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Research Article

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A Literature Review about the Oral Health Status of Schizophrenic Patients and Autistic Children in Iran

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Abstract

Background and aim: Schizophrenia is a psychiatric disorder, and autism is one of the developmental, psycho-neurological disorders in early childhood. Both of these disorders can harm the dental health of patients with schizophrenia and autism. This study aimed to review the dental health status of schizophrenic patients and children with autism in Iran based on previous studies.

Material and methods: The systemic search by MeSH in several national and international databases, including the Web of Science, Science Direct, Scopus, PubMed, Google Scholar, Magiran, and IranDoc in the period 2000–2021, was carried out under PRISMA's guidelines to review and extract the results from published articles related to the subject under study.

Results: The study results showed that the rate of tooth decay in patients with schizophrenia is higher than in healthy individuals, and the rate of tooth decay in children with autism is higher than in healthy children.

Conclusion: Based on the present study results, it is possible to conclude that the dental health status of schizophrenia patients and children with autism is unfavorable. Therefore, due to the sensitivity of these patients' dental health, the government has taken steps to address their needs, including establishing special dental centers, lowering the cost of dental restorations and educating parents of children with autism and caregivers of people with schizophrenia.

Keywords: Dental Health • Tooth decay • Patients

Introduction

Oral health received more attention after the World Health Organization (WHO) changed the definition of "health" in 1984 [1]. According to this definition, health is a state of complete physical, mental and social well-being and does not only indicate the absence of disease, disability, or grounding [2]. According to this definition, oral health is one of the most critical factors affecting physical and social well-being. Daily activities such as eating, speaking, smiling, as well as participating in social activities influence people's health. Therefore, it is easy to conclude that oral health is essential for physical and social well-being [1,3].

Schizophrenia is a psychiatric disorder characterized by clinical symptoms, including delusions and hallucinations, social isolation, and cognitive impairment. Occupational, interpersonal, and societal dysfunction are all present in this disease. Lack of personal hygiene, makeup, and oral hygiene are symptoms of this disorder, compounded by a decline in physical and cognitive abilities [4]. With a global prevalence of 0.7%, this disease imposes a high economic burden on society and its health system and is one of the most debilitating psychiatric disorders [4]. In addition to mental problems, other diseases such as diabetes, hypertension, dyslipidemia, and obesity are seen in people with this disease, complicating the treatment [5]. Due to the nature of the disease, these patients usually do not make the right decision or are entirely oblivious to solve their health problems [6]. In addition to ignoring their oral health, the psychological condition of these patients also affects the receipt of dental services and treatments by the relevant centers [7,8].

According to studies, patients with schizophrenia are underserved when it comes to dental care [9]. These patients' dental and oral problems are complicated by underlying systemic diseases and pharmaceutical side effects, including reduced saliva [10]. Decreased mobility, a strong desire to smoke, and new economic poverty are some of the factors that exacerbate these adverse conditions [11]. Oral disease in patients with schizophrenia provides the basis for heart, lung, and gastrointestinal disorders. According to studies, oral problems have been mentioned as one of the factors affecting the mortality of patients with schizophrenia [12]. The most common index for assessing the health of permanent teeth is the number of Decayed, Missed, and Filled Teeth (DMFT). This index is written in small letters (dmft) in deciduous or primary teeth, and both indices are valuable indicators for assessing community health [13]. In some studies, the mean DMFT index in schizophrenia patients in the United Kingdom, Italy, and India has been reported to be 19.1, 15.5, and 12.6, respectively [14-16]. Autism is a developmental neuropsychological disorder that affects the early stages of childhood [17]. The prevalence of autism globally is significant and reported as 1 case in 88 cases of the total world population [18]. Disorders resulting from disease, the effects of prescription drugs, increased or decreased saliva in the mouth, unhealthy eating habits, harmful oral habits such as bruxism, and poor oral care can increase the risk of caries and periodontal disease in children with autism [19]. Poor oral health in children with autism can lead to difficulty eating and talking, mouth pain, sleep disorders, and low self-esteem, resulting in a negative impact on their health and quality of life [20]. Richa investigated the quality of life-related oral health in children and adolescents with autism. In children with autism, the mean oral health index and DMFT were significantly higher [19]. Rekha et al. found significant dental caries in children with autism during the deciduous period in an Indian study [21]. In research conducted in the United States by Lai 11% of 516 children with autism referred to the dentist had unmet dental needs [22]. DMFT levels were higher in children with autism than in controls in a study conducted by Jaber in the United Arab Emirates [23]. A study by Subramaniam reported that children with autism

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had lower rates of dental decay than the general population, despite the presence of a lot of plaque in their teeth [24]. Given that various researches on the dental health status of patients with schizophrenia and children with autism have been undertaken in Iran to provide a general result to clarify the dental health status in those mentioned above two patient groups, the current study reviewed previous studies.

Materials and Methods

To review and extract the required results from published articles and reports related to the subject under study, systematically search through worldwide available databases such as Web of Science, Science Direct, Scopus, PubMed, and Google Scholar within the one time period, July 1, 2000, to August 4, 2021. Systematic review using MeSH terms "Oral health", "Dental health", "Schizophrenic", "Autistic", "Patients", "Children", "Adults", "Iran", "Autistic spectrum disorder", "Psychiatric "Dental patients" was performed. The same MeSH words were similarly used in other databases. The studies' references were checked (Reference Checking) to exclude the chance of missing research. Citation tracing was also reviewed. Based on Figure 1, texts were searched, and articles were received based on the PRISMA guideline [25]. Moreover, unofficial reports, articles documented in letters to the editor, and unpublished papers and information from websites were also deleted from the list of items that could be downloaded. Finally, for this review, the outcomes of six published publications were reviewed.

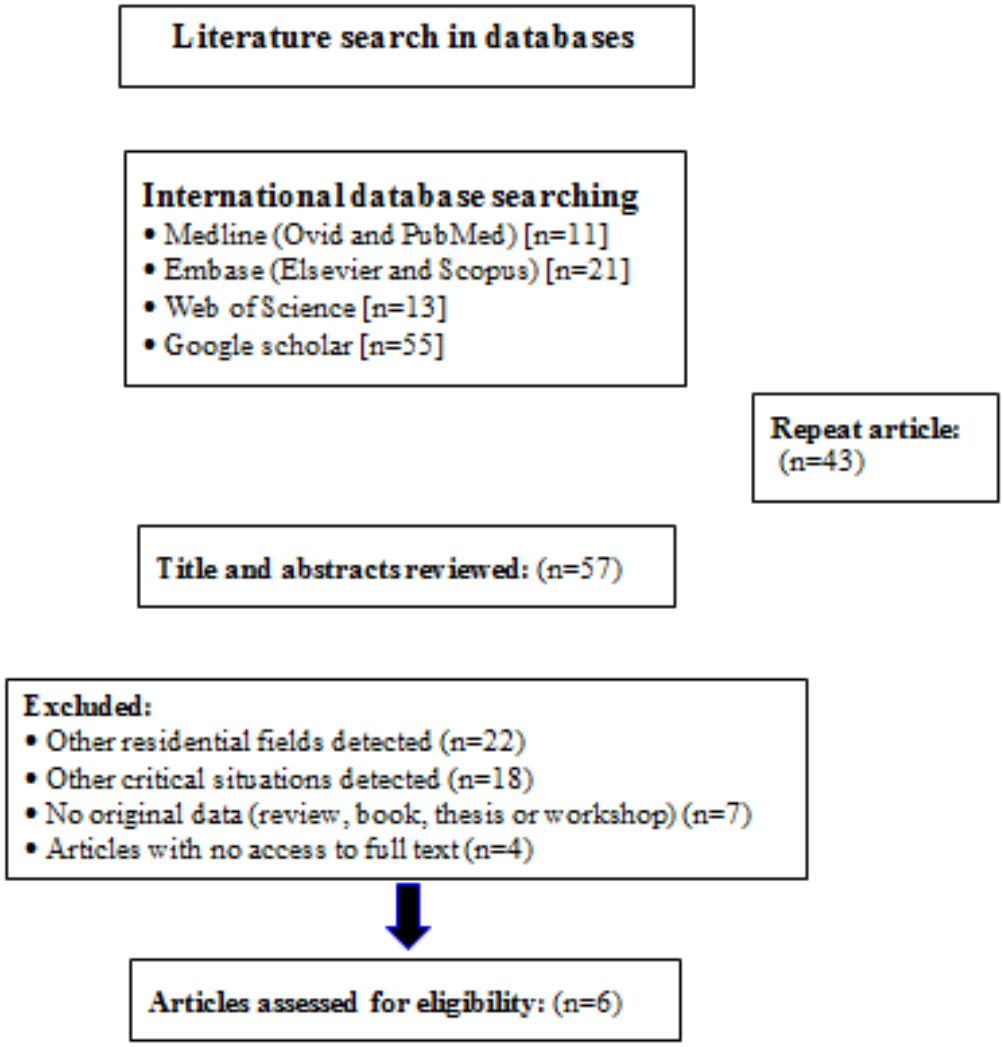

Figure 1. Flow diagram of study identification according to PRISMA.

In this study, two well-known indicators of dental health conditions were used for permanent teeth: DMFT (Decayed, Missing, and Filled Teeth) and PUFA (Pulpal involvement, Ulceration caused by dislocated tooth fragments Fistula and Abscess). In addition to the indices mentioned above, dmft and pufa indices were used, which can be used for deciduous or primary teeth. The components of these indices were also extracted from the mentioned indices, which comprise "D", "M", "F", "d", "m", "f", "P", "U", "F", "A", "p", "u", "f", "a", "DMFT+dmft", "D + d", "M + m", and "F + f" [26,27].

Results and Discussion

Dental health of schizophrenic patients

In this part of the study, the dental health status of patients with autism is reviewed based on previous studies conducted in Iran. Table 1 shows the results of studies on the dental health status of schizophrenic patients in Iran. Based on the findings presented in this table, the survey by Nikfarjam showed that the mean DMFT index, mean Decayed teeth (D), Mean missed

teeth (M) and mean Filled teeth (F) in patients with schizophrenia was 19.43 ± 71, 11.24 ± 6.97, 8.17 ± 8.30 and 1.1 ± 0.4, respectively [11]. In the study of Ebrahimi, the mean of the parameters mentioned above were 19.25 ± 7.35, 6.43 ± 3.20, 10.82 ± 7.66 and 4.12 ± 2.0 [28]. Moreover, Farhadmollashahi et al. reported that the mean of the above parameters in patients with schizophrenia is 15.22 ± 6.62, 6.86 ± 3.60, 8.31 ± 6.89 and 0.06 ± 0.45 [29]. Therefore, based on the results mentioned above, it was found that the mean DMFT in schizophrenia patients in Iran is high, and steps should be taken to improve the dental health of these patients. However, in all three studies mentioned above, the mean F was lower than D and M's (Table 1).

Table 1. The oral health status for patients with schizophrenic in Iran.

Reference	Study area	Sample size	Patients age group (year)	Type of disease	Average for various indexes			
					DMFT	D	M	F
Nikfarjam et al.	Chaharmahal-Bakhtiari Province	123	38.8 ± 10.5	Schizophrenic	19.43 ± 7.71	11.24 ± 6.97	8.17 ± 8.30	1.1 ± 0.4
Ebrahimi et al.	Tabriz	40	45.0 ± 13.3	Schizophrenic	19.25 ± 7.35	6.43 ± 3.20	10.82 ± 7.66	2.0 ± 4.12
Farhadmollashahi et al.	Sistan and Baluchestan Province	44	34.5 ± 11.4	Schizophrenic	15.22 ± 6.62	6.86 ± 3.60	8.31 ± 6.89	0.45 ± 0.06

The results of three studies conducted in Iran [11,28,29] are similar to the study conducted in Turkey by Gurbuz et al. [31]. The similarity of the above results can be in the field of cultural, geographical and economic commonalities. Also, the statistical population and the tools used in all four studies are very similar. However, according to studies conducted in France in 2013 and Taiwan in 2010 [32,33], the mean DMFT of schizophrenic patients was lower than previous studies in Iran [11,28,29]. This situation can be justified by the statistical population in the study of Taiwan and the better socio-economic status of both countries. Furthermore, the results of previous studies conducted in Iran [11,28,29] are not consistent with the mean DMFT with the studies conducted by Arnaiz in Spain [7] and Persson in Sweden [34]. However, the subjects that could explain this difference were selected from outpatients, and welfare indices in both research's statistical populations are better than those in Iranian studies.

In some studies, such as the study in Greece in 1996 and Spain in 1997, the mean DMFT was higher than ours. Therefore, it is easy to conclude that most European countries in the past decades also had more flawed oral health indicators that have improved over time [35,36].

Age, duration of illness, smoking and substance use, poor eating habits, medications used for treatment, poor oral health, limited social relationships, economic poverty, low level of education and some cultural issues are among the critical factors affecting oral and dental problems of these patients [33,37]. To improve the oral health status of these people, professional teams with different specialties need to work closely with each other. Lack of regular dental visits is one of the main factors in declining oral health in these patients [7,33,35]. Although this case is attributed chiefly to patient support in non-hospitalized patients, evaluating hospitalized patients also reveals a lack of regular dental visits [38].

Based on a study by Nielsen, Patients with schizophrenia, on average, need a dental visit about 30 days after admission due to a dental problem [39]. However, in outpatients, visiting the dentist is neglected by the patient due to the nature of the disease. Furthermore, 60% of people with schizophrenia do not understand the existence of a disorder in their body, and if they do, they have no motivation to get rid of it [28]. This condition places a heavy burden on health facilities or institutions to maintain regular screening schedules. Furthermore, because patients are unlikely to cooperate, these institutions should take the initiative to detect dental problems of known patients in their area and screen cases regularly throughout the year by referring to the place of residence or maintenance [28,29].

Providing conditions for regular and frequent examinations of these patients is the first step to providing appropriate treatments and preventive measures. Using dairy products or pills containing probiotics and fluoride supplements can help prevent caries. Helping to reduce and preferably eliminate smoking and alcohol consumption, modifying the diet by reducing the consumption of carbohydrates and increasing fiber consumption should be considered by nutritionists, dentists and psychiatrists associated with these patients. Due to the symptoms of dry mouth in these patients, specific antimicrobial and antifungal mouthwashes should be designed and produced with suitable compounds to reduce dry mouth. Furthermore, for these people, health instruction and training should be provided through instructional media such as film and animation with simple language. In addition, it is highly beneficial to use mock-ups and to accompany the patient [33-37].

Therefore, specialized treatment centers for schizophrenia patients in Iran are necessary and unavoidable due to unfavorable conditions. Furthermore, particular dentists should be trained for dental treatments of these patients in short periods that, in addition to dental treatment, are aware of the systemic conditions and side effects of their medications. Doctors in these institutes collaborate closely with dentists to refer these patients to dental problems in their early stages. Prophylactic dental therapies should also be considered, including the use of special toothbrushes and mouthwashes. The results of this review study can be used by health policymakers, therapists, and patient's families.

Dental health of children with autistic

In this part of the study, the dental health status of children with autism is reviewed based on previous studies conducted in Iran; Table 2 represents this section's results. The mean DMFT and dmft were 1.44 ± 1.11 and 2.24 ± 1.86, respectively, in the Mashhad study by Movahhed. The same study results showed no significant difference between the dmft/DMFT ratio of children with autism and healthy children [26]. In Amrollahi study in Isfahan, PUFA and pufa indices were used. The average of the above index in children with autism was 0.29 ± 0.62 and 2.46 ± 3.43, respectively. The study results show that the prevalence of dental caries was comparatively high in children with autism, and oral health in children with deciduous or primary teeth was worse than permanent teeth. Among the various components of the PUFA index, teeth with pulp involvement with an average of 0.27 had the highest rate, and the average of wounds due to dental parts was 0.01. It seems that the oral health status of permanent teeth has been better than deciduous teeth in this age group due to the delayed eruption time of these teeth and, as a result, less exposure to cariogenic agents and also fewer permanent teeth in the mouth of these

children [27]. The mean "DMFT+dmft" recorded by Daneshvar was 2.33 ± 6.33. Furthermore, the average DMFT or dmft indices for autistic children are significantly higher than for healthy children based on the findings of this study [30].

Table 2. The oral health status for children with autistic in Iran.

Reference	Study area	Sample size	Patients age group (year)	Type of disease	Average for various indexes			
Movahhed et al.	Mashhad	70	9.7 ± 1.36	Autistic	DMFT=1.44 ± 1.11	D=1.13 ± 0.99	D/DMFT=0.87 ± 0.23	-
					dmft=2.24 ± 1.86	d=1.45 ± 1.38	d/dmft=0.64 ± 0.32	-
Amrollahi et al.	Isfahan	90	8.7 ± 2.15	Autistic	PUFA=0.62 ± 0.29	P=0.27 ± 0.56	U=0.01 ± 0.1	f=0.07 ± 0.26
					pufa=3.43 ± 2.46	p=2.46 ± 2.35	u=0.85 ± 1.01	a=0.30 ± 0.18
Daneshvar et al.	Rasht	55	9.32 ± 2.33	Autistic	(DMFT+dmft) = 6.33 ± 2.88	(D + d) = 5.78 ± 3.21	(M + m) = 0.11 ± 0.42	(F + f) = 0.44 ± 1.07

The results of studies conducted in Iran [26,27,30] are consistent with some studies carried out in other countries, while others are inconsistent. For example, Du evaluated oral health in autistically-preschool children and discovered that gingival health was better for children with autism than for healthy children; the mean dmft index for autistic children was 3.73 and lower than that of healthy children [40]. Moreover, the studies of Loo et al. (2008) [41] and Namal et al. [42] have similarly reported a lower prevalence of caries in children with autism than in healthy children. On the other hand, Rekha reported high rates of dental caries in the deciduous dental period in children with autism [21]. Jaber also said a mean DMFT in children aged 6-16 years of 4.2, indicating a high prevalence of tooth decay in the study population [23]. In Yashoda (2014) study, oral health was evaluated in children aged 4-15 years with autism [43]. The findings of this study showed that deciduous teeth decay rate is more than permanent teeth, which is consistent with the results of studies conducted in Iran [26,27,30]. Furthermore, Marshal reported that caries status in children with autism is inappropriate and considered autism a factor in the high risk of caries [43]. In studies that have reported higher rates of tooth decay in children with autism than in healthy children, for these reasons, we can point to reasons such as more flawed chewing power and the use of drugs that cause dry mouth in children with autism [26]. Moreover, studies indicated lower rates of tooth decay in children with autism than healthy children might result from careful nutrition monitoring and oral hygiene by children with autism and lower sugar intakes reported for these children [19,26].

Studies in Iran and other countries show that child care centers for autistic children and child caregivers have an essential influence on the prevalence of caries in autistic children. The more critical oral health centers and experienced staff there are and the more regular oral health monitoring, the fewer caries there are. Since these children cannot maintain personal hygiene due to physical and mental problems, they rely on their caregivers. In childcare centers, healthy eating habits and snacks are particularly crucial as well. In childcare centers, healthy eating habits and snacks are particularly vital. Oral hygiene can be challenging for families, educators, and caregivers in children with autism spectrum disorders due to limited communication and linguistic skills and behavioral issues. Parents or caregivers play an essential role in promoting children's oral health in terms of motivation and helping them to follow effective oral health practices and ensure regular dental hygiene examinations. Therefore, the importance of a preventive approach and the vital role of the dentist in providing appropriate dental education to parents of people with disabilities is well felt. In addition, with careful monitoring and periodic dental checkups, people with disabilities can improve their oral health habits.

Conclusion

Based on the present review study results, it can be said that in Iran, the rate of tooth decay in patients with schizophrenia is higher than in healthy individuals. Likewise, the rate of tooth decay in children with autism is higher than in healthy children. The high cost of dentistry and lack of financial resources prevent schizophrenics or children with autism from visiting dental treatment centers. Therefore, double cooperation and exceptional attention to this group of patients are needed immediately and effectively to improve their oral health. Otherwise, due to the nature of disorders related to schizophrenia and autism, the patient is not aware of his condition. If not taken care of by dentists and related institutions, it will lead to worse physical and mental conditions for these patients and their caregivers and impose high costs for government agencies.

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