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Original Article

# Validity of self-reported number of teeth among Saudi older adults: A public health perspective

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المخلص

أهداف البحث: هدفت هذه الدراسة إلى تقييم مدى الاتفاق بين العدد المبلغ عنه ذاتيا والعدد المحدد سريريا للأسنان في كبار السن في المدينة المنورة، المملكة العربية السعودية، وتحديد العوامل المرتبطة بدقة التقرير الذاتي.

طرق البحث: شملت هذه الدراسة 337 من كبار السن (60 سنة فما فوق). أكمل المشاركون استبيان يقيم الخصائص الاجتماعية والديموغرافية، وتقييم الصحة العامة والفم والأسنان الذاتي، والعدد الذاتي المبلغ عنه للأسنان. تم إجراء الفحص السريري باستخدام معايير منظمة الصحة العالمية لعام 2013. تم استخدام رسومات بلاند–ألتمان ومعاملات الارتباط لتقييم الاتفاق بين العدد الذاتي المبلغ عنه والعدد السريري للأسنان.

النتائج: كان متوسط عمر المشاركين في الدراسة 67.1 (الانحراف المعياري = 6.5) سنة، وكان الغالبية من الذكور (71.2%). كان العدد الذاتي المبلغ عنه للأسنان أعلى من العدد المحدد سريريا (161، 47.7%) من العينة أظهروا اتفاقا كاملا بين القياسين. كان الفرق المتوسط بين العدد الذاتي المبلغ عنه والعدد السريري المسجل للأسنان (0.41 سنا)، وأبلغ تقريبا ثلثي المشاركين في الدراسة عن عددهم من الأسنان ضمن هامش خطأ من أسنانهم. أظهرت كلا من طرق الارتباط سبيرمان وبيرسون وجود ارتباط إيجابي كبير بين القياسين.

الاستنتاجات: كان العدد الذاتي المبلغ عنه للأسنان بين كبار السن السعوديين متطابقا مع الأعداد المحددة سريريا للأسنان. يوحي هذا بأن التقارير الذاتية يمكن

أن تكون طريقة موثوقة واقتصادية لتقييم صحة الفم والأسنان في الاستبيانات ذات النطاق الكبير، مما يمكن أن يوجه السياسات الصحية والتدخلات لكبار السن.

الكلمات المفتاحية: كبار السن؛ التقارير الذاتية؛ الصحة الفموية؛ عدد الاسنان؛ خسارة الاسنان؛ صلاحية

## Abstract

**Objectives:** This study aimed to evaluate the agreement between self-reported and clinically measured numbers of teeth in older adults from Almadinah Almunawwarah, KSA, and to identify factors associated with self-reporting accuracy.

**Methods:** This study included 337 older adults ($\geq$60 years). Participants completed a survey assessing sociodemographic characteristics, self-rated oral and general health, and the self-reported number of teeth. Clinical examination was conducted using the 2013 criteria published by the World Health Organization. Bland–Altman plots and correlation coefficients were used to assess the agreement between self-reported and clinically measured teeth.

**Results:** The mean age of the study participants was 67.1 (SD = 6.5) years, and the majority were males (71.2%). The self-reported teeth count was higher than the clinically measured number, and only 47.7% (n = 161) of the sample showed complete agreement between the two measures. The mean difference between the self-reported and clinically recorded number of teeth was 0.41 teeth, and almost two-thirds of the study participants reported their number of teeth within an error margin of two teeth (p < 0.001). Both Spearman's and Pearson's correlation methods revealed a significant positive correlation

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between the two measures. Specifically, the Spearman's rho was 0.91, while Pearson's r coefficient was 0.96.

**Conclusion:** Among Saudi older adults, the self-reported number of teeth correlated with the clinically measured numbers of teeth. This suggests that self-reports can be a reliable and cost-effective method for assessing oral health in large-scale surveys, potentially guiding health policies and interventions for older adults.

**Keywords:** Number of teeth; Older adults; Oral health; Self-report; Tooth loss; Validity

## Introduction

Oral health conditions are a global public health concern which affects half of the population worldwide.[1] Dental caries and periodontal diseases are the main oral conditions; these are both irreversible and cumulative conditions that may ultimately lead to the loss of teeth.[2] Tooth loss increases with age[3] and there are multiple consequences of tooth loss, including altering facial esthetic appearance and the loss of masticatory function.[4] In addition, edentulism reduces social interaction capacity and life quality.[5,6] KSA is a country located in the Middle East, with a rich cultural history and a rapidly aging population, in which 12% of the population is currently over the age of 60 years.[7] In the Saudi Arabian context, the aging population is projected to increase significantly in the coming years, with estimates suggesting that over 20% of the population will be over the age of 60 years by 2030.[8] This demographic shift presents various challenges for healthcare, social welfare, and economic systems in the country, highlighting the importance of developing effective policies and interventions to address the unique needs of older adults and promote healthy aging.

The number of natural teeth is an indicator employed in epidemiological research to investigate oral health, as well as to investigate potential connections between oral conditions and other illnesses.[2,9] Clinical dental examination is the diagnostic gold standard for assessing the oral health status of patients and populations.[10] Nonetheless, clinical and dental assessments necessitate staffing, resources, time, and expenses.[11] Questionnaires provide an alternative means of obtaining information, offering cost-effective data collection with reduced resource requirements and shorter turnaround times.[12] Nevertheless, self-reported measures may be influenced by individual variables, such as age, socioeconomic status, cultural background, and environmental factors.[11,12] Therefore, it is necessary to assess the validity of self-reported data in diverse populations on an ongoing basis.

The self-reported number of teeth is considered an important indicator for assessing oral health, particularly in older adults. As the prevalence of tooth loss is significantly higher in older adults,[13] and previous studies have found that tooth loss is associated with many geriatric health outcomes,

such as frailty, dependence, social isolation and systemic conditions.[14–16] In addition, older adults may have limited access to dental care[17]; this can make it challenging to receive regular clinical dental examinations. Self-reported measures, such as asking older adults about the number of teeth they have, can be a valuable source of information for assessing oral health status in this population and have been used in many epidemiological surveys for older adults.[18]

Unfortunately, to date, no national oral health survey has been conducted in KSA. Most existing studies regarding oral health focused on children and adult populations.[19] Therefore, a significant limitation of data exists regarding the oral health status of KSA's older adults. Moreover, national health surveys of older adults in KSA did not include any measures of oral health.[20] Assessing the validity of the self-reported number of teeth amongst Saudi older adults would be important as this could potentially be used in future surveys. Furthermore, we are only aware of one study that addressed the validity of the self-reported number of teeth for older adults; this study was conducted in Norway.[21] Therefore, this research aimed to assess the validity of the self-reported number of teeth compared to the number of teeth ascertained by clinical examinations among a sample of older Saudi adults living in Almadinah Almunawwarah, KSA.

The objectives of this study were to analyze the agreement between the self-reported and clinically examined number of teeth, to identify the extent of overestimation or underestimation in self-reported tooth count, and to establish the correlation between the self-reported and clinical number of teeth for the entire study population and across different study variables.

## Materials and Methods

### Study design

The study was conducted in Almadinah Almunawwarah, KSA, and followed a cross-sectional study design using a convenience sampling method.

### Study population

The study included a convenient sample of 394 older adults who were recruited from Taibah University Dental Hospital, dental clinics, and social centers. To be eligible for the study, participants had to be Saudi nationals, above the age of 60 years, residents of Almadinah Almunawwarah, and physically independent. However, those with communication difficulties were excluded from the study. In addition, participants with missing data on the self-reported number of teeth or any of the study variables were excluded from the study (n = 57); thus, the final study sample included 337 older Saudi adults.

### Measurement of variables

#### The self-reported number of teeth

The self-reported number of teeth was obtained using two questions. First, participants were asked "Do you still have all of your natural teeth?" If the participant answered "No" to the first question, they were asked "How many natural teeth have you lost?" The self-reported number of teeth was

calculated by subtracting the number of teeth lost from the total number of natural teeth (32 teeth).[12]

### The number of teeth ascertained clinically

The actual number of teeth was ascertained by clinical examination. The clinical examination was conducted by calibrated dentists who had previously received training on the World Health Organization (WHO) oral health survey basic methods.[10] The examination was conducted using dental chairs, mirrors, and probes to evaluate the number of natural teeth and the condition of the teeth based on the criteria set out by the WHO.[10] The actual number of teeth included only natural teeth, excluding any remaining roots, and artificial or prosthetic teeth.

### Covariates

Sociodemographic characteristics include age (expressed in years), gender, level of education (no education, primary school, intermediate/high school and higher education), income, and cognitive status. Self-reported health and self-reported oral health (excellent, very good, good, fair, poor) were included as potential confounders in the statistical analysis to assess their association with the self-reported number of teeth and the actual number of teeth obtained by clinical examination.[10]

### Cognitive assessment

The Abbreviated Mental Test (AMT) test was used to assess the cognitive status of the participants. The AMT refers to the Abbreviated Mental Test, which is a commonly used screening tool for cognitive impairment in older adults. The AMT consists of ten questions that assess orientation, memory, and comprehension. Based on the score obtained, the study participants were categorized (abnormal, or normal).[22]

### Data collection

The participants were given a brief self-administered structured survey which included questions about their personal information. To ensure reproducibility, we adapted the research tool from the 2013 WHO Oral Health Survey method.[10] The variables examined in the survey included: (1) personal information (gender and age); (2) socioeconomic status (educational level and monthly income); (3) general health (self-rated health and cognitive function) and (4) oral health (self-rating of oral health and the self-reported number of teeth).

### Statistical analysis

The statistical analysis was performed using Stata17 and IBM SPSS version 22 software. Continuous variables are presented as mean values with standard deviations (SD), while categorical variables are presented as frequencies and percentages. To examine the agreement between the self-reported and clinical number of teeth, the Bland–Altman plot was utilized, plotting the mean difference between the two measures. The limits of agreement were determined at 95% using ±1.96 SD.[23] In addition, the paired t-test was performed to compare differences between the self-reported

and clinical number of teeth. Furthermore, to examine whether participants had a tendency to overestimate or underestimate, we compared the frequency and percentage of participants who had complete conformity between their self-reported and clinical number of teeth, as well as the percentage of participants with self-reporting errors. Finally, to analyze the correlation between the two teeth measures, both Spearman's and Pearson's correlation coefficients were used for the entire study population, as well as for various subgroups based on sex, age, education, income, cognitive status, and self-rated general and self-rated oral health reporting median and interquartile range (IQR), and mean and SD. The cut-off point of 0.7 was used to indicate a strong positive correlation.[24] The p-value for statistical significance was set at a predetermined threshold of 0.05.

## Results

### Sociodemographic characteristics and cognitive assessment of the study participants

The sociodemographic characteristics and cognitive assessment of the 337 participants included in the analysis are presented in Table 1. The mean age of the study participants was 67.1 (SD = 6.58) years, and the majority were males (n = 240, 71.2%). The majority of the study participants had completed at least intermediate/high school education (n = 116, 34.4%), and 175 participants (52%) indicated that they had a monthly income higher than 5000 Saudi Riyals which is equivalent to approximately 1333 USD. Regarding cognitive status, the majority of the study participants did not have cognitive impairment according to the AMT test with 318 of the study participants (94.4%) scoring above the cut-off score of 6. Around two-thirds (n = 229, 67.9%) of the study

**Table 1: Sociodemographic and health characteristics of the study participants.**

| Variable | Group | Study sample (n = 337) |
|---|---|---|
| Sex, n (%) | Male | 240 (71.2) |
| | Female | 97 (28.8) |
| Age, mean (SD) | | 67.1 (6.5) |
| Education, n (%) | No education | 70 (20.8) |
| | primary school | 83 (24.6) |
| | intermediate/high school | 116 (34.4) |
| | higher education | 68 (20.2) |
| Monthly income, n (%) | ≥10,000 SR | 76 (22.6) |
| | 9999–7500 SR | 41 (12.2) |
| | 7499–5000 SR | 58 (17.2) |
| | 4999–2500 SR | 81 (24) |
| | <2500 SR | 81 (24) |
| Cognitive status, n (%) | Abnormal | 19 (5.6) |
| | Normal | 318 (94.4) |
| Self-reported health, n (%) | Poor | 20 (5.9) |
| | Fair | 88 (26.1) |
| | Good | 119 (35.3) |
| | Very good | 61 (18.1) |
| | Excellent | 49 (14.5) |

SD, standard deviation; SR, Saudi Riyal.

**Table 2: Oral health characteristics of the study participants.**

| Variable | group | Study sample (n = 337) |
|---|---|---|
| Self-reported oral health, n (%) | Poor | 68 (20.2) |
| | Fair | 102 (30.3) |
| | Good | 95 (28.2) |
| | Very good | 52 (15.4) |
| | Excellent | 20 (5.9) |
| Number of teeth mean (SD) | | 18.4 (9.7) |
| Self-reported number of teeth (SD) | | 18.8 (9.7) |
| Functional dentition, n (%) | 0−20 | 152 (45.1) |
| | ≥21 | 185 (54.9) |

SD, standard deviation.

**Table 3: Proportion of participants and the levels of self-reporting error by tooth count difference in the study sample (n = 337).**

| Tooth count difference | Overestimation, n (%) | Underestimation, n (%) | Total self-report error, n (%) |
|---|---|---|---|
| 0 | — | — | 161 (47.7) |
| 1 | 37 (10.9) | 23 (6.8) | 60 (17.8) |
| 2 | 34 (10.1) | 20 (5.9) | 54 (16.0) |
| 3 | 18 (5.3) | 6 (1.7) | 24 (7.1) |
| 4 | 14 (4.1) | 9 (2.6) | 23 (6.8) |
| ≥5 | 11 (3.2) | 4 (1.2) | 15 (4.4) |
| Total | 114 (33.8) | 62 (18.4) | 337 |

### Oral health characteristics of the study participants

Around half of the study participants (n = 167, 49.5%) reported having a good rating of oral health (good, very good, excellent compared to fair or poor). The mean number of teeth present in the study participants was 18.4 (SD = 9.76), and 185 participants (54.9%) had 21 teeth or more (Table 2).

### Agreement between the self-reported and clinical number of teeth

According to the findings presented in Table 3, 47.7% (n = 161) of the participants exhibited complete agreement between their self-reported number of teeth and the clinical assessment. Over 66.6% (n = 223) of participants had self-reported errors within two teeth, and close to 94% (n = 317) had self-reported errors within four teeth. Notably, a slightly higher proportion of participants overestimated (n = 114, 33.8%) than underestimated (n = 62, 18.4%) their number of teeth.

Figure 1 shows a Bland Altman plot which represents the difference between the self-reported number of teeth and the number of teeth counted by the clinical examiner (Y-axis); the X-axis represents the mean of both measurements, and the parallel lines represent the upper and lower limits of agreement (mean difference ± 95% limits). The study participants had a tendency to over-report the number of teeth they had when compared to the clinical examiner's tooth count. On average, there were 0.41 more teeth reported by the participants than counted by the examiner. Moreover, the paired t-test demonstrated a statistically significant difference (95% CI: 0.20−0.62, p < 0.001) between the two counts. The plot shows that there were cases where the overestimation and underestimation were particularly notable. However, the majority of cases fell within the limits
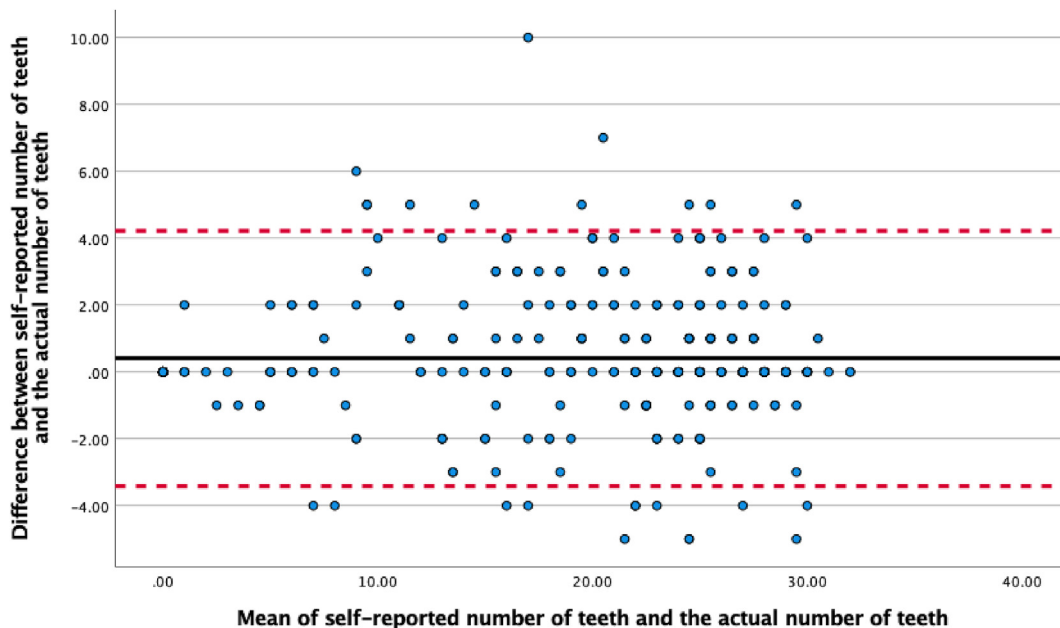
participants, reported having a better rating of general health (good, very good, excellent compared to fair or poor) (Table 1).



**Figure 1:** Bland−Altman plot of the agreement between self-reported number of teeth and the number of teeth counted by a clinical examiner.

**Table 4: Correlation between clinically determined and self-reported number of teeth in the sample (n = 337).**

| Variable | Group | Clinical number of teeth | | Self-reported number of teeth | | Spearman[a] | Pearson[a] |
|---|---|---|---|---|---|---|---|
| | | Median (IQR) | Mean (SD) | Median (IQR) | Mean (SD) | | |
| Total | | 22 (12—26) | 18.4 (9.7) | 22 (12—27) | 18.8 (9.7) | 0.91 | 0.96 |
| Sex | Male | 23 (14—26) | 18.8 (9.7) | 22 (13.5—27) | 19.0 (9.8) | 0.92 | 0.98 |
| | Female | 19 (10—25) | 17.3 (9.6) | 22 (12—27) | 18.3 (9.8) | 0.90 | 0.97 |
| Education | No education | 14.5 (5—24) | 13.6(9.9) | 14.5 (4—22) | 13.5 (9.9) | 0.97 | 0.97 |
| | Primary school | 17 (6—23) | 15.1(10.1) | 19 (6—24) | 15.7 (10.1) | 0.97 | 0.98 |
| | Intermediate/high school | 24 (16—26) | 20.3 (8.7) | 24 (16.5—27) | 20.8 (8.7) | 0.92 | 0.97 |
| | Higher education | 26(22.5—28) | 24.2 (6.4) | 27 (23.5—28) | 24.8 (6.4) | 0.86 | 0.96 |
| Monthly income | >10000 SR | 25.5 (23—27) | 23.6 (6.8) | 26 (23.5—28) | 24.1 (6.8) | 0.84 | 0.96 |
| | 9999—7500 SR | 25 (19—28) | 22.3 (7.6) | 25 (20—28) | 22.7 (7.56) | 0.96 | 0.97 |
| | 7499—5000 SR | 23 (11—26) | 19.1 (10.0) | 23 (13—27) | 19.1 (10.1) | 0.92 | 0.98 |
| | 4999—2500 SR | 19 (10—24) | 16.7 (9.3) | 20 (12—24) | 17.3 (9.3) | 0.95 | 0.97 |
| | <2500 SR | 14 (4—20) | 12.7 (9.8) | 15 (3—22) | 13.1 (10.1) | 0.97 | 0.97 |
| Cognitive status | Abnormal | 18 (7—23) | 15.7 (9.12) | 18 (8—26) | 16.6 (9.7) | 0.79 | 0.86 |
| | Normal | 23 (12—26) | 18.5 (9.7) | 22 (12—27) | 18.9 (9.7) | 0.95 | 0.97 |
| Self-reported health | Poor | 18 (9—25) | 16.3 (9.6) | 17.5 (12—24) | 16.5 (9.1) | 0.91 | 0.96 |
| | Fair | 15 (1.5—20.5) | 13.2 (9.9) | 15 (2—22) | 13.6 (10.1) | 0.91 | 0.96 |
| | Good | 23 (11—26) | 18.2 (9.7) | 22 (12—26) | 18.6 (9.8) | 0.95 | 0.97 |
| | Very good | 25 (21—27) | 22.4 (7.8) | 24 (20—27) | 22.3 (7.6) | 0.92 | 0.97 |
| | Excellent | 26 (23—28) | 24 0 (6.1) | 27 (23—28) | 25.1 (5.8) | 0.85 | 0.95 |
| Self-reported oral health | Poor | 10 (4—17.5) | 11.3 (8.8) | 12 (3—19) | 11.7 (8.7) | 0.91 | 0.96 |
| | Fair | 18 (6—24) | 15.2 (9.6) | 19 (6—24) | 15.6 (9.8) | 0.95 | 0.98 |
| | Good | 24 (19—26) | 21.0 (8.3) | 24 (22—27) | 21.5 (8.3) | 0.91 | 0.96 |
| | Very good | 27 (25—29) | 26.6 (3.21) | 27 (25.5—29) | 26.7 (3.3) | 0.85 | 0.91 |
| | Excellent | 27 (25—28) | 25.2 (6.2) | 28 (25.5—29) | 26.1 (6.5) | 0.83 | 0.98 |

IQR, interquartile range; SD, standard deviation; SR, Saudi Riyal.

[a] All p values < 0.001.

of agreement, indicating acceptable tooth-counting accuracy in older Saudi participants.

*Correlation between the self-reported number of teeth and the clinically determined number of teeth*

Table 4 presents the correlations between the self-reported number of teeth and the clinically determined number of teeth using Pearson's and Spearman's correlation coefficients for the whole population and for different groups across the study variables. The correlation coefficients showed a high correlation between the self-reported and clinically determined number of teeth for the whole population, with a Pearson's coefficient of 0.96 and a Spearman's rank correlation coefficient of 0.91. This suggests a strong relationship between the self-reported and clinical numbers of teeth in the study population (p < 0.001). Similarly, across the study variables, the correlation coefficients consistently showed a significant high positive correlation, indicating a strong association between the self-reported and clinical numbers of teeth (p < 0.001). These findings suggest that self-reporting can be a reliable and valid method for assessing the number of teeth in this particular population.

**Discussion**

This study aimed to evaluate the accuracy of self-reported tooth count among older Saudi adults (≥60 years) and its correlation with clinical examination. We found that the majority of participants showed acceptable accuracy in their self-reported tooth count when compared to the clinical examination. However, there were cases of overestimation and underestimation that varied significantly from the actual tooth count. The mean difference between the self-reported and clinically recorded number of teeth was 0.41 teeth, and almost two-thirds of the study participants reported their number of teeth within an error margin of two teeth. Furthermore, the correlation coefficients indicated a high degree of consistency between the self-reported and clinical numbers of teeth for the entire population of participants and across sociodemographic and health-related groups.

While the majority of participants had acceptable accuracy in the self-reported tooth count, there was still a tendency for over-reporting. This contradicts the findings of previous studies which found a tendency for the under-reporting of tooth count.[11,12,21,25] This could be explained by several factors, such as cultural norms that prioritize having a full set of teeth and the fear of embarrassment or stigma associated with missing teeth.[11,26] Another explanation could be the fact that our study included older adults who may have had more dental problems and therefore perceive tooth loss in a manner that differed from younger populations.[27–29] Oral health literacy could also be one of the explanations, as participants may have a limited understanding of how to accurately count their teeth, especially if they have dental issues such as huge cavities or remaining roots.[30]

Additionally, social desirability bias could be a factor, as participants may want to present themselves in a positive light by reporting more teeth than they actually have.[31] It is possible that cultural and societal factors specific to the Saudi

population could contribute to the tendency of participants in our study to over-report their number of teeth such as social norms and expectations related to presenting oneself positively in terms of health and appearance. Additional research is needed to explore the reasons behind the tendency for the over-reporting of tooth count in our study population and to determine if this trend is consistent across other populations. Nevertheless, despite the tendency for the over-reporting of tooth count observed in our study participants, self-reported tooth count remains a valuable tool for assessing oral health as it serves as a cost-effective and convenient method for gathering information relating to tooth loss, especially in large-scale population studies where clinical assessments may not be feasible for every participant.[12,21,25,32]

We observed a slightly higher proportion of participants overestimated their number of teeth (33.83%) compared to those who underestimated (18.4%). This is an interesting finding that warrants further investigation. This asymmetry in over- and under-reporting could be due to several factors, such as the aforementioned cultural norms that prioritize having a full set of teeth,[31] and the fear of stigma or embarrassment associated with missing teeth. This finding highlights the importance of taking into consideration potential sources of bias when collecting self-reported data related to health, particularly in populations where cultural factors may influence reporting, as well as the need for accurate and standardized methods for measuring and reporting the number of teeth. Further research in this area could help to identify factors contributing to self-reporting bias and inform the development of interventions to improve the accuracy of self-reported dental data.

The consistently high positive correlations between the self-reported and clinically determined number of teeth across the study variables further strengthen the validity of the results which is in line with previous studies.[21,25] These findings suggest that self-reported data relating to the number of teeth can be a reliable indicator of an individual's actual number of teeth, which can be helpful for researchers and clinicians in designing interventions and assessing oral health status. However, it is important to note that this study was conducted on a specific population and may not be generalizable to other populations. In addition, self-reported data may still be subject to biases and limitations, such as recall bias and social desirability bias, which should be considered when interpreting the results. Recall bias is a factor to consider when individuals are asked to remember and report the number of teeth they have or had in the past.[33] Memory limitations can lead to inaccuracies, such as forgetting extracted teeth or miscounting.[33,34] Social desirability bias is another consideration, as people may over-report or under-report their tooth count to conform to societal expectations or present themselves favorably.[33] In the context of oral health, this could mean over-reporting the number of teeth to avoid the potential stigma associated with tooth loss or under-reporting to maintain a desirable image of good oral health. These biases can introduce errors and distort the accuracy of self-reported oral health data, thus affecting our understanding of dental status and the prevalence of tooth loss in a population.

The findings of this study have implications for various aspects of public health interventions and strategies in the context of oral health among older Saudi adults. The accuracy of self-reported dental data can inform the design of targeted public health interventions and educational campaigns aimed at improving oral health literacy and promoting accurate reporting of dental conditions.[35] By addressing cultural norms and reducing stigma associated with missing teeth, these interventions can foster a realistic understanding of oral health and encourage individuals to report their dental status accurately.[36] In addition, self-reported tooth count can be utilized as a screening tool in community health programs, thus enabling health practitioners and community workers to identify individuals who may require further oral health assessments and interventions. This cost-effective approach can help to prioritize resources and provide appropriate preventive and treatment services.[37] Moreover, the high correlation observed between self-reported and clinically examined tooth count supports the use of self-reported data in epidemiological studies on oral health.[18] Researchers can utilize self-reported dental data to estimate the prevalence of tooth loss and associated risk factors, thus facilitating the development of targeted oral health policies and programs.[37] Furthermore, incorporating self-reported dental data into routine health surveys and surveillance systems can enable the monitoring of oral health trends over time, the evaluation of interventions, and the identification of populations at a higher risk of tooth loss.[38] This information can guide resource allocation and the implementation of preventive strategies. Overall, the findings of this study have implications for public health interventions, screening and assessment practices, epidemiological studies, and the monitoring of oral health outcomes in older Saudi adults.

*Strengths and limitations*

Our study has some limitations that should be addressed. The sample of the study was a convenience sample, and thus might not be generalizable to the Saudi population. Second, we did not include remaining roots and other dental structures, such as implants or dentures, in our assessment of the number of teeth; this might have implications for the accuracy of self-reported data in populations with high rates of dental interventions or procedures. Previous studies have demonstrated that these factors can play a role in the accuracy of number of teeth reporting.[21,32] Future studies should consider including these structures and assessing their impact on self-reported dental data. Nevertheless, our study still provides valuable insights into the validity of self-reported dental data in Arabic-speaking communities and highlights the potential benefits and limitations of using this type of data among older adults.

**Conclusions**

Self-reported and clinical data demonstrated a high correlation among our cohort of older Saudi older. Our analyses showed that the study participants had a tendency to over-report the number of teeth they had when compared to a clinical examiner's tooth count. These findings suggest that self-reported data on the number of teeth can be a reliable indicator of an individual's actual number of teeth. Further

research now needs to identify the reasons underlying the trend of over-reporting and to replicate the study on other populations.

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## Conflict of interest

The authors have no conflict of interest to declare.

## Ethical approval

The study was conducted in accordance with the Declaration of Helsinki and approved by the Institutional Review Board of Taibah University, College of Dentistry research Ethics committee (TUCDREC/20190402).

## Consent

Informed consent was obtained from all subjects involved in the study.

## Authors contributions

The authors of this study made the following contributions: FFH conceived the study and developed the methodology, conducted formal analysis, created visualizations, and supervised the project. LA assisted with methodology development, data curation, and writing of the original draft. AMM and SAA contributed to the writing of the original draft. FFH provided critical review and editing of the manuscript. All authors read and approved the final version of the manuscript for publication. All authors have critically reviewed and approved the final draft and are responsible for the content and similarity index of the manuscript.

## Data availability statement

The data presented in this study are available on request from the corresponding author. The data are not publicly available due to ethical restrictions.

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