

Health literacy of community leaders in the prevention and control of COVID-19: A cross-sectional study

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ABSTRACT

Community leaders in Thailand play an important role in preventing and controlling infectious diseases, especially during the COVID-19 pandemic. Hence, risk perception and adequate health literacy among these leaders influence the population. This cross-sectional study aimed to investigate the relationships among health literacy, risk perception factors, and the implementation of COVID-19 prevention and control. A self-administered structured questionnaire was administered to 1,338 community leaders in northeast Thailand to assess the level of implementation of COVID-19 prevention and control measures. Multiple logistic regression was performed to identify the influence of risk perceptions and health literacy on the prevention and control of COVID-19. Approximately 64% of the sample was male, and the participants had an average age of 50.51 ± 8.47 years. The factors associated with moderate and high levels of COVID-19 prevention and control among community leaders were moderate and high levels of perceived susceptibility (adjusted odds ratio [OR_{adj}] = 3.01; 95% CI: 2.13–4.25; p-value < 0.001) and perceived severity (OR_{adj} = 1.73; 95% CI: 1.22–2.45; p-value = 0.023) as well as adequate access (OR_{adj} = 1.56; 95% CI: 1.08–2.25; p-value < 0.001) and adequate understanding (OR_{adj} = 2.29; 95% CI: 1.34–3.93; p-value < 0.001), with a level of statistical significance of 0.05. The incorporation of health literacy and risk perception, especially in dimensions such as access, understanding, perceived susceptibility, and perceived severity, is essential for leaders to possess strong skills in community health development, particularly during crises such as the COVID-19 pandemic.

Key words:

risk perception; health literacy; COVID-19; community leader; prevention and control

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INTRODUCTION

The novel coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) created a pandemic that has spread across the world.¹ Infection with SARS-CoV-2 leads to severe pneumonia. The virus is transmissible through coughing, sneezing, or contact with patients' secretions.² By July 2023, coronavirus had infected more than 4.7 million people and killed more than 34,000 people in Thailand.³ Currently, there are still individuals infected with COVID-19, and it remains a disease that requires vigilant monitoring in communities.

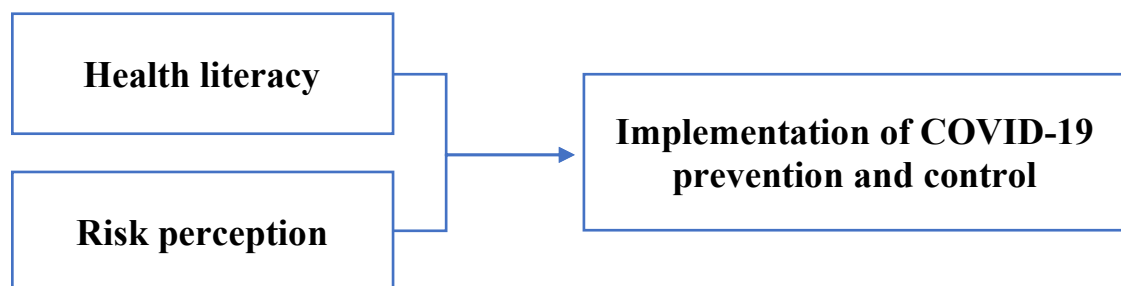
Communities worldwide have faced significant challenges in effectively mitigating the spread of COVID-19 while ensuring the stability of their health care systems.⁴ In communities across Thailand, particularly in the northeast region, the people have a significant level of trust in community leaders. Each community boasts numerous leaders who shoulder the responsibility of caring for and spearheading various activities within their locality. These leaders occupy a range of roles, including subdistrict headmen, assistant subdistrict headmen, village headmen, assistant village headmen, and subdistrict medical staff. Community leaders also play a pivotal role in the prevention and control of COVID-19 transmission. Throughout the epidemic response, vital information from disease control departments, medical institutions, and anti-epidemic agencies is exchanged via comprehensive platforms. Specifically designated individuals are responsible for relaying this information to community leaders, who then communicate with village residents to oversee and manage transmission dynamics. Consequently, strong risk perception and health literacy among community leaders enable them to assess situations accurately, alleviate fear and anxiety, and effectively implement

COVID-19 prevention and control measures. The Ministry of Interior mandated the implementation of COVID-19 prevention and control measures within communities in accordance with specified guidelines. These guidelines cover the pre-operation, operation, and post-operation phases⁵ to ensure preparedness and safety during the process for efficient operations.

Health literacy is a critical determinant that influences individuals' knowledge and understanding of how to prevent COVID-19. It includes the ability to comprehend and utilize health-related information, warnings, and advice to make informed decisions about health care. This capacity for information retrieval, comprehension, evaluation, and application contributes significantly to disease prevention and health promotion efforts.⁶ Hence, it is imperative for community leaders to possess robust health literacy skills. These leaders play a vital role in guiding communities towards adopting sustainable health behaviours and serve as role models in making informed health decisions.⁷ The health belief model (HBM) suggests that individuals are more inclined to take preventive action against illness if they perceive themselves as susceptible to a condition (perceived susceptibility), if they believe the condition would have serious consequences (perceived severity), if they believe that implementing a specific action could reduce the severity or susceptibility or lead to other benefits (perceived benefits), and if they perceive few adverse effects related to the health action (perceived barriers). Researchers of the HBM subsequently proposed that the model should incorporate self-efficacy, which is the belief that one can effectively perform a desired behaviour despite perceived obstacles.⁸ The importance of Rosenstock's (1974) concept of the risk perception of disease has become crucial since the alarmingly rapid spread of COVID-19, which highlights the need for community leaders to have a basic

understanding of risk perception. Previous studies have highlighted a significant correlation between health literacy and the prevention and control of COVID-19.⁹⁻¹³ However, there is a notable gap in research regarding the health literacy of community leaders and its impact on COVID-19 prevention and control in Thailand.

CONCEPTUAL FRAMEWORK



METHODOLOGY

This cross-sectional study included 1,338 community leaders. The inclusion criteria were community leaders such as subdistrict headmen, assistant subdistrict headmen, village headmen, assistant village headmen, and subdistrict medical staff in the northeastern region of Thailand. Eligible participants were aged 20 years and above and had a minimum of 1 year of work experience. The sample size was determined using the calculation formula outlined by Hsieh et al.¹⁴ based on previous research on community attitudes, knowledge, and behaviours concerning social distancing policies to mitigate COVID-19 transmission as described in a study conducted in Indonesia by Yanti et al.¹⁵ The sample was selected using multistage random sampling. Initially, four provinces were randomly selected from the northeast region (one province in each health region), followed by cluster random sampling of 4 districts in each province, with the sample size distributed proportionally in each district.

This study aimed to investigate the relationships among health literacy, risk perception factors, and the implementation of COVID-19 prevention and control measures among community leaders in northeastern Thailand.

A self-administered structured questionnaire that included demographic variables, risk perception, and health literacy was used to assess the level of implementation of COVID-19 prevention and control measures. The data were gathered between August and October 2021. The research team developed research tools based on relevant theoretical frameworks in line with the research objectives. The research instrument underwent content validity assessment by five experts to ensure both the relevance of the content and the appropriateness of the language. A consensus among the experts was sought to establish the validity index. Additionally, item objective congruence (IOC) was assessed, with each question requiring a congruence index value of 0.50 or higher to maintain alignment with the research objectives. Furthermore, reliability was evaluated using Cronbach's alpha coefficient formula with the aim of obtaining a coefficient of 0.7 or higher to ensure satisfactory internal consistency. This questionnaire comprised four parts. Part 1 included personal characteristic

factors. Part 2 focused on the perception of the risk of contracting the disease and the severity of the disease and included 40 items derived from Rosenstock (1974)¹⁶ and rated on a 4-level scale. The risk perception scores were categorized into three levels: high ($\geq 80\%$), moderate (60-79%), and low ($< 60\%$).¹⁷ Part 3 addressed health literacy and consisted of 26 items adapted from Sorensen et al. (2012)⁶ that were evaluated on a 4-point rating scale. The total scores determined health literacy levels, which were classified as excellent ($\geq 80\%$), adequate (70-79%), problematic (60-69%), or inadequate ($< 60\%$).¹⁸ Part 4 involved the implementation of COVID-19 prevention and control measures in the community and comprised 19 items assessed on a 3-point rating scale. Based on the total scores, COVID-19 prevention and control measures were classified according to previous research¹⁹ into two groups: moderate-high ($\geq 80\%$) and low ($< 80\%$).

Descriptive statistics, including frequencies and percentages, were used for categorical data reporting. Mean, standard deviation, median, minimum, and maximum were used for continuous data reporting.

The level of implementation of COVID-19 prevention and control measures was reported as percentages with

95% CI. The associations between factors and depressive disorders were assessed using multiple logistic regression. Four different provinces were chosen to account for random effects. The magnitude of the association was provided as adjusted odds ratios (ORAdj), 95% confidence intervals (CI), and p values with a statistical significance of 0.05. STATA 15.0 (Copyright Faculty of Public Health, Khon Kaen University) was used for all analyses. In this study, missing data were addressed by realistically analysing the collected data.

Human ethical permission for the study was obtained from the Ethics Committee in Human Research of Khon Kaen University, Khon Kaen, Thailand (HE642111).

RESULTS

Demographic and socioeconomic distribution of community leaders in northeast Thailand

Of the 1,338 community leaders surveyed, approximately 64% were male, with an average age of 50.51 ± 8.47 years. The majority (83.75%) were married. Furthermore, 36.04% had completed senior high school, and 77.88% reported having 1 to 10 years of work experience (Table 1).

Table 1. Demographic and socioeconomic distribution of community leaders in northeastern Thailand (n=1,338)

Characteristics	Number	Percentage
Gender		
Male	853	63.94
Female	485	36.06
Age group (years old)		
20-30	41	3.06
31-40	122	9.12
41-50	464	34.68
51-60	599	44.77
> 60	112	8.37
(Mean = 50.51, S.D.= 8.47, Minimum =22, Maximum = 73)		

Characteristics	Number	Percentage
Marital status		
Single	164	12.26
Married	1113	83.18
Widow/Divorced	61	4.56
Educational attainment		
Primary schools	352	26.31
Junior high school	302	22.57
Senior high school	480	35.87
Diploma	93	6.95
Bachelor's degree	105	7.85
Master's degree/higher	6	0.45
Working experience (years)		
1-10	1042	77.88
11-20	229	17.12
21-30	49	3.66
31-40	18	1.34
(Mean= 7.56, S.D.= 6.62 , Median =6, Minimum= 1, Maximum = 40)		

Assessment of overall health literacy and risk perception of COVID-19

The assessment of overall health literacy regarding COVID-19 indicated that 44.92% of the participants demonstrated an adequate level, 41.26% exhibited an excellent level, and only a small minority (3.74%) showed problematic levels (Table 2). In terms of the overall risk perception of COVID-19 infection, a majority (66.59%) of community leaders reported a high level

of concern, followed by 30.71% who reported a moderate level (Table 3).

The overall outcome indicated the implementation of COVID-19 prevention and control measures within the community. Specifically, 226 participants (16.9%) were categorized at a moderate-high level, while the majority, comprising 1,112 participants (83.11%), were categorized at a low level.

Table 2. Number and percentage of patients with health literacy related to COVID-19 (n=1,338)

Health literacy	Number and percentage of health literacy			
	Problematic (<60%)	Inadequate (60-69%)	Adequate (70-79%)	Excellent (≥80%)
Access	99(7.40%)	214(15.99%)	676(50.52%)	349(26.08%)
Understand	43(3.21%)	44(3.29%)	801(59.87%)	450(33.63%)
Appraise	56(4.19%)	117(8.74%)	800(59.79%)	365(27.28%)
Apply	10(0.75%)	227(16.97%)	773(57.77%)	328(24.51%)

Overall	50(3.74%)	135(10.09%)	601(44.92%)	552(41.26%)
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Table 3. Number and percentage of COVID-19-related risk perceptions (n=1,338)

Risk Perception	Number and percentage of risk perceived		
	Low Level (<60%)	Moderate Level (60-79%)	High Level (≥80%)
Perceived susceptibility	78 (5.82%)	303 (22.64%)	957 (71.54%)
Perceived severity	102 (7.62%)	251(18.75%)	985(73.63%)
Perceived benefits	91(6.80%)	297(22.19%)	950(71.01%)
Perceived barriers	241(18.01%)	786(58.74%)	252(18.85%)
Self-efficacy	125(9.35%)	725(54.18%)	488(36.47%)
Overall	36(2.70%)	411(30.71%)	891(66.59%)

Multivariate analysis of health literacy and risk perception

The statistical analysis results obtained through multiple logistic regression with backward elimination to identify factors associated with moderate and high levels of COVID-19 prevention and control among community leaders in northeastern Thailand included moderate and high levels of perceived susceptibility

(adjusted odds ratio [OR_{adj}] = 3.01; 95% CI: 2.13–4.25; p value < 0.001) and perceived severity (OR_{adj} = 1.73; 95% CI: 1.22–2.45; p value = 0.230) as well as adequate access (OR_{adj} = 1.56; 95% CI: 1.08–2.25; p value < 0.001) and adequate understanding (OR_{adj} = 2.29; 95% CI: 1.34–3.93; p value < 0.001), with a level of statistical significance of 0.05 (Table 4).

Table 4: Multivariable analysis of factors (n=1,338)

Factors	Number	% of moderate & high level	Crude OR	Adj OR	95% CI	p value
Health literacy						
Access						<0.001**
Inadequate and Problematic	934	13.28	1	1	1	
Adequate and Excellent	404	25.74	1.92	1.56	1.08-2.25	
Understand						<0.001**
Inadequate and Problematic	1160	14.40	1	1	1	
Adequate and Excellent	178	34.27	3.76	2.29	1.34-3.93	
Risk perception						
Perceived susceptibility						<0.001**
Low	211	7.58	1	1	1	
Moderate and High	1127	18.81	3.16	3.01	2.13-4.25	

Factors	Number	% of moderate & high level	Crude OR	Adj OR	95% CI	p value
Health literacy						
Perceived Severity						0.023*
Low	216	12.60	1	1	1	
Moderate and High	1122	17.51	1.87	1.73	1.22-2.45	

*p value < 0.05, **p value < 0.01

DISCUSSIONS

Community leaders play a crucial role in developing the community health system and leading the communities toward prosperity and well-being. They set the direction for community development and ensure comprehensive health coverage from the local to the national level. Moreover, community leaders contribute to changing health behaviours, particularly amidst technological advancements and the challenges posed by the COVID-19 pandemic. In collaboration with public health officials, they facilitate proactive screening and infection prevention measures by utilizing various communication channels to disseminate vital information. Consequently, community leaders serve as key figures in educating and guiding their communities. They therefore require proficiency in health literacy to effectively communicate health-related information. Health literacy skills²⁰ are needed to effectively prevent and control COVID-19. Health literacy is defined as the ability to understand, access, and act on health advice; it enables individuals to make informed health decisions. This literacy may significantly influence preventive behaviours across diverse communities.²¹ Especially in the era of globalization as health literacy policies are being implemented in community settings,

communities are empowered to effectively manage their health, fostering a holistic and sustainable healthcare system.²² Therefore, there is an urgent need to embrace health practices and make informed health decisions to enhance the well-being of citizens, address health inequalities, and bolster resilience for individuals and communities.²³ Health literacy is closely intertwined with COVID-19 prevention and control in the general population. Individuals with higher levels of health literacy tend to comprehend COVID-19 prevention and control measures more effectively, uphold more positive attitudes towards prevention and control, and exhibit better adherence to preventive behaviours. Promoting residents' health literacy through targeted health education can play a crucial and constructive role in managing the threat of major infectious disease outbreaks, consistent with findings from other studies.^{11,24}

However, access to health literacy is crucial to enable people to practise proper behaviours to control and prevent COVID-19. Community leaders must have the ability to select accurate and appropriate health information sources, filter and evaluate information, and understand how to apply it effectively.²⁵ Moreover, health literacy serves as a valuable tool for navigating the vast array of medical data and services. Social media has emerged as an effective tool for promoting behaviours to prevent

COVID-19 among the public. Health literacy plays a pivotal role in promoting individual health and influencing public engagement in preventive behaviours during a pandemic, as suggested by other studies.^{11,26}

Additionally, health literacy, particularly the understanding of various factors, influences the ability to act upon acquired knowledge and fosters positive health behaviours. It sets standards for self-care and facilitates the development of the skills and potential necessary for individuals to effectively control and prevent diseases.²⁵ The understanding of health literacy factors plays a pivotal role in the adoption of preventive health behaviours, including lifestyle choices, physical activity, alcohol consumption, health screenings, and smoking cessation. These behaviours extend to preventive measures specific to COVID-19, such as wearing masks, practising hand hygiene, and maintaining physical distancing.²⁶

Individuals with high health literacy exhibit a deeper understanding of COVID-19 prevention and control measures coupled with a more favourable attitude towards these efforts, which leads to better adoption of preventive behaviours. This underscores the need for community leaders to prioritize the enhancement of health literacy. Health literacy involves fundamental knowledge of the health practices necessary for proper self-care. These findings align with those of other studies.^{11,24}

Perceived susceptibility to risks significantly influences people's responses. It can be argued that heightened nervousness stems from a sense of susceptibility, which prompts cautious actions. Community leaders who perceive high susceptibility to COVID-19 are more inclined to implement prevention and control measures in their communities.²⁷ Previous studies have identified risk perception as a key factor that drives protective behaviours, particularly in terms of social distancing during the COVID-19 pandemic. Addressing

perceptual biases should thus be a priority in public policy.²⁸⁻³¹ Perceived susceptibility and severity can be influenced by a multitude of cultural and social adjustments within each community.

Moreover, the perceived severity of risk can lead individuals to believe that they are ill or infected with COVID-19 because individuals perceive COVID-19 as a significant threat to their health and lifestyle. Failure to adhere to medical advice or cooperate in preventive measures may have repercussions for families and communities. Hence, it is crucial for community leaders to grasp the severity of the disease and disseminate information effectively.³² This perception of severity also influences people's actions; previous studies have shown that the perceived severity of COVID-19 is correlated with adverse emotional and behavioural outcomes.³⁰ High levels of perceived risk, severity, general anxiety, and worry about daily activities due to the pandemic have been reported in other studies.^{30,33-34}

Community leaders serve as pivotal figures in guiding health policies and fostering health development within their communities. The incorporation of health literacy and risk perception, especially with regard to access, understanding, perceived susceptibility, and perceived severity, is essential for community leaders to possess strong skills in community health development, particularly during crises such as the COVID-19 pandemic. These competencies contribute to the establishment of an integrated health care system and profoundly affect and contribute to sustainable community health.

RECOMMENDATION

Community leaders include various types of leaders with distinct duties. Government agencies, especially the Ministry of Interior, should integrate and promote awareness among community leaders regarding outbreaks. This can be

achieved through activities aimed at enhancing health literacy and risk perception. With this knowledge, community leaders can effectively manage potential epidemic situations.

Future research should focus on studying participation in the development of health literacy and risk perception, particularly by examining the dimensions of access, understanding, perceived susceptibility, and perceived severity among community leaders. This comprehensive approach will ensure that the process is integrated and sustainable.

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CONFLICT OF INTEREST

The authors declare no potential conflict of interest.

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