

# Development of a Health Literacy Assessment for Young Adult High School Students: A Pilot Study

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## ABSTRACT

Several conceptual models have been developed to measure health literacy. However, health literacy of the community, particularly the young is still under reported and under-explored. The purpose of this study was to develop and validate health literacy assessment tool for high school students. Participants were 150 students. The concept of health literacy evolved from defining, redefining, outlining and quantifying health literacy needs of a young population. Seven health education experts reviewed the initial item pool and helped select 85 questions for testing. The reviewer also provided confidential feedback via an evaluation questionnaire. Seven distinct health literacy domains meanings emerged *viz* health promotion, health care, disease prevention, health behaviour, health attitude, health wellbeing and health culture. The instrument has 85 questions that look promising for measuring health literacy in high school students, but needs additional and continuous testing with larger population to see how these questions continue to perform. The findings of present study might be a useful policy maker and health organizations to reflect and focus their promotion efforts on the more practical aspects of day-to-day in health promotion and are concerned with empowering young through enhancing their knowledge and improving their ability to make choices about their health wellbeing.

**Keywords:** Health Literacy, Adolescents, Psychometric

## Introduction

Malaysians are facing a ticking time bomb scenario due to their unhealthy lifestyle and weight issues (The Sun Daily, 5 May 2015). Youth and Sports Minister Khairy Jamaluddin hoped that the health program, which was supported by both the Education Ministry and the state governments, would motivate and encourage youths to be more concern in healthy life and reduce the risk of diseases. Such health program is about education, information, awareness and exposure so that people, especially adolescent understand about health, nutrition, food content, and physical activities to enhance their health wellbeing. Youth and Sports Minister Khairy Jamaluddin said every year, Malaysian are faced with the question of how much we want to spend money to build a hospital and health facilities. Therefore, focus on raising health awareness about sustainable lifestyle among the young people is more worth it and precious,"

(The Star, 16 August 2015). According to Youth Malaysia Index reported by Ministry of Youth and Sport Malaysia, the level of health status among youth in Malaysia is moderate (65.8%). The statistic showed that more action need to be taken to improve young people health as well as develop a health literate generation.

Thus, developing students' health literacy is the prior attention to interventions aimed at enhancing health literacy especially in Malaysia (Begoray et al., 2009; Borzekowski, 2009; Deal and Hodges, n.d.; Schmidt et al., 2010; St Leger, 2001; Wu et al., 2010). It's important that young people's health is considered in its broadest sense, as encompassing social, physical and emotional wellbeing.

Consequently, in this paper researcher might first give a definition of health literacy as a learning outcome, and besides, the study concentrates on the sorts of learning conditions that are required to create health literacy education among school students.

### **Literature review**

Health literacy as an idea has been defined in different ways as often as possible, cited definitions incorporate the one given by Ratzan and Parker (2000), and the definition of the World Health Organization, given by Nutbeam (1998). Health literacy has been defined as "how many people have the ability to get, prepare and comprehend essential health information and administrations expected to settle on proper health decisions" (Ratzan and Parker, 2000). Writing in the WHO glossary, Nutbeam (1998), takes a more extensive point of view: "health literacy infers the accomplishment of a level of knowledge, individual abilities and confidence to make a move to enhance individual and group health literacy by changing individual ways of life and living conditions".

Most of health literacy research has concentrated on the adult population, and some usually utilized health literacy measurement tools have been approved just in the adult population. However, adolescent health literacy is critical too, in light of the fact that the present youths are regularly challenged to deal with their chronic health conditions and to make vital health-related decisions in light of accessible data.

In defining health literacy, the researcher has proposed a three-level various level structure for health literacy highlighted by Nutbeam (2000; 2008). The three-level moving from basic and functional literacy (sufficient skills to function effectively in everyday circumstances) towards communicative and interactive literacy (more advanced cognitive and literacy abilities, expected to apply information in changing circumstances and to partake in daily routine), and critical literacy (the most advanced-level cognitive skills, for vital analysis of information and the utilization of it to improve health).

Health literacy is important because it affects an individual's ability to manage personal health: to navigate the healthcare system, share health history with healthcare providers, engage in self-care and manage chronic disease, and understand concepts such as probability and risk.

Research has shown, patients with inadequate health literacy have a poorer health status, less knowledge about their disease and the treatments, less in health self-

management skills, increased hospitalizations, increase health costs and have poorer adherence rates (Kickbusch, 2001; Baker, Parker, Williams, Clark. 1997).

Promoting healthy practices during adolescence, and taking steps to better protect young people from health risks are critical for the prevention of health problems in adulthood, and for countries' future health and social infrastructure (WHO, 1998;2007; Taghizadeh, Shahinfar, Bahreini, Ajilian, Fazli, & Saeidi, 2016; Langley, 2015; Call, Riedel, Hein, McLoyd, Petersen, & Kipke, 2002).

It is now quite widely accepted that adolescence is a time of transition involving multi-dimensional changes: biological, psychological (including cognitive) and social. Biologically, adolescents are experiencing pubertal changes, changes in brain structure and sexual interest, as a start. Psychologically, adolescents' cognitive capacities are maturing. And finally, adolescents are experiencing social changes through school and other transitions and the roles they are assumed to play in family, community and school (National Research Council [NRC], 2002; Hoyt, Chase-Lansdale, McDade, & Adam, 2012). These changes occur simultaneously and at different paces for each adolescent within each gender, with structural and environmental factors often impacting adolescents' development.

In the present study, the researcher study and assess the health literacy among school student in Malaysia, researching and analysis mainly their capacity to apply basic knowledge in a health setting. For the purpose of this study, model by Nutbeam (2000; 2008) will be applied to support and strengthen the health literacy framework.

## **Methodology**

This study used the quantitative research design as it involves numerical and numbering data to answer the research objectives. The population of this study covers adolescent from secondary school. Eventually, the target population of this study was focused on adolescents who are studying in Klang valley. Cluster sampling techniques were used in selecting the respondents. The 13 schools that involved in this study are divided into two categories; (1) boarding School, and (2) day school. Thus the population for this study narrowed down to the adolescent between ages 15 to 17 years old. The selections of these schools were based on the response and permission given by the principals within the survey period from January to March 2017. A total of 790 students ages between 15 to 17 years were participating in the study. A self-administered questionnaire had been employed in this study. Data were collected using a two-part questionnaire. The instrument used in this study has been developed by the research team based on the input from the multidisciplinary expert panel. The first part of the questionnaire was included the personal characteristics such as age, gender, ethnicity, race, parents' education and health status. The second part of the questionnaire was included seven distinct domains of health literacy meanings emerged viz health promotion, health care, disease prevention, health behaviour, health attitude, health wellbeing and health culture. Questions were rated in a 5-point Likert-scale format was used, ranging from 1 (strongly disagree) to 5 (strongly agree). Hence, the scoring level of adolescent health literacy was regarded as Low (1.00 – 2.33), Moderate (2.34-3.66) and High (3.67-5.00). Finally, all participating students signed the informed consent statement and gave their permission to use the questionnaire

content for the research purpose only. Data was analyzed using IBM-SPSS version 23 to determine the level of health literacy among students with selected demographic factors.

## Research Finding and Discussion

### *Profile of respondent*

A total number of 150 students were enrolled in this study. In all, adolescents aged 15–18 participated in the study. The mean age of respondents was 16.2 years. The demographic profiles analyzed were gender, and health status, as shown in Table 1. There were 67 male respondents (44.7%) while 83 respondents were female (55.3%). From the survey, it was found that most students live in urban areas. Overall, students had a healthy status, which 95 (63.3%) at a healthy level and 31 (20.7%) indicate a very healthy person. Hence, about 24 (16%) of adolescent in the study are indicate they are not healthy person of their general health status. As depicted in Table 1, male students indicate 61.3% as a very healthy person compare to female students, about 38.7% said that they are very healthy. In addition, only 33.3% of students state that their health status as unhealthy. Meanwhile, more than half female students (66.7%) reported as unhealthy status.

**Table 1: Profile of Health Status among Students**

Characteristics		Health Status		
		Very Healthy	Healthy	Unhealthy
Gender	Male	19 (61.3%)	40 (42.1%)	8 (33.3 %)
	Female	12 (38.7%)	55 (57.9%)	16 (66.7%)
Age	15 years	4 (80%)	1 (20%)	-
	16 years	20 (17.1%)	79 (67.5%)	18 (15.4)
	17 years	7 (25%)	15 (53.6%)	6 (21.4%)

The Cronbach’s alpha coefficient was measured for each dimension and items as well as for the entire scale. In the study, a Cronbach’s (alpha) coefficient of 0.70 or above indicates that the instrument has acceptable reliability. The Cronbach’s (alpha) coefficient for the entire scale was 0.95 and ranged from 0.733 to 0.897 for various domains. Table 2 represents the value of Cronbach’s  $\alpha$  Coefficient of health literacy assessment tool and its subscales.

**Table 2: Cronbach’s  $\alpha$  Coefficient of Health Literacy Assessment Tool and its Subscales**

Construct	Number of items	Cronbach’s $\alpha$ coefficient (n=150)
Health Promotion	13	.762
Health Care	13	.818
Disease Prevention	14	.806
Health Behaviour	14	.897
Health Attitude	9	.857
Health Wellbeing	13	.893
Health Culture	9	.733
Overall Health Literacy	85	.955

*Level of Health literacy Constructs among Adolescent*

The general health status of 150 high school students of Malaysia was assessed in 2017 and more than half (84%) of the students were found to be healthy. Overall, the health literacy status indicates moderate level 54.7% ( $M=3.57, SD= .43310$ ). As depicted in Table 3, the level of health literacy constructs shows moderate to high level. Among the health literacy constructs, health attitude shows higher mean ( $M=3.97, SD= .61335$ ). While, health promotion construct indicate a lower mean score ( $M=3.01, SD= .50962$ ) compare to other construct.

**Table 3: Level of Health literacy Construct among Students**

Construct/Level	Frequency	Percent (%)	Mean	SD
<b>Health Promotion</b>			3.01	.50962
Low	17	11.3		
Moderate	121	80.7		
High	12	8.0		
<b>Health Care</b>			3.62	.43990
Low	-	-		
Moderate	81	54.0		
High	69	46.0		
<b>Disease Prevention</b>			3.50	.55316
Low	3	2.0		
Moderate	88	58.7		
High	59	39.3		
<b>Health Behaviour</b>			3.50	.57511
Low	1	0.7		
Moderate	92	61.3		
High	57	38.0		
<b>Health Attitude</b>			3.97	.61335
Low	3	2.0		
Moderate	41	27.3		
High	106	70.7		
<b>Health Wellbeing</b>			3.79	.56771
Low	3	2.0		
Moderate	51	34.0		
High	96	64.0		
<b>Health Culture</b>			3.57	.58101
Low	4	2.7		
Moderate	65	43.3		
High	81	54.0		
<b>Overall Health Literacy</b>			3.57	.43310
Low	-	-		
Moderate	82	54.7		
High	68	45.3		

Table 4 gives the descriptive characteristics of the subscales measuring the level of health promotion, health care, disease prevention, health behaviour, health attitude, health wellbeing and health culture on adolescence health literacy by gender. The findings indicate that the level

of health literacy by gender is no different. The overall health literacy level by gender showed moderate level. Majority of the male students had high health literacy level, while the health literacy level of health promotion, health care, disease prevention, health behaviour subscales were 79.1%, 52.2%, 68.7%, and 59.7% respectively. Additionally, the health literacy levels for the three aspects viz health attitude (67.2%), health wellbeing (67.2%), and health culture (58.2%) indicates high level. While, female students also showed moderate level in health promotion (81.9%), health care (55.4%), disease prevention (50.6%), health behaviour (62.7%) subscales. The score of health literacy in health attitude (73.5%), health wellbeing (61.4%), and health culture (50.6%) dimension indicates high level.

**Table 4: Level of Health literacy Construct among Students (by gender)**

<b>Construct/Characteristics</b>	<b>Male</b>	<b>Female</b>
<b>Health Promotion</b>		
Low	8 (11.9%)	9 (10.8%)
Moderate	53 (79.1%)	68 (81.9%)
High	3 (9%)	6 (7.2%)
<b>Health Care</b>		
Low	-	-
Moderate	35 (52.2%)	46 (55.4%)
High	32 (47.8%)	37 (44.6%)
<b>Disease Prevention</b>		
Low	1 (1.5%)	2 (2.4%)
Moderate	46 (68.7%)	42 (50.6%)
High	20 (29.9%)	39 (47.0%)
<b>Health Behaviour</b>		
Low	1 (1.5%)	-
Moderate	40 (59.7%)	52 (62.7%)
High	26 (38.8%)	31 (37.3%)
<b>Health Attitude</b>		
Low	2 (3.0%)	1 (1.2%)
Moderate	20 (29.9%)	21 (25.3%)
High	45 (67.2%)	61 (73.5%)
<b>Health Wellbeing</b>		
Low	2 (3.0%)	1 (1.2%)
Moderate	20 (29.9%)	31 (37.3%)
High	45 (67.2%)	51 (61.4%)
<b>Health Culture</b>		
Low	2 (3.0%)	2 (2.4%)
Moderate	26 (38.8%)	39 (47.0%)
High	39 (58.2%)	42 (50.6%)
<b>Overall Health Literacy</b>		

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Low	-	-
Moderate	36 (53.7%)	46 (55.4%)
High	31 (46.3%)	37 (44.6%)

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In addition, the overall health literacy rate by ages was at a moderate level. Respondents ages 15 years old were the highest score (80.0%) in the health literacy level. While, respondents ages 16 years and 17 years were 53.6% and 53.8% respectively. Additionally, for all the aspects of health literacy among 15 years old respondents, the rates of health literacy were around 60 % to 80%. While, the level of health literacy at the moderate level for respondents ages 16 years old in descending order were 80.3%, 64.1%, 60.7%, and 53.8%, for the health promotion, health behaviour, disease prevention, and health care subscales, respectively. The level for the three constructs of health literacy remains at high level in descending order were health attitude (71.8%), health wellbeing (65.8%), and health culture (56.4%). Besides that, health literacy level of respondents 17 years old also indicates moderate score in the health promotion (82.1%), disease prevention and health behaviour (50.0%) subscales. In addition, for health attitude (71.4%), health wellbeing (64.3%), and health culture (53.6%) reported high level. While, health care constructs show a balanced score of moderate to high levels.

**Table 5: Level of Health literacy Construct among Students (by ages)**

Construct/Characteristics	15 years	16 years	17 years
<b>Health Promotion</b>			
Low	1 (20.0%)	12 (10.3%)	4 (14.3%)
Moderate	<b>4 (80.0%)</b>	<b>94 (80.3%)</b>	<b>23 (82.1%)</b>
High	-	11 (9.4%)	1 (3.6%)
<b>Health Care</b>			
Low	-	-	-
Moderate	<b>4 (80.0%)</b>	<b>63 (53.8%)</b>	14 (50.0%)
High	1 (20.0%)	54 (46.2%)	14 (50.0%)
<b>Disease Prevention</b>			
Low	1 (20.0%)	1 (0.9%)	1 (3.6%)
Moderate	<b>3 (60.0%)</b>	<b>71 (60.7%)</b>	<b>14 (50.0%)</b>
High	1 (20.0%)	45 (38.5%)	13 (46.4%)
<b>Health Behaviour</b>			
Low	1 (20.0%)	-	-
Moderate	<b>3 (60.0%)</b>	<b>75 (64.1%)</b>	<b>14 (50.0%)</b>
High	1 (20.0%)	42 (35.9%)	14 (50.0%)
<b>Health Attitude</b>			
Low	-	3 (2.6%)	-
Moderate	<b>3 (60.0%)</b>	30 (25.6%)	8 (28.6%)
High	2 (40.0%)	<b>84 (71.8%)</b>	<b>20 (71.4%)</b>
<b>Health Wellbeing</b>			
Low	-	3 (2.6%)	-
Moderate	<b>4 (80.0%)</b>	37 (31.6%)	10 (35.7%)
High	1 (20.0%)	<b>77 (65.8%)</b>	<b>18 (64.3%)</b>
<b>Health Culture</b>			
Low	-	4 (3.4%)	-
Moderate	<b>5 (100%)</b>	47 (40.2%)	13 (46.4%)
High	-	<b>66 (56.4%)</b>	<b>15 (53.6%)</b>
<b>Overall Health Literacy</b>			
Low	-	-	-
Moderate	<b>4 (80.0%)</b>	<b>63 (53.8%)</b>	<b>15 (53.6%)</b>
High	1 (20.0%)	54 (46.2%)	13 (46.4%)

## Discussion

The findings of this study are able to present important information regarding health literacy among adolescents. It is essential to inform the education department to be aware of these growing phenomena in order to overcome the declining of health problems and psychological well-being among adolescents. Studies on health literacy in Malaysia are still very



limited and not documented, often focused on a specific illness, and demographic groups. The word 'health literacy' is vaguely utilized in research, not defined in standard measurement. Yet, studies on health literacy at national level are still non-existent. This presents a huge potential and benefit for this study to be conducted nationwide in Malaysia.

This study was the first attempt to design and psychometrically evaluate an instrument to measure health literacy among adolescents in Malaysia. The initial questionnaire was developed based on data obtained from a qualitative study on adolescents aged 15–17, expert opinions, and extensive reviews of existing literature on health literacy. The designed questionnaire included a wide range of items to assess individual and interpersonal factors relating to adolescent health literacy. After the completion of the validity and reliability phases, the health literacy assessment tool consisted of 85 items within 7 construct. These constructs were health promotion, health care, disease prevention, health behaviour, health attitude, health wellbeing and health culture. As most participants completed the questionnaire without any difficulties in approximately 15 minutes, the researcher believes that the health literacy assessment is an easy-to-use questionnaire that can be used easily for future studies.

Health literacy is worldwide agenda. Meanwhile, measuring health literacy among adolescents, not only in Malaysia but also elsewhere, is a relatively new issue. Although there are growing concerns about this, applying conventional health literacy measurements (such as TOFHLA, REALM, NVS) to this population has its limitations (Shone, Doane, Blumkin, Klein, Wolf, 2009). Few studies have investigated adolescent health literacy and fewer research projects have addressed this concept from adolescents' perspectives. The findings of this study indicated that the health literacy assessment has appropriate validity and reliability. One of the features of the health literacy assessment is that, in addition to functional health literacy, it covers other dimensions, including interactive health literacy and critical health literacy suggested by Nutbeam (2000; 2008). Studying adolescent health literacy in a school (Steinberg, 2001; 2005) is another vital aspect of this study, which can help to overcome the challenges (Seligman, Ernst, Gillham, Reivich, & Linkins, 2009) of health literacy assessments in non-clinical settings, particularly since this age group is often the healthiest period of life and have fewer dealings with healthcare services (Manganello, 2008)

As stated previously, this was the first attempt to measure the health literacy of Malaysian adolescents. Future studies should be carried out among different age groups of adolescents and in different settings. Perhaps the assessment of such studies may lead to a stronger confirmation of the psychometric properties of the health literacy assessment.

## **Conclusion**

In conclusion, this study shows that health literacy level among young people was at a moderate level with health promotion construct indicate a lower score compare to other construct. Thus, more health education promotion program should be done to strengthen the knowledge, attitude and practice of health literacy among young people. General health literacy is an important issue among adolescents and high school students due to their higher risk of general health disorder. Therefore, to plan an appropriate and proper extension

education health program, the evaluation of students' general health literacy status is necessary.

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