

## **GRADUATED PHARMACISTS PROMOTING ORAL HEALTH IN FEDERATION OF BOSNIA AND HERZEGOVINA**

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### **ABSTRACT:**

**Background:** Community pharmacists are healthcare professionals that play a crucial role in delivering quality healthcare to people, including oral health-related problems and dental hygiene products, as part of health promotion.

In order to better understand these issues in FB&H, this exploratory study aimed at assessing the knowledge, attitude and practice of Pharmacy interns in Federation of B&H in regard to oral health and their educational needs, with the ultimate goal of enhancing their future role in promoting oral health and oral hygiene practices as pharmacists.

**Methods:** This cross-sectional study was carried out among pharmacy interns in 2019 by using self-administered, semi-structured questionnaire. The results were statistically analysed using descriptive statistics.

**Results:** The most frequently reported oral condition/products on which pharmacists provided advice during their practice were: (other) gum related problems like pain, redness, tenderness, inflammation etc.), Toothache and Denture related problems. Mouthwash, Toothbrush and Toothpaste were reported respectively. Regarding the knowledge of participants about prevention oriented oral health behaviours, 80.8% of participant strongly agree and agree to recommended oral health behaviors. Participants showed positive attitudes toward their role in oral health care and willingness to improve their knowledge about this issue.

**Conclusion:** This study shows that pharmacy interns in FB&H have good knowledge about preventive oral health behaviours, average knowledge related to oral health care and have positive attitude to their important role in maintenance of oral health despite all barriers and difficulties. The pharmacist interns expressed their need for education/training to enhance their practice.

**Key words:** pharmacist, oral health, promotion, FBiH

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## INTRODUCTION

Pharmacy is a dynamic profession and pharmacists have long served as medication experts due to their knowledge and accessibility, and are frequently approached by consumers with health-related questions. (1,2) Community pharmacists are trustworthy, and well-respected healthcare professionals that could play a crucial role in delivering quality healthcare to people. (3,4,5) Studies have reported that pharmacists are the second most used source for advice on general health matters and, therefore, can and should also be used in an oral health capacity (2,6,7) Rather than consult a dentist or physician, many individuals with oral problems seek help from their pharmacists. (8) Previous findings revealed that pharmacists are asked at least one question every week about some oral health-related problem, with almost half of them about mouth ulcers. (4) In fact, with a large number of customers visiting, the pharmacists actually are exposed to more people with dental problems than an average dentist does. (9,10,11)

We have to understand that community pharmacies are a setting for the public who cannot attend dental care to consult for dental advices. (8,10) Costs and accessibility are among the reasons that prevent general public from having proper dental care. (11,12)

There are a variety of ways by which the pharmacist can take a frontline approach to oral disease prevention through encouraging effective oral hygiene practices; promoting healthy eating; smoking cessation, encouraging use of dental services and preventive therapies; and giving parents and other family caregivers information, motivation, confidence, and the skills to prevent oral disease (8,13) Moreover, most of the products used to treat or maintain oral health can be purchased from pharmacies. Therefore, community pharmacists should be able to adequately counsel about the appropriate use of dental products available in the pharmacy such as products for dental decay/tartar build up (toothpaste/mouthwash), denture hygiene, gum care, etc. In addition, community pharmacists should be able to identify the signs and symptoms of the most frequently

encountered oral health problems within the scope of their knowledge and practice, and know when to refer to a dentist/physician. (4) In fact, cost, fear from and difficult access to dentists (inconvenient location and time) are among the reasons that prevent general public from having proper dental care (4,12,14)

In addition, pharmacist role as adviser regarding side effects of prescribed or requested medicine in relation to oral health should not be disregarded. The role played by the pharmacist in the delivery of oral health care has been taken into consideration only recently. (2) According to the studies the recommendations of oral health products also depended mainly on the limited knowledge of the pharmacist about the product and their personal experience. (2,8,12) Based on these reports, it is obvious that pharmacists play an important role in oral health promotion.

To the best of our knowledge, no studies were conducted in Federation Bosnia and Herzegovina to evaluate the knowledge, attitude, and practice toward Oral Health Among Pharmacist or pharmacy students or to explore their attitude toward role of community pharmacists in the provision of oral health care advice. In order to better understand these gaps, this exploratory study aimed at assessing the knowledge, attitude and practice of Pharmacy interns in Federation of B&H regarding oral health and the educational needs of pharmacists, with the ultimate goal of enhancing their role in promoting oral health and hygiene. Our primary goal was to explore graduate pharmacist knowledge and attitude related to oral health and oral hygiene products, which is not based only on their personal experience, but on their formal education. The study was conducted on sample of pharmacy interns in FB&H to obtain information relevant for further study about the issue.

## METHODS

This cross-sectional study was carried out among pharmacy interns in 2019 by self-administered, semi-structured and paper-based questionnaire. The participants filled the questionnaire, voluntary

and anonymous, during their formal internship classes. Data was collected by a single investigator, who personally met the pharmacy interns and explained to them the purpose of the study. The same investigator collected the completed questionnaires.

Since, there is no standardised questionnaire, for the purpose of this study, it was used questionnaire created by authors based on references from existing literature. Questionnaire was composed of 4 different sections: 1. Socio-demographic and practice characteristics: age, gender, location of the Faculty of Pharmacy, location of the pharmacy; 2. Question related to pharmacists' practices toward oral health and hygiene products (open-ended question), 3. Questions related to perceived knowledge in oral health (5 closed-ended questions and 3 open-ended questions); 4. Questions related to pharmacists' attitude.

The results were statistically analysed using Office Excel 2013. Relating to the nature of data obtained by this study only descriptive statistics was used to assess its results. The mean percentage scores and frequency distribution were calculated.

## RESULTS

A total of 62 pharmacy interns participated in this survey, 56 (90.3%) female and 6 (9.7%) male. The two thirds of the participants in the study were between 24 and 25 year old.

Respondents named three locations in FB&H where their Faculty of Pharmacy is located. The most frequent location reported was Sarajevo (61.3%).

Respondents named 20 different locations in FB&H where they practice their internship. Sarajevo (40.3%) was the most frequent location reported.

## Practices

Practices of pharmacy interns regarding provided advices on oral health conditions and oral hygiene products was assessed through an open-ended question. Because of variety of answers obtained, they were categorised into 15 categories.

The most frequently reported oral condition/products on which pharmacists provided advice were: Other gum related problems (incl. pain, red-

ness, tenderness, inflammation etc.) (21.3%), Toothache (15.4%) and Denture related problems (13.6%). Mouthwash, Toothbrush and Toothpaste were reported in 10.0%, 9.0%, 7.2% respectively.

Table 1. The most frequently reported oral condition/products on which pharmacy interns provided advice

	Categorisation of answers	o r a l h e a l t h a d v i c e r e q u e s t s	
		N	%
1	Other gum related problems	47	21.3%
2	Toothache	34	15.4%
3	Denture related problems	30	13.6%
4	Mouthwash	22	10.0%
5	Toothbrush	20	9.0%
6	Toothpaste	16	7.2%
7	Oral ulcer	14	6.3%
8	Other mouth related problems	14	6.3%
9	Bleeding gums	6	2.7%
10	Mouth malodour	5	2.3%
11	Interdental brushes	4	1.8%
12	Medicine request	3	1.4%
13	Tooth whitening	3	1.4%
14	Teething	2	0.9%
15	No experience	1	0.5%
	Grand Total	221	100.0%

Chart 1. Oral health advice requests categories

## Knowledge

Knowledge of pharmacy interns was assessed through 8 questions, five of them were closed-ended with 5-point Likert scale and 3 of them were open-ended, so we had to categorise answers for further analysis.

Table 2. Closed-ended questions related to knowledge about oral health behaviour in the form of claims with most frequent answers

NoQ	Questions in form of claims	% of respondents who answered strongly agree and agree

Q1	It is necessary to brush your teeth in the morning and evening to maintain their health	88.8%
Q2	Using fluoride tooth paste enhances the tooth enamel	55.8%
Q3	It is necessary to visit the dentist for control (when painless) at least 1 time a year	88.3%
Q4	It is necessary to clean the teeth with the dental floss to remove the residue of food between the teeth at least once a day	87.1%
Q5	It is necessary to inform the patient that the requested or prescribed drug contains sugars and that therefore may affect their oral health	83.8%

### Open-ended question

Table 3. Q6. Categorisation of answers related to List of drugs and the type of changes reported by respondents that can cause unwanted changes in the teeth or mucous membranes in the oral cavity.

	categorisation of answers	Total number of answers n	% of answers in Total
1	iron preparations with or without listed change	20	26.7%
2	tetracycline with or without listed change	20	26.7%
3	don't know	16	21.3%
4	other	9	12.0%
5	antibiotics with or without listed change	3	4.0%
6	don't want to answer	3	4.0%
7	fluorides without listed change	1	1.3%
8	gingival hyperplasia without listed drug	1	1.3%
9	inhalation drugs without listed change	1	1.3%
10	sugar pastilles and caries	1	1.3%
	Grand Total	75	100.0%

Chart 2. List of drugs and type of changes that can cause unwanted changes in the teeth or mucous membranes in the oral cavity categories

Table 4. Q7. Categorisation of answers related to question what kind of mouthwash would you recommend to adult patient for the prevention / treatment of gingivitis?

ommend to adult patient for the prevention / treatment of gingivitis?

categorisation of answers	Total number of answers n	% of answers in Total
a commercial name for a mouthwash intended for the purpose	32	54.2%
don't know	17	28.8%
don't want to answer	6	10.2%
Missing / No Response	4	6.8%
Grand Total	59	100.0%

Table 5. Q8. Categorisation of answers related to question What is the possible fluoride concentration in the toothpaste?

categorisation of answers	Total number of answers n	% of answers in Total
don't know	42	67.7%
Missing / No Response	10	16.1%
don't want to answer	7	11.3%
some answer	3	4.8%
Grand Total	62	100.0%

### Attitudes

Pharmacy interns were asked about their attitudes regarding the role of Pharmacist through counselling, patient information and education in the maintenance and improvement of oral health in the community. 96.8% of respondents answered strongly agree and agree to this claim.

Some questions assessed participants attitudes regarding their education toward oral health. As for the previous question, answers were based on 5 point Likert scale from strongly agree to strongly disagree.

72.6% of the respondents disagree and strongly disagree that they acquired enough knowledge about oral health in their previous education.

93.5% of the respondents strongly agree and agree that is necessary that they continue to work on improving their oral health knowledge through various forms of education.

Some of the respondents suggestions regarding

the way and type of education / information for improvement of their knowledge about oral health were: educational meetings, lectures, seminars (16.4%), lectures in collaboration with dentists, communication with dentists (9.8%), web based self-learning (9.8%), but actually, 21,3% of answers were do not know. Since, this was an open-ended question, answers were categorised.

## Discussion

Pharmacy interns during their professional work were actively involved in providing oral health advices.

Our results are in line with results of other study (Al-Saleh et. al., 2017). Toothache was the second most frequent request. More or less, advices requested in our study are consistent with advices regarding oral health conditions or products requested in other studies. (2, 4, 8, 16).

There is difference in most frequent advice requested in our study related to other studies. Most frequent advice requested in our study is Other gum related problems (21.3%) which is not assessed as advice in other studies. This could be due the type of question in our study, which was open-ended. Data obtained in this way are qualitative in nature and therefore were analysed in mixed manner. Data obtained in other studies were mostly closed-ended. Answers categorised in the category Other gum related problems were gum pain, gum redness, gum tenderness etc. excluded gum bleeding.

Other important issue is that respondents did not reported dental floss as request for advice. Dental floss is important oral hygiene product in everyday practice for the maintenance of interdental spaces hygiene which are almost impossible to brush and clean with ordinary toothbrush. Not requesting such product in the pharmacy may be due to the grocery store purchasing habit. However, advice about Interdental brushes which serve for same purpose was the answer in 1.8% of cases.

Regarding the knowledge of participants about prevention oriented oral health behaviors, 80.8% of participants strongly agree and agree to recommended oral health behaviors.

The most frequent answers related to listing of drugs that can cause unwanted changes in the teeth or mucous membranes in the oral cavity, as well as the type of changes were iron preparations with or without listed change, tetracycline with or without listed change (26.7% each). Twenty one point three percent of answers were do not know. Only 1.3% of answers were sugar pastilles and caries.

In 54.2% of cases, the respondents named a commercial name for a mouthwash intended for the purpose of the prevention / treatment of gingivitis for an adult patient.

Regarding the question about the possible fluoride concertation in the toothpaste, the participants answered do not know 67.7% and do not want to answer 11.3%.

Results explanation is by the fact that younger pharmacists do not have enough experience to develop their personal knowledge and be at ease to provide advices for oral health-related issues, especially in the absence of education/information during their pharmacy curriculum. (4)

Good knowledge about commercial names of mouthwashes may be due to contact with sales representatives who give instructions/advices about oral health products, but it is advisable for pharmacist to know active substance in oral health products intended for therapeutic purposes. Further studies are needed to evaluate this correlation.

One question was related to the assessment of participant attitudes toward their role in the maintenance and improvement of oral health in the community, which was presented in the form of claim. 96.8% of respondents answered strongly agree and agree to this claim.

In relation to education about oral health topics, 72.6% of participants disagree and strongly disagree that they acquired enough knowledge about oral health in their previous education.

Moreover, 93.5% of respondents strongly agree and agree that is necessary that they continue to work on improving your oral health knowledge through various forms of education.

Some of the respondents suggestions regarding the way and type of education / information for

improvement of their knowledge about oral health were: educational meetings, lectures, seminars (16.4%), lectures in collaboration with dentists, communication with dentists (9.8%), web based self-learning (9.8%), but actually, 21,3% of answers were don't know. Since this was an open –ended question, the answers were categorized.

The data in the present study showed the important role and contribution of the pharmacy interns in improving oral health. The pharmacy interns were willing to improve their knowledge through training programs and promotional materials. The pharmacists trained in oral health can advise the public on the most appropriate choices of dental products and the use of fluoride supplements.

Our research is consistent with other study (8) which show that pharmacists generally wish to play a more active role in health promotion.

They are presently an underused resource, and it is only now that they are beginning to get the recognition they deserve. There is a definitive need for training of pharmacists and providing them with access to information on available dental services, oral health care products and oral conditions related to side effect of drugs.

This study shows that pharmacy interns have an important role in oral health and provides evidence supporting the need for growing partnerships/collaborations between pharmacy and dental health-care professionals and organisations to develop, implement and evaluate evidence-based resources, interventions and services to deliver improved and responsive oral healthcare within communities. (3)

Studies are needed to examine the extent of pharmacist training in oral health. Data gathered from such studies will be invaluable in developing appropriate training standards, model curricula, and clinical best practices. (15)

As described by several published articles (3, 8, 16 ), almost all pharmacists agreed that the collaboration between dentists and pharmacists could offer more effective oral health promotion strategies, especially that most of them reported knowing a dental clinic in their pharmacy vicinity.

## Strengths and limitations of this study

To the best of our knowledge, this is the first study in FB&H evaluating the KAP of pharmacy interns who work in community pharmacies toward oral health and dental care.

Even if some scientists have voiced their concern over the applicability of KAP surveys, they remain an interesting tool that offers accurate information about knowledge, attitude and practice that can be used for educational purposes (4, 17 )

The other limitation of this study is that, this study has small sample size and focusing only on pharmacy interns who work under professional supervision in community pharmacies instead of pharmacist.

Also, some question in the questionnaire were open-ended which gave opportunity to gain more data on the issue, but data acquired in such manner are even more difficult to analyse. Therefore, we categorised answers in purpose of quantitative assessment, but comparison of our results with results of other relevant studies was limited so as deeper statistical analysis.

## CONCLUSIONS

In conclusion, this study shows that pharmacy interns in FB&H have knowledge about preventive oral health behaviours, and oral health care and have positive attitude to their important role in maintenance of oral health despite all barriers and difficulties. The pharmacist interns expressed their need for education/training to enhance their practice. Pharmacy interns in FB&H are approached for variety of oral health advices including oral health conditions as well as oral hygiene products. Continuing education courses and programs should be tailored according to their needs to maximize their potential of promoting oral health in the community.

Pharmacy undergraduate curricula should be revised and more collaboration with dental schools should be established. In addition, communication and interaction between pharmacists and dentists should be established including emergency referral protocols. These measures would increase pharmacists' knowledge and experience in oral health, and would effectively serve the clients.

## Key points

Community pharmacists can play an important role in oral health promotion.

Addition of specific oral health subjects in the pharmacy curriculum and/ or continuing education may enable pharmacists to provide better oral health advice.

Collaboration between pharmacists and other healthcare professionals, especially dentists could offer more effective oral health promotion strategies.

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## DIPLOMIRANI FARMACEUTI U PROMOCIJI ORALNOG ZDRAVLJA U FEDERACIJI BOSNE I HERCEGOVINE

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### SAŽETAK

**Uvod:** Farmaceuti u zajednice su zdravstveni djelatnici koji igraju ključnu ulogu u pružanju kvalitetne zdravstvene zaštite ljudima, uključujući probleme vezane uz oralno zdravlje i proizvode za zubnu higijenu, kao dio promocije zdravlja. U cilju boljeg razumijevanja ovih pitanja u FBiH, ovo istraživanje imalo je za cilj procjenu znanja, stavova i prakse magistara farmacije na radu u apotekama u pogledu oralnog zdravlja i obrazovnih potreba farmaceuta, s krajnjim ciljem jačanja njihove uloge u promicanju oralnog zdravlja i prakse oralne higijene.

**Metode:** Ovo presječno istraživanje provedeno je među pripravnicima ljekarni tokom 2019.godine samopopunjavanjem polustrukturiranog upitnika, kreiranog u sklopu predavanja iz oblasti javnog zdravstva. Rezultati su statistički analizirani pomoću deskriptivne statistike.

**Rezultati:** Najčešće prijavljena pitanja u vezi sa dentalnim zdravljem farmaceutima tokom prakse u apotekama bili su: (drugi) problemi povezani s oboljenjima desni, kao što su bol, crvenilo, osjetljivost, upala itd., problemi s zuboboljom i protezama, te zahtjevi za solucijama za ispiranje usta, četkice i paste za zube. Što se tiče znanja o prevenciji usmjerenog ka oralnom zdravlju, 80,8% sudionik se slaže, i u potpunosti slaže s preporučenim zdravstvenim ponašanjem. Sudionici su pokazali pozitivan stav prema svojoj ulozi u oralnoj zdravstvenoj zaštiti oralnog zdravlja uz spremnost da poboljšaju svoje znanje o ovom pitanju.

**Zaključak:** Studija pokazuje da pripravnici, magistri farmacije, u FBiH imaju dobro znanje o preventivnom ponašanju o oralnom zdravlju, prosječno znanju vezano uz oralnu zdravstvenu zaštitu i imaju pozitivan stav prema svojoj važnoj ulozi u održavanju oralnog zdravlja unatoč svim preprekama i poteškoćama. Farmaceuti su izrazili potrebu za dodatnim obrazovanjem kako bi unaprijedili svoju praksu.

**Ključne riječi:** farmaceut, oralno zdravlje, promocija, FBiH

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