



Oral Health Literacy Rate Among Schoolteachers—A Quantitative Study

Qurat-ul Ain¹ Syeda Munazza Gillani² Qurat-ul Ain³

¹ Department of Preventive & Community Dentistry, Abbottabad International Dental College, Abbottabad, Pakistan

² Department of Oral Pathology, Abbottabad International Dental College, Abbottabad, Pakistan

³ Department of Pharmacology, Abbottabad International Dental College, Abbottabad, Pakistan

Address for correspondence Qurat-ul Ain, BDS, MSPH, Associate Professor, Preventive & Community Dentistry, Abbottabad International Dental College, Abbottabad 22020, Pakistan (e-mail: anee.ayuob@gmail.com).

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Abstract

Objective The aim of this study was to evaluate oral health literacy (OHL) rate among schoolteachers of Abbottabad city by using structured questionnaire divided in sections of reading skills, numeracy, listening skills, and appropriate decision-making skills.

Materials and Methods Descriptive cross-sectional study was conducted among schoolteachers with survey method. Total 159 participants were selected as sample from 10 different local schools of Abbottabad city. Data was gathered by using OHL-AQ (oral health literacy-adult questionnaire) with convenient sampling technique. Responses were calculated by using IBM SPSS.V.26 and descriptive analyses were performed.

Results Satisfactory results were seen among schoolteachers: high-level of OHL, 44.65%; moderate level of OHL, 40.9 and low-level OHL, 14.46%. The questionnaire section, “numeracy-calculation skills” and “appropriate decision-making skills,” exhibited high scores.

Conclusion This study concluded that the OHL rate among schoolteachers was satisfactory. But as teachers play a pivotal role in shaping and influencing young minds, setting a goal of achieving 100% would ensure commitment toward better oral health of their wards. Those participants who showed considerably low OHL level is alarming for oral health challenges.

Keywords

- ▶ school teacher
- ▶ OHL level
- ▶ score
- ▶ OHL-AQ

Introduction

The World Health Organization (WHO) emphasizes that oral health is an essential indicator of overall health, well-being, and quality of life.¹ Oral health literacy (OHL) is widely recognized as an individual intangible means to speculate in individual empowerment.^{2,3} OHL is defined as “the degree to which individuals have the ability to receive, process and

understand the basic oral health information and services needed to make suitable health decisions.”^{4,5} Therefore, OHL is essential to recognize the means to access health-related information and its application to keep up a healthy life and achieve oral health promotion goals.^{6–8}

In the recent years, the inclination of health services from curative to preventive aspect has raised the importance of OHL.^{9,10} Worldwide studies linked low OHL of the people

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with poor oral health status, reduced dental appointments and little understanding of medicine, which may be an obstacle to reach good oral health.^{11,12} There is significantly high burden of oral diseases that are preventable and OHL has been associated with reduced incidence of oral diseases.^{13,14}

Moreover, primary, secondary, and tertiary prevention strategy implementation to population may not help to improve oral health until and unless people get individual attention toward improvement.^{15,16} Hence, OHL is a crucial factor in promoting and maintaining good oral health.¹⁷

To prevent oral diseases among children, it is crucial to identify the main influencing factors and plan for prevention. As children in schools spend their ample time with their teachers, so schoolteachers can actively contribute to student's health promotion, empowering individuals to make better choices about oral care practices and in adopting healthy oral lifestyles.^{18,19} Lack of teacher's awareness about oral health may be a significant barrier to the success of health promoting school activities.^{20,21}

In developing countries like Pakistan, there is little awareness about OHL. Therefore, more research is desired to obtain comprehensive information in this regard. The extent of knowledge about oral health along with observing the proper oral health behaviors in schoolteachers can play a momentous role in the oral health of children. Thus, this study is aimed to evaluate the OHL rate among schoolteachers in Abbottabad city, Pakistan.

Materials and Methods

Descriptive cross-sectional study was conducted on schoolteachers of Abbottabad city to assess their OHL rate. Convenient sampling technique was used, and sample population was selected from 10 different local schools of Abbottabad city, Pakistan during "Community out-reach activities-2022; School Dental Health Visits." Sample size calculated n = 151, on 95% confidence level, 8% margin of error and 50% population on proportion. Total (male = 8.8% and female = 89.3%) participants were 159 who were included during survey.

Data was gathered by using OHL-AQ (oral health literacy-adult questionnaire) (►see annexure) via survey method in allocated test centers in each selected school and a quiz exam was conducted in one single sitting in each station.²² OHL-AQ is based on 14 questions and divided in four sections related to oral health, reading comprehension, numeracy (calculation skills), listening skills, and appropriate decision-making skills. Results were calculated by checking answers and giving (1. mark for each correct answer) marks out of total marks of question paper. Total scores were interpreted on different levels of OH-literacy: low, moderate, and high. Obtained scores considered as follows: 0–5 = low scores, 6–9 = moderate, and 10–14 = high score. Collected data was entered in SPSS.v.26 sheet and was analyzed by descriptive statistics (frequencies and cross-tabulation)

Results

The total number of 159 participants (male = 8.8% and female = 89.3%) were tested for their level of OHL from 10 local schools of Abbottabad city. Teaching levels of schoolteachers included were primary (51%), middle (17.6%), secondary (18.9%), and higher secondary (10.7%). Qualifications of the teachers were as follows: bachelor (31.4%), master (59.1%) and MPhil (9.4%) (►Fig. 1). The total score points were 14 in OHL-AQ in which mean score was recorded as 10.43 (►Table 1). Overall scores from OHL-AQ were divided into three different levels of OHL level: low, moderate, and high. Study subjects obtained following OHL level: 13.83% participant in low OHL level, 46.54% in moderate OHL level, and 39.62% in high OHL level (►Fig. 2).

Reading comprehension (total points 3 out of 14) of OHL-AQ (►Table 2), showed majority of teachers answer lied at moderate level of literacy (49.0%). Numeracy calculation skills (total 4-points out of 14) (►Table 3) of questionnaire showed mostly participants literacy level was high (62.8%). Listening skills of OHL-AQ (2-points out of 14) (►Table 4) showed equal percentage (40.8%) of highly and moderately literate participants. Subsequently, appropriate decision-making skills of OHL-AQ (5 points out of 14) (►Table 5)

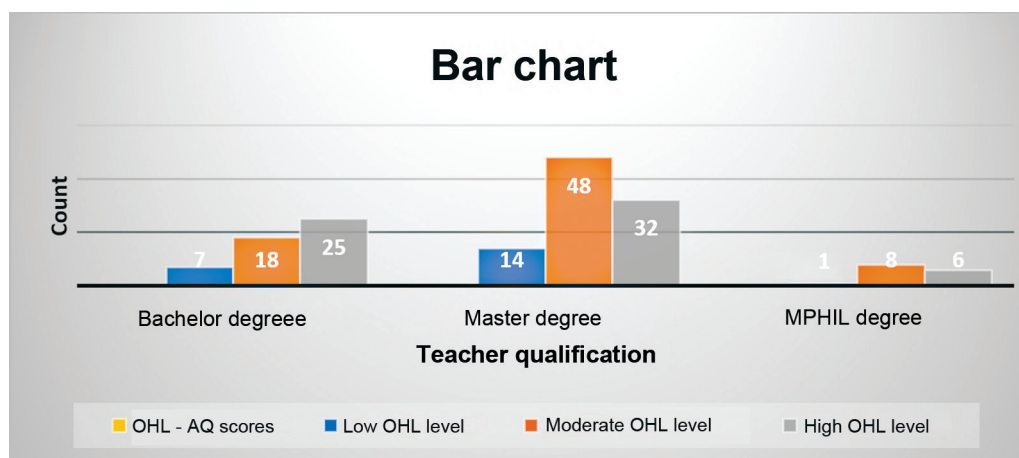


Fig. 1 this figure illustrated teachers obtained scores of OHL-AQ verses their qualification level.

Table 1 shows OHL-AQ descriptive statistics

Descriptive statistics OHL-AQ scores	
n	159
Mean	10.43
Std. error of mean	0.253
Median	9.00
Mode	9
Std. deviation	3.185
Range	9
Minimum	5
Maximum	14

Abbreviation: OHL-AQ, oral health literacy-adult questionnaire.

showed 71.6% participants achieved high level of literacy rate.

Discussion

Encumbrance of oral diseases increases every day, as stated by the WHO. Among many reasons, cost-effectiveness, lack of facilities, poor access to dental health services, cultural obstacles and lack of knowledge are important contributing factors in Pakistan.²³ Fortunately, oral diseases are widely curable.²⁴ Oral health deterioration can be encountered effectively in children by providing them right kind of required knowledge; thus, teachers have a critical role to play.²⁵ Oral health information systems, primary prevention, and iceberg of oral disease phenomena can play vital role if oral public health sectors work in right directions.²⁴ Providing scientific knowledge and its right technical implementation is essential to prevent oral disease among population.^{26,27} Schoolteachers can play a dynamic role to improve oral health of their pupils, if they have a good OHL

Table 2 shows OHL-AQ reading comprehensive section scores

OHL-AQ reading comprehension		
	Frequency	Percentage
Low scores	39	24.5
Moderate scores	78	49.0
High scores	42	26.4
Total	159	100.0

Abbreviation: OHL-AQ, oral health literacy-adult questionnaire.

Table 3 shows OHL-AQ numeracy section scores

OHL-AQ numeracy (calculation skills) total scores		
	Frequency	Percentage
Low scores	26	16.3
Moderate scores	33	20.7
High scores	100	62.8
Total	159	100.0

Abbreviation: OHL-AQ, oral health literacy-adult questionnaire.

Table 4 shows OHL-AQ listening skills section scores

OHL-AQ listening skills total scores		
	Frequency	Percentage
Low scores	29	18.2
Moderate scores	65	40.8
High scores	65	40.8
Total	159	100.0

Abbreviation: OHL-AQ, oral health literacy-adult questionnaire.

rate themselves.²⁸⁻³⁰ OHL is key for an individual to understand basic oral health information and make themselves capable for appropriate health decisions and use dental

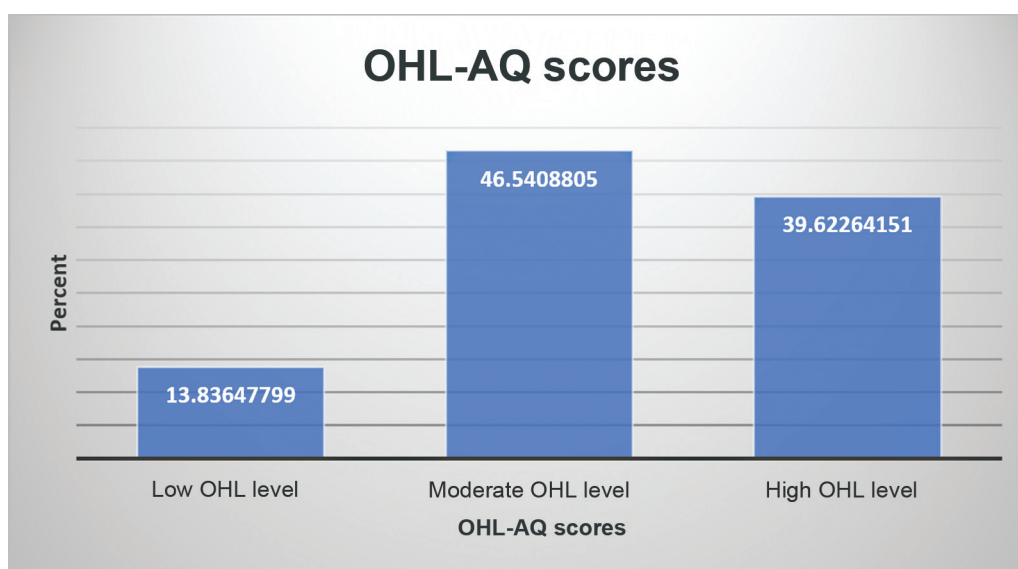


Fig. 2 illustrated OHL-AQ scores of teachers on three levels 1- Low, 2- Moderate, 3-High.

Table 5 shows OHL-AQ appropriate decision-making scores

OHL-AQ appropriate decision-making skills score		
	Frequency	Percentage
Low scores	42	26.4
Moderate scores	2	1.2
High scores	114	71.6
Total	159	100.0

Abbreviation: OHL-AQ, oral health literacy-adult questionnaire.

information to change their oral health behaviors positively.^{31–33}

A study was published in 2019, on same topic of OHL, among schoolteachers working in the schools of Sullia Taluk, Dakshina Kannada, South India. In this study, the OHL was measured by using tool of Comprehensive Measure of Oral Health Knowledge.³⁴ Same study concluded scores of OHL; results showed that 44% participants had good scores, 33.7% participants had fair, and 22% participants were considered under poor theoretical oral health knowledge. Our study reveals low OHL level among 14.46% teachers, moderate level of OHL among 40.9% of schoolteachers, and 44.6% participants achieved high level of OHL score. Both studies assessment scores have had slight differences.

Precisely if we highlight, the role of teachers can play a great part to improve oral health of children; however, it would only be possible when teachers are well aware of oral health information. A study was led in Saudi Arabia in year of; 2014–2015 on total n = 223 secondary schoolteachers and concluded that the teachers had good level of knowledge (80%–90%) of preventive measure for dental caries and gingivitis and 94% teachers showed their willingness of taking part in oral health education campaign in future, 91.9% suggested to include oral health education in school curriculum.³⁵

Low OHL is one of the causes of poor oral health outcomes. A study was conducted; “Influence of Oral Health Literacy on The Oral Health Status of School Teachers in Mangalore, India” by using tools of ‘Adult Literacy in Dentistry-99 (REALD-99)’ & “WHO Oral Health Assessment Form-1997” (World Health Organisation). This study revealed high scores of OHL among school teachers and reported poor oral health status on oral screening; this study also reported high prevalence of dental caries and fewer diagnosed with periodontal diseases.³⁶ Moreover, one research revealed that nonmedical professionals working in hospital had good oral health awareness but very low knowledge of periodontal diseases unfortunately.³⁷ Another study conducted in Karachi, Pakistan, “Oral Health Knowledge, Attitude and Self-Practices of Pre-School Teachers” was satisfactory about the knowledge of tooth decay and involvement of participants in delivering oral health education; subsequently teachers had low understanding regarding regular dental visits.³⁸ Similar study was conducted in Sung-nam city of China and showed comparable results;

teachers were deficient in accurate oral health knowledge and they highly recommended that oral health promotion program should be commanded by oral public health sectors in schools for children.³⁹ The collective findings from these studies highlight the significance of oral health knowledge coupled with fostering positive early childhood behavior towards healthy oral habits can possibly bring a positive change in an individual’s life.

This study defines higher oral health level of literacy in questionnaire section of “appropriate decision-making skills” and “listening skills.” In contrast other sections of questionnaire, “reading comprehension,” showed moderate OHL level. However, section of “numeracy – calculation skills” equally showed moderate and high level of literacy among teachers. Furthermore, participants with low scores should be on a serious consideration. There is dire need to promote oral health; the literate communities like teachers must be 100% well aware of OHL. Professionals of dental health should take active participation in this scenario. Multiple oral health awareness workshops are recommended accompanied with school dental health awareness programs. However, it is required to motivate these teachers to take active participation in spreading oral health awareness among their pupils and their families.

Limitation of this study is small sample size because only schoolteachers of Abbottabad city may not give the generalize reflection of all population of teachers in Pakistan. Same study must be conducted in government educational and noneducational department, This study also be conduct on mothers/house wives, male/ female to evaluate the levels of individual knowledge.

Conclusion

OHL is important in educated communities like teachers. Teachers often playing dual role of being a parent too can educate their wards as well as their families. Conducting workshops supervised by oral health professionals can effectively empower them to raise awareness and promote better oral hygiene among their pupils.

Conflict of Interest

None declared.

References

- 1 Global Review on Oral Health in Ageing Societies. Accessed December 16, 2023 at: <https://apps.who.int/iris/handle/10665/67584>
- 2 Nutbeam D. The evolving concept of health literacy. *Soc Sci Med* 2008;67(12):2072–2078
- 3 Ranjbaran S, Chollou KM, Babazadeh T. Assessment of health literacy and health promoting behaviors among the urban adult population. *Ethiop J Health Sci* 2022;32(05):985–992
- 4 Bridges SM, Parthasarathy DS, Au TKF, Wong HM, Yiu CKY, McGrath CP. Development of functional oral health literacy assessment instruments: application of literacy and cognitive theories. *J Public Health Dent* 2014;74(02):110–119
- 5 Roundtable on Health Literacy, Introduction; Board on Population Health and Public Health Practice; Institute of Medicine. Oral

- Health Literacy. Washington (DC): National Academies Press (US); 2013 Feb 19. Available at: <https://www.ncbi.nlm.nih.gov/books/NBK207126/>
- 6 Naghibi Sistani MM, Montazeri A, Yazdani R, Murtomaa H. New oral health literacy instrument for public health: development and pilot testing. *J Investig Clin Dent* 2014;5(04):313–321
 - 7 Baskaradoss JK. Relationship between oral health literacy and oral health status. *BMC Oral Health* 2018;18(01):172
 - 8 Batista MJ, Lawrence HP, Sousa MDLR. Oral health literacy and oral health outcomes in an adult population in Brazil. *BMC Public Health* 2017;18(01):60
 - 9 Ahmed W, Muzzamil Ali Shah S, Khayyam U, Sheikh T, Anwer N. Measuring oral health literacy in dental patients: contribution towards preventive dentistry in Pakistan. *J Pak Dent Assoc* 2017; 26(04):176–180
 - 10 Wehmeyer MMH, Corwin CL, Guthmiller JM, Lee JY. The impact of oral health literacy on periodontal health status. *J Public Health Dent* 2014;74(01):80–87
 - 11 Kanupuru KK, Fareed N, Sudhir KM. Relationship between oral health literacy and oral health status among college students. *Oral Health Prev Dent* 2015;13(04):323–330
 - 12 Lapidus A, Shaefer HL, Gwozdek A. Toward a better understanding of dental appointment-keeping behavior. *Community Dent Oral Epidemiol* 2016;44(01):85–91
 - 13 Richards D, Kassebaum NJ, Bernabé E, et al. Oral diseases affect some 3.9 billion people. *Evid Based Dent* 2013;14(02):35
 - 14 Aldowah O, Assiry AA, Mujallid NF, et al. Assessment of oral health knowledge, literacy, and attitude among schoolteachers towards oral health - a cross-sectional study. *BMC Oral Health* 2023;23(01):392
 - 15 Birch S, Bridgman C, Brocklehurst P, et al. Prevention in practice - a summary. *BMC Oral Health* 2015;15(01):1–9
 - 16 Bridgman C, McGrady MG. Clinical leadership and prevention in practice: is a needs led preventive approach to the delivery of care to improve quality, outcomes and value in primary dental care practice a realistic concept? *BMC Oral Health* 2015;15 Suppl 1 (Suppl 1):S2. Doi: 10.1186/1472-6831-15-S1-S2
 - 17 Guo Y, Logan HL, Dodd VJ, Muller KE, Marks JG, Riley JL III. Health literacy: a pathway to better oral health. *Am J Public Health* 2014; 104(07):e85–e91
 - 18 Sekhar V, P S, M A E, et al. Knowledge, attitude and practice of school teachers towards oral health in Pondicherry. *J Clin Diagn Res* 2014;8(08):ZC12–ZC15
 - 19 WebmedCentral.com. Factors Affecting the Knowledge on Prevention of Oral Diseases among School Teachers of Dharwad City, A Survey from India. Accessed December 16, 2023 at: http://www.webmedcentral.com/article_view/1618
 - 20 Macnab A, Kasangaki A. 'Many voices, one song': a model for an oral health programme as a first step in establishing a health promoting school. *Health Promot Int* 2012;27(01):63–73
 - 21 Tikare S, AlQahtani N. Oral health knowledge and attitudes of primary school teachers toward school-based oral health programs in Abha-Khamis, Saudi Arabia. *Saudi J Oral Sci* 2017;4(02):72
 - 22 Naghibi Sistani MM, Montazeri A, Yazdani R, Murtomaa H. New oral health literacy instrument for public health: development and pilot testing. *J Investig Clin Dent* 2014;5(04):313–321. Doi: 10.1111/jicd.12042
 - 23 WHO EMRO | Primary oral health care: a missing link in public health in Pakistan | Volume 22, issue 9 | EMHJ volume 22, 2016. Accessed December 16, 2023 at: <https://www.emro.who.int/emhj-volume-22-2016/volume-22-issue-9/primary-oral-health-care-a-missing-link-in-public-health-in-pakistan.html>
 - 24 Landmark global strategy on oral health adopted at World Health Assembly 75. Accessed December 16, 2023 at: <https://www.who.int/news-room/feature-stories/detail/landmark-global-strategy-on-oral-health-adopted-at-world-health-assembly-75>
 - 25 Maganur PC, Satish V, Marwah N, Vishwas TD, Dayanand MC. Knowledge, attitudes, and practices of school teachers toward oral health in Davangere, India. *Int J Clin Pediatr Dent* 2017;10(01):89–95
 - 26 Al-Qahtani SM, Razak PA, Khan SDAA. Knowledge and practice of preventive measures for oral health care among male intermediate schoolchildren in Abha, Saudi Arabia. *Int J Environ Res Public Health* 2020;17(03):703
 - 27 Bourgeois DM, Phantumvanit P, Llodra JC, Horn V, Carlile M, Eiselé JL. Rationale for the prevention of oral diseases in primary health care: an international collaborative study in oral health education. *Int Dent J* 2014;64 Suppl 2(Suppl 2):1–11. Doi: 10.1111/idj.12126
 - 28 Asao Y, Iwamoto Y, Chea C, et al. The effect of improving oral health literacy among teachers on the oral health condition of primary schoolchildren in Cambodia. *Eur J Paediatr Dent* 2022;23(04):321–326
 - 29 An R, Li Q, Luo Y, et al. Oral health literacy, oral health behavior, and oral health status among dental patients and associated factors. *medRxiv*, 2022:2022.09.09.22279289. Doi: 10.1101/2022.09.09.22279289
 - 30 Haleem A, Khan MK, Sufia S, Chaudhry S, Siddiqui MI, Khan AA. The role of repetition and reinforcement in school-based oral health education-a cluster randomized controlled trial. *BMC Public Health* 2016;16:2
 - 31 Sun Y, Li C, Zhao Y, Sun J. Trends and developments in oral health literacy: a scientometric research study (1991–2020). *BDJ Open* 2021;7(01):13
 - 32 Ramos-Gomez F, Tiwari T. Oral health literacy framework: the pathway to improved oral health. *J Calif Dent Assoc* 2021;49(12): 759–769
 - 33 Safari-Moradabadi A, Rakhshanderou S, Ramezankhani A, Ghaf-fari M. Explaining the concept of oral health literacy: findings from an exploratory study. *Community Dent Oral Epidemiol* 2022;50(02):106–114
 - 34 Jagan P, Fareed N, Battur H, Khanagar S, Manohar B. Conceptual knowledge of oral health among school teachers in South India, India. *Eur J Dent* 2018;12(01):43–48
 - 35 Aljanakh M, Siddiqui AA, Mirza AJ. Teachers' knowledge about oral health and their interest in oral health education in Hail, Saudi Arabia. *Int J Health Sci (Qassim)* 2016;10(01):87–93
 - 36 Simon AK, Rao A, Rajesh G, Shenoy R, Pai MBH. Influence of oral health literacy on the oral health status of school teachers in Mangalore, India. *J Indian Assoc Public Heal Dent* 2018;16(02):127–132
 - 37 Umeizudike KA, Onajole AT, Ayanbadejo PO. Periodontal health knowledge of nonmedical professionals and their oral hygiene behavior in a teaching hospital in Nigeria. *Eur J Gen Dent* 2015;4(02):48–54
 - 38 Dawani N, Nisar N, Khan N, Syed S, Tanweer N. Oral health knowledge, attitude and self-practices of pre-school teachers of Karachi, Pakistan. *JPDA* 2013;22:47–51
 - 39 Ahn Y, Kim ES, Lim DS, Jung SH, Kim MJ. A Study on Preschool Teachers Oral Health Knowledge and Behaviors in Sung-nam City. *J Dent Hyg Sci* 2001;1(01):12–20