



Original article

Prevalence of Impaired Dental Function Among Libyan Elderly Dental Patients: Secondary Data Analysis

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ABSTRACT

Background and Aim: This study was aimed to assess the prevalence of partial impairment of dental function among Libyan elderly population.

Methods: Secondary data analysis of previously collected data for a national survey of reasons of tooth extraction among Libyan adults. The data was extracted according to age of the participants (65 years of age or more). Having 20 or less functional teeth was considered as partial impairment of dental functions. Data was analyzed by SPSS version 25 to obtain frequencies and conduct bivariate analysis at $p \leq 0.05$.

Results: Of 165 elderly dental patients, the majority of them were males and from urban areas, 19% had 20 functioning teeth or less. The impaired dental function was higher among patients from rural areas and females ($p \leq 0.05$). Periodontal diseases and caries were the most common reasons for tooth loss in this group. Small number of participants had restorative treatment for tooth decay.

Conclusions: Partial impairment of dental function was observed in nearly the fifth of study group and appeared to be associated with social and gender differences. More efforts are required to understand this phenomenon and to offer dental care to those in need.

Keywords Tooth loss, Elderly, Libya, Secondary analysis.

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INTRODUCTION

The World Health Organization (WHO) predictions indicate that the global population is aging, and suggests that by the year 2050, the population aged 60 years or more will be twofold higher than the today's numbers.¹ Ageing, a foreseeable process, is usually measured by years and, there is an agreement that an individual aged 65 years or more is referred to as 'elderly'.² Ageing affects the integrity and function of human body, and oral health is no exception. Several studies have found that severe tooth loss (edentulism) is associated with poor nutrition due to limited eating options, especially healthful fruits and vegetables and increased consumption of unhealthy processed foods rich in cholesterol and fats.³ Poor nutrition can lead to several systemic conditions and poor quality of life as an additional consequence of tooth loss. For example,

individuals who lost their teeth can suffer from decreased self-esteem and overall well-being, and socializing because they embarrassed to speak, smile, or eat in front of others.⁴

Periodontal disease and dental caries are the leading causes of tooth loss. However, causes such as trauma and prosthetic reasons have been reported.^{5,6} Risk factors for tooth loss include poor oral hygiene, tobacco use, dry mouth, gum disease (gingivitis) and some prescription medications. Tooth loss is preventable in most cases through proper oral hygiene, regular dental visits, avoiding tobacco and using products that help with dry mouth.⁷ Having 20 or 21 remaining teeth is regarded as functional dentition and has been set as global oral health goals.⁸ Many researchers have reported the importance of maintaining 20 or more teeth for oral health function, and this has been adopted by the WHO as a measure of functional dentition.^{9,10} In addition, there are health policies using this

measure (having 20 or more teeth) as a health goal. For example, In Japan, having 20 or more natural teeth has been used as a goal of oral health policy since 1989, termed the "8020 (Eighty-Two) campaign".¹⁰

Previous studies in Libyan adults have demonstrated that extraction is quite common practice, with caries and periodontal diseases being the most common causes. However, as far as the authors concerned, no previous studies have attempted to investigate the impaired dental function in the adults and its related factors. Therefore, the present study aims to assess the prevalence of elderly dental patients who retain a minimum of 20 teeth after 65 years of age and its related factors.

MATERIAL AND METHODS

This study was based on a secondary analysis of data collected in a Multi-centre Cross-sectional study, conducted in six Libyan cities, covering the West, East and South of Libya. The data for the primary study was collected during the period between September 2016 and March 2017. The description of study design, data collection and sampling of the survey has been described elsewhere.¹¹ Permissions to access the primary raw data were obtained from the main author of the study.

The primary data included all dental patients aged 17 years or more who extracted their teeth in one of the dental clinics selected as study sites. A total of 2386 Libyan adults were recruited. Informed verbal consent was obtained from all participants. Data were collected by dentists in each research site who collected through clinical examination and interviews using especially designed form. The dental examination was done on dental chair unit used dental light, mouth mirror and dental probe. No other diagnostic aids such dental x-ray was used. The designed form contains information's on patient's demographic variables such as age; gender; education level; dental attendance pattern; occupation; place of birth; type of dental clinic; the type of tooth and reason for its extraction. The reasons for tooth extraction was categorized as following: caries, periodontal diseases, orthodontic treatment, prosthetic treatment, impaction, trauma, and other reasons.

Data of participants aged 65 years of age or more were extracted and analysed using SPSS software Version 25. Descriptive statistics were used to describe study sample characteristics and reasons of tooth extraction and prevalence of partial function impairment. Chi squared test was used to compare partial function impairment by participants' gender, and social class, and living area, at p value of 0.05.

RESULTS

A total of 178 elderly Libyan adults were included in the analysis. Table 1 shows the sociodemographic characteristics of the study subjects. The majority were males (70.2%), attended public dental clinics (73.6%). Only small proportion of the participants

were from rural areas (9%) and attained university or higher educational level (16.9%).

Table 1: Socio-demographic characteristics of study sample (n=178)

<u>Socio-demographic characteristics</u>		<u>Count</u>	<u>%</u>
<i>Gender</i>	Male	125	70.2
	Female	53	29.8
<i>Clinic</i>	Public	131	73.6
	Private	47	26.4
<i>Education</i>	High school or less	146	82.0
	Higher than high school	30	16.9
<i>Residency</i>	Urban	162	91
	Rural	16	9

Figure 1 depicts the dentition status among the study subjects. Just less than the quarter had sound teeth (24.2%) whereas the majority had decayed (59%) or missing teeth (60.7%). The least common finding was the filled teeth which was observed in 15% of the participants. The most common reasons for tooth extraction among the study subjects were severe periodontitis (32.6%) and tooth decay (37.6%), followed by prosthetic reasons (23.6%). On the other hand, the least common reasons were trauma, impaction and failed endodontic treatment (1%) (Table 2).

Figure 1 shows the prevalence of Partial impaired function which was reported in 19 % of study subjects. Table 3 presents comparison of PIF prevalence by study sample characteristics (gender, clinic types, education level and area of residency). Statistically significant differences were observed when PIF compared by gender and area of residence. Higher frequency of PIF was observed among females ($p=0.000$) and residents of rural areas ($p=0.001$).

Table 2: Reason of last tooth extraction among study sample (n=178)

<u>Reasons for tooth extraction</u>	<u>Count</u>	<u>%</u>
Restorable decayed tooth	6	3.3
Non-restorable decayed tooth	58	32.6
Severe periodontitis	67	37.6
Trauma	1	0.6
Impaction	1	0.6
Prosthetic reasons	42	23.6
Pathology such as cystic lesion	2	1.1
failed restoration such as bridge or failed RCT	1	0.6

Table 3: Comparison of partial impaired function (PIF) by characteristics of study subjects

	<i>Proportions of PIF in subgroups</i>	<i>Count (%)</i>	<i>P value</i>
Gender	Male	15 (12.0)	0.000
	Female	19 (35.8)	
Clinic	Public	26 (19.8)	0.672
	Private	8 (17.0)	
Education	High school or less	28 (19.2)	0.917
	Higher than high school	6 (20.0)	
Residency	Urban	26(16)	0.001
	Rural	8 (50)	

Chi square test was used to compare subgroups at $p \leq 0.05$

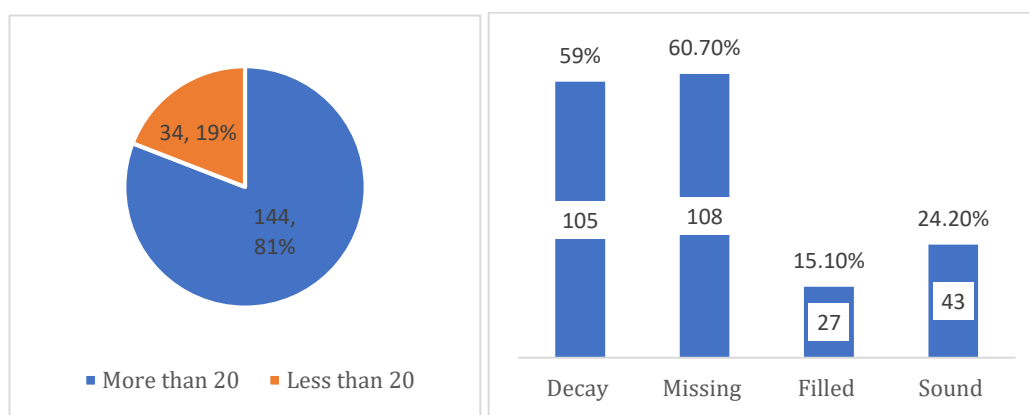


Figure 1: prevalence of Dentition status and Partial impaired function

DISCUSSION

To authors' best of knowledge, this is the first Libyan study to investigate partial impairment of dental function (having less than 20 functional teeth) among elderly. The study used secondary data analysis of previously collected data in a nation-wide survey of reasons of tooth extraction among Libyan adults. This approach saves time and efforts but also it has its own limitations such as no control over a chosen study population, variables of interest, and study design.¹² For example, the analysed data showed that the majority of participants were males, not educated and from urban areas which might be controlled if primary data was collected for the present study purpose.

In other words, representative proportions of these variable might be selected in a primary data was collected. We acknowledge this as a limitation of the present study and future research should consider these aspects. Nevertheless, the data used in this study appeared to fit well with the study aim and amenable to statistical analysis. Therefore, it can be claimed that the benefits of secondary data analysis outweigh the drawbacks in the present study. The prevalence of

Partial impairment of functional dentation was reported in 19 % of study subjects. This means that considerable proportion of Libyan elderly keep their optimum functional dentition. Similar findings were observed in previous studies conducted in Brazil, Korea and Vietnam where the majority of adults had functional dentition.^{4,13,14} In line with the previous studies investigating the reasons of tooth loss among Libyan adults,^{11,15} The most common reasons for tooth extraction among the study subjects were severe periodontitis (32.6%) and tooth decay (37.6%), followed by prosthetic reasons (23.6%). This later appeared to be logic because of the increased demands of dental extraction in the elderly age group.¹⁶ This statement can be supported by present study finding that showed higher loss of function dentition among females.

Another interesting finding in this study was that patient from rural areas exhibited higher loss of functional dentition, reflecting poorer dental services and utilization of care in these areas. The data shows that tooth loss and dental caries are very common among Libyan elderly with just less than the quarter had

sound teeth (24.2%). On the other hand, a small proportion of the participants had filled (15%). These observations corroborate great deal previous findings among Libyan adults as well as children, and demonstrate highly unmet treatment needs,^{17,18} which can be attributed to low attention paid to oral health in a war-torn country. Previous research from other countries went through fiscal crisis, such as Greece, suggested that people tend to re-prioritize their demands and needs and what necessary or not.^{19,20} The financial crises in Libya has resulted in growth of the black market, weakened the Libyan dinar (LYD) and rapidly rising inflation.²¹ Consequently, the price of everything has increased up to 5-8 folds.²² Therefore, it is likely less educated males who forms the majority of the present study's participants prefer extraction over the expensive restorative treatment.

Further research using larger study sample and qualitative interviews is required to fully understand the reasons of loss of functional dentition, particular

among females and rural areas. The present study although of small scale, it sheds light on the provision of dental care among Libyan elderly population and the need to provide appropriate care for this groups in order to maintain their oral and general health as well as ensure acceptable levels of quality of life.

CONCLUSIONS:

The present study suggests that nearly one fifth of Libyan elderly has lost their functional dentition and that there are regional and gender differences in the distribution of this condition. Further research is required to fully understand this phenomenon, and more efforts are needed to provide optimal dental care to this group.

Conflict of interests: none.

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