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Use of Internet Platforms for Information About Sensitive Teeth Among Indonesian Adults: A Cross-Sectional Study

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Abstract

Background: The behavior of seeking oral health information (OHI), especially the topic of sensitive teeth (ST), among the Indonesian adult population has rarely been studied. Hence, the current work aimed to analyze the characteristics of the Indonesian adult population who reported having ST and to explore their practice of self-medication in terms of their behavior of seeking OHI on the internet.

Methods: A cross-sectional study was conducted between January and March 2021 in Indonesia. This study used a self-administered questionnaire comprising questions about sociodemographic data, oral health behavior, diet, and subjective oral health. Bivariate analysis based on a chi-square test was conducted for statistical evaluation.

Results: Results showed that 63.3% of the respondents used Google, 24.5% used Instagram, and 24.2% used YouTube to search for OHI about ST. Most of them felt improvement with self-perceived medication, with YouTube (odds ratio [OR] = 5.13, 95% confidence interval [CI] = 2.26, 11.62), Google (OR = 2.94, 95% CI = 1.79–4.84), and Instagram (OR = 1.84, 95% CI = 1.11, 3.06) as their main OHI sources.

Conclusions: Internet platforms provide information that helps adults to cope with their ST. Professionals should consider using internet-based interventions as a powerful tool for dental health education.

Keywords: dentin hypersensitivity, Indonesia, oral health

INTRODUCTION

Sensitive teeth (ST) are relatively common among adults, and the defining symptom is short, sharp pain unrelated to any other dental pathology or defect.¹ The stimulus is usually thermal, chemical, tactile, osmotic, or even related to evaporation.² Epidemiological studies have shown that the prevalence of ST varies between 1.34% and 98%.² This heterogeneity can be explained by several factors, such as the sample population (ethnicity, study location, periodontal status, dental care regime), the different diagnostic criteria used to define ST, and whether the source data are based on clinical evaluations of patient-based questionnaires.¹ Thus, patients and health professionals, mainly dentists and physicians, should be educated about the risk factors, signs, and symptoms of ST. In this context, the use of the internet as a source of oral health information (OHI) has grown over the years. Patients and professionals have resorted to this tool for knowledge.³

Studies have shown that online OHI can contribute to individuals' awareness of oral health, improved prognosis

and adherence to treatment, and the facilitation of professional-patient communication.^{4,5} However, several authors have warned about the difficulty in ascertaining the validity and reliability of the information published on the individuals' awareness of oral health, improved prognosis internet.⁴ The most commonly used internet tools for access to OHI are search engines such as Google.⁶ In addition, other platforms, such as YouTube and Instagram, have been used as channels of communication and access to OHI.⁷ OHI can be disseminated through a variety of forms over social media, such as blogs, podcasts, tweets, Facebook pages or posts, and YouTube videos. This development may be especially relevant in Indonesia, where users have been reported to spend more time on the internet in comparison with users in other parts of the world.⁸ Thus, the internet may offer an opportunity to disseminate OHI targeting Indonesians.

Indonesia is one of the largest countries in Southeast Asia. It consists of many islands and is divided into 34 provinces. According to the 2010 census data, the Indonesian population during the period was 237,641,326. Indonesia is the fourth largest country in the world after China, India, and the United States.⁹ It is home to 117.21 million internet users, which make up 64.8% of the country's population.¹⁰ The current study explores an important topic about using the internet to retract information about ST. This topic is suitable for the current

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environment in which the COVID-19 pandemic has resulted in limited access to dental clinics because of stay-at-home restrictions. The use of the internet may help inform patients about the many aspects of ST. Thus, this study would be beneficial and impactful for the development of teledentistry. The objectives of this study were to analyze the characteristics of the adult population of Indonesia who had reported ST and to explore their practice of self-medication in terms of their behavior of seeking OHI on the internet.

METHODS

The study was approved by the Ethics Committee of the Faculty of Dentistry, Universitas Indonesia, No. 82/Ethical Approval/FKGUI/II/2021 No. Protocol 030871220. A cross-sectional questionnaire-based study was conducted among adults in Indonesia in 2021. The reporting of the present study is in accordance with the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement.¹¹ Sample size was calculated on the basis of an assumed margin of error of 3%, confidence level of 95%, and percentage of using internet to obtain OHI of 93%.⁸ The required sample size was 278 participants, and it was increased by 20% to compensate for potential nonresponse. The employed questionnaire was based on a previous study.² The original questionnaire was translated to Bahasa Indonesia and then back translated to English and compared with the original English version to resolve inconsistencies. Some words were modified so that their meanings in the Bahasa Indonesian version would be consistent with those in the original English version. Furthermore, a pilot test of the modified questionnaire was conducted among adults to determine the clarity and comprehensiveness of the wording. The final questionnaire was used as a self-administered Bahasa Indonesia form. The questionnaire was divided into three sections. The first section collected personal information, including gender, age, domicile, education, and occupation. The second section assessed oral health practices, including brushing twice daily, regular visits to the dentist, and presence of dental pain in the last six months; the items were close-ended questions requiring "yes" or "no" responses. The third section assessed the use of the internet for OHI. The participants were asked about the internet platforms they used to search for OHI.

Descriptive analysis was conducted, and summary measures were calculated as means and standard deviations or frequencies and percentages. The dependent variable was using various internet platforms to obtain OHI (categorized into using Google, Instagram, YouTube, or none), and the independent variables included factors reflecting interest in oral health based on their adoption of oral health practices, such as brushing and dental visits and the need for OHI due to the presence of dental pain. The independent factors also included searching for OHI related to various aspects of oral diseases. Chi-square

analysis was used to assess the association between the dependent and independent variables. Odds ratios and 95% confidence intervals (CIs) were calculated. Significance was set at 5%.

RESULTS

A total of 335 respondents completed the questionnaire and reported having ST. Table 1 shows that most of the participants were female ($n = 200$; 59.7%) with a mean age of 29.7 ± 9.8 years. The age range of the respondents was 15–65 years. Most of the participants completed university and postgraduate education (80.9%) and reported brushing twice daily (79.4%). The results showed that of the participants, 63.3% used Google, 24.5% used Instagram, and 24.2% used YouTube to search for OHI. The participants also used social media, such as Twitter (5.4%) and Facebook (4.8%).

TABLE 1. Personal profile, toothbrushing, dental visits, and dental pain among Indonesian adult participants who reported having sensitive teeth ($N = 335$)

Variables	Number of subjects (N)	Percentage (%)
Gender		
Male	135	40.3
Female	200	59.7
Age		
<34	269	80.3
>35	66	19.7
Domicile		
Java	216	64.5
Others	119	35.5
Education		
High school	64	19.1
Higher education	271	80.9
Occupation		
Unemployed	127	37.9
Employee	208	62.1
Toothbrushing frequency		
At least twice per day	266	79.4
Less than twice daily	69	20.6
Types of pain		
Acute	161	48.1
Discomfort	280	83.6
Pulsatile	171	51
Occurrence of pain		
Spontaneously	78	23.3
Induced	257	76.7
Causes of pain		
Cold	237	70.7
Heat	53	15.8
Sweet	123	36.7
Air	73	21.8

Table 1. continues

Variables	Number of subjects (N)	Percentage (%)
Frequency of pain		
Frequently	8	2.4
Occasionally	129	38.5
Rarely	198	59.1
Duration of pain		
Persistent	27	8.1
Short	308	91.9
Pain effect on daily life		
Oral hygiene habits affected by pain	74	22.1
Diet affected by pain	138	41.2
Drinks affected by this pain	149	44.5
Lifestyle affected by this pain	45	13.4
Mentioning sensitive teeth problems to health professional		
Dentist	155	46.3
Doctor or Nurse	13	3.9
Never	167	49.8
Learning source for sensitive teeth self-medication		
Google	212	63.3
Television advertisement	179	53.4
Friends/Family	169	50.4
Instagram	82	24.5
YouTube	81	24.2
Print media	50	14.9
Radio advertisement	30	9
Twitter	18	5.4
Facebook	16	4.8
Feeling improvement with the self-medication		
Yes	245	73.1
No	90	26.9

Table 2 shows that various factors were differently associated with the use of Google, Instagram, and YouTube relative to the non-usage of such apps to obtain OHI. Gender was associated with a significantly lower likelihood of using Instagram (OR = 2.03, 95% CI = 1.18, 3.50) but had no significant association with using Google (OR = 1.13, 95% CI = 0.72, 1.78) and YouTube (OR = 1.04, 95% CI = 0.62, 1.74). Pain effect on daily life, especially when drinking, was significantly associated with the use of Instagram (OR = 1.86, 95% CI = 1.12, 3.07) and YouTube (OR = 2.06, 95% CI = 1.24, 3.42) but had no significant association with the use of Google (OR = 1.09, 95% CI = 0.58, 1.43). Feeling improvement with self-medication was associated with significantly greater likelihood of using Google (OR = 2.94, 95% CI = 1.79, 4.84), Instagram (OR = 5.23, 95% CI = 2.30, 11.85), and YouTube (OR = 5.13, 95% CI = 2.26, 11.62).

DISCUSSION

This study explored the behavior of seeking OHI about ST on the internet among the adult population in Indonesia. The results revealed that using the internet for seeking OHI is likely for those who had higher education and had

access to smartphones and the internet. Several studies have reported that access to e-health information and the usefulness of the internet for decision making are of great importance for patients with high e-health literacy. This finding may be attributed to the fact that people with high e-health literacy have the skills needed for obtaining OHI from the internet and therefore consider using this medium as one of the most important and useful resources for obtaining OHI.¹² The necessary skills and abilities include the ability to access the internet, use computers, utilize search engines, develop search keyword strategies, and differentiate between high- and low-quality information.¹³ Other studies have found that high educational attainment is a significant predictor of the behavior of seeking online dental procedural information before consultations.¹⁴ Such findings are consistent with reports of older foreign-born Latinos with lower education levels using less internet and communication technologies than others.¹⁵ Similar to previous reports, the current work found that the participants with higher education were likely to state that they had searched online for general health information.¹⁶

According to a recent study, women are more likely than men to use social network services in general. Such findings are consistent with reports emphasizing that the rate of internet use is increasing more rapidly among girls than among boys. Moreover, girls have been found to be more likely than boys to use the internet for social networking services, Facebook, shopping, games, information acquisition, and formation of relationships in the virtual world. This pattern is different from that observed in boys' main use of the internet, which is for gaming purposes.¹⁷ This study showed that among the population of social media users, those in younger age groups tend to use more social media than those in older age groups. Another study found that college students aged 18–30 years tend to seek health information on the internet. The authors concluded that social media show great promise as an effective source of medical information for this age group.¹⁸

The internet has great potential for spreading OHI. Regardless of the communication channel used, content is known to influence the decisions of individuals about their health, including changes in lifestyles.⁵ Google was the most popular internet platform for OHI-seeking behavior in the present study. This result is in accordance with that of another study that reported the important role of Google as a search engine because the platform actively mediates and shapes the information seen by users.¹⁹

The current literature highlights the various benefits and challenges for patients when using social media for health purposes. Overall, this review shows the apparent potential of social media use in healthcare because it can

TABLE 2. Odds ratios (OR, 95% CI) of factors associated with seeking OHI from Google, Instagram, and YouTube by adults in Indonesia

	Google		Instagram		YouTube	
	Yes	OR (95% CI)	Yes	OR (95% CI)	Yes	OR (95% CI)
Gender		1.13 (0.72-1.78)		2.03 (1.18-3.50)*		1.04 (0.62-1.74)
Male ^(ref)	83 (61.5%)		23 (17.0%)		32 (23.7%)	
Female	129 (64.5%)		59 (29.5%)		49 (24.5%)	
Age		1.20 (0.68-2.12)		0.48 (0.23-1.00)		1.35 (0.73-2.46)
<34 ^(ref)	168 (62.5%)		72 (26.8%)		62 (23.0%)	
>35	44 (66.7%)		10 (15.2%)		19 (28.8%)	
Domicile		1.04 (0.65-1.65)		0.99 (0.589-1.668)		1.01 (0.60-1.71)
Java ^(ref)	136 (63.0%)		53 (24.5%)		52 (24.1%)	
Others	76 (63.9%)		29 (24.4%)		29 (24.4%)	
Education		1.04 (0.59-1.83)		1.39 (0.76-2.55)		1.42 (0.77-2.61)
University level ^(ref)	171 (63.1%)		63 (23.2%)		62 (22.9%)	
High school	41 (64.1%)		19 (29.7%)		19 (29.7%)	
Toothbrushing frequency		1.22 (0.71-2.11)		1.50 (0.77-2.92)		1.47 (0.76-2.87)
Less than twice per day ^(ref)	41 (59.4%)		13 (18.8%)		13 (18.8%)	
At least twice per day	171 (64.3%)		69 (25.9%)		68 (25.6%)	
Pain effect on daily life						
Oral hygiene habits		0.91 (0.53-1.57)		1.11(0.60-2.04)		1.08 (0.59-2.00)
Yes ^(ref)	48 (64.9%)		17 (23.0%)		17 (23.0%)	
No	164 (62.8%)		65 (24.9%)		64 (24.5%)	
Diet		1.35 (0.85-2.13)		1.41 (0.85-2.33)		1.65 (1.00-2.74)
No ^(ref)	119 (60.4%)		43 (21.8%)		40 (20.3%)	
Yes	93 (67.4%)		39 (28.3%)		41 (29.7%)	
Drinks		1.09 (0.58-1.43)		1.86(1.12-3.07)*		2.06 (1.24-3.42)*
No ^(ref)	116 (62.4%)		36 (19.4%)		34 (18.3%)	
Yes	96 (64.4%)		46 (30.9%)		47 (31.5%)	
Feeling improvement with the self-medication		2.94 (1.79-4.84)*		5.23 (2.30-11.85)*		5.13 (2.26-11.62)*
No ^(ref)	40 (44.4%)		7 (7.8%)		7 (7.8%)	
Yes	172 (70.2%)		75 (30.6%)		74 (30.2%)	

* $p < 0.05$; ref = reference category

be used as a tool to engage and empower patients.²⁰ In an existing study, the participants explained their use of social media sources for health information with the following statement: "because a lot of them are having the same problem I am or another user on these sites had asked the same question, and as a result, the best answer was already identified."¹⁸ Another study found several benefits to using that type of digital social media. The

authors noted that online videos are a more effective way of sharing health information than written text. They also reported that patients easily described their experiences and firsthand impressions related to their disease by using YouTube. Patients could describe and share their emotional perspectives and acquire coping skills, support, and resources.²¹

ST is a relatively common problem encountered in clinical practice, and it was found to be related to substantially impaired oral health-related quality of life.²² The study showed that choice of beverages is affected by ST. ST may disturb patients during eating, drinking, and brushing.²³ This observation is similar to those in other studies, which reported that drinks are most often modified because of ST; for example, subjects may limit their intake of cold and/or acidic drinks because they want to prevent possible discomfort/pain or because they had discussed the impact of these elements with their dentists. Although most people with ST noted little impact of such behavior on their overall quality of life, some reported a significant impact.²

In the present study, the prevalence of self-medication for ST was high. However, the resources about the practice of self-medication for ST are limited as the existing studies are generally about self-medication for oral health problems. This percentage is similar to those reported in several studies.²⁴⁻²⁶ A few limitations were identified in the current study, and they should be highlighted for future research. For example, the results cannot be generalized to the whole Indonesian population. Therefore, any decision to generalize these findings to other categories of the population must be made thoughtfully. The questionnaire was adapted directly from a previous study. Hence, validity and reliability tests were not conducted. In addition, the questionnaire was self-administered and might have led to a certain type of limitation bias, such as social desirability.

CONCLUSIONS

The findings of this study showed that the adult population in Indonesia rely more on Google than on Instagram and YouTube when seeking OHI about ST on the internet. People who use the internet to seek OHI are likely to have had higher education and have access to smartphones and the internet. This study also showed that the choice of drinks is affected by ST and that people who seek information about self-medication for ST feel improvement thereafter. Further study should be conducted to develop and analyze internet-based intervention program for oral health education.

CONFLICT OF INTEREST

The authors declare no conflicts of interest.

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