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RESEARCH ARTICLE

Development of Health Literacy and Mental Health for Participatory Public Health Emergency Response in Namon District, Kalasin Province

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Abstract

This participatory research and development study aimed to develop health literacy and mental health for public health emergency response, using the COVID-19 situation as a case, among stakeholder networks and the public in Namon District, Kalasin Province. It was conducted from October 2025 to April 2026 (7 months). The sample comprised 585 people from 5 sub-districts and 67 villages (381 members of the public and 204 network personnel), selected by proportionate stratified random sampling using a lottery method. The research instruments were a participatory problem-solving process, a health literacy questionnaire, and a mental health questionnaire. Data were analyzed using descriptive statistics, paired t-test, independent t-test, and chi-square test, with a significance level of .05.

After the intervention, the overall health literacy score increased from 133.40±16.10 to 138.90±13.90 ($t(584) = 9.81$, $p<0.001$), the mental health score increased from 161.30±17.60 to 165.70±16.10 ($t(584) = 7.03$, $p<0.001$), and the self-care behavior score increased from 40.70±5.60 to 41.80±4.90 ($t(584) = 5.62$, $p<0.001$). The developed process comprised seven groups of measures implemented in four phases (one-group pre–post design; causal inference is not possible). Stakeholder network personnel had significantly higher health literacy (143.50±10.30) and mental health (167.20±11.90) scores than the public (132.30±10.40 and 161.50±12.00, respectively). The participatory process should be piloted and further evaluated to prepare for other public health emergencies, and activities to strengthen media literacy and appropriate decision-making should be added.

Keywords: health literacy, mental health, public health emergency, participation

Introduction

Public health emergencies pose a continuing threat to the health and socioeconomic well-being of the global population. A prominent example is the coronavirus disease 2019 (COVID-19) pandemic, which the World Health Organization declared a Public Health Emergency of International Concern. As of 5 January 2025, more than 777 million confirmed cases and more than 7 million deaths had been reported worldwide.[1] In Thailand, approximately 4.81 million confirmed cases and 35,000 deaths had been reported over the same period.[1] At the height of the outbreak, as of 8 August 2021, there were 756,505 cumulative confirmed cases and 6,204 deaths.[2] In addition, the Public Health Emergency of International Concern for mpox, declared on 14 August 2024, ended on 5 September 2025,[3] indicating that emerging and re-emerging diseases may occur again and that health systems must remain continuously prepared. This study used the COVID-19 situation as a case study because Namon District had experience implementing a comprehensive set of measures and had documented records, making it suitable for extracting lessons learned to prepare for future emergencies.

During the COVID-19 outbreak in 2020–2021, Kalasin Province reported 4,516 confirmed cases, most of whom were people returning from other provinces.[4] Namon District reported 219 confirmed cases, distributed across the sub-districts of Nong Bua (72), Namon (56), Song Plueai (50), Lak Liam (28), and Yot Kaeng (13) (32.88%, 25.57%, 22.83%, 12.79%, and 5.94%, respectively). The district implemented measures including mask wearing, handwashing, physical distancing, screening, a reception center, and field hospitals.[5] However, the area still faced rumors about patient control, waste problems, loss of public confidence, livelihood difficulties, and mental health impacts both during illness and after recovery, reflecting the need to develop health literacy among the public and stakeholder networks. According to Namon Hospital's outbreak investigation reports and district-level community forums, most rumors arose from sharing unverified information on social media; waste problems stemmed from infectious waste from home-quarantined households and community quarantine centers; and mental health impacts included stress, anxiety, and stigma both during illness and after recovery.[5]

Health literacy refers to the knowledge, competence, and motivation to access, understand, appraise, and apply health information to make decisions about one's own health.[6,7] The Department of Mental Health developed guidelines for psychological support for people affected by crises during the pandemic.[8] Previous studies have mostly examined disease prevention knowledge and behaviors in specific population groups,[9–11] while few have developed health literacy and mental health simultaneously through a district-level participatory process involving stakeholder networks to prepare for public health emergencies. This is the research gap the present study aims to fill. The study applied Nutbeam's concept of health literacy,[7] linked it to mental health care in emergencies, and used a

participatory research and development cycle to design activities: situation analysis, planning, implementation, and lessons learned for improvement.

The researcher therefore recognized the importance of promoting and developing health literacy and mental health through a participatory approach in Namon District as a model for short-term public health emergency response. The findings will benefit public health personnel, administrators, local administrative organizations, and relevant agencies in planning, budget allocation, and designing community problem-solving projects.

Research Objectives

1. To examine health literacy, mental health, and self-care behaviors for disease prevention among stakeholder networks and the public in Namon District before the intervention.
2. To develop a participatory process for promoting health literacy and mental health for public health emergency response among stakeholder networks and the public, and to assess the appropriateness and feasibility of the process through focus group discussions and lessons-learned sessions.
3. To compare health literacy, mental health, and self-care behaviors for disease prevention before and after the intervention, and between stakeholder networks and the public. Research hypotheses: health literacy, mental health, and self-care behavior scores after the intervention are higher than before, and stakeholder networks score higher than the public.

Methods

This study was participatory research and development combined with a quasi-experimental one-group pretest–posttest evaluation, using the COVID-19 situation as the public health emergency case, in 5 sub-districts and 67 villages of Namon District, Kalasin Province. It was conducted from October 2025 to April 2026 (7 months). The pre-intervention assessment was conducted in October 2025 and the post-intervention assessment in April 2026, approximately 2 weeks after the main activities ended. The patient and measures data in Results section 2.2 are secondary data on the district outbreak in 2020–2021, analyzed retrospectively for lessons learned; they did not occur during the study period. Details are as follows.

Population

The population comprised 36,550 residents of 9,133 households in 5 sub-districts and 67 villages of Namon District, and 431 stakeholder network personnel in the area. Stakeholder networks were defined as personnel from public health agencies, local administrative organizations, village health volunteers (VHVs), community leaders, and other agencies with roles in the measures: 96 public health personnel, 58 local administrative organization personnel, 134 VHVs, 72 community leaders (sub-district and village headmen), and 71 personnel from other agencies.

Sample

The sample comprised 381 members of the public and 204 stakeholder network personnel (585 in total). Sample size was calculated using the formula for estimating a proportion in a finite population, $n = NZ^2pq/[e^2(N-1) + Z^2pq]$, with a 95% confidence level ($Z = 1.96$), an acceptable error of 0.05, and a proportion of 0.50, yielding 380.17 and 203.37, rounded up to 381 and 204. This sample size provided a power of approximately 0.998 to detect a small effect size ($d = 0.20$) with a paired t-test ($\alpha = 0.05$, two-tailed), calculated using G*Power. Participants were allocated by the number of households and network personnel in each sub-district using proportionate stratified random sampling, drawn by lottery from household lists (one representative per household) and network personnel lists. Household representatives aged 15 years or older were selected using the next-birthday method. If a selected person could not be contacted or declined, the next name on the list was used; this occurred for 42 of 627 sampled names (6.70%), giving a response rate of 93.30%. The same respondents completed the pre- and post-tests and were tracked by identification codes.

Inclusion Criteria

Members of the public and stakeholder network personnel aged 15 years or older (those aged 15–17 years required parental consent in addition to their own assent; there were 14 minors, 2.39% of the sample) who had lived or worked in Namon District for at least 6 months, could communicate in Thai, and consented to participate.

Exclusion Criteria

Severe illness preventing completion of the questionnaires, or withdrawal from the study. Incomplete responses were not an exclusion criterion but were treated as missing data (complete-case analysis), with numbers reported in the results.

Research Instruments

The instruments comprised: 1) a participatory problem-solving process, including group interviews, community forums, and group processes to analyze the situation, define measures and stakeholder network roles, extract lessons learned, and improve measures. It was conducted by the researcher and the District Quality of Life Development team, with activities held 2–4 times per month over 7 months, as shown in Table 1. Guiding questions for focus groups and community forums covered perceptions of news and rumors, problems and mental health impacts, measures the community wanted, stakeholder network roles, and barriers to implementation; and 2) data collection instruments, including a patient report form in an electronic database; a 7-domain health literacy questionnaire with a total score of 167 (cognition 10, access to information and services 25, communication to increase expertise 30, self-management of health conditions 25, media and information literacy 25, appropriate decision-making 2, and self-care behavior 50), adapted from the Department of Health's health literacy and health behavior (3E 2S) assessment form;[24]

and a 55-item mental health questionnaire scored 1–4 per item (total 220), adapted from the Thai Mental Health Indicator (TMHI-55)[25] and Department of Mental Health guidelines.[8] Items referred to the past month. Because self-care behavior is one of the seven health literacy domains, it was reported as a subdomain. Scores were interpreted using Bloom's criteria[26] into three levels: low (<60%), moderate (60–79%), and good (80–100%). Content validity was assessed by three experts (one each in public health, health education, and mental health), yielding an index of item–objective congruence (IOC) of 0.67–1.00. Reliability was tested with 30 residents of a neighboring district outside the study area, yielding Cronbach's alpha coefficients of 0.89 for the health literacy questionnaire and 0.91 for the mental health questionnaire.

Data Collection

The researcher sent letters requesting cooperation to heads of government agencies, the private sector, and sub-district and village headmen to obtain permission to collect data and conduct activities in the area. Primary data were collected through questionnaires and interviews, and secondary data were obtained from the Namon Hospital database. Data collectors were a team not involved in delivering the activities, and questionnaires were self-administered. The study was conducted in 4 phases: 1) analysis of the situation, risk factors, health literacy, and mental health; definition of measures and stakeholder roles; and pre-intervention assessment (October 2025); 2) implementation of measures (November–December 2025); 3) lessons learned and improvement of measures (January 2026), adding risk communication channels via village broadcasting towers and village LINE groups, proactive mental health care by VHVs, and management of infectious waste from home-quarantined households; and 4) implementation of the improved measures, post-intervention assessment, and a final lessons-learned session (February–April 2026), as detailed in Table 1. Qualitative data were obtained from 5 focus group discussions (one per sub-district, 8–10 participants each), 2 community forums (approximately 60–80 participants each), and 2 lessons-learned sessions (approximately 30 participants each), using audio recordings with consent and field notes.

Data Analysis

Data were analyzed using a statistical software package. Descriptive statistics included frequency, percentage, mean, and standard deviation. Inferential statistics included the paired t-test to compare pre- and post-intervention scores, the independent t-test (and ANCOVA adjusting for pre-intervention scores) to compare stakeholder networks with the public, and the chi-square test to compare health literacy levels between groups, with significance set at .05. Normality was tested using the Shapiro–Wilk test, and the Wilcoxon signed-rank or Mann–Whitney U test was used for non-normal data. Mean differences, 95% CIs, and Cohen's d were reported, and significance levels were adjusted using the Bonferroni correction (α = 0.0056 for 9 variables). Qualitative data were analyzed using content analysis, with trustworthiness established through triangulation and member checking.

Research Ethics

This study adhered to the principles of human research ethics. The researcher addressed privacy, confidentiality, and informed consent by explaining the objectives, rationale, and study activities to all participants, who signed informed consent forms. Participants aged 15–17 years obtained parental consent. Data were kept confidential, participants could withdraw at any time without consequences, and results were presented only in aggregate. Use of patient data from the hospital database complied with personal data protection law and was de-identified, and participants with high stress were referred for care.

Results

1. General Characteristics, Health Literacy, and Mental Health before the Intervention

1.1 General characteristics of the sample The pre-intervention sample comprised 585 participants: 381 members of the public (65.13%) and 204 stakeholder network personnel (34.87%). Most were female (320; 54.70%) and younger than 31 years (316; 54.02%), with a mean age of 33.40±12.60 years (range 15–78). All were Buddhist (100.00%). Most were single (349; 59.66%), held a bachelor's degree (207; 35.38%), worked as general laborers (152; 25.98%), had a family income of 10,000–20,000 baht per month (239; 40.85%), and had sufficient income with savings (234; 40.00%).

1.2 Health literacy, mental health, and behaviors before the intervention Overall health literacy was at a moderate level (133.40±16.10). Cognition (7.30±1.50), access to information and services (19.90±3.70), and communication to increase expertise (21.90±4.30) were at a moderate level; self-management of health conditions (21.00±2.80), media literacy (20.90±5.70), and self-care behavior (40.70±5.60) were at a good level; and appropriate decision-making (1.70±1.00) was at a low level. Overall mental health was at a moderate level (161.30±17.60). The most common risk behavior was not wearing a mask in crowded places (397; 67.86%), and the least practiced mental health item was accepting problems that are difficult to solve (5; 0.85%). By group, before the intervention, stakeholder network personnel had overall health literacy and mental health scores of 139.50 and 166.40, respectively, compared with 130.10 and 158.50 among the public.

2. Participatory Process for Developing Health Literacy and Mental Health

2.1 Development process and activities The process was led by the District Quality of Life Development team, with stakeholder networks and the public participating in every step. It comprised seven groups of measures: (1) data and situation analysis; (2) outbreak investigation and disease control; (3) case-study lessons learned; (4) integrated planning and budget allocation; (5) establishment of service points; (6) problem-solving, including health literacy promotion, mental health care, active and passive surveillance, and medical treatment and post-recovery care; and (7) community operations. Activities that directly developed health literacy and mental health included risk communication via village broadcasting towers and health education, mental health care

following Department of Mental Health guidelines, and media literacy activities in phase 4. Activities were held 2–4 times per month by VHVs, community leaders, and sub-district public health officers. Qualitative findings from focus groups and community forums identified key themes: the public wanted reliable information from a single source to reduce rumors, regular communication through village broadcasting towers and village LINE groups, and continuous psychological follow-up for quarantined and recovered individuals, as shown in Table 1.

Table 1 Participatory process and activities for developing health literacy and mental health, by period

Period	Activities/Content	Instruments	Duration	Academic Rationale
Oct 2025	Analysis of data, the situation, risk factors, health literacy, and mental health in the area (pre-intervention assessment)	Group interviews, health literacy questionnaire, mental health questionnaire, patient report form	1 month	Assessing the community situation and context before defining measures helps align measures with local problems and needs[6]
Oct 2025	Joint definition of measures/activities and stakeholder network roles	Community forums and group processes	2 sessions, 3 hours each	Participation of stakeholder networks and the community fosters ownership and sustainability of measures[11]
Nov–Dec 2025	Implementation of measures: Emergency Operations Center meetings, outbreak investigation and control, service points, and health literacy promotion and mental health care in every village	District Emergency Operations Center, village broadcasting towers, health education, Antigen Test Kits	2 months	Health literacy is the skill of accessing, understanding, appraising, and using health information; continuous risk communication therefore helps develop these skills[7]

Period	Activities/Content	Instruments	Duration	Academic Rationale
Jan 2026	Case-study lessons learned, analysis of problems and barriers, and improvement of measures/stakeholder roles	Lessons-learned meeting, group processes	1 session, 3 hours	After-action review enables learning from real events and continuous improvement of measures
Feb–Apr 2026	Implementation of improved measures, strengthening mental health care and media literacy	Department of Mental Health care guidelines,[8] community public relations media	3 months	Proactive community-based psychological support helps reduce psychological impacts in crises[8]
Apr 2026	Post-intervention assessment and final lessons learned	Health literacy questionnaire, mental health questionnaire	1 month	Repeated measurement with the same instruments allows pre–post comparison of changes

2.2 Results of implementing the measures Throughout the 2020–2021 outbreak (secondary data), 4,203 individuals met the criteria for outbreak investigation or were high- or low-risk contacts, including 186 confirmed cases and 1 death. All cases were investigated and controlled (100.00%). The District Emergency Operations Center met 15 times, and lessons were extracted from 5 major events. Service points included 67 village-level reporting points, 1 district reception center, 7 community quarantine centers, 7 sub-district field hospitals (20 beds each), 1 district field hospital (120 beds), 7 acute respiratory infection (ARI) clinics, and a 22-bed cohort ward. Health literacy promotion and community mental health care covered all 67 villages (100.00%), and post-recovery mental health care was provided to all 185 recovered patients (100.00%). Namon Hospital treated 186 patients, of whom 185 recovered, a case fatality rate of 0.54% (1/186). Data were obtained from the Namon Hospital database and outbreak investigation reports of the Namon District Public Health Office. Confirmed cases were defined as individuals testing positive for SARS-CoV-2 by RT-PCR or Antigen Test Kit according to the Department of Disease Control definition. Predefined success indicators were investigation of all cases, coverage of service points and health literacy activities in all villages, and a case fatality rate below 1%.

3. Comparison of Health Literacy, Mental Health, and Disease Prevention Behaviors

3.1 Pre–post comparison After the intervention, overall health literacy increased from a moderate to a good level (79.90% of the maximum score before and 83.17% after; the proportion at the good level rose from approximately 48.00% to 58.29%), from 133.40±16.10 to 138.90±13.90 (difference 5.50, 95% CI 4.40 to 6.60, t(584) = 9.81, p<0.001, d = 0.41). Mental health increased from 161.30±17.60 to 165.70±16.10 (t(584) = 7.03, p<0.001), and self-care behavior increased from 40.70±5.60 to 41.80±4.90 (t(584) = 5.62, p<0.001). Scores increased significantly in every domain, including media literacy (t(584) = 4.83, p<0.001). The t values, differences, and 95% CIs were estimated from means and S.D.s, assuming a pre–post correlation of r = 0.60. Effect sizes (d) were small (0.20–0.41), and all domains remained significant after Bonferroni adjustment (α = 0.0056), as shown in Table 2.

Table 2 Comparison of mean health literacy, mental health, and self-care behavior scores before and after the intervention (paired t-test, n = 585)

Variable	Group	Before		After		Level	$\bar{d}$	95%CI	t	p-value
		$\bar{x}$	S.D.	$\bar{x}$	S.D.					
Cognition (max 10)	Overall	7.30	1.50	7.80	1.10	Moderate	0.50	0.40-0.60	9.94	<0.001*
Access to information and services (max 25)	Overall	19.90	3.70	20.70	3.40	Good	0.80	0.54-1.06	6.07	<0.001*
Communication to increase expertise (max 30)	Overall	21.90	4.30	22.90	3.80	Moderate	1.00	0.70-1.30	6.63	<0.001*
Self-management of health conditions (max 25)	Overall	21.00	2.80	21.90	2.60	Good	0.90	0.70-1.10	8.99	<0.001*
Media and information literacy (max 25)	Overall	20.90	5.70	21.90	5.50	Good	1.00	0.59-1.41	4.83	<0.001*
Appropriate decision-making (max 2)	Overall	1.70	1.00	1.90	0.90	Good	0.20	0.13-0.27	5.66	<0.001*
Self-care behavior (max 50)	Overall	40.70	5.60	41.80	4.90	Good	1.10	0.72-1.48	5.62	<0.001*
Overall health literacy (max 167)	Overall	133.40	16.10	138.90	13.90	Good	5.50	4.40-6.60	9.81	<0.001*
Overall mental health (max 220)	Overall	161.30	17.60	165.70	16.10	Moderate	4.40	3.17-5.63	7.03	<0.001*

*Statistically significant at p-value <.05

3.2 Comparison between the public and stakeholder networks After the intervention, stakeholder network personnel had significantly higher health literacy (143.50) and mental health

(167.20) scores than the public (132.30 and 161.50, respectively; t = -12.50 and -5.50, respectively, p<0.001). The differences were 11.20 points for health literacy (95% CI 9.44 to 12.96) and 5.70 points for mental health (95% CI 3.67 to 7.73). Self-care behavior scores were 43.10 among stakeholder network personnel and 40.30 among the public, a statistically significant difference (t = -6.54, p<0.001). This comparison used post-intervention scores without adjusting for pre-intervention scores; before the intervention, stakeholder network personnel already scored higher than the public (health literacy 139.50 vs 130.10; mental health 166.40 vs 158.50). In an ANCOVA adjusting for pre-intervention scores, the health literacy difference decreased to approximately 5.60 points (95% CI 3.70 to 7.50) but remained statistically significant (p<0.001), as shown in Table 3.

Table 3 Comparison of post-intervention mean scores between the public and stakeholder networks (independent t-test, df = 583)

Variable	Public (n = 381)		Stakeholder networks (n = 204)		Level	$\bar{d}$	95%CI	t	p-value
	$\bar{x}$	S.D.	$\bar{x}$	S.D.					
Self-care behavior (max 50)	40.30	5.00	43.10	4.80	Good/ Good	-2.80	-3.64 to -1.96	-6.54	<0.001*
Overall health literacy (max 167)	132.30	10.40	143.50	10.30	Moderate/Good	-11.20	-12.96 to -9.44	-12.50	<0.001*
Overall mental health (max 220)	161.50	12.00	167.20	11.90	Moderate/Moderate	-5.70	-7.73 to -3.67	-5.50	<0.001*

*Statistically significant at p-value <.05

3.3 Health literacy levels by group When classified using Bloom's criteria, 75.00% of stakeholder network personnel were at the good level, significantly more than the public (49.30%) (χ^2 = 37.10, df = 2, p<0.001, Cramér's V = 0.25). Comparing the good level only, χ^2 = 35.97, df = 1, p<0.001 (OR 3.08, 95% CI 2.12 to 4.48), as shown in Table 4.

Table 4 Post-intervention health literacy levels by group (chi-square test)

Health literacy level	Public (%)	Stakeholder networks (%)	χ^2	p-value
Low	12.10	3.90	37.10	<0.001*
Moderate	38.60	21.10		
Good	49.30	75.00		

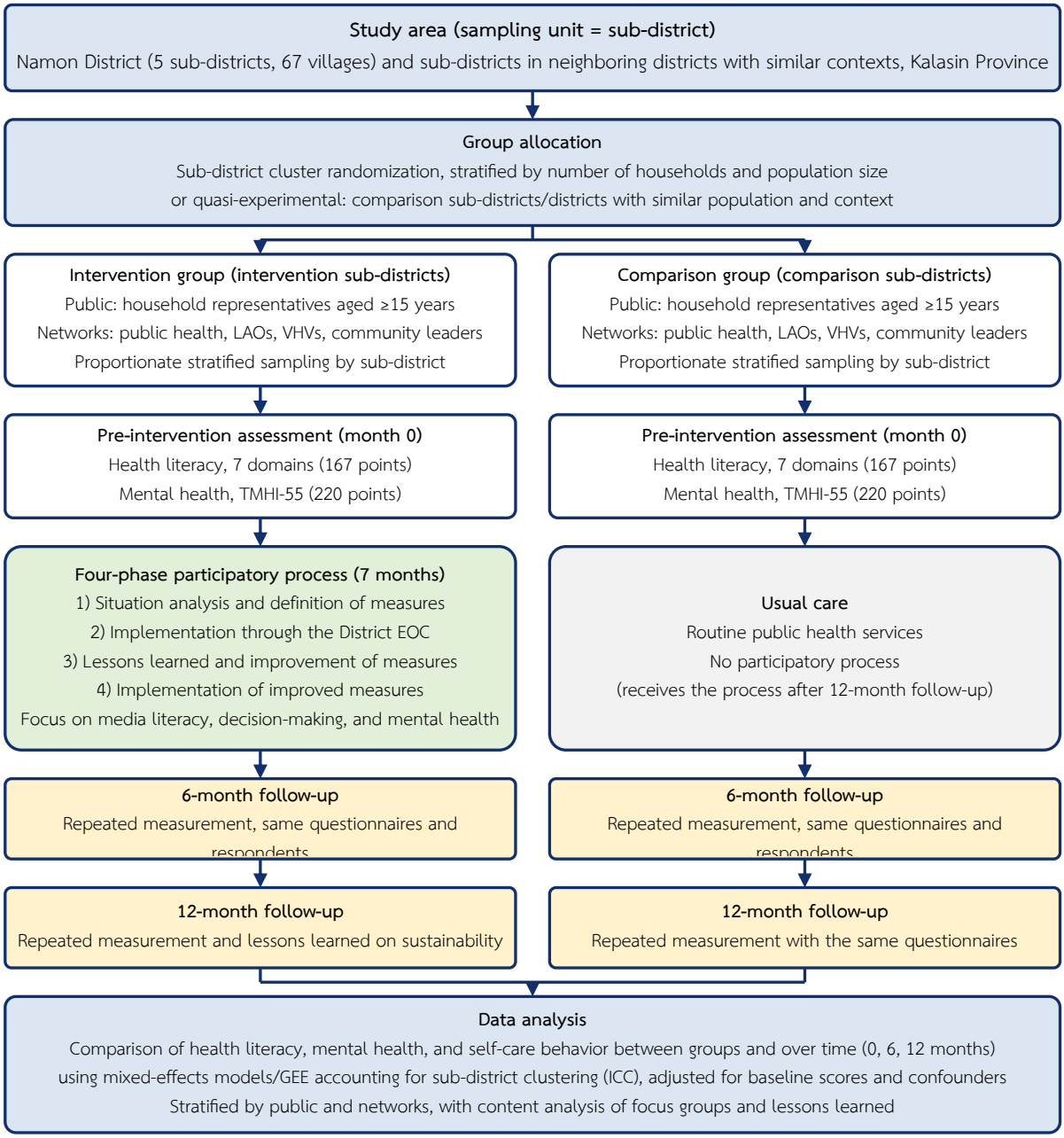


Figure 1 Participatory development process of health literacy and mental health

Discussion

Before the intervention, the situation in the area reflected the impact of recurring waves of the public health emergency, consistent with studies finding that each wave affected personal and economic problems[12] and that outbreak control requires community awareness and social norms alongside government policy.[13,14] Regarding behaviors, mask wearing and handwashing were well practiced, consistent with previous studies;[9,10,15,16] however, risk behaviors remained, including attending social gatherings, sharing personal items, and eating with others, contrary to recommendations.[15] This may be because the lifestyle of people in northeastern

Thailand (Isan) favors communal meals and traditional gatherings; community forum participants likewise reported that merit-making ceremonies, funerals, and communal meals were important traditions that were difficult to change during the outbreak. Overall health literacy was moderate and appropriate decision-making was low, which was inconsistent with a study that found high public health literacy in all domains,[17] but consistent with its finding of poor media literacy, as many people believed fake news.[17] Mental health was moderate, consistent with studies finding that selective attention to and recall of news affected anxiety[18] and that social distancing caused stress.[12] Although a study of medical personnel found a low overall prevalence of mental health problems,[19] moderate or higher levels of stress and depression were found among disease control workers.[20]

The participatory development process in this study relied on collaboration across all sectors, from data and situation analysis, outbreak investigation and disease control, lessons learned, integrated planning and budget allocation, and establishment of service points to community operations, with the District Chief Officer chairing the Emergency Operations Center. This is consistent with the COVID-19 surveillance, prevention, and control model of Udon Thani Province, whose key success factor was the participation of the District Quality of Life Development Committee and stakeholder networks,[11] and with rapid case and contact finding through the participation of village health volunteers and communities.[13] The process also aligns with the concept of health literacy, which emphasizes accessing, understanding, appraising, and using health information,[7] and may therefore be piloted for other public health emergencies, such as mpox.[3] However, most activities were disease-response tasks rather than direct health literacy development, so it cannot be determined which activities affected the scores, and application to other diseases remains a conceptual proposal. Lessons learned identified success factors, including the District Chief Officer chairing the Emergency Operations Center, the participation of VHVs and community leaders, and rapid communication through village broadcasting towers; barriers included rumors, infectious waste, personnel workload, and frequent changes in practice guidelines.

After the intervention, overall health literacy, mental health, and disease prevention behaviors increased significantly ($p<0.001$), consistent with a study finding a moderate positive correlation between knowledge and self-protection behaviors,[9] but inconsistent with a study that found no difference in knowledge and self-protection behavior scores.[21] This small improvement is consistent with a systematic review finding that educational and behavioral modification interventions had only a small effect on preparedness behaviors, with very low certainty of evidence.[22] Media literacy had the smallest effect size (difference 1.00, d = 0.20), possibly because media literacy is difficult to develop and media have many channels and often present information negatively, so the government needs to adapt its presentation and allow more time. Stakeholder network personnel scored higher than the public in all compared domains, possibly because they drove the

measures and received information and hands-on practice directly; however, part of the difference existed before the intervention. This is consistent with a study in southern Thailand that found most VHVs had adequate COVID-19 preventive behaviors, whereas most residents did not.[23] Limitations of this study include a one-group pre–post design without a control group, a 7-month study period, and self-administered questionnaires. Observed changes may have been influenced by the evolving outbreak over time; the researcher developed the process and may have introduced bias; respondents may have given socially desirable answers; replacing uncontactable participants with the next names on the list may have caused selection bias; the same questionnaire was used before and after (testing effect); measures were adjusted during the study; confounders were not adjusted for; data within villages may have been correlated; results are specific to one district; and there was no long-term follow-up.

Conclusion

The participatory development of health literacy and mental health for public health emergency response in Namon District, Kalasin Province, from October 2025 to April 2026 among 585 participants found that health literacy and mental health were at a moderate level before the intervention. The developed process comprised seven groups of measures implemented in four phases. After the participatory intervention with stakeholder networks, scores for health literacy (133.40 to 138.90), mental health (161.30 to 165.70), and self-care behavior (40.70 to 41.80) increased significantly ($p<0.001$), and stakeholder network personnel had higher health literacy and mental health than the public. However, these results reflect pre–post changes in a single group with small effect sizes; therefore, no causal conclusions can be drawn.

Recommendations

1. Recommendations for applying the findings: This participatory process should be piloted and further evaluated to prepare for other public health emergencies through the District Emergency Operations Center, emphasizing risk communication and community mental health care, and adding activities to strengthen media literacy and appropriate decision-making.

2. Recommendations for future research: Future studies should compare with neighboring districts, test the model and measures in other areas, and follow up over a longer period, using a quasi-experimental design with a comparison group or a sub-district-level cluster randomized design, with follow-up at 6 and 12 months.

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