

Factors Associated with Dental Attendance Among Indonesian Adults: A Cross-Sectional Study

Latifah Fitriani Rakhman¹, Atik Ramadhani¹, Diah Ayu Maharani^{1*}

1. Department of Preventive and Public Health Dentistry, Faculty of Dentistry, Universitas Indonesia, Depok, Indonesia.

Abstract

Research on dental attendance conducted in Indonesia remains scarce. Moreover, studies on the association of sociodemographic factors and oral health behaviors with dental attendance are limited. This study aims to analyze the association of sociodemographic factors and oral health behaviors with dental attendance among adults in Indonesia.

This cross-sectional study was conducted between February and March 2021 in Indonesia using a self-administered online questionnaire that was distributed via social media. The questionnaires consisted of sociodemographic and oral health behaviors. Univariate, bivariate, and logistic regression was performed to analyze dental attendance and associated factors. A total of 802 Indonesian adults were enrolled in the study. A statistically significant difference was found between gender, occupation, frequency of toothbrushing, type of toothbrush used, use of dental floss, use of mouthwash, and tongue cleaning. Females, employed, and being married had higher odds ratios for dental attendance.

There was a significant association between the use of a soft-bristle toothbrush, mouthwash, and dental floss with a dental visit (odds ratio [OR] = 1.838, 95% confidence interval [CI] = 1.388, 2.433; OR = 2.065, 95% CI = 1.527, 2.793; and OR = 6.673, 95% CI = 3.135, 14.206), respectively. Individuals with better oral health behaviors have a tendency to visit the dentist. For those with lower oral health behaviors, oral health programs are needed to improve awareness of the need for a dental visit.

Clinical article (J Int Dent Med Res 2021; 14(4): 1547-1551)

Keywords: Dental attendance, oral health, Indonesia.

Received date: 16 September 2021

Accept date: 11 October 2021

Introduction

Oral health is an important determinant of overall health that contributes to an individual's general well-being.¹ Healthy habits and good oral hygiene are intrinsically linked to maintain good oral health.² In addition to good oral hygiene and self-care, dental attendance is one of the key measures of oral health promotion.^{3,4} However, oral health status is low in Indonesia.³ A national health survey in 2018 organized by the Ministry of Health showed that 57.4% of the population stated that they had dental and oral problems, but 96% of Indonesians did not visit a dentist within the past year.⁵ Several factors known to

influence dental attendance include age, gender, education level, domicile, marital status,³ and oral health behavior, including twice daily toothbrushing and flossing.⁶

In Indonesia, which is a developing country, although 94.7% of the population brushes their teeth every day, only 2.8% brush their teeth at the correct time, namely, in the morning after breakfast and at night before going to bed.⁵ A previous study in Indonesia showed that 86.4% of Indonesian adults had never been to a dentist.³ Other studies have indicated that individuals who routinely attend dental appointments are more likely than non-routine attenders to perform preventive behaviors, such as brushing their teeth in day and night and flossing more frequently.⁶ Smoking habits are also more likely to be associated with poor oral health. A study in England found links between smoking status and dental attendance. The results of the analysis indicated that the dental attendance of smokers differed from that of

*Corresponding author:

Diah Ayu Maharani
Department of Preventive and Public Health Dentistry,
Faculty of Dentistry, Universitas Indonesia,
Jakarta, Indonesia.
E-mail: diah.ayu64@ui.ac.id

nonsmokers: those who smoked were less likely to attend dental checkups.⁷

Checkups and screenings for dental conditions have been identified as important contributors to the reduction in the burden of diseases.⁸ Dental attendance helps to identify high-risk individuals and is also related to lower rates of dental caries, periodontal disease, and tooth loss.⁹ Adults who do not attend dental checkups are more likely to have a poorer dental status and worse subjective oral health than people who usually attend dental checkups.¹⁰

However, research on dental attendance conducted in Indonesia remains scarce. There is still limited evidence of the association between dental attendance and oral health behavior. To improve individuals' oral health and healthy oral habits, identifying factors associated with dental attendance is essential. The objective of this study was to analyze the factors associated with dental attendance among adults in Indonesia.

Materials and methods

This cross-sectional study was conducted between February and March 2021 in Indonesia. The study protocol was approved by the Research Ethics Committee, Faculty of Dentistry, Universitas Indonesia. Written informed consent was obtained from all participants. This study complies with the STROBE guidelines. Purposive sampling was used to distribute links to the questionnaire to the collaborators' eligible contacts, post them on social media groups, and send them to institutional and network email lists. The sample size was calculated based on the assumption of a 3% margin of error, 95% confidence level, and 20% rate of dental attendance.⁸ The required sample size was 683 participants, which was increased by 20% to compensate for potential nonresponse.

This study used a self-administered online questionnaire which consisted of two parts: sociodemographic variables (gender, domicile, educational level, occupation, and marital status) and oral hygiene behavior (frequency of toothbrushing, type of toothbrush, use of toothpaste, dental floss, mouthwash, tongue cleaning, and smoking). Responses were dichotomous. The data were analyzed using the Statistical Package for Social Sciences program for Windows (version 25 SPSS Inc., Chicago, IL, USA). Descriptive statistics were calculated for

the study variables. The association between the variables and dental attendance were analyzed using chi-square at 95% confidence ($p < 0.05$) and logistic regression.

Results

A total of 802 were included in the study, with a response rate of 99.8%. The mean age of the respondents was 30.1 ± 10.4 years (range 15–65 years). Most individuals who reported dental attendance were female. Table 1 presents the sociodemographic factors and oral health variables associated with dental attendance. A statistically significant association was found between gender, occupation, frequency of toothbrushing, type of toothbrush used, use of dental floss, use of mouthwash, and tongue cleaning.

Variables	Dental Attendance		p-value
	Less than a year (n=430)	More than a year (n=372)	
Age			
<34 yo (n=629)	340 (54.1%)	289 (45.9%)	0.689
>34 yo (n=173)	90 (52.0%)	83 (48.0%)	
Gender			
Female (n=479)	286 (59.7%)	193 (40.3%)	0.000*
Male (n=323)	144 (44.6%)	179 (55.4%)	
Education			
College Student (n=637)	350 (54.9%)	287 (45.1%)	0.163
High School Student (n=165)	80 (48.5%)	85 (51.5%)	
Occupation			
Employed (n=490)	277 (56.5%)	213 (43.5%)	0.045*
Unemployed (n=312)	153 (49.0%)	159 (51.0%)	
Domicile			
DKI Jakarta (n=272)	154 (56.6%)	118 (43.4%)	0.252
Non DKI Jakarta (n=530)	276 (52.1%)	254 (47.9%)	
Marital Status			
Married (n=367)	192 (52.3%)	175 (47.7%)	0.544
Unmarried (n=435)	238 (54.7%)	197 (45.3%)	
Frequency of toothbrushing			
Twice a day or more (n=642)	368 (57.3%)	274 (42.7%)	0.000*
Less than twice a day (n=160)	62 (38.9%)	98 (61.3%)	
Type of Toothbrush used			
Soft bristle brush (n=412)	251 (60.9%)	161 (39.1%)	0.000*
Non soft bristle brush (n=390)	179 (45.9%)	211 (54.1%)	
Use of Toothpaste			
Yes (n=799)	429 (53.7%)	370 (46.3%)	0.599
No (n=3)	1 (33.3%)	2 (66.7%)	
Use of Dental Floss			
Yes (n=63)	55 (87.3%)	8 (12.7%)	0.000*
No (n=739)	375 (50.7%)	364 (49.3%)	
Use of Mouthwash			
Have use (n=546)	324 (59.3%)	222 (40.7%)	0.000*
Never use (n=256)	106 (41.4%)	150 (58.6%)	
Tongue Cleaning			
Yes (n=438)	252 (57.5%)	186 (42.5%)	0.018*
No (n=298)	178 (48.9%)	186 (51.1%)	
Smoking			
Yes (n=100)	382 (54.4%)	320 (45.6%)	0.273
No (n=702)	48 (48.0%)	52 (52.0%)	

Table 1. Association between socio demographic and oral health care variables and Dental Attendance (n=802).

Table 2 describes the results of the logistic regression analysis. Occupation and gender were associated with significant dental attendance (odds ratio [OR] = 1.351, 95% confidence interval [CI] = 1.016, 1.797; OR = 1.842, 95% CI = 1.385, 2.451, respectively). Marital status was associated with a significantly lower likelihood of dental attendance (OR = 1.101, 95% CI = 0.833, 1.455). Oral health behavior, including type of toothbrush used and use of mouthwash, were associated with significantly higher dental attendance (OR = 1.838, 95% CI = 1.388, 2.433; OR = 2.065, 95% CI = 1.527, 2.793, respectively). The use of dental floss was associated with a significantly greater likelihood of dental attendance (OR = 6.673, 95% CI = 3.135, 14.206).

Variables	OR	95% CI	p-value
Gender Female Male	1.842	1.385, 2.451	0.001
Occupation Employed Unemployed	1.351	1.016, 1.797	0.043
Marital Status Married Unmarried	1.101	0.833, 1.455	0.043
Type of Toothbrush used Soft bristle brush Non soft bristle brush	1.838	1.388, 2.433	0.005
Use of Dental Floss Yes No	6.673	3.135, 14.206	0.000
Use of Mouthwash Have use Never use	2.065	1.527, 2.793	0.000

Table 2. Logistic regression analysis of the dental attendance and its associated factors.

Discussion

This study analyzed sociodemographic factors and oral health behaviors associated with dental attendance among adults in Indonesia. This study population had a dental attendance rate within the past year of 53.6%, although they were still higher than countries such as Laos and Philippines.² It is possible that there were variations in the study population, time, and study setting¹¹ as well as other factors in this group, such as high education and occupation, that contributed to dentist access. Individual with a

high education level and economic status may have higher oral health literacy; therefore, they might have been more likely to understand the importance of oral health and dental visits.³

This study showed that dental attendance was associated with sociodemographic factors such as gender and occupation. This study found that males visited their dentist less frequently than females did. Males were more likely to not visit their dentist regularly, which is congruent with the findings of others studies.^{2,12,13} This might be because females care more and pay more attention to their body and health, including oral health, and males are too busy to allocate time to their oral health.^{2,14,15} Females are also known to have better oral health behaviors than male do.³ In line with a previous study, employed participants were more likely to visit their dentist than unemployed participants were,¹³ which might be attributed to the fact that they had a stable income, which allowed for regular dentist visits.³ This finding is similar to a study in Australia showing that adults avoided or delayed going to dentist due to cost.^{16,17} Unemployed individuals are more likely to postpone their dental attendance when it is not necessary or there are no noticeable symptoms.

Contrary to the results of another study, association between domicile and dental attendance was not apparent in this study.¹⁷ One study in China found that participants who resided in more economically developed megacities were more likely to visit the dentist frequently.¹⁸ A possible explanation is that higher socioeconomic development in an area makes it easier for people to access dental facilities. However, that study found no differences between individuals who lived in the capital of Jakarta compared with those who did not. Another study on dental attendance patterns in Australian adults reported that those with no postsecondary education were more likely to have an unfavorable pattern of dental attendance.¹³ This result was contradictory to the findings of this study, and the discrepancy might be due to this study having fewer respondents with a high school education. On the other hand, unmarried individuals, including those divorced and widowed, were less likely to visit the dentist regularly, which was consistent with previous studies suggesting that marriage plays a larger role in health care attendance.^{1,19}

This study findings agreed with previous

literature reporting an association between good oral health behavior and regular dental attendance.²⁰ This study evaluated oral health behaviors such as frequency of toothbrushing, type of toothbrush, use of toothpaste, dental floss, mouthwash, and tongue cleaning, as well as also smoking. The results showed that frequency of toothbrushing was associated with dental attendance, in line with findings of a previous study reporting that individuals with problem-based dental attendance had poorer dental status and brushed their teeth less often.^{2,10} More subjects who brushed their teeth twice or more daily had visited a dentist within the study period than those who brushed only once a day.

Previous studies reported that behavioral factors were independently related to the frequency of dental attendance.²⁰ This study mentioned that the type of toothbrush used, use of dental floss, mouthwash, and tongue cleaning were associated with dental attendance. Those who used soft-bristle brushes were more likely to visit a dentist routinely were than non-soft-bristle brush users. Individuals who had never used mouthwash were less likely to visit the dentist regularly, and those who used dental floss routinely more likely to visit their dentist for a checkup. One explanation might be that adults who have good oral health behavior had implied positive effect of dental attendance regularly.⁶ Poor oral health behaviors has been found to be associated with less than annual or no dental visits.² Better oral health behavior encourages people to attend dental checkups, in turn motivating them to maintain a healthy mouth and teeth by seeing their dentist regularly.

The results did not show an association between smoking status and frequency of dental attendance, which contrasted with other studies. It is plausible that the low rate of smoking respondents in this study population might also have contributed to the different findings. A prior study found that smokers were more likely to attend symptomatically and not regularly for checkups, and they also had poorer oral health.⁷ Regular dental visits for smokers might be a way for dentists to evaluate their oral health status and dental habits, such as brushing, flossing, mouthwash, and toothpaste use.²¹

One strategy to improve oral health status is promoting regular dental visits, as routine dental care can help prevent and treat oral disease. Unfortunately, people and mostly

children tend to do dental visit only if they have a toothache, and not for preventive care purposes, even though dental visit within the last 12 months was associated with a lower caries risk.^{22,23} Regular dental attendance can also reduce emergency visits and give provide instruction for better preventive and curative treatment.²⁴ A study in Australia reported that unfavorable dental attendance had a negative effect on general health, oral health status, and social impact. Those authors found a relationship between general health and unfavorable dental attendance. Adults with unfavorable dental attendance were twice as likely to have poor or fair general health than those with favorable dental attendance. People with unfavorable dental attendance were at higher risk of developing poor or fair oral health status. Unfavorable dental attendance could have social effects, such as an uncomfortable dental appearance.¹³

This study has some limitations. The cross-sectional design suggests an association but cannot support causality. Further, validity and reliability of the questionnaire was not assessed. Therefore, the results should be interpreted with caution. However, the data might be useful in that they provide an idea about the magnitude of the problem and shed light on some of the factors that may be linked to dental attendance, a key oral health behavioral indicator.

Conclusions

It is important to know the factors associated with dental attendance. Dental attendance has a curative and/or preventive effect on oral health. Sociodemographic factors and oral health behaviors influence people to visit the dentist. Female employees, those who brush their teeth twice or more daily, individuals who use soft-bristle brushes, and those who use dental floss, mouthwash, and tongue cleaning tend to make more regular visits to the dentist. Promoting regular dental attendance could improve oral health status and prevent oral diseases earlier.

Acknowledgments

This study was supported by Universitas Indonesia.

Declaration of Interest

The authors report no conflict of interest.

References

1. Watt RG, Heilmann A, Sabbah W, Newto T, Chandola T, Aida J, Sheiham A, Marmot M, Kawachi I, Tsakos G. Social relationships and health related behaviors among older US adults. *BMC Public Health*. 2014;14:533.
2. Peltzer K, Pengpid S. Oral health behaviour and social and health factors in university students from 26 low-, middle- and high-income countries. *Int J Environ Res Public Health*. 2014;11(12):12247–60.
3. Santoso CMA, Bramantoro T, Nguyen MC, Bagoly Z, Nagy A. Factors affecting dental service utilisation in indonesia: A population-based multilevel analysis. *Int J Environ Res Public Health*. 2020;17(15):5282.
4. Spinler K, Aarabi G, Valdez R, Kofahl C, Heydecke G, König HH, Hajek A. Prevalence and determinants of dental visits among older adults: Findings of a nationally representative longitudinal study. *BMC Health Serv Res*. 2019;19(1):590.
5. Ministry of Health Republic of Indonesia. *Indonesia Health Statistics 2018*. Jakarta (2019).
6. Åström AN, Ekback G, Ordell S, Nasir E. Long-term routine dental attendance: Influence on tooth loss and oral health- related quality of life in Swedish older adults. *Community Dent Oral Epidemiol*. 2014;42(5):460–9.
7. Csikar J, Kang J, Wyborn C, Dyer TA, Marshman Z, Godson J. The self-reported oral health status and dental attendance of smokers and non-smokers in England. *PLoS One*. 2016;11(2): e0148700.
8. Aarabi G, Valdez R, Spinler K, Walther C, Seedorf U, Heydecke G, König HH, Hajek A. Determinants of postponed dental visits due to costs: Evidence from the survey of health, ageing, and retirement in Germany. *Int J Environ Res Public Health*. 2019;16(18):3344.
9. Kino S, Bernabé E, Sabbah W. Social inequalities in use of preventive dental and medical services among adults in European countries. *Int J Environ Res Public Health*. 2019;16(23):4642.
10. Montero J, Albaladejo A, Zalba JI. Influence of the usual motivation for dental attendance on dental status and oral health-related quality of life. *Med Oral Patol Oral Cir Bucal*. 2014;19(3): e225–31.
11. Tafere Y, Chanie S, Dessie T, Gedamu H. Assessment of prevalence of dental caries and the associated factors among patients attending dental clinic in Debre Tabor general hospital: A hospital-based cross-sectional study. *BMC Oral Health*. 2018;18(1):119.
12. Samohyl M, Babjakova J, Vondrova D, Jurkovicova J, Stofko J, Kollar B, Hirosova K, Filova A, Argalaso L. Factors associated with non-attendance at dental preventive care in Slovak high school students. *Int J Environ Res Public Health*. 2021;18(3):1295.
13. Ellershaw A. Dental attendance patterns of Australian adults. *Aust Dent J*. 2014;59(1):129–34.
14. Nishide A, Fujita M, Sato Y, Nagashima K, Takahashi S, Hata A. Income-related inequalities in access to dental care services in Japan. *Int J Environ Res Public Health*. 2017;14(5):524.
15. Trohel G, Bertaud-Gounot V, Soler M, Chauvin P, Grimaud O. Socio-Economic determinants of the need for dental care in adults. *PLoS One*. 2016;11(7): e0158842.
16. Armfield J. The avoidance and delaying of dental visits in Australia. *Aust Dent J*. 2012;57(2):243–7.
17. Lutfiyya M N, Gross AJ, Soffe B, Lipsky MS. Dental care utilization: Examining the associations between health services deficits and not having a dental visit in past. *BMC Public Health*. 2019;19(1):265.
18. Qu X, Qi X, Wu B. Disparities in dental service utilization among adults in chinese megacities: Do health insurance and city of residence matter? *Int J Environ Res Public Health*. 2020;17(18):6851.
19. Wilson R, Kuh D, Stafford M. Variations of health check attendance in later life: Results from a British birth cohort study. *BMC Public Health*. 2019;19(1):1518.
20. Beigi MR, Shamshiri AR, Asadi-Lari M, Hessari H, Jafari A. A cross-sectional investigation of the relationship between complementary health insurance and frequency of dental visits in 15 to 64 years old of Tehran population, Iran, a secondary data analysis (urban HEART-2). *BMC Health Serv Res*. 2019;19(1):678.
21. Blasi PR, Krakauer C, Anderson ML, Nelson J, Bush T, Catz SL, McClure JB. Factors associated with future dental care utilization among low-income smokers overdue for dental visits. *BMC Oral Health*. 2018;18(1):183.
22. Pasiga, Burhanuddin. The Behavior of Indonesian Society about Access Dental Care, using a Telephone Survey. *Journal of International Dental and Medical Research*. 2018; 11(2): 663–8.
23. Bahar A, Darwita RR, Setiawati F, Ramadhani A, Rahardjo A, Maharani DA. Dental Caries Experience and Associated Factors Among 12-year-old Schoolchildren in East Jakarta, Indonesia. *J Int Dent Med Res*. 2021;14:666–70.
24. Da Fonseca EP, Frias AC, Mialhe FL, Pereira AC, Meneghim Mde C. Factors associated with last dental visit or not to visit the dentist by Brazilian adolescents: A population-based study. *PLoS One*. 2017;12(8): e0183310.