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Knowledge and Perceived Importance of Oral Health: A Case Study of Addis Ababa, Ethiopia

Meron Tesfaye[1] & Emmanuel Thompson[2] & Seidu Sofo[3]

[1] Department of Biology, Southeast Missouri State University, USA
[2] Department of Mathematics, Southeast Missouri State University, USA
[3] Department of Allied Health, Kinesiology, & Sport Sciences, Southeast Missouri State University, USA
Correspondence: Seidu Sofo, Southeast Missouri State University, USA
Email: ssofo@semo.edu

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Abstract

The study examined the knowledge and perceived importance of oral health among residents of Addis Ababa, Ethiopia. Participants were a purposive sample of 329 adults (55% male and 45% female) from Addis Ababa in Ethiopia. The response variables were knowledge of oral health and perceived importance of oral health. The predictor variables were sex, age, marital status, and educational background. A 10-point Likert Scale was used for data collection. Descriptive and inferential tools used for the analyses were frequency count, percentage, median, first and third quartiles, and interquartile range, Pearson's Chi-squared, Fisher's exact, Wilcoxon rank sum, and Kruskal-Wallis tests. The results revealed that 55% of respondents had a high level of knowledge about oral health, while 33% had moderate levels of knowledge. Additionally, 81% reported high levels of perceived importance of oral health, while 13% exhibited moderate levels of perceived importance of oral health. The analyses further showed a significant difference in knowledge and perceived importance of oral health in terms of sex and educational background of respondents. However, age and marital status did not indicate significant differences. The study highlights the significance of understanding the knowledge and importance of oral health in the Ethiopian context. It provides insights into educational levels and perceptions, offering valuable information for public health interventions aimed at promoting oral health awareness and practices among the population of Addis Ababa and potentially across Ethiopia.

Keywords: Oral Health, Oral Hygiene, Oral Diseases, Ethiopia

Introduction

Maintaining oral health is essential for overall well-being, as it impacts both physical health and quality of life (Yap, 2017). Oral health encompasses taking care of diseases and conditions that affect the teeth and gums, among structures in the mouth (World Health Organization [WHO], 2016). Maintaining hygiene involves following daily routines to keep one's teeth and gums clean and healthy. This helps prevent issues like

cavities, gum disease, and bad breath (Ayele et al., 2013).

Taking care of one's teeth and gums through habits, like brushing and using floss, is crucial for oral health since it helps prevent dental problems such as cavities and gum disease, like periodontitis, especially in communities where access to good oral hygiene practices is limited, leading to a high number of people suffering from dental problems (Andarigie, 2019). Improving the quality of education for the public and ensuring access to dental services are essential steps in enhancing oral health outcomes in communities that lack adequate resources. Research shows a positive association between an individual's health and oral hygiene (Yang et al., 2024). It is, therefore, crucial to uphold good hygiene practices for excellent oral health standards. Poor oral hygiene may result in oral diseases such as cavities and gum disease, which can potentially lead to health concerns such as heart disease and diabetes. For example, research has shown a high prevalence of oral diseases among populations in many African countries (Abid et al., 2015; Mbawalla et al., 2010). Furthermore, researchers have reported that oral diseases were among the leading causes of morbidity in some African countries (Morgan et al., 2018).

Despite the significance of care practices in maintaining oral health, there is a lack of awareness of preventive oral care routines in many parts of the world (Chebib et al. 2021; Poudel et al. 2018). Additionally, Naidoo et al. (2015) asserted that there is low priority for research in oral health in the African and Middle Eastern Region. There is a need for comprehensive knowledge and awareness regarding appropriate oral care routines. Research reveals that the role of oral health in the health and well-being of individuals is often overlooked. Numerous communities, especially in Sub-Saharan Africa, face challenges in obtaining care and educational materials related to oral hygiene (Andarigie, 2019). In the Ethiopian context, the difficulties are exacerbated by economic and infrastructural problems, resulting in oral hygiene issues such as cavities and gum diseases in both children and adults. Tackling these challenges should include interventions that address public health initiatives, mass education, and the enhanced availability of healthcare services (Ayele, 2013; Tesfaye, 2018).

Purpose of the Study

Oral health is fundamental for general well-being, as it averts infections and diseases that can affect the entire body, while enhancing self-esteem and promoting good nutritional practices. Maintaining good oral hygiene can reduce pain, healthcare costs, and lead to early detection of dental issues. Therefore, the current study aimed to examine the knowledge and perceived importance of oral health among residents of Addis Ababa, Ethiopia.

Research Questions

The following research questions guided the present study.

1. What is the level of awareness of oral health among residents of Addis Ababa, Ethiopia?
2. What are the perceptions of oral care to residents in Addis Ababa, Ethiopia, regarding the importance of oral health?
3. To what extent do the perceived importance of oral health differ among male and female residents of Addis Ababa, Ethiopia?
4. What is the effect of educational background on the perceived importance of oral health among the residents of Addis Ababa, Ethiopia?

Method

Participants

This study utilized a purposive sample of 329 adults from Addis Ababa, Ethiopia, aged 18 years and above. Of the total participants, 55% were male and 45% were female. The purposive sampling method was the appropriate technique for the researchers to select those individuals who could provide the most relevant information for the study. That is, the sampling technique enabled the researchers to explore oral health knowledge and its perceived importance within the local context.

Instrument

The Oral Health Questionnaire (OHQ), a 10-point Likert Scale, served as the data collection tool. The researchers developed the questionnaire based on the literature relating to attitudes, beliefs, and perceptions of oral health. The OHQ comprises three sections. Section 1 collects demographic information on sex, age, marital status, and educational background. Section 2 examines participants' knowledge of oral health on a 10-point scale, with "1" being the lowest and "10" being the highest. Section 3 asked participants to rate the importance of oral health. Using a 10-point scale, with "1" being the least important and "10" being the most important, participants rated the importance of oral health and the maintenance of health.

The study was approved by the Institutional Review Board (IRB) at the authors' institution. The purpose of the study was explained to the participants, after which they provided their consent before completing the questionnaire. The consent form clearly stated to participants that participation was voluntary and that they could withdraw from the study by not completing the questionnaire.

Variables

The study identified two main response variables: knowledge of oral health and perceived importance of oral health. The predictor variables were sex, age, marital status, and educational background. Sex was classified into male and female. Age was treated as a continuous variable, recorded in years. Marital status was considered as married or single (unmarried). Educational background was divided into five categories: elementary, secondary, vocational/technical, bachelor's degree, and master's/doctoral.

Statistical Analysis

Descriptive and inferential statistical analyses were conducted to test the relationship between the predictor variables and the response variables. First, we used descriptive statistics to summarize the data and provide an overview of the demographic characteristics of the participants—sex, age, marital status, and educational background. These statistics outlined the basic structure of the sample and provided a foundation for the inferential analyses. Second, associations between categorical variables were assessed using Pearson's Chi-Squared Test (Bluman, 2017). The test aimed to find if a statistically significant relationship existed between two categorical variables; for example, sex and knowledge of oral health, or marital status and perceived importance of oral health. Third, we utilized Fisher's Exact Test because some of the expected frequencies of the contingency table cells were small. The test provided better results in cases where the assumptions for the Chi-Squared Test were violated (Agresti, 2019).

Fourth, the Wilcoxon Rank Sum Test was used to analyze the distribution of continuous variables across categories. This is a non-parametric test used to compare two independent groups. For instance, it was used to compare male participants with female participants in terms of oral health knowledge, without assuming the normality of data distribution. Comparisons involving more than two independent groups—knowledge of oral health across different age groups—were calculated using the Kruskal-Wallis Test. This test allowed the analysis of significant differences in the distribution of responses across three or more groups. In general, nonparametric tests are useful when the assumptions of parametric tests, such as normality and homogeneity of variance, cannot be justified, and one wishes to obtain robust and valid results even with skewed or ordinal data (Conover, 1999). All statistical tests were performed with a significance level of 0.05, and any p-value less than 0.05 was considered statistically significant. This threshold was chosen to minimize the likelihood of Type I errors, ensuring that the findings were robust and reliable.

Results
Descriptive Statistics

The descriptive statistics of the predictor variables are summarized in Table 1. A little over half of the participants were male (55%), while females constituted 45%. Regarding educational background, most participants had either a bachelor's degree (40%) or a secondary education (37%). Most respondents were under 25 years of age, and most participants were single.

Table 1: Descriptive statistics (Predictor Variables)

Characteristic	**N = 329**
Sex:	
Male	182 (55%)
Female	147 (45%)
Age:	
Less/Equal to 25 Years	203 (62%)
Greater Than 25 Years	126 (38%)
Marital Status:	
Single	249 (76%)
Married	80 (24%)
Educational Background:	
Elementary	13 (4.0%)
Secondary	122 (37%)
Vocational/Technical	24 (7.3%)
Bachelor’s	132 (40%)
Master's/Doctorate	38 (12%)

Descriptive statistics of the response variables are presented in Table 2. On knowledge about oral health, 55% of the respondents showed a high level of knowledge, while 33% had moderate levels of knowledge. On the perceived importance of oral health, 81% of the participants reported a high level of importance, while 13% reported a moderate level of perceived importance.

Table 2: Descriptive statistics (Response Variables)

Knowledge (Score)	8 (5, 9)
Importance (Score)	10 (9, 10)
Knowledge (Class):	
Low (1 - 4)	39 (12%)
Moderate (5 - 7)	109 (33%)
High (8 - 10)	181 (55%)
Importance (Class):	
Low (1 - 4)	18 (5.5%)
Moderate (5 - 7)	44 (13%)
High (8 - 10)	267 (81%)

n (%); Median (IQR)

Significance Tests

The results in Table 3 suggest a statistically significant difference by sex in both knowledge of oral health and perceived importance of oral health. Both the Wilcoxon Rank Sum Test and Person's Chi-Squared Test yielded significant differences, $p < .05$, for both response variables. This suggests that male and female respondents differed in their levels of knowledge and perceptions about the importance of oral health.

Table 3: Significance tests – sex

Characteristic	**Male**, N = 182[1]	**Female**, N = 147[1]	***P*-value**[2]
Knowledge	7 (5, 9)	8 (6, 10)	0.010
Importance	8 (6, 10)	10 (9, 10)	0.003
Knowledge:			0.006
Low	27 (15%)	12 (8.2%)	
Moderate	69 (38%)	40 (27%)	
High	86 (47%)	95 (65%)	
Importance:			0.008
Low	12 (6.6%)	6 (4.1%)	
Moderate	33 (18%)	11 (7.5%)	
High	137 (75%)	130 (88%)	

[1] ***Median (IQR); n (%)***

[2] ***Wilcoxon rank sum test; Pearson's Chi-squared test***

The significance tests for educational background, as shown in Table 4, indicated mixed results. In contrast, the Kruskal-Wallis Rank Sum Test showed a significant difference by educational background in knowledge of oral health, $p < .05$. Also, the Kruskal-Wallis Rank Sum Test found a significant difference by educational background in perceived importance of oral health, $p < .05$. However, Fisher's Exact Test did not find any significant associations for either knowledge or perceived importance of oral health by educational background.

The predictor variables of sex and educational background were found to be significant factors in influencing both knowledge and perceived importance of oral health. In contrast, age and marital status were unimportant predictors because they did not show significant associations with the response variables in the statistical tests conducted.

Table 4: Significance tests – Educational background

Characteristic	Elementary N = 13[1]	Secondary N = 122[1]	Vocational/ Technical N = 24[1]	Bachelor N = 132[1]	Masters/Doctorate N= 38[1]	*P*-value[2]
Knowledge	6 (5, 8)	8 (5, 9)	7 (5, 8)	8 (6, 10)	9 (7, 10)	0.000
Importance	9 (7, 10)	10 (9, 10)	9 (8, 10)	10 (9, 10)	10 (10, 10)	0.031
Knowledge (Class):						0.320
Low	3 (23%)	18 (15%)	5 (21%)	11 (8.3%)	2 (5.3%)	
Moderate	5 (38%)	39 (32%)	11 (46%)	44 (33%)	10 (26%)	
High	5 (38%)	65 (53%)	8 (33%)	77 (58%)	26 (68%)	
Importance						0.200
Low	2 (15%)	9 (7.4%)	2 (8.3%)	5 (3.8%)	0 (0%)	
Moderate	3 (23%)	17 (14%)	4 (17%)	17 (13%)	3 (7.9%)	
High	8 (62%)	96 (79%)	18 (75%)	110 (83%)	35 (92%)	

[1] Median (IQR); n (%)

[2] Kruskal-Wallis rank sum test; Fisher's exact test

Discussion and Conclusions

This study examined the knowledge and perceived importance of oral health among residents of Addis Ababa, Ethiopia. The results indicate that most participants in the present study reported high levels of knowledge in oral health and the perceived importance of oral health. This finding is consistent with that of Madiba et al. (2017), who reported that 70% of the participants in their study in South Africa displayed an acceptable level of knowledge regarding sugar-sweetened beverages and oral health. However, the finding contradicts that of Varenne et al. (2006), who reported low levels of oral health knowledge, attitudes, and self-care among both children and adults in Burkina Faso. These mixed findings could be attributed to socioeconomic differences in the three countries. Countries with higher levels of education are more likely to report higher levels of awareness of oral health than those with lower education levels (Nzabonimana, 2024; Sekele et al., 2025).

Notably, female respondents in the current study reported higher levels of awareness for oral health compared to their male counterparts. Typically, females have interactions with the healthcare system due to gender roles as primary caregivers in African societies. This finding is consistent with previous research that men are more likely to neglect their oral health and have poor oral hygiene (Lipsky et al., 2021). Also, Lipsky et al. (2021) reported that women demonstrated greater oral health literacy and good oral

health practices than men.

Another finding of the current study was that individuals with higher educational attainment demonstrated better knowledge and a stronger perceived importance of oral hygiene. This finding may be attributed to the higher levels of health literacy among individuals with higher levels of education (Nutbeam, 2000). Additionally, individuals with higher education levels are more likely to have access to health information than those with limited education. These findings stress the role education plays in health perceptions and highlight opportunities for public health interventions to raise awareness about oral health. By addressing these demographic factors, especially educational inequalities, interventions can have a more positive impact on oral health practices in Addis Ababa and, more broadly, on the health of Ethiopia's population.

We make three recommendations based on the main findings. First, community oral health programs should focus on male adults to raise their awareness of oral health and its importance to their health and overall well-being. For instance, public figures such as male politicians and other personalities can serve as role models for oral health awareness. Second, public education on oral health through the non-formal education sector would be valuable for individuals with low educational levels. Third, oral health education should begin early in the schools, from the primary to secondary school levels. This will help children and adolescents learn about oral health early.

About the Authors

The three authors are with Southeast Missouri State University in the United States. Meron Tesfaye was a Biomedical Sciences major in the Department of Biology at the time of the study. Emmanuel Thompson is a Professor of Actuarial Science and Statistics, and coordinator of the Actuarial Science program in his department. Seidu Sofo is a Professor of Physical Education Pedagogy and the coordinator of the physical education program in his department.

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