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The state of patient-dentist communication among the adult population of Ukraine**Barkovska Anastasiia¹, Kostenko Viktoriia²**¹Master's Degree Student of Dental Faculty, Poltava State Medical University, Poltava, Ukraine²Candidate of Philological Sciences, Associate Professor, Department of foreign languages with Latin and medical terminology, Poltava State Medical University, Poltava, Ukraine**Adress for correspondence:**

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Annotation: effective communication between patients and dental doctors is a critical component in providing high-quality dental care and preserving overall health. Unknown terms and insufficient health-related information can lead to a misperception of the disease, diagnosis, and treatment processes that, in turn, may result in more serious health consequences. Therefore, it is essential to pay attention to the quality of patient-dentist communication in order to prevent dental anxiety and dental fear, which induces patients to avoid dental visits and, in general, reduces the effectiveness of treatment, makes any preventive measures impossible to implement. The objective of this study is to determine the level of dental anxiety, understanding of information provided at the dentist's, and to assess the impact of unknown technical vocabulary in the dentist's speech on patient-doctor communication among Ukrainians aged 20 – 39. The study was conducted using an anonymous survey of 200 respondents aged from 20 to 39, including 151 women and 49 men. The survey consisted of 20 questions, 5 of which were adapted from the Modified dental anxiety scale (MDAS), other were formulated by the authors. The findings obtained were analyzed using STATISTICA for Windows 13 software (StatSoft Inc., #JPZ804I382I20ARCN10-J). It was found that dental anxiety is prevalent in nearly half of the adult population in Ukraine, particularly among women and individuals aged 20-29. 55.4% of the respondents feel anxious at the dentist's appointment because of special technical words, while 38.4% of them gain credence. As people age, they are more likely to consider that unclear words have no impact on communication. The term 'anesthesia' is the most understandable among those researched, while the term 'endodontic treatment' was unclear to 62.7% of respondents, especially among those aged 30-39 and women. Men are more likely to interpret the term as 'painful procedure'. The term 'cyst' is considered curable with the tooth preservation more often than with its necessary removal – 20.8% vs. 6.8% of all respondents respectively. Beliefs about the impossibility of saving a tooth are more common among people aged 20-29 – 9.2% vs. 5.9% of people aged 30-39. The difference in number of male and female respondents who consider that 'benign neoplasm' 'must be removed' depends on age: in the 20-29-year-old group, the 'must be removed' option prevailed among men – 30.8% vs. 25.4% of women; in the 30-39 age group – prevailed among women – 43.2% vs. 23.1% of men. To conclude, dental anxiety is prevalent in nearly half of Ukrainian adults, particularly among women and individuals aged 20-29. Dental technical words are found as

eliciting more anxiety than trust or fear, but this effect decreases with age, as more Ukrainians consider that technical words do not have a significant impact on further communication between the dentist and patient. Dentists are advised to avoid such terms as 'endodontic treatment' and use their analogues, or to make sure that the patient fully comprehends the information provided in order to prevent misunderstandings and dental anxiety level growth.

Keywords: [dental care](#), [dental anxiety](#), [medication adherence](#), [psychometrics](#), [surveys and questionnaires](#).

Introduction

Effective communication between patients and dental doctors is one of the crucial components in dental care. Unknown terms (violation of the Gricean conversation maxim of quality and manner) (Grice, 1975), insufficient amount of information (violation of the Gricean conversation maxim of quantity) can lead to a misperception of the disease, diagnosis, and treatment processes that, in turn, may result in more serious health consequences. All these aspects related to communication problems are among the number of etiological factors of dental anxiety, which is more common in women (Barkovska, 2022)

The term 'dental anxiety' introduced by Coriat (1946) is defined as an overwhelming fear associated with any dental procedure, no matter how minor, or even routine dental prophylaxis. This fear often leads individuals to delay or avoid necessary dental treatments, which can have detrimental effects on their overall dental health. Ensuring high-quality patient-dentist communication is of paramount importance in the field of dental care. By adhering to the principles of cooperation, as elucidated by Grice (1975) as the fundamental basis of effective speech communication, dental professionals can actively work towards preventing dental anxiety and fear among patients. Dental anxiety and fear often serve as significant barriers, compelling patients to avoid dental visits altogether. This apprehension not only hampers patients' oral health but also diminishes the overall effectiveness of dental treatment. Therefore, it is essential for dental healthcare providers to establish open and transparent channels of communication with their patients, fostering an environment of trust and understanding. Establishing effective communication, applying right strategies are particularly crucial for young adults aged 20-39, as it plays a vital role in maintaining their dental

health, preserving natural teeth, and improving their overall quality of life.

Aim

To determine the level of dental anxiety, understanding of information provided at the dentist's, and to assess the impact of unknown technical vocabulary in the dentist's speech on patient-doctor communication among Ukrainians aged 20 – 39.

Materials and methods

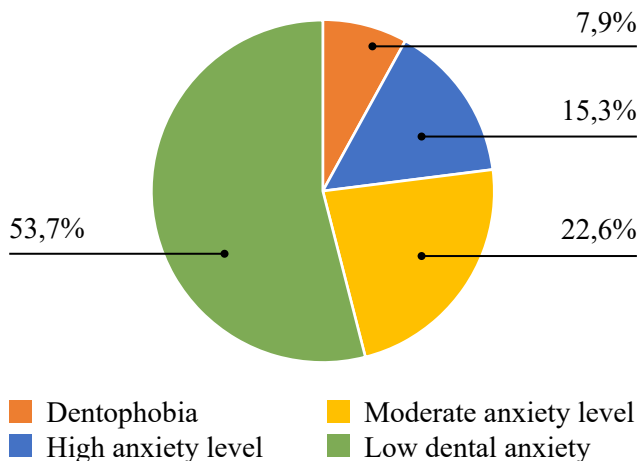
The study was conducted using an anonymous questionnaire from October to December 2022 by filling out a Google form. The sample coverage reached 200 respondents aged from 20 to 39, including 151 women and 49 men. The survey consisted of 20 questions, 5 of which were adapted from the Modified dental anxiety scale (MDAS), other were formulated by the authors. The findings obtained were analyzed using STATISTICA for Windows 13 software (StatSoft Inc., #JPZ804I382120ARCN10-J). The significance of differences in means for independent samples was calculated using the t-test, while the significance of differences in quality indicators was calculated based on the Pearson chi-square test (χ^2), including Yates' correction and Fisher's exact test. Significance was set at $p < 0.01$.

Results

The age distribution was as follows: 42.9% of respondents were aged 20-29 and 57.1% were aged 30-39. In the 20-29 age group, women prevailed constituting 71.6%; men made up 28.4%. In the 30-39 age group, the shares of women and men were 78.6% vs. 21.4%, respectively.

Dental anxiety of various levels of intensity has been found in 46.3% of the respondents, 23.2% of whom have the high levels which include moderate and high dental anxiety, dentophobia (Graph №1). Younger individuals demonstrate a higher prevalence of dental anxiety, with 48.7%

of those aged 20-29 affected, compared to 44.6% of those aged 30-39. Gender differences are only significant when age groups are considered separately, with 52.4% and 38.5% of women and men aged 20-29 affected, and 44.3% and 38.5% of women and men aged 30-39 affected, respectively.



Graph №1. Dental anxiety level

The analysis of obtained data revealed that 63.3% of the respondents were able to comprehend all the words used by dental doctors, while 36.7% reported not fully understanding them. It is worthy to emphasize noting that this rate does not change significantly with age, but depends on gender: men in the 20-29-year-old group are more likely to fully understand the dentist, 92.3% vs. 57.1% of women. This difference is much smaller among the respondents aged 30-39, with 69.2% and 62.5% of men and women, respectively, fully understanding the dentist.

In general, Ukrainian adults aged 20-39 evaluate the influence of unknown words as rather negative (31,6%), than positive (24,9%), but 43,5% do not recognize any impact at all on patient-dentist communication. As people age, they are less likely to consider that unclear words have an impact on communication. This is reflected in the frequency of respondents choosing the option "no impact". In the 20-29 age group, this option was chosen by 39.5% of all respondents, 39.7% of women, and 38.5% of men. In the 30-39 age group, the frequency of this answer option was 46.5% for all respondents, 45.5% for women, and 53.8% for men.

More than half of the respondents (55.4%) feel anxious at the dentist's appointment because

of special technical words, while 38.4% gain credence. Interestingly, the 30-39-year-old group appears to be more prone to fear of unclear terms compared to the 20-29-year-old group, with 8.9% and 2.6% respectively. This trend is evident among both genders, with percentages of 7.7% and 0%, and 9.1% and 3.2% among female and male respondents aged 30-39 and 20-29, respectively.

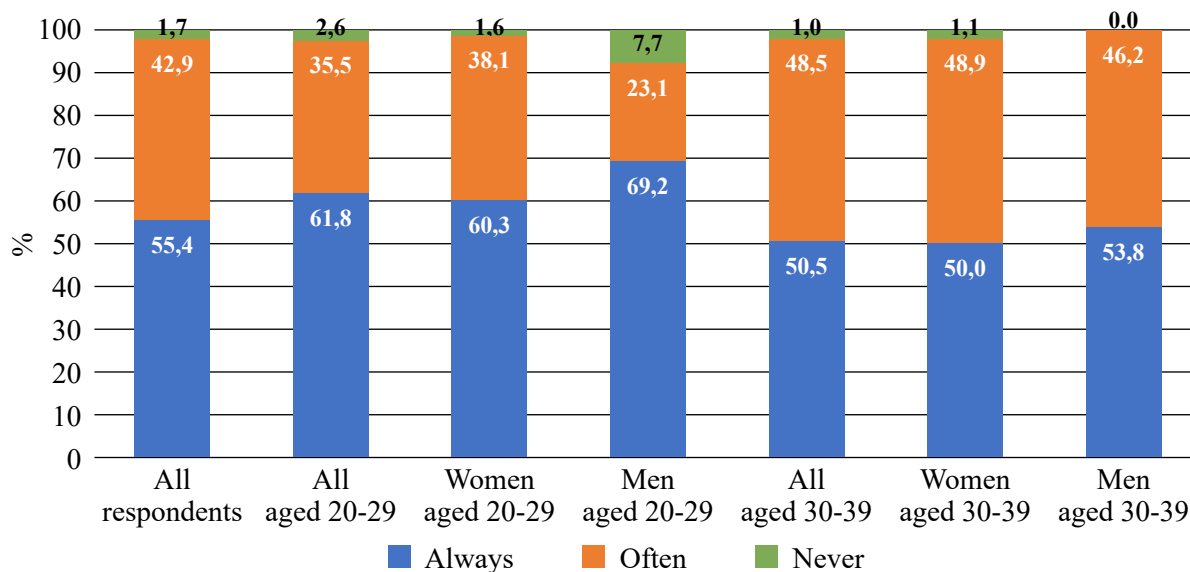
The overwhelming majority of respondents always ask for additional clarification about incomprehensible words during dental visits (92.7%), but there are also those who never ask (4%). Interestingly, the majority of those who never seek clarification are women aged 30-39 (85.7% of respondents who answered "no").

More than half of the respondents believe they always receive sufficient information from their dentist (55.4%). At the same time, there is a difference in the prevalence of this opinion among people of different ages, with 61.8% and 50.5% among people aged 20-29 and 30-39, respectively. It is worth noting that, regardless of age, men are more likely to feel that they receive enough information from their dentist – 69.2% vs. 60.3%, and 53.8% vs. 50.0% of men and women aged 20-29 and 30-39, respectively (Graph №1).

Although 55.4% of respondents fully understand and receive enough information at the dentist's, 76.3% 'always clarify' what seem unclear to them, while 23.2% do 'not always' consult a dentist for more details. Consequently, even with sufficient for patient amount of information provided, questions concerning diagnostics, procedures and treatment plans, and more often among younger respondents – 78.9% vs. 74.3% among 20-29 and 30-39-year-old groups, respectively.

In order to thorough study the level of understanding of frequently used dental terms, the respondents were asked to choose the terms' meaning, which were grouped into pairs "term – its simplified (commonly used) analogue".

All respondents comprehend the term 'anesthesia' with the most common meanings – 'full' and 'partial absence of pain': 63.3% and 33.9% respectively. The options 'sleep during the procedure' and 'no sound of the dentist's work' were also offered, but were chosen by a fairly small number of respondents, 2.3% and 0.6% respectively.



Graph №2. Do patients receive sufficient information from dentist?

The term 'pain relief' was understood by the overwhelming majority of the respondents – 99.4%. The most common versions of its meaning were found to be 'to take away pain' – 53.7%, 'injection to stop pain' – 39.5%. There is a difference in the option prevalent depending on age: the first one is more popular in 20-29-year-old group – 68.4% of respondents, and the second one – in 30-39-year-old group by 52.5% of respondents. No gender differences were found.

The term 'endodontic treatment' was discovered to be unknown for 62.7% of respondents, another 6.2% misinterpret it, understanding as 'treatment of tissues around the tooth'. Young adults aged 20-29 comprehend this term more clearly, that can be recognized by frequency of respondents choosing the option 'I do not understand' in 20-29-year-old and 30-39-year-old groups – 52.3% and 71.3%, respectively. Women, independent from age, are more likely to be unaware of the term 'endodontic treatment' – 55.6% vs. 30.8%; 73.9% vs. 53.8% of female and male respondents aged 20-29 and 30-39 respectively. At the same time more precise options 'treatment of the tooth core' and 'treatment of tooth inflammation' were chosen by 23.7%, 7.3% of respondents respectively.

The commonly used equivalent of the above-mentioned term, 'root canal treatment' is considerably better comprehended, as only 7.6% of respondents do not understand its meaning. Slightly more than half of respondents (52%)

believe that 'root canal treatment' is a synonym to 'tooth nerve removal'; this meaning is more often chosen by participants aged 30-39 – 57.4%, whereas by respondents aged 20-29 – 44.7%. Interestingly, men aged 20-29 are more likely to consider 'root canal treatment' a 'painful procedure' compared to women of the same age – 15.4% vs. 4.8% respectively. Such difference can be associated with a different pain threshold and psychological perception of pain by individuals of different genders. Men aged 30-39, in turn, suggest that 'root canal treatment' means 'deprivation of tooth sensitivity with 38.5% of respondents of this group vs. 9.1% and 7.9% of women aged 20-29 and 30-39 respectively.

In general, both terms were understandable for 35% of participants, with prevalence among those aged 20-29, who made up 46.1%. However, 5.1% of respondents do not comprehend both the term 'endodontic treatment' itself and its commonly used analogue 'root canal treatment' completely. This rate depends on age and is higher among participants aged 20-29 (6.6%) compared to the 30-39-year-old group (4%). Therefore, dentists should avoid the term 'endodontic treatment' by replacing with 'root canal treatment', especially during appointments with those aged 30-39 and women, and clarify the essence of this treatment method for patients.

Nearly half of the respondents, 47.5%, consider the term 'cyst' to be 'benign neoplasm', and only

2.3% – to be ‘malignant neoplasm’. This indicator does not significantly change with age or gender of participants. 20.8% of respondents believe that ‘cyst’ ‘can be treated with tooth preservation’ unlike of 6.8% of those who suggest that in such case tooth removal is needed. The opinion about the impossibility of tooth preservation in diagnoses that include the term "cyst" is more common among people aged 20-29 – 9.2% vs. 5.9% of those aged 30-39. Among younger respondents, 15.4% of men share the same opinion compared to only 7.9% of women. In general, the term ‘cyst’ was unknown by 22,6% of all respondents; particularly for men aged 30-39, who made up 46.2%.

The term ‘benign neoplasm’ more acceptable, as only 2.8% of respondents do not understand it. The majority of respondents suggest that such formation ‘does not harm the body (60.5%); this opinion is more prevalent among respondents aged 20-29 compared to those aged 30-39 – 69.7% vs. 53.5%, respectively. ‘Benign neoplasm’ is considered ‘must be removed’ by 34.5% of respondents, namely in 30-39-year-old group (40.6%). It should be noted that such understanding of benign neoplasm treatment differs among men and women depending on age: in 20-29-year-old group option ‘must be removed’ was chosen more often by men – 30.8% vs. 25.4% of women; in 30-39-year-old group – by women – 43.2% vs. 23.1% of men. Sometimes the option ‘tumor (cancer)’ was found – 2.3%, in this case gender and age differences were not significant ($p=0,212$). The pair of terms ‘benign neoplasm’ and ‘cyst’ were completely misunderstood by a fairly small part of respondents – 2.3%, whereas 59.9% of participants understand both of them. Thus, during patient-dentist communication the term ‘benign neoplasm’ should be preferred as greater known by the general public and does not cause excessive anxiety.

Discussion

Dental anxiety is prevalent among the adult population of Ukraine, especially among young people aged 20-29 and women. Examining this indicator in other countries of the world, we obtained similar data on gender and age characteristics regarding the prevalence of dental anxiety (Deogade and Suresan, 2016; Muneer et al., 2022), but its intensity level was found

to be different. Thus, among New Zealanders, the prevalence of anxiety among women was 59.39% higher compared to men (Sukumaran et al., 2021), whereas in our study a smaller difference of 36.1% and 15% between women and men 20-29 and 30-39 years, respectively, is observed. The prevalence of high-level dental anxiety among Lebanese adults is close to the data found in our study – 23.2% and 22.4% of respondents from Lebanon and Ukraine, respectively (Kassem et al., 2021). At the same time, among the inhabitants of India, this rate is even higher – 30% (Sindhu et al., 2020). According to the results of our research, men more often believe that they fully understand and receive enough information from the dentist. Sufficient perception of information concerning diagnostics and treatment is also recognized by the answers of respondents aged 20-29, who, despite their age, are likely to consult a doctor for additional explanations regarding diagnosis, treatment, etc. It is noteworthy that, although the part of people who deny any impact of unclear terms on communication with the dentist increases with age, so does the percentage of those who feel fear and anxiety when hearing unknown medical terms. The literature research revealed that there is not enough data to compare exactly this aspect in the literature devoted to the study of patients’ anxiety in medical institutions.

The full understanding by the respondents of such terms as ‘anesthesia’ and ‘benign neoplasm’ can be explained by the increase of public awareness due to the; sanitary and awareness-rising work of health care workers, wide use of various anesthesia methods in dental treatment, which significantly increases its quality. A better understanding of the term ‘endodontic treatment’ by young adults aged 20-29 compared to respondents aged 30-39 may be determined by greater general awareness of young people, increase of responsibility for their own health, availability of information about types of dental services in both Ukrainian and English languages.

The term ‘benign’ was unclear for 32.5% and 10.2% of respondents in studies of Hayes et al. (2017) and Hamilton et al. (2021), respectively, which is significantly different from the frequency of such respondents’ answer in our study, which

made up 2.8%. Sarbaz et al. (2022) also found a relationship between age and desire for information, as our study did. They conducted a survey among patients in a transplant clinic and discovered that the older participants were, the less interested they were in additional data.

Issues related to the emergence of anxiety in medical institutions, peculiarities of its manifestations among Ukrainians, and measures aimed at its prevention, have not yet received adequate coverage and require in-depth multifaceted study. The differences found by comparing the data we obtained with those presented in the literature can be caused, first of all, by the peculiarities of providing dental care and cultural specificity. Future research should take into account the difference in the socioeconomic status of the respondents.

Conclusion

1. Dental anxiety is prevalent in nearly half of the adult population in Ukraine, particularly among women and individuals aged 20-29.
2. Dental technical words are found as eliciting more anxiety than trust. However, with age, even more Ukrainians consider that technical words do not have a significant

impact on further communication between the dentist and patient.

3. Dentists are advised to avoid such terms as 'endodontic treatment' and use their analogues, or to make sure that the patient fully comprehends the information provided in order to prevent misunderstandings and dental anxiety level growth and, therefore, promote recovery and maintenance of dental health.

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Conflict of interests

There are no conflicts of interests.

Consent to publication

All authors have read the text of the article and gave consent to its publication.

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A – Research concept and design, B – Collection and/or assembly of data, C – Data analysis and interpretation, D – Writing the article, E – Critical revision of the article, F – Final approval of article

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Стан комунікації між пацієнтом та стоматологом серед дорослого населення України

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Анотація: комунікація пацієнт-стоматолог є одним із значущих частин стоматологічної допомоги населенню. Незрозумілі слова, недостатня кількість інформації може призвести до хибного сприйняття хвороби, процесів діагностики лікування, що з високою ймовірністю посприяє розвитку ускладнень і тому важливо приділяти увагу якості спілкування з пацієнтом з метою запобігання розвитку стоматологічної тривоги, яка спонукає пацієнта до уникання стоматологічного візиту та знижує ефективність лікування. Дослідження мало на меті визначити рівень стоматологічної тривоги, розуміння стоматолога та вплив незнайомих термінів у його мовленні на комунікацію пацієнт-лікар серед українців 20-39 років. Дослідження проведено методом анонімного анкетування за участю 200 респондентів віком від 20 до 39 років, серед яких 151 жінка та 49 чоловіків. Анкета складалася з 20 питань, 5 з яких були запозичені з модифікованої шкали стоматологічної тривоги, інші сформульовано авторами. Було проведено статистичний аналіз отриманих даних за допомогою програмного забезпечення STATISTICA для Windows 13 (StatSoft Inc., № JPZ804I382120ARCN10-J). Стоматологічна тривога зустрічається у майже половини дорослого населення України з переважанням серед осіб 20-29 років та жінок. 55,4% респондентів відчують тривогу через незрозумілі терміни на прийомі стоматолога, в той час як у 38,4% вони викликають довіру. З віком все більше українців вважають, що медичні терміни не мають впливу на подальшу комунікацію між стоматологом та пацієнтом. Термін «анестезія» є найзрозумілішим серед використаних у дослідженні, а термін «ендодонтичне лікування» навпаки – 62,7% респондентів не знали його, що частіше спостерігалось серед осіб 30-39 років та жінок. Чоловіки були більш схильні віддавати перевагу «болісній процедурі» серед інших значень терміну «лікування кореневих каналів». Термін «кіста» вважається виліковною із збереженням зубу частіше ніж із необхідним його видаленням – 20,8% проти 6,8% усіх анкетованих. Думки про неможливість збереження зубу притримуються більше серед осіб 20-29 років – 9,2% проти 5,9% осіб 30-39 років. Серед чоловіків та жінок різна кількість респондентів вважають «доброякісне новоутворення» «обов'язковим до видалення» залежно від віку: у групі 20-29 років варіант «обов'язкового видалення» було обрано частіше серед чоловіків – 30,8% проти 25,4% жінок; у групі 30-39 років – частіше серед жінок – 43,2% проти 23,1% чоловіків. Отже, стоматологічна тривога зустрічається у майже половини дорослого населення України з переважанням серед осіб 20-29 років та жінок. Стоматологічні терміни викликають більше тривоги, ніж довіри або страху. Однак, з віком все більше українців вважають, що медичні терміни не мають впливу на подальшу комунікацію між стоматологом та пацієнтом. Стоматологам рекомендовано уникати таких термінів як «ендодонтичне лікування» та використовувати їх аналоги або пересвідчитися в повному розумінні пацієнтом наданої інформації з метою запобігання непорозуміння та посилення стоматологічної тривоги.

Ключові слова: стоматологічна допомога, тривога на стоматологічному прийомі, дотримання плану лікування, психометрія, опитування та анкетування.



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