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Article

Malaysian Health Literacy: Scorecard performance from a National Survey

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Abstract: Health literacy is an indicator of a society's ability to make better health judgement for themselves and the people around them. This study investigates the prevalence of health literacy among Malaysian adults and provides an overall picture of the current health literacy state of the society. The study also highlights socio-demographics markers of communities with limited health literacy which may warrant future intervention. A population based self-administered survey using the Health Literacy Survey Malaysian Questionnaire18 (HLS-M-Q18) instrument was conducted as part of the National Health Morbidity Survey 2019 in Malaysia. The nationwide survey utilized two-staged stratified random sampling method. A sample of 9478 individuals aged 18 and above participated in the study. The health literacy score was divided into three levels; limited, sufficient and excellent. Findings showed that majority Malaysian population has sufficient health literacy level, albeit leaning towards the lower end of the category with an average score of 35.5. The limited health literacy groups are associated with respondents with older age, lower education level and lower household income. Overall health literacy state for Malaysia is categorized at a lower sufficient level. Health literacy improvements should focus on communities with limited health literacy level.

Keywords: health literacy; healthcare; disease prevention; health promotion.

1. Introduction

World Health Organization (WHO) defines Health Literacy as cognitive and social skills which determines individual motivation and ability to gain access, understand and use information in ways which promote and maintain good health [1]. Studies suggested that health literacy is an important contributor to existing health gaps [2-4]. An individual who is competent can access, understand, judge, and apply health information to healthcare, disease prevention and health promotion; they are considered as health literate. Those who are health literate are able to facilitate their health decision making such as utilizing of health care services optimally, practising healthy lifestyles to deal with social determinants of health successfully [5, 6]. For those with low health literacy are

associated with less participation in health-promoting and disease detection activities, prone to riskier health choices, weak management of chronic diseases, low adherence to medication, increased hospitalization, readmissions and overall poor health outcomes that in turn causes increased morbidity and premature death [7].

Malaysia is a multi-ethnic, multilingual, and multi-cultural country with Malays (alongside the indigenous Bumiputras) being the predominant ethnic group followed by Chinese, Indians and other smaller ethnicities. Linguistically Malaysian (the standardized version of the Malay language) is the official language of Malaysia [8]. This however, does not limit the linguistic communication whereas English being the second official language and the varying Chinese dialects widely spoken and not limited to the Chinese population alone. With this extensive ethnicity and language variations, communication should not be a barrier.

Malaysia's education system consists of a dual system with the official formal education and informal education. The formal education is divided into a primary, secondary and tertiary education and it is further divided into the national school curriculum and vernacular school curriculum [9]. The informal education takes form of religious education provided by non-governmental organizations or private sources [10, 11]. The national school curriculum was formalized in in the 1980s with Malay being the primary teaching language [12]. The curriculum has been the fundamental education system in the country with ever changing improvements. Vernacular education follows the similar trajectory of the national curriculum with minor differences and with special focus on ethnical linguistics such as Mandarin or Tamil [13, 14].

Population wise, Malaysia in mainly built of the 15-64 age group or 69.5 percent of the total population. The second largest consisting of the 0–14 age group or 24.5 percent, while senior citizens aged 65 years or older make up 6.0 percent [15]. Because the national school curriculum was formalized in the 1980s [16] despite the National Education Act gazetted in 1961 [17], much of the population did not receive the national curriculum earlier hence differing levels of education was received for the more advance population. As the population gears towards an elderly population, care for the changing landscape of the population needs special emphasis. Therefore there is a need for continuous health literacy assessment to ensure the needs of all target groups are met.

In 2015, the first nationwide study among Malaysian adults for health literacy was conducted as part of the National Health and Morbidity Survey 2019 (NHMS) using a modified and translated version of standard Newest Vital Sign (NVS) tool [18]. The functional HL tool is used to look at people understanding on information relevant to health for disease prevention [19]. The survey findings reported overall prevalence of adequate functional health literacy was only 6.6%; with urban population reporting higher significantly adequate health literacy (7.8%) compared to rural population (2.3%). The same study also reported adults with tertiary education were more adequately proficient in health literacy (11.0%) in comparison to those with primary education (2.4%)[18] .

In NHMS 2019, a validated comprehensive HL tool known as Health Literacy Survey Malaysian Questionnaire18 (HLS-M-Q18) was used to address a self-report difficulties in tasks concerning decision-making in health care (HC), disease prevention (DP), and health promotion (HP) [20]. The aim of this study is to assess prevalence Malaysian adults health literacy.

2. Materials and Methods

2.1. Recruitment and Sample Size and Sampling Determination

The NHMS 2019 is a nationwide survey covering both urban and rural areas in Malaysia. Target population were residences of non-institutional living quarters (LQs) and institutional population such as hotel, hostels, hospitals, etc. were excluded from this survey. For Health Literacy Module, all individuals aged 18 years and above living in Malaysia, residing in the Living Quarters (LQ) for at least 2 weeks prior to data collection were included. Institutional populations (for example: old folk homes, hotels, hostels, hospitals) were excluded from the survey. Sample size was calculated using a single proportion

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formula for estimation of prevalence. The sample size calculation was based on (a) variance of proportion of the variable of interest (based on NHMS 2015 or other literatures), (b) margin of error and, (c) Confidence Interval of 95% [20].

Sample size was adjusted according to the need of the analysis, whether \prevalence estimate was focused either at national, or state level. Based on the core objectives and above-mentioned considerations, optimum sample size required was 5,676 LQs. The allocation of samples to the states, urban and rural was done proportionally to the population size. Bigger number of samples were allocated to states with bigger population size such as Selangor, Johor and Sabah, and lesser number of samples were allocated to states with smaller population size such as Melaka, Perlis and Labuan. To ensure national representativeness, two stage stratified random sampling was used. The two strata are primary stratum, which made up of states of Malaysia, including Federal Territories, and secondary stratum, which made up of urban and rural strata formed within the primary stratum. A total of 4703 Living Quarters (LQ) were successfully screened resulting a total of 10,472 respondents. Of these, 9478 individuals agreed to participate for the Health Literacy assessment resulting a 90.5% response rate [20].

2.2. Instrument

Data was collected nationwide between July and September 2019 using a self-administered questionnaire HLS-M-Q18 [20]. This questionnaire was adapted and compressed from the Health Literacy Survey European Questionnaire47 (HLS-EU-Q47) [21] and was pretested in Selangor, Kuala Lumpur and Sarawak using ratio-based sampling, which took into account population characteristics such as population size and ethnic density. For validation purpose, face and content validity were conducted at among experts, researchers, stakeholders and the technical team to ensure items in the questionnaire is valid measuring the specific domains. Instrument reliability showed all major domains in HLS-M-Q18 having a Cronbach's Alpha value greater than 0.7 [21].

The questionnaire contained 18 items and the assessment focused on four dimensions of health literacy skills: Ability to Access, Understand, Appraise and Apply Health Information in three domains: Health Promotion, Disease Prevention and Healthcare. It is designed with Likert-type responses (‘very easy’, ‘fairly easy’, ‘fairly difficult’, ‘very difficult’) and a final score will be given when respondents completes all 18 questions. All scores were transformed to a unified metric with a minimum score of 0 and a maximum score of 50, whereby 0 represents the ‘lowest possible’ and 50 represents the ‘highest possible’ health literacy score. The scores are divided into three levels; Limited Health Literacy Level (score 0-33), Sufficient Health Literacy Level (score >33-42) and Excellent Health Literacy Level (score >42-50) [5].

2.3. Data Collection Procedure

The HLS-M-Q18 was distributed together with other questionnaires under NHMS survey. Self- administered with minimal guidance approach was used to obtain data from the selected respondents. The trained researches assistants approached respondents who are 18 years old above and able to read and explained the objectives of the study and informed respondents that their participation was based on voluntary basis and will be assured with anonymity. Once respondents agreed to participate, written consent was obtained from the respondents and the data collection sessions commenced. Respondents were given the options either to answer in tablet or through questionnaire handouts. Respondents are guided (in terms of questionnaire being read out etc) if they face difficulties in reading and answering the questionnaire. The questionnaires were programmed into the hand-held mobile devices for data collection [20].

2.4. Data Analysis

A descriptive weighted analysis using Statistical Package for the Social Sciences (SPSS) version 26 was used to measure prevalence of health literacy within the Malaysian population. The prevalence of overall health literacy by socio-demographic subgroups

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was derived using complex sampling analysis where locality is the main weight. Data normality was assessed and presentations of data are in the form percentages, prevalence and confidence intervals (CI). Data was presented by domains and overall results [20].

3. Results

3.1 . Distribution of health literacy

Findings showed a higher number of Malaysian populations of having good health literacy levels, with 40.7% (95% CI: 38.8, 42.5) possessing sufficient levels, 35.0% (95% CI: 33.0, 37.1) possessing limited level and 24.2% (95% CI: 22.6, 26.1) having excellent level.

Table 1 described proportions of limited health literacy to be higher among rural respondents [41.5% (95% CI: 38.3, 44.9)], with non-formal education [64.8% (95% CI: 55.7, 72.9)], earning less than RM1000 [42.5% (95% CI: 44.0, 55.0)], male [37.2% (95% CI: 34.3, 40.3)] and widower or divorcee [48.1% (95% CI: 43.1, 53.2)].

Ratio of sufficient health literacy were higher among urban respondents [41.1% (95% CI: 38.9, 43.3)], whose age group of 40-44 years old [46.1% (95% CI: 40.8, 51.5)], Malay [44.0% (95% CI: 42.3, 45.9)] and with tertiary education level [44.1% (95% CI: 41.3, 47.1)]. Respondents with excellent health literacy level were almost similar with those of the sufficient health literacy level, whereby proportions were higher among urban population [25.7% (95% CI: 23.7, 27.9)], with tertiary education level [31.2%, 95% CI: 28.1, 34.5)] and a difference in those with higher income level of RM 10,000 and above [27.8% (95% CI: 22.2, 34.2)].

Table 1. Descriptive statistics of general health literacy level by socio demographic.

Demographic Characteristics	Level of Health Literacy		
	Limited Health Literacy Level (Score 0-33)	Sufficient Health Literacy Level (Score >33-42)	Excellent Health Literacy Level (Score >42-50)
	Percentage (95% CI)		
Overall	**35.0(33.02, 37.11)**	**40.7(38.89, 42.57)**	**24.3(22.56, 26.02)**
Residence			
Urban	33.2(30.80, 35.70)	41.1(38.87, 43.33)	25.7(23.66, 27.89)
Rural	41.5(38.29, 44.85)	39.4(36.73, 42.20)	19.0(16.87, 21.40)
Sex			
Male	37.2(34.25, 40.28)	38.7(35.99, 41.52)	24.1(21.76, 26.54)
Female	32.7(30.70, 34.85)	42.8(40.81, 44.87)	24.4(22.55, 26.42)
Marital Status			
Single	38.6(34.86, 42.44)	39.4(36.11, 42.80)	22.0(19.12, 25.20)
Married	32.2(29.95, 34.45)	42.0(39.93, 44.15)	25.8(23.72, 28.04)
Widow(er)/Divorcee	48.1(43.06, 53.15)	33.5(28.95, 38.32)	18.4(14.85, 22.67)
Education Level			
No formal education	64.8(55.71, 72.93)	26.2(19.29, 34.48)	9.0(4.89, 16.06)
Primary education	50.3(45.79, 54.89)	35.9(31.72, 40.32)	13.8(11.34, 16.58)
Secondary education	32.4(30.07, 34.78)	42.0(39.70, 44.34)	25.6(23.51, 27.84)
Tertiary education	24.6(21.83, 27.67)	44.1(41.25, 47.05)	31.2(28.11, 34.54)
Unclassified	62.8(34.40, 84.41)	28.3(10.25, 57.59)	9.0(2.29, 29.37)
Occupation			
Government employee	21.1(17.73, 24.95)	42.9(38.17, 47.71)	36.0(31.17, 41.16)
Private employee	34.2(30.71, 37.94)	41.1(37.79, 44.55)	24.6(21.95, 27.54)
Self employed	36.7(32.85, 40.77)	39.8(35.78, 43.95)	23.5(19.69, 27.75)
Unpaid worker/Homemaker/caregiver	32.7(29.43, 36.08)	44.0(40.65, 47.34)	23.4(20.21, 26.85)
Retiree	30.3(23.70, 37.80)	40.3(34.53, 46.37)	29.4(23.74, 35.78)
Student	29.5(21.69, 38.81)	49.3(40.55, 58.17)	21.1(15.54, 28.07)
Not working (unemployed, health problem, old age)	51.2(46.45, 55.95)	32.0(27.96, 36.23)	16.8(13.96, 20.17)
Household Income Group			

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Demographic Characteristics	Level of Health Literacy		
	Limited Health Literacy Level (Score 0-33)	Sufficient Health Literacy Level (Score >33-42)	Excellent Health Literacy Level (Score >42-50)
	Percentage (95% CI)		
Less than RM 1000	49.5(44.04, 55.02)	36.8(32.01, 41.87)	13.7(10.35, 17.85)
RM 1000 - RM 1999	39.4(35.27, 43.66)	39.5(35.36, 43.75)	21.1(16.98, 26.00)
RM 2000 - RM 3999	34.5(31.35, 37.81)	40.2(37.01, 43.53)	25.3(22.60, 28.12)
RM 4000 - RM 5999	29.0(25.40, 32.90)	43.5(39.62, 47.51)	27.5(24.08, 31.13)
RM 6000 - RM 7999	33.8(28.35, 39.75)	39.9(34.93, 45.12)	26.3(21.59, 31.56)
RM 8000 - RM 9999	24.4(18.20, 31.93)	49.6(41.78, 57.45)	26.0(19.43, 33.81)
RM 10,000 and above	31.4(22.77, 41.64)	40.8(33.63, 48.31)	27.8(22.20, 34.18)
Ethnic Group			
Malay* (included Orang Asli)	30.6 (28.70,32.61)	43.9 (42.14,45.75)	25.4 (23.53,27.44)
Chinese	36.6 (31.32,42.23)	36.0 (31.45,40.74)	27.4 (23.07,32.28)
Indians	30.3 (24.43, 36.86)	36.7 (31.83,41.79)	33.0 (27.76,38.81)
Bumiputra Sabah	38.6 (32.81,44.71)	41.3 (35.45,47.46)	20.1 (15.62,25.43)
Bumiputra Sarawak	41.9 (34.59, 49.63)	37.5 (31.99,43.32)	20.6 (14.55, 28.30)
Others	51.2 (42.44, 59.90)	38.0 (29.57,46.39)	11.2 (7.21, 16.96)
Age Group			
18-19	40.1(32.14,48.62)	39.2(31.88,46.92)	20.8(14.87,28.18)
20-24	37.3(32.12,42.73)	43.0(37.61,48.61)	19.7(16.02,24.01)
25-29	31.7(27.27,36.54)	41.2(36.62,45.93)	27.1(22.88,31.75)
30-34	32.0(27.08,37.35)	37.6(33.28,42.20)	30.4(24.71,36.68)
35-39	31.1(26.85,35.77)	43.6(38.94,48.44)	25.2(21.53,29.34)
40-44	25.6(1.44,30.28)	46.1(40.76,51.49)	28.3(23.63,33.51)
45-49	29.7(25.40,34.35)	43.6(38.73,48.51)	26.8(22.44,31.57)
50-54	34.9(30.70,39.37)	42.0(37.48,46.64)	23.1(19.38,27.28)
55-59	35.7(30.98,40.69)	41.7(37.43,46.13)	22.6(18.59,27.18)
60-64	41.2(35.63,47.01)	38.9(33.76,44.26)	19.9(16.15,24.31)
65-69	49.5(42.58,56.43)	33.0(26.88,39.70)	17.5(13.09,23.07)
70-74	51.2(43.72,58.71)	29.4(23.60,36.02)	19.3(13.84,26.32)
75 & above	68.0(60.90,74.31)	21.0(15.69,27.40)	11.1(7.42,16.21)
Household Income Group			
Bottom 40%	36.6(34.04, 39.14)	40.9(38.55, 43.36)	22.5(20.41, 24.77)
Middle 40%	32.6(29.27, 36.13)	40.1(37.03, 43.25)	27.3(24.27, 30.53)
Top 20%	30.7(22.90, 39.86)	42.0(35.28, 49.06)	27.3(22.06, 33.13)

3.2 . Health Literacy in the domains of Health Care, Disease Prevention and Health Promotion

Health literacy domain analysis were described in Table 2. Generally, majority of respondents have sufficient health literacy level for all domains – Health Care [49.1% (95% CI: 47.2, 51.1)], Disease Prevention [44.2% (95% CI: 42.4, 46.1)] and Health Promotion [47.5% (95% CI: 45.7, 49.3)].

Among these domains, the limited health literacy group are most present [32.3% (95% CI: 30.4, 34.2)] in the Disease Prevention domain, while the sufficient health literacy group are most present [49.1% (95% CI: 47.2, 51.1)] in the Health Care domain and the excellent health literacy group are most present [25.9% (95% CI: 24.2, 27.6)] in the Health Promotion domain.

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Table 2. Health Literacy by domains.

Domain	Limited Health Literacy Level (Score 0-33)	Sufficient Health Literacy Level (Score >33-42)	Excellent Health Literacy Level (Score >42-50)
	Percentage (95% CI)		
Healthcare	**27.9 (26.01, 29.89)**	49.1 (47.22, 51.05)	23.0 (21.25, 24.76)
Disease Prevention	32.3 (30.39, 34.20)	44.2 (42.42, 46.06)	23.5 (21.84, 25.25)
Health Promotion	26.6 (24.76, 28.60)	47.5 (45.68, 49.26)	25.9 (24.23, 27.64)

3.3 . Health Literacy (HLS-M-Q18) per items

As shown in Table 3, respondents reported all 18 questions were fairly easy to comprehend in term of finding, processing health information and services they received, and deciding what action to take next. Question Q3 of the Health Care domain was easiest to comprehend (58%) followed by question Q13 of the Health Promotion domain (55.7%).

Table 3. Frequency Table for Health Literacy (HLS-M-Q18) Items.

Domain	On a scale from "very difficult" to "very easy", how easy would you say it is to:		Very difficult (%)	Fairly difficult (%)	Fairly easy (%)	Very easy (%)	Mean
Health Care	Q 1	…**understand** the medication guides that come with your medicine?	2.2	9.6	48.6	39.6	3.26
	Q 2	…**understand** what to do in a medical emergency?	4.2	21.5	50.2	24.2	2.94
	Q 3	…**judge** how information from your doctor applies to you?	1.9	10.1	58.0	29.9	3.16
	Q 4	…**judge** when you may need to get a second opinion from another doctor?	3.2	16.6	54.3	25.9	3.03
	Q 5	…**call** an ambulance in an emergency?	3.9	15.3	44.2	36.6	3.13
	Q 6	…**follow** instructions from your doctor or pharmacist?	1.3	5.9	50.3	42.5	3.34
Disease Prevention	Q 7	…**find information** on	4.6	21.9	47.8	25.6	2.94

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Domain	On a scale from "very difficult" to "very easy", how easy would you say it is to:		Very difficult (%)	Fairly difficult (%)	Fairly easy (%)	Very easy (%)	Mean
		how to manage mental health problems like stress or depression?					
	Q 8	…**understand** health warnings about behaviour such as smoking, insufficient physical activity, unhealthy eating and drinking too much alcohol? (	2.7	9.1	47.9	40.2	3.26
	Q 9	…**find information** about vaccinations/immunisation and health screenings (such as breast exam, blood sugar test, blood pressure, cholesterol level) that you should have?	4.8	20.5	48.2	26.5	2.96
	Q 10	…**understand** why you need health screenings (such as breast exam, blood sugar test, blood pressure, cholesterol level)?	2.9	12.9	53.2	30.8	3.12
	Q 11	…**judge** which health screenings (such as breast exam, blood sugar	2.8	16.9	53.4	26.9	3.04

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Domain	On a scale from "very difficult" to "very easy", how easy would you say it is to:		Very difficult (%)	Fairly difficult (%)	Fairly easy (%)	Very easy (%)	Mean
		test, blood pressure, cholesterol level) you should have? *(Appraise/Evaluate)*					
	Q 12	…**judge** when you need to go to a doctor for a check-up?	1.9	11.3	52.9	34.0	3.19
Health Promotion	Q 13	…**understand** advice on health from family members or friends?	1.5	7.6	55.7	35.3	3.25
	Q 14	…**understand information** in the media (such as Internet, newspaper, magazines) on how to get healthier?	3.4	12.8	48.1	35.7	3.16
	Q 15	…**judge** how where you live (such as your community, neighbourhood) affects your health and well-being?	2.2	11.8	55.1	31	3.15
	Q 16	…**judge** how your housing conditions help you to stay healthy	1.3	8.9	55.5	34.3	3.23
	Q 17	…**make decisions** to improve your health? *(Apply)*	1.5	10.1	55.4	33.1	3.2
	Q 18	…**take part** in activities that improve health and well-being in your community? *(Apply)*	3.5	18.4	46.4	25.9	2.99

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4. Discussion

This Malaysian population-based survey revealed overall health literacy; with population majority having sufficient and excellent health literacy – giving an indication the country is doing sufficiently well.

In relation to the whole spectrum of health literacy scores, the average Malaysian scored at 35.5 (out of the total score of 50). Despite overall population are within acceptable/sufficient range (33-42) [22], in reality the scoring actually falls at the lower end of the sufficient category.

Prevalence of limited Malaysians health literacy levels in the population is relatively similar to other countries such as Ireland (40%), Germany (54.3%), Taiwan (34.4%), Sri Lanka (32.5%) and Vietnam (32.5%); and are using comparable instruments [23-26]. A systematic review of 11 papers in Southeast Asian region showed overall prevalence of limited health literacy in South East Asia vary considerably, 1.6%–99.5% with a mean of 55.3% [27]. This relative pattern indicates the varying challenges faced by countries in improving health literacy in general.

There is also an association between sociodemographic characteristics and health literacy levels. Limited health literacy was more prevalent amongst of the older age, with lower education level and lower household income group. Sufficient or excellent health literacy level population composed more of the younger age (under 50 years old), with higher education and higher income group. Study results are parallel to other studies using similar HLS-EU-Q questionnaires like such as Canada [28, 29], United States [30], Europe (Austria, Bulgaria, Germany, Greece, Ireland, the Netherlands, Poland and Spain) [1] and Taiwan [31]. However, age & education are not associated with health literacy in Japan [32]. This could be due to the Japanese Web survey study that only included active Internet users and may not well represent the whole population.

In this study, identified factors including older age, lower formal educational level, lower income, location, unemployment status reflected social disparities and are interrelated with limited health literacy.

Older age being a factor to low health literacy is attributed to the decline in physical and cognitive capacities that may affect their understanding and judgement [33].

Higher education level has been proved a significant determinant of higher health literacy level. This is due to individual cognitive and social skills that enable them to gain access to health information, understand information and use it to maintain their good health [34]. Prior to the study findings, similar results have been consistently reported in Iran [35], Germany [36] & Europe[1].

Lower income is related to low health literacy [5]. Due to financial deprivation it is likely that having lower education levels and not knowing how to obtain information from various sources other than healthcare providers [37] in turn will equate to having less knowledge about medical conditions and treatment [3].

Urban dwellers who possess sufficient health literacy than rural communities tend to have better access to health care and better health information. The results also indicated the likelihood of rural individuals being limited to higher education attainment [38, 39] live below the poverty line, comprise of the larger population of older adults [40] and do not have access to internet to seek for information and less access to primary health care providers or specialists when they seek for health care [41, 42].

As reported in this study, female respondents have better sufficiency in health literacy as compared to the male counterparts. This finding is comparable to studies done in United States [4], Saudi Arabia [43], Iran [35] and Korea [44]. Korean women understand medical or health information and how to use the medical information in their daily lives better than men. Moreover, Korean women have higher educational levels than men which explains why their health literacy levels are higher. Women who scored higher in health literacy were also believed to find health information on treatment, seek medical treatment or health issues and indirectly have more medical interaction with health care providers as they are more concerned of their health compared to males [45, 46]. Nevertheless, there are no consistent patterns between gender and health literacy as one of the

sexes is more likely to have lower health literacy as per reported in Romania, Limbangan, Denmark [47] and Ghana [46].

In regards to marital status, it was reported married individuals have sufficient and excellent health literacy as compared to singles. Studies in Denmark [48] reported individuals who have higher health literacy are those who live with their families. Marriage fosters social interaction among family members through knowledge sharing, giving support in making health decision, communicating with healthcare professionals and monetary support; as opposed to those living alone [4].

This study also demonstrated that students followed by unpaid worker, homemaker, caregiver and government employee are at top among those who possess sufficient health literacy levels while government employee leads the excellent health literacy level group followed by retiree and private employee. Government employees especially those who have at least higher education were found to have higher health literacy level than other occupations [49]. A study conducted in Iran [35] reported housewives or homemakers possessed higher literacy as they are more likely to be exposed to multimedia educational materials. Furthermore, higher literacy among women could be due to their role as caregivers whose provide care to sick members in the family and children, hence they tend to frequently engage with the health system when dealing health issues [44].

Variations among Malaysian ethnicities, languages and culture are also contributing factors for disparity in health literacy levels [8]. Difference in languages that are non-natives to certain ethnic groups can be a barrier in reading and understanding oral and written health information which can further lead to low health literacy [50].

Retrospectively, it is also worth to highlight that different instruments used in measuring health literacy level could result to different findings. For example, functional health literacy instruments would give a more detailed indicator of skills [51] whereas the instrument employed in this study resulted in a generic categorisation of individual competencies. Conceptual health literacy covers a wide range of skills, and competencies that people develop over their lifetime to seek out, comprehend, evaluate, and use health information and concepts to make informed choices, reduce health risks, and increase quality of life [5].

Recommendations to improve overall country performance in health literacy scores for the population; improvements are needed by the use of creative and digital media in channelling health information more widely and continuously will help to improve health literacy level of Malaysians as a whole. Regular monitoring and surveillance of population-based health literacy at the national level can significantly support decision-making to improve population health literacy, thus contribute to the further improvements of the population's health comprehensively.

5. Conclusions

Overall, health literacy level among Malaysians can be categorized as sufficient, however, it is charted at the lower end of the sufficiency category. This current border-line situation of sufficient health literacy along with the limited health literacy needs to be addressed by national health planners and policymakers who are dealing with social determinants of health – to develop appropriate public health and health promotion strategies and initiatives. Thus, the capabilities of those who are in the limited & border-line sufficient literacy group can be strengthened with the support and commitment from all parties that range from upper management to community level.

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