

Dental needs of psychiatric patient with eating disorders

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Summary

Aim: Aim of this study is to determine the dental care needs of patients with eating disorders and the need of interdisciplinary collaboration of psychiatrists, psychologists and dentists. This gives the opportunity to complete diagnosis and treatment.

Method: In this study, 40 daily treated psychiatric patients were examined. Patients with diagnoses of chapters F4.xx, F5x.x, F6x.x ICD-10, were included in the study. During a stomatological consultation detailed clinical examination, including oral health index – API, was conducted. Swabs were taken for microbiological examination – bacteriological and mycological. Each patient was assigned for X-ray picture.

Results: Among the patients many had poor oral hygiene, tooth enamel erosion, frequent oral infections, both fungal and bacterial were present. All patients required dental treatment. In several cases there were severe symptoms in the form of large enamel erosion, and numerous chronic periapical inflammation requiring rapid intervention.

Conclusions: Dental needs of patients with eating disorders are enormous and these patients often require immediate dental treatment. Interdisciplinary diagnosis and treatment provides complete picture of the patient's problems and the possibility of full recovery.

Key words: eating disorders, psychiatric patient, dental needs

Introduction

Psychiatric patients are ill people who usually must be diagnosed rigorously and receive comprehensive treatment. In many cases the somatic nature of such disorders should be excluded; coexisting complications and the effects of mental disorders need to be diagnosed and treated. The causes of eating disorders are complex. Their origins are believed to stem from early childhood – the disorders result from the eating habits of the patients' caregivers, as well as from the patients' bad experiences from this period. Sometimes eating disorders may be the only disorders affecting the patient

(bulimia and anorexia). However, it is more often that they coincide with other mental disorders (e.g. bulimia is often accompanied by depression or mania) or comprise a part of the clinical picture of other mental illnesses in cases where, for example, symptoms of eating disorders occur in personality disorders [1].

Mental health patients with eating disorders represent a group of patients who require dental check-ups not only because of pathologic symptoms that occur in the oral cavity, but also as a result of a deterioration in dental aesthetics (damaged clinical crowns), factors that result in low self-esteem [1]. Furthermore, symptoms of eating disorders among boys and girls are associated with a higher risk of use of alcohol, cigarettes and drugs [2] and, therefore, at least a periodic lifestyle conducive to lack of proper oral hygiene.

Eating disorders take a variety of forms, e.g. disorders connected with the intake of food (an aversion to eating) or habitual (regurgitation) digestive problems manifesting themselves in abdominal pain, flatulence, constipation or diarrhoea [1, 3, 4].

These patients may also experience oral symptoms, most commonly enamel and dental erosion [5-12]. Hard dental tissue loss occurs due to gastric acid occurrence as a result of vomiting (endogenous erosion), bad eating habits (frequent intake of excessive amounts of acidic drinks and food (exogenous erosion) [7] or an intake of vinegar and lemon juice to reduce appetite (exogenous erosion) [11]. The duration of such symptoms appears to be the most important factor in the development of erosion rather than the frequency of the patient's vomiting [7]. Cavities resulting from erosion require immediate treatment. In these cases, "minimally invasive" techniques are recommended. They involve restoring hard tissue with a light-cured composite material [13, 14]. One of the consequences of hard tissue loss and the exposure of deeper, porous layers underneath is a hypersensitivity to cold and sweet products [5, 12]. Further advancement of cavities may even lead to pulp exposure [11], which in turn results in the need for endodontic treatment. Mental symptoms or drugs taken by the patient, inter alia anti-depressants, may lead to disorders affecting salivary flow [7, 12] and dry mouth [15], which is associated with a higher risk of caries [12] and may lead to difficulties in speech, mastication and swallowing [16]. Other pathologies include lesions of the oral mucosa, the tongue and the posterior pharyngeal wall due to the effects of acid [9, 11, 15, 17], the enlargement of the salivary glands, usually bilateral [8-10, 12, 18, 19], changes in the pH values of saliva, changes in periodontal tissue and a greater susceptibility to both bacterial and fungal infections [4, 6-10, 18].

The literature includes a number of studies on the occurrence of burning mouth syndrome or dysgeusia, which are described as symptoms associated with eating disorders, and which appear in the oral cavity [11]. Although aesthetic defects are of no lesser importance, they are only infrequently reported [13].

The clinical presentation of a patient with eating disorders also includes erosions and ulcerations of traumatic origin that arise when vomiting is induced [11], and ulcerations on the skin of the patient's palms may occur as a result of gastric acid (Russell's sign) [8, 11]. Microbiological studies conducted by other authors

confirm the occurrence of fungal infections in patients with eating disorders [20, 21] and the presence of so-called acidophilic bacteria such as *Streptococcus mutans*, *Lactobacillus* spp. or *S. sobrinus* – bacteria believed to be a marker responsible for the patient's vomiting [21].

Objective of the study

The aim of the present study was to assess the treatment needs of patients with eating disorders by evaluating the clinical condition and microbiological status of the oral cavity in these patients.

Methods

The study was conducted in collaboration with Department of Dental Propedeutics and Integrated Dentistry of Dental Institute of Jagiellonian University Medical College and the Chair of Psychiatry of Jagiellonian University Medical College in Krakow.

The study consisted of two stages. In the first stage, 40 adults diagnosed with symptoms of eating disorders were selected out of 150 examined patients with personality disorders and neurotic disorders. In the second stage, the patients were admitted to the University Dental Clinic. Dental examination was performed according to generally accepted rules. Later, a detailed extra- and intraoral examination was performed. Moreover, the participants' periodontium and oral hygiene were evaluated with a WHO periodontal probe. The Approximal Plaque Index (API) was used to assess their oral hygiene. The index score is given in percentage terms, and is interpreted as follows:

API 70–100% – poor oral hygiene

API 40–69% – average oral hygiene, improvement is indicated

API 25–39% – rather good oral hygiene

API <25% – optimal oral hygiene

Additional examinations, i.e. radiographic and mycological, were performed. Panoramic radiographs, which show the alveolar processes of the maxilla and mandible along with the patient's teeth, were used for radiographic assessment purposes. To ensure a precise microbiological assessment (bacteriological and mycological), two methods were employed to collect the material for the examination. A buccal mucosa smear was taken directly with a sterile agar disc (a microbiological growth medium), owing to which not only quantitative but also a qualitative assessment could be performed (on a specific surface area of the disc). In case of the second method, the material was collected from the gingival pocket by placing paper points in it for 20 seconds. After absorbing the gingival fluid, the points were soaked in test-tubes containing liquid media – broth (for aerobic and anaerobic bacteria, and for fungi). The biological material from the buccal mucosa was inoculated on agar media (blood,

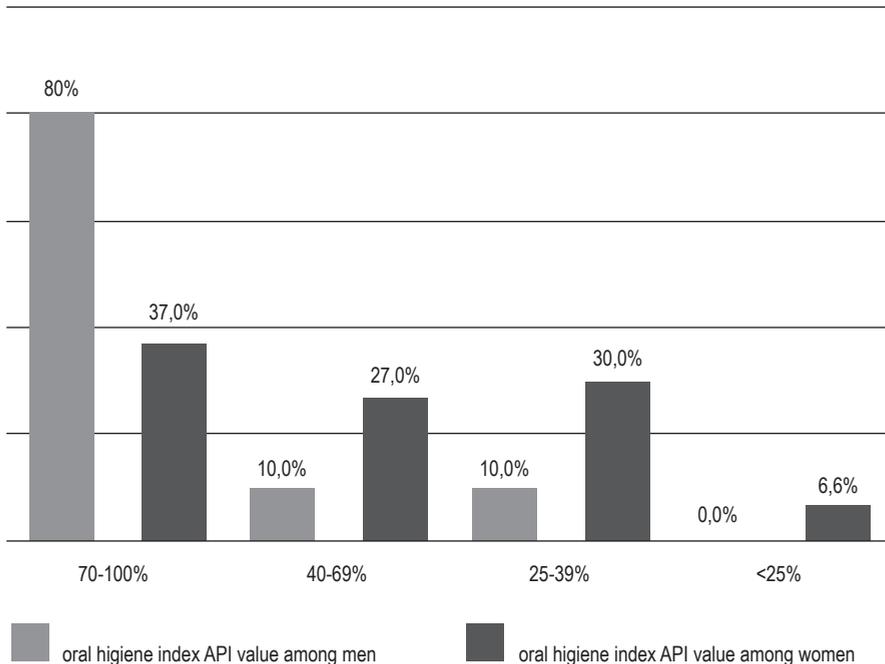
Saboraud and Schaedler). Paper points in the broth were incubated and the obtained material was cultured to help to identify aerobic and anaerobic bacteria on agar media: chocolate, blood, McConkey's and Saboraud (mycological examination). In cases in which pathogenic microbes were obtained, drug-resistance tests were performed. Photographic documentation was prepared. A statistical analysis of the results was performed.

Results

The majority of the 40 examined patients were female, i.e. 30 patients (75%). Following a hygiene evaluation with API, the mean values of API were estimated to be 60.1%, which indicates average oral hygiene. Its mean value in females was 53.9%, and in males 83.4% (poor oral hygiene). 45% of all patients exhibited poor oral hygiene, 22.5% average oral hygiene, 27.5% rather good oral hygiene and only 5% maintained optimal oral hygiene.

A sex distribution of API values revealed the following: 8 males (80%) exhibited API values of 70–100%, one male (10%) exhibited values of 40–69%, one male (10%) exhibited values of 25–39%, and none of the male patients achieved optimal oral hygiene (API<25%) (Fig. 1). Among the female patients, poor oral hygiene was

Figure 1. Oral hygiene index API value among men and women.



noted in 11 cases (36.7%), average oral hygiene in 8 patients (26.7%), rather good oral hygiene in 9 patients (30%), and optimal in 2 patients (6.6%) (Fig. 1).

Figure 2. The most common diagnosis in all patients.

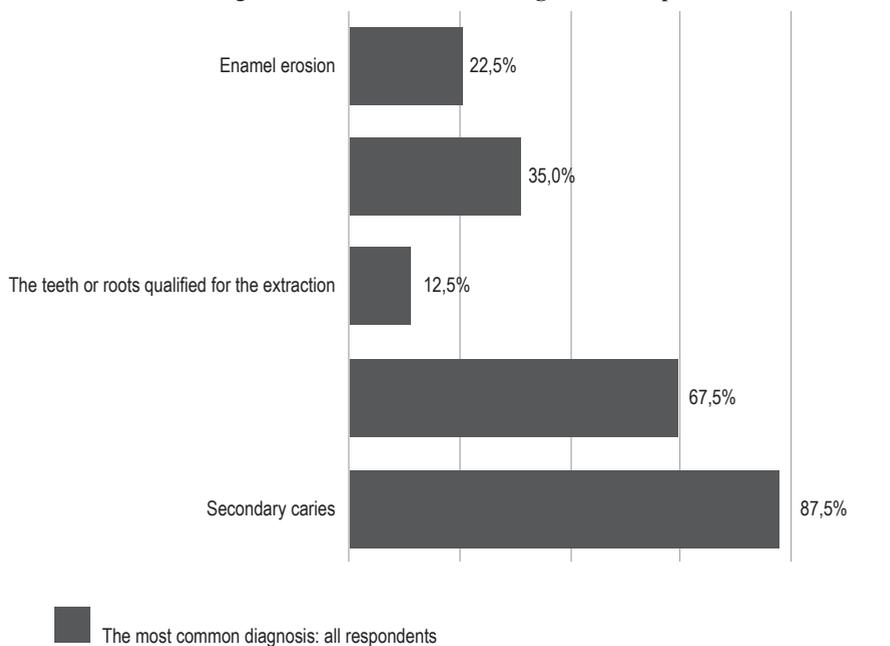


Figure 2 presents the most commonly occurring dental problems. Recurrent caries was diagnosed in 87.5% (35 people) of the participants, and primary caries in 67.5% (27 patients). Moreover, inflammatory periradicular lesions requiring endodontic treatment were diagnosed in 14 patients (35%). Enamel and/or dentin erosion was found in 22.5% of patients (9 cases). Extraction of at least one tooth (not including third molars) was necessary in 12.5% of patients (5 patients).

There are discrepancies in the results when it comes to the sex of the participants. Recurrent caries occurred in 25 of the examined women (83.3%) and in 10 of the men (90%). Primary caries, on the other hand, occurred in 17 females and 10 males (56.7% and 10% respectively). Periapical inflammatory lesions occurred in 23.3% of the females, and in 60% of the males (7 females, 6 males); erosion was diagnosed in 16.7% of the females (5 patients) and in 40% of the males (4 patients), while extraction was recommended in case of 2 females (6.7%) and 3 males (30%).

Figure 3. Bacterial and fungal infections in the study group (in percent).

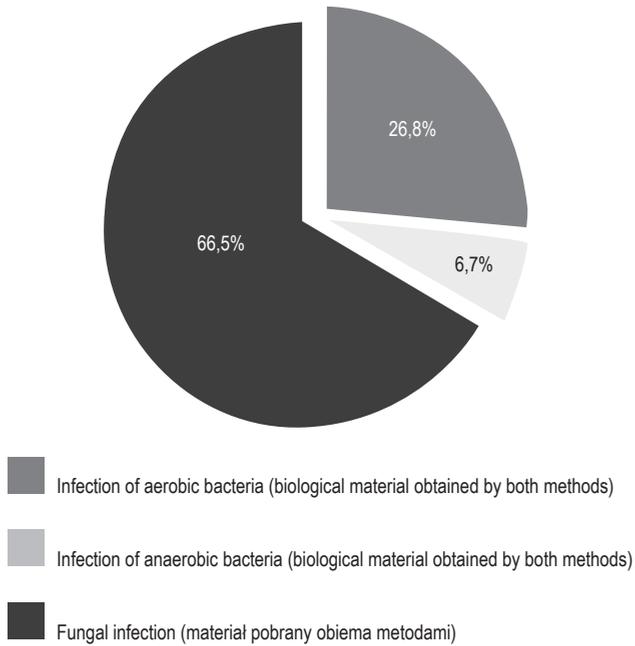


Figure 4. Patient, age 35. Oral hygiene index API=100% (poor oral hygiene)



The results of the microbiological examination – bacteriological and mycological – revealed that fungal infections were observed in 66.5% of all cases, aerobic bacterial infection in 26.8%, and anaerobic bacterial infection in 6.7% (Fig. 3).

By analysing the results of the bacteriological examination we were able to observe the presence of bacilli – bacteria mainly found in further parts of the gastrointestinal tract (oesophagus, stomach) in 25% the patients. The isolated bacilli included Actino-

Figure 5. Patient, age 27. The arrows point a clear line of enamel erosion defects on the labial surface of the teeth.



myces spp. (*A. israeli*, *A. meyeri*, *A. naeslundii*), *Fusobacterium* spp., *Bacteroides* spp. and *Enterobacter* (*E. cloacae*).

Moreover, it is important to note the presence of the following: *Actinomyces israeli* (2 cases), *Streptococcus canis* (1 case), *Staphylococcus aureus* (1 case), *Citrobacter koseri* (1 case) and *Pseudomonas luteola* (1 case). All fungal infections were caused by the *Candida* spp. fungus.

Generally, the patients' oral hygiene level was low (Fig. 4), and they had symptoms of generalised and advanced tooth erosion (Fig. 5).

Discussion

Patients with eating disorder symptoms require comprehensive dental treatment. The state of oral health has an impact upon the health of the entire body, both psychologically – the appearance of the teeth has an impact on self-esteem, the patient's social

acceptance, and their quality of life [16, 22] – as well as on their physical condition. Numerous authors report that enamel and dentine erosion is one of the most frequent complications associated with eating disorders [5–12] – the results of this study correspond to these data. The consequences of hard dental tissue loss include hypersensitivity to cold and sweet products [5, 12] which was not found in the study group.

Frequently described lesions such as erosion of the oral and pharyngeal mucosa [9, 11, 15, 17] and enlargement of the salivary glands [8-10, 12, 18, 19] were not observed in any of the patients.

The authors' results indicating that caries is a common occurrence in patients with eating disorders are in accordance with other studies in the literature on patients suffering from these problems [9, 10, 12]. The authors did not find any studies on the use of API for assessing oral hygiene in such patients.

The available sources confirm the tendency of such patients to suffer from fungal infections [20, 21]. However, there are no detailed data on bacterial infections. Only microbiological changes that may have resulted from vomiting have been described [21]. The gathered material confirms the presence of bacteria characteristic for lower parts of the gastrointestinal tract, and which, moreover, indicate the presence of other significant pathogens.

The authors assessed the most common dental diagnoses in patients with eating disorders, including, besides caries and erosion, periradicular lesions and teeth and roots that qualified for extraction. The literature includes no oral cavity analyses that considered these issues.

The limited awareness of the symptoms of eating disorders in the oral cavity and the importance of interdisciplinary diagnostics and treatment of these patients are underlined in the literature [23]. The authors share this view.

Conclusions

Patients with eating disorders have considerable treatment needs. Patients often require basic dental treatment (scaling, caries treatment, replacement of restorations), as well as multi-phase treatment including teeth extractions, endodontic treatment, erosion treatment and other issues. Moreover, if the patient does not undergo treatment, inflammatory lesions such as, e.g. abscesses may develop and these have an impact on overall health. The role of oral health and its impact on the general state of the body, including mental states, has been pointed out on many occasions. The results of the present analysis indicate that an examination of the patient's clinical and microbiological status is vitally important, and that API (hygiene index) is useful for evaluating oral hygiene. The results suggest that these patients should undergo a dental check-up as an additional examination during the course of their treatment.

References

1. American Psychiatric Association. *Diagnostic and statistical manual of mental disorders*. Fifth Edition (DSM-5). Arlington, VA: American Psychiatric Association; 2013.
2. Modrzejewska R. *Współwystępowanie objawów depresyjnych, zaburzeń jedzenia oraz obsesyjno-kompulsyjnych a używanie substancji psychoaktywnych w populacji 17-letniej młodzieży wielkomięskiej*. *Psychiatr. Pol.* 2010; 44(5): 651–663.
3. Mayers D. *Psychologia*. Poznan: Zysk i S-ka publishing house; 2003.
4. Paszyńska E, Słopeń A, Ślebioda Z, Dyszkiewicz-Konwińska M, Węglarz M, Rajewski A. *Ocena makroskopowa błony śluzowej jamy ustnej i analiza pH śliny u pacjentów z jadłowstrętem psychicznym*. *Psychiatr. Pol.* 2014; 48(3): 453–464.
5. Emodi-Perlman A, Yoffe T, Rosenberg N, Eli I, Alter Z, Winocur E. *Prevalence of psychologic, dental and temporomandibular signs and symptoms among chronic eating disorders patients: a comparative control study*. *J. Orofac. Pain* 2008; 22(3): 201–208.
6. Islam NM, Bhattacharyya I, Cohen DM. *Common oral manifestations of systemic disease*. *Otolaryngol. Clin. North Am.* 2011; 44(1): 161–182.
7. Dynesen AW, Bardow A, Petersson B, Nielsen LR, Nauntofte B. *Salivary changes and dental erosion in bulimia nervosa*. *Oral Surg. Oral. Med Oral. Pathol Oral Radiol. Endod.* 2008; 106(5): 696–707.
8. Park MJ, Mandel L. *Diagnosing bulimia nervosa with parotid swelling. Case report*. *N. Y. State Dent. J.* 2006; 72(6): 36–39.
9. Sedghizadeh PP. *Bulimia nervosa*. *N. Engl. J. Med.* 2013; 368: 1238.
10. Arahna AC, Eduardo Cde P, Cordas TA. *Eating disorders part II: clinical strategies for dental treatment*. *J. Contemp. Dent. Pract.* 2008; 9(7): 89–96.
11. Paradowska A, Sieja A. *Obraz jamy ustnej w zaburzeniach odżywiania*. *Gastroenterol. Pol.* 2010; 17(2): 111–114.
12. Chi A, Neville BW, Krayner JW, Gonzales WC. *Oral manifestations of systemic disease*. *Am. Fam. Physician.* 2010; 82(11): 1381–1388.
13. Spreafico RC. *Composite resin rehabilitation of eroded dentition in a bulimic patient: a case report*. *Eur. J. Esthet. Dent.* 2010; 5(1): 28–48.
14. Schwarz S, Kreuter A, Rammelsberg P. *Efficient prosthodontic treatment in a young patient with long-standing bulimia nervosa: A clinical report*. *J. Prosthet. Dent.* 2011; 06(1): 6–11.
15. Marder MZ. *Oral status in eating disorders*. W: Strumia R. ed. *Eating disorders and the skin*. Berlin/Heidelberg: Springer; 2013. p. 85–91.
16. Cormac I, Jenkins P. *Understanding the importance of oral health in psychiatric patients*. *Adv. Psychiatr. Treat.* 1999; 5: 53–60.
17. Aframian DJ, Ofir M, Benoliel R. *Comparison of oral mucosal pH values in bulimia nervosa, GERD, BMS patients and healthy population*. *Oral Dis.* 2010; 16(8): 807–811.
18. Arahna AC, Eduardo Cde P, Cordas TA. *Eating disorders. Part I: Psychiatric diagnosis and dental implications*. *J. Contemp. Dent. Pract.* 2008; 9(6): 73–81.

19. Buchanan JA, Forune F. *Bilateral parotid enlargement as a presenting feature of bulimia nervosa in a post-adolescent male*. Postgrad. Med. J. 1994; 70(819): 27–30.
20. Back-Brito GN, da Mota AJ, de Souza Bernardes LA, Takamune SS, Prado EFGB, Cordas TA. et al. *Effects of eating disorders on oral fungal diversity*. Oral Surg. Oral Med. Oral Pathol. Oral Radiol. 2012; 113(4): 12–517.
21. Bretz WA, Krahn DD, Drewnowski A, Loesche WJ. *Salivary levels of putative cariogenic organisms in patients with eating disorders*. Oral Microbiol. Immunol. 1989; 4(4): 230–232.
22. Russo LL, Campisi G, Di Fede I O, Di Liberto C, Panzarella V, Muzio LL. *Oral manifestations of eating disorders: a critical review*. Oral Dis. 2008; 14(6): 479–484.
23. Bhargava S, Motwani MB, Patni V. *Oral implications of eating disorders: a review*. Arch. Orofac. Sci. 2013; 8(1): 1–8.

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