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Review Paper

A systematic review of the prevalence of limited health literacy in Southeast Asian countries

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ABSTRACTS

Objectives: Health literacy is increasingly recognized as a public health concern. Most of the literature on health literacy concentrate in the Western countries. Therefore, this study aimed to systematically review and examine the available studies on health literacy in Southeast Asian countries and estimate its prevalence in this region.

Study design: Systematic review.

Methods: A search for relevant articles was carried out using Cumulative Index to Nursing and Allied Health Literature (CINAHL) and MEDLINE (via EBSCOhost), Scopus, Science Direct, PubMed and Google Scholar with multiple search terms. Inclusion criteria comprised articles published in English language and assessing general health literacy. Risk of bias reduced with the involvement of two independent reviewers in the screening of the literature and the quality assessment process.

Results: A total of 11 studies were included, which only consist of studies from five countries out of 11 making up the Southeast Asian region. The overall prevalence of limited health literacy varied considerably, 1.6%–99.5% with a mean of 55.3% (95% confidence interval [CI]: 35.1%–75.6%). A much higher prevalence was noted in studies conducted in healthcare settings, 67.5% (95% CI: 48.6%–86.3%). The most common factors associated with limited health literacy were education attainment, age, income and socio-economic background. Other factors identified were gender and health behaviours.

Conclusions: In summary, despite the little evidence available and existences of high heterogeneity among studies, limited health literacy is still prevalent in Southeast Asian countries. Urgent strategies to improve and promote health literacy in the region are highly warranted. Besides, more studies on health literacy with better quality on the methodology aspect are needed.

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Introduction

Health literacy, commonly cited as individuals' ability to read, understand and apply health information to make healthcare-related decisions,[1] has been a growing topic of interest in medicine in recent years. The bulk of evidence on health literacy, predominantly in Western countries, reported numerous adverse health outcomes among the population with limited health literacy. A prospective cohort study among Medicare enrollees showed that the risk of hospitalisation was higher for individuals with limited health literacy.[2] Limited health literacy was associated with higher all-cause mortality rates in elderly patients and higher prevalence of medication non-adherence.[3,4] In addition, studies demonstrated that limited health literacy increases health costs,[5,6] partly because of a higher number of hospitalisations and medication errors and increased use of emergency departments. The estimated cost of limited health literacy to the healthcare system is between $106 and $238 billion annually.[7]

The concept of health literacy has been established in the US for more than a few decades, and to date, numerous studies are available in this area especially on the prevalence of limited health literacy in different targeted population. In accordance with the 2003 National Assessment of Adult Literacy, a 30,000-household US Department of Education survey, 36% of US adults possess basic or below basic health literacy skills.[8] In Canada, limited health literacy has been estimated to be 48%,[9] in Australia, approximately around 30%[10] and in New Zealand over 50%.[11] A health literacy evaluation in a sample of literate Portuguese population revealed three in four of the participants to have limited health literacy.[12] Compared with their counterparts, research in Southeast Asian countries is still in the infancy stage, although the World Health Organization has highlighted to improve health literacy as a public health goal.

Southeast Asia, the home to almost 9% of the world's population, comprises eleven countries which consist of Indonesia, Malaysia, Singapore, Thailand, Philippines, Myanmar, Vietnam, Brunei, Cambodia, Laos and East Timor.[13] Mostly developing, these countries with high population density, coupled with diverse ethnicity and culture, still struggle with human development and economic and healthcare indices.[14] As such, the common struggles of these countries are the challenges in providing healthcare services to their people, especially disadvantaged populations consisting mainly of poorly literate, older adults and with lower socio-economic status. The literature consistently supports these factors associated with limited health literacy.[15–18] As the burden of diseases rapidly increase in this region, the need for patient participation in the healthcare process for the success of the disease management is crucial. However, a significant concern arises as patients' health literacy withstand as the barrier to understand health information leading to failure in their disease self-management and health communication, thus contribute to poorer health outcomes.

Given the background of the inhabitants of the Southeast Asian countries and the importance of health literacy in this province of the world, a comprehensive review of the prevalence of limited health literacy is highly warranted to determine the scope of opportunities for this health concern. To date, only one published systematic review involving 85 studies conducted in the US reported the prevalence of limited health literacy ranging from 0% to 68%.[19] The review also highlighted an alarming estimation of one in four participants in the included studies who had limited health literacy. However, to the best of our knowledge, there is no previous systematic review of the prevalence of limited health literacy in the region of Southeast Asia. The present study, therefore, aimed to identify and examine available studies on health literacy in Southeast Asian countries to estimate its prevalence in this region.

Methods

This systematic review was developed in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) guidelines. The study was registered under the National Medical Research Register of Malaysia and was approved with an exempt review by the Medical Review and Ethics Committee.

Literature search strategy

A comprehensive search of the following electronic databases was completed on 31st January 2018: Cumulative Index to Nursing and Allied Health Literature (CINAHL) and MEDLINE (via EBSCOhost), Scopus, ScienceDirect, PubMed and Google Scholar. The following words were combined with 'Southeast Asia' and appropriate country names, using Boolean operators ('AND' & 'OR'): 'health literacy', 'limited health literacy', 'poor health literacy', 'inadequate health literacy', 'low literacy', 'illiterate' and 'adequate health literacy'. In addition, the bibliography of retrieved articles was screened for relevant titles.

Inclusion and exclusion criteria

All studies retrieved were initially screened for title and abstract by the principal investigator, and any duplication was removed. The investigator further assessed the articles for eligibility against the predetermined selection criteria. A second investigator independently evaluated the included abstracts for eligibility. Decisions to include or exclude a study were compared between the two investigators. Discrepancies were discussed until consensuses were reached or involvement of the third investigator.

The inclusion criteria comprised articles published in the English language and assessing general health literacy with evidence of direct measures of health literacy level. There was no limitation imposed on the year of publication of the studies. However, reviews, case studies, conference papers, books, opinions and reports were excluded.

Study quality assessment and data extraction

Quality assessment of the included studies was performed by two reviewers independently to avoid biases. A set of quality criteria adapted from Munn et al.,[20] was used for the critical appraisal, as it was deemed appropriate to evaluate the

methodological quality in systematic reviews of prevalence studies. The tool consists of 10 questions with a 'yes' and 'no' answer choices. One score was awarded for 'yes' and '0' to a 'no' answer. The item and total score for each study were recorded.

In addition, the studies included were subjected to data extraction process by two investigators independently. The information extracted is as follows: identification of study, study objectives, study methods (study design, setting, population, duration and procedure/protocol), study results (participation, characteristic of the study population, study variables and outcomes), study limitations and strengths and conclusions.

Results

The database search yielded 331 relevant articles. After duplication was removed, 184 studies were examined for eligibility. Of these, 141 were excluded mainly based on the title and abstract relevance. A total of 43 full articles were retrieved for review and 32 were eliminated because the majority were not on general health literacy and without evidence of direct health literacy measurement. Fig. 1 outlined the search strategy and inclusion by the PRISMA guidelines.

Study characteristics

The final 11 studies retrieved for full analysis were mostly from Malaysia (5 studies), whereas others were conducted in Singapore (2 studies), Thailand (2 studies), Laos (1 study) and Myanmar (1 study). Almost half (45.5%) of the studies were conducted in healthcare settings. All studies were cross-sectional with only five studies reported the sampling method. Two studies used convenience sampling, and other studies used multistage random sampling or multicluster sampling. Two ways of administering research instrument were reported in the studies which were self-administered (3 studies) and interviewer-administered (6 studies) questionnaires. The studies reported a broad range of sample population of 34–1367 participants with response rate falls between 30.6% and 100% (Table 1).

Quality assessment

Quality assessment (Table 2) revealed that only a few studies fulfilled the majority of the defined quality criteria, suggesting an average quality of the studies in the review. There were some significant weaknesses identified on recruitment strategy and sampling techniques. The majority of the studies failed to provide the sample size calculation, thus undermining the representability of the study findings. Besides, the studies with high non-response rate fail to have a clear justification for the low turnout. In the aspect of the clarity, the studies failed to include sufficient data to support the reliability of the data collection and data analysis method.

Prevalence of limited health literacy

Four types of assessment tools were used to determine the health literacy of participants of the studies. Four studies reported the use of Newest Vital Sign which evaluates the patient's ability to use an ice cream label to answer six questions.[21] As all the four studies were conducted in Malaysia, three studies used instruments translated to Malay, the national language of Malaysia, and one used Arabic language. Short Test of Functional Health Literacy is another common health literacy tool which comprises 36 items testing patient's reading comprehension.[22] This instrument was used by a study in Singapore. Another Singaporean study was conducted with Rapid Estimation of Adult Literacy in Medicine that tests the patient's ability to pronounce 66 common medical words.[23] The newer version of health literacy assessment tool developed in Europe is the Health Literacy Survey Questionnaire (HLS-Europe-Q47), comprehensively assesses multiple conceptual domains of health literacy in a diverse range of health contexts.[24] Later, this tool was adapted and validated in six Asian countries and termed as HLS-Asia-Q.[25] In the reviewed studies, two studies assessed the health literacy of the study population with HLS-Asia-Q. Two studies in Thailand took a different approach; one used an adapted questionnaire to assess functional, communication and critical skills similar to the study of Ishikawa et al.,[26] and the other study used research tool developed by the authors using the Nutbeam health literacy model.[27]

As for the prevalence of limited health literacy in the studies, the range varied greatly from 1.6% to 99.5% with a mean of 55.3% (95% confidence interval [CI]: 35.1%–75.6%). Higher prevalence of limited health literacy was noted in studies conducted at healthcare setting, 67.5% (95% CI: 48.6–86.3%) and lower in studies taking place in non-healthcare settings; the mean was 46.9% (95% CI: 13.6–80.2%).

Factors associated with limited health literacy

The most common factors associated with limited health literacy were education,[28–31] age,[28,32] income[29,33] and socioeconomic background.[28,31] Interestingly, the study in Myanmar associated gender with limited health literacy.[32] Besides, the study also associated limited health literacy with watching the medically related program on television, attending health education, ability to pay for medication and affordability to see a doctor with health literacy.

Discussion

The present review is the first of its kind to synthesise the available literature on health literacy in Southeast Asian countries to provide an overview of the prevalence and the factors associated with limited health literacy. Unfortunately, there were only a handful of published health literacy studies available in this region, and of eleven countries that make up Southeast Asia, only five had published data on the prevalence of limited health literacy. It is noteworthy that the majority of the studies were from Malaysia, Singapore and Thailand. Not surprising, much effort focused at improving the healthcare system in these countries, and one of the components in the agenda of the national plan is promoting the health literacy of the population (Thai 4.0

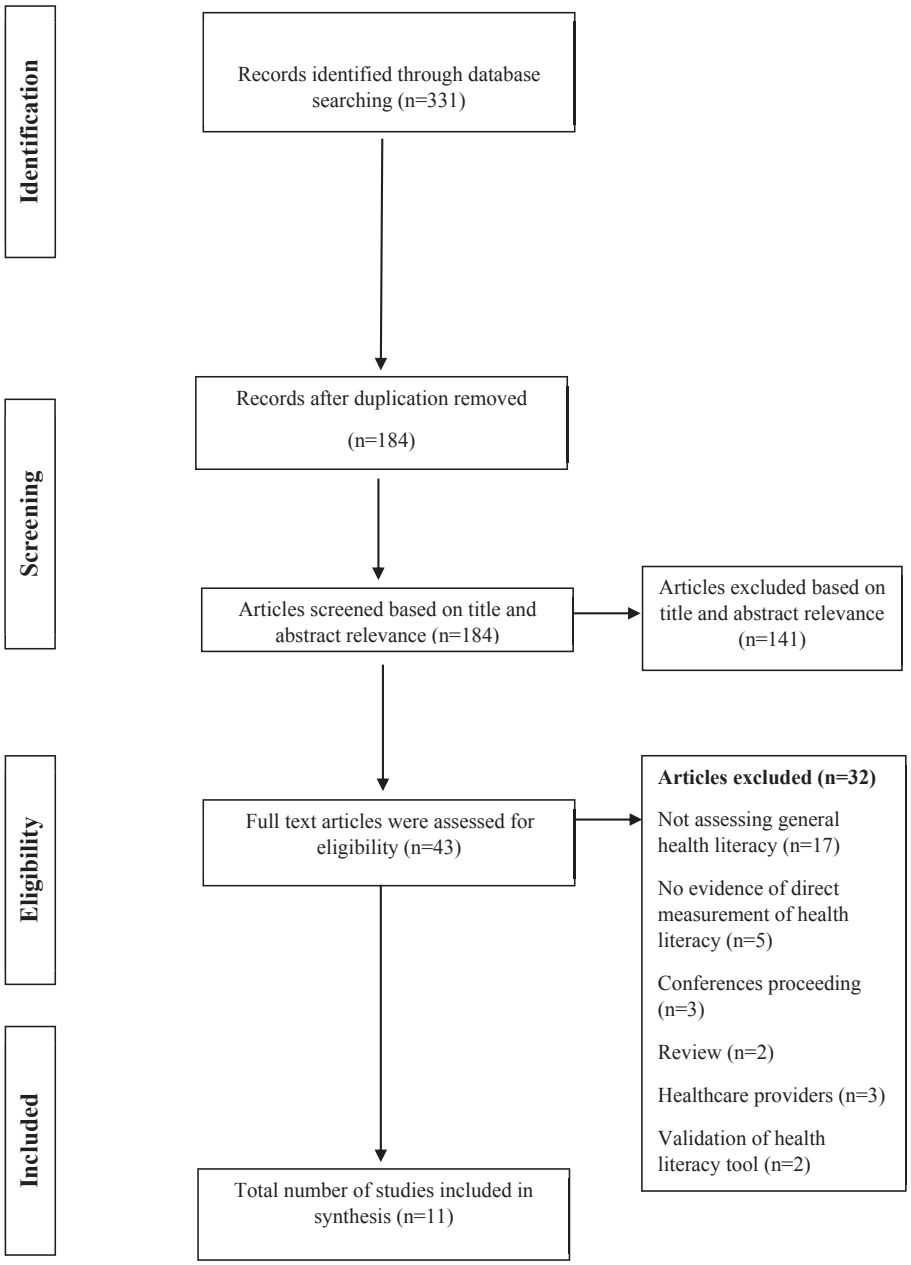

Fig. 1 – A flow chart for study screening and selection as per the PRISMA guidelines. PRISMA, Preferred Reporting Items for Systematic Reviews and Meta-analyses.

2016, the 10th Malaysia Plan Health Research Priority 2011–2015 and the Singapore Action Plan to Improve Health Literacy 2010).

Furthermore, the review findings highlighted a few issues that debilitate the quality, particularly methodology, of the included articles. Almost half of the studies failed to provide the sampling techniques; of the studies reported, most used convenience sampling. While this may be justified in study logistics, there is a clear clinical implication for external validity. Lack of sample size calculation noted in the studies raised the concern on the representativeness of the target population and the implication for confidence in reported outcomes. Besides, the higher non-response rate in a few of the studies may have underestimated the actual prevalence of limited health literacy.

The overall prevalence of limited health literacy reported was widely varying (1.6%–99.5%), reflecting substantial discrepancies among the studies. First, the two main study settings were the healthcare settings and non-healthcare settings. Consistent with previous studies,[34,35] the prevalence of limited health literacy was lower in non-healthcare settings such as the education setting or the general population. Second, the dissimilarity of tools adapted to measure the health literacy, some instruments evaluate the numeracy and reading comprehension, others assessed just the reading ability. Besides, there are differences in the thresholds used to

Table 1 – Characteristics of studies included in the review and prevalence of limited health literacy.

Study, year	Country	Study population	Settings	Health literacy tool	Study design	Response rate [n (%)]	Prevalence of limited health literacy
Runk, Durham, Vongxay, & Sychareun, 2017[38]	Laos	244 first year university students	National University of Lao PDR	HLS-Asia-Q (translated in the Lao language)	Self-administered	Not stated	92.7%
Azreena, Suriani, Juni, & Fuziah, 2016[31]	Malaysia	360 patients	A government health clinic in Selangor, Malaysia	NVS (translated in the Malay language)	Systematic random sampling; self-administered	288(80.0)	85.8%
Chan et al., 2015[29]	Malaysia	222 caregivers	Outpatient of a government-funded hospital in Northern Malaysia	NVS (translated in the Malay language)	Convenience sampling; interviewer-administered	208 (93.7)	94.2%
Eltayeb, Salmiah, & Suriani, 2016[39]	Malaysia	250 Arabic secondary school students	The territory of Kuala Lumpur and Putrajaya	NVS (translated into the Arabic language)	Self-administered	202 (81.0)	9.4%
Hamzah et al., 2016[33]	Malaysia	506 secondary school students	Eight schools of Klang and Selangor	A research instrument using a tool constructed based on studies of Nutbeam (2000) and Osborne, Batterham, Elsworth, Hawkins, & Buchbinder, (2013)	Not stated	385 (76.1)	1.6%
Norrafizah et al., 2016[40]	Malaysia	111 residents	Federal Land Development Authority (FELDA) s ettlement , Pahang	NVS (translated in the Malay language)	Interviewer-administered	34 (30.6)	50.0%
Oo et al., 2015[32]	Myanmar	1367 participants	35 townships of Myanmar	HLS-Asia-Q	Multistage random sampling; interviewer-administered	1367 (100)	28.2%
Ko et al., 2013[41]	Singapore	465 hypertension patients	A government-funded primary care clinic	S-TOFHLA (Singapore version)	Interviewer-administered	306 (67.1)	54.9%
Zhang et al., 2009[28]	Singapore	220 patients	A tertiary referral centre	REALM	Convenience sampling; interviewer-administered	199 (90.5)	43.7%
Nilnate, Hengpraprom, & Hanvoravongchai, 2016[42]	Thailand	440 elderly participants	Thai senior citizen clubs of Bangkok	A research instrument using a tool constructed by authors using the Nutbeam (2008) model	Not stated	440 (100)	99.5%
Wannasirikul et al., 2016[30]	Thailand	600 hypertension patients	Primary health care centre in Sa Kaeo Province, Thailand	An adapted questionnaire to assess functional, communicative and critical skills similar to the study of Ishikawa, Takeuchi, and Yano (2008)	Multicluster sampling; interviewer-administered	600 (100)	48.7%

HLS-Asia-Q, Health Literacy Survey Questionnaire validated in Asia; NVS, Newest Vital Sign; S-TOFHLA, Short Test of Functional Health Literacy; REALM, Rapid Estimation of Adult Literacy in Medicine; PDR, People's Democratic Republic.

Table 2 – Quality assessment of the included studies in the review.[a]

Study	Criterion 1	Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6	Criterion 7	Criterion 8	Criterion 9	Criterion 10
Runk, Durham, Vongxay, & Sychareun, 2017[38]	1	1	0	1	1	1	1	1	0	1
Azreena, Suriani, Juni, & Fuziah, 2016[31]	1	0	0	0	1	1	1	1	0	0
Chan et al., 2015[29]	1	1	0	1	1	1	1	1	0	0
Eltayeb et al., 2016[39]	0	0	0	0	1	0	0	1	0	0
Hamzah et al., 2016[33]	0	0	0	1	0	1	1	0	0	0
Norrafizah et al., 2016[40]	0	0	0	1	0	0	0	1	1	0
Oo et al., 2015[32]	1	0	1	1	1	1	1	1	0	1
Ko et al., 2013[41]	0	1	0	1	0	1	1	1	0	0
Zhang et al., 2009[28]	0	1	0	0	1	1	1	1	0	0
Nilnate et al., 2016[42]	1	1	1	0	1	1	1	0	0	0
Wannasirikul et al., 2016[30]	1	1	1	1	1	1	1	1	0	0

Criterion 1:Was the sample representative of the target population?
Criterion 2:Were study participants recruited appropriately?
Criterion 3:Was the sample size adequate?
Criterion 4:Were the study subjects and settings described in detail?
Criterion 5: Is the data analysis conducted with sufficient coverage of the identified sample?
Criterion 6:Were objectives and standard criteria used for measurement of the condition?
Criterion 7:Was the condition measured reliably?
Criterion 8:Was there appropriate statistical analysis?
Criterion 9:Are all important confounding factors/subgroups/differences identified and accounted for?
Criterion 10:Were subpopulations identified using objective criteria?
[a] 1 = 'yes' and 0 = 'no' answer.

determine the health literacy levels. This variation in the estimation and threshold, in addition to the fact that these instruments measure different aspects of health literacy, could influence the magnitude and precision of the prevalence reported in the studies. Notably, few of the tools are translated to the primary language of the sampled population which is favourable for better understanding of the target population. Third, the included studies not only diverge socioeconomically, culturally and politically across regions but also within countries itself. Hence, owing to the high heterogeneity, the estimation presented in the review should be cautiously interpreted as indicative of magnitude rather than precise measures.

Another significant finding worth discussion is the estimation of one in every two participants in the review had limited health literacy. This is higher than the US-based systematic review whereby one in every four participants found to have limited health literacy.[19] Undoubtfully, as issues of illiteracy, poorer socio-economic status and the emergence of the elderly population are still much higher in part of Southeast Asia, health literacy presents as a significant challenge. Moreover, the concept of health literacy is relatively new to this region.

Similarly to studies elsewhere, education attainment, age, income and socio-economic status were factors identified in some studies of the review relating to health literacy. Only one study found gender to be associated with health literacy, although prior published literature failed to establish a consistent pattern observed between gender and health literacy.[36,37] Interestingly, one study associated health-related activities such as watching medical programmes or attending health education talks with health literacy.

The findings must be considered in the context of the limitations of the included studies and the review methods used. First, by including articles published in English, some relevant studies in other languages commonly used in Southeast Asian countries may have been missed that may limit the generalisation of the findings. To overcome it, we have conducted a broad search of the main databases with multiple search terms. Second, we excluded unpublished data, therefore may have omitted studies, particularly conference proceedings with the primary objective of assessing the prevalence of limited health literacy. This increases the possibility that this review is subjected to publication bias, although this is less likely for the systematic review of prevalence studies due to the narrative nature which has no definite outcomes. Third, two studies included were a letter to the editor and short communication paper that was subjected to word limitation, thus may cause some missing information especially on the methodological component.

Conclusions

The systematic review findings revealed limited health literacy in Southeast Asian countries. Urgent strategies to improve and promote the health literacy in the region are highly warranted. However, the prevalence is obscured by the small number of studies and high heterogeneity among the studies. There were some substantial issues with the methodology of the studies affecting the study quality. Future studies are needed on this topic with more thorough and comprehensive methods to have a better picture of the prevalence, particularly in countries with no prevalence data on limited health literacy.

Author statements

Ethical approval

This study was registered with the National Medical Research Register of Malaysia and was approved with an exempt review by the Medical Review and Ethics Committee.

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Competing interests

None declared.

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