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Evaluation of symptoms and sings of oral soft tissue disorders among inpatients with schizophrenia

Процена симптома и знакова оралних мекоткивних поремећаја у хоспитализованих пацијената са схизофренијом

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SUMMARY

Introduction Inpatients with schizophrenia are likely to constitute a high-risk group of individuals with respect to prevalence of oral diseases and they require special attention. Factors like nature of psychiatric disorders, length of stay and oral-side effects of psychotropic medications have been noted as contributors to poor oral health among institutionalized chronic psychiatric patients.

Methods This cross-sectional study comprised 190 inpatients with schizophrenia at the Clinic for Mental Disorders "Dr Laza Lazarevic" in Belgrade, and 190 mentally healthy patients at the Clinic for Periodontology and Oral Medicine, School of Dental Medicine, University of Belgrade. A questionnaire was designed for the purpose of this research with the aim of recording information on demographic data (age and gender), unhealthy habits (tobacco smoking, alcohol consumption and drug abuse), and data about the existence of any oral symptom and/or sings related to oral soft tissue pathology. All participants were subjected to targeted clinical examinations.

Results All study group patients were receiving psychotropic medications (mean number 4.18 ± 1.14; from 1 to 7 medications). The study group patients had a total of 272 symptoms and 121 signs of oral disorders; which was almost four times higher for symptoms and even nine times higher for signs of oral disorders than in the control group.

Conclusion Schizophrenia as a mental disorder does not directly affect the condition of oral health of this group of psychiatric patients, but indirectly - reducing their motivation and awareness of the importance of oral health, which is particularly emphasized in hospital conditions.

Keywords: oral symptoms; oral signs; schizophrenia; hospitalization

САЖЕТАК

Увод Хоспитализовани пацијенти са схизофренијом представљају високо ризичну групу особа са аспекта преваленције оралних обољења, те захтевају посебну пажњу. Фактори попут природе психијатријске болести, дужине хоспитализације и нежељених ефеката психотропних медикамената евидентирани су као акцесорни за лоше орално здравље хоспитализованих психијатријских пацијената.

Методе Ова студија пресека обухватила је 190 пацијената са схизофренијом хоспитализованих у Клиници за психијатријске болести "Др Лаза Лазаревић" у Београду и 190 ментално здравих пацијената Клинике за парадонтологију и оралну медицину. У сврху овог истраживања дизајниран је упитник са циљем бележења података о демографским подацима (старост и пол), лоших навика (пушење дувана, конзумирање алкохола и злоупотреба дрога) и података о постојању било којег оралног симптома и/или знака који се односе на патологију меких ткива усне дупље. Сви учесници били су подвргнути циљаним клиничким прегледима.

Резултати Сви пацијенти из студијске групе примали су психотропне лекове (средња вредност 4.18 ± 1.14, од 1 до 7 лекова). Пацијенти студијске групе имали су укупно 272 оралних симптома и 121 знакова оралних обољења; што је скоро четири пута више за оралне симптоме, а чак и девет пута више за знаке оралних поремећаја него у контролној групи.

Закључак Схизофренија као ментални поремећај не утиче директно на стање оралног здравља ове групе психијатријских пацијената, већ индиректно, смањујући им мотивацију и свест о значају оралног здравља, што се посебно потенцира у хоспиталним условима.

Кључне речи: орални симптоми; орални знаци; схизофренија; болничко лечење

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INTRODUCTION

People with mental disorders are a part of the community deserving special attention. This group is often neglected by dental professionals due to ignorance, fear, stigma, misconceptions and negative attitudes. However, they are of even more concern because

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there is a loss of productivity due their disability and an increased health care cost and burden to the government and society [1]. The majority of them who required long-term psychiatric care worldwide have schizophrenia diagnosed as their primary mental disorder [2]. The prevalence of schizophrenia is less than 1% in general population, without gender differences [3]. Treatment of institutionalized residents, especially those with schizophrenia, takes up an important part of the health care resource, compared to other psychiatric inpatients [4].

Having in mind oral health, hospitalized psychiatric patients are likely to constitute a high-risk group of individuals with respect to prevalence of oral diseases and they require special attention [5]. Factors like nature of psychiatric disorders, and oral-side effects of antipsychotic medications have been noted as contributors to poor oral health among institutionalized patients with schizophrenia [6]. In addition, unhealthy behaviors such as smoking cigarettes, alcohol consumption and drug abuse have been linked to psychiatric disorders [7].

Some studies that have been done on patients with schizophrenia focused on the assessment of dental caries and periodontal disease [8, 9, 10]. On the other hand, no published studies have addressed the prevalence of oral symptoms and disorders among inpatients with schizophrenia or the influence of mental disorders on these conditions, although some studies recorded a high prevalence of oral symptoms and disorders, such as xerostomia, hypersalivation, recurrent oral ulcerations (RAS), burning mouth syndrome (BMS), tongue and lips disorders, oral lichen planus (OLP) etc. in psychiatric patients [11–14]. Therefore, the aim of this study was to assess the prevalence of symptoms and signs of oral disorders among inpatients with schizophrenia and to evaluate association of demographic, medical characteristics and unhealthy behaviors in this group of psychiatric inpatients with the development of oral soft tissue pathology.

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PATIENTS AND METHODS

This study was conducted as an observational cross-sectional study, in accordance with the Declaration of Helsinki and it was approved by the Ethics Committee of the Clinic for Mental Disorders “Dr. Laza Lazarevic” in Belgrade, Serbia (No. 7221), and the Faculty of Dental Medicine, University of Belgrade, Belgrade, Serbia (No. 36/10). The study is reported according to the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement for improving the quality of observational studies [15].

Each subject participated voluntarily in the study and was informed, through a special brochure regarding the type of research, data collection procedure, and other aspects of the study. Written consent was obtained from all subjects or their legal representatives to use personal data for research purposes. The study enrolled two groups of patients. The study group compromised 190 randomly selected patients with schizophrenia, hospitalized at the Clinic for Mental Disorders "Dr. Laza Lazarevic" in Belgrade, Serbia. The inclusion criteria for entering the study were that the patient was hospitalized, older than 18 years and diagnosed with schizophrenia (according to the 10. Revision of the International Classification of Diseases) two years prior to the study. Medical data for the study group patients (duration of psychiatric disease, number of hospitalizations, number and type of psychotropic medications) were taken from medical records. The exclusion criteria were a primary diagnosis of other mental disorder, hospitalized patients diagnosed with schizophrenia in the period shorter than two years from the time of the survey, the simultaneous presence of systematic diseases (e.g. nutritional deficiency, cardiovascular, respiratory, metabolic, endocrinal disorders), medications for such systematic diseases, and inability to communicate or the refusal to cooperate. The control group also compromised 190 healthy subjects suffering from aggressive periodontitis [16], without any psychiatric or somatic illness, who were consecutively recruited from the pool of patients at the Clinic for

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Periodontology and Oral Medicine, Faculty of Dental Medicine, University in Belgrade, Serbia. Participants of the control did not use any medications that could affect oral health [17]. Groups were age and sex matched.

A questionnaire was designed for the purpose of this research with the aim of recording information on demographic data (age and gender), unhealthy habits (tobacco smoking, alcohol consumption and drug abuse), and data about the existence of any oral symptom and/or sings related to oral soft tissue pathology.

All participants were subjected to targeted clinical examinations in the dental office at the Clinic for Mental Disorders "Dr. Laza Lazarevic" in Belgrade, Serbia (patients of the study group), and the Department of Periodontology and Oral Medicine, Faculty of Dental Medicine, University in Belgrade, Serbia (patients of the control group), according to criteria recommended by the World Health Organization [18]. The examination was performed in the following sequence: labial mucosa and labial sulci (upper and lower), labial part of the commissures and buccal mucosa (right and left), tongue (dorsal and ventral surfaces, margins), floor of the mouth, hard and soft palate and alveolar ridges/gingiva (upper and lower). During clinical examination, the following elements of the lesion were analyzed: anatomical location, extension; possible etiological or related factors were also recorded [19].

All collected data were organized and evaluated using dedicated software (SPSS 17.0 Inc., Chicago, IL, USA) and were analyzed by descriptive statistical parameters, methods for testing the difference of numerical data and regression models. Descriptive statistical methods were represented by measures of central tendency (mean and median), measures of variability (standard deviation and variation interval) and were expressed in percentages. The methods for testing the difference of numerical data (age) were represented by the *t*-test of independent groups. For testing data of different categories (gender, medications, unhealthy habits), χ^2 test was used. Level of significance was set at $p < 0.05$.

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RESULTS

The study group consisted of 190 hospitalized patients with schizophrenia (95 males and 95 females) aged 19–67 years, with mean age of 43.59 ± 11.96 years. Most respondents (32.1%) were in age group over 50. The control group also consisted of 190 mentally healthy subjects (95 males and 95 females) aged 19–72 years, with mean age 43.20 ± 11.89 years. Most respondents in control group (30%) were in age group between 41–50. The groups thus where comparable in terms of age ($p = 0.747$ for *t*-test of independent groups) and gender ($p = 1.000$ for Pearson χ^2-test).

Distributions of unhealthy habits in both groups are shown in Table 1. In the study group most of the patients pleaded that they consume alcoholic beverages, in contrast to the control group who have often declared not to consume alcoholic beverages. Also, most of study group patients said that they sometimes enjoy drugs, unlike mentally healthy individuals who, in almost all cases, stated that they do not enjoy them. Among the patients of the study group, almost 75% of them smoked cigarettes; unlikely, in the control group patients there was less than half smokers. A statistically significant difference between the two groups of participants was observed in all three observed variables in terms of practicing bad habits for oral health (Table 1).

In the study group, schizophrenia lasted 14.31 ± 9.19 years on average (2–45 years). Most of patients (43.2%) have schizophrenia 11–20 years. The average number of hospitalizations per participant was 8.48 ± 5.71 (from 1 to 30). Sixty eight of patients with schizophrenia had less than ten hospitalizations, during the disease.

All study group patients were receiving psychotropic medications (mean number 4.18 ± 1.14; 1–7 medications) and in the greatest number – antipsychotics (mean number 1.64 ± 0.66; 1–3) – Table 2. In addition to antipsychotic medications, patients of the study group received other medications, too (Table 2). Almost 71% of inpatients with

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schizophrenia received mood stabilizers, 84.2% of them anxyolitics, 33.2% hypnotics, 7.9% antidepressants and 57.9% of them antiparkinsonics.

Based on the patients' subjective symptoms and clinical examination of the oral cavity, in both groups were noted some oral soft tissue diseases (Table 3). Almost half of the study group patients, and over 65% of the control group patients were free of any oral soft tissue pathology. The subjects of the study group had a total of 272 symptoms and 121 signs of oral disorders; which was almost four times higher for symptoms and even nine times higher for signs of oral disorders than in the control group. In the study group an average number of oral symptoms per patient were 1.26 ± 1.20 (range 0–5) and for signs of oral disorders 0.91 ± 1.21 (range 0–4), despite of respondents in the control group, where an average number of oral symptoms per patient were 0.29 ± 0.52 (range 0–2) and oral disorders 0.12 ± 0.35 (range 0–2). Distribution of the symptoms and signs of oral disorders in the both groups of patients has been shown in Table 3.

Univariate logistic regression showed that only on BMS statistical significance had duration of mental disorder and smoking cigarettes – Table 4. Similar to that, multivariate logistic regression showed a statistical significance of BMS among inpatients with schizophrenia in terms of mental disorder duration and smoking cigarettes – Table 4.

DISCUSSION

Based on anamnesis' data and clinical examination of oral soft tissues, a statistically significant difference was found between inpatients with schizophrenia and mentally healthy patients in the presence of symptoms and signs of oral soft tissue diseases; most commonly reported were: xerostomia (43.2%), tongue illness (23.7%) and signs of buccal mucosa diseases (22.1%), as opposed to mentally healthy patients with the majority of cases registered with halitosis (18, 9%). Xerostomia or "dry mouth" was the most common oral

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symptom that the inpatients with schizophrenia complained, which corresponds to the results of some previous studies [14, 19]. These results should not be surprising because it is known that xerostomia and hyposalivation may be the consequence of the application of some psychotropic medications [19, 20], including: first generation antipsychotics [21, 22], antiparkinsonics, antidepressants, as well as anxiolytics [23], which are often applied to inpatients with schizophrenia in our study. However, in a number of previous studies, xerostomy has been registered at significantly lower percentages of patients than in our research; Dangore-Khasbage et al. [24] registered xerostomia only in 13.0% of patients, Ujaoney et al. [25] in 22.0% of patients, while Morales-Chavez et al. [11] had xerostomia in only 9.23% of psychiatric patients. This can be explained by the fact that the researches concerned oral health of psychiatric patients (not only patients with schizophrenia), as well as that the patients in our study were treated with a greater number (1 to 3) of antipsychotics. Common habits such as smoking and alcohol consumption can cause some oral dryness [17]. The drugs most commonly implicated include antidepressants, antipsychotics, benzodiazepines, hypnotics, opioids and drug of abuse [17].

Most of inpatients with schizophrenia in this study had coated (n = 25) and black tongue (n = 12). Similar findings were also obtained in previous studies: Znegin et al. [14] found coated tongue in 8.0% of patients, while Bertaud-Gounot et al. [26] in 6.8% of patients. Coated tongue is a common oral-medical problem, due to accumulation of epithelial cells, residues of food and microbial debris [27]. It is well known that the coated tongue is occurring in a person with xerostomia and those who do not maintain or irregularly maintain oral hygiene [27]. Black tongue is a pathological change that also occurs in people who have poor oral hygiene, who smoke, have xerostomia, and consume soft and non-abrasive food [27]. In our research most of the inpatients with schizophrenia said they smoke (74.7%).

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Also, 22.1% examinees of the study group had some disease of oral mucosa, and the most common finding of RAS (n = 13) and OLP (n = 11) was consistent with the results of other investigators. Dangore-Khasbage et al. [24] reported RAS at 16.0% and OLP at 2.0% of patients; Bertaud-Gounot et al. [27] reported RAS in 12.4% of patients; Kossioni et al. [19] registered RAS in 3.6% of psychiatric patients, while Lai et al. [28] shown that olanzapine, quetiapine and sulpiride posed a higher risk of oral ulcerations among psychiatric patients, compared to the other antipsychotics. Also, it is known that RAS and OLP have psychosomatic support, highlighting the importance of anxiety, stress and depression in the development of these oral diseases. Cerqueira and al. [29] in their research indicate that psychological disorders (in particular anxiety and stress) have a high correlation with symptoms of OLP. Similar to that, Karthikeyan et al. [30] in their study indicate that stress can be a significant etiologic co-factor in OLP and RAS, which is interesting information that should be proven.

CONCLUSION

On the basis of the obtained risk factors for oral soft tissues diseases of inpatients with schizophrenia, it can be said that schizophrenia as a mental disorder does not directly affect the condition of oral health of this group of psychiatric patients, but indirectly - reducing their motivation and awareness of the importance of oral health, which is particularly emphasized in hospital conditions. Also, this research suggest that oral care of patients with schizophrenia must include periodic monitoring of dental and soft tissues, and that greater coordination between specialists of psychiatry and dentists may better serve the need of this neglect group of psychiatric patients.

Conflict of interest: None declared.

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Table 1. Distribution of unhealthy habits in both groups

Unhealthy habits	Obtained values		Significance (p)[a]
	Study group n (%)	Control group n (%)	
Smoking cigarettes: yes no	 142 (74.7) 48 (25.3)	 75 (39.5) 115 (60.5)	[a]0.000*
Alcohol consumption: yes no	 49 (25.8) 141 (74.2)	 2 (1.1) 188 (98.9)	[a]0.000*
Drug of abuse: yes no	 133 (70.0) 57 (30.0)	 39 (20.5) 151 (79.5)	[a]0.000*
n-number of patients; %-percent of patients; *statistical significant; [a]Pearson χ^2-test			

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Table 2. Psychotropic medications of patients in study group

Psychotropic medications	Obtained values Study group n (%)
Antipsychotics	
1) ***Typical antipsychotics***	
- chlorpromazine	34 (17.9)
- levopromazine	8 (4.2)
- fluphenazine	37 (19.5)
- haloperidole	81 (42.6)
2) ***Atypical antipsychotics***	
- clozapine	50 (26.3)
- risperidone	39 (20.5)
- quetiapine	4 (2.1)
- olanzapine	54 (28.4)
- sulpirid	2 (1.1)
- aripiprazole	3 (1.6)
Mood stabilizers	135 (71.1)
Hypnotics	63 (33.2)
Anxyolitics	160 (84.2)
Antidepressants	15 (7.9)
Antiparkinsonics	110 (57.9)
n-number of patients; %-percent of patients	

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Table 3. Distribution of soft tissue pathology in both groups

Oral symptoms and signs	Obtained values		Significance (p)[a]
	Study group n (%)	Control group n (%)	
Presence of oral symptoms:	122 (67.4)	50 (26.4)	0.000*
Burning mouth syndrome	44 (24.3)	9 (4.7)	0.000*
Facial pain	22 (12.2)	0 (0)	0.000*
Hypersalivation	19 (10.5)	2 (1.1)	0.000*
Xerostomia	85 (47.0)	13 (6.8)	0.000*
Halitosis	50 (27.6)	36 (18.9)	0.048*
Gustatory sense dysfunction	28 (15.5)	5 (2.6)	0.000*
Swallowing difficulties	24 (13.3)	0 (0)	0.000*
Presence of oral signs:	101 (55.8)	20 (10.6)	0.000*
Lips disorders	23 (12.7)	2 (1.1)	0.000*
Tongue disorders	47 (26.0)	4 (2.1)	0.000*
Soft and hard palate disorders	9 (5.0)	2 (1.1)	0.026*
Oral mucosa disorders	42 (23.2)	5 (2.6)	0.000*

n-number of patients; %-percent of patients; * statistical significant; [a] Pearson χ^2 test;

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Table 4. Logistic regression of study group patients and oral soft tissue pathology

Observed characteristics	Obtained values Significance (*p*)							
	Gender	Age	Duration of disease	Number of hospitalizations	Antipsychotics	Alcohol	Narcotics	Smoking
Burning mouth syndrome	[a]0.362	[a]0.620	[a]0.028*	[a]0.138	[a]0.655	[a]0.174	[a]0.180	[a]0.034*
	/	/	[b]0.012*	/	/	/	/	[b]0.005*
Facial pain	[a]0.034*	[a]0.904	[a]0.279	[a]0.486	[a]0.863	[a]0.876	[a]0.378	[a]0.730
Hypersalivation	[a]0.203	[a]0.670	[a]0.733	[a]0.290	[a]0.211	[a]0.519	[a]0.293	[a]0.829
Xerostomia	[a]0.405	[a]0.565	[a]0.983	[a]0.205	[a]0.308	[a]0.705	[a]0.321	[a]0.643
Halitosis	[a]0.129	[a]0.395	[a]0.963	[a]0.209	[a]0.895	[a]0.133	[a]0.254	[a]0.743
Gustatory sense dysfunction	[a]0.924	[a]0.692	[a]0.297	[a]0.523	[a]0.994	[a]0.502	[a]0.419	[a]0.568
Swallowing difficulties	[a]0.931	[a]0.406	[a]0.468	[a]0.988	[a]0.793	[a]0.539	[a]0.908	[a]0.353
Lips disorders	[a]0.890	[a]0.943	[a]0.959	[a]0.186	[a]0.641	[a]0.632	[a]0.129	[a]0.475
Tongue disorders	[a]0.008*	[a]0.518	[a]0.132	[a]0.340	[a]0.864	[a]0.928	[a]0.970	[a]0.463
Soft and hard palate disorders	[a]0.771	[a]0.465	[a]0.320	[a]0.141	[a]0.743	[a]0.227	[a]0.793	[a]0.521
Oral mucosa disorders	[a]0.293	[a]0.727	[a]0.874	[a]0.641	[a]0.217	[a]0.527	[a]0.758	[a]0.534

*statistical significance; [a]Univariate logistic regression; [b]Multivariate logistic regression

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