Short Communication
Health Literacy in Dentistry Among Undergraduate Students in Indonesia

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Abstract

Oral health literacy is an emerging focus of public health research and has been found to be an important predictor of oral health outcomes. Data on oral health literacy in Indonesia, which is the world's 4th most populous country is absent from the literature. The objective of this pilot study was to develop an Indonesian version of the Health Literacy in Dentistry (HeLD) instrument and to analyze its reliability among undergraduate students. The HeLD questionnaire was back translated into Indonesian. The 29 items of the HeLD scale were used to assess the components of oral health literacy. The reliability of the HeLD domains (receptivity, understanding, support, economic barriers, access, communication and utilization) were evaluated in undergraduate students from the University of Indonesia. Three hundred and eighty one students completed the questionnaire. The mean total HeLD score was 3.3 ± 0.57. Oral health literacy was higher among female students and those studying in health-related fields. All domains had high internal consistency (Cronbach's alpha = 0.94). The Spearman's correlation coefficients between the seven domains of HeLD were significant (all p<0.001). The Indonesian version of the HeLD appears to be a reliable instrument. Future studies should complement its psychometric testing and extend its application to various communities.

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INTRODUCTION

Oral health literacy is defined as the degree to which individuals have the capacity to gain, process and understand basic oral health information and services needed to make appropriate oral health decisions (Dickson-Swift *et al.*, 2014). Therefore, a community's oral health literacy level affects the overall burden of oral health diseases and contributes to the presence of oral health disparities (Petersen *et al.*, 2005). Oral health literacy is an important contributing factor to the global disease burden, especially in Indonesia (Maharani and Rahardjo, 2012). Identification of levels of health literacy may help tailor interventions that can be implemented to improve health outcomes (Nutbeam, 2008).

The Health Literacy in Dentistry (HeLD) instrument was developed as a reliable, valid and culturally suitable instrument to assess oral health literacy (Jones *et al.*, 2015). The scale used the Health Literacy Management Scale (HeLMS) as a foundation. A number of theoretical constructs were included, such as one's ability to seek, understand and use oral health information to access and benefit from oral health care services (Jones *et al.*, 2014). The HeLD has seven domains that reflect those used in the HeLMS. The HeLD accounts for the multidimensional nature of oral health literacy and encompasses the domains of receptivity, understanding, support, economic barriers, access, communication and utilization, which have all been shown to impact oral health status. The results of a HeLD pilot study highlighted its potential to be used across a variety of health care settings. However, these results still allow reliable international comparisons to be made (Dickson-Swift *et al.*, 2014). The results of studies utilizing the HeLD tool are relevant for any studies measuring oral health literacy in marginalized or mainstream groups (Jones *et al.*, 2014). However, the findings should be replicated in other populations before the scale is used broadly in health services research. The findings will be important to determine the effects of interventions or programs aimed at improving oral health outcomes (Jones *et al.*, 2015).

One of the goals of Indonesian health policy is "Health for all," which includes dental care. Therefore, it is important to periodically assess dental health and to identify barriers to achieving good oral health (Maharani and Rahardjo, 2012). Moreover, the perceived need for and utilization of dental care among Indonesians was found to be low and there are persistent disparities in dental care (Maharani, 2009a). Low health literacy may be a cause of the low perceived need, which justifies the exploration of health literacy in the Indonesian community.

Oral health literacy has emerged as a new public health challenge and is an important predictor of oral health outcomes (Jones *et al.*, 2014). To date, a health literacy instrument in the Indonesian language has not been available. In Indonesia, dental health can be quickly and inexpensively evaluated periodically using subjective indicators as screening instruments provided by an oral health literacy questionnaire. The objectives of this study were to develop an Indonesian version of the HeLD instrument and to examine its reliability.

MATERIALS AND METHODS

This study was performed in 2014 and comprised a series of items in a questionnaire that was administered to a convenience sample of students from the University of Indonesia. The university is located in the urban area of Java Island, which is the most populous island in the world. A self-administered online survey was developed and sent to the students, who were invited to complete the questionnaire by email. The research protocol was approved by the Faculty of Dentistry University of Indonesia Ethical Committee prior to data collection (Approval No. 111).

The 29 items of the HeLD scale are designed to assess components of oral health literacy (Jones *et al.*, 2014). The HeLD was modified from the HeLMS to create a scale relevant to dental health; the instrument was originally written in English (Jordan *et al.*, 2013). It was back-translated into Indonesian version. The HeLD consists of the following 7 domains: receptivity, understanding, support, economic barriers, access, communication and utilization (Fig. 1). The 29 questions that constituted the HeLD focused on the 'Difficulty experienced'. The response options for the respondents were graded on a 5-point likert-type scale ranging from 'Without any difficulty to unable to do'. Scores were coded 0-4 and the possible final score range was 0-116 (Jones *et al.*, 2014). Higher scores indicate greater oral health literacy.

Cronbach's alpha and Corrected Item Total Correlations (CITCs) were used to assess the internal consistency of the instrument. Alpha, if deleted, was used for optimal subscale assessment and was determined for each item as a measure of overall item consistency. A Cronbach's alpha coefficient of 0.70 or higher is considered satisfactory level of reliability for research instruments. A CITC value lower than 0.30 is recommended as the threshold for removing an item (Jones *et al.*, 2014).

Associations between the seven components of the HeLD scale were measured using Pearson correlations. Factors influencing oral health literacy in this study were gender, field

1st Domain: Receptivity
R1. ApakahAndamemilikikemampuanuntukmengelolakesehatangigiataukesehatanmulutAnda?
R2. ApakahAndamampumemperhatikankebutuhankesehatangigiataukesehatanmulutAnda?
R3. ApakahAndamampumeluangkanwaktuuntukhal-halbaikbagikesehatangigiataukesehatanmulutAnda?
R4. ApakahAndamampumengubahgayahidupAndauntukmeningkatkankesehatangigiataukesehatanmulutAnda?
R5. ApakahAndamampumenemukaninformasikesehatangigidalambahasa yang Andamengerti?

2nd Domain: Understanding
U1. ApakahAndamampumengisiformulirgigimisalnyaformulirpendaftaran?
U2. ApakahAndamampumembacainformasitertulismisalnyaselebaranyangdiberikankepadaAndaolehdoktergigiAnda?
U3. ApakahAndamampumembacabrosurmengenaiinformasikesehatangigiataukesehatanmulut yang ada di klinikgigidanruangtunggu?

3rd Domain: Support
S1. ApakahAndamampumengajakkeluargaatautemanuntukmenemaniAndakedoktergigi?
S2. ApakahAndamampumemintaseseoranguntukmenemaniAndakedoktergigi?
S3. ApakahAndamampubertanyakepadakeluargaatauteman-temanuntukmembantumemahamiinformasikesehatangigiataukesehatanmulut?

4th Domain: Economic Barriers
E1. ApakahAndamampumembayarseorangdoktergigi?
E2. ApakahAndamampumembayartransportasikeklinikgigi?
E3. ApakahAndamampumembayarobatuntukmengelolakesehatangigiataukesehatanmulutAnda?

5th Domain: Access
A1. ApakahAndamengetahuidimanaseorangdoktergigidapatdihubungi?
A2. ApakahAndamengetahuibagaimanamendapatkanjanjidengandoktergigi?
A3. ApakahAndamengetahuiapa yang harusdilakukanuntukmendapatkanjanjidengandoktergigi?
A4. ApakahAndamengetahuidimanaAndadapatmelihatseorangdoktergigi?

6th Domain: Communication
C1. ApakahAndamampubertanyakepadaseorangdoktergigiuntukmembantuAndamemahamiinformasimengenaigigi?
C2. ApakahAndamampumendapatkaninformasiyangAndabutuhkanketikabertemuseorangdoktergigi?
C3. ApakahAndamampumenindaklanjutidengandoktergigiuntukmemahamiinformasimengenaikesehatangigiAnda?
C4. ApakahAndamampuberalihkedoktergigi lain untukmendapatkanperawatangigi yang lebihbaik?
C5. ApakahAndamampumendapatkanpendapat lain mengenaikesehatangigiAndadariseorangtenagakesehatangigiprofesional?
C6. ApakahAndamampumencaripendapat lain mengenaikesehatangigiAndadariseorangtenagakesehatangigiprofesional?
C7. ApakahAndamampumenggunakaninformasidariseorangdoktergigiuntukmembuatkeputusanmengenaikesehatangigiAnda?

7th Domain: Utilization
X1. ApakahAndamampumendiskusikankesehatangigiataukesehatanmulutAndadengan orang-orang selaindoktergigi?
X2. ApakahAndamampumengikutipetunjukyangdoktergigiberikankepadaAnda?
X3. ApakahAndamampumelaksanakanpetunjukyangdoktergigiberikankepadaAnda?
X4. ApakahAndamampumenggunakannasihatdariseorangdoktergigiuntukmembuatkeputusanmengenaikesehatangigiAnda?

Fig. 1: Twenty nine items Indonesian version of Health Literacy in Dentistry (HeLD) instrument comprising of 7 domains

of study and year of study at the university. Statistically significant differences in scale scores with relevant oral health literacy-related factors would offer evidence of the instrument's ability to discriminate between groups. All data were analyzed using SPSS for Windows v19.

RESULTS

An Indonesian version of the HeLD was developed (Fig. 1). The response rate was 95%, with 381 undergraduate students of the University of Indonesia completed the questionnaire. Oral health literacy was significantly higher among female students, those studying a health-related field (e.g., Faculty of Medicine, Dentistry, Pharmacy, Public Health, or Nursing) and those in later years of study at the university

(Table 1). Moreover, Table 2 presents the following findings for the 29 items of the HeLD instrument: mean item scores, Cronbach's alpha for subscales if an item was removed and CITCs. Internal reliability measured by Cronbach's alpha showed a high relatedness of all items with the overall mean HeLD score, indicating that consistency could not be improved by deleting any items. The overall Cronbach's alpha of the Indonesian version of the HeLD questionnaire was 0.94. The Cronbach's alpha coefficients of each domain were above 0.70, which is considered satisfactory. No CITC value was lower than 0.30, which allowed all items to be included in the instrument.

The highest mean scores were in the understanding domain (3.48±0.12) and the lowest mean scores were in the receptivity domain (3.06±0.16). The domains ranked from

Table 1: Participant characteristics and oral health literacy based on gender, field and year of study

			Oral health literacy	
Variables	N	%	Mean	SD
Gender				
Male	86	22.6	3.06	0.58
Female	295	77.4	3.30	0.55
p-value				p<0.05
Field of study				
Health-related	194	50.9	3.43	0.46
Not health-related	187	49.1	3.05	0.60
p-value				p<0.05
Years of study at the University				
<2 years	171	44.9	3.15	0.59
>2 years	210	55.1	3.32	0.54
p-value				p<0.05
Total	381	100	3.22	0.15

SD: Standard deviation

Table 2: Item characteristics and reliability analysis

			Reliability		
HeLD subscale and items	Mean	SD	Alpha if deleted*	CITC**	Cronbach's alpha
Receptivity	3.06	0.16			0.84
HeLD R1			0.80	0.66	
HeLD R2			0.78	0.75	
HeLD R3			0.78	0.73	
HeLD R4			0.81	0.63	
HeLD R5			0.85	0.48	
Understanding	3.48	0.12			0.74
HeLD U1			0.76	0.49	
HeLD U2			0.60	0.61	
HeLD U3			0.61	0.62	
Support	3.14	0.07			0.81
HeLD S1			0.68	0.71	
HeLD S2			0.70	0.71	
HeLD S3			0.83	0.57	
Economic barriers	3.33	0.28			0.87
HeLD E1			0.75	0.82	
HeLD E2			0.90	0.68	
HeLD E3			0.73	0.82	
Access	3.33	0.27			0.88
HeLD A1			0.84	0.73	
HeLD A2			0.79	0.85	
HeLD A3			0.81	0.83	
HeLD A4			0.90	0.64	
Communication	3.13	0.32			0.85
HeLD C1			0.83	0.56	
HeLD C2			0.82	0.64	
HeLD C3			0.82	0.67	
HeLD C4			0.84	0.50	
HeLD C5			0.82	0.65	
HeLD C6			0.81	0.68	
HeLD C7			0.83	0.60	
Utilization	3.26	0.29			0.80
HeLD X1			0.88	0.45	
HeLD X2			0.70	0.74	
HeLD X3			0.71	0.72	
HeLD X4			0.72	0.69	

*Cronbach's alpha for sub-scales if an item was removed, **CITC: Corrected item-total correlation

highest to lowest mean scores were as follows: understanding health information (HeLD R1-R5), accessing dental healthcare services (HeLD U1-U3), socioeconomic considerations (HeLD E1-E3), being proactive and using health information

Table 3: Associations (Spearman's correlations) between the seven domains of the HeLD scale

Components	1	2	3	4	5	6	7
Receptivity	-						
Understanding	0.516	-					
Support	0.467	0.411	-				
Economic barriers	0.295	0.294	0.311	-			
Access	0.397	0.335	0.405	0.526	-		
Communication	0.597	0.467	0.524	0.465	0.567	-	
Utilization	0.573	0.493	0.474	0.359	0.437	0.632	-

Correlations were all significant at the p<0.01 level

(HeLD X1-X4), social support (HeLD S1-S3), communication with health professionals (HeLD C1-C7) and patient attitudes toward health. The correlations between each latent variable are shown in Table 3. Item subscale correlations ranged from 0.3-0.6, indicating the multidimensionality of the scale. Correlations were all significant at the p<0.01 level.

DISCUSSION

Persistent inequality of oral health in Indonesia has been reported (Maharani and Rahardjo, 2012; Maharani, 2009a, b). Dental public health improvements remain a fundamental need in Indonesia (Rahardjo *et al.*, 2015). Strategies to reduce oral health inequalities are not possible without improving other influential factors, including public oral health literacy, oral health service providers and policy makers (Horowitz and Kleinman, 2012). Previous findings confirm that the majority of tools are heavily biased toward word recognition, numeracy and reading skills. Those tools do not cover aspects such as health behaviors or service utilization (Dickson-Swift *et al.*, 2014). More recent developments have attempted to include other important factors, such as decision-making and service navigation. The HeLD is one of such instrument, making the HeLD an appropriate instrument to assess oral health literacy in Indonesia.

This study included undergraduate students from a public university in Indonesia. The students come from many parts of Indonesia and represent the various tribes of Indonesia. Moreover, this convenient sample was also chosen to increase the visibility of an online questionnaire. Indonesia has a fast growing netizen, which makes online subjective assessments feasible in the near future. A shorter version of the HeLD has been developed, which could make the instrument easier and more efficient to use in research and clinical settings (Jones *et al.*, 2015). The shorter version may also increase the potential to expedite an oral health literacy assessment in Indonesia. The results will lead to interventions to increase oral health literacy and thus lead to better oral health among citizens. Nonetheless, further studies should be conducted to explore the use of the instrument in other Indonesian settings.

Although, this is the first study to evaluate oral health literacy in Indonesia, the results may have limited generalizability. Furthermore, the questionnaire may not be representative of all undergraduate students in Indonesia, as only one university was included. Nonetheless, a previous study has shown that the perceptions of undergraduate students are worthy of analysis (Ariani *et al.*, 2013). Despite the high proportion of females in our sample, which may overemphasize their oral health literacy, women tend to use dental care more than males. Women also tend to be more concerned about their health and aesthetic qualities than men (Maharani, 2009b). The tendency of greater oral health literacy and higher educational attainment among females has been previously reported (Khan *et al.*, 2014). Individuals with higher educational attainment most likely have higher socio-economic status and are likely better informed about dental health options (Paulander *et al.*, 2003). They may also choose to undergo regular dental check-ups that result in greater use of dental care than individuals with lower levels of education (Fisher-Owens *et al.*, 2008). Therefore, the results of this study are consistent with previous studies that have found parallels between education and dental health service use (Maharani, 2009b).

Health literacy is an emerging focus of public health research and has been found to be an important predictor of health outcomes (Nutbeam, 2000; Ratzan, 2001; Batterham *et al.*, 2014; Safeer and Keenan, 2005). To date, no health literacy instruments exist in Indonesia, the world's 4th most populous country. The association between health and oral health literacy was not possible to consider. This association is needed to evaluate the convergent validity of the theoretical constructs of two related instruments and to evaluate the predictive validity, which is the extent to which an instrument predicts scores on some related criterion (Babbie, 2013). In addition, the information was collected from a convenience sample of undergraduate students from a university in Indonesia and these students are likely to have higher oral health literacy than the general population. Nonetheless, screening for oral health literacy in any communities are essential (Atchison *et al.*, 2010; Jones *et al.*, 2007; Cho *et al.*, 2008; Blizniuk *et al.*, 2014; Ueno *et al.*, 2014). To increase the validity of the Indonesian HeLD instrument, general population samples are necessary for future research. Assessments of the associations between oral health literacy and oral health outcomes are also needed. In addition, further work is needed to develop tools that are adaptive and culturally acceptable for specific populations. The tools should be sensitive to measuring changes in literacy levels resulting from any interventions. Not with standing the limitations of this study, the undergraduate students at the University of

Indonesia appear to have relatively high oral health literacy. Moreover, the Indonesian version of the HeLD has the potential to be a reliable and valid oral health literacy instrument for use in the general population in Indonesia. Future studies should complement its psychometric testing and extend its application to other samples as well as public health programs.

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