

# BULGARIAN PHARMACISTS' ATTITUDES AND BARRIERS TOWARDS PHARMACEUTICAL CARE PROVISION FOR INCREASING IMMUNITY IN CHILDREN

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## Abstract

A cross-sectional, anonymous questionnaire-based study was performed among 158 participants to assess the pharmacists' attitudes and barriers towards providing pharmaceutical care for increasing immunity in children in Bulgarian community pharmacies. 93.7% of the respondents consider pharmaceutical care to be main priority and responsibility of the pharmacist when it comes to children. 97.5% agreed/strongly agreed with the statement that providing pharmaceutical care will improve health of children and the awareness of their parents. 84.8% of the respondents reported that they agreed/strongly agreed that preventing, detecting and solving problems related to children's health and drug therapy is an important responsibility of the pharmacist. Main barriers to the effective provision of pharmaceutical care for children according to 72.2% of pharmacists are the lack of additional training and lack of payment for the service in pharmacies. They are followed by the lack of time as the main barrier (70.8%). The lack of a separate place for consultation is an obstacle for 62% of the respondents and for 65.8%, a significant obstacle for effective consultation is the lack of access to medical documentation or electronic file of the child. Bulgarian pharmacists generally have positive attitudes towards the provision of pharmaceutical care for children and are available to advise their parents on the management of children's immunity. Despite the existence of some barriers, pharmacists demonstrate a high degree of responsibility in providing care and consulting on immuno-stimulation in children and are willing to increase knowledge and skills in this field through postgraduate training and specialization.

## Rezumat

Pentru a evalua atitudinea și limitele farmaciștilor privind furnizarea de servicii farmaceutice destinate creșterii imunității copiilor, în farmaciile comunitare din Bulgaria, a fost realizat un studiu transversal, anonim, bazat pe chestionar, în rândul a 158 de participanți. 93,7% dintre respondenți consideră că îngrijirea farmaceutică este principala prioritate și responsabilitate a farmacistului atunci când vine vorba de copii. 97,5% au fost de acord cu furnizarea serviciilor de îngrijire farmaceutică pentru a îmbunătăți sănătatea copiilor și a crește gradul de conștientizare al părinților lor. 84,8% dintre respondenți au raportat că sunt de acord că prevenirea, detectarea și rezolvarea problemelor legate de sănătatea copiilor precum și terapia medicamentoasă reprezintă responsabilități importante ale farmaciștilor. Principalele bariere în calea asigurării efective a îngrijirii farmaceutice pentru copii, conform cu 72,2% dintre farmaciști, sunt lipsa pregătirii suplimentare și lipsa remunerației pentru serviciul respectiv, acestea sunt urmate de lipsa timpului (70,8%). Absența unui loc separat pentru consultație reprezintă un obstacol pentru 62% dintre respondenți. Pentru 65,8%, un obstacol semnificativ pentru o consultare eficientă a este reprezentat de lipsa accesului la documentația medicală sau la dosarul electronic al copilului. Farmaciștii bulgari au, în general, atitudini pozitive privind furnizarea de servicii farmaceutice pentru copii și prezintă disponibilitate pentru a sfătui părinții cu privire la gestionarea problemelor legate de imunitatea la copii.

**Keywords:** pharmaceutical care, children's immunity, pharmacists, postgraduate training

## Introduction

The nature of the pharmacies' tasks includes not only the preparation and dispensing of medicines, but also the interaction with patients and other health

professionals in order to provide pharmaceutical care. Pharmaceutical care is an integral part of modern pharmacy practice, which requires direct collaboration of the pharmacist with the patient and cooperation with other specialists to achieve therapeutic goals.

There are different definitions of the pharmaceutical care nature, but the original concept defined by Michael *et al.* reads: “the care that the patient needs and receives, and which provides him with safe and rational drug use” [1]. As earlier than 1990, Hepler and Linda Strand defined it as: “Pharmaceutical care is the responsible conduct of drug therapy in order to achieve predefined therapeutic results that improve the quality of life of patients” [2]. These results imply the treatment of the disease, the elimination or reduction of the patient's symptoms, limitation or delay of the disease process, prevention of diseases and symptoms [2, 3]. Following Hepler and Strand, the American Pharmacists Association expanded the original definition through its “Rules for Pharmaceutical Care” by developing five principles of pharmaceutical care practice to ensure positive outcomes for patients [4]. A key component of the concept is the patient care [3]. This definition is extended to include not only the determination of the necessary drug therapy, but also all the services the patient needs to ensure optimal safe and effective therapy [5]. The philosophy of pharmaceutical care defines pharmacists as directly responsible for the patients they serve. The purpose of consulting patients is to improve their quality of life and the quality of pharmaceutical care. In the presence of drug deficiencies such as adverse drug reactions, drug interactions, errors in the use of drugs, etc., *e.g.* as well as non-compliance with the therapeutic regimen shows the need for intervention of pharmacists as drug experts [6, 7].

In addition to their traditional role of dispensing prescription drugs and advising patients, pharmacists are providers of pharmaceutical care. They take responsibility for the outcome of treatment and actively participate in the monitoring of therapy. Pharmacists are also advisors to the patient on safe and rational drug use [8]. Communication with the patient is essential, and the pharmacist, through his knowledge and skills, is committed to meeting the health care needs of patients [9]. The pharmacist, as the most accessible health specialist, is sought for advice and consultation from parents for their children on therapeutic appointments, disease prevention and immune boosting.

Practice shows that parents often turn to pharmacists for prevention or in the early stages of their children's illness. In recent years, more and more parents are considering the use of supplements and herbal medicines for their children for health prevention and treatment of certain diseases. The increased use of herbal medicines and medicinal herbs corresponds to their wide availability in pharmacies, drugstores and other sources [10]. This in turn requires pharmaceutical care. In the context of pharmaceutical care, patients are considered children from new-borns to the age of 18 years old. Special attention should be paid to the

group up to 12 years, where the dosage of medicinal products is specific and often the most critical time for the provision of pharmaceutical care. In general, paediatric patients are in a period of rapid development, during which a number of physiological changes occur in the body. The intake of drugs, supplements and other means in new-borns should be consistent with this fact, as well as with the different rate of emptying of the gastrointestinal tract, the degree of absorption of the drug, kidney and liver clearance [11]. This is the cohort that needs to be handled with care and monitoring when taking medications for prevention or treatment by parents, doctor, pharmacist or other medical professionals [12]. Adherence of children to the applied therapy or prophylaxis depends on the medicinal form, its taste, appearance, type of application. Of great importance is the experience of parents in understanding the benefits/risks of medicines [13]. In paediatrics, drugs are also often used outside the indications described in the summary of product characteristics - the so-called “Off label” use. The medicinal forms used in paediatrics should be tailored to the needs of children in terms of age, weight, physiological condition and treatment requirements. The right dose reduces the risk of treatment errors, increases adherence to therapy and leads to good therapeutic results. Good collaboration between health professionals, pharmacists and young children parents’ also leads to good therapeutic results. Pharmacists play an important role in prevention, by providing quality pharmaceutical care.

## Materials and Methods

### *Objective of the study*

The objective of this study was to assess the attitudes and perceived barriers by pharmacists towards providing pharmaceutical care for increasing immunity in children in Bulgarian community pharmacies.

The local ethical committees approved the study related to Plovdiv Medical University’s project HO-07/2020, and the study was performed in accordance with the Declaration of Helsinki.

### *Study design and setting*

A cross-sectional, anonymous questionnaire-based study was performed in the second half of 2021. The study was conducted among pharmacists working in community pharmacies in the main districts of Bulgaria. A web application was used for the distribution of the survey. A total of 158 surveys were completed by pharmacists and pharmacist’s assistants, actively working in providing pharmaceutical care.

### *Survey instrument*

The study tool included statements regarding pharmacists’ attitudes and barriers towards providing pharmaceutical care for increasing immunity in children. The questionnaire was divided into 3 sections: 1 – demographic and professional data; 2 – attitudes

towards providing pharmaceutical care to children; 3 – perceived barriers for providing pharmaceutical care for children. The second and third sections included a total of 19 items to which respondents must answer according to the five-point Likert scale, ranging from 1 – “strongly disagree” to 5 – “strongly agree”. The items included in sections 2 and 3 were based on previously used instruments regarding the attitudes and perceived barriers towards providing pharmaceutical care [9, 14, 15]. The questionnaire was anonymous and contained clear instructions for completion: a brief explanation of the purpose of the study; clear instructions for completing the questionnaire and its individual sections. It was clearly stated that the data collection complied with the requirement of confidentiality and the respondents signed an informed consent to be included in the survey.

*Statistical methods*

Statistical data processing was performed using the software product SPSS ver. 22. Descriptive statistics were used to describe the demographic and occupational characteristics of respondents, as well as attitudes and barriers to pharmaceutical care provision. The pharmacists’ attitudes and perceived barriers towards providing pharmaceutical care provision for increasing immunity in children were measured using multiple scales. The internal consistency of the scales was calculated by Cronbach’s alpha. Attitudes and perceived barriers were measured using means and standard deviations.

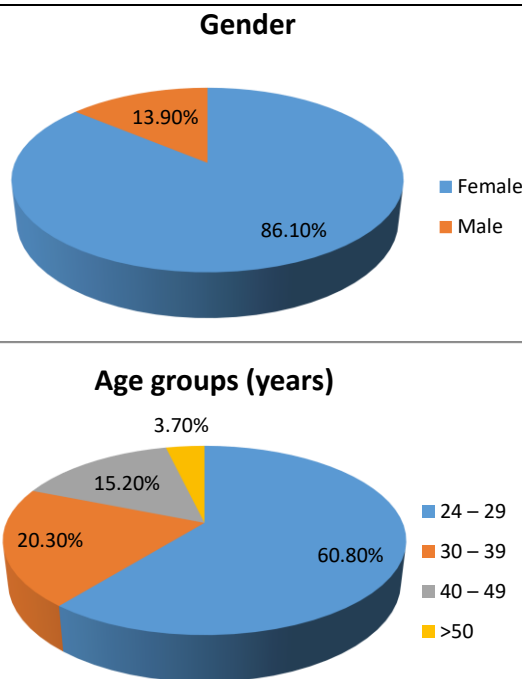
**Results and Discussion**

The demographic and professional characteristics of the surveyed pharmacists are presented in Table I. The predominant part of the participants (n = 158) were women (86%) and the remaining 14% - men (Figure 1).

The vast majority of respondents (60.8%) were aged up to 29 years. More than half of pharmacists (57%) reported working in a chain pharmacy, and 72% reported an open access type of service in a pharmacy. In terms of professional experience, participants with 0 - 5 years of work experience (49.3%) predominate, followed almost equally by 6 - 15 years (20.3%) and 16 - 20 years (17.7%) (Figure 2).

Most of the participants are full-time pharmacists on a full-time job position (78.5%) and (21.5%) were employed as pharmacy managers. 30.4% of community pharmacists reported that they obtained a postgraduate qualification (Figure 3).

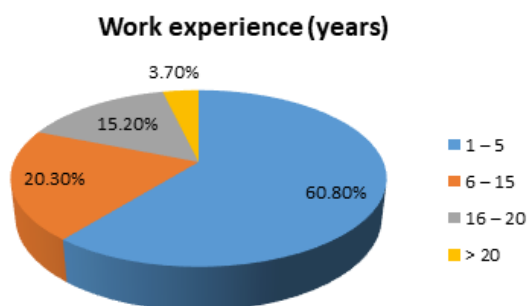
The statements included in the survey aimed to establish the pharmacist’s opinion about providing pharmaceutical care for children. The results regarding attitudes and barriers of providing pharmaceutical care for increasing immunity in children are presented in Table II and Table III, Figure 4 and Figure 5.



**Figure 1.**  
Demographic characteristics of the respondents

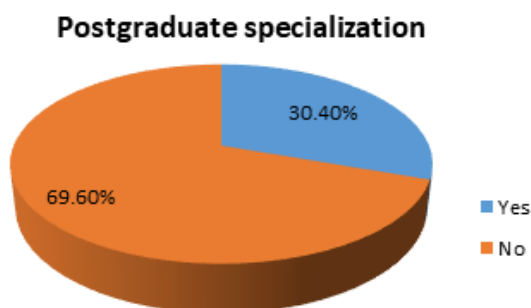
**Table I**  
Demographic and professional characteristics of the surveyed pharmacists

Characteristics	Frequency	Percentage
Gender		
Female	136	86.1%
Male	22	13.9%
Age groups (years)		
24 - 29	96	60.8%
30 - 39	32	20.3%
40 - 49	24	15.2%
> 50	6	3.7%
Work experience (years)		
1 - 5	78	49.3%
6 - 15	32	20.3%
16 - 20	28	17.7%
> 20	20	12.7%
Pharmacy type		
Independent	68	43%
Chain	90	57%
Type of service in the pharmacy		
Open access	114	72.2%
Service only on counter	44	27.8%
Position		
Pharmacy manager	34	21.5%
Pharmacy staff	124	78.5%
Postgraduate specialization		
Yes	48	30.4%
No	110	69.6%



**Figure 2.**

Work experience of the respondents



**Figure 3.**

Postgraduate specialization of the respondents

93.7% of the respondents consider pharmaceutical care to be the main priority and responsibility of the pharmacist when it comes to children. The vast majority of respondents (97.5%) agreed/strongly agreed with the statement that providing pharmaceutical care will improve health of children and the awareness of their parents. The statement that providing pharmaceutical care brings professional satisfaction, obtained the second highest score (95.6%). A high proportion (84.8%) of the respondents reported that they agreed/strongly agreed that preventing, detecting and solving problems related to children's health and drug therapy is an important responsibility of the pharmacist.

On the other hand, 63.9% of the respondents believe that in Bulgaria there is no effective pharmaceutical care aiming at parents, in order to improve the immunity of their children. One third of the participants (31.7%) are of the opinion that the provision of pharmaceutical care would not be beneficial for influencing parents regarding the prophylaxis of children's immunity, while 64.6% are not of this opinion. Nearly one third of the respondents (30.4%) are neutral, and more than one third (38%) are worried about taking risks and responsibility for the results of prevention or therapy in a vulnerable group of patients such as children. Approximately 45% of the participants are of the opinion that pharmacists in Bulgaria do not have enough knowledge to provide effective pharmaceutical care. Just under 90% of respondents said that they need additional courses and specializations to be effective health consultants related to the paediatric population.

The results of our study show two main barriers to the effective provision of pharmaceutical care for children according to 72.2% of pharmacists who indicated the lack of additional training and lack of payment for the service in pharmacies, with equal values. These two barriers are directly followed by the lack of time as the main barrier (70.8%). The lack of a separate place for consultation is an obstacle for 62% of the respondents and for 65.8%, a significant obstacle for effective consultation is the lack of access to medical documentation or electronic file of the child.

More than half of the pharmacists participating in the study (55.7%) consider as a barrier the reluctance of parents to accept the role of pharmacist, and the lack of effective communication between pharmacist and parents, identified as a barrier by 58.2% of the respondents.

35.5% of pharmacists believe that lack of knowledge about drug safety would negatively affect the provision of pharmaceutical care to children. 41.8% of the respondents believe that the lack of specialized software or other technical resources is a barrier to quality pharmaceutical care.

Pharmacists play a major role in serving patients and delivering pharmaceutical services to the community. In a survey about public perceptions of community pharmacists and levels of satisfaction with pharmacy services, El-Kholy *et al.* conclude that the public was greatly satisfied with community pharmacists' professionalism and pharmaceutical services. This positive perception provides an opportunity for pharmacists to extend their roles as healthcare professionals [16]. In a cross-sectional study conducted in Bulgaria, Staynova and Lambreva assessed elderly patients' attitudes towards prescribed medications and satisfaction with the provided pharmaceutical care services. The results from this study showed that the geriatric patients have a positive attitude towards the provided pharmaceutical care services [17].

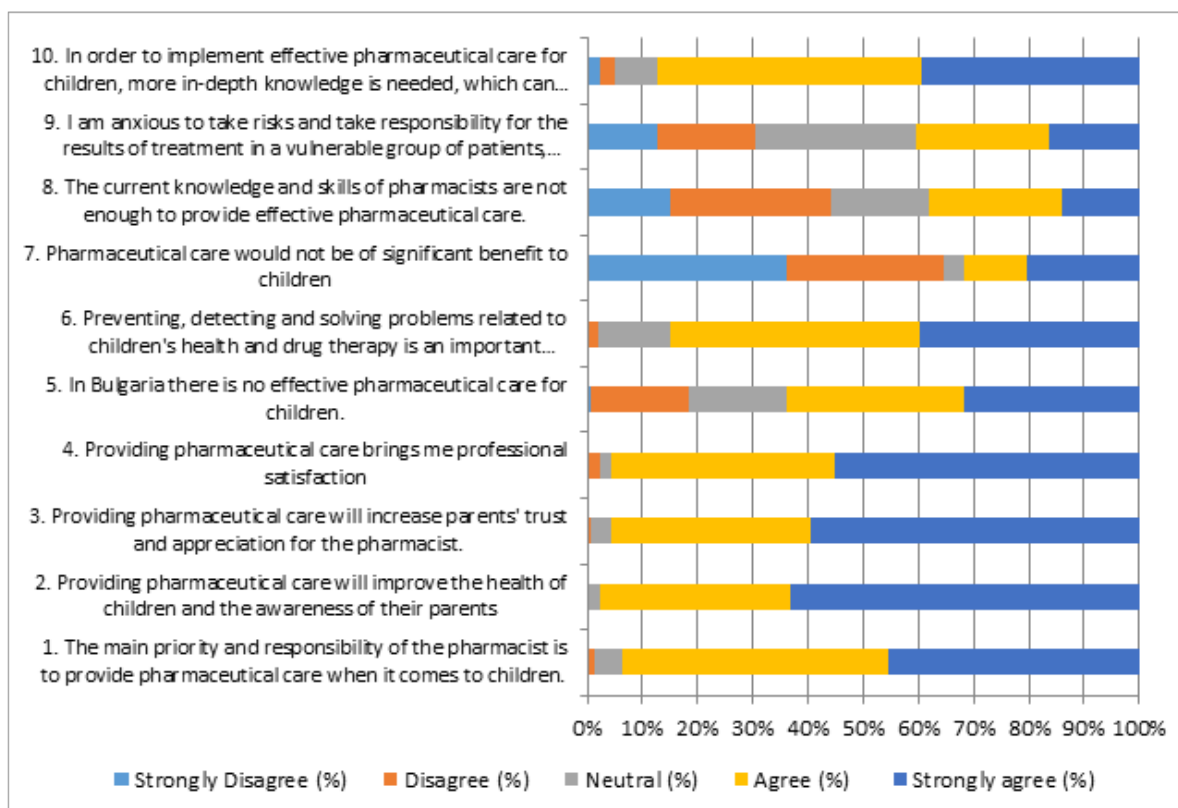
In carrying out their professional duties, however, pharmacists encounter barriers that prevent the use of pharmaceutical care, especially for vulnerable groups such as children. According to our respondents, the main barriers are the lack of additional training and funding for the service, as well as the lack of sufficient time.

There are various factors in the pharmacy that can hinder the implementation of pharmaceutical care services. Our results confirm the data from studies conducted in different countries, namely that the lack of time is a major barrier to the application of pharmaceutical care [14, 15, 18, 19]. Patient-centred counselling is an integral part of the pharmaceutical care process and the main barrier to effective communication is time available for pharmacists to spend with patients, as confirmed by Vucicevic's study on the quality of pharmaceutical care provision [20].

**Table II**

Pharmacists' attitudes towards pharmaceutical care provision for increasing immunity in children

Statement I think that:	Strongly Disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly agree (%)
	1	2	3	4	5
1. The main priority and responsibility of the pharmacist is to provide pharmaceutical care when it comes to children.	-	1.3%	5.1%	48.1%	45.6%
2. Providing pharmaceutical care will improve the health of children and the awareness of their parents	-	-	2.5%	34.2%	63.3%
3. Providing pharmaceutical care will increase parents' trust and appreciation for the pharmacist.	-	.6%	3.8%	36.1%	59.5%
4. Providing pharmaceutical care brings me professional satisfaction	-	2.5%	1.9%	40.5%	55.1%
5. In Bulgaria there is no effective pharmaceutical care for children.	0.7%	17.7%	17.7%	32.3%	31.6%
6. Preventing, detecting and solving problems related to children's health and drug therapy is an important responsibility of the pharmacist.	-	1.9%	13.3%	44.9%	39.9%
7. Pharmaceutical care would not be of significant benefit to children	36.1%	28.5%	3.8%	11.4%	20.3%
8. The current knowledge and skills of pharmacists are not enough to provide effective pharmaceutical care.	15.2%	29.1%	17.7%	24.1%	13.9%
9. I am anxious to take risks and take responsibility for the results of treatment in a vulnerable group of patients, such as children.	12.7%	17.7%	29.1%	24.1%	16.5%
10. In order to implement effective pharmaceutical care for children, more in-depth knowledge is needed, which can be acquired by attending additional courses and/or specializations.	2.5%	2.5%	7.6%	48.1%	39.2%



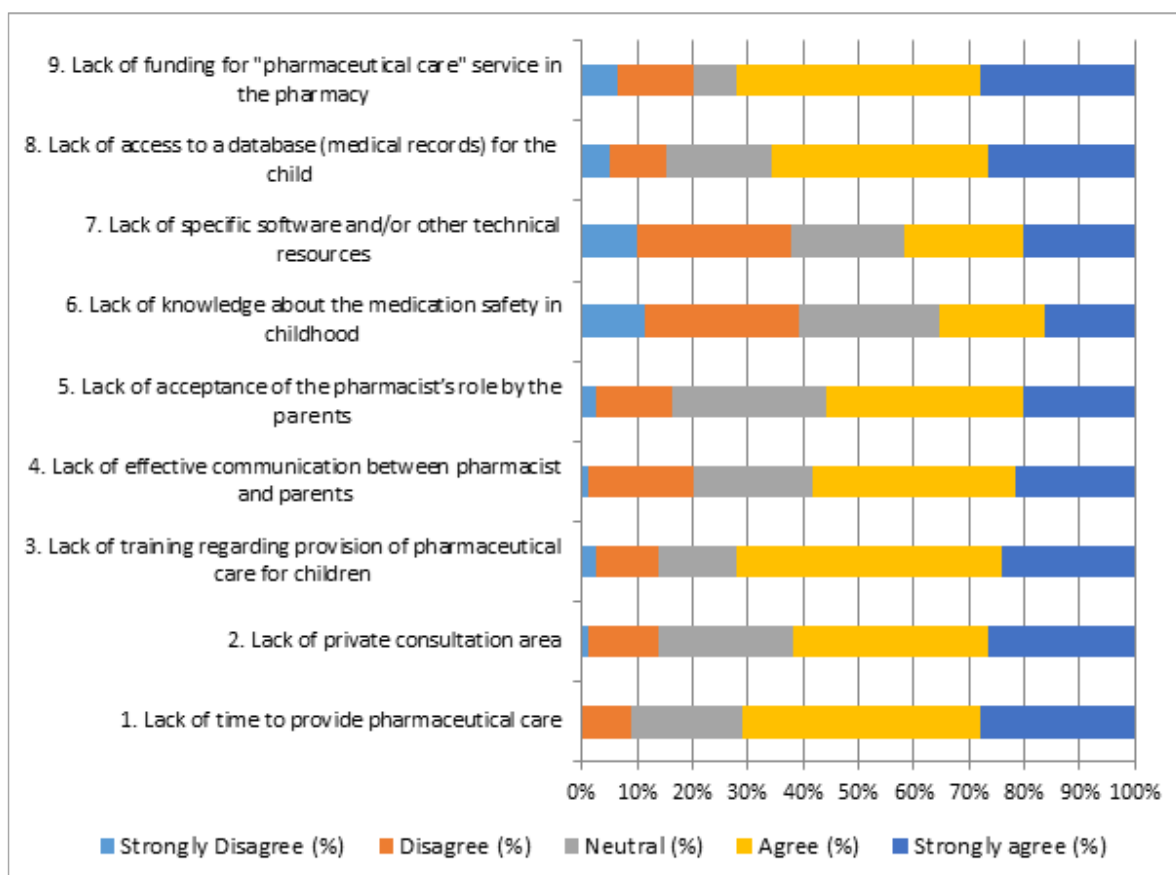
**Figure 4.**

Pharmacists' attitudes towards pharmaceutical care provision for increasing immunity in children

**Table III**

Perceived barriers for providing pharmaceutical care for increasing immunity in children

Statement	Strongly Disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly agree (%)
	1	2	3	4	5
1. Lack of time to provide pharmaceutical care	-	8.9%	20.3%	43.0%	27.8%
2. Lack of private consultation area	1.3%	12.7%	24.1%	35.4%	26.6%
3. Lack of training regarding provision of pharmaceutical care for children	2.5%	11.4%	13.9%	48.1%	24.1%
4. Lack of effective communication between pharmacist and parents	1.3%	19.0%	21.5%	36.7%	21.5%
5. Lack of acceptance of the pharmacist's role by the parents	2.5%	13.9%	27.8%	35.4%	20.3%
6. Lack of knowledge about the medication safety in childhood	11.4%	27.8%	25.3%	19.0%	16.5%
7. Lack of specific software and/or other technical resources	10.1%	27.8%	20.3%	21.5%	20.3%
8. Lack of access to a database (medical records) for the child	5.1%	10.1%	19.0%	39.2%	26.6%
9. Lack of funding for "pharmaceutical care" service in the pharmacy	6.3%	13.9%	7.6%	44.3%	27.8%



**Figure 5.**

Perceived barriers for providing pharmaceutical care for increasing immunity in children

Lack of reimbursement, as well as inconvenient access to patient medical information, have been reported by various authors as main barriers to the implementation of pharmaceutical care [19, 21]. European countries with high implementation of pharmaceutical care are Belgium, Netherlands and France [22]. In the Netherlands, the pharmacist receives a fixed amount for the service. Some of the components of the concept of “pharmaceutical care” are applied in pharmacies in

Bulgaria, but the additional pharmaceutical service is still not paid, despite repeated discussions on this issue. Although community pharmacists are the most accessible health care providers, there are probably gaps in knowledge and consulting regarding medication use in children, which is confirmed by other studies [23]. To the professional practice must be added the need and utility of constantly updating the area of medical documentation, in the magnitude of recent acquisitions

of medical research and innovation. The degree of permanent intellectual effort to adapt to new algorithms and treatment schemes in various medical specialties is amplified by the effort to be empathetic with all patients, which implies a high psycho-emotional consumption [24].

In order to be able to provide effective consulting for children, pharmacists must have appropriate and evidence-based information. This will help to fully implement pharmaceutical care services in terms of increasing immunity in children.

Our results confirm the need for educational interventions on consulting parents of children. Continued education organized by the Bulgarian Pharmaceutical Union, as well as the participation of pharmaceutical faculties and pharmaceutical distributors, can help raise awareness of pharmacists about the specifics of the use of drugs, supplements, phytoproducts and others taken by the paediatric population.

### Conclusions

In conclusion, we can summarize that Bulgarian pharmacists generally have positive attitudes towards the provision of pharmaceutical care for children and are available to advise their parents on the management of children's immunity. Despite the existence of some barriers, pharmacists demonstrate a high degree of responsibility in providing care and consulting on immuno-stimulation in children and are willing to increase knowledge and skills in the field through postgraduate training and specialization. The active contribution of the pharmacist in the care of children and providing opportunities to increase the health education of parents on the rational and safe use of medicines, vitamins and nutritional supplements for immunostimulation in children will inevitably increase their health status and quality of life.

### Conflict of interest

The authors declare no conflict of interest.

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