintances who refuse to vaccinate their children

About half of the respondents - 46.47% (n = 79) report that they have relatives or acquaintances who have refused to vaccinate their children, and 16.47% (n = 28) say they do not know. 37.06% (n = 63) of the respondents gave a negative answer (Figure 23).

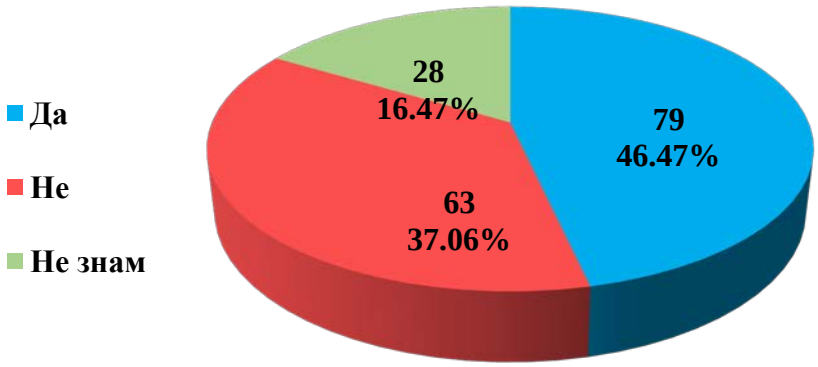

Figure. 23 Distribution of respondents by presence of relatives or acquaintances who do not vaccinate their children

- Distribution of surveyed parents according to whether unvaccinated children pose a threat to their children

Respondents in 35.92% (n = 51) state that they do not consider unvaccinated children a threat to society, 26.76% (n = 38) are unsure and 37.32% (n = 53) think that they pose a threat to their children. 24).

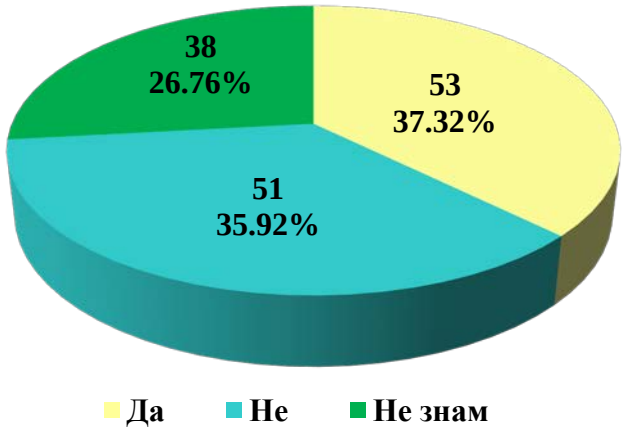

Figure 24. Distribution of surveyed parents according to whether unvaccinated children pose a threat to their children

- Distribution of the surveyed parents and future parents in their opinion on the mandatoryity of vaccines according to the immunization calendar in Bulgaria

Respondents are divided into two almost equal groups in their opinion on the mandatory nature of vaccines. 58.06% (n = 97) think that vaccines should be mandatory and 42.94% (n = 73) do not consider it necessary to immunize children according to the immunization calendar (Figure 25).

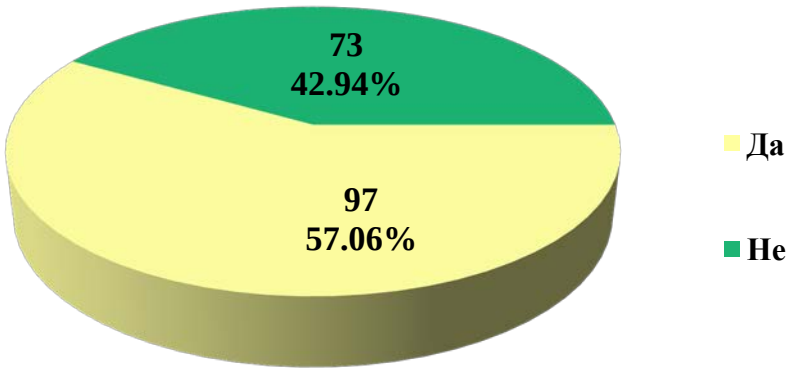

Figure 25. Percentage distribution of parents and future parents in their opinion on vaccination mandatory

- Distribution of the surveyed parents and future parents according to their opinion on the danger of mass refusal of immunization in society

According to the surveyed parents and future parents, 70% (n = 119) indicate that mass refusal of vaccination is dangerous and 30% (n = 51) do not think that mass refusal of immunizations would be a danger to society (Figure 26).

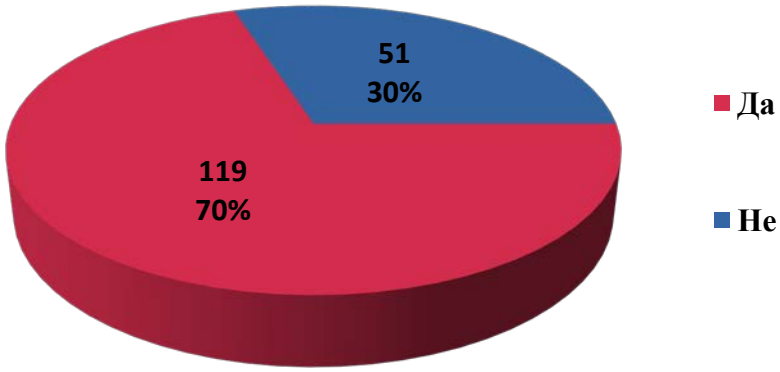

Figure 26. Percentage distribution of the opinion of parents and future parents about the danger of mass refusal of vaccination

- Percentage distribution of the surveyed parents for the need to document the refusal of immunization

55.29% (n = 94) indicated that they considered it correct to document the refusal of vaccination and 44.71% (n = 76) did not think it necessary for parents to declare in writing the refusal to immunize their children (Figure 27).

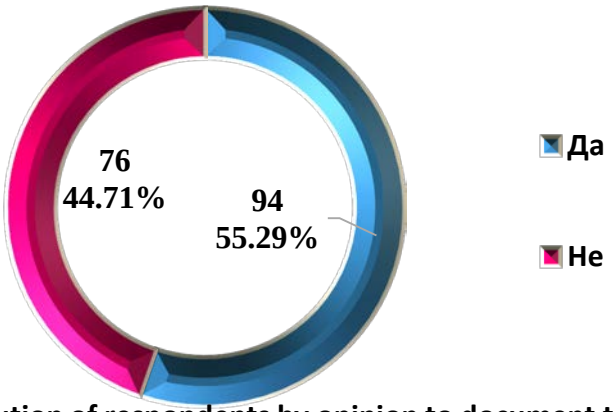

Figure 27. Distribution of respondents by opinion to document the refusal of vaccination

- Opinion of parents and future parents on whether vaccines can harm their children (Figure 28).

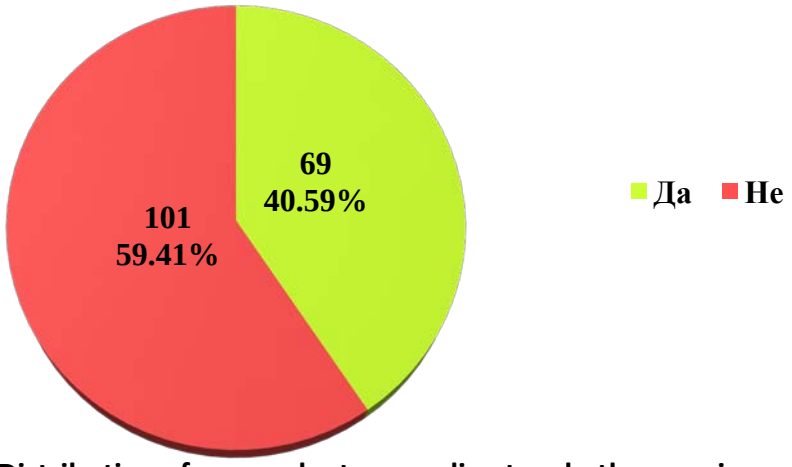

Figure 28. Distribution of respondents according to whether vaccines can harm their children

- Distribution of respondents in their opinion on the type of vaccines given in Bulgaria and in other countries (Figure 29.).

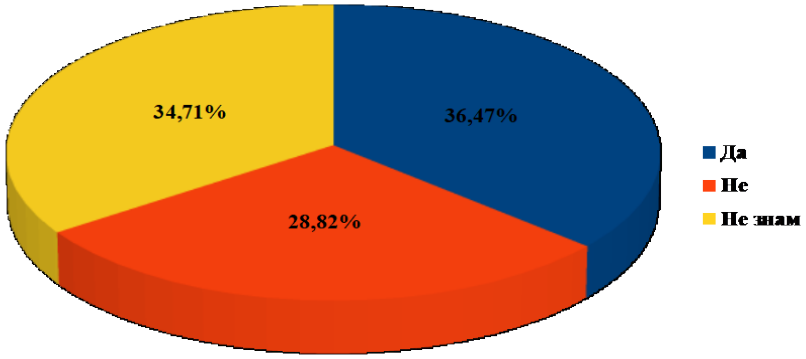

Figure 29. Distribution of respondents by opinion on the differences in the administered vaccines in our country compared to other countries

- Opinion of respondents about the decline in immunity after vaccination in childhood

According to 35.29% (n = 60), vaccines lead to a decline in the immune system, 24.12% (n = 41) are hesitant and 40.59% (n = 69) believe that there is no decline in immunity after immunization (Figure 30).

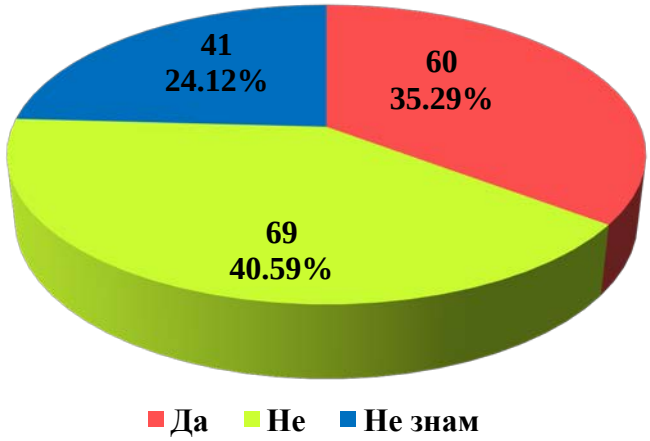

Figure 30. Distribution of respondents by opinion about the decline in immunity after vaccination of children

- Distribution of the respondents by awareness of the lack of the right of their child to attend a childcare facility without immunizations according to the immunization calendar (Figure 31.)

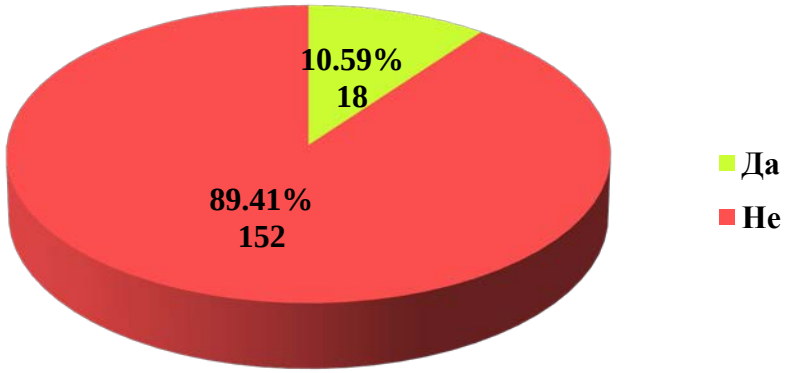

Figure 31. Distribution of respondents by awareness of mandatory vaccination of children when visiting a kindergarten

II. GP AND IMMUNIZATION CALENDAR SURVEY

The respondents are 39 general practitioners from Varna, Burgas and Dobrich districts.

- Age distribution of respondents

Distribution of the surveyed GPs by age group (Figure 32).

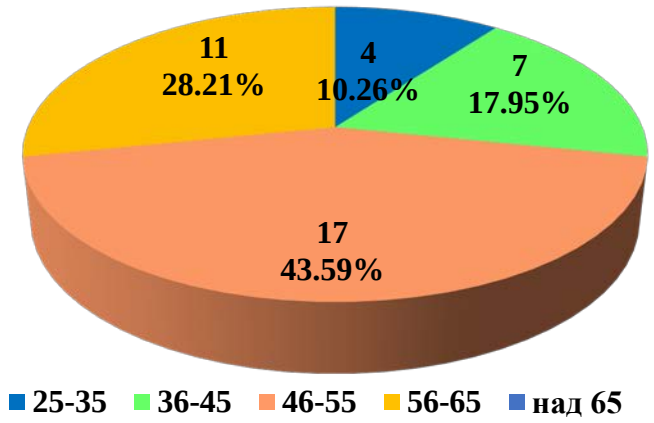

Figure 32. Age distribution of the surveyed GPs

- Distribution of respondents by length of service (Figure 33).

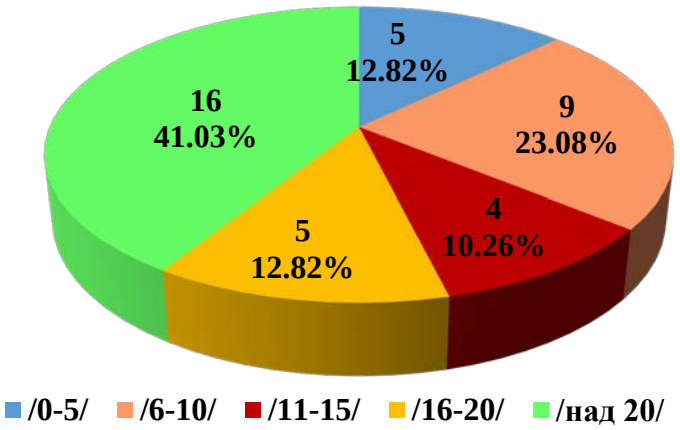

Figure 33. Distribution of the surveyed GPs by length of service

- Distribution of the respondents according to the tendency in their practice towards refusal of immunizations

In recent years, there has been an increase in parents refusing or postponing their children's vaccines. This is also shown by the data obtained from the surveyed GPs - 71.79% (n = 28) observe

an increasing tendency towards fluctuations in vaccines and 28.21% (n = 11) do not notice such a tendency (Figure 34).

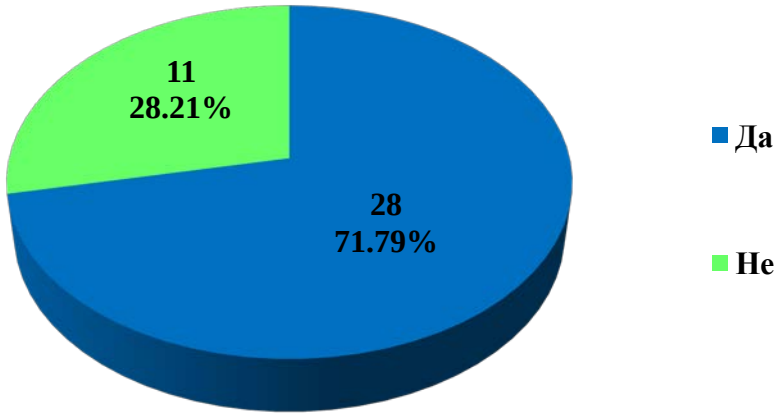

Figure 34. Distribution of the surveyed GPs by surveillance for refusal of immunizations in their practice

- Distribution of respondents by opinion on the link between ethnicity and more frequent refusal of vaccines.

The opinions of the respondents here are divided into approximately two equal halves - 51.28% (n = 20) believe that the refusal of vaccination has no connection with the ethnicity of the parents and 48.72% (n = 19) believe that those belonging to the Bulgarian ethnicity -often hesitant to place immunizations (Figure 35.).

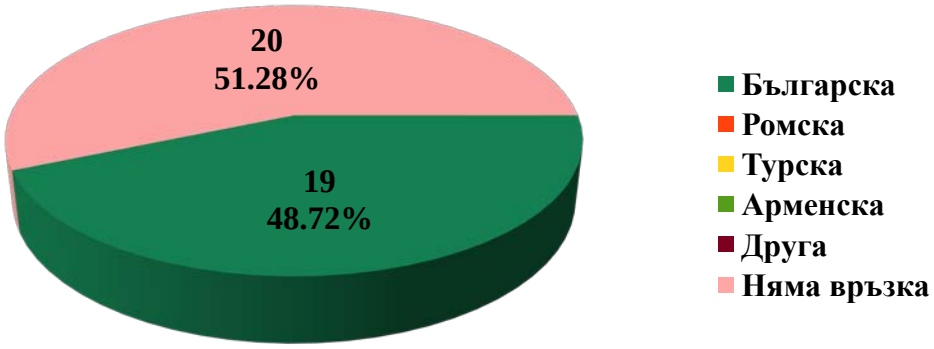

Figure 35. Percentage distribution of GPs' opinion on ethnicity and vaccine refusal

- Distribution of the surveyed GPs in their opinion about the fears of the parents (Figure 36).

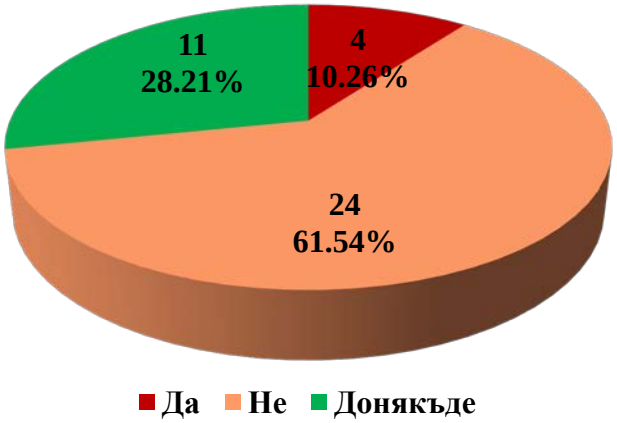

Figure 36. Distribution of the surveyed GPs according to their opinion The parents' fears about immunizations are justified

- Distribution of GP respondents on the cause of parents' fears (Figure 37).

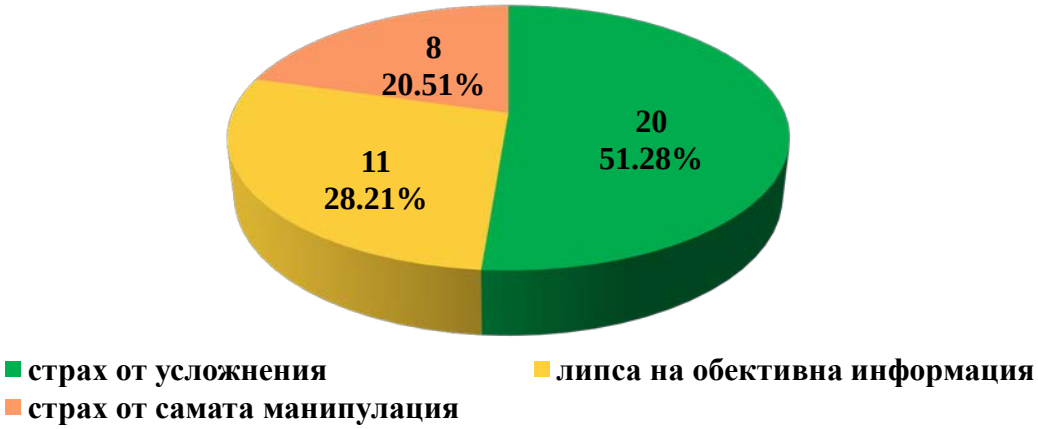

Figure 37. Distribution of GPs according to the main reason for refusal of immunizations of parents

- Distribution of the GPs surveyed according to the time they spend on pediatric consultation

According to the time they spend on children's consultation, GPs are divided into the following groups: on average 10-15 minutes are spent by 41.03% (n = 16), about 15-20 minutes are spent on 48.72% (n = 19) and on average 20-30 minutes are spent only about 10.26% (n = 4) (Fig. 38).

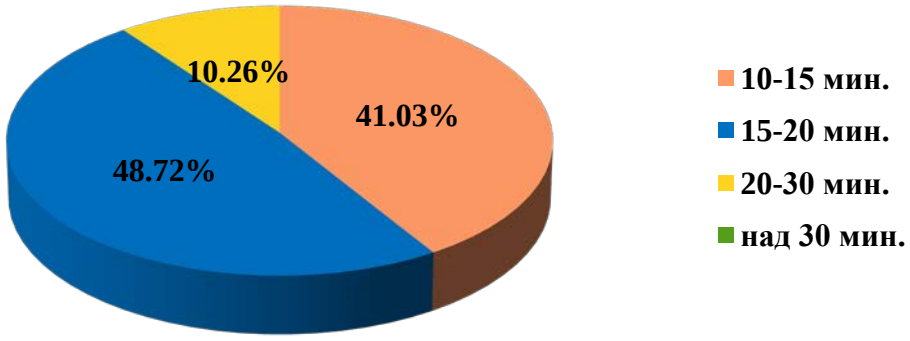

Figure 38. The time spent by GPs for pediatric consultation

- Distribution of GPs by availability with sufficient time to explain the benefits of vaccines

Respondents of GPs believe that they have enough time to explain the positive effects of vaccines in 84.62% (n = 33) of cases and only 15.38% (n = 6) think it is necessary to spend more time to promote immunoprophylaxis (Figure 39). .

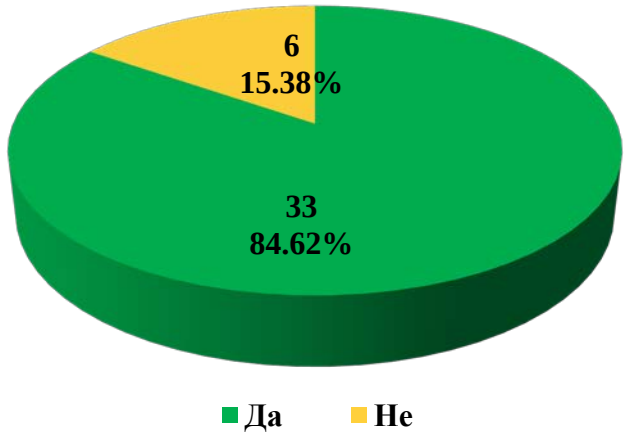

Figure 39. Distribution of GPs by sufficiency of time to promote the benefits of vaccines

- Distribution of the surveyed GPs according to the main source of information they use to be informed about vaccines

The main sources of information that GPs use to inform about the benefits and risks of vaccines are divided into the following groups: textbooks in 58.97% (n = 23), Internet in 20.51% (n = 8) and training courses in 20.51% (n = 8) (Figure 40).

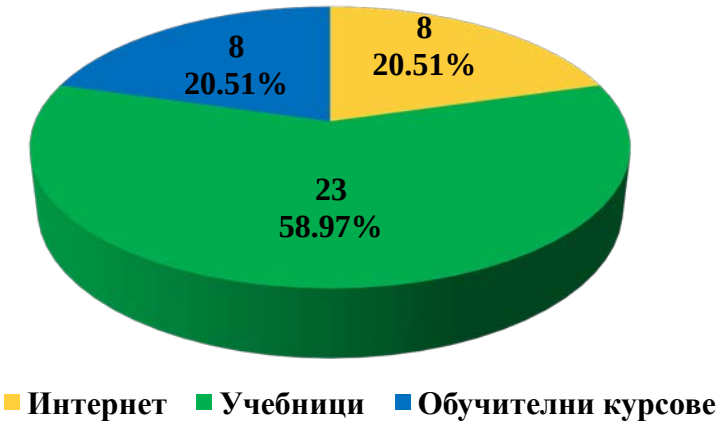

Figure 40. Distribution by source of information used by GPs

- Opinion of GPs on the availability of sufficient training courses for medical staff on the problems related to immunizations in the country

89.74% (n = 35) of the surveyed GPs think that there are not enough training courses and only 10.26% (n = 4) think that there is no need for additional courses for medical specialists performing immunoprophylaxis (Figure 41).

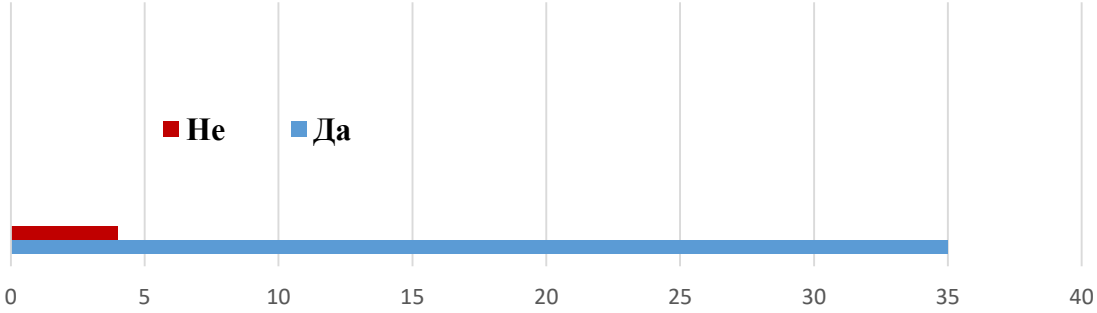

Figure 41. Distribution of GPs according to the need for additional training courses

- Distribution of respondents by opinion on the need to promote the positive effects of vaccines on the media, television and the Internet (Figure 42).

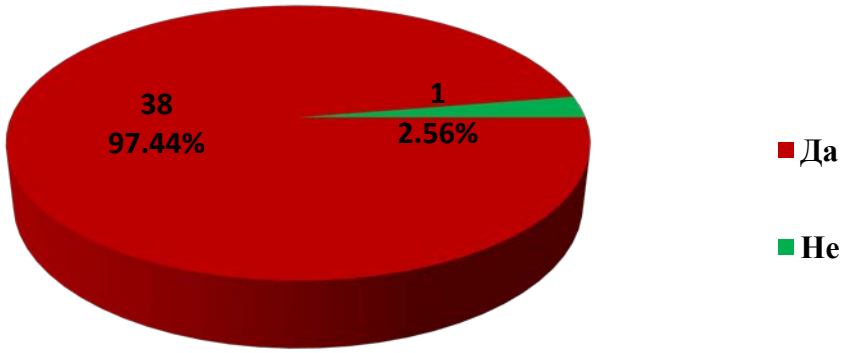

Figure 42. Opinion of GPs on the need to promote the positive effects of vaccines in the media and television

- Distribution of GPs in the opinion on the need for written declaration of refusal of vaccination and the existence of sanctions for parents who refused to vaccinate their children

The opinion of the respondents about the need for written declaration of the refusal of vaccinations of the parents is positive in 92.31% (n = 36) and negative in 7.69% (n = 3). Regarding the need for sanctions for parents who refused to vaccinate their children, the surveyed GPs are divided in half - 51.28% (n = 20) consider it necessary to have sanctions for these parents and 48.72% (n = 19) do not think necessary sanctions after as the parent has declared his refusal in writing (Figure 43)

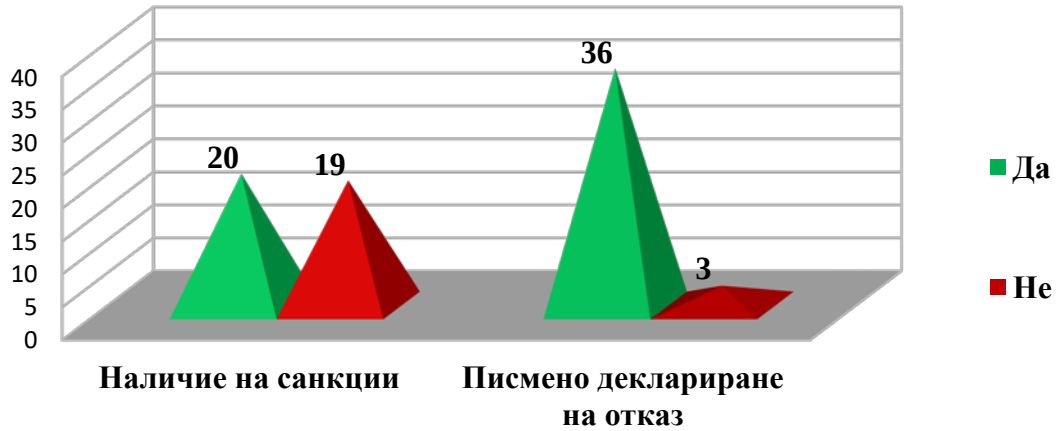

Figure 43. Opinion of GPs on the need for sanctions and written declaration of refusal of immunization

V. DISCUSSION

There are certain demographic and socio-economic features of the respondents who are hesitant about the placement of mandatory immunizations.

Compared to the age group of parents who refused the mandatory vaccines according to the immunization calendar in Bulgaria, the respondents are distributed mainly in the age group 26-35 years with 42.86% (n = 3), followed by the group of 18-25 year olds with 28.56% (n = 2) . Comparing the marital status of the respondents, it can be seen that among those who refused vaccination, the respondents who do not have a civil marriage prevail 57.14% (n = 4).

The education of the parents also turned out to be a factor among the respondents, it was found that the children of the surveyed parents with secondary education have a lower immunization status compared to the children of the parents with higher education. 85.71% (n = 6) of the respondents who refused to vaccinate their children have secondary education.

Observations on the number of children in the family and the refusal of vaccines also show dependence among the respondents in the study who did not immunize their children - 71.43% (n = 5) are families with one child and 28.57% (n = 2) are families With two kids. In Bulgaria, the percentage of families with one child is increasing compared to those with two or more children. The factors determining this trend are most often financial, personal understandings, health problems and others. Health problems and in particular reproductive ones among the population in the country, which require various manipulations, surgical interventions and methods of assisted reproduction, lead to increased sensitivity of future parents to health issues. The increased tension associated with difficult and problematic conception in families after a successful pregnancy and childbirth escalates into over-concern, anxiety, uncertainty in medical professionals, thinking and questioning any advice or the need for preventive manipulations of the child. This burdens the work of GPs, makes it difficult to conduct regular children's consultations, increases missed opportunities for immunizations, increases the conduct of redundant research and consultations with specialists and delays vaccination at the request of parents without adequate medical reason.

The results obtained by the respondents showed a relationship between the education of the respondents and the source of information they use. Respondents with a lower level of education - primary and secondary education use the Internet as the main source of information.

Employment is also proving to be a factor in choosing vaccine information sources. The media and television proved to be the preferred source of information for the respondents who indicated that they were unemployed at the time of the survey, the women noted that they were hosts and those on maternity or paternity leave.

As a source of information, another major factor is the GP. The results of our respondents in 88.7% (n = 126) parents are satisfied with the time spent by their GP and the information provided to them about vaccines according to the immunization calendar in the country. However, in 11.3% the parents do not consider the time and information received from their general practitioner to be sufficient.

According to Dube E. (2013), the competence and behavior of health professionals in relation to vaccines determines their own opinion and reflects on the recommendations they will give to their patients.

Davis M. et al. (2002) consider the administration of immunization as three different actions:

1. Vaccination recommendation
2. Vaccination
3. Immunization status check

It is the recommendation of a vaccine that is the way to create a more successful model for immunoprophylaxis.

The effectiveness of vaccines is one of the main problems in decision-making by parents and the emergence of hesitation about the immunization of children. According to the surveyed parents and future parents, a significant percentage - 31.18% (n = 53) consider vaccines ineffective. There is a contradiction between the high vaccine coverage among the children of the respondents - 95.1% and the percentage of respondents indicated that they think the vaccines are not effective. Doubts about the effectiveness of vaccines are indicated mainly by the respondents belonging to the following age groups 26-35 - 58.49% and 36-45 - 24.53% of those who gave a negative opinion.

The main source of information for respondents who indicated vaccines as ineffective is the Internet in 79.25% (n = 42), followed by media and television with 20.75% (n = 11). This shows the detrimental effect of abundant medically unfounded freely available information, which raises parental suspicion and creates a misconception about the need to immunize children.

The results obtained by us show that the level of education is also related to the opinion of the respondents about the effectiveness of vaccines. The analysis of the results shows that 73.58% (n = 39) of those who indicated vaccines as ineffective have secondary education. In addition, vaccines are often not only cited as ineffective, but information and materials are being disseminated that they are dangerous to health. According to the results obtained from the surveyed parents and future parents, 24.71% (n = 42) categorically state that vaccines are dangerous.

Fluctuations in immunizations are observed mainly among young parents. Compared to the age group, the respondents who indicated the vaccines as dangerous to health or unsure are mainly the respondents in the group aged 26-35.

The education of the parents turned out to be a factor in the formation of the opinion of the respondents - 90.48% indicated the vaccines as dangerous with a lower level of education.

The need for mass immunization is an important part of immunoprophylaxis and aims to minimize or eradicate infectious diseases for which vaccines have been developed. Analyzing the results of the respondents show that only about half of them are informed about this need - 48.24% (n = 82). This speaks to a public awareness of the problem of the spread of dangerous infectious diseases that affect the most vulnerable, namely the population in early childhood.

The refusal of compulsory vaccinations on the immunization calendar in the country is becoming more common among parents. About half of the respondents answered that they have relatives or acquaintances who refused to give immunizations to their children - 46.47% (n = 79). The increase in unvaccinated children in society is a threat of epidemics of vaccine-preventable diseases in children's groups, as well as a risk of complications after illness. Only 37.32% (n = 53) of the surveyed parents consider unvaccinated children to be a potential danger in society, and the rest of the respondents do not express concerns about this problem. A very large percentage of respondents do not consider it necessary to make vaccines mandatory - 42.94% (n = 73). Some parents admit that they vaccinate their children because of attending kindergartens or receiving social assistance, and not because of the positive effects on the health of their children and society.

The basis of parents' fear is the idea that vaccines can harm their children. The results obtained from the analysis of the answers of the respondents participating in the present study show that 40.59% (n = 69) believe that vaccines can harm their children. Among the respondents in the study, 35.29% (n = 60) believe that there is a decrease in immunity after vaccination.

Part of the concerns of the respondents in the survey is that the vaccines used in our country differ from those in other countries - 36.47% of respondents. Frequently asked questions during a children's consultation are related to information about the manufacturer of the vaccine and whether this vaccine is used only in Bulgaria.

Immunoprophylaxis is part of the daily life of general practitioners and the knowledge they have and pass on to their patients is extremely important. The main sources of information mentioned by GPs in the current study are textbooks in 58.97% (n = 23), which is insufficient and 89.74% (n = 35) consider it necessary to have additional training courses for medical professionals on all issues related to immunoprophylaxis. .

Problems with the immunization schedule are also GPs, who doubt the positive effects of vaccines and believe that parents' fears are justified - 10.26% (n = 4) and 28.21% (n = 11) are

hesitant and do not indicate definite answer. The practices of GPs serving children are usually large and exceed 2,000 patients, which means that the opinion of these GPs reaches a wide audience and would be a problem in forming the opinion of parents, as well as reinforcing their fears. This, in turn, will increase the incidence of delaying immunizations, not giving some or giving up vaccines altogether.

The time that GPs spend on pediatric consultation is on average 15-20 minutes in 48.72% and 10-15 minutes in 41.03%. This raises the question of whether this time is enough for parents to ask all the questions about the fluctuations they experience and whether the GP is able to explain accurate and clear up-to-date medical information about the need for immunoprophylaxis and the safety and efficacy of vaccines.

The majority - over 40% of the GPs participating in the survey have over 20 years of work experience. This shows not only the experience they have but also the lack of new staff in the field of general medicine. Based on their many years of experience, GP respondents can compare the public attitudes towards vaccines over a long period of time. The percentage of GPs who have seen an increase in parents who refuse immunizations in recent years is alarming - 71.79% (n = 28).

The GP's observations of ethnicity as a factor influencing parents' reluctance to immunize their children are similar. There is a tendency increase in the Bulgarian ethnic group towards the refusal to vaccinate - 48.72%. The most frequently cited reason for GPs to refuse immunizations by parents is the fear of complications after vaccination.

Written declaration of refusal of vaccinations unanimously believe that there should be 92.31% (n = 36) of GPs surveyed. Regarding the existence of sanctions for those who refused to immunize their children, the opinion of GPs is divided in half - 51.28% (n = 20) indicate the need for such sanctions. So far, there are no specific financial sanctions in Bulgaria for parents who refuse to receive immunizations.

The global nature of the problem with the spread of anti-vaccine movements will lead to the return of dangerous infectious diseases for which there is a proven effective method of control - vaccination.

Particularly important for the future development of vaccine prophylaxis are the main trends in the field, which should lead to maintaining a high level of group immunity in order to irradiate or minimize the spread of infectious diseases preventable by vaccines. Trends should include a complex change in the health system, medical professionals and societal attitudes. All this will stimulate the maintenance of a high immunization status in society. General practitioners are a basic unit for the promotion and implementation of immunoprophylaxis. This requires active training and updating of the knowledge of medical professionals, key players in vaccination according to the immunization calendar. The high level of their knowledge will lead to influencing the parents' fluctuations in a positive direction.

Preferential immunizations are preferably multivalent in order to avoid multiple injections, the purpose of a single vaccine injection is to cover several diseases. Another such method is the development of oral vaccines such as rotavirus vaccines. Active monitoring of the developed immunity allows to reduce the intake of some vaccines.

VI. CONCLUSION

One of the motivations for conducting the study is the suspicion that parents' concerns are increasing due to the lack of sufficient information from GPs about their children's vaccines. This encourages parents to look for other sources of information that turn out to be unreliable and increase their fears and subsequently increase procrastination and refusal of immunizations. The presented data explain the reasons for hesitation among parents and future parents and knowing this, general practitioners will be able to motivate parents to vaccinate their children only with proven medical facts and global recommendations in the field of immunoprophylaxis. This will lead to an increase in vaccination coverage in our country and will reduce the delay of vaccines without indications.

Global experience in immunizations in special cases, such as prematurity, low birth weight and immunodeficiency conditions, is very important, so sharing this study aims to stimulate increased vaccination coverage among these vulnerable populations.

The prevailing low level of awareness of parents about the type of mandatory immunizations, as well as their misunderstandings about the need for them are key issues. Some of the reasons for this are the failure of some general practitioners, who are a major source of information on immunoprophylaxis.

In recent years, there has been an alarming trend among GPs to increase the number of delayed or refused vaccines without medical indications. This indicates the need for additional training courses and medical guides with world-class information on vaccines, contraindications for their administration and immunization in more specific conditions. They should serve to maintain a high level of knowledge of medical professionals about current trends and recommendations for good medical practice in the field of immunoprophylaxis.

It is necessary to create a unified information system containing information about the immunization file of every Bulgarian citizen. This will create clear statistics on the refusal to place immunizations in the country. This will facilitate the work of physicians and, if necessary, it will be possible to quickly and easily check the vaccination status of a patient.

The implementation of the change requires joint work between health institutions, medical professionals, as well as media and social platforms to inform the public about the positive effects of vaccines and the importance of maintaining high-level immunity.

VII. CONCLUSIONS

1. Data from our study indicate that 55.88% of parents' knowledge of vaccines is based on information from the Internet. This leads to distorted perceptions of the benefits of vaccines, doubts about their effectiveness and fear of dangerous post-vaccine complications.
2. Despite the very good vaccination coverage of 95.1% of the children of the respondents in the study, 24.71% of the respondents consider the vaccines dangerous, and 31.18% indicate them as ineffective.
3. The survey revealed the main fears among parents leading to hesitation or refusal of immunizations, as 35.29% of respondents believe that vaccines lead to a decline in immunity, and 40.59% say that vaccines can harm their children.
4. The role of some demographic factors in forming an opinion on vaccines is confirmed. The most serious attention should be paid to parents in the age group between 26-35 years, in which we found that 73.58% have secondary education and 69.05% consider vaccines dangerous, and 58.49% ineffective.
5. The impact of the level of education for refusing to vaccinate children is great:

    - 85.71% of the respondents with unvaccinated children have secondary education.
    - 82.22% of them point to the Internet as their main source of information;
    - 90.48% of people with secondary education consider vaccines to be dangerous to health.

6. Vaccination refusals were found to be more frequent in families with one child - 71.43% of the respondents with non-immunized children compared to families with more than one child.
7. An analysis of the relationship between parents' employment and vaccination refusal found that 42.86% of respondents with unvaccinated children were unemployed at the time of the survey, and 57.14% of mothers identified themselves as hosts.
8. 46.47% of the respondents have relatives or acquaintances who refuse to immunize their children, and 42.94% of the respondents do not consider it necessary to make vaccines mandatory according to the immunization calendar.
9. We have identified the need to develop specific and up-to-date information materials on mandatory and recommended vaccines according to the immunization calendar and the epidemiological situation in the country to be provided to current and future parents.
10. The knowledge of GPs related to immunoprophylaxis is not at the required high and modern level. This can lead to wrong decisions, missed immunization opportunities, inadequate advice to parents, as well as stimulating the refusal of vaccines and a decline in immunization coverage in the country.

11. 89.74% of the surveyed GPs indicated that there should be additional training courses related to mandatory and recommended vaccines, due to the dynamic development of vaccine prophylaxis and the need to constantly update the knowledge of doctors and medical professionals directly related to it.
12. Analyzing the opinion of the GP respondents on the main reason leading to refusal or postponement of immunizations, 51.28% indicate that this is the fear of parents of post-vaccination complications.
13. The time spent informing parents when visiting GPs is not enough, but the good organization of children's consultations is the way to implement a more successful model for immunization of infants and children.
14. The good information of GPs and the topicality of their knowledge related to immunoprophylaxis can be the best way to encourage parents to follow the immunization calendar in our country and this should be used most actively during each pediatric consultation.
15. 97.44% of the surveyed GPs indicate the need for promotion of immunoprophylaxis in the media and television.

VIII. CONTRIBUTIONS

1. Original scientific and applied contributions

1. A large-scale study has been conducted on current global recommendations for immunoprophylaxis in cases of prematurity, low birth weight and immunocompromised children, which could be used in our country to achieve better prevention among these vulnerable groups.
2. The current trends and the main reasons for hesitation and / or refusal of parents to immunize their children against the background of the epidemiological situation in the world and in our country, as well as the fact that the main source of information about vaccines in over half of the surveyed parents is the Internet space.
3. There is an inversely proportional dependence between the anti-vaccination tendencies of the parents and the level of education, the younger age, the employment, the number of children in the family and a directly proportional dependence on the influence of relatives with such attitudes.
4. About 90% of the GPs surveyed indicate that training courses and recommendations with up-to-date information and scientific evidence are needed for all team members (doctors and nurses) who are actively involved in immunoprophylaxis of the population and can contribute to raising the percentage of vaccinated children.

2. Contributions of a confirmatory nature

1. The main reasons for the emergence of anti-vaccine movements, the influence of the Internet and the media on public attitudes towards vaccines and the need for change in health policy to address this issue and stimulate the promotion of immunoprophylaxis have been studied.
2. There is a need to prepare guides for parents as up-to-date and reliable sources of information in order to increase trust in medical professionals and the health system.
3. The need to increase the time spent talking to parents is confirmed, which will enable children's counseling to be used more successfully to promote the health benefits of vaccines.
4. Almost all respondents GPs (97.44%) indicate that the promotion of immunoprophylaxis in the media and television is very important and necessary.

IX. ARTICLES AND COMMUNICATIONS RELATED TO THE SURVEY

1. **V.Alexandrova** , Iv.Hristova, R.Alexovska, Zh.Ruseva, V. Madjova. "Vaccines - past and future". Mr. "Varna Medical Forum", no. 1, on-line edition, 04.2021

2. R. Aleksovska, Iv. Hristova, **V. Alexandrova** , E. Hristova, V. Madzhova. "Urinary tract infections in childhood and the role of the general practitioner in their prevention and treatment." Mr. Children's and Infectious Diseases, 2021, 13 (1): 3-8

3. R. Aleksovska, Iv. Hristova, **V. Alexandrova** , E. Hristova, V. Madzhova. "Assessment of risk factors for urinary tract infections in childhood." Mr. Children and Infectious Diseases, 2021, 13 (1): 9-12

4. R. Aleksovska, Iv. Hristova, **V. Alexandrova** , M. Bliznakova, V. Madzhova. "The role of parents in the diagnosis and treatment of children with urinary tract infections - assessment of their knowledge, attitudes and practices." Mr. General Medicine, 2021, 23 (5): 20-25