



The relationship between oral health and oral health related quality of life among elderly people in United Kingdom



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ABSTRACT

Objectives: To identify the determinants of OHRQoL among older people in the United Kingdom.

Methods: A subset of elderly (≥ 65 year) participants from the UK Adult Dental Health Survey 2009 data was used. OHRQoL was assessed by means of the OHIP-14 additive score. The number of missing teeth; presence of active caries, dental pain, root caries, tooth wear, periodontal pockets > 4 mm, loss of attachment > 9 mm; having PUFA > 0 (presence of severely decayed teeth with visible pulpal involvement, ulceration caused by dislocated tooth fragments, fistula and abscess); and wearing a denture were used as predictor variables. Age, gender, marital status, education level, occupation and presence of any long standing illness were used as control variables. Multivariate zero-inflated Poisson regression analysis was performed using R-project statistical software.

Results: A total of 1277 elderly participants were included. The weighted mean(SE) OHIP-14 score of these participants was 2.95 (0.17). Having active caries (IRR = 1.37, CI = 1.25;1.50), PUFA > 0 (IRR = 1.17, CI = 1.05;1.31), dental pain (IRR = 1.34, CI = 1.20;1.50), and wearing dentures (IRR = 1.30, CI = 1.17;1.44), were significantly positively associated with OHIP-14 score. Having periodontal pockets > 4 mm, at least one bleeding site, and anterior tooth wear were not significantly associated with the OHIP-14 score.

Conclusion: Whereas previous research has suggested a moderate relationship between oral disease and quality of life in this large scale survey of older adults, the presence of active caries and the presence of one or more of the PUFA indicators are associated with impaired oral health related quality of life in older adults, but not indicators of periodontal status. The implication of this is that whilst focussing on prevention of disease, there is an ongoing need for oral health screening and treatment in this group.

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1. Introduction

With global changes in life expectancy, there has been a growth in the population aged over 65 years, particularly in developed countries [1]. Not only is the proportion of the population who fall into groups historically termed ‘the elderly’ (aged over 65 years) increasing, there is also an increase in the proportion who enter this age group who retain their health and functioning. This is true as much in oral health as it is in general health [2]. The World Health Organisation has identified that this will bring new challenges in maintaining the dentition and oral health of those

aged over 65 years [2]. However little is known about how these trends will impact upon the lived experience of older people.

Oral Health-Related Quality of Life (OHRQoL) is a multidimensional construct that corresponds to the impact of oral health or diseases on an individual's daily functioning, well-being or overall quality of life [3,4]. Almost all measures of OHRQoL have been founded on Locker's conceptualization of the impact of oral disease based on the WHO model of health [5]. This model states that there are five consequences of oral disease: impairment, functional limitation, pain/discomfort, disability, and handicap. Further the model proposes that these domains are sequentially related such

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that Impairment (structural abnormality e.g. caries) leads to functional limitation (restrictions in body functions, e.g., difficulty chewing) and pain/discomfort (self-reported physical and psychological symptoms), which, in turn, leads to disability (limitations in performing daily activities, such as an unsatisfactory diet) and disability may then lead to handicap (social disadvantage, such as social isolation). Impairment and functional limitation may also lead directly to handicap. Locker's model has typically been viewed as a framework for understanding oral health rather than as a scientific model to be empirically validated but implicit in the model is the assumption that there is a relationship between poor oral health and impaired quality of life. This assumption has been questioned, and it would appear that any relationship is moderate [6–9], while Locker argued that the concept of quality of life is broader than clinical health and therefore such measures should not be expected to show high correlations [10]. However, understanding which aspects of oral disease have the greatest impact on well bring may help to identify priorities for prevention and treatment. The aim of the present study is to explore the relationship between oral health status and oral health related quality of life in older adults in the United Kingdom.

2. Methods

Data from Adult Dental Health Survey (ADHS), United Kingdom 2009 was used in this study. The 2009 ADHS is the fifth in a series of national dental surveys that have been carried out every ten years since 1968. The 2009 survey covers the adult population in England, Wales and Northern Ireland, but excludes Scotland which decided not to participate in the 2009 survey. A two-stage cluster sample was used for the survey comprising of 253 primary sampling units (PSU) across England and Wales, and a further 15 PSUs in Northern Ireland. Each PSU consisted of two postcode sectors with 25 addresses sampled from each, giving a total sample of 13,400 addresses. Of these 12,054 were eligible for inclusion (1346 ineligible were unoccupied households, business addresses, care homes etc.). Of the 12,054 eligible households, 7233 participated (60% household response rate), while the remaining 3895 households refused to participate or were non-contactable (n=455) or other non-response (n=471). Within the 7233 households there were 13,509 adults who were asked to participate in the survey – of these 11,382 participated (84%). A questionnaire based interview and clinical examination were used to get a picture of the dental health of the adult population. From these 13,509 interviewed participants, a clinical examination was completed for 6469 individuals for oral health and function including dental caries experience. Detailed information about the UK ADHS is available elsewhere [11]. A subset of the 1277 elderly individuals aged 65 years or older was included in this study.

OHRQoL was measured using the 14-item Oral Health Impact Profile (OHIP-14). The OHIP-14 has good reliability, validity, and precision [12]. The OHIP-14 measures the frequency of occurrence oral impacts in seven conceptual domain, two questions for each dimension namely; functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability and handicap [12]. Ratings are made on a 5-point Likert scale; 0 = never; 1 = hardly ever; 2 = occasionally; 3 = fairly often; 4 = very often/every day. Summary OHIP-14 scores were calculated by summing ordinal values for 14 items. Higher OHIP-14 scores indicate worse and lower scores indicate better oral health-related quality of life.

Sociodemographic factors (Age, gender and marital status) socioeconomic status (education level, occupation and index for multiple deprivation), oral health status (active caries, periodontal pocket, number of missing teeth, gingival bleeding, root caries, anterior tooth wear), smoking status and general health (having

any systemic problem, self-reported general health) were used as explanatory variables for the prediction of OHIP-14 and its domains. Sociodemographic factors, socioeconomic status, smoking status and general health variables were measured through

Table 1
Descriptive analysis of the characteristics of elderly in UK (n = 1277).

	n(%) n = 1277	Total OHIP-14 Weighted Mean(SE)
Age		
65–75	805 (59.1)	3.12(0.23)
75 and above	472 (40.8)	2.69(0.24)
Gender		
Male	627 (47.6)	2.73(0.21)
Female	650 (52.4)	3.14(0.26)
Marital Status		
Never married	79 (7.3)	2.53(0.48)
Married	811 (57.6)	2.72(0.19)
Previously married	386 (35.1)	3.47(0.35)
Education		
No qualification	587 (47.5)	3.34(0.27)
Below degree	482 (36.9)	2.73(0.27)
Degree or above	207 (15.5)	2.23(0.31)
NSSEC		
Professional	430 (30.8)	2.42(0.24)
Intermediate	305 (24.6)	3.19(0.38)
Manual	430 (34.6)	3.21(0.30)
Unemployed	111 (10.0)	3.03(0.63)
IMD		
Quintile 1	127(11.3)	3.06(0.49)
Quintile 2	182(14.6)	3.90(0.60)
Quintile 3	285(22.8)	2.78(0.30)
Quintile 4	326(24.2)	2.82(0.39)
Quintile 5	355(27.1)	2.62(0.32)
Active caries		
No	893 (68.5)	2.57(0.18)
Yes	382 (31.5)	3.76(0.36) ^a
At least one pocket ≥ 4 mm		
No	512 (37.9)	2.83(0.28)
Yes ^j	740 (52.1)	2.92(0.21)
At least one PUFA		
No	1185 (92.7)	2.69(0.15)
Yes	90 (7.3)	6.21 (1.11) ^a
Pain related to teeth		
No	1205(94.6)	2.68(0.16)
Yes	70(5.4)	7.61(1.21) ^a
Active root caries		
No	1116 (85.9)	2.80(0.18)
Yes	159 (14.1)	3.87(0.50) ^a
Anterior tooth wear		
No	105 (7.8)	3.87(0.79)
Yes	1190 (92.2)	2.87(0.17)
At least one bleeding site		
No	627 (47.6)	2.74(5.02)
Yes	638 (52.4)	3.05(5.52)
Number of missing teeth		
0–5	192 (15.5)	2.87(0.56)
6–11	482 (36.0)	2.02(0.23)
12–17	289 (23.1)	2.91(0.28)
18–23	170 (13.2)	3.58(0.40)
24–32	144 (12.2)	5.15(0.66) ^a
Wearing Denture		
No	735 (57.1)	2.32(0.22)
Yes	540 (42.9)	3.78(0.26) ^a
Smoking status		
Never	535 (41.3)	2.83(0.28)
Past	650 (51.0)	2.78(0.21)
Current	92 (7.7)	4.64(0.85) ^a
Systemic Problem		
No	572 (43.6)	2.16(0.22)
Yes	703 (56.4)	3.55(0.24) ^a
Self-reported general health		
Very good/good	922 (70.1)	2.21(0.15)
Fair	272 (22.4)	4.54(0.47)
Poor/very poor	83 (6.6)	5.44(0.90) ^a

^a p-value ≤ 0.05 ; Mann Whitney U test and Kruskal Wallis test were used as appropriate.

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