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## Oral Health of People with Psychiatric Disorders

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### 1. Introduction

#### 1.1 What are the psychiatric disorders?

Psychiatric disorders are categorized by the Diagnostic and Statistical Manual of Mental Disorders (DSM- IV), which is published by the American Psychiatric Association and covers all mental health disorders for both children and adults. (APA, 1995) It also lists known causes of these disorders, statistics in terms of gender, age at onset, and prognosis in addition to results from some studies concerning the ideal treatment methods. The manual utilizes a multi-axial classification system to formulate the diagnosis of psychiatric patients. The five dimensions for assessment are described in Table 1.

On the fifth axis, the psychiatrist evaluates the patients' level of functioning both at the present time and the highest level within the previous year. This helps the psychiatrist recognize how the above four axes are affecting the patients and what type of changes could be detected.

According to the DSM-IV psychiatric disorders are divided into 17 major categories, including: 1. disorders usually first diagnosed in Infancy, childhood, or adolescence. 2. delirium, dementia, and amnesic and other cognitive disorders. 3. mental disorders due to a general medical condition not elsewhere classified. 4. substance-related disorders. 5. schizophrenia and other psychotic disorders. 6. mood disorders. 7. anxiety disorders. 8. somatoform disorders. 9. factitious disorders. 10. dissociative disorders. 11. sexual and gender identity disorders. 12. eating disorders. 13. sleep disorders. 14. impulse-control disorders not elsewhere classified. 15. adjustment disorders. 16. personality disorders. 17. other conditions that may be a focus of clinical attention.

#### 1.2 Epidemiology of psychiatric disorders

There are evidences of psychiatric disorders being a rising tendency and major health problem for the modern humanity. Studies reported that the prevalence of psychiatric disorders in the Dutch population: those aged under 65 in 1996 had experienced at least one psychiatric disorder in their lifetime, among them 23.3% within the preceding year. (Bijl, Ravelli, & van Zessen, 1998)

Axis	Mean	Description	Examples
Axis I	Clinical Disorders	what we typically think of as the diagnosis	depression, schizophrenia, social phobia
Axis II	Personality Disorders	more long-lasting symptoms and encompass the individual's way of interacting with the world	paranoid, antisocial, borderline personality disorders
Axis III	General Medical Conditions	play a role in the development, continuance, or exacerbation of Axis I and II disorders	brain injury, AIDS resulting in mental illness
Axis IV	Psychosocial and Environmental Problems	events in a person's life that can affect the disorders listed in Axis I and II	death of a loved one, starting a new job, entry to college, unemployment, or marriage
Axis V	Global Assessment of Functioning	the physician's rating of the patient's level of functioning	Global Assessment of Functioning Scale, Social and Occupational Functioning Assessment Scale, Global Assessment of Relational Functioning Scale

Table 1. Five dimensions for assessment of psychiatric disorders (DSM-IV)

The one-year prevalence of major psychiatric disorder, minor psychiatric disorder, and all psychiatric disorder were 1.37 %, 4.26 %, and 5.30 %, respectively in Taiwan in 2000. (Chien, Chou, Lin, Bih, & Chou, 2004)

### 1.2.1 Schizophrenia

A literature search of schizophrenia-related studies in 2002 showed that 1-year and lifetime prevalence and 1-year incidence of schizophrenia were: 0.34 %, 0.55 %, and 11.1/100,000 persons respectively. (Goldner, Hsu, Waraich, & Somers, 2002)

The cumulative prevalence of psychiatric disorders increased from 0.33 % to 0.64 % from 1996 to 2001 in Taiwan. (I. C. Chien et al., 2004) Another review research indicated that the median incidence was 15.2/100,000 persons and the median lifetime prevalence was 0.72% for schizophrenia. (McGrath et al. 2004)

### 1.2.2 Eating disorders

Eating disorders are psychiatric disorders, which represent a clinical symptoms to oral health professionals because of their unique psychological, medical, dental patterns, and their unique features. (Aranha et al., 2008) The average prevalence for anorexia nervosa and bulimia nervosa among young females are 0.3% and 1%, respectively. (Hoek, 2006) The incidence of anorexia nervosa in women between 15 and 19 years of age was 270 per 100,000 person-years. (Keski-Rahkonen et al., 2007)

### 1.2.3 Depression

A systematic review on the prevalence and incidence of perinatal depression from 1980 through 2004 was carried out. The combined prevalence estimates ranged from 6.5% to 12.9% for major and minor depression, and the major depression alone from 1.0 to 5.6% at different trimesters of pregnancy and months in the first postpartum year. (Gavin et al. 2005)

Eaton et al. pointed out that there has been a rise in the prevalence of depression among middle-aged females due to increasing chronicity in the U.S. between 1981 to 1993. (Eaton et al. 2007) There has been a rise in the prevalence of depression among middle-aged females in the U.S.. (Eaton, Kalaydjian, Scharfstein, Mezuk, & Ding, 2007)

### 1.2.4 Dementia and anxiety

The incidence of dementia was 9.2/1000 person-years in aged 65 or over in UK. (Copeland et al., 1992)

A systematic review of literature published between 1980 and 2004 reporting findings of the prevalence and incidence of anxiety disorders in the general population. This study demonstrated that 1-year and lifetime prevalence for total anxiety disorders was 10.6% and 16.6% respectively. (Somers, Goldner, Waraich, & Hsu, 2006)

## 1.3 The side effects and interaction of drugs for patients with psychiatric disorders

### Antipsychotics

The atypical antipsychotics generally produce fewer extra pyramidal side effects than the conventional antipsychotic drugs. However, some atypical antipsychotic drug, such as Clozapine, has an associated risk of agranulocytosis and symptom of tremor at rest. (Jansen 1994; Kane et al. 1988) Clozapine also lead to hypersalivation because of the side effects of cholinergic agonists. (Arranz et al. 2000; Seeman 2004) Some atypical antipsychotics, such as Olanzapine, have not been reported to be associated with agranulocytosis, haemotoxicity, and pose minimal effect on prolactin levels. (Fulton et al. 1997) The atypical antipsychotics raise the risk of diabetes, and cardiovascular disease through antagonism at the  $H_1$ ,  $5-HT_{2A}$ , or  $5-HT_{2C}$  receptors. The effect of elevation of serum leptin and insulin resistance also cause weight gain. (Lean and Pajonk 2003)

The atypical antipsychotics, such as clozapine, lead to hypersalivation because of the side effects of cholinergic agonists. (Arranz et al. 2000; Seeman 2004)

### Anti-seizure drug

Sodium valproate, an anti-seizure drug used for treating patients with a bipolar disorder, can cause thrombocytopenia and reduce platelet aggregation response. (Jeavons et al. 1977) Tegretol has anticholinergic effects that can cause orthostatic hypotension; thus, the use of vasoconstrictors should be restricted. The use of erythromycin or clarithromycin should be avoided to prevent the risk of Tegretol poisoning. Tegretol poisoning in patients may result in oral ulcers, sore throat, Steven-Johnson syndrome, agranulocytosis, and aplastic anemia. (Dalby 1971; Kimura et al. 1974)

### Antidepressant drugs

All tricyclic antidepressants have anticholinergic effects that can cause orthostatic hypotension. (Beckmann and Goodwin 1975; Szabadi and Tavernor 1999)

Selective serotonin reuptake inhibitors (SSRIs) can cause xerostomia. SSRIs also can lead to a reduced platelet aggregation because SSRIs can prevent the resorption of serotonin. (Thase et al. 2001)

Monoamine oxidase inhibitors (MAOIs) have anticholinergic effects that cause orthostatic hypotension. MAOIs also interact with several drugs, thereby causing hypertensive crisis. (El-Ganzouri et al. 1985; Yamada and Yasuhara 2004)

Diseases	Year	Area	Prevalence/accidence	Population
Psychiatric disorders	1996	Dutch	Lifetime prevalence 23.3%	Aged <65
	2000	Taiwan	1-year prevalence: 5.30 %	Population in National Health Insurance
Schizophrenia	2001	System review 1965-2001	1-year incidence: 0.015%	
	2002	Taiwan	1-year incidence: 0.011%	Population in National Health Insurance
Eating disorders	1999	System review 1980-1999	Lifetime prevalence: 0.3 % (anorexia nervosa)	Young females
			Lifetime prevalence: 1% (bulimia nervosa)	
	2004	Finland	Lifetime prevalence: 2.2%; 1-year incidence: 0.27% (anorexia nervosa)	Women aged 15 -19 years
Depression	2004	System review 1980-2004	Prevalence: 12.9% Prevalence: 5.6% (major)	Pregnancy and post amp women
Dementia	1992	British	Lifetime prevalence: 4.3%	Aged >64 years
Anxiety disorders	2006	System review 1980-2004	1-year prevalence: 10.6%; lifetime prevalence: 16.6%.	

(Bijl, et al., 1998; I.-C. Chien, et al., 2004; I. C. Chien, et al., 2004; Copeland, et al., 1992; Gavin, et al., 2005; Goldner, et al., 2002; Hoek, 2006; Keski-Rahkonen, et al., 2007; McGrath, Saha, Chant, & Welham, 2008; McGrath, et al., 2004; Somers, et al., 2006)

Table 2. The prevalence / incidence of psychiatric disorders

**Mood stabilizer drugs**

Lithium salt leads to polyuria, which often results in dry mouth. The combination of non-steroidal anti-inflammatory drugs (NSAID) increases blood levels of lithium, which may lead to an lithium toxicity. (Corena-McLeod et al. 2008)

Classification	Side effects	Interaction
Antipsychotics		CNS depressant
-Typical	Extrapyramidal symptoms - Acute dystonia - Pseudo parkinsonism - Akathisia - Tardive dyskinesia - Neuroleptic malignant syndrome	
-Atypical	Anticholinergic effect Agranulocytosis Tremor Drowsiness	
Antidepressant		Hypertensive crisis with tricyclic antidepressants
- Monoamine reuptake inhibitors	Orthostatic hypotension Anticholinergic effect	
- Monoamine oxidase inhibitors (MAOI)	Hyper stimulation Insomnia Anticholinergic effect Impotence or anorgasnia	
Mood stabilizer drugs		
-Lithium salt	Polyuria Tremor Weight gain Oedema	Plasma concentration with Erythromycin
Anxiolytic	Drowsiness Excessive somnolence Impaired intellectual function Reduced motor coordination Impaired memory and recall	CNS depressant

Table 3. The side effects and interaction of drugs for patients with psychiatric disorders

#### **1.4 Social stigma of psychiatric disorders**

The stigma on people with psychiatric disorders is extensive among this population. Such stigma varies in nature and frequency in different psychiatric disorders. The stigma harms the self-esteem of many people who have serious psychiatric disorders. Negative opinions indiscriminately are likely to overstress the social handicaps together with psychiatric disorders. (Crisp, Gelder, Rix, Meltzer, & Rowlands, 2000) Corrigan et al. reported that two factors that may influence whether a person who might benefit from mental health treatment, such are public stigma and self-stigma. (Corrigan et al. 2003)

#### **1.5 Psychiatric disorders and health-related quality of life (QoL)**

Most people with psychiatric disorders can obtain the necessary care services to live normally in the community. They use the outreach support skills provided by institutions to help them in the transition to community living. (A. A. Pinkney, 1991) A poor mental health could result in a poor perception of health-related QoL. A patient-centered, routine assessment of QoL provides a supplemental measure that may help improve the understanding of the effects of psychiatric disease on an individual's life. (Llewellyn, Warnakulasuriya, Llewellyn, & Warnakulasuriya, 2003) Health-related QoL is an important outcome index of mental health. Therefore, a rehabilitation protocol that takes into account the financial situation, family support, and social functioning of patients is essential. (Chan et al., 2007)

## **2. The oral health status and problems of people with psychiatric disorders**

### **2.1 Prevalence and incidence of oral health problems in patients with psychiatric disorders**

The oral health status of people with psychiatric disorders is not desirable in general, but there are also significant variations indicating potential of prevention and improvement. The results of several relevant studies are summarized in table 4.

### **2.2 Factors associated with poor oral health status among people with psychiatric disorders**

There are many factors associated with poor oral health status among people with psychiatric disorders. Gender differences between oral health and psychiatric disorder have been reported. (G. M. Eugenio Velasco, Angel Martinez-Sahuquillo, Vicente Rios, Juan Lacalle, Pedro BulloAn,, 1997) Factors such as age and the length of stay in institutions seem to be associated with the oral health of psychiatric patients. (G. M. Eugenio Velasco, Angel Martinez-Sahuquillo, Vicente Rios, Juan Lacalle, Pedro BulloAn,, 1997; Italo Francesco Angelillo, 1995; Kumar, Chandu, Shafiulla, & Kumar, 2006; Rekha et al., 2002; Tang et al., 2004) Researches also reported that severity of psychiatric disorders was related with oral health. (Italo Francesco Angelillo, 1995; Kumar et al., 2006; Thomas, Lavrentzou, Karouzos, & Kontis, 1996) The typical antipsychotics, which are part of a wide array of medications used for schizophrenia treatment, may cause manifest hypo-salivation by blocking the parasympathetic stimulation of the salivary glands. This is likely to intensify the progression of dental diseases. (Friedlander & Marder, 2002; Thomas et al., 1996) Xerostomia is a significant risk factor which influences the oral health of patients with psychiatric disorders. (Hede, 1995; Locker, 2003)

Country / Area	Samples	CPI*	Oral health Index	Dental treatment needs
Italy (Angelillo et al. 1995)	297, Mean age 55.1	0: 0.9% 1: 4.6% 2: 10.1% 3: 19.6% 4: 64.8%	DMFT# 15.5 Exp@: 100% Ed \$: 11.1%	Ext%:80.7%; Con&: 58.3%
South Africa (Rudolph and Chikte 1993)	240 males	0:0 4: 17%	Exp: 88% DMFT: 7.92	Con: All age groups
Spain (Velasco et al. 1997)	565, Mean age 58.0		DMFT: 24.9	
Spain (Velasco and Bullon 1999)	565	0: 8.5% 1:14.2%, 2:43.8% 3:24.6% 4:8.9%	Ed: 31.7%	
India (Kenkre and Spadigam 2000)	128, Mean age 25		Exp: 88% Ed: 3.9%	Con: 88%
UK (Lewis et al. 2001)	326, Mean age 71.1		DMFT:19.1 Ed: 63%	
India (Rekha et al. 2002)			Exp: 75.5%	
Israel (Ramon et al. 2003)	431, Mean age 54.0		DMFT: 26.7	
HK (Tang et al. 2004)	91, Mean age 44.7	4: 28.2%	DMFT>15	Con: 78.8%, Ext: 54%
Israel (Zusman et al. 2010)	254		Exp: 98.4% DMFT: 23.8 Ed: 26%	

\* Community Periodontal Index

# No. of teeth with decay, missing, or filling

@ Caries experience

\$ Edentulism

% Extraction

& Conservative treatment

Table 4. The oral health status of people with psychiatric disorders

### **3. Oral health care for people with psychiatric disorders**

Oral health programs for people with psychiatric disorders are rare. Researchers have demonstrated the feasibility and efficacy of the combination of mechanical toothbrush, dental instructions and reminders which resulted in additional improvements for the oral health of people with psychiatric disorders. (Almomani et al., 2006) Studies also showed that people with psychiatric disorders receiving motivational interviewing (MI) had significantly better oral health than those receiving oral health education only. Furthermore MI has been shown to be effective for enhancing short-term oral health behavior change for people with severe mental illness. (Almomani, Williams, Catley, & Brown, 2009)

#### **3.1 Barriers to oral health care for people with psychiatric disorders**

Most oral health professionals have limited experiences in providing care for people with psychiatric disorders. (Waldman, Perlman, Waldman, & Perlman, 2002) The barriers exist in organization and financing of the care needed as well as in proposing strategies to enhance the delivery of appropriate treatment. (Ridgely, Goldman, & Willenbring, 1990)

General health services are widely utilized by people with psychiatric disorders under psychiatric care in long-term care institutions. However, oral health services remain underutilized, and there is a high prevalence of perceived barriers to receiving dental care in this population. (Dickerson et al., 2003)

#### **3.2 Special requirements of oral health care delivery system for people with psychiatric disorders**

Psychiatric disorders have psychopathological characteristics. In particular, there are specific oral health care requirements and management models for patients with psychiatric disorders. (Clark, 1992) These major requirements for people with psychiatric disorders include prophylaxes, calculus removal, and periodontal therapy Patients' dental treatment needs vary depending on several demographic factors, length of stay in institutions and the patient's psychiatric diagnosis. (Barnes et al. 1988)

### **4. Implications for the oral health policies**

Since the psychiatric health care system has not yet been fully established in some countries, patients with psychiatric disorders there are not likely to obtain the necessary care in their communities. Individuals suffering from severe psychiatric disorders may be able to attain a more dignified life if they could avail themselves of personalized, private, and high quality care services in pertinent institutions. To stay in long-term care institutions is, perhaps, the alternative solution to living in the community. Therefore, the reform of institutions, particularly for the provision of relevant services and continued care, can compensate for a little imparity of dental care for these patients, and is a more practical solution than de-institutionalization of patients with psychiatric disorders. (Chu et al. 2010)

Being not life-threatening in most cases, oral diseases have obvious impacts on patients' quality of life. However, patients with psychiatric disorders also suffer from stigma outside and inside themselves. They are vulnerable to oral diseases due to their limited ability/motivation to take care of themselves and also to the side effects of medications

prescribed for treating their psychiatric disorders. Despite of the increased needs for dental prophylaxes and care, oral health care programs for psychiatric patients are rare, underutilized and receiving less attention from the public sectors.

In addition to boost oral health services provided for patients with psychiatric disorders in the community, it is important for the health policy-makers to support oral health promotion programs. The programs will aim at the patients and their families/carers to empower their belief that oral health is essential and attainable through their own efforts. The government should initiate on-the-job education programs for the dental and psychiatric professionals to enhance their capability and motivation to provide proper services to their psychiatric patients' oral health through integrated efforts. Oral health is an essential part of general health, and it is certainly true for patients with psychiatric disorders.

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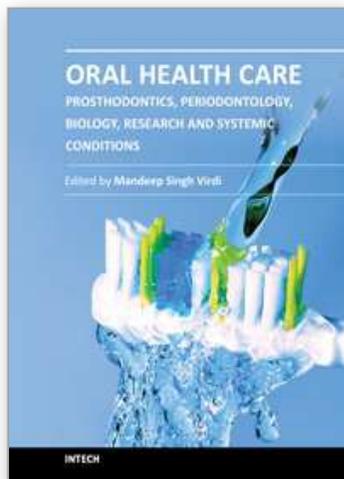
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Geriatric dentistry, or gerodontics, is the branch of dental care dealing with older adults involving the diagnosis, prevention, and treatment of problems associated with normal aging and age-related diseases as part of an interdisciplinary team with other healthcare professionals. Prosthodontics is the dental specialty pertaining to the diagnosis, treatment planning, rehabilitation, and maintenance of the oral function, comfort, appearance, and health of patients with clinical conditions associated with missing or deficient teeth and/or oral and maxillofacial tissues using biocompatible materials. Periodontology, or Periodontics, is the specialty of oral healthcare that concerns supporting structures of teeth, diseases, and conditions that affect them. The supporting tissues are known as the periodontium, which includes the gingiva (gums), alveolar bone, cementum, and the periodontal ligament. Oral biology deals with the microbiota and their interaction within the oral region. Research in oral health and systemic conditions concerns the effect of various systemic conditions on the oral cavity and conversely helps to diagnose various systemic conditions.

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