

Factors associated with self-reported dental visits among older Melbournians. The MELSHA study 2008 data collection.

Factores asociados con visitas dentales autoinformadas entre melbournianos mayores. El estudio MELSHA 2008 recopilación de datos.

Rodrigo Mariño.¹
Joanne Enticott.²
Mahmoud Elsamman.¹
Rachel Etzion.¹
Maryam Ferooz.¹
Ryuun Fujihara.¹
Hugo Hancock.¹
Julian He.¹
Hall Kendig.³
Colette Browning.^{3,4}

Affiliations: ¹Melbourne Dental School University of Melbourne, Melbourne, Australia. ²Monash University; Melbourne, Australia. ³Australia National University, Canberra, Australia. ⁴Peking University, China.

Corresponding author: Rodrigo Mariño. University of Melbourne. VIC 3010, Australia. Phone: (61-3) 93411558. E-mail: r.marino@unimelb.edu.au

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Abstract: Objective: To describe self-reported oral health-care visits and associated factors in older adults in Melbourne, Australia. Material and Methods: 201 older adults, 79-96 years, took part in the Melbourne Longitudinal Studies on Healthy Ageing (MELSHA) in 2008. Participants who visited a dentist within 12-months prior were identified. Logistic regression examined factors associated with the 12-month visits. Results: 47.7% reported visits to the dentist in the previous 12 months. Multivariate analyses showed dentate participants (OR=11.27; 95% CI: 4.38-29.00) were more likely to have a 12-month visit, and; those receiving a government pension or benefit were less likely to have a 12-month visit (OR=0.38; 95% CI 0.18-0.79). Conclusion: Compared with existing data on the oral health of older Australians, MELSHA participants appear to have lower dental attendance. Findings highlight the need to increase older people seeking oral health-care, and the need to collect information to identify influencers of oral health service usage.

Keywords: *Elderly; health services for the aged; dental health services; Australia; longitudinal studies.*

Resumen: Objetivo: Describir las visitas de atención de salud bucal autoreportadas y los factores asociados en adultos mayores en Melbourne, Australia. Métodos: 201 adultos mayores, de 79 a 96 años, participaron en los Estudios longitudinales de Envejecimiento Saludable en Melbourne (MELSHA) en 2008. Se identificaron los participantes que visitaron a un dentista dentro de los 12 meses anteriores. La regresión logística examinó los factores asociados con haber visitado el dentista en los últimos 12 meses. Resultados: el 47,7% informó visitas al dentista en los 12 meses anteriores. Los análisis multivariados mostraron que los participantes dentados (OR=11.27; IC 95%:4.38-29.00) tenían más probabilidades de haber visitado al dentista en los últimos 12 meses; y aquellos que recibieron una pensión o beneficio del gobierno tenían menos probabilidades de haber reportado una visita en los últimos 12 meses (OR=0,38; IC del 95%:0,18 a 0,79). Conclusión: en comparación con los datos existentes sobre la salud oral de los australianos adultos mayores, los participantes de MELSHA reportaron una menor asistencia dental. Los resultados resaltan la necesidad de aumentar que adultos mayores busquen atención de salud bucal, y la necesidad de recopilar información para identificar influyentes en el uso de servicios de salud bucal.

Palabras Clave: *Anciano; servicios de salud para ancianos; servicios de salud dental; Australia; estudios longitudinales.*

INTRODUCTION.

A recent redefinition explains oral health as "...multi-faceted and includes the ability to speak, smile, smell, taste, touch, chew, swallow and convey a range of emotions through facial expressions with confidence and without pain, discomfort and disease of the craniofacial complex".¹ The significance of this new definition is that it positions the individual as the centre and also proposes a framework to evaluate oral health.¹ Furthermore, oral health has been placed as part of the Non-Communicable Disease (NCD) agenda.² From this perspective, oral health diseases and conditions (e.g., caries, periodontal disease, edentulism) are among the most common NCDs in any population, including Australia.³ In particular dental caries is the most prevalent among all other diseases.

However, the mere absence of such problems does not mean that a person has a good oral health. Oral Health is essential to an individual's overall quality of life and well-being.¹⁻⁴ Thus, this absence does not mean that there is no need for oral health-care visits. Oral health objectives cannot be reached through clinical interventions alone. As for any health conditions, health promotion, oral health education and prevention, early diagnosis and treatment, are key for achieving improved oral health outcomes in the population.⁵

Like in most countries, the Australian population is ageing due to a decline in the birth-rate and increases in life expectancy.⁶ In 2016, 15% of the Australian population (3.7 million) was aged 65 and over. It is expected that by 2056, 8.7 million Australians will be 65 or older, which will represent 22% of the population. Internationally, this figure will be about 1.6 billion.⁷ Policies in Australia and elsewhere, put emphasis on the promotion of good health and a positive experience with ageing.⁸

Consistent with this policy, regular oral health-care visits can offer opportunities for further enhancing positive ageing, by providing venues for health promotion, oral hygiene education and maintenance of good oral health, as well as for early identification and treatment of disease and conditions.^{1,9} Older Australians are now characterised with retention of their natural dentition and decreased prevalence of edentulism,³ therefore

making the need for good oral health throughout the lifespan.

An oral health-care visit in the previous 12 months is considered the standard measure of appropriate health care for the general population.⁹ Over a period of thirty years there has been a substantial increase of the proportion of Australians using oral health-care services; from 49% in 1985; 60% in 1999, to 62.0% in 2006.^{3,10,11} However, there are also several well described barriers to access oral health care in Australia, which include financial (*i.e.*, those without dental insurance),¹² length of waiting list,¹³ and inequalities in the oral health workforce distribution.³

Considering the importance of oral health and the known impact of oral health on older adults' physical, emotional and social functioning, as well as quality of life and well-being, the objective of this cross-sectional study is to use the 2008 data collection wave of the Melbourne Longitudinal Studies on Healthy Ageing (MELSHA) project¹⁴⁻¹⁶ to describe the patterns of use of oral health-care services, to highlight factors associated with utilisation of oral health-care services by older adults living in Melbourne, Australia, and to make comparisons to previous results of the MELSHA study to assess how predictors change over time.

MELSHA data collection started in 1994 on a sample of 1000 (533 female, 467 male) independently living Melbourneans, aged 65 years and over, selected from the electoral roll. The MELSHA study methodology is described elsewhere.¹⁴ A study on dental utilization by older adults living in Melbourne in 1994 found that one third of the participants (33.4%) reported oral health-care visits in the previous 12 months.¹⁶

Information on use of oral health care services in older people will provide a better identification and understanding of specific socio-demographic and psychosocial factors associated with oral health-care services use among independent older urban Victorians. This in turn, will help to better clarify the theoretical understanding of factors that mediate oral health care services use in this growing group of the population in many countries. Learning how to reach these groups and overcoming their barriers to access oral health-care are important goals in health.

MATERIALS AND METHODS.

This study analysed data collected as part of the 2008 wave of the Melbourne Longitudinal Study on Healthy Ageing (MELSHA). The 2008 data collection wave represents the largest data collection in oral health during the MELSHA study. The MELSHA program initially received ethics clearance from Monash University (Ethics ID:CF07/0618-2007/0138), with the University of Melbourne gaining ethics approval for this specific study (Ethics ID 1646495.1).

The MELSHA study methodology is described in detail elsewhere;¹⁷ briefly, data-collection was performed by means of a face-to-face interview (with a proxy if necessary) in the participants' homes by trained interviewers, using structured questionnaires. At each wave, a self-completed questionnaire covered attitudes and life histories. A clinical examination conducted in the home measured variables such as weight, height, eyesight and hearing.¹⁸ Within each wave of data collection, non-respondents were identified, and dental records were updated. Data collection for the MELSHA study is now closed. The last wave of data collection was in 2010.

Variables used in the analyses

Socio-demographic variables such as age, sex, income, level of education, and marital status were collected. Participants were classified according to their educational level using four categories: 'Left school at age ≤ 14 years'; 'Left school at age ≥ 15 years'; 'Trade/apprenticeship' and 'Bachelor degree or higher'. Marital status as four groups: 'Never been married'; 'Divorced/Separated'; 'Widowed'; and 'Now married/Living with a partner'. Income was assessed by asking participants their main source of income, in the categories of: 'Government Pension'; 'Income from business or property'; 'Superannuation' and 'Interest or dividends'.

Psychosocial variables were also collected, such as dental appearance, which was assessed by asking the participants to indicate whether "In the last 12 months, how often have you felt concerned about the appearance of your teeth, mouth (or dentures)?" in the categories of: 'Very often'; 'Often'; 'Sometimes'; 'Hardly ever'; and 'Never'. Social support was measured using the Cox *et al.*,¹⁹ social support scale. Self-reported clinical data included self-assessed natural dentition status, grouped as dentate for those who

indicated having at least some natural teeth, and edentulous for those with no natural teeth. Participants were also asked to indicate on a 5-point ordinal scale ranging from 'Very often' to 'Never', according to frequency of problems with their mouth (or dentures) during the last 12 months and, for those with at least some natural dentition, whether they have dental pain.

Barriers and facilitators to oral health-care: Participants were asked to report whether they had: a) Private health insurance (Yes/No) and whether they had a health benefits card (Yes/No). Participants were also asked to rate their general health using a five-point ordinal scale ranging from 'Excellent' to 'Poor'. Patterns of medical and dental attendance were assessed by asking how long since the last dental visit as: '12 months or less'; '12 months to 2 years'; '3 years to 4 years'; 'More than 5 years'; and 'Never'.

The study dependent variable was whether a participant had visited the dentist within the last 12 months, or not.

Analysis

The analysis included descriptive information on the distribution of selected socio-demographic and service use variables. Next, to examine the effects of selected independent variables on the dependent variable, one-way analysis of variance (ANOVA) were conducted for continuous variables. For variables that were nominal or ordinal, Chi-square analyses were conducted. To obtain a better picture of the effect of these variables, significant associations were entered into a stepwise logistic regression analysis (LRA). Adjusted odds ratios (OR) measured the magnitude of the effect of each variable in the final model. Data were analysed using SPSS for Windows (Version 24.0).

RESULTS.

Two-hundred and one active, independent-living, older adults participated in the 2008 MELSHA data collection wave. Mean age was 83.9 (s.d. 3.6) years and ranged from 79 to 96 years. Approximately half (51.2%) of the participants were male, were married or lived with partners (53.5%) and had no formal qualifications (51.0%). Another 11% had trade or apprenticeship qualifications. There remaining 38.0% had higher levels of education, including 9.0% with Bachelor or higher degrees. The majority (70.4%) had a health benefits card.

The majority (70.4%) assessed their general health as 'Good' or 'Excellent', 24.0% assessed it as 'Fair', and 5.6% as 'Poor'. The majority (65.1%) were partially dentate, 31.3% were edentulous and only 3.6% fully dentate. 80.3% reported no experience of toothaches in the last year.

Recency of dental visits ranged from 12 months or less (47.7%) to 'Never visited the dentist' (3.1%), as shown in Table 1. About one third (29.0%) reported no visits for 5 years or longer. In contrast, all had visited a medical practitioner in that period.

Regarding the appearance of their teeth, mouth or dentures, the majority (75.0%) reported 'Never' feeling concern while 8.3% expressed feeling troubled 'Often' or 'Very often' by the aesthetics of their teeth. 8.9% 'Hardly ever' felt concern and 7.8% 'Sometimes' felt bothered.

The group that visited oral health-care services within the last 12 months was evaluated against those who did not, in relation to the various socio-demographic and self-assessment variables. Significant factors associated with use

of dental health services in the last 12 months were source of income ($p<0.001$); age ($p<0.001$); dentate participants ($p<0.001$); having a concession card or private health insurance ($p<0.01$); and level of education ($p<0.05$).

The last association described dentate participants using oral health services more frequently than edentulous participants.

Multivariate analysis

Significant variables associated with use of oral health-care services were included in the multivariate analysis. In the multivariate analyses, recent use of services was associated with two variables ($p<0.001$).

Dentate participants were more likely to have visited the dentist in the last 12 months (OR=11.27; 95% CI: 4.38-29.00). Those receiving government pensions or benefit were less likely to have had a dental visit (OR=0.38; 95% CI 0.18 to 0.79). These variables accounted for 33.3% of the variance in dental visits in the full model (Nagelkerke $r^2=0.33$).

Table 1. Pattern of dental visits among older Melbournians, 2008.

Last visit to oral health-care services (n=193)	%
12 months or less	47.7
More than 12 months, but less than 3 years	12.4
3 years, but less than 5 years	7.8
5 years or more	29.0
Never been to a dentist in my life	3.1

Table 2. Regression coefficient, odds ratios and 95% confidence interval for odds ratios for the factors predicting use of oral health-care services among older Melbournians, 2008.

	β coefficient)	Odds ratio	95% Confidence interval
Dentate status			
Dentate	2.4221	1.270	4.380-28.999
Edentulous			1.0
Source income			
Government pension or benefit (No:0/Yes: 1)	-0.965	0.381	0.18-0.79
Constant	-1.385		

DISCUSSION.

We have reported data from a longitudinal study (MELSHA) 2008 wave of data collection on the patterns of use of oral health care services and predictors of use among older adults aged 79 years and above, who resided in the city of Melbourne, Australia. About half (47.7%) of the

participants visited oral health-care services in the previous 12 months. This proportion was larger than that reported using the 1994 baseline data of MELSHA for those aged 65 and over (33.4%).¹⁶ However, compared with existing data on oral health of older adults in Australia, it represents a lower dental attendance compared to that reported in

a national survey (62.0%) for older than 55-year-olds in 2006, living in metropolitan cities,³ and to that reported for older adults living in rural Victoria (51.2%) in 2009.²⁰

Compared to the analysis of MELSHA 1994 baseline data,¹⁶ two variables remained significant in 2008 (*i.e.*, dentate status and source of income). However, the predictive power of our final multivariate model was larger (33.3% of the variance), compared to 1994 when five variables explained 14% of the variance, however, this is still moderate. Predictors not included in the MELSHA study might add explanatory power to the present model. This might include other historical factors, both oral health and personal, which might be important mediators in the use of oral health services by older Melbourne residents.²¹

Some SES (*i.e.*, age, level of education,) and psychosocial (*i.e.*, social support, depression) variables, that were significant in 1994, were not using the 2008 data. Additionally, other SES predictors found in the literature,^{20,22} and included in this analysis (*e.g.*, living arrangement) were not significant in the multivariate analysis. Thus, providing evidence on how predictors may change over time.

Financial factors, and number of remaining teeth are among the most commonly found predictors to utilisation of dental service.^{3,23,24} However, the purpose of the present analysis was also to assess how predictors change over time. In this regard, these findings are of concern given that a larger proportion of this group (68.7%) self-reported having, at least some, natural dentition and the majority (70.4%) would have access to public (*i.e.*, lower fees) oral health care services. Another relevant finding of the study was that all participants visited a medical practitioner in the previous 12 months. Current recommendations for secondary prevention suggest that older adults should have oral health visits regularly.²⁵ This again highlights the need for a better access to oral health services and even integration of health services (*i.e.*, between health professionals and oral health practitioners), and the allocation of resources to develop community programs addressing the unique oral health needs of older adults in Australia.

Dental caries, periodontal disease and edentulism are important health and social concerns and a public health challenge. However, oral health needs do not end with these three conditions. This is particularly the case for older adults. Lack of access or deficient use of oral health

care services remains a call for action.²⁶ Data collected over the past decades demonstrates the improvements that have been made to the oral health status of older adults living in Australia. Today, new cohorts of older adults are more likely to keep their natural teeth. This creates challenges that are completely different from the past. Additionally, oral cancer is more common at older ages, and there is strong evidence about the general health consequences of neglected oral hygiene (*e.g.*, aspiration pneumonia).²⁷

Present findings highlight the need for actions to increase older people seeking oral health-care, in particular edentulous one, as well as for the need to collect additional information in order to identify factors and explore the relationship between variables in our model and use of oral health-care services, as it suggests that underlying barriers to care may be operating within this population that influence their use of oral health services. This analysis is important in view of the complexity of the relationships between oral health and general health and quality of life and could provide additional information on factors which determine what people believe about their oral health and the efficacy of the various health approaches and services available to them, and the effect of the reported long wait times for public dental services.

In interpreting the present findings, several limitations were identified, including the cross-sectional design and the self-reported nature of the data, and a population bias towards relatively healthy, independent-living and English-speaking individuals. In addition, there were limitations imposed due to the lack of clinical data to assess the oral health status of the participants. The current analysis included data from the 2008 data collection wave. This wave was chosen due to the inclusion of the most up-to-date information regarding the oral health of older Melbourne residents.

Nonetheless, the self-assessed health status data reported here is consistent to that reported by the Australian Bureau of Statistics.²⁸ for people aged 75 years and over 2015, when 34.5% self-rated their health status as being excellent or very good, compared to 36.7% in the MELSHA sample.

Additionally, the 2008-MELSHA data show consistency, although no similarities due to discrepancy in the age ranges of participants, to the Victorian results for the metropolitan 55 years and older respondents of the

NSAOH.²⁹ Furthermore, the present study comprised a sample of older adults 79 years or more, which is quite uncommon. This age groups is the fastest growing age group in Australia and in many countries, and a group from which not much data is available. Better information on the oral health and wellbeing of this population group is needed.

In closing, despite limitations, we believe that programs to improve access to and use of preventive services for older adults are essential. Health planners need to understand the many factors that impact on the use of oral health-care services, as the starting point for the development of relevant policies designed to reduce the impact of inadequate oral health in everyday life. Inadequate knowledge compromises the response to improve use of oral health services and the health outcomes.

Health planners and practitioners also need to be aware that inequalities persist, even in older ages. As such, they continue to be an issue in needs to be addressed. Evidence suggests that a wrong approach might only widen inequalities by operation of an “inverse care law”: that is those who most need attention do not get it.^{30,31} Governments are custodians of the health of their nation. There is no health without oral health. Moreover, oral health inequalities tend to health mirror those of general heal.

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