

Factors Related to Health Literacy in the Prevention of COVID-19 Disease in the Elderly in Lad Yai Subdistrict, Mueang District, and Samut Songkhram Province

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Abstract

The purpose of this descriptive cross-sectional study is to investigate the factors related to health literacy in preventing COVID-19 disease among the elderly in Lad Yai subdistrict, Mueang district, and Samut Songkhram province. The sample size comprised 339 individuals. Data analysis utilized frequency, percentage, and Chi-square statistics. The majority of respondents were female (54.6%), aged between 65 and 69 (65.5%), had completed junior high school (44.8%), and had an average monthly income ranging from 3,001 to 4,000 THB (69.9%). Additionally, a significant portion (48.7%) reported being bereaved, while the majority (71.4%) did not have an underlying disease. Moreover, 70.8% lived with relatives, and 31% worked in agriculture. The general level of health literacy regarding the prevention of COVID-19 infection was found to be adequate, representing 42.8 percent. The analysis explored the relationship between personal factors and health literacy in preventing COVID-19 disease among the elderly. It was discovered that gender, marital status, living style, and occupation had no significant relationship with health literacy in COVID-19 prevention. However, at a statistical significance threshold of 0.05, age, education level, average monthly income, and underlying conditions were found to be significantly associated with health literacy in preventing COVID-19 disease.

Keywords: COVID-19, COVID-19 Prevention, Elderly, Health Literacy, Lad Yai

1. Introduction

COVID-19 infection currently represents a critical global public health concern due to its significant impact on human health. Based on available information regarding the outbreak situation, it has been determined that the initial outbreak occurred in Wuhan, Hubei Province, in December 2019. The spread of the infection has profoundly affected individuals' health conditions worldwide, resulting in extremely severe losses. As of now, the world's total confirmed cases of COVID-19 stand at 581,530,720, with 6,410,230 fatalities [1]. COVID-19 is an infectious disease caused by the SARS-CoV-2 virus.

The COVID-19 infection is caused by the SARS-CoV-2 virus, leading to respiratory disease. It can spread from person to person through inhalation of virus-containing droplets or direct contact, such as coughing, sneezing, or touching fluids like nasal discharge or saliva.

Symptoms of severe acute respiratory syndrome (SARS) include fever, headache, weariness, and flu-like symptoms, followed by coughing and rapid breathing. The infection damages the immune system by killing cells in the trachea and lungs, causing pneumonia and respiratory failure. If the immune system fails to manage the virus, it can be fatal. Elderly individuals, due to immune system deterioration and physical decline, are more susceptible to severe outcomes. Moreover, individuals with underlying health conditions such as diabetes, obesity, heart disease, and cerebrovascular disease are at increased risk. Renal disease, chronic respiratory disease, and neurological disorders further compound the risk [2]. The COVID-19 epidemic in Thailand was rapidly spreading, particularly affecting the elderly population.

In Thailand, 170,861 elderly individuals have been infected, resulting in 928 deaths [3]. The increasing elderly population poses significant health and medical challenges as aging bodies are more susceptible to serious illnesses, especially COVID-19 infections. Infection in the elderly may lead to acute respiratory dysfunction, incapacity to work consistently, breathing difficulties, myocarditis, pneumonia, and heart failure. Occupational exposure to COVID-19 may also contribute to dementia in elderly individuals working in high-risk or crowded environments [4]. Family members, children, grandchildren, and individuals traveling from high-risk areas may expose the elderly to the virus. Therefore, precautions must be taken to reduce the risk of disease [4].

The Department of Disease Control has implemented self-care measures, such as wearing masks, to prevent COVID-19 illness. Additionally, frequent handwashing with alcohol gel or spray, maintaining social distancing of 1-2 meters, and avoiding crowded areas are recommended. Vaccination also plays a crucial role in preventing coronavirus-related diseases.

According to Nut Beam's definition of health literacy, "health literacy is a person's skill or ability to act on his or her health with appropriate health conditions and behaviors in healthcare" [5]. Developing health literacy involves six key areas: access to information, understanding data, questioning and influencing health decisions, health education decisions, the influence of word-of-mouth, and changes in health behavior [6] and [7]. Enhancing health literacy among the elderly can contribute to the successful prevention of COVID-19 infection. Samut Songkhram Province is experiencing a consistent rise in the elderly population. and ranks fifth in Thailand in terms of the elderly population. 26.4% is the proportion in question. Samut Songkhram Province's Mueang District has 50.11 percent of its population who are 65 years of age or older, followed by Bang Khonthi District with 19.53 percent and Amphawa District with 30.34 percent. The cumulative infection rate among the elderly since the 2019 coronavirus outbreak is 4,010 cases, and the number of infected individuals continues to rise. Based on the information presented above, infection with the 2019 coronavirus is a significant issue that has a substantial impact on the health of the elderly. Especially, the elderly with chronic or congenital diseases will experience severe symptoms upon infection. To the extent of mortality If the elderly are informed about preventative measures for coronavirus disease in 2019, they will be able to decrease their likelihood of contracting the virus. Therefore, taking from the

previous information, the researcher examined the level of health literacy among the elderly based in Lat Yai Subdistrict with the intention of utilizing the findings to formulate strategies for enhancing health literacy among the elderly and thereby contributing to the prevention of coronavirus disease 2019 in the region.

Samut Songkhram Province experienced a consistent rise in its elderly population, ranking fifth in Thailand in terms of the proportion of elderly individuals, which stood at 26.4%. Within Samut Songkhram Province, Mueang District had the highest percentage of elderly individuals, accounting for 50.11% of its population, followed by Bang Khonthi District with 19.53%, and Amphawa District with 30.34%. Since the outbreak of the 2019 coronavirus, the cumulative infection rate among the elderly has reached 4,010 cases, and this number continued to increase. Given this information, it is evident that coronavirus infection poses a significant health risk to the elderly population, particularly those with chronic or congenital diseases who may experience severe symptoms, including mortality, upon infection. Educating the elderly about preventative measures for COVID-19 can help reduce their risk of contracting the virus. Building upon this knowledge, the researcher investigated the level of health literacy among the elderly residing in Lat Yai Subdistrict, Samut Songkhram province. The intention behind this study was to utilize the findings to develop strategies for enhancing health literacy among the elderly population, thereby contributing to the prevention of COVID-19 in the region.

2. Method

2.1 Study Area

Samut Songkhram is one of the central provinces of Thailand, situated between latitude 13°14.5'N to 13°31.0'N and longitude 99°51.0'E to 100°4.6'E as illustrates in Figure 1. It spans a total area of 416.7 km². The province boasts abundant natural resources and a diverse environment, featuring a coastline approximately 23 kilometers long along the Gulf of Thailand. This coastal area is highly fertile due to its location at the mouth of a river delta. Samut Songkhram is characterized by lowland terrain with one notable mountain, Khao Yi San, and no islands. The western side of the province is slightly elevated compared to the eastern side. Since 2019, it has been the least populated province in Thailand. Samut Songkhram is renowned for its leadership in Thai salt production. According to the results of the Human Security Index survey at the end of 2007, Samut Songkhram is ranked as the province with the highest level of human security in Thailand.

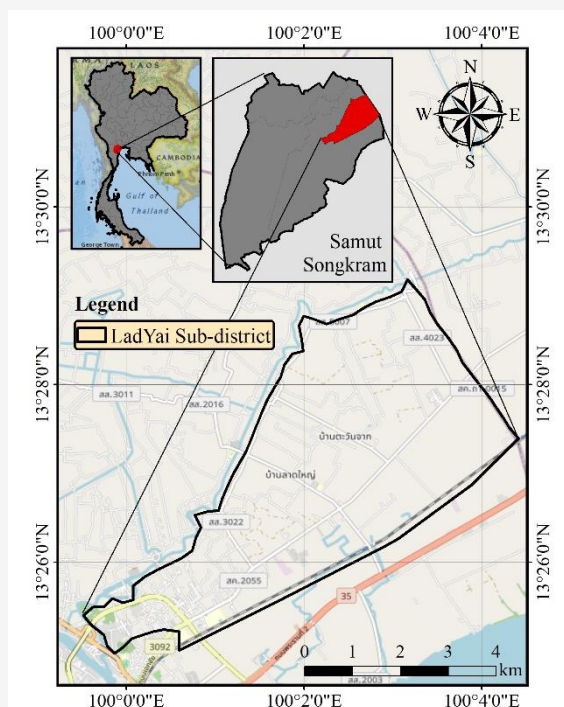


Figure 1: Samut Songkram province, Thailand

2.2 Research Objectives

The objectives of this study are as follows:

- To examine the level of health literacy among the elderly in Lad Yai Subdistrict, Mueang District, and Samut Songkram Province regarding the prevention of coronavirus disease in 2019.
- To investigate the correlation between personal factors and health literacy in preventing COVID-19 among the elderly in Lad Yai Subdistrict, Mueang District, Samut Songkram Province.

2.3 Research Design

This study is a descriptive cross-sectional study aimed at exploring the factors associated with health literacy in preventing COVID-19 among the elderly in Lad Yai Subdistrict, Mueang District, Samut Songkram Province, Thailand.

2.3.1 Population and representative sample

The study was conducted on the male and female population aged 60 years and older within the service area of Lad Yai Subdistrict Health Promoting Hospital, totaling 1,685 individuals. The sample population for this study consisted of 323 individuals, determined using the Taro Yamane formula [8] with

a confidence level of 95%. To mitigate data discrepancies, information was subsequently gathered from 5% of the sample, totaling 339 individuals. Eligible participants were elderly individuals who were fully conscious, capable of hearing and comprehending Thai, and not being bedridden patients.

2.3.2 Research instruments

A questionnaire was utilized for data collection. It comprised two parts as follows:

- Part 1 gathers general information about the elderly, including their gender, age, level of education, average monthly income, marital status, presence of congenital diseases, type of residence, and occupation. This section consists of eight multiple-choice questions, allowing respondents to select only one response each.
- Part 2 focuses on Health Literacy and COVID-19 Prevention, encompassing six components: knowledge and comprehension, accessibility to media, literacy, self-control, interrogative communication, and 22 discrimination choices.

The six components of Part 2 of the questionnaire are as follows:

- 1) Knowledge and comprehension of COVID-19. It comprises five items, each worth five points, with scoring levels for sub-items delineated into four distinct alternatives.
- 2) COVID-19 information accessibility, encompasses three items. A perfect score of five on a five-point scale earns a total of fifteen points.
- 3) Media literacy in relation to COVID-19, with three items contributing to a maximum score of fifteen points. Sub-items are rated on a five-point scale.
- 4) Self-management regarding COVID-19. Each item is worth a total of twenty points and is further subdivided into five sub-item ratings.
- 5) Communication and questioning about COVID-19. The total score is fifteen points, with sub-items rated on a five-point scale.
- 6) Decision-making regarding COVID-19. The overall score is sixteen points, with sub-items scored at four levels.

A comprehensive description of the overall health literacy results (component 1 through 6) with a cumulative score of 86 points, along with the scoring criteria and an explanation of the findings presents in Table 1.

Validation of the questionnaire is an assessment of research instrument quality. The content validity index was checked by analyzing the findings of three experts who verified the validity of the content. The questionnaire's content and comprehension, along with any remarks and improvement suggestions, were reviewed according to the experts' advice. The validity of the questionnaire was assessed using Cronbach's alpha coefficient, resulting in a confidence value of 0.769. Data analysis involved descriptive statistics such as frequency and percentage, and the Chi-square test was utilized to examine the relationship between personal factors

and health literacy. Sample rights protection was ensured by obtaining approval for research involving humans (COA.1-012/2023) from the Human Research Ethics Committee of Suan Sunandha Rajabhat University.

3. Results

The results of the data analysis revealed that out of the respondents, 339 were elderly individuals. Among them, 54.6% were female. The majority of this age group, constituting 82.3%, fell between the ages of 60 and 64. Additionally, 44.8% of them held a secondary school diploma, and 69.9% reported an average monthly income ranging from \$3,001 to \$4,000. Furthermore, the majority, at 48.7%, were widowed. As for health status, 71.4% reported no underlying diseases. In terms of living arrangements, 70.8% of elderly individuals resided with relatives. Regarding occupation, 31% of the elderly were employed in agriculture, as indicated in Table 2.

The findings from a study on the health literacy of the elderly population concerning the prevention of coronavirus disease in 2019 suggest that, overall, health literacy levels are moderate. Upon analyzing health literacy factors, it was discovered that communication and questioning (32.7%) and knowledge and comprehension (62.5%) are the two domains in which the elderly exhibit exceptionally strong health literacy. Additionally, there was excellent performance in two domains, namely self-management (52.8%) and media literacy (56.6%), moderate performance in one domain, information accessibility (31.3%), and poor performance in one domain, decision-making (62.5%), as indicated by data from Tables 3 and 4.

In the analysis of factors classified by health literacy, it was found that two aspects were exceptionally high among the elderly: knowledge and comprehension (62.5%) and communication and response (32.7%). Two aspects were at a decent level: media literacy (56.6%) and self-management (52.8%).

Table 1: Interpretation of the score

| Score range | Interpretation |
|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| 1.00 to 51.59 ($< 60\%$) | Insufficient knowledge about health and disease is not desirable for dealing with COVID-19. |
| 51.60 to 60.19 (51.60% to 60.19%) | Fair knowledge about health and disease is considered adequate for managing COVID-19 at an acceptable level. |
| 68.79 to 60.20 (70% to 80%) | Good knowledge indicates a satisfactory understanding of health and disease, leading to effective management of COVID-19. |
| 68.80 to 86.00 ($> 80\%$) | Excellent knowledge reflects a high level of understanding of health and illness, facilitating exceptional management of COVID-19. |

Table 2: General information of the participants

| Criteria | Quantity | Percentage (%) |
|-------------------------------------|-----------------|-----------------------|
| Gender | | |
| Male | 154 | 45.4 |
| Female | 185 | 54.6 |
| Age | | |
| 60-64 years | 279 | 82.3 |
| 65-69 years | 48 | 14.2 |
| 70 years or older | 12 | 3.5 |
| Education level | | |
| Uneducated | 51 | 15.0 |
| Primary school | 129 | 38.1 |
| Junior high school | 151 | 44.5 |
| High school / vocational | 5 | 1.5 |
| Diploma / high Vocational | 2 | 0.6 |
| Bachelor's degree. | 1 | 0.3 |
| Monthly income (THB) | | |
| 2,000 – 3,000 | 78 | 23 |
| 3,001 – 4,000 | 238 | 70.2 |
| 4,001 – ,5000 | 21 | 6.2 |
| > 5,000 | 2 | 0.6 |
| Marital Status | | |
| Married | 67 | 19.8 |
| Widowed | 165 | 48.7 |
| Divorce | 13 | 3.8 |
| Single | 94 | 27.7 |
| Congenital Disease | | |
| No | 242 | 71.4 |
| Yes | 97 | 28.6 |
| Characteristics of residence | | |
| Alone | 99 | 29.2 |
| Not alone | 240 | 70.8 |
| Occupation | | |
| Unemployed | 60 | 17.7 |
| Trading | 88 | 26.0 |
| Agriculture | 105 | 31.0 |
| Employee | 86 | 25.3 |

Table 3: Knowledge level of COVID-19 among the elderly for preventing COVID-19 disease

| Knowledge level | Elderly numbers | Percentage (%) |
|------------------------|------------------------|-----------------------|
| Excellent | 51 | 15.0 |
| Good | 142 | 41.9 |
| Fair | 145 | 42.8 |
| Poor | 1 | 0.3 |

Table 4: Health literacy level among the elderly for preventing COVID-19 disease

| Health literacy for preventing COVID-19 | Health Literacy Level | | | |
|-----------------------------------------|-----------------------|--------------|--------------|--------------|
| | Excellent | Good | Fair | Poor |
| | Quantity (%) | Quantity (%) | Quantity (%) | Quantity (%) |
| Knowledge and comprehension | 212 (62.5) | 0 (0) | 55 (16.3) | 72 (21.2) |
| Access to information | 96 (28.3) | 92 (27.1) | 106 (31.3) | 45 (13.3) |
| Media Literacy | 69 (20.4) | 192 (56.6) | 63 (18.6) | 15 (4.4) |
| Self-Management | 90 (26.5) | 179 (52.8) | 49 (14.5) | 21 (6.2) |
| Interrogation, and response | 111 (32.7) | 80 (23.6) | 64 (18.9) | 84 (24.8) |

Table 5: The relationship between personal factors and health literacy in the prevention of COVID-19 disease categorized by personal factors

| Personal factors | Chi square | p-value |
|------------------------|------------|---------|
| Gender | 5.209 | .157 |
| Age | 16.840 | .010* |
| Education level | 29.836 | .013* |
| Average monthly income | 25.012 | .003* |
| Marital status | 11.455 | .246 |
| Congenital disease | 9.594 | .022* |
| Type of residence | 1.273 | .736 |

*Statistically significant at the $p=0.05$

One aspect was at an acceptable level: access to information (31.3%) and decision-making (62.5%), as depicted in Table 4. Age, education level, and average monthly income showed significant correlations with health literacy in preventing COVID-19 disease among the elderly at the 0.05 level. However, no correlation was found between health literacy and gender, marital status, residential style, or occupation for COVID-19 prevention, as illustrated in Table 5.

4. Discussion

According to the findings of a study on the role of health literacy in preventing COVID-19 disease among the elderly, the overall level of health literacy among this demographic was deemed adequate. Upon categorization based on health literacy indicators, it was revealed that the elderly exhibited exceptional health literacy in two domains: comprehension and knowledge. In two other domains—media literacy and independent management—health literacy was at an adequate level. One aspect of health literacy, the ability to obtain information, was deemed adequate. However, one domain in which health literacy was deficient was decision-making, consistent with a previous study [4]. These findings align with another study on

health literacy and preventive behavior for COVID-19 among elderly dementia risk groups in rural communities of Chiang Rai [5], indicating a moderate level of health knowledge among the sample population.

The correlation between age and education level and health literacy in preventing coronavirus disease in 2019 among the elderly was found to be significant at the 0.05 level, as per the results of a study examining the correlation between personal factors and health literacy in preventing coronavirus disease in 2019. This finding is consistent with [6]. It was observed that the cognitive abilities of the geriatric population were very high, particularly in identifying the main symptoms of the coronavirus disease in 2019, which received the highest number of correct responses. During the disease outbreak, Thailand implemented policies and measures for disease control and prevention, alongside educating people about the symptoms, characteristics, and prevention of the disease to ensure the protection of all populations. Consequently, the elderly have a comprehensive understanding of disease prevention. However, the research on decision-making procedures revealed that 62.5% of the elderly had inadequate knowledge, and 31.3% had fair access to information. These findings suggest that these elderly

populations are vulnerable due to compromised immune systems, making them more susceptible to COVID-19 infection and potentially fatal symptoms.

5. Conclusion

According to research on factors affecting health literacy in preventing COVID-19 disease, the overall health literacy level was found to be adequate, with 62.5% of respondents rating their health education as satisfactory. It was discovered that the elderly exhibited very strong health literacy in two areas: cognitive (62.5%) and interrogative communication (32.7%). Media literacy scored high at 56.2%, and self-management was at 52.8%. Access to information was rated as satisfactory by 31.3% of respondents, with one aspect, decision-making, receiving a poor rating at 62.5%. The relationship between personal factors and health literacy in preventing COVID-19 among the elderly in Lad Yai Subdistrict, Mueang District, and Samut Songkhram Province revealed that factors such as sexual orientation, marital status, and occupation showed no correlation with health literacy in preventing COVID-19. However, age, education, average monthly income, and comorbidities were significantly correlated with health literacy in COVID-19 prevention, with a significance level of 0.05.

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References

- [1] Department of Older Persons., (2022). *Statistics of the Elderly, Covid-19 in Thailand*. [Online]. Available: <https://www.dop.go.th/th/know/side/1/1/857>. [Accessed August 24, 2022].
- [2] Department of Disease Control, Ministry of Public Health., (2021). *Coronavirus Disease 2019 (COVID-19)*. [Online]. Available: https://ddc.moph.go.th/viralpneumonia/faq_more.php. [Accessed August 24, 2022].
- [3] Department of Disease Control, Ministry of Public Health., (2022). *Coronavirus Disease Situation Report. 2019*. [Online]. Available: <https://ddc.moph.go.th/viralpneumonia/situation.php>. [Accessed August 24, 2022].
- [4] Un-ai, K., Chaiwang, P., Korakotkamjorn, P. and Pancharoen, D., (2022). Health Knowledge and Behavior for COVID-19 Prevention of the Elderly at Risk of Dementia in Rural Communities Chiang Rai Province. *Journal of Nursing Sciences*. Vol. 49(1), 200-212.
- [5] Ketpichayawatana, J., Wiwatvanich, S. and Wanwacha, C. (2020). Health Literacy of the Elderly in Clubs/Geriatric Education Centers in Bangkok. *Journal of Population Studies*, Vol. 3(2), 40-57.
- [6] Ruamsuk, T., Phuengthong, S., Thammetha, P., Wongsawang, N., DuangJan, N., Boonsiri, C. and Khrobsorn, C., (2022) Factors Related to Health Literacy in The Prevention of Coronavirus Disease 2019 among the Elderly. Bangkok Metropolis. *Journal of Public Health Nursing*, Vol. 36(1), 39-52. <https://he01.tci-thaijo.org/index.php/phn/article/view/254108>.
- [7] Meekaew, E., Jaidee, W. and Saengchan, S., (2022). Factors Related to Health Literacy and Self-Protective Behavior in the Surveillance of the Outbreak of Coronavirus Disease 2019 among Regular Public Health Volunteers. Village, Soi Dao District, Chanthaburi Province. *Nursing Journal*, Vol. 32(1),74-87.
- [8] Yamane, T., (1967). *Statistics: An Introductory Analysis*. 2nd Edition, New York: Harper and Row.