# Oral Health Literacy Level among the Mothers of Preschool Students According to Demographic Factors

**Yufitri Mayasari[1], Annisa Septalita[1], Sarah Mersil[2], Shafira Salmiya Rukka[3]**

[1]Department of Community and Preventive Dentistry, Faculty of Dentistry, Prof. Dr. Moestopo University (Beragama), Jakarta, Indonesia

[2]Department of Oral Medicine, Faculty of Dentistry, Prof. Dr. Moestopo University (Beragama), Jakarta, Indonesia

[3]Faculty of Dentistry, Prof. Dr. Moestopo University (Beragama), Jakarta, Indonesia

| ABSTRACT | ARTICLE DETAILS |
|---|---|

**Introduction:** Oral health literacy (OHL) is defined as an individual's capacity to comprehend and effectively utilize information pertaining to dental health, which subsequently influences oral health behaviors and informs decision-making processes. OHL plays a critical role in mitigating oral health disparities, enhancing dental health outcomes, and establishing a foundation for the development of sound oral health practices among parents. **Objective:** To analyze the differences in OHL levels among parents of early childhood education (ECE) students, specifically in relation to the demographic factors of school location and socioeconomic status, age, education, and income. **Methods:** This study used an analytical approach and adopted a cross-sectional design. The target population consisted of mothers of children enrolled in ECE programs in South Jakarta. A total of 99 participants were selected using multi-stage cluster sampling. Data were collected through the distribution of the Health Literacy in Dentistry 14 (HeLD-14) questionnaire via Google Forms, followed by analysis using chi-square and Pearson chi-square tests. **Results:** The results showed that mothers of ECE students in South Jakarta had an average OHL score of 48.4, indicating high literacy levels. The chi-square test showed significant differences in literacy levels based on socioeconomic status factors such as age (p-value = 0.000) and education (p-value = 0.035). Among the ten demographic regions in South Jakarta, there were significant differences in literacy levels between these regions (p-value = 0.009). **Conclusion:** The study found that demographic factors, especially the location or region of the ECE, significantly influence the OHL levels of mothers with children attending ECE in South Jakarta.

**KEYWORDS:** health literacy, early childhood, oral health, mothers

## INTRODUCTION

Health literacy is the ability of an individual to access, process, and comprehend essential health information and healthcare services necessary for improving health outcomes.[1,2] Current data indicates that the overall health literacy level within the Indonesian population is categorized as low, with an average score of 37.32. In contrast, DKI Jakarta exhibits a higher average score of 58.16, which falls within the moderate category.[3] Oral Health Literacy (OHL) is the knowledge and skills related to oral health, which are key determinants of an individual's ability to make decisions regarding oral health-related behaviors and activities.[4,5] The concept of OHL underscores the importance of an individual's ability to understand and utilize dental information to influence oral health practices and facilitate informed health choices.[4] Parental OHL plays a critical role in the oral health of young children. Several studies have shown a correlation between parental OHL levels and the oral health status of their children. Sociodemographic factors also significantly influence parental OHL and children's oral

health. OHL is one of the key factors in the development and formation of parental oral health behaviors.6–8 Parents with low literacy levels generally have less knowledge of their children's oral health.2 A study conducted by Worang (2014) demonstrated that the knowledge levels of parents directly impact the oral hygiene practices of their children. This knowledge can be acquired through informal means or through structured educational programs. A deficiency in parental understanding of oral health significantly contributes to suboptimal oral health care behaviors among children.9 Sociodemographic characteristics of parents, such as education level, health insurance status, and income, as well as oral health behaviors of parents, both directly and indirectly, influence the oral health behaviors and oral health status of their children.6 While several studies have established connections between parental sociodemographic factors and children's oral health behaviors, there remains a gap in research regarding the association between these factors and literacy levels specifically in DKI Jakarta. Consequently, this study seeks to analyze variations in OHL levels among parents of ECE students, considering factors such as age, education, and income.

**METHODS**

This study was a analytic study with cross-sectional design aimed at identifying differences in OHL levels among parents of early childhood education (ECE) students, based on demographic factors such as school location and socioeconomic status (including age, education, and income). The independent variables in this study consisted of demographic factors, specifically the school location, which included ten ECE centers from each subdistrict, as follows: Pesanggrahan District represented by ECE Anak Terang, Kebayoran Lama District represented by ECE Al-Karimiyah, Kebayoran Baru District represented by ECE Harapan Bangsa I, Mampang Prapatan District represented by ECE Taman Bermain Kepompong, Cilandak District represented by ECE Nurul Hikmah, Jagakarsa District represented by ECE Al-Hidayah, Pasar Minggu District represented by ECE Merpati Tunas Harapan, Pancoran District represented by ECE Jambu, Tebet District represented by ECE Uswatun Hasanah, and Setiabudi District represented by ECE Dahlia. The socioeconomic status factors included age (<26 years, 26-35 years, 36-45 years, 46-55 years, >55 years), education (primary, secondary, higher education), and income, classified according to the minimum income cutoff for the DKI Jakarta province in 2024 (<IDR 5,067,361, IDR 5,067,361, >IDR 5,067,361). The dependent variable in this study was the OHL level, which was categorized as low, moderate, or high.

The population in this study consisted of mothers of children attending ECE in the South Jakarta area, with inclusion criteria being mothers of children enrolled in ECE within South Jakarta, and exclusion criteria being mothers who had consented but were unable to complete the questionnaire. The sample was selected using multi stage cluster sampling. The minimum sample size for this study was 99 mothers. The research was conducted from July 15-19 2024, with the sample consisting of mothers of students from 10 ECEs in South Jakarta, each ECE representing one subdistrict in South Jakarta.

This study employed two measurement instruments: a questionnaire examining sociodemographic factors and the Health Literacy in Dentistry 14 (HeLD-14) questionnaire. The Indonesian version of the HeLD-14 was subjected to a validity assessment, wherein all fourteen questions exhibited a correlation coefficient (r) exceeding the critical value of 0.497, thus confirming the questionnaire's validity. Moreover, the reliability analysis produced a Cronbach's Alpha value of 0.769, indicating that the questionnaire was reliable. Ethical approval for this study was granted by the Ethics Commission of the Faculty of Dentistry at Prof. Dr. Moestopo University (Beragama), under approval number 102/KEPK/FKGUPDMB/VI/2024.

**RESULTS**

This study used 99 samples that met the inclusion and exclusion criteria. The frequency distribution based on three sociodemographic factors—age, education levels, and income—yielded the following results. Based on age, the sample included 4 individuals (4%) aged <26 years, 56 individuals (56.6%) aged 26-35 years, 28 individuals (28.3%) aged 36-45 years, 8 individuals (8.1%) aged 46-55 years, and 3 individuals (3%) aged >55 years. Regarding the education, the largest group was at the secondary education, with 44 individuals (44.4%), followed by higher education with 42 individuals (42.4%), and primary education with 13 individuals (13.1%). As for income, the majority of respondents had incomes below the minimum wage, with 66 individuals (66.7%), followed by those above the minimum wage with 22 individuals (22.2%), and those at the minimum wage level with 11 individuals (11.1%). These results are presented in Table 1 below.

**Table 1. Frequency distribution of respondent characteristics (n=99)**

| | n | % |
|---|---|---|
| **Mothers' Age** | | |
| <26 years | 4 | 4 |
| 26-35 years | 56 | 56.6 |
| 36-45 years | 28 | 28.3 |
| 46-55 years | 8 | 8.1 |
| >55 years | 3 | 3 |
| **Mothers' Education** | | |
| Primary (Elementary/Junior High School) | 13 | 4 |
| Secondary (High School) | 44 | 56.6 |
| Higher (University) | 42 | 28.3 |
| **Mothers' Income** | | |
| < IDR 5,067,361 | 58 | 56.9 |
| IDR 5,067,361 | 44 | 43.1 |
| > IDR 5,067,361 | 11 | 11.1 |

## Oral Health Literacy Level among the Mothers of Preschool Students According to Demographic Factors

The results from the Health Literacy in Dentistry 14 (HeLD-14) questionnaire regarding OHL showed that 81 (81.8%) mothers of children attending ECE in South Jakarta had high literacy, 16 (16.2%) mothers had moderate literacy, and 2 mothers (2.0%) had low literacy. These results are presented in Table 2 below.

**Table 2. Mothers literacy levels (n=99)**

|  | n | % |
|---|---|---|
| **Literacy level categories** | | |
| Low (14-28) | 2 | 2 |
| Medium (29-42) | 16 | 16.2 |
| High (43-56) | 81 | 81.8 |

Based on the analysis of differences in OHL levels among the research sample based on socioeconomic factors, it was found that there were significant differences in literacy levels based on the respondents' age factor (p=0.000) and highest level of education (p-value=0.035). However, no significant difference was found in OHL levels based on income. These results are presented in Table 3 below.

**Table 3. Analysis of differences in literacy levels based on socioeconomic status factors (n=99)**

|  | Knowledge Level | | | p-value |
|---|---|---|---|---|
|  | Low | Medium | High | |
| **Mothers' Age** | | | | 0.000* |
| <26 years | 0 | 0 | 4(100%) | 0.000* |
| 26-35 years | 0 | 6(10.7%) | 50(89.3%) | |
| 36-45 years | 0 | 8(28.6%) | 20(71.4%) | |
| 46-55 years | 2(25%) | 1(12.5%) | 5(62.5%) | |
| >55 years | 0 | 1(33.3%) | 2(66.7%) | |
| **Mothers' Education** | | | | 0.035* |
| Primary | 0 | 1(7.7%) | 12(92.3%) | |
| Secondary | 2(4.5%) | 12(27.3%) | 30(68.2%) | |
| Higher | 0 | 3(7.1%) | 39(92.9%) | |
| **Mothers' Income** | | | | |
| < IDR 5,067,361 | 2(3%) | 13(19.7%) | 51(77.3%) | 0.553 |
| IDR 5,067,361 | 0 | 1(9.1%) | 10(90.9%) | |
| > IDR 5,067,361 | 0 | 2(9.1%) | 20(90.9%) | |

*Chi-square test, Sig p-value ≤ 0.05, Confident interval 95%

The results of the analysis of differences in literacy levels based on demographic factors showed that there were 3 regions where 100% of mothers had high literacy levels: Kebayoran Baru, Cilandak, and Tebet. Two regions had 90% of mothers with high literacy levels. Two regions had 40% of mothers with moderate literacy levels, namely Pasar Minggu and Pancoran. Meanwhile, Mampang Prapatan had 20% of mothers with low literacy levels. These results are presented in Table 4 below.

**Table 4. Analysis of Differences in Literacy Levels Based on Region (n=99)**

|  | Literacy Level | | | p-value |
|---|---|---|---|---|
|  | Low | Medium | High | |
| **Region (Demographics)** | | | | |
| Pesanggrahan | 0(0%) | 2(20%) | 8(80%) | 0.009* |
| Kebayoran Lama | 0(0%) | 1(10%) | 9(90%) | |
| Kebayoran Baru | 0(0%) | 0(0%) | 10(100%) | |
| Mampang Prapatan | 2(20%) | 1(10%) | 7(70%) | |
| Cilandak | 0(0%) | 0(0%) | 10(100%) | |
| Jagakarsa | 0(0%) | 1(10%) | 9(90%) | |
| Pasar Minggu | 0(0%) | 4(40%) | 6(60%) | |
| Pancoran | 0(0%) | 4(40%) | 6(60%) | |
| Tebet | 0(0%) | 0(0%) | 10(100%) | |
| Setiabudi | 0(0%) | 3(33.3%) | 6(66.7%) | |

*Pearson Chi-square Test, CI 95%, p≤0.05

## DISCUSSION

Based on the results of the research conducted in ECE centers in South Jakarta, which involved 10 ECE centers representing each subdistrict—Pesanggrahan District represented by ECE Anak Terang, Kebayoran Lama District represented by ECE Al-Karimiyah, Kebayoran Baru District represented by ECE Harapan Bangsa I, Mampang Prapatan District represented by ECE Taman Bermain Kepompong, Cilandak District represented by ECE Nurul Hikmah, Jagakarsa District represented by ECE Al-Hidayah, Pasar Minggu District represented by ECE Merpati Tunas Harapan, Pancoran District represented by ECE Jambu, Tebet District represented by ECE Uswatun Hasanah, and Setiabudi District represented by ECE Dahlia, conducted from July 15-19, 2024, the frequency distribution of respondents' ages, divided into 5 age ranges, was obtained (Table 1). The age group 26-35 years was the most prevalent group of respondents in this study, with a total of 56 individuals. This finding aligns with a study conducted by Dieng S, Cisse D, Lombrail P (2020) on mothers in Pikine, which also showed that the most common age group was 35 or younger, with an average age of 34 years.[2] A study conducted by Adil AH, Eusufzai SZ, Kamruddin A, et al. (2020) on 230 parents of preschool

children, predominantly mothers, in Malaysia found that the most common age group of respondents was 22-33 years, with an average age of 31 years.10 The results of the study regarding the highest level of education were classified into three categories: primary education (Elementary/Junior High School), secondary education (High School), and higher education (University). It was found that the majority of respondents had secondary education (High School), followed by higher education (Table 1). A study conducted by Dieng S, et al. (2020) on mothers in Pikine contradicted these findings, as the majority of mothers had low education levels (none or only elementary school). However, there were studies that showed similar results, such as the one by Gayatri RW, et al. (2022) on adults in Malang, which also found that the majority of respondents had secondary education (High School).4 A study by Manbait RM (2019) indicated that parents with higher education backgrounds were more likely to have better knowledge of oral health. Parental knowledge and understanding of oral health are crucial, as oral health affects overall health and quality of life.11 The study results based on the frequency distribution of respondents' income, using the cutoff point from the 2024 minimum wage of the DKI Jakarta province, which is IDR 5,067,361, divided into three categories—below the minimum wage, equal to the minimum wage, and above the minimum wage—showed that respondents with incomes below IDR 5,067,361 were the majority (Table 1). A study by Mialhe FL, et al. (2020) on adults in Brazil found that the majority of respondents had incomes above the minimum wage.12

The findings of this study showed a significant statistical influence between age and OHL. It was found that the age group >55 years tended to achieve higher HeLD scores compared to other age groups. These results were consistent with a study by Wahyuningsih T (2022), which stated that age had an impact on OHL and showed a significant association.13 There was also a study conducted by Mialhe FL (2020) on adults in Brazil, which found that the age group under 40 years achieved higher HeLD scores compared to the group above 40 years.12 The results of this study were also in line with the statement that lower health literacy is often found in older individuals, as with age, there is cognitive abilities and sensory functions decline. This condition can affect their ability to read and comprehend information. Therefore, age can influence an individual's health literacy level.13 A different finding was reported in a study by Adil AH, et al. (2020) on 230 parents of preschool children, predominantly mothers, in Malaysia using the OHL-M, which found no significant relationship between age and OHL.10

The results of this study showed a significant influence based on education (indicating that individuals with education below the secondary level often exhibited low health literacy). This was consistent with research that showed a social relationship between education and general health literacy, as well as OHL. Individuals with higher levels

of education were more capable of acquiring and understanding health information, and were more effective in communicating with the healthcare system to make better decisions.12 A strong educational background played a significant role in determining parents' OHL, as those with higher education tended to have better access to oral healthcare materials. Conversely, low education levels often led to inadequate behaviors and poorer oral health outcomes.11,12,14 Improving the overall education level of the community is crucial, as it would enhance parents' OHL and ultimately lead to better health outcomes and improved oral health status for their children.2

The results of this study showed that there was no significant influence based on income (<0.05) on the literacy scores, with the highest literacy scores observed in respondents who had income above the minimum wage, which was 52. This finding was consistent with the study by Dieng S, et al. (2020) on adults in Malang, using the HeLD tool, which indicated that income did not have a significant effect on OHL.2 Contradictory results were found in the study conducted by Mialhe FL, et al. (2020) on adults in Brazil, which showed that the highest literacy scores were obtained by respondents with income above the minimum wage, which was 46.15.12 Previous research by Lopes RT, et al. (2020) on adolescents in Brazil using the BREALD-30 tool also found a significant relationship between income and OHL, where higher family income supported greater financial resources and easier access to oral health services, thus contributing to better OHL.14 According to various literatures, it is known that individuals with higher economic status have better access to educational resources and oral health promotion, as well as easier access to dental services, ultimately improving their OHL.2,4 Higher income is related to better literacy scores, indicating a better ability to communicate oral health issues. Additionally, individuals with adequate income are more likely to report their oral health independently, resulting in better oral health status compared to those living in less optimal conditions.4,14 The findings in this study may have been influenced by the homogeneity of the income levels in the study sample, making it less sensitive to measuring differences in literacy scores based on income levels.

Furthermore, there was a significant difference in literacy levels based on the location of the ECE centers (Table 4). According to national data, Jakarta was the region with the highest literacy rate in Indonesia, and the results of this study showed that almost all areas had high literacy levels.15 Three areas had all their study participants within the high literacy group. This occurred due to the fact that these three subdistricts were the nearest to the city center of Jakarta. The economy in these areas was relatively high, and access to these locations was easily reachable.

Based on the results of this study, it can be concluded that age and education level have an influence on OHL levels,

which is in line with the findings of a study conducted by Liu et al. (2015) in China.16

**CONCLUSION**

The results of the study that most mothers had high literacy scores, with an average HeLD score of 48.4. Among the three sociodemographic factors, significant differences in literacy levels were observed in age and education. However, no significant differences were found based on income. Given these results, it is important to implement a well-structured program that considers demographic factors, such as a dental health education program for ECE mothers every six months based on region, recognizing that early childhood is a critical period for the prevention of dental issues, including tooth decay.

**REFERENCES**

1) Tavousi M, Mohammadi S, Sadighi J, et al. *Measuring Health Literacy: A Systematic Review and Bibliometric Analysis of Instruments from 1993 to 2021*. Vol 17.; 2022. doi:10.1371/journal.pone.0271524

2) Dieng S, Cisse D, Lombrail P, Azogui-Lévy S. Mothers' oral health literacy and children's oral health status in Pikine, Senegal: A pilot study. *PLoS One*. 2020;15(1):1-12. doi:10.1371/journal.pone.0226876

3) Solihin L, Utama B, Pratiwi I, Novirina. *Indeks Aktivitas Literasi Membaca 34*. Pertama. (Solihin L, ed.). Pusat Penelitian Kebijakan Pendidikan dan kebudayaan, Badan Penelitian dan Pengembangan, Kementerian Pendidikan dan kebudayaan; 2019.

4) Gayatri RW, Deniati EN, Saub R Bin. Oral health literacy in Malang City, Indonesia. *J Public Health Africa*. 2022;13(s2). doi:10.4081/jphia.2022.2414

5) Baskaradoss JK. Relationship between oral health literacy and oral health status. *BMC Oral Health*. 2018;18(1):1-6. doi:10.1186/s12903-018-0640-1

6) Buldur B, Oguz E. Reliability and validity of the Turkish version of the Oral Health Literacy Assessment Task: Pathways between parental oral health literacy and oral health consequences in children. *Int J Paediatr Dent*. 2023;33(2):101-112. doi:10.1111/ipd.13025

7) Mialhe FL, Santos BL, Bado FMR, de Oliveira AJ, Soares GH. Association between oral health literacy and dental outcomes among users of primary healthcare services. *Braz Oral Res*. 2022;36:1-8. doi:10.1590/1807-3107BOR-2022.VOL36.0004

8) Chawłowska E, Karasiewicz M, Lipiak A, et al. Oral Health Behaviours, Knowledge, and Literacy of Expectant Mothers: A Cross-Sectional Study among Maternity Ward Patients. *Int J Environ Res Public Health*. 2022;19(18). doi:10.3390/ijerph191811762

9) Worang TY, Pangemanan DHC, Wicaksono DA. Hubungan Tingkat Pengetahuan Orang Tua Dengan Kebersihan Gigi Dan Mulut Anak Di Tk Tunas Bhakti Manado. *e-GIGI*. 2014;2(2):7-10. doi:10.35790/eg.2.2.2014.5777

10) Adil AH, Eusufzai SZ, Kamruddin A, et al. Assessment of parents' oral health literacy and its association with caries experience of their preschool children. *Children*. 2020;7(8). doi:10.3390/children7080101

11) Manbait MR, Fankari F, Manu AA, Krisyudhanti E. Peran Orang Tua dalam Pemeliharaan Kesehatan Gigi dan Mulut. *Dent Ther J*. 2019;1(2):74-79. doi:10.31965/dtl.v1i2.452

12) Mialhe FL, Bado FMR, Ju X, Brennan DS, Jamieson L. Validation of the Health Literacy in Dentistry scale in Brazilian adults. *Int Dent J*. 2020;70(2):116-126. doi:10.1111/idj.12531

13) Wahyuningsih T. Faktor- Faktor yang Berpengaruh terhadap Literasi Kesehatan Masyarakat di Puskesmas Banguntapan I Bantul D. I. Yogyakarta. *J Innov Res Knowl*. 2022;3(3):891-898.

14) Lopes RT, Neves ÉTB, da Costa Dutra L, et al. Socioeconomic status and family functioning influence oral health literacy among adolescents. *Rev Saude Publica*. 2020;54:1-10. doi:10.11606/S1518-8787.2020054001842

15) Perpustakaan dan Kearsipan Provinsi DKI Jakarta D. Literasi Di Dki Jakarta 2023. Published online 2023:1-14. https://berkas.dpr.go.id/akd/dokumen/K10-43-0e750065efd466793149d67094c1653c.pdf

16) Liu YB, Liu L, Li YF, Chen YL. Relationship between health literacy, health-related behaviors and health status: A survey of elderly Chinese. *Int J Environ Res Public Health*. 2015;12(8):9714-9725. doi:10.3390/ijerph120809714