

Assessment of Oral Health Literacy Among Malaysian Adults: a cross sectional study

Vardhan AS^{1*}, Gogula S², Thomas W¹, Goh M¹, Johaila D¹

Abstract

Dental health practitioners are currently focusing on oral health literacy to assess and better comprehend the general public's dental and overall health needs. Gender, age, socioeconomic condition, and education status all play a role in determining the level of understanding of basic oral health literature. Our research focuses on the oral health literacy of Malaysian adults who attended the Lincoln University College (LUC) Dental Clinic. We want to know if our findings support other people's studies in different circumstances. This also allows us to assess our patient population and better tailor our oral health education to LUC future patients. We used a validated research questionnaire developed by Jaafar et al. 2020. The questionnaire was delivered to respondents via a Google link and print copy upon request. The data collected was evaluated using SPSS version 30 with a significance level of $p\text{-value} > 0.05$. The results were described using analysis of variance (ANOVA). The findings of our study show that Oral Health Literacy (OHL) varies by social demographic profile (SDP), which validates the previously stated general assumptions. Better education and socioeconomic circumstances result in a better overall awareness of oral health knowledge.

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Affiliation

Dr. Anubhava Vardhan Shawarma

Department of Restorative Dentistry,
School of Dentistry Lincoln University College,
Petaling Jaya, Selangor, Malaysia.

Dr. Sita Gogula

Department of Oral Diagnostics and Surgical Sciences,
Faculty of Dentistry, Lincoln University College,
Petaling Jaya, Selangor, Malaysia

Dr. William Thomas

Department of Restorative Dentistry,
Faculty of Dentistry, Lincoln University College,
Petaling Jaya, Selangor, Malaysia

Dr. Michelle Goh

Department of Restorative Dentistry,
Faculty of Dentistry, Lincoln University College,
Petaling Jaya, Selangor, Malaysia.

Dr. Diya Johaila

Department of Restorative Dentistry,
Faculty of Dentistry, Lincoln University College,
Petaling Jaya, Selangor, Malaysia

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Address of Correspondence:

Assoc. Prof. Dr. Anubhava Vardhan Shawarma
Department of Restorative Dentistry
School of Dentistry Lincoln University College, Petaling
Jaya, Selangor, Malaysia.
Email: anubhava@lincoln.edu.my

Introduction

The World Health Organization¹ identifies oral health as a fundamental component of overall health, well-being, and quality of life.² Despite being largely preventable, oral diseases remain a significant public health concern globally, affecting individuals across their lifespan and resulting in pain, discomfort, disfigurement, and even mortality in severe cases.¹ These conditions have wide-reaching consequences, not only on physical health but also on social functioning, economic productivity, and emotional well-being. According to the Global Burden of Disease 2019, approximately 3.5 billion people worldwide are affected by oral diseases, with untreated dental caries in permanent teeth being the most prevalent health condition.¹ The burden of these diseases is disproportionately high among socioeconomically disadvantaged populations and is anticipated to escalate due to social and habit factors.² Oral diseases are influenced by a range of modifiable risk factors that are also common to other non-communicable diseases, including unhealthy dietary habits, tobacco and alcohol use, inadequate oral hygiene, and poor access to healthcare, all of which are shaped by broader social determinants of health.¹ Social determinants of health are defined as the conditions in which individuals are born, grow, live, work, and age, as well as the systemic forces that shape these conditions.³ These determinants encompass various factors such as neighborhood environments, accessibility of healthcare resources, income, wealth, education, and employment opportunities. Among these, education plays a particularly critical role, not only in providing individuals with knowledge and skills but also in shaping attitudes, beliefs, and lifelong behaviors. Education is a continuous process that supports personal growth and social development, and it is

closely linked to health outcomes, including oral health. In the context of oral health, education serves as a crucial preventive measure. Oral health education seeks to improve knowledge and foster behaviors that contribute to maintaining good oral hygiene and reducing disease risk.⁴ While education at the population level has been shown to be one of the most cost-effective strategies for disease prevention, it does not always result in behavior change. This disconnect underscores the importance of not only disseminating information but also ensuring that individuals are equipped to understand and apply it effectively in their lives.

This leads to a growing emphasis on oral health literacy (OHL). Oral Health Literacy (OHL), defined as an ability to obtain, understand, and apply information related to oral health, plays a crucial role in promoting effective oral health outcomes and behaviors.⁵ In today's digital age, where smartphones and the internet have made access to health information more widespread than ever. The challenge is no longer the availability of information, but the ability to comprehend, evaluate, and utilize it in meaningful ways. Oral health literacy is defined as the degree to which individuals can obtain, process, and understand essential oral health information and services needed to make informed health decisions.⁶ Low levels of OHL have been identified as a significant contributor to disparities in oral health outcomes and are associated with increased rates of disease and negative health experiences (Journal of Public Health Dentistry, 2005).

In Malaysia, where ethnic, linguistic, and socioeconomic diversity is prominent, addressing oral health literacy is crucial for reducing health inequalities. Malaysia's population includes Malays, Chinese, Indians, and Indigenous groups, each with distinct cultural practices and health beliefs. The national language is Malay, but English and other languages are widely spoken, and varying literacy levels exist across regions and demographic groups. Access to dental services also varies significantly, with rural populations and lower-income communities often facing barriers to care.

The primary goal of this study is to evaluate the oral health literacy (OHL) levels among adult Malaysians who attend the LUC dental clinic. By understanding how well individuals comprehend, process, and apply oral health information, we can gain insights into their capacity to make informed decisions about their oral health. This study aims to highlight current literacy trends, identify gaps in knowledge, and ultimately help inform better communication strategies and interventions within the dental setting.

Methodology

This cross-sectional study was conducted among Malaysian adults attending the Lincoln University College (LUC) Dental Clinic. A systematic sampling method was employed to recruit participants during the study period. Eligible participants were Malaysian adults aged 18 years and above, fluent in the Malay language, and residing in Malaysia for at least one year. Individuals attending emergency dental visits, those with cognitive impairment or diagnosed mental illness, non-Malaysians, and individuals unable to read Malay were excluded. The sample size was determined using OpenEpi Version 3 based on a population of 3,000 patients, an anticipated prevalence of 7.2% (Jaafar et al., 2020), and a 5% margin of error. The minimum required sample size was 100 participants; allowing for a 20% non-response rate, a total of 120 participants were recruited.

Data were collected using the validated Malay Oral Health Literacy Instrument (OHLI-M) developed by Jaafar et al. (2020). The questionnaire was administered in printed form or via Google Forms following informed consent. It comprised two components: reading comprehension and numeracy. Reading comprehension was self-administered, whereas the numeracy section was conducted through face-to-face interviews using medication labels, a dental appointment card, and post-extraction instructions. Each correct response was awarded one mark, and weighted scores were calculated to obtain a total OHLI-M score ranging from 0 to 100, categorized as inadequate (0–59), marginal (60–74), or adequate (75–100). Data were analysed using descriptive statistics, including frequencies, percentages, means, and standard deviations. Statistical significance was considered at $p < 0.05$.

Results

A total of 120 participants were successfully recruited in this study as portrayed in our methodology. Participants were all adult patients that attended LUC dental clinic during the time of the research. 75 (62.5%) out of 120 were female and the rest 45 (37.5%) were male participants as shown in Table 4.1 and Figure 4.1. Table 4.1 is included at the end of this section and consists of comprehensive data that had been collected and analyzed in this study such as OHL mean, standard deviation (SD) value.

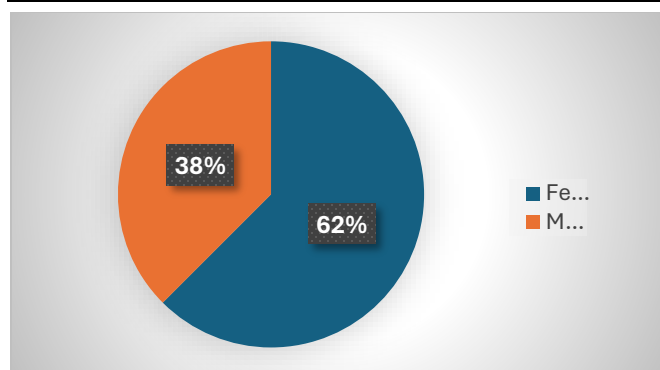


Figure 4.1 Total female and male participants percentage in our study.

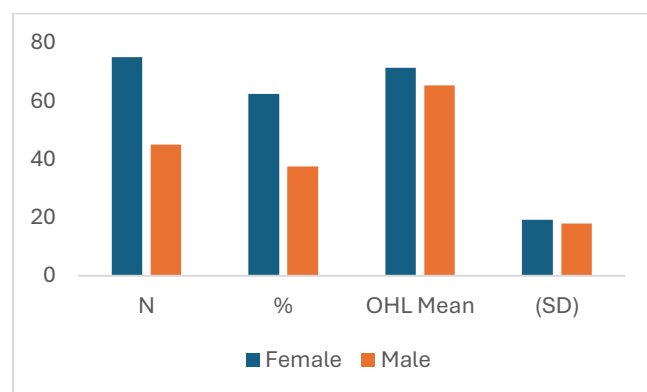


Figure 4.2 OHL mean score according to gender of participants. N, number; % total percentage of participants.

Oral Health Literacy Among Gender

In comparison between female and male participants, females had a higher OHL mean score (71.45 ± 19.9) in Table 4.1. Among male participants, the OHL mean score is lower, recorded at (65.27 ± 17.99). The SD values indicate that the range of score is wider amongst female participants.

Oral Health Literacy Based on Education Status

From the perspective of education status, the OHL mean score increases based on the level of education as shown in Figure 4.3. The range of score starts from an average of 61.63 with an upward value till 73.10 for university level of education status as shown in Figure 4.3 and Table 4.1. There were no representative values from primary school and middle school education status as no participants were recruited in this category. However, there was an outlier data with an OHL score of 78.96, which is the highest score, with no formal education.

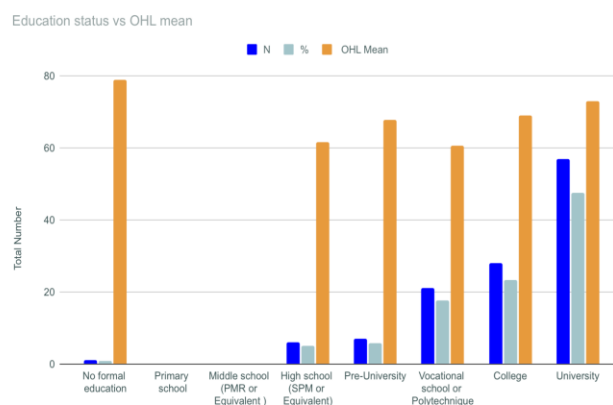


Figure 4.3. Total of participants in each Education Category, percentage and OHL mean for each category. N, number; % total percentage of participants.

Ethnicities in this study were divided into 5 broad categories in this study which are Chinese, Malay, Indian, Native and others. A total of 25 (20.8%) Chinese participants, 76 (63.3%) Malay participants, 18 (15%) Indian participants, 1 (0.8%) Native participants and 0 in others participants as shown in Figure 4.4. Malays and Indians have relatively close OHL scores (69.71 ± 18.42) and (69.31 ± 24.57) respectively according to data in Table 4.1. Chinese participants scored the lowest OHL score, with the mean score of (66.85 ± 16.58), SD values are as shown in Table 4.1. Highest OHL score was from the Native category recorded at 78.96 but the value is obtained from only 1 participant in the category as shown in Figure 4.4 below.

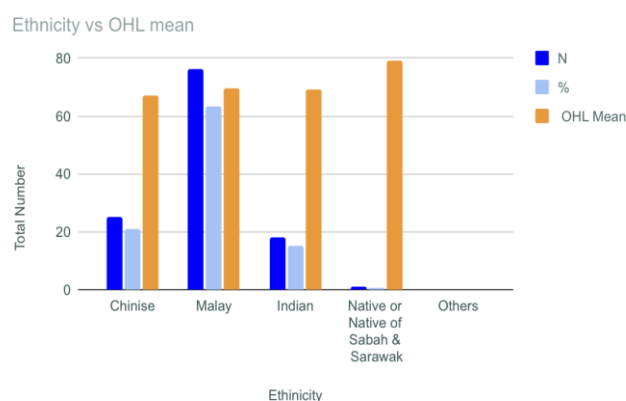


Figure 4.4 OHL mean score according to ethnicity. N, number; % total percentage of participants.

In our study the economic status was segregated based on income value. The value categories are from RM 30000 and below, RM 3000 to RM 6000, RM 6000 to RM 9000 and lastly RM 9000 and above category. As the salary or income value increases, we observed the upward trend in the mean OHL score until the range of RM 6000-RM9000 and drops

of mean OHL score to 59.71, which is an inadequate score at RM 9000-RM 15,000 monthly income value. No participants from RM 15,000 and above were recorded. The p-value for this category is more than 0.05 indicated in Table 4.1.

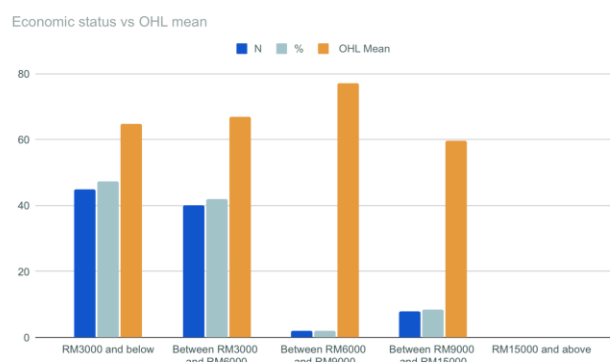


Figure 4.5 OHL mean score according to economic status N, number; % total percentage of participants.

Lastly, we study the OHL relationship based on the age group of participants. The mean age for our study is 41.28 years with the range of age of 18 years to 65 years as shown in Table 4.1 and Figure 4.6 below. Participants are categorised into 4 main groups, early adulthood, adulthood, middle age and elderly. As expected, early adulthood participants have the highest OHL score at an average of 79.52. Lower scores were observed in middle age and elderly groups at 66.21 and 62.84 respectively as shown in Figure 4.6 below.

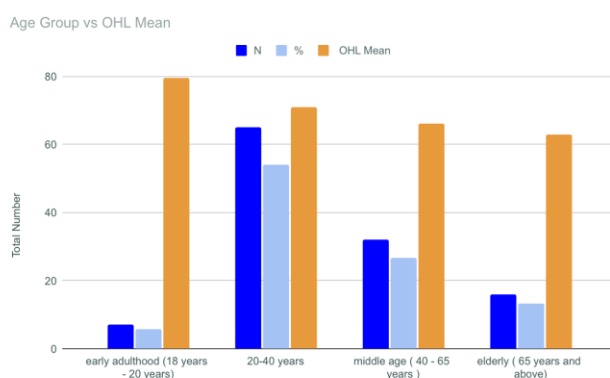


Figure 4.6 OHL mean score according to age group. N, number; % total percentage of participants.

Table 1. Descriptive data of OHL

Characteristics	N	%	OHL Mean	(SD)
Female	75	62.5	71.45	19.19
Male	45	37.5	65.27	17.99
Education status				
No formal education	1	0.8	78.96	-
Primary school	0	-	-	-
Middle school (PMR or Equivalent)	0	-	-	-
High school (SPM or Equivalent)	6	5.0	61.63	21.60
Pre-University	7	5.8	67.89	10.95
Vocational school or Polytechnique	21	17.5	60.66	14.30
College	28	23.3	69.00	17.49
University	57	47.5	73.10	20.99
Ethnicity				
Chinese	25	20.8	66.85	16.58
Malay	76	63.3	69.71	18.42
Indian	18	15.0	69.31	24.57
Native or Native of Sabah & Sarawak	1	0.8	78.96	-
Others	0	-	-	-
Economic status				
RM3000 and below	45	47.4	64.66	17.83
Between RM3000 and RM6000	40	42.1	66.98	17.61
Between RM6000 and RM9000	2	2.1	76.99	28.85
Between RM9000 and RM15000	8	8.4	59.71	22.54
RM15000 and above	0	-	-	-
Age group				
Early adulthood (18 years - 20 years)	7	5.8	79.52	
Adulthood 20-40 years	65	54.2	71.00	
Middle age (40 - 65 years)	32	26.7	66.21	
Elderly (65 years and above)	16	13.3	62.84	

Discussion

Because it affects a person's capacity to access, comprehend, and apply oral health information to make educated health decisions, oral health literacy (OHL) is acknowledged as a significant predictor of oral health. Better oral health

outcomes, increased use of preventive dental care, and improved oral health habits are all linked to enough OHL. Improving OHL may help promote oral and overall health since many chronic systemic diseases share risk factors with dental problems.⁷ In this study, the degree of oral health literacy among adult Malaysians who visited the Lincoln University College (LUC) Dental Clinic was evaluated, and its association with particular sociodemographic traits was investigated. Overall, the findings indicated variability in OHL across gender, education, ethnicity, income, and age, demonstrating that oral health literacy is influenced by numerous social variables.

In line with other research showing that women typically have better oral health knowledge, more positive attitudes about oral health, and greater engagement in preventive oral health activities, female participants showed a higher mean OHL score than male participants.⁸ Despite the small reported difference, women may use healthcare more frequently and are more interested in health-related information. The most obvious correlation with OHL was seen in education. The greatest mean OHL score was attained by participants with a university education, whereas those with a secondary or vocational education scored much lower. These results are consistent with other research showing that educational achievement enhances a person's capacity to comprehend health information and adopt healthy behaviours. It's interesting to note that one participant without formal schooling received a high OHL score; nevertheless, as this is an isolated discovery and does not represent the general trend, it should be evaluated cautiously. However, it implies that oral health literacy may also be influenced by personal experiences and lifelong learning.

The main ethnic groupings had comparatively little variation in OHL. However, as only one participant was from the Native group and none were chosen from the "Others" category, the study sample did not accurately represent the ethnic distribution of Malaysians. As a result, it is not appropriate to extrapolate these results to the entire Malaysian population. To more accurately assess the impact of ethnicity and cultural diversity on oral health literacy, future research should enlist a more representative sample. There was no consistent correlation found between household income and OHL. Although middle-class participants had comparatively higher OHL scores, the higher-income categories had only few participants, making meaningful interpretation difficult. This implies that oral health literacy may be influenced by factors other than wealth, such as education, access to health information, and health-seeking behaviour.

Younger participants had higher mean scores than older persons, indicating a falling trend in OHL with increasing

age. Differences in educational exposure, accessibility to health information, and familiarity with digital resources may be reflected in this finding. Tailored communication tactics are crucial since older persons can still learn new things through suitable educational approaches. All things considered, this study shows that oral health literacy differs among the many demographic groups that visit the LUC Dental Clinic. The results highlight the importance of patient-centered oral health education, especially for older folks and those with less education. Incorporating digital platforms, visual teaching materials, clear communication, and individualised counselling into regular dental treatment may improve oral health results by increasing patients' comprehension. It is advised that larger, more representative populations be included in future multicenter studies to confirm these results and direct Malaysian oral health promotion initiatives.

Conclusion

This study evaluated the oral health literacy (OHL) of adult Malaysians who visited the Lincoln University College (LUC) Dental Clinic and looked at how it related to certain sociodemographic traits. The results imply that OHL differs among various demographic groups, with females, younger individuals, and those with higher levels of education typically exhibiting higher mean scores. These findings corroborate earlier research showing that socioeconomic status and education have an impact on a person's capacity to comprehend and implement oral health information. Due to the low representation in certain participant categories, these results should be interpreted cautiously even if variations were noted based on household income and ethnicity. Overall, the study emphasises how crucial it is to advance oral health literacy in dental practices through patient-centered instruction and efficient communication techniques. It is advised that larger, more representative groups be included in future research to confirm these results and delve deeper into the variables affecting oral health literacy. Enhancing OHL may improve the Malaysian population's overall oral health outcomes, informed decision-making, and preventative oral health practices.

Ethical Approval: The study was conducted in accordance with the ethical approval obtained by ethical committee Lincoln University College, Malaysia (LUCFD2024RPA27).

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