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Is there a correlation between oral health-related quality of life and oral health literacy?

Nader Navabi DDS, MSc[1,2], Arash Shahravan DDS, MSc[3], Ramin Behnood DDS[4], Maryam Alsadat Hashemipour DDS, MSc[2,5]

Original Article

Abstract

BACKGROUND AND AIM: Oral health literacy (OHL) and oral health-related quality of life (OHRQOL) are two important current scales for oral health. The aim of the present study was to investigate the correlation between these two scales and explore the clinical indices for dental caries and periodontal disease in this association.

METHODS: A total of 470 subjects were included in the present study. A total of 51 (10.58%) subjects filled the questionnaire incompletely; therefore, finally, the data of 419 questionnaires were analyzed. Volunteer patients attending dental clinics in Kerman, Iran, enrolled in the study. Data were collected via Oral Health Literacy Adult Questionnaire (OHL-AQ) for OHL, Oral Health Impact Profile (OHIP-14) for OHRQOL, and calculation of Decayed, Missing, and Filled Teeth (DMFT) and Community Periodontal Index (CPI) after clinical examination. The questionnaires were standardized in Persian and their validity and reliability were confirmed. The association of OHL with OHRQOL, CPI, and DMFT was quantified using Pearson's correlation coefficient.

RESULTS: Finally, 419 participants enrolled in the investigation. Reported OHL was poor (48.92%) and the score was 9.23 ± 3.39 (the overall score range of the questionnaire was 0-17). The OHIP-14 mean score was 10.10 ± 8.20 (the score range of the OHIP-14 questionnaire was 0-56) There was no significant association between OHL and OHRQOL; however, there was a relationship between DMFT and CPI ($P < 0.001$).

CONCLUSION: In this sample, we did not find a correlation between OHL and OHRQOL. However, considerable low OHL in this study denotes to necessary take care of.

KEYWORDS: Oral Health; Quality of Life; Literacy

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Oral health literacy (OHL) is defined as an individual's ability to prepare, process, and understand basic information, the necessary treatments, and proper decision-making in relation to oral health.[1] Currently, interest in OHL has increased all over the world because it is believed that an increase in OHL can decrease huge economic burden of common oro-dental diseases on the community.[2-4]

Oral health-related quality of life (OHRQOL) is an important criterion and for the past two decades, researches have used it in various studies in the field of oral health. These diseases decrease OHRQOL in the affected subjects and negatively affect various aspects of individuals including oral functions, facial appearance, and social relations.[5]

Methods

The present cross-sectional study was carried

1- Associate Professor, Department of Oral Medicine, School of Dentistry, Kerman University of Medical Sciences, Kerman, Iran
2- Dental and Oral Diseases Research Center AND Social Determinants on Oral Health Research Center, Kerman University of Medical Sciences, Kerman, Iran
3- Professor, Department of Endodontics, School of Dentistry, Kerman University of Medical Sciences, Kerman, Iran
4- Dentist, Private Practice, Kerman, Iran
5- Professor, Department of Oral Medicine, School of Dentistry, Kerman University of Medical Sciences, Kerman, Iran
Address for correspondence: Maryam Alsadat Hashemipour DDS, MSc; Professor, Department of Oral Medicine, School of Dentistry AND Dental and Oral Diseases Research Center AND Social Determinants on Oral Health Research Center, Kerman University of Medical Sciences, Kerman, Iran; Email: m_hashemipoor@kmu.ac.ir

out by simple sampling technique and completing two questionnaires by interview. Sampling was done by census method. A total of 470 subjects were included in the present study. A total of 51 (10.58%) subjects filled the questionnaire incompletely; therefore, finally, the data of 419 questionnaires were analyzed. The study was approved by Ethical Committee of Kerman University of Medical Sciences. The ethic approval code is IR.KMU.REC.1395.401. The subjects were 18-65 years old. Subjects with a history of any systemic disease or psychological problems were excluded from the study. The subjects were selected from patients referring to dental clinics in Kerman. Verbal consent was obtained from all individuals and a checklist was used to record demographic data of the patients, including age, gender, educational status, occupation, and data on oral health indexes of Decayed, Missing, and Filled Teeth (DMFT) and Community Periodontal Index (CPI).

To determine the OHRQOL, the Persian version of the standard and valid Oral Health Impact Profile (OHIP-14) questionnaire was used. This questionnaire consists of 14 questions and the respondents respond to one of the problems discussed in each question in relation to the status of the oral cavity, teeth, or dentures during the recent 12-month period. These problems are in fact the experiences related to physical, psychological, and social aspects that are manifested in the form of pain, discomfort, or disability. The responses were scored based on a Likert scale; in this context, "always" was assigned a score of 4, "in most cases" was designated a score of 3, "sometimes" was designated a score of 2, "seldom" was designated a score of 1, and "never" was designated a score of 0. Therefore, the score range of the OHIP-14 questionnaire was 0-56, with lower grades indicating a high OHRQOL for each subject.[5]

To determine OHL, the standard Persian version of the valid Oral Health Literacy Adult Questionnaire (OHL-AQ) tool was used.[6] This questionnaire consists of 17 items in 4 sections consisting of reading, calculation, listening, and decision-making skills of the subjects. The first section, consisting of 6 questions, evaluated the subjects' ability to read and their knowledge about oral health, including questions on the number of teeth, the age at eruption, the type of toothpaste used, and the number of times the subjects brushed their teeth daily and used dental floss. The second section used 4 questions to determine the subjects' ability to calculate dental prescriptions and instructions to use mouthwashes. The listening sections used two questions to evaluate the communication skills, in which the researcher read some instructions on the care after tooth extraction and asked the subject to answer the questions. The section on decision-making consisted of 5 questions on the most common oro-dental problems and how to deal with these problems. The overall score range of the questionnaire was 0-17. For each question, a score of one was given to the correct answer and a score of zero to the wrong answer. The results were categorized in 3 groups as follows: 0-9: inadequate OHL, 10-11: moderate OHL, and 12-17: adequate OHL. In relation to the subjects' oral health behaviors, questions were asked about the frequency of tooth brushing, use of toothpastes, the last visit to a dentist, and smoking.[7,8]

The data were coded and analyzed with SPSS software (version 20, IBM Corporation, Armonk, NY, USA) and Pearson's correlation coefficient, analysis of variance (ANOVA), chi-squared test, and regression model at a significance level of 0.05.

Results

A total of 470 subjects were included in the present study. A total of 51 (10.58%) subjects filled the questionnaire incompletely; therefore, finally, the data of 419 questionnaires were analyzed. Table 1 presents the frequencies of demographic data of the subjects. Based on table 1 data, 50.9% of the subjects were men. The highest frequency of educational level belonged to high school graduates (55.7%). The

majority of the subjects were government employees (42.7%). The mean age of the subjects was 26.68 ± 8.02 years.

Table 1. Demographic characteristics of studied population

Item	n (%)
Job	
Unemployed	74 (17.7)
Student	95 (22.8)
Employee	178 (42.7)
Self-employed	63 (15.3)
Retired	6 (1.5)
Education level	
Under Diploma	43(10.4)
Diploma	232(55.7)
Bachelor	129(31)
Above Licentiate	12(2.9)
Gender	
Male	212 (50.9)
Female	204 (49.1)

Table 2 presents the frequencies of the subjects' responses to the questions on OHIP-14 questionnaire. The mean score of the subjects on the questionnaire was 10.10 ± 8.20, with a range of 0-35.

Table 3 presents the frequencies of the subjects' responses to the questions on OHL-AQ tool. The mean score on this questionnaire was 9.23 ± 3.39, with a score range of 0-17.

The mean of DMFT index of the subjects in the present study was 6.14 ± 4.35 (with a score range of 0-28) and the mean CPI was 1.50 ± 0.75, with a range of 0-9.

Chi-squared test did not show any significant relationship between the means of demographic data (occupation, education, and gender) of the subjects and OHL (P = 0.11). Evaluation of the correlation between OHL, OHRQOL, DMFT, and CPI with ANOVA and Pearson's correlation coefficient showed a significant correlation only between CPI and DMF (P < 0.001), i.e., subjects with higher DMFT exhibited higher CPI and vice versa. For example, this coefficient for the correlation between OHL and OHRQOL was -0.074 and for the correlation between OHL and DMFT it was 0.153. Regression model did not reveal a new correlation in this respect.

Figure 1 shows the designation of the subjects, in terms of OHL, to one of the OHL groups: inadequate OHL, moderate OHL, and adequate OHL. As shown in this figure, the highest frequency was related to inadequate OHL with 48.92%.

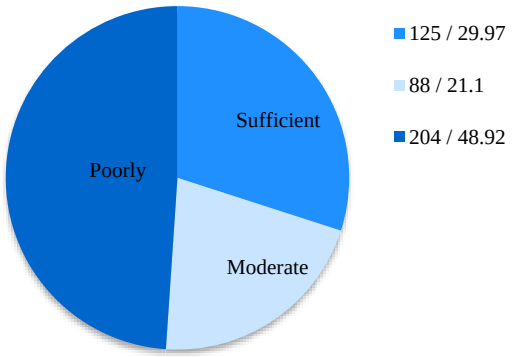

Figure 1. Oral health literacy (OHL) level of participants in three categories: sufficient, moderate, and poorly (frequency/percent)

Table 2. Frequency (percent) of answers to Oral Health Impact Profile (OHIP-14) items

Question	Never	Hardly ever	Occasionally	Fairly often	Very often
	n (%)	n (%)	n (%)	n (%)	n (%)
Trouble pronouncing words	347 (82.8)	41 (9.8)	25 (6.0)	6 (1.4)	0 (0)
Sense of bad taste	234 (55.8)	131 (31.3)	43 (10.3)	8 (1.9)	3 (0.7)
Having painful aches	157 (37.5)	134 (32.0)	87 (20.8)	36 (8.6)	5 (1.2)
Uncomfortable to eat food	188 (44.5)	122 (29.1)	79 (18.9)	25 (6.0)	5 (1.2)
Being self-conscious	162 (38.7)	118 (28.2)	59 (14.1)	59 (14.1)	21 (5.0)
Feeling tense	193 (46.1)	101 (24.1)	78 (18.6)	36 (8.6)	11 (2.6)
Unsatisfactory diet	274 (65.4)	87 (20.8)	48 (11.5)	8 (1.9)	2 (0.5)
Interrupted meals	222 (53.0)	129 (30.8)	52 (12.4)	12 (2.9)	4 (1.0)
Difficult to relax	207 (49.4)	120 (28.6)	71 (16.9)	17 (4.1)	4 (1.0)
A bit embarrassed	242 (57.8)	93 (22.2)	62 (14.8)	17 (4.1)	5 (1.2)
A bit irritable	202 (48.2)	110 (26.3)	77 (18.4)	21 (5.0)	9 (2.1)
Difficulty doing usual jobs	251 (59.9)	107 (25.5)	50 (11.9)	11 (2.6)	0 (0)
Feeling life less satisfying	262 (62.5)	108 (25.8)	40 (9.5)	7 (1.7)	2 (0.5)
Being totally unable to function	290 (69.2)	79 (18.9)	39 (9.3)	11 (2.6)	0 (0)

Table 3. Frequency (percent) of answers to Oral Health Literacy Adult Questionnaire (OHL-AQ) items

		n (%)			n (%)
L1	Skin diseases	9 (2.1)	L5	Incisor	20 (0.5)
	Myocardial infarction	122 (29.1)		Milk-tooth	39 (9.3)
	Psychological diseases	19 (4.5)		Molar	29 (6.9)
	Muscular disorders	29 (6.9)		Permanent tooth	276 (65.9)
	I do not know	231 (55.1)		I do not know	46 (11.0)
L2	Flavoring agents	9 (2.1)	L6	More	93 (22.2)
	Bleaching agents	24 (5.7)		First	184 (43.9)
	Cleaning agents	26 (6.2)		Last	32 (7.6)
	Fluoride	302 (72.1)		The whole	48 (11.5)
	I do not know	45 (10.7)		I do not know	32 (7.6)
L3	Month	18 (4.3)	L7	Hour	349 (83.3)
	Repast day	16 (3.8)		I do not know	60 (14.4)
	Day	316 (75.4)	L8	Yes	298 (69.0)
	Week	25 (6.0)		No	101 (24.1)
	I do not know	32 (7.6)		I do not know	26 (6.2)
L4	Salt	15 (3.6)	L9	Yes	24 (5.7)
	Pepper	5 (1.2)		No	331 (79.0)
	Lipid	22 (5.3)	L10	I do not know	59 (14.0)
	Sugar	312 (74.5)		Hour	281 (67.1)
	I do not know	54 (12.9)		I do not know	129 (30.7)
L11	Hour	277 (66.1)	L15	Chewing hard meal	26 (6.2)
	I do not know	137 (32.7)		Using mouthwash	58 (13.8)
L12	Yes	146 (34.8)		Using whitening toothpaste	60 (14.3)
	No	230 (54.9)		Scaling by dentist	170 (40.6)
	I do not know	35 (8.4)		I do not know	96 (22.9)
L13	Not brushing	12 (2.9)	L16	I blame the dentist	21 (5.0)
	Chewing gum	15 (3.6)		I am satisfied from the dental management	99 (23.6)
	Keep brushing	204 (48.7)		I entitle the dentist for appropriateness	75 (17.9)
	Using toothpick	95 (22.7)		Dentist does not blame me	165 (39.4)
	I do not know	88 (21.0)		I do not know	53 (12.6)
L14	Using antibiotic	64 (15.3)	L17	Stutter and seizure	11 (2.6)
	Using analgesic	84 (20.0)		Severe pain under the sternum	23 (5.5)
	Consultation	40 (9.5)		Dyspnea and urticaria	167 (39.9)
	Medical or dental attending	196 (64.8)		Anxiety and dizziness	101 (24.1)
	I do not know	34 (8.1)		I do not know	110 (26.3)

Discussion

The results of the present study did not show a significant relationship between oral health indexes except for DMFT and CPI. All over the world, there are only a limited number of studies available on the relationship between OHL and OHRQOL and the majority of studies have evaluated the relationship between general health literacy (HL) and quality of life (QOL) and further studies are still necessary to determine the relationship between OHL and OHRQOL. The only similar studies available have been carried out by Divaris et al., the results of which have shown a weak correlation between OHL and OHRQOL.[9,10] However, the researchers mentioned above believe that in individuals with low OHL, there are more effects on OHRQOL. In addition, the association between OHL and OHRQOL is affected by ethnicity. Bress believes that promotion of OHL is a new standard for oro-dental health, reiterating that a low OHL has a detrimental effect on the oral health and QOL, with heavy economic burden on the community.[11] Naghibi Sistani et al. also reported that OHL serves as a predictor of oral health status in a manner independent form socioeconomic factors and it should be considered as an important factor, especially in countries in which healthcare systems are still developing.[12]

In the present study, almost half of the subjects exhibited inadequate OHL. Pippi et al. reported favorable OHL in the patients they evaluated; however, they only evaluated their subjects' familiarity with the role of oral hygienists.[13] The results of a study by Ramandeep et al. in relation to cross-sectional evaluation of OHL in patients referring to a dental college showed that 60.2% of the subjects had low OHL,[14] which is close to that in the present study. Sistani et al. reported low OHL in a group of Iranian adults with the use of OHL-AQ tool, similar to the present study.[15] In a study by Batista et al. in 2017, the OHL of 248 subjects was lower than that in the present study (71.5% of the subjects exhibited low OHL); however, in a study by Calvasina et al., 83.1% of the subjects had favorable OHL.[16,17] There are several challenges in relation to determining OHL. Vilella et al. pointed out the importance between them for better determination of OHL in epidemiological studies.[18] In this context, in the present study, all the interviews were carried out by one interviewer. Villanueva Vilchis et al. considered a mean time for completing the OHL tool, which was not considered in the present study.[19]

In the present study, the samples were selected from several centers. Atchison et al. also believe that Multicenter Oral Health Literacy Research Studies (MOHLRS) are studies that best reveal challenges of determining OHL. In this context, their own studies have shown that the dialect used by the interviewers and interviewees should be taken into account in such studies.[20] Macek et al. used MOHLRS design in two separate studies as well.[21,22]

In the present study, there was no significant correlation between OHL and OHRQOL of the subjects. The results of a study by Villanueva Vilchis et al. on the relationship between OHL and OHRQOL tools revealed a Pearson's correlation coefficient of -0.336, which is higher than that in the present study; however, in that study, too, this coefficient does not indicate a strong correlation in this respect.[19] Batista et al. believed that at low levels of OHL, the effects of oro-dental problems on the individual's QOL was more prominent,[16] which is different from the results of the present study. Haridas et al. evaluated the presence of temporomandibular (TMD) disorders and the patients' needs for prosthetic treatments and attachment loss, except for DMFT and Community Periodontal Index of Treatment Needs (CPITN) indexes. They reported an inverse relationship between OHL and DMFT index; such a relationship was not detected in the present study.[23] Hiu Fong et al. reported a relationship between the parents' low OHL and the children's severe and early caries; their methodology was different from that of the present study.[24] Khodadadi et al. similar to Hiu Fong et al. reported an association between the parents' inadequate OHL and high caries rate and lower number of restored teeth in children.[25] Holtzman et al. used these indices: the number of natural teeth, gingival bleeding [bleeding on probing (BOP)], and Gingival Index (GI) in this respect and, contrary to the present study, reported a moderate level of correlation between OHL and periodontal diseases.[26] Kanupuru et al., similar to the present study, used DMFT and CPI indices; the mean age of the subjects in that study was 20.35 ± 1.66 years, which is almost similar to that in the present study. However, contrary to the present study, they reported a significant inverse correlation between the two above indexes and OHL.[27] Bridges et al. used DMFT and visible plaque indices and Wehmeyer et al. reported an association between low OHL and a more severe periodontal disease.[28,29] However, their aim was to evaluate the relationship between the OHL of home nurses and the oral health status of children they cared for, which is different from the aim of the present study. Currently, various tools are available for the evaluation of OHL and the question is whether this variety can be considered a factor for differences between the results of

studies on OHL. Aldoory et al. carried out a pilot study to compare the commonly-used tools in this respect and reported that the type of the tool used for evaluation of OHL did not affect the final evaluation of OHL.[30]

In the present study, due to the existing social limitations of all the demographic variables, the subjects' income was not recorded and evaluated. However, Hiu Fong et al.[24] and Shin et al.[31] considered the income variable in their evaluations with Hiu Fong et al. reporting that promotion of OHL should be actively considered in groups with lower socioeconomic status. Vilella et al. evaluated a group of Brazilian pregnant women and reported a significant relationship between some demographic variables such as income and occupation and OHL;[32] in the present study, such a relationship was not detected in relation to occupation.

Furthermore, Burgette et al. did not report a significant relationship between the patients' use of dental services and their OHL levels.[33]

Conclusion

In this sample, we did not find a correlation between OHL and OHRQOL. However, considerable low OHL in this study denotes to necessary take care of.

Conflict of Interests

Authors have no conflict of interest.

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References

1. Dickson-Swift V, Kenny A, Farmer J, Gussy M, Larkins S. Measuring oral health literacy: a scoping review of existing tools. BMC Oral Health 2014; 14: 148.
2. Cartes-Velasquez RA, Luengo ML. Adaptation and validation of the oral health literacy instrument for the Chilean population. Int Dent J 2017; 67(4): 215-20.
3. Lee J, Stucky B, Rozier G, Lee SY, Zeldin LP. Oral Health Literacy Assessment: development of an oral health literacy instrument for Spanish speakers. J Public Health Dent 2013; 73(1): 1-8.
4. Bridges SM, Parthasarathy DS, Au TK, Wong HM, Yiu CK, McGrath CP. Development of functional oral health literacy assessment instruments: Application of literacy and cognitive theories. J Public Health Dent 2014; 74(2): 110-9.
5. Navabi N, Nakhaee N, Mirzadeh A. Validation of a Persian version of the Oral Health Impact Profile (OHIP-14). Iran J Public Health 2010; 39(4): 135-9.
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(4): 313-21.
7. Vyas S, Nagarajappa S, Dasar PL, Mishra P. Linguistic adaptation and psychometric evaluation of original Oral Health Literacy-Adult Questionnaire (OHL-AQ). J Adv Med Educ Prof 2016; 4(4): 163-9.
8. Devi MA, Soni S, Radha G, Kadanakuppe S, Nagashree SR, Pallavi SK. Reliability and validity of a questionnaire to assess oral health literacy among college students in Bangalore City. J Contemp Dent 2011; 2(2): 43-7.
9. Divaris K, Lee JY, Baker AD, Vann WF. The relationship of oral health literacy with oral health-related quality of life in a multi-racial sample of low-income female caregivers. Health Qual Life Outcomes 2011; 9: 108.
10. Divaris K, Lee JY, Baker AD, Vann WF. Caregivers' oral health literacy and their young children's oral health-related quality-of-life. Acta Odontol Scand 2012; 70(5): 390-7.
11. Bress LE. Improving oral health literacy - the new standard in dental hygiene practice. J Dent Hyg 2013; 87(6): 322-9.
12. Naghibi Sistani MM, Yazdani R, Virtanen J, Pakdaman A, Murtomaa H. Determinants of oral health: Does oral health literacy matter? ISRN Dent 2013; 2013: 249591.
13. Pippi R, Bagnato F, Ottolenghi L. Oral health literacy: How much Italian people know about the dental hygienist. J Clin Exp Dent 2017; 9(1): e13-e20.
14. Ramandeep G, Arshdeep S, Vinod K, Parampreet P. Oral health literacy among clients visiting a rural dental college in North India-a cross-sectional study. Ethiop J Health Sci 2014; 24(3): 261-8.
15. Sistani MM, Yazdani R, Virtanen J, Pakdaman A, Murtomaa H. Oral health literacy and information sources among adults in Tehran, Iran. Community Dent Health 2013; 30(3): 178-82.

16. Batista MJ, Lawrence HP, Sousa MDLR. Oral health literacy and oral health outcomes in an adult population in Brazil. BMC Public Health 2017; 18(1): 60.
17. Calvasina P, Lawrence HP, Hoffman-Goetz L, Norman CD. Brazilian immigrants' oral health literacy and participation in oral health care in Canada. BMC Oral Health 2016; 16: 18.
18. Vilella KD, Assuncao LR, Junkes MC, Menezes JV, Fraiz FC, Ferreira FM. Training and calibration of interviewers for oral health literacy using the BREALD-30 in epidemiological studies. Braz Oral Res 2016; 30(1): e90.
19. Villanueva Vilchis MC, Wintergerst A, Borges Yanez SA. Toward a comprehensive instrument of oral health literacy in Spanish. J Health Commun 2015; 20(8): 930-7.
20. Atchison KA, Macek MD, Markovic D. The value of a combined word recognition and knowledge measure to understand characteristics of our patients' oral health literacy. Community Dent Oral Epidemiol 2017; 45(4): 380-8.
21. Macek MD, Atchison KA, Chen H, Wells W, Haynes D, Parker RM, et al. Oral health conceptual knowledge and its relationships with oral health outcomes: Findings from a Multi-site Health Literacy Study. Community Dent Oral Epidemiol 2017; 45(4): 323-9.
22. Macek MD, Atchison KA, Watson MR, Holtzman J, Wells W, Braun B, et al. Assessing health literacy and oral health: preliminary results of a multi-site investigation. J Public Health Dent 2016; 76(4): 303-13.
23. Haridas R, S S, Ajagannanavar SL, Tikare S, Maliyil MJ, Kalappa AA. Oral health literacy and oral health status among adults attending dental college hospital in India. J Int Oral Health 2014; 6(6): 61-6.
24. Hiu Fong LS, Kok Wun WM, Ming WH, Kar Yung YC. Parental oral health literacy of children with severe early childhood caries in Hong Kong. Eur J Paediatr Dent 2017; 18(4): 326-31.
25. Khodadadi E, Niknahad A, Sistani MM, Motallebnejad M. Parents' oral health literacy and its impact on their children's dental health status. Electron Physician 2016; 8(12): 3421-5.
26. Holtzman JS, Atchison KA, Macek MD, Markovic D. Oral health literacy and measures of periodontal disease. J Periodontol 2017; 88(1): 78-88.
27. Kanupuru KK, Fareed N, Sudhir KM. Relationship between oral health literacy and oral health status among college students. Oral Health Prev Dent 2015; 13(4): 323-30.
28. Bridges SM, Parthasarathy DS, Wong HM, Yiu CK, Au TK, McGrath CP. The relationship between caregiver functional oral health literacy and child oral health status. Patient Educ Couns 2014; 94(3): 411-6.
29. Wehmeyer MM, Corwin CL, Guthmiller JM, Lee JY. The impact of oral health literacy on periodontal health status. J Public Health Dent 2014; 74(1): 80-7.
30. Aldoory L, Macek MD, Atchison KA, Chen H. Comparing well-tested health literacy measures for oral health: A pilot assessment. J Health Commun 2016; 21(11): 1161-9.
31. Shin WK, Braun TM, Inglehart MR. Parents' dental anxiety and oral health literacy: Effects on parents' and children's oral health-related experiences. J Public Health Dent 2014; 74(3): 195-201.
32. Vilella KD, Alves SG, de Souza JF, Fraiz FC, Assuncao LR. The association of oral health literacy and oral health knowledge with social determinants in pregnant Brazilian women. J Community Health 2016; 41(5): 1027-32.
33. Burgette JM, Lee JY, Baker AD, Vann WF, Jr. Is dental utilization associated with oral health literacy? J Dent Res 2016; 95(2): 160-6.