

Dentistry

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INFLUENCE OF EDUCATIONAL LEVEL ON DENTAL ANXIETY AND UNDERSTANDING SPECIAL MEDICAL VOCABULARY IN WOMEN***Barkovska A.D., Kostenko V.G.****Poltava State Medical University, Poltava, Ukraine*

The aim of the study was to determine how well Ukrainian women perceive and understand information provided at the dentist's depending on educational level, to assess the role of vocabulary on dental-patient communication. Data for analysis were collected by questionnaire from 358 women aged 18–75 years from Poltava and Zaporizhzhia regions. The questionnaire consisted of 19 questions, 5 of which were taken from the Modified Scale of Dental Anxiety, the others were determined by the authors. The obtained results were statistically processed. The respondents' characteristics in this study are as follows: with higher education (65.6%), with special secondary (25%) and upper secondary education (9.4%). It was found that 6% of the respondents have dentophobia; 12% – high anxiety, and 21% – moderate anxiety; 62% – low anxiety. The impact of medical vocabulary on communication is assessed by respondents as "negative" by 30% and "positive" by 28% of respondents. Unfamiliar words cause "more trust" in 60%, 40%, 36% of the participants, "more anxiety" in 38%, 53%, and 56% of women with upper secondary, special secondary, higher education respectively. The level of availability of the words "endodontic treatment" naturally increases with increasing level of education: the option "do not understand" in groups upper secondary, special secondary, higher education has chosen 88%, 76%, 61% of respondents, respectively. To conclude, high dental anxiety level and dentophobia are more prevalent among respondents with special secondary and higher education. Dentists should minimize the presence of medical terms during their conversations with patients, especially low educational patients. These steps should positively affect dentist-patient communication and psychological aspects of dental treatment in total.

Keywords: *dental care, medication adherence, psychometrics, surveys and questionnaires.*



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Introduction

Anxiety is a state of being worry, nervousness, or unease about something with an uncertain outcome that can affect everyone in different ways and quite often arises in medical settings [1]. To a certain extent, this apprehension is fairly common to many people, but sometimes it can be so strong and out of proportion to the situation that it turns into specific phobias. For instance, severe fear of dental treatment, dentophobia [2], also known as odontophobia is reported to affect almost half of the population of the world [3]. The term "dental anxiety" was adopted and defined as "an excessive dread of anything being done to the teeth" with the result that "any dental surgery, no matter how minor, or even dental prophylaxis, may be so postponed or procrastinated that the inroads of disease may affect the entire dental apparatus" by Coriat [4]. There have been numerous studies on etiology of dental anxiety, its predisposing factors and its consequence for oral health. This condition is known as more prevalent in women or in people experienced traumatic dental intervention [5–7].

Preventing and reducing dental anxiety and dentophobia appear as a crucial means in building up effective dentist-patient communication and, consequently, in positive treatment outcomes. The riskiest moments at the dentist's appointment when the loss of connection or misunderstanding is highly possible include reporting the diagnosis and explaining the treatment plan. However, sometimes dentists are far from being very diligent in pondering words: they can use a lot of specific medical vocabulary while explaining the purpose and details of treatment, procedures, etc., or reporting the diagnosis. This becomes a barrier and challenge in setting up rapport between dentist and patient [8]. A plethora of technical words and jargon in the language of dental professionals can make patients feel anxious and even lead to

dentophobia [8; 9]. Moreover, being in stressful situation, many patients are unable to comprehend all information provided by the doctor, they feel uneasy to ask for an explanation, thus, the misunderstanding grows like a snowball and the emotional connection between the patient and the dentist is broken. As a result, patients tend to avoid dental attendance [10] that impedes the use of preventive methods and leads to the postponement of dental visits and deterioration of individual's oral health. That is why many patients start seeking for medical aid when their medical condition is far gone, often irreversible, and requires prolonged, complex, and expensive treatment. Since in Ukraine the access to dental care and the experience of patients can differ significantly depending on their socioeconomic status, it is interesting to investigate the impact of education on the dental anxiety and misunderstanding of the health-related information provided by dentists.

Given the fact that in the modern world a healthy and beautiful smile plays an important role not only for the physical, but also for the psychological well-being [11] of women, the investigation of the specifics of communication between dentists and female patients of different educational level is crucial in boosting patients' self-esteem and providing better patient-oriented dental services in Ukraine.

The aim of this study is to determine how well Ukrainian women perceive and understand information provided at the dentist's depending on educational level, and to assess the role of vocabulary on dental-patient communication.

Materials and Methods

The data for analysis were collected by questioning 358 women aged 18–75 years from Poltava and Zaporizhzhia regions. Using the Google Forms, we elaborated the questionnaire consisted of 19 questions, 5 of which were taken from the Modified Scale of Dental Anxiety, the

others formulated by the authors (included questions about gender and educational level). Among the self-administered questions, 6 questions referred to understanding the information presented by the dentist and perception of dental technical words, and 6 questions were aimed at revealing meanings of certain dental technical words.

The analysis of the findings obtained allowed us to distribute respondents by their levels of education into 3 groups: the group with higher education (University Master and Bachelor Degrees) comprised 65.6% of all participants, the group with professional pre-higher education included 25.0% of the respondents, and the group of women with vocational education and training made up 9.4%. For identifying educational levels, we used the level descriptions given on the official website of the Ministry of Education and Science of Ukraine [12].

The obtained results were statistically processed by STATISTICA 13 software (StatSoft Inc., USA, license No.JPZ804I382120ARCN10-J) for Windows. The assessment of the significance of the mean differences for the independent samples was calculated by Student's t-test; the reliability of the differences in quality indicators was calculated on the basis of Pearson's chi-square test (χ^2), including the Yates correction, Fisher's exact test. Results at $p < 0.01$ were considered reliable.

Results

The findings of the questionnaire have enabled to reveal what dental procedures are considered as the most frightening by the respondents. 9% of all respondents felt "extremely anxious" when awaiting tooth drilling; this situation was found as more common in groups with pre-higher education and vocational education and training, achieving 26% and 13%, respectively. By contrast, "no anxiety" reaction reported by 40% of all respondents was found as the most prevalent in the case of hygienic teeth cleaning. It is worth noting

that the answer "no anxiety" in different education groups was the most common while anticipating different procedures: having treatment tomorrow – 45%, having local anesthetic injection – 54%, having teeth scaled and polished – 58% of participants in each group with "professional pre-higher education", "vocational education and training" and "higher education", respectively. Anxiety also decreases among the respondents with "pre-higher education", "vocational education and training", and "higher education". This tendency is clearly seen in the proportions of the answer "extremely anxious" regarding tooth drilling: 26%, 13% and 8% respectively, as well as regarding the anesthesia injection: 45%, 8%, and 6%, respectively. However, anxiety related to awaiting dental appointment and hygienic teeth cleaning is found as the lowest amongst the respondents with pre-higher education: only 3% of the participants felt extremely anxious.

Dentophobia can be diagnosed by summarizing scores for questions taken from the Modified Scale of Dental Anxiety, where "not anxious" answer is worth 1 score (=1), "slightly anxious" (=2), "fairly anxious" (=3), "very anxious" (=4), "extremely anxious" (=5). Overall score higher than 19 indicates dentophobia. According to the results of the questionnaire, the participants demonstrate the following prevalence rate of dentophobia and level of anxiety: 6% of all respondents are diagnosed as having dentophobia; 12% of all respondents experience high anxiety; 21% of the respondents feel moderate anxiety, and the largest share of 61% is diagnosed as having low anxiety level. Our study has demonstrated that dentophobia is the most common in the group of the respondents with vocational education and training (10%), while it is the least common in the group of respondents with pre-higher education (5%). However, 11% respondents with higher education have high anxiety

level, while only 6% and 5% of respondents with vocational education and training and pre-higher education are found to have such level of dental anxiety.

In the literature dedicated to doctor-patient communication, there are many studies concerning the language used by doctors [13; 14]. It is well known that effective dentist-patient communication helps to reduce anxiety and can alleviate dentophobia or even prevent its occurrence [3; 4; 8]. There is a traditional point of view about a negative patient's attitude towards the use of medical terms by healthcare professionals, therefore, we decided to investigate the level of understanding specific terms by the patients and the impact of the terms on the dentist-patient interaction.

Most of the respondents (65%) reported that they "fully understand" the doctor's words and this rate does not significantly vary among respondents with pre-higher education, vocational education and training and higher education.

The impact of medical terms on communication between patient and dentist is assessed as "negative" by 30% and "positive" by 28% of respondents, respectively. More than 40% of all respondents think of "no impact". It is important to stress that the number of participants denying any influence of medical terms decreases with the increasing level of education: 53%, 48% and 39% in the groups with pre-higher education, vocational education and training, and higher education, respectively.

Subsequently, we investigated what impact the medical terms can produce on patients. Our findings revealed that 53% of patients experienced "increased anxiety" while hearing medical terms, on the other hand, 40% reported about "increased trust" to the doctors, who use technical words plentifully. It is interesting to note that complex terms, which are difficult to understand by lay people, are perceived as less plausible and cause more anxiety as

the educational level of respondents grows. This is supported by the following data: unfamiliar technical words cause "more trust" in 60%, 40%, 36% of the respondents, while these words provoke "more anxiety" in 38%, 53%, 56% of respondents with pre-higher education, vocational education and training, higher education, respectively.

The study has shown that 93% of the respondents can ask for clarifying the meanings of terms about certain manipulations, diagnosis and further treatment mentioned by the dentist if any of them seem unclear. 4% of all respondents with the maximum amongst the respondents with upper secondary education (8%) say that they "do not ask about the meaning of the doctor's words". 2% of the respondents report that they "not always ask to clarify the meaning of certain terms".

An important issue is the adequacy of information about certain manipulations, diagnosis and further treatment delivered by the dentist: 54% of all respondents suggest they receive "enough" information: this is more typical for the participants with upper secondary education (63%); while 43% of all respondents say that they "not always" have enough information.

As 77% of the answers "always ask for additional information at the dentist's", 21% "not always" consult a dentist for more details, 2% never do this at all. When analyzing the relationship between this rate and educational level of the participants, we found out that 80% and 79% of the respondents with pre-higher education and higher education respectively always ask for the explanations or clarification of medical terms, while only 70% of the respondents with vocational education and training ask for the right interpretation.

Some medical terms are used at the dentist's office more often than others, but may still be unclear to patients. Therefore,

the understanding of words in pairs "term – its simplified synonym" was investigated. Three pairs were formed: "anesthesia – pain relief", "endodontic treatment – root canal treatment", "cyst – benign neoplasm".

The term "anesthesia" was clear in 100% of cases. "Full" and "partial absence of pain" are the most common options of understanding this term demonstrated by 66% and 31% of responses, respectively. There were some other options suggested by the respondents, for instance, "sleep during the procedure" and "no sound of the dentist's work" chosen by 2% and 1% respondents, respectively. The answer "partial absence of pain" was more often identified by the respondents with higher education (31%), and less often recognized by the respondents with upper secondary education (3%).

The term "pain relief" was new for 0.5% of respondents. Versions of its meaning were the following: "to take away pain", "injection to stop pain", "complete absence of sensations", "sleeping during the procedure" that made up 53.6%, 41.2%, 4.0%, and 0.7%, respectively. Differences depending on educational level of participants were not significant. Thus, both terms were interpreted properly by 99.5% respondents.

The term "endodontic treatment" was not clear for the majority of respondents – 67.5%. The level of availability of the words "endodontic treatment" naturally increases with increasing level of education: the option "I do not understand" in groups of upper secondary, special secondary, higher education have chosen 88%, 76%, 61% of respondents, respectively. Correct options "treatment of the tooth core" and "treatment of tooth inflammation" were selected – 19%, 8.3%, respectively. Significantly fewer respondents consider this term means "treatment of tissues around the tooth" – 5.5%, which is not true.

The term "root canal treatment" is misunderstood only by 7.6% of the respondents; this term was especially difficult to interpret in the group of the respondents with pre-higher education (13%). The most popular versions of the meaning of the above-mentioned term are "tooth nerve removal" and "treatment of the tooth core" that make up 53.1% and 26.3%, respectively. Less common answers include "deprivation of tooth sensitivity" and "painful procedure", that make up 6.6% and 6.4%, respectively. Thus, there is a considerable difference in understanding between these two terms: only 31.3% respondents are familiar with both terms with maximum among the respondents with higher education, whose share constitutes 38%, 5.9% of the participants do not understand any of them. In this case, it is advisable to use "root canal treatment" instead "endodontic treatment", however, incomplete understanding of medical words by the patients may be possible.

The term "cyst" is reported as difficult for understanding by 22.3% of the respondents. A cyst is interpreted as "a benign neoplasm" and "can be treated with tooth preservation" in 43.6% and 25.1% of cases, respectively; the above term is defined as "malignant neoplasm" and "a condition that can be treated with tooth removal" in 2.1% and 6.9% of cases, respectively. It is worthy to emphasize that only 18% of the participants with pre-higher education consider a cyst to be treated with tooth preservation, when this rate outreach one quarter of respondents amongst the group with higher education, reaching 28%.

Most often, the respondents chose the following definitions of the term "benign neoplasm": it "does not harm the body" (54%), "must be removed" (40%), and "cancerous tumor" (3%). This term was most often misunderstood by the par-

ticipants with pre-higher education education, i.e., 13% vs. 2% in each group of the respondents with vocational education and training and higher education.

Discussion

Dental anxiety is a quite prevalent condition characterized by a variety of causative factors and predisposing factors, and gender and educational level are some of them [5; 6]. The data we obtained indicate that the maximum increase in the average level of anxiety scores is observed in the group with vocational education and training. However, our findings differ significantly from the trends reported by some studies, where anxiety scores were higher in respondents with the lowest social status [5; 15]. This may be primarily related to the socio-cultural differences between women in New Zealand, India and Ukraine.

The prevalence of anxiety among the respondents with pre-higher education may also appear due to the fear resulted from deeper knowledge of the respondents, and as the findings of this study point out, due to the greater access to information about possible risks and complications, which may not be objectively analyzed compared to the women with higher education.

When it comes to the presence of any dental anxiety among women, similarities and differences between situations in different countries can be found. For instance, dental anxiety is reported among 31.5% of women in Lebanon and 75% of women in Saudi Arabia compared to 39% in Ukraine as stated in our study [6; 16]. We can also presume that there is dependence between the level of dental anxiety and the age of Ukrainian women but these issues have not been elucidated yet and, thus, requires further investigation.

We would like to emphasize that the novelty of this study consists in the identification of patients' attitudes regarding the impact of medical terminology on the understanding of the doctor and communica-

tion with him. Patients' understanding of the most commonly used dental terms is almost complete with regard to the concept of "anesthetic", the concept of "benign" is not understood by 10% of respondents, while the concept of "cyst" seems to be clear, but incorrect by almost half of the respondents [17].

It is important to note that the novelty of this study consists in the assessment of patients' attitude towards the sophisticated medical terms and the level of their understanding, as well as the impact the complex vocabulary has on the dentist-patient communication. The interpretation of the most frequently used dental terms by the patients can range from the complete proper understanding, as in the case of the term "anesthetic", to the incomplete understanding, as in the case of the term "benign", which is misinterpreted by 10% of the respondents, or the term "cyst", which seems to be clear as first sight, but has been improperly interpreted by almost half of the respondents [17].

We can suggest that peculiarities of dentist's personality and behavior patterns as well as different treatment methods may affect the level of dental anxiety that requires further in-depth study.

Conclusions

High dental anxiety level and possible dentophobia have been found in 18% of women in total and are more prevalent amongst the respondents with vocational education and training and higher education. Despite the fact that the majority of respondents ask dentist for additional information or clarification of new medical terms, which are suggested to cause trust, on the one hand, and anxiety, on the other, dentists should minimize using complex medical terms and technical words, which cannot be easily recognized by public, when communicating with patients, especially when talking to female patients with low educational level. Such terms as "endodontic treatment", "cyst", or "benign

neoplasm" should be either avoided in dentist-patient communication or changed by their synonyms, explained by the dentist without additional questions. These steps can boost the effectiveness of dentist-patient communication and psychological aspects of dental treatment in total, thus resulting in the considerably positive impact on the quality of dental service, its out-

comes and better quality of life of the population.

Prospects for further research

In the future, we plan to study the variation and effectiveness of methods to reduce dental anxiety in women of different ages. In our opinion, communication strategies with patients also need improvement.

Conflict of interest is absent.

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ВПЛИВ РІВНЯ ОСВІТИ НА СТОМАТОЛОГІЧНУ ТРИВОГУ ТА РОЗУМІННЯ МЕДИЧНОЇ ТЕРМІНОЛОГІЇ У ЖІНОК

Метою дослідження було визначити, наскільки українські жінки розуміють надану стоматологом інформацію залежно від рівня освіти, оцінити роль лексики у спілкуванні стоматолога з пацієнтом. Дані для аналізу були зібрані шляхом анкетування 358 жінок віком 18–75 років Полтавської та Запорізької областей. Анкета складалася з 19 питань, 5 з яких узяті з Модифікованої шкали стоматологічної тривожності, інші визначені авторами. Отримані результати статистично оброблені. У дослідженні виявлено такий розподіл респондентів: з вищою освітою – 65,6 %, із середньою спеціальною освітою – 25,0 %, з повною середньою освітою – 9,4 %. Виявлено, що 6 % респондентів мають дентофобію; 12 % – високу; 21 % – помірну; 62 % – низьку тривожність. Вплив медичної лексики на спілкування між лікарем та пацієнтом респонденти оцінюють частіше «негативно» (30 %), ніж «позитивно» (28 %). За рівнем освіти респондентів незнайомі слова викликають «більше довіри» у 60 %, 40 %, 36 % учасниць, які мають повну середню, середню спеціальну та вищу освіту, та «більше занепокоєння» – у 38 %, 53 % та 56 % жінок відповідно. Рівень доступності вислову «ендодонтичне лікування» зростає з підвищенням рівня освіти: не розуміють його 88 %, 76 % та 61 % респондентів із повною середньою, середньою спеціальною, вищою освітою, відповідно. Отже, високий рівень стоматологічної тривожності та дентофобія більш поширені серед респондентів із середньою спеціальною та вищою освітою. Стоматологи повинні мінімізувати присутність медичних термінів під час розмови особливо з малоосвіченими пацієнтами. Ці кроки позитивно вплинуть на спілкування лікаря та пацієнта та психологічний аспект лікування загалом.

Ключові слова: стоматологічна допомога, прихильність до лікування, психометрія, опитування та анкетування.

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