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Patterns of use of oral healthcare services in rural adults: The Crossroads II Dental sub-study.

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Ethics

This project received ethics approval from Goulburn Valley Health (ID 1648142).

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Patterns of use of oral healthcare services in Australian rural adults: The Crossroads-II Dental sub-study.

Background: As part of a larger study, the Crossroads-II Dental sub-study determined the patterns of, and barriers to, oral healthcare service utilisation in a rural area of Victoria.

Methods: In this cross-sectional sub-study predisposing, enabling, needs-related, and oral health variables were considered in association with patterns of oral healthcare utilisation. A logistic regression was performed to explain the use of oral healthcare services.

Results: Overall, 574 adults participated, with 50.9% reporting having visited an oral healthcare service in the previous 12 months. Age, number of chronic health conditions and holding a health card; were associated with increased visiting a dentist (OR=1.01; 95% CI:1.00-1.03; OR=1.08; 95% CI:1.01-1.16; OR=2.06; 95% CI:1.26-3.36, respectively).

Perceived barriers to care and number of missing teeth decreased the odds of using services (OR=0.46; 95% CI:0.36–0.58; OR=0.95; 95% CI:0.92–0.98, respectively).

Conclusions:

Results suggest that use of oral healthcare services is associated with a range of financial, educational, health, and structural barriers. Increasing the use of oral healthcare services in rural populations requires additional efforts beyond the reduction of financial barriers.

Key words: adults, barriers, dental services utilization, rural health, oral health.

Introduction

Australian rural and remote populations are diverse in location, composition and size, but are typically ageing more rapidly than their urban counterparts. This demographic transition will pose a significant challenge for health services, alongside the associated shifting disease patterns.¹

The health status of people living in rural and remote regions tends to be poorer than that of metropolitan counterparts.² This is particularly the case with oral health. The National Study of Adult Oral Health 2017-18 found that tooth loss, dental disease, and having an inadequate dentition were each higher for residents outside capital cities.³ Other studies have reported that regional Victorian towns had edentulism rates (14.5%) higher than the national average (9.0%).^{4,5} This would indicate that improvements in oral health that have been achieved in Australia in the past few decades have had less impact for residents of regional areas than their metropolitan counterparts, suggesting unmet need and unaddressed barriers. These are important concerns for policy makers and current preventative strategies.

Several risk factors contribute to this inequality in the overall oral health in Australian rural populations.⁶ One factor relates to reduced exposure to community water fluoridation. Additionally, a critical “maldistribution” of health professionals persists, leaving rural communities with reduced access to oral health care services, in particular dental specialists.⁷ Residents of rural areas visit oral health professionals less frequently than residents of metropolitan areas (51.7% vs 58.6%).³ Furthermore, while most oral diseases can be prevented through health promotion, prevention and early intervention, access to oral health services is critical for these purposes.

However, despite the well documented demographic profile of the Australian population and repeated calls for comprehensive rural oral health assessment,^{8,9} there has been little progress in addressing the oral health needs of those living in rural areas, and few programs are specifically designed to improve access to oral health care in these communities. Such an element of inequality of access to, and utilisation of, oral healthcare services pose a serious threat to the health and oral health of rural and remote communities.

Crossroads-II is a cross-sectional study conducted to identify changes in the prevalence of key chronic health conditions, including undiagnosed and undermanaged disease, and access to care of the population living in the Goulburn Valley (GV) region of Victoria, Australia.¹⁰ As part of the Crossroads-II study (XRoadsII), this paper aims to determine the current patterns of use of oral healthcare services; and self-reported barriers to using those services by adults living in the Goulburn Valley. We hypothesize that: 1) individuals with higher perceived oral health needs will have used oral health care services in the previous 12 months, 2) older participants will be less likely to have used oral health care

services in the previous 12 months and 3) individuals with lower self-perceived barriers to oral healthcare will be less likely to have used oral health care services in the previous 12 months. The study also explores factors associated with use of oral healthcare services in this rural context and compares findings with health indicators for the general Australian population.

The XRoadsII study represents one of the largest and most broadly focussed studies of rural health in Australia.¹⁰ These data can be used for service planning and delivery to ensure oral healthcare for all Australians.¹⁰ Data from the current study will serve as baseline for future studies as well as to inform targeted population-based approaches to improve oral health service development and to increase their responsiveness to rural groups' needs.

Materials and Methods

The XRoadsII study was designed as a cross-sectional study of randomly selected households in the regional centre and three adjacent “shire capitals” in the Goulburn Valley of regional Victoria¹⁰. In brief, the data were collected in two parts. The first part consisted of a household survey of randomly selected households (conducted face-to-face). The second part consisted of a clinic evaluation. Questionnaires collected demographic, socio-economic, self-reported health, health service utilisation and health behaviour information. A subgroup of this sample, underwent clinical evaluation, which included an oral health assessment, in the health centres of each town (Figure 1).

We estimated the sample size for the multiple logistic regression analysis following Hsieh et al.¹¹ and Bujang et al.¹² recommendations. Specifically, as the use of oral healthcare services was reported to be 50.8% for rural populations,¹³ 388 participants were required to perform a multiple logistic regression analysis yielding a power of 0.80, at a two-sided significance level of 0.05. Sample size calculations were conducted using G-Power v.3.1.9.4.¹⁴

With the ethical approval granted, informed consent to participate in the study was obtained from each participant aged 18 years or older. Separate, individual written consent was obtained for the household survey, clinic attendance and the dental examination. Data were collected between October 2016 and October 2018.

Measures

The conceptual framework used in the present study assesses diverse variables that predict the utilization of medical, dental, and hospital services.¹⁵⁻¹⁹ The model incorporates interrelated predisposing (demographics), enabling (e.g., type of health insurance) factors and needs (perceived needs), contributing to the use of health services. Socio-demographic variables included: age, sex, marital status coded as ‘Single/Separated/divorced’; ‘Widow/widower’; and ‘Married/de facto’; level of formal education in the categories: ‘Some secondary’, ‘Secondary complete’, ‘Trades’, ‘Tertiary education’ and ‘Other’ and Locality of residence; regional centre (Shepparton/Mooroopna); and Shire capital (Benalla; Cobram; and Seymour). Participants were also asked about the level of health insurance, including health care/ pensioner card or not.

Self-assessments of oral health status. Response options included: ‘Excellent’; ‘Very good’; ‘Good’; ‘Fair’; and ‘Poor’. Participants were asked to indicate the type of oral health conditions they may be experiencing, including tooth/dental pain, mouth pain, dental caries, gingival bleeding, and tooth mobility. A score was created by adding positive responses to this list of oral health conditions. Additionally, participants were asked to indicate the frequency of pain in their mouth as: ‘Never’; ‘Hardly ever’; ‘Occasional’; ‘Fairly often’ and ‘Very often’.

To investigate use of oral healthcare services participants were asking to report the time since their last dental visit, with response option:²⁰ ‘12 months or less’; ‘12 months to 2 years’; ‘2 to 5 years’; ‘More than 5 years’; and ‘Never’. A favourable oral health care visit is defined as a dental visit made at least once in a 12-month period.³ Throughout, oral healthcare services utilisation was dichotomised according to whether or not a participant had visited the dentist within the last 12 months (i.e., 0 to 12 months ago) visits to a General Medical practitioner (GP) in the last 12 months were also asked.

Medical history was measured by the presence or absence of 26 medical conditions (including arthritis, heart conditions, high blood pressure, respiratory problems, allergies, hearing loss, kidney problems, liver diseases, diabetes, depression, etc.) and was used to compute a health conditions score by summing up the positive answers to these conditions.

Additionally, participants were asked about self-perceived barriers to oral health care from a list of 15 commonly described categories, including: “Cost”, “No availability of dentist”, “Time waiting for appointments”, “Quality/competency of dentist”; “Distance to service”; “Lack of time”, “Fear of dental treatments/procedures”, “Personal choice”, “General health

conditions”, and “Attitudes/manners”. Responses were coded as ‘Yes’ or ‘No’. The number of barriers was quantified by the adding up the number of affirmative responses.

Dental examinations were conducted by three calibrated examiners. Clinical data were recorded following the World Health Organization criteria and recommendations for oral health data collection.²¹ Examiners recorded the number of decayed tooth surfaces, filled tooth surfaces, and missing teeth and calculated the Decayed, Missing, Filled Surface (DMFS) index. According to the number of natural teeth present, participants were grouped as ‘dentate’ or with no natural teeth (i.e. ‘edentulous’).

For dentate participants, a restorative unmet normative needs score was computed to measure restorative needs by dividing the sum of carious surfaces by the sum of carious and filled surfaces $[DS/(DS + FS)]$.²²

Additionally, the gingival and periodontal status was recorded for each participant, using the Community Periodontal Index (CPI). The Community Periodontal Index (CPI) modified have two indicators, gingival bleeding (0= absence of bleeding, 1= presence of bleeding) and the periodontal pockets (0 = absence of a condition, 1 = pocket 4–5 mm, 2 = pocket 6 mm or more).²¹

The analysis provides descriptive information on selected socio-demographic, oral health status and use of oral healthcare services. To determine differences between groups on use of oral healthcare services, ANOVAs and Chi-square tests were employed. To identify the association between predisposing, enabling and need, and clinical variables and use of oral healthcare services, was assessed using a logistic regression analysis. The model employed a forward stepwise selection method, with listwise deletion of cases with missing values. 13 predictors were included in the initial model based on theoretical and literature review considerations. However, predictors with p-value of less than 0.05 were retained. Data manipulation and analyses were conducted using IBM-SPSS Statistics (Version 26.0).

Results

Overall, 574 participated in this component of the XRoadsII study. Table 1 presents participants’ selected demographics. Almost half of the sample was from Shepparton/Mooroopna (n=279; 48.6%), another 20.0% from Benalla; and the remainder were from Cobram (17.0%) or Seymour (14.4%). The overall mean age of this subsample was 58.6 years (s.d. 16.3), ranging from 18 to 98 years, with 41.9% 65 years of age or more. Another 35.4% were between the age of 45 and 64 years and 20.9% were between

25 and 44 years. Only 1.8% of participants were between 18 and 24 years. Overall, there were more female (55.3%) than male (44.7%) participants.

The largest proportion of participants reported some level of health insurance coverage (36.7%), including the Department of Veteran Affairs health coverage; another 30.5% had some sort of healthcare card; and 9.8% reported mixed coverages (e.g., some level of health insurance and healthcare card). The remaining 23.0% (n=132) reported having no health insurance coverage.

The overall mean DMFS was 70.6 (s.d. 41.1) tooth surfaces with dental caries history. Based on individual DMFS components, participants had a mean of 15.5 (s.d. 14.9) filled surfaces and a mean of 2.3 (s.d. 4.5) decayed surfaces. The average number of missing teeth among this sample was 11.0 (s.d. 9.5). Forty-nine participants (8.5%) were fully edentulous.

Regarding oral health clinical conditions, 39.6% (n=208) of the dentate sample had all their restorative needs unmet. Twenty-one participants (4.0%) had no restorative needs unmet. Overall, dentate participants had an average of 15.6% of their restorative needs unmet. Among dentate participants, forty (7.6%) were assessed as having no periodontal treatment needs. Gingival bleeding on probing was observed in 71 participants (13.6%), and supra- or sub-gingival calculus in approximately half (48.6%) of the dentate adults. Pockets greater than 3 mm, but less than 5 mm, were found in 113 participants (21.6%). Only a small percentage had pockets greater than 5 mm (8.6%).

Just above half of participants (51.0%) reported that they were not experiencing any of the listed oral health conditions. Among those who reported an oral health condition (n=281), the most reported conditions were; dental caries (56.3%); painful mouth (occasional or more frequent: 51.6%); bleeding gums (49.5%); toothache (22.7%); and loose tooth (18.7%).

Overall, just over half of participants (50.9%) reported having been to an oral healthcare service in the previous 12 months. One-hundred and seven participants (19.5%) reported that their last visit was between one and two years ago. Another 29.6% had not had a visit for more than two years, including ten participants (1.8%) who reported never having been to the dentist and 5 who did not remember (0.6%). One-hundred and ninety participants (34.9%) indicated visit the dentist "only when needed". Of these participants, only 26.1% had their last visit with the last 12 months. Another commonly mentioned reason for not

visiting the dentist was because of not seeing the need as they were full dentures wearers (11.7%). On the other hand, the great majority (94.4%) visited a GP in the previous 12 months.

Participants living in the Regional centre (Shepparton/Mooroopna) were more likely to have visited a dentist in the past 12 months compared to those living in Shire capitals (Benalla/Cobram/Seymour) (53.0% vs. 47.0%; OR=1.49; 95% CI: 1.05–2.12) (See Table 1).

When participants were asked about perceived barriers to care, approximately half of the participants (45.6%) reported no barriers. Among those who did report a barrier, cost of services (21.4%), fear of the dentist (8.4%), and lack of time (6.6%) were the three most frequent barriers to care cited. No other category was reported by more than 5% of the sample. 'Perceived no need' was also found to be a commonly mentioned reason (12.7%) for not attending oral healthcare. Another 35.1% of the participants indicated that they attended when necessary. Two-hundred and three participants (35.4%) reported one barrier to oral healthcare services; while another 15.8% and 3.5% reported two and three barriers, respectively; and the remainder (0.7%) reported between four and five barriers. A stepwise logistic regression analysis indicated that each added barrier decreased by more than half the likelihood of having a visit (OR=0.46; 95% CI: 0.37–0.58).

Regarding pre-existing oral health clinical conditions, dentate participants who had visited a dentist in the past 12 months had a significantly higher mean number of missing teeth than participants who had not been to the dentist recently (12.9 vs. 9.1; $p < 0.001$). Edentulous participants were less likely to have been to the dentist in the previous 12 months than those with natural teeth (OR=0.15; 95% CI: 0.07–0.35) (See Table 1).

When asked to self-assess their oral health status, 33.0% considered their oral health to be 'Excellent' or 'Very good'. The largest group (41.3%) self-assessed his/her oral health as being 'Good'. Another 14.2% self-assessed their oral health as being 'Fair'. The remainder (10.5%) self-assessed his/her health as being 'Poor' or did not know. Self-assessed oral health status was not associated with time since last dental visits.

Five hundred and fifteen participants reported at least one common chronic health condition including arthritis (38.0%); high blood pressure (37.8%); hearing loss (31.0%) or allergies (30.5%). Just above ten percent (10.3%; $n=59$) reported that they did not have any of the selected chronic health conditions, 9.9% reported one condition, another 11.5%

reported 2 conditions, 12.5% reported three conditions, another 9.4% reported four. The remainder (46.3%) reported between five and sixteen conditions. However, none of the respondents indicated that a general health condition was a barrier to accessing oral healthcare services. No statistical difference existed regarding number of self-reporting general health conditions and time since last dental visit.

The probability of having used oral healthcare services in the previous 12 months was explored using stepwise logistic regression analysis. Thirteen predictors were included in the model: including five predisposing variables (sex, age, level of education, marital status, and location), four enabling or needs variables (perceived oral health needs, barriers to care, distance to healthcare services and type of health insurance) and four clinical variables (number of natural teeth, decayed tooth surfaces, periodontal status, number of chronic health conditions). The final model included five statistically significant factors associated with using oral healthcare services [$\chi^2=102.67$; (8) $p<0.001$]. The goodness-of-fit of the model was tested using the Hosmer-Lemeshow test. The test indicated that the model adequately fits the data [$\chi^2=7.07$; $p>0.05$]. Age was associated with visiting a dentist in the last 12 months; each year of age increased the odds of using oral health services (OR=1.01; 95% CI: 1.00-1.03). Number of self-reported chronic health conditions was associated with visiting a dentist in the last 12 months; each diagnosed health condition increased the odds of using oral health services (OR=1.08; 95% CI: 1.01-1.17); participants who were health care card holders, were more likely to have visited the dentist than other health insurance groups, including no health insurance (OR=2.06; 95% CI: 1.26 – 3.36). On the other hand, each perceived barrier decreased the odds of using oral health services (OR=0.46; 95% CI: 0.36–0.58); and any additional missing teeth decreased the likelihood of using oral healthcare services (OR=0.95; 95% CI: 0.92–0.98) (See Table 2). The variance for the ability to predict a favourable use of oral health care services, using the full model, was 24.2% (Nagelkerke $r^2=0.242$).

Discussion:

In line with other Australian reports from rural Victoria, approximately half (50.9%) of the sample visited oral healthcare services in the 12 months before the study,^{13,23,24} Nonetheless, data regarding oral health service utilization from the XRoadsII sample were comparatively lower than that reported for older adults in the Bendigo Region and for those aged 55 years and above living in urban or rural areas in the Victorian component of the

Australian National Survey of Adult Oral Health 2004-2006.²⁴ Moreover, almost one third of the XRoadsII sample (29.0%) reported not visiting oral healthcare services for periods longer than two years. This is somewhat unexpected given that a significant proportion of this rural sample (30.5%) were health card or pensioners card holders, therefore eligible to public, low fee oral health care services. Nonetheless, the average waiting time for public dental services is 15.6 months and longer for some dental specialities (i.e., endodontics, prosthodontics).²⁵ This supports the contention about a lack of capacity to provide good access to oral healthcare services for rural Australian populations.²⁶

The literature identifies several socio-demographic, oral health knowledge and attitudes, and clinical factors related with frequency of use of oral healthcare services.^{5,27,28} In the present study, participants nominated several barriers to accessing oral healthcare services commonly found in the literature (e.g., cost, fear, practicalities of life, etc.),^{5,29} as having an impact on access to oral healthcare service. Additionally, often regional populations experience an intrinsic barriers in relation to oral health, by virtue of reduced access to oral healthcare services and a lack of services compared to metropolitan areas, and with less attendance frequency and later presentation have been reported to be associated with this issue.^{3,30} Present results are in agreement with previously reported predictors of oral healthcare services usage; including, access and cost of health services, number of remaining natural teeth, etc. have also been described as good predictors to utilisation of dental services.^{5,28,31}

Interestingly, distance to oral healthcare services was not identified as a major barrier. Indeed, the multivariable analysis suggested that those living within 5 Km of the health services were less likely to have used oral health services, after controlling for other variables in the model, particularly, self-reported oral health needs. This paradox was also present in a systematic review, which analysed the association between distance from health centres and utilization.³² In that review, distance to the health centre appeared as a barrier, but it was found that in a number of studies, patients who lived farther from the health centre had better health outcomes and access to medical care. Additionally, McGrail et al.³³ reported that communities that were geographically isolated and sparsely spread, were willing to travel greater distances to visit the medical centre than those who lived closer. Interestingly, structural barriers, such as length of waiting lists or waiting time in the dental clinic before treatment were not highly selected.

It is possible that information about the importance of good oral health and access to oral health care services might have been not readily available for some population, or that information was suboptimal. Lack of information is frequently mentioned as a barrier to accessing health services.³⁴ This strengthens the call for increased awareness about availability and the need to have, at all ages, regular, favourable oral healthcare utilisation patterns.³⁵ Further research is required to better understand contextual factors including life experience and oral health attitudes in relation to oral health service utilization and knowledge.³⁶

Findings suggest that interventions aimed at solely reducing the cost of oral healthcare might not, in isolation sufficient to increase services utilisation among these populations. Consistent with other studies,³⁷ the present study 'Perceived no need' was reported as a common reason for not attending oral healthcare services. Therefore, there may also be a need to increase awareness and understanding about the importance of good oral health and the two-way interaction between oral health and general health and well-being.³⁸⁻⁴⁰

Residents in rural areas commonly reported high prevalence of chronic disease and multimorbidity, increasing the risk of medication side effects including adverse effects for oral health. These side-effects and complications may include xerostomia, which significantly reduce the protective effect of saliva, thus exposing the individual to greater risk for various oral diseases.³⁸

The strengths of this study are that XRoad II provides deeper insights on the use of oral healthcare services in rural populations. XRoad II collected data provides an excellent basis for understanding healthcare needs for this population. Despite the strength of this study, some inherent limitations are acknowledged. Firstly, a self-selection bias might be present in this subsample and also within XRoad II, findings are not intended to be representative of the entire Australian rural population, they only provide initial information from a defined region. Additionally, data were based on self-reports, and the potential for recall and social desirability biases on the frequency of visits, might also be present. Additionally, although assumptions underlying multivariable analysis were fulfilled with the exception of the proportional odds assumption,⁴¹ Therefore, caution is needed in interpreting present results.

Future studies should provide opportunities for qualitative exploration of rural populations, oral healthcare experiences. This analysis would generate opportunities for a broader

understanding of oral health perceptions, experience, and contextual issues. Thus, it is not implied that a final definitive model about predictors and barriers to use of oral healthcare services has been developed from this study, rather it raises some foundational factors to be investigated in the future.

Access to oral healthcare services is affected by several financial, educational, and structural barriers, as well as predisposing and enabling factors. Increasing the use of oral healthcare services in rural populations requires Interventions that address a range of complex barriers in addition to financial issues.

Regardless of the potential limitations of these data, there is a scarcity of evidence regarding barriers to oral healthcare services in Victorian adults. The present analysis suggests a model that government or healthcare professionals can use to improve utilization of oral healthcare services by rural Australians. This is important to consider as there is a trend in the Australian population to maintain their natural dentition for longer. As healthcare needs in rural areas change in line with ageing populations, existing data may not provide sufficient or accurate information on the current oral health status of rural communities. Efforts should also be made include the diverse ethnic backgrounds of people from Australian populations when collecting data on oral health care services to be more truly representative and to avoid biases in the results.^{5,42,43}

Findings from the present study identified inequalities in the use of oral health care services by residents in a rural area and the need to improve access to oral healthcare services. Oral healthcare is not included in government schemes like Medicare and expenses are fully covered by patients. Decline in private insurance in this population further deters their access to healthcare. Increasing opportunities for community-based interventions to increase oral and general health awareness are warranted. Rural communities' education regarding the need to maintain good oral health throughout life, must be highlighted to ensure continuity of care and to maximise good health. It is hoped that this study serves as a base for future research on the oral health and health services utilization of rural and remote populations focusing on psychosocial, environment and financial aspects to improve oral health outcomes in this population.

Ethics

This project received ethics approval from Goulburn Valley Health (ID 1648142).

Conflict of Interest

Authors declare not conflict of interest

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Figure 1. Participant recruitment flow chart for the Dental Sub-study.

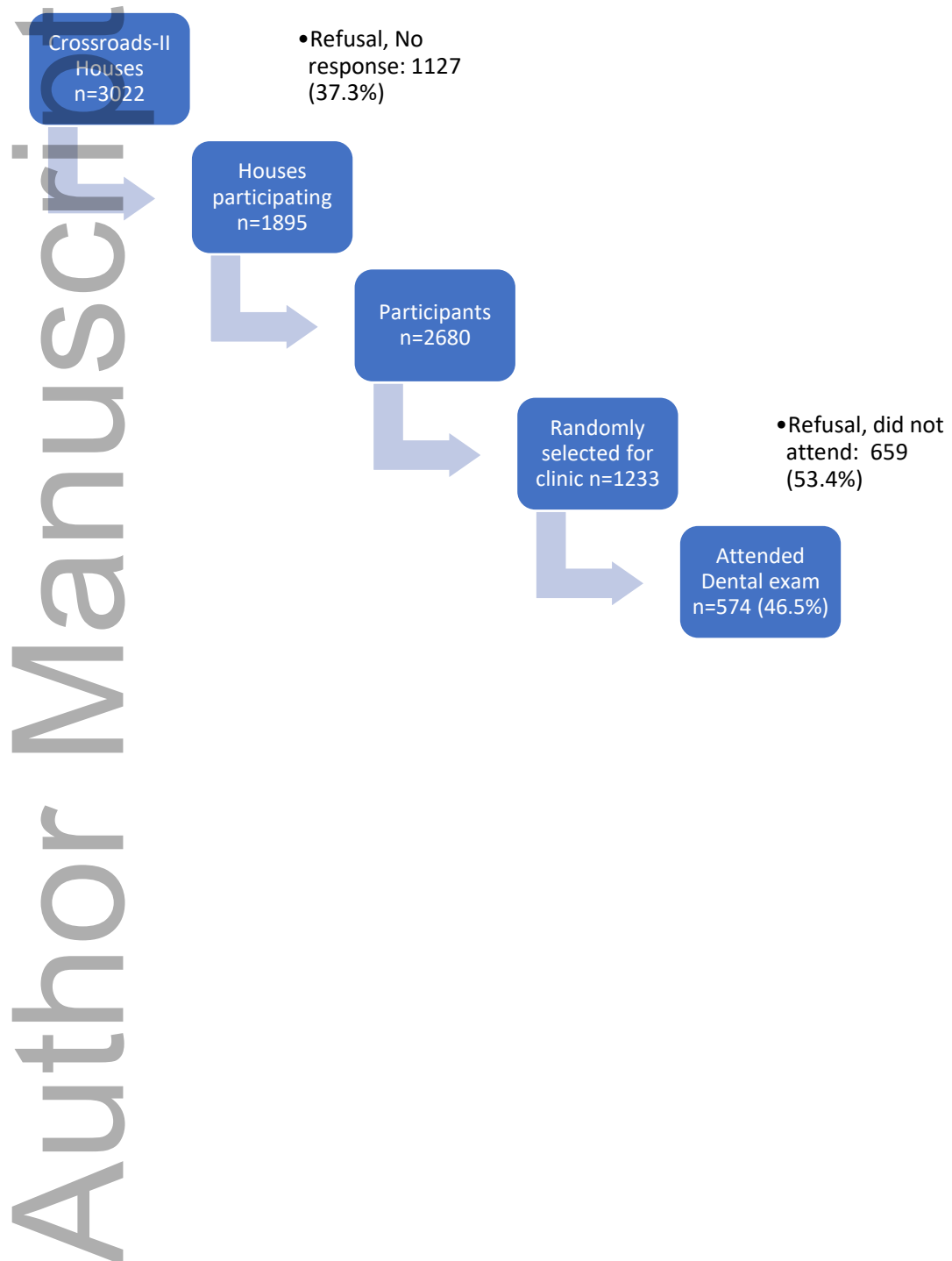


Table 1. Univariate associations between socio-demographic variables and use of dental health service in the previous 12 months.

Predisposing, enabling, and need factors	n	Used dental service in last 12 month (%)		Odds Ratio (95% CI [†])
		Yes	No	
Mean Age (years)	574	59.2 (15.7) [†]	58.0 (16.5)	1.00 (0.98 – 1.01)
Gender				
Male	256	46.1	53.9	1.21 (0.87 – 1.68)
Female	317	50.8	49.2	1
Level of education				
Some secondary	193	44.0	56.0	1
Secondary complete	58	44.8	55.2	0.81 (0.65 – 1.02).
Trades	120	46.7	53.3	0.88 (0.75 – 1.02)
Tertiary	153	56.6	44.4	1.25 (1.10 – 1.43)
Other	50	56.0	44.0	1.27 (1.00 – 1.61)
Locality of residence		*		
Regional centre (Shepparton/Mooroopna)	279	53.0	47.0	1.49 (1.05 – 2.12)
Shire capitals (Benalla; Cobram; and Seymour)	295	44.7	55.3	1
Health insurance				
Private insurance any coverage (Yes/No) ***	211	58.3	41.7	1.83 (1.30 – 2.59)

Health insurance Health/ Pensioners card (Yes/No)	175	35.4	64.6	0.46 (0.32 – 0.66)
Mixed insurances (e.g., Health card and private) (Yes/No)	56	62.5	37.5	1.86 (1.05 – 3.28)
No health insurance (Yes/No)	132	45.5	54.5	0.85 (0.75 – 0.96).
Edentulous (No natural teeth)		**		
Yes	49	14.3	85.7	0.15 (0.07 – 0.35)
No (Dentate)	525	52.0	48.0	1.00
Number of self-perceived oral health condition		1.1 (1.0)†	1.3 (1.1)	1.04 (0.98 – 1.10).
Number of self-perceived barriers to oral health care ***		0.5 (0.8)†	1.1 (0.9)	0.46 (0.37 – 0.58)
Number of health conditions		4.5 (3.3)†	4.7 (3.6)	0.99 (0.98 – 1.00)
Missing teeth§ ***		9.1 (7.4)†	12.9 (10.7)	0.96 (0.94 – 0.98)
Decayed tooth surface§		2.0 (3.6)†	2.6 (5.2)	0.97 (0.95 – 0.98)

† Mean and standard deviation; ‡: CI=confidence interval; §: Dentate participants only.

* p<0.05; **p<0.01; ***p<0.001.

Figures may not add due to missing values.

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

	β coefficient	Odds ratio	95% Confidence interval
Age	0.01	1.01	1.00 – 1.03
Number of general health conditions (per health condition)	0.78	1.08	1.01 – 1.16
Number of self-perceived barriers to oral health care (per barrier)	- 0.79	0.46	0.36 – 0.58
Distance from health care (1 = within 5 Km)	-0.71	0.50	0.31 – 0.79
Health insurance: Health card holder (1 = Yes)	0.72	2.06	1.26 – 3.36
Number of missing teeth (per missing tooth)	- 0.05	0.95	0.92 – 0.98
Constant	0.721		

The variance in dental visits accounted for using the full model was 24.2% ($\eta^2=0.24.2$).