Complete edentulism and related factors among patients visiting prosthodontics department clinic of School of Dentistry - University of Sulaimani

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Abstract

Objectives: The aim of this study is to assess the prevalence of complete edentulism and associated factors among patients visiting prosthodontics department clinic of School of dentistry Sulaimani University, in order to plan for future oral health care provisions for the society, collecting epidemiological data on oral health particularly related to prosthodontics and its related issues.

Materials and Methods: The samples comprised 280 completely edentulous patients, who attended University of Sulaimani School of dentistry prosthodontics department clinic, patients questioner filled out which covered their age, gender, reasons for edentulousness, medical history, and presence of previous denture and the reason of not using it. The patients were divided in to four age groups; Group I (40-49) years, Group II (50-59) years, Group III (60-69) years, and Group IV 70 years and above. The relationship between the variables were investigated then evaluated.

Results: The results showed that 155 (55.4%) of the patients were males and 125 (44.6%) of the patients were females. The majority of the patients were from age group III (60-69) years, while minority of the patient were from age Group I (40-49). Tooth decay was the major cause of edentulousness (75.4%), while periodontitis constitutes only (24.65) of the cases. Among the total number of participants only (35%) of them were have systemic problems, 61.2% suffered from hypertension, 29.6% were diabetic, and only 9.2% of the patients have cardiovascular problem. Finally, the results revealed that from 280 patients 164 (58.6 %) have previous dentures, poor retention (48.2%), fracture (31.7), tooth wear (12.2%), discomfort (4.2%), and stability (3.7%); were the reason of not using these dentures.

Conclusions: An effective relationship between age, gender, tooth decay, periodontal disease, hypertension, diabetes, and cardiovascular disease with edentulism is present.

Keywords: *Complete edentulism, complete dentures, prosthodontics.*

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Introduction:

Edentulism is defined as the loss of all permanent teeth[(1)] and is the terminal outcome of a multifactorial process involving biologic processes (caries, periodontal disease, pulpal pathology, trauma, oral cancer) as well as nonbiologic factors related to dental procedures (access to care, patient's preferences, treatment options etc.)[(2)]. Poor oral health has been shown to have a negative effect on peoples overall health and quality of life[(2,3)].

Edentulism remains an important public health problem worldwide[(2)]. It is an often overlooked public health issue, especially for those over 65 years of age, and has been associated with changes in food taste, food preferences and nutritional deficiency[(4)].

The loss of teeth can impair function, esthetics and phonations and is restored most of the time with prosthesis. Although preventive dentistry helps protecting teeth, the demand for prosthodentic treatment is expected to rise even in developed countries as a result of a rapid increase in their elderly population[(1-3)]. Many countries are facing an aging population, which will cause a ratio of individual over 65 years of age up to 50% in the coming decades. The number of edentulous patient even in countries with a high standard of dental health care is significant[(1-3)]. According to the World Health Organization (WHO) Global Oral Data Bank the prevalence of edentulism older than 65 years was shown as 58% in Canada, 41% in Finland and 46% in the United Kingdom[(5)].

The distribution and prevalence of complete edentulism between developed and less developed countries may be associated with a complex interrelationship between cultural, individual and socioeconomic factors and health. World Health Organization (WHO) Data Banks indicate that dental caries is prevalent in the majority of countries internationally with some reporting 100% incidence in their populations, sever periodontal disease is estimated to affect 5-20% of the population and the incidence of complete edentulism has been estimated between 7% to 69% internationally. Several cross-sectional studies on the prevalence of edentulousness is associated with age, gender and living areas in most countries[5].

The present study was conducted with following objectives:

1. Evaluation of the prevalence of edentulousness in relation to age and gender in the studied sample.
2. Main causes of complete edentulousness in the studied sample.
3. Presence of previous complete dentures and the reasons of not using it.

Materials and Methods:

Two hundred eighty completely edentulous patients attending prosthodontic department Clinic University of Sulaimani were included in this study over a period from (October 2013 to April 2015). Only patients who were completely edentulous in both arches were selected. A prepared questioner (case sheet) was used to record the data that assessed by students and supervisors which include; the gender, the age of the patient, the medical history of the patient and the dental history for the patient such as reasons of teeth lost and presence of previous complete denture with it is reasons for not using it.

The patients were classified in to four age groups; Group I (40-49) years, Group II (50-59) years, Group III (60-69) years, and Group IV 70 years and above. The patients were informed that the recorded information is required for a research purpose and it will be used in a survey and their consents and agreements were taken verbally. The variables were correlated, descriptive and inferential statistical methods were employed; tables, graphical presentation, numbers, percentages, Chi- Square and Fisher´s exact test were also used to show comparative significance between the groups at the significant level 5%.

Results:

The results of this study showed that; 155 (55.3 %) of the patients were males, while 125 (44.6 %) were female. The results in table 1 show that, the majority of the patients were from age Group III (60-69), 119 (42.6 %), while minority of the patient were from age Group I (40-49), 29 (10.4 %), while age Group II (50-59), and age Group IV (70 and over) had the same number of patient both consist of 66 (23.5 %) patients. Significant difference was found in comparing completely edentulous patients in relation to age (P< 0.001).

Table 2 show the reason for missing teeth among the patients and its relation with gender; 211 (75.4 %) of the subjects lost their teeth as a result of tooth decay, 116 (55 %) of them were male and the rest 95 (45 %) were female, while periodontal disease was the cause for tooth loss for 69 (24.6 %) of the patients, in which 39 (56.5 %) were male and 30 (43.5 %) were female. Insignificant difference was found in comparing reasons of tooth lost (P=0.8).

Table 1: Patients distribution in relation to age group and gender.

Age group	Male No. (%)	Female No. (%)	Total No. (%)	*P-Value
Group I (40-49)	11 (37.9)	18 (62.1)	29 (10.4)	
Group II (50-59)	27 (40.9)	39 (59.1)	66 (23.5)	
Group III (60-69)	70 (58.9)	49 (41.1)	119 (42.6)	P< 0.001
Group IV (70 and over)	47 (71.3)	19 (28.7)	66 (23.5)	
Total No. (%)	155 (55.4)	125 (44.6)	280 (100)	

*Chi- Square test

Table 2: Reasons of teeth lost and it is relation with gender.

Reasons for teeth lost	Male No. (%)	Female No. (%)	Total No. (%)	*P-Value
Tooth Decay	116 (55)	95 (45)	211 (75.4)	
Periodontitis	39 (56.5)	30 (43.5)	69 (24.6)	P = 0.8
Total No. (%)	155 (55.4)	125 (44.6)	280 (100)	

*Chi-Square test

Table 3: Health status of the patients and it is relation with gender.

Health status	Male No. (%)	Female No. (%)	Total No. (%)	*P-Value
Hypertension	31(51.6)	29(48.4)	60 (61.2)	
Diabetes Miletus	16 (55.2)	13 (44.8)	29 (29.6)	
Cardiovascular	7 (77.7)	2 (33.3)	9 (9.2)	P = 0.3
Total No. (%)	54 (55.1)	44 (44.9)	98 (100)	

*Fisher´s exact test

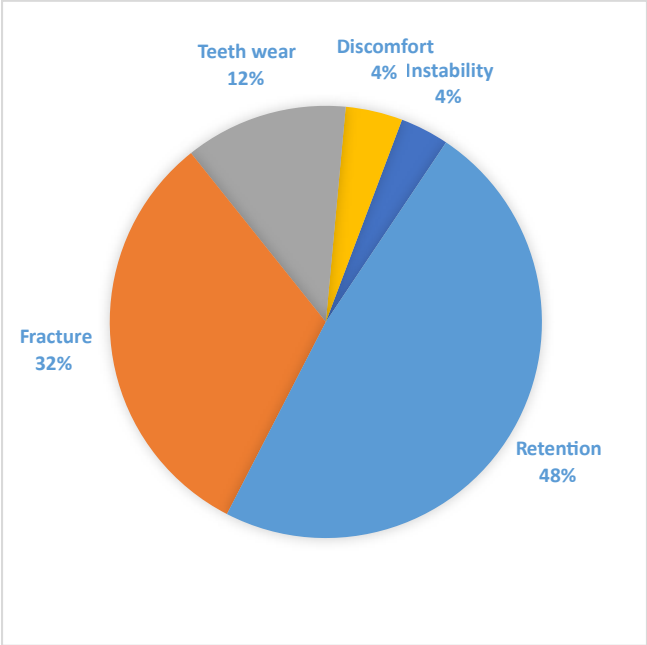

Figure 1: Prevalence of having previous denture and reasons of not using it.

Medical history of the patients revealed that 98 (35 %) patient had systemic disease, 60 (61.2 %) patients suffered from hypertension (31 male and 29 female), while 29 (29.6%) patients were diabetic (16 male and 13 female), and the rest 9 (9.2 %) patient have got cardiovascular disease (7 male and 2 female) as shown in Table 3. Insignificant difference was found in comparing health status among patients with relation to gender (P=0.3).

From 280 patients 164 (58.6 %) have previous denture; 79 (48.2%) of them were not using the dentures because of poor retention, while in 52 (31.7%) cases had fractured denture and need construction of a new denture, other causes like wearing of occlusal surface 20 (12.2 %), discomfort 7 (4.2 %), and instability 6 (3.7 %) were recorded (Figure 1).

Discussion:

Scientific advances have helped increase human longevity and, thus, induced the need for specific hygienic and treatment services for long-living individuals. The number of elderly people with complete edentulism can be decreased through planned prevention in the area of oral health. Examining the factors affecting edentulism and becoming aware of dominant factors in the region can be very influential in such planning[9].

The present study show that percentage of male edentulous was significantly more than females (55.4% and 44.6%) respectively, this is consistent with some studies[10,11], and inconstant with others[6-8,12].

According to Suominen Taipale et al. in 1978 found higher percentage of edentulous females than males, while in 1997 the percentage was the same in male and female, also Ogunrinde and Dosumu 2012 found higher percentage of edentulous males. These variation are due to different communities, time that the study accomplished and the selection of the sample of edentulous patient. The reason can be attributed to the fact that females were dependent on the male members of the family to take them for treatment[12]. Males were not dependent on any one and they can easily come for treatment.

Regarding age distribution among the subjects highest percentage of edentulousness subjects were in the age group (60-69), (42.6%), and lowest percentages was found in age group (40-49), (10.4%). This result is considered logic, since age was strongly associated with Edentulism[11,16,17]. This finding was not surprising because the cumulative effects of dental caries and

periodontal diseases, as well as treatment decisions associated with this two main reasons, increase with age[6,7].

Highest percentages of complete edentulousness in female subjects was found in age group I (40-49), (62.1%) then age group II (50-59), (59.1%) then age group III (60-69), (41.1%) and lowest percentages was found in group IV (28.7%). This showed that females were becoming edentulous at an earlier age than males. This result is in convenient to that of Xie (1999)[6], and that of Kaira and Dabral (2014)[11]. While highest percentages of complete edentulousness in male subjects was found in age group IV (71.3%), then age group III (58.9%), followed by age group II (40.9%), and age group I (37.9%) respectively. This showed that males becoming edentulous at a later age than females.

Dental caries and periodontal disease have been considered as a main determinants for the high occurrence of tooth loss and consequently for the high percentage of edentulism[11]. The result of the present study showed that dental caries was the major cause for edentulousness (75.4%), and then periodontal disease (24.6%). While other studies[7,11,15] showed different results, studies have also shown similar significant finding[7,13,14].

Systemic health and quality of life were compromised when edentulousness affects eating and food choices[11]. The consequences of complete Edentulism on the oral and facial structures are well known, criteria for predicting the long term effects of tooth removal on any individual patient are currently lacking. While the effects of chronic periodontal disease have been closely linked to tooth loss and other systemic conditions, whether the cumulative effects of this inflammatory disease have long range clinical implications for the completely edentulous patients remain speculative; however it appears that the completely edentulous patients may be at risk for the development of other comorbid conditions, including diabetes, cardiovascular diseases, dementia, asthma and others, but whether these conditions are causal or not has not been clearly determined[8]. In the present study only (35%) of the patients have systemic problems in which (61.2%) of them were hypertensive and (29.6%) were diabetic, while (9.2%) have cardiovascular diseases.

Surprisingly 164 (58.6%) patients from the total of 280 patients have useless previous denture. According to the patients poor retention was the major reason (48.2%) of not using the denture, this is an indicative that either a non-scientific procedure were performed in construction of the dentures or it is related to patients factors like using the same denture for long period of time or systemic conditions of the patient that facilitate bone resorption. Denture fracture was another reason of denture failure (31.7%) this result is in accordance with that of Takamiya et al (2012) they also clearly showed a high prevalence of complete denture fractures, as almost one-third of the samples[19], similar to the result of the present study. Wearing of the teeth or occlusal wear was the third major reason, in which 12.8% of the patients have difficulty with their denture because of this problem, this is also related to the age of the denture or possibly related to patient's factor like having habit such as bruxing with the denture. Discomfort with the denture was another reason of refusing the denture by the (4.2%) of the patients, and finally nonstable denture was the reason of not using the denture by (3.7%) of the patients.

Conclusions:

On the bases of results obtained the following conclusions were drawn:

1. Prevalence of edentulousness in males was higher than in females.
2. With increasing age, the prevalence of edentulous females were decreased while this prevalence was increased for male with increasing age.
3. Highest percentage of edentulous female was in age group (40-49) years, and in edentulous male was in age group (70 years and above).
4. Dental caries was the main cause of edentulism both in female and male subjects, so a strong treatment plan for prevention of caries is recommended.
5. Poor retention, fractured denture, occlusal wear, discomfort, and stability were the main reasons of not using previous dentures among patients respectively.

References:

1. *Academy of Prosthodontics (2005) Glossary of prosthodontic terms. J Prosthet Dent 94:10–92.*
2. *Petersen PE, Bourgeois D, Ogawa H et al (2005) the global burden of oral diseases and risks to oral health. Bull World Health Organ 83:661–669.*
3. *World Health Organization (2003) the world oral health report. WHO Press, Geneva.*
4. *Marcenes W, Steele JG, Sheiham A, Walls AW (2003) The relationship between status, food selection, nutrient intake, nutritional status and body mass index in older people. Cad Saude Publica 19:809–816.*
5. *Basker RM, Davenport JS. Priosthetic treatment of the edentulous patient 4th ed. Berlin; Wiley-Blackwell; 2002 p. 71-80.*
6. *Xie Ainamo A. (1999) Association of edentulousness with systemic factors in elderly people living at home. Commun Dent Oral Epidemiol 27: 202-209.*
7. *Suominen Taipale A.L, Alanen P, Nordbald A, et al (1999) Edentulism among finish adults of working age. Commun Dent Oral Epidemiol 27: 335-365.*
8. *Felton David. (2009)Edentulism and comorbid factors. J Indian prosthodontics 18: 88-96.*

9. Zarb CA, Bolender CL, Carlsson CE. (1997) Boucher's Prosthodontic treatment for edentulous Patients. 11 ed. St. Louis: Mosby; PP; 104-15.
10. Elizabeth AK, Arthur JG, Raul IG. (1999) Alveolar bone loss and tooth loss in male cigar and pipe smokers. JADA; 130: 57-64.
11. Kaira LS and Dabral E. (2014) Prevalence of complete Edentulism among Udaipur population of India. Saudi Journal for Dental Research; 5: 139-145.
12. Prabhu N, Kumar S, Souza M. (2009) Partial edentulousness in rural population based on Kennedy's classification: J Indian prosthodontics; 9: 18-23.
13. Fure Solveig, Zickert I. (1990) prevalence of root surface caries in 55, 65, and 75 years old. Commun Dent Oral Epidemiol; 18: 100-105.
14. Jelte Bouma, Schaub,Rob MH, Fons VP. (1985) periodontal status and total tooth extraction in a medium-sized city in the Netherlands. Commun Dent Oral Epidemiol; 13: 323-327.
15. Marcus A Philip, Anil joshi, Judith A Jones, et al. (1996) complete edenulism and denture use for elders in New England. J prosthet Dent; 76: 260-268.
16. Nicholls. (2000) A study of periodontal disease and tooth loss over 12 years. Br Dent J; 188: 343-4.
17. Lopez R, Baelum. (2003) Classifying periodontitis among adolescents: implications for epidemiological research. Commun Dent Oral Epidemiol; 31: 136-143.
18. 18 Ogunride T.J. And Dosumu O.O. (2102) the influence of demographic factors and medical conditions on patients complaints with complete dentures. Ann Ibd Pg Med; 10: 61-21.
19. Takamiya AS, Monteiro DR, Marra J, Marco A. and Barbosa D. (2012) Complete denture wearing and fractures among edentulous patients treated in university clinics. Gerodontology; 29: 728-734.
20. Nagaraj N, Mankani P, Madalli D, and Astekar. (2014) Socioeconomic Factors and Complete Edentulism in North Karnataka Population. J Indian Prosthodont Soc; 14: 24–28.