

An Integrated Community-Based Model for Chronic Disease Care in a Community in the Lower Southern Peninsular Thailand

Prawit Khunnikom¹, Tawatchai Sunthonnon^{1*}, Sirunya Sang-arun¹, Ussanee Issarachote¹, Wasana Kongbua², and Jariwan Saengchong³

¹ Faculty of Public Health and Allied Health Sciences, Sirindhorn College of Public Health Trang, Prabormarajanok Institute, Ministry of Public Health, Thailand

² Ban Khuan Pom Commemorative Health Promoting Hospital (HPH), Pa Bon District, Phatthalung Province, Thailand

³ Pa Bon Hospital, Pa Bon District, Phatthalung Province, Thailand

* Tawatchai Sunthonnon, corresponding author. Email: tawatchai@scphtrang.ac.th

Submitted: 4 November 2025. Accepted: 26 July 2026. Published: 21 August 2026

Volume 35, 2027. pp. 654–669. <http://doi.org/10.25133/JPSSv352027.033>

Abstract

Effective chronic disease management requires community-based approaches tailored to local contexts. This study sought to develop an integrated community-based model for chronic disease care in a community in the lower southern peninsular Thailand. It was a research and development (R&D) study consisting of three phases: Phase 1 identified situational factors through focus group discussions; Phase 2 produced a model validated by three experts using the Appraisal of Guidelines for Research and Evaluation II (AGREE II) instrument; and Phase 3 employed a one-group pretest-posttest design to implement the model and evaluate outcomes over three months. Key informants included 30 patients with non-communicable chronic diseases and 15 healthcare professionals. Data analysis used descriptive and inferential statistics, paired-samples t-test, and content analysis. The study found that the integrated community-based model for chronic disease management consisted of three main components. First, individual participation (focusing on shared goal setting and risk awareness); Second, interpersonal participation (involving peer support and structured information/feedback exchange); and finally, community participation (including positive motivation, community-based healthcare activities, and surveillance). The results show that after the patients were taken care of with the integrated community-based model for three months, the average HbA1C (glycated hemoglobin) levels among chronic disease patients had significantly decreased by 0.10 (95% CI [0.04–0.16]), and the average systolic blood pressure had significantly decreased by 4.70 mmHg (95% CI [2.32–7.07]). Chronic disease clinics in comparable rural settings can adopt this three-tiered participation structure within existing services, with village health volunteers and community groups recognized as partners in care.

Keywords

Chronic disease; community participation; community-based model; Lower Southern Peninsular Thailand; non-communicable diseases (NCDs); self-management

Introduction

Non-communicable chronic diseases (NCDs) are a major public health issue both globally and nationally (Geng et al., 2026). According to the World Health Organization (2025), chronic diseases are the leading cause of premature death worldwide. Key risk factors contributing to the development of NCDs include smoking, alcohol consumption, unhealthy diets, and insufficient physical activity. In Thailand, NCDs have shown a continuous upward trend (Department of Disease Control, Ministry of Public Health, 2023). The situation in Thailand reveals an increasing mortality rate from the four major chronic diseases: diabetes, hypertension, ischemic heart disease, and cerebrovascular disease. The mortality rates per 100,000 people in the mid-year population in 2020–2021 (B.E. 2563–2564) were 131.81 and 145.01, respectively (Yokin & Nawsuwan, 2023). In response, the Ministry of Public Health has outlined its strategy in the Thailand Action Plan for the Prevention and Control of Non-Communicable Diseases (2023–2027). The plan sets a goal to mobilize strong collaboration across all sectors in Thailand to protect, prevent, and control chronic NCDs equitably through the strategic integration of a Smart NCD Network, which aims to build cooperation and coordination among various agencies and sectors to manage NCDs effectively.

The key goal is to reduce premature mortality from NCDs by 25% by the year 2027. This strategy is considered a critical starting point for the successful implementation of other related strategies. However, despite efforts to manage networks, the core of disease management is the collaboration stemming from the patient's own needs. According to Sakulmanon and Khunnikom (2025), for effective disease management, patients should be placed centrally as the main stakeholders in the design of activities to foster their active participation, including their ability to recognize the benefits of healthy behaviors, perceive their own self-efficacy, and engage in mutual social support. Such collaboration must be appropriate and aligned with the diverse contextual and social conditions of each area. In addition, a number of factors, namely self-management support (Huang et al., 2024; Lorig & Holman, 2003), family engagement, and participation of village health volunteers (VHVs), are important for controlling and preventing chronic diseases.

Patients should be coached to understand their disease conditions, self-care practices, health behavior modification, and proper medication use, along with support from family members and VHVs to provide reminders and encouragement. According to Lahpunsu et al. (2024), a self-management program combined with participation of families and VHVs helped promote healthy behaviors and reduced blood pressure levels in patients with hypertension. Participation from family members, friends, and even VHVs created reinforcement mechanisms for patients, including social support and holistic management that integrated multiple dimensions beyond medical care, such as psychological support. These factors played a crucial role in reducing stress and mitigating physiological changes such as elevated cortisol levels, systemic inflammation, and immune system dysfunction (Rahelić et al., 2024).

The development of integrated community-based models for chronic disease management is a complex topic. However, studies on community-level processes in managing chronic diseases—such as awareness-raising activities, systematic collaboration between external organizations and communities, clear planning and step-by-step implementation, training of volunteers, or transforming community members into active and accepted participants—remain limited (Hassan et al., 2025). Moreover, context-based learning may lead to failure in collaboration, which is especially critical for vulnerable groups and communities.

For these reasons, success in community participation is closely linked to social capital, social cohesion, and community empowerment, all of which influence accessibility, acceptance, readiness, responsiveness, and service quality. Promoting these factors may lead to increased service utilization and improved health outcomes (Haldane et al., 2019; Sakulmanon & Khunnikom, 2025). Established frameworks for chronic disease management demonstrate notable limitations in community contexts. The Chronic Care Model focuses primarily on healthcare system delivery with limited evidence for scaling in low- and middle-income settings (Xu et al., 2025), while self-management support programs address individual behavior change but lack structural support in resource-limited communities (Lorig & Holman, 2003; Siddiqui et al., 2024).

In Thailand, VHV-based models remain constrained by inconsistent policy directions and unclear performance indicators (Tuangratananon et al., 2021). None of these frameworks adequately address community-level social processes and cultural determinants in local southern Thai contexts (Haldane et al., 2019; Hassan et al., 2025), directly justifying the need for a context-specific, community-grounded model. Therefore, developing integrated community-based models is essential for chronic disease care. It is not solely about disease management; it is also about addressing the social determinants of health, the community environment, and service system mechanisms, which must operate in an integrated manner (Hacker, 2024).

This study was conducted in Phatthalung Province, located in the lower southern peninsular region of Thailand. According to Chaimay et al. (2016) and Rukleng (2017), blood pressure control among patients with hypertension in Phatthalung Province is poorly executed. Chaimay et al. (2016) found that 67.35% of patients were able to control their blood pressure, while approximately one-third were unable to do so. In 2023, there were 30,055 patients with diabetes, but only 38.77% had good blood sugar control (Buakaew et al., 2024). This showed that patients with hypertension or diabetes had limitations in controlling clinical outcomes, which reflected their past behavior and the potential for future complications. This study therefore developed an integrated community-based model for chronic disease care grounded in the lived experiences of patients and healthcare professionals in the lower southern peninsular Thailand, to generate context-specific evidence to inform sustainable community-level NCD management.

Research methodology

Research and development (R&D) were conducted in this study (Boocha & Seangduang, 2021; Virutsetazin & Pandang, 2017). The R&D process comprised three interrelated phases: Phase 1, Research 1 (R1), for situation investigation; Phase 2, Development 1 (D1), for model development and iterative refinement; and Phase 3, Development 2 (D2), for model implementation and evaluation. The study adopted an inductive approach, in which the model components were derived from the data rather than imposed by a pre-existing theoretical framework. Data collection was conducted between June and September 2025, as detailed below.

Research setting

The study area was selected by purposive sampling in a community under the jurisdiction of the 60th Anniversary of His Majesty the King's Accession to the Throne Health Station, Ban Khuan Pom, Khok Sai Subdistrict, Phatthalung Province. This area was chosen for a case study based on the following characteristics: the community has potential and willingness to cooperate in managing NCDs. It is a community with strong local operations and capable leaders who can drive the development of chronic disease care.

Participants of the study

The key informants in this study were selected by purposive sampling. There were 30 patients with NCDs (coded A1–A30), and 15 healthcare personnel working in chronic disease clinics at hospitals and local healthcare centers, including one physician, seven registered nurses, one patient care assistant, three public health academics, one nutritionist, one Thai traditional medicine practitioner, and one physical therapist (coded B1–B15). Inclusion and exclusion criteria were applied to both groups of participants as follows.

Participants were recruited from patients registered in the chronic disease clinic of the health station who volunteered to take part in all research activities. The 15 healthcare personnel included VHVs and community representatives who serve as the primary link between the health station and the community, as well as clinical and allied health staff. VHVs participated in both focus group discussions and the model development phase, contributing community perspectives that shaped the community participation component of the model. The sample size of 30 patients was determined through purposive sampling based on the defined inclusion and exclusion criteria, selecting individuals with clear willingness to participate in all research activities throughout the study period, consistent with R&D developmental research practice (Richey & Klein, 2007).

1. Patients with diabetes: The inclusion criteria for the group were patients (1) with type 2 diabetes registered in the chronic disease clinic and under clinical management, (2) aged 35 years or older with no upper age limit, consistent with the national NCD screening threshold for adults (Ministry of Public Health, 2023), (3) mentally alert and able to communicate with the researchers, (4) able to read and write in Thai, and (5) provides consent and can take part in all research activities throughout the study.

The exclusion criteria for diabetic patients included the following four conditions: (1) Patients with type 2 diabetes were excluded when they had severe comorbidities or medical conditions unsuitable for strict behavioral modification, such as chronic kidney disease with eGFR < 30 mL/min/1.732 m², severe or unstable heart failure, or ischemic heart disease within the past 6 months; (2) Patients were excluded if diagnosed with diabetes before age 30 without clearly showing characteristics of type 2 diabetes or if they had a family history of diabetes; (3) The adult diabetic patients who may have Latent Autoimmune Diabetes in Adults (LADA) were also not selected; and (4) Pregnant diabetic patients were excluded from the study.

2. Patients with hypertension: Inclusion criteria for patients with hypertension included patients diagnosed with hypertension and registered in the chronic disease clinic. Further inclusion criteria for the group were (1) documented diagnosis of hypertension under clinical management, (2) aged 35 years or older with no upper age limit, consistent with the diabetes

group, (3) mentally alert and able to communicate with the researcher, (4) able to read and write in Thai, and (5) provides consent and can participate in all research activities.

There were six exclusion criteria for patients with hypertension: (1) Patients were excluded from the study when they had severe comorbidities or medical conditions unsuitable for strict behavioral modification, such as chronic kidney disease with $\text{eGFR} < 30 \text{ mL/min/1.732 m}^2$, severe or unstable heart failure, or ischemic heart disease within the past 6 months, (2) patients with pregnancy-induced hypertension could not take part in the study, (3) patients with secondary hypertension, e.g., due to endocrine disorders or kidney disease, were also excluded from the study, (4) patients who could not control blood pressure despite being treated with at least three types of medication were not selected, (5) patients with severe complications from hypertension, such as stroke or myocardial infarction, were excluded, and (6) patients with severe psychiatric disorders were not chosen.

3. Healthcare personnel working in chronic disease clinics at hospitals and local health centers: The inclusion criteria included hospital staff who had been working in chronic disease clinics for at least 6 months and provided consent to take part in this research process.

Exclusion criteria were applied to informants who were unable to participate during the research period.

Research procedures

The development of the integrated community-based model for chronic disease care in the lower southern region of Thailand was divided into three phases: Phase 1 for situation investigation, Phase 2 for model development and refinement, and Phase 3 for model implementation and evaluation. Each phase is described in detail below. Iterative refinement occurred within Phase 2 through three sequential steps: drafting the model from Phase 1 findings, refining it via a 5-hour multidisciplinary focus group, and validating it through the Appraisal of Guidelines for Research and Evaluation II (AGREE II) expert evaluation. This intra-phase iteration is consistent with R&D designs in which developmental cycles may occur within a single overarching phase (Richey & Klein, 2007).

Phase 1: Situation Investigation (Research 1; R1) involved studying the situation and care practices for patients with chronic diseases by collecting data from NCD reports from community hospitals, local health centers, and the Health Data Center (HDC) between 2021–2025 (B.E. 2564–2568). Additionally, two focus group discussions were conducted. The first focus group comprised 15 multidisciplinary professionals to gather key issues for model development. The second focus group was 30 patients with NCDs, who voluntarily participated in the discussion at the Chaloem Phra Kiat 60th Anniversary Health Station, Ban Khuan Pom, Khok Sai Subdistrict, Phatthalung Province. Each focus group event lasted three hours and continued until data saturation was reached (Baker & Edwards, 2012).

Data source triangulation was employed across three sources: (1) secondary NCD epidemiological data from the HDC (2021–2025); (2) key issues identified by the 15 healthcare professionals in Focus Group 1; and (3) lived experiences of the 30 chronic disease patients in Focus Group 2. Findings from each source were cross-verified in a data extraction table and linked to specific study objectives, ensuring that the situational investigation addressed the research questions comprehensively.

The research instruments used in Phase 1 were data extraction forms, voice recorders, notebooks, and guiding questions for focus group discussions.

Data analysis

The data from the review were analyzed based on predetermined themes. The key findings were summarized in a data extraction table. The data from focus group discussions were considered qualitative and analyzed using content analysis. Codes were assigned to meaning units, grouped into subcategories, and abstracted into the categories that constitute the model.

Phase 2: Model development and refinement (Development 1; D1) involved the data from Phase 1, which included the secondary data, the key issues from focus group discussions, and the guidelines for managing type 2 diabetes to achieve a stable phase through strict behavioral modification, as recommended by the Royal College of Family Physicians of Thailand (2022), along with the concept of the “7-color traffic ping-pong” model (Wanchai et al., 2023), were used to draft the content of the care model for patients with NCDs that aligns with the local context to achieve stable disease management phase. The model included service delivery at chronic disease clinics, home visits, follow-up and counseling on diet and exercise, and health status assessment. After that, a 5-hour focus group discussion was conducted with healthcare professionals working in chronic disease clinics at hospitals, including a physician, specialized nurses in diabetes care, and multidisciplinary team members, to provide feedback on the model and its components to help the patients reach a stable phase.

Afterward, three experts reviewed the model and its components using the AGREE II instrument. Then they implemented it with 30 patients with type 2 diabetes who consented to participate in the study. The 7-color traffic ping-pong model is a Thai health communication tool that classifies patients into seven color-coded risk categories based on blood glucose and blood pressure levels, ranging from white (normal) through green, yellow, and orange to red, dark red, and black (severe complications). Each color corresponds to specific self-care recommendations and follow-up intervals, enabling patients to visually monitor their own risk status and health personnel to tailor counseling accordingly.

The model’s distinctive features include: (1) cultural embeddedness—integration of locally meaningful community activities such as community prayer groups, home visits by local clubs, and community health activities as structured social cohesion and physical exercise vehicles; (2) a three-tiered participation structure (individual, interpersonal, community) operationalized through locally validated activities specific to southern Thai rural communities; and (3) an adapted 7-color traffic ping-pong self-monitoring system as a patient-facing behavioral tracking tool. These features distinguish the model from generic community-based care frameworks such as the Chronic Care Model, which do not incorporate community-level cultural practices or locally grounded participation mechanisms.

The research instrument in Phase 2 was the AGREE II tool by Brouwers et al. (2010).

Data analysis

The model and its components for chronic disease care, aimed at achieving a stable operation, were submitted to three experts (Lynn, 1986), including a physician, a specialized nurse in diabetes care, and an academic for health system development and quality analysis. According to the guidelines for research and evaluation, scores were calculated separately for

each domain and then combined using the following formula: (the total score for each domain - minimum possible score for that domain) $\times$ 100

The resulting value had an upper bound of 100 and was used to determine whether the guideline was recommended for use. The interpretation of scores in each domain was used to assess the quality of the guideline, along with an analysis of content consistency and content validity of the model and its components.

Phase 3: Model implementation and evaluation (Development 2; D2) involved a one-group pretest-posttest design that was employed to study a single group of participants before and after the implementation of the developed model. The study involved 30 patients with non-communicable chronic diseases who were screened using the inclusion/exclusion criteria and gave consent to participate. It underwent strict behavioral modification to achieve a stable phase over a period of three months, as determined by the guidelines of the Royal College of Family Physicians of Thailand (2022). The evaluation focused on comparing pre-intervention and post-intervention averages of hemoglobin A1C (HbA1C) levels and blood pressure levels. HbA1C levels were measured from venous blood samples analyzed at the community hospital laboratory using standardized glycated hemoglobin assay methods. Blood pressure was measured using a validated digital sphygmomanometer after the participant had rested for at least five minutes in a seated position, with two readings taken and the average recorded, at baseline prior to model implementation and at three months post-intervention.

Data Analysis

The collected data were analyzed using SPSS. General information was analyzed using descriptive statistics, including frequency, percentage, mean, and standard deviation. Pre- and post-intervention differences in HbA1C and blood pressure were analyzed using the paired samples t-test at a significance level of .05. Given a sample size of $n = 30$, parametric analysis was considered appropriate based on the robustness of the paired t-test under the Central Limit Theorem (Field, 2018).

Ethical consideration

This study was reviewed and approved by the Ethics Committee of Sirindhorn College of Public Health, Yala Province, under approval number SCPHYLIRB-2568/359, dated May 23, 2025.

Results

The integrated community-based model for chronic disease care in the lower southern region of Thailand can be described in three parts: (1) general information from the key informants involved in the chronic disease management is curated, (2) the integrated community-based model for chronic disease care is designed and implemented, and (3) the evaluation is carried out for HbA1C levels and blood pressure three months after implementation. The details are as follows.

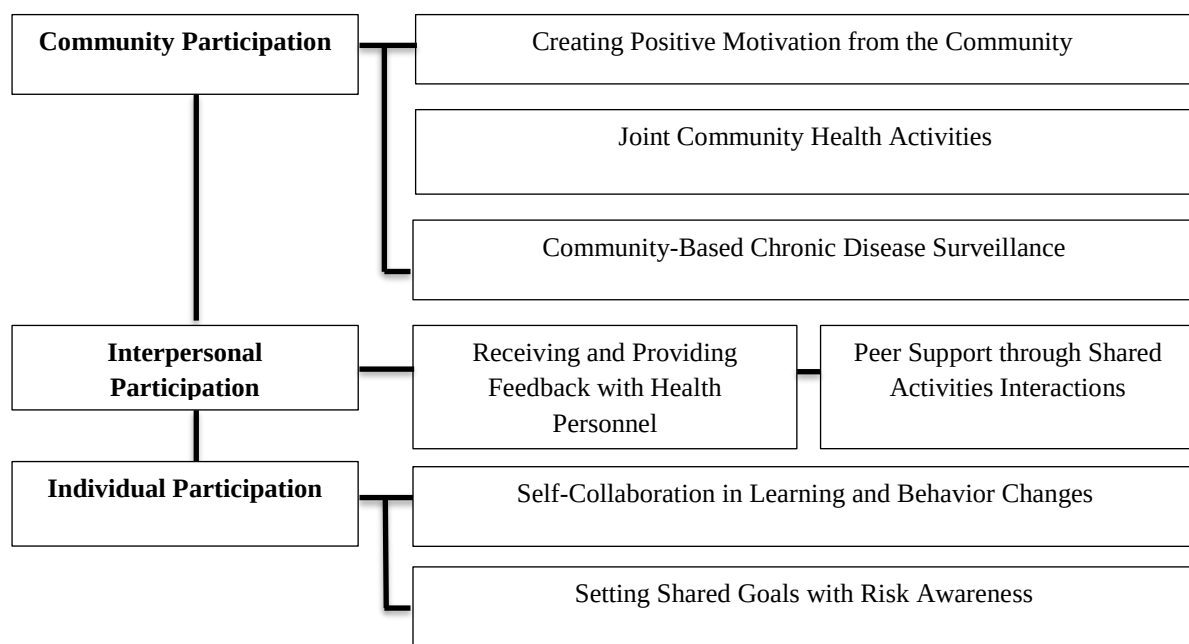
Part 1: General information was collected from key informants in chronic disease management in the lower southern peninsular region of Thailand, including two groups.

In the first group, the majority among the 30 patients with NCDs were female (86.67%), in the late working age group or early elderly aged 50–59 years and aged 60–69 years (36.67% for both age ranges); the overall age range was 44–79 years (mean 59.7 years). All 30 participants were registered in the chronic disease clinic with a diagnosis of type 2 diabetes; of these, 23 (76.67%) had diabetes alone and 7 (23.33%) had diabetes with comorbid hypertension. In the second group, the majority of 15 healthcare personnel working in chronic disease clinics at hospitals and local health centers were female (86.67%) and aged 40–49 years (73.33%). Patients were coded A1–A30 and healthcare personnel B1–B15 for reporting qualitative findings.

Part 2: The integrated community-based model for chronic disease care in the lower southern peninsular region of Thailand (Figure 1) can be described as follows.

The integrated community-based model for chronic disease care in the lower southern region of Thailand was a self-management model aligned with local cultural practices and contextual realities, emphasizing support from individuals, peers, and the community in managing chronic disease transitions. The model consists of three key components: (1) individual participation, (2) interpersonal participation, and (3) community participation in chronic disease management, as follows.

Figure 1: Integrated Community-Based Model for Chronic Disease Care in the Lower Southern Peninsular Thailand



Note: The three categories and their sub-categories were derived inductively through content analysis of focus group data from patients (n = 30) and healthcare personnel (n = 15). The categories are cumulative: individual participation reinforces interpersonal participation, which in turn reinforces community participation.

(1) Individual participation refers to chronic disease management in which the patient has to take the initiative and set their own life and health goals. This involves understanding their internal needs and adjusting their behavior to achieve their desired health conditions. There were two points to this participation.

Point 1: Setting shared goals with risk awareness is a method where each patient sets their own life and health goals, driven by internal motivation and awareness of the potential risks associated with chronic illness. This awareness acts as a driving force for behavior change. Two informants expressed,

We want to live with our children and grandchildren for a long time, so we have to do it, and we don't want to end up with kidney failure like that.
(Patient A4)

I'm not afraid of dying. I'm afraid of being bedridden.
(Patient A6)

Point 2: self-collaboration in learning and behavior change refers to an individual's internal desire to learn and participate in behavior modification, and focuses on both dietary habits and physical activity within the patient's own context. One informant said,

When I run, I know I don't need to run too fast. On days I don't go out to tap rubber trees, I go running. But if I do go tapping, I leave at 5:30 a.m. I don't tap every day – every other day, and sometimes every two days. I start it at 4 a.m., finish it by 6 a.m., and instead of going home, I wait at the plantation to collect the latex.
(Patient A1)

At the same time, the motivation for self-regulation arose from the intention of being selected to participate in the program. Being part of a group made patients feel chosen and valued, which became a motivating factor for better self-care. One informant stated,

Being selected to join the group probably has an effect. Like, once I'm in the group, I feel that I need to behave well, be a good role model, and improve myself. That's my mindset – if I'm chosen to be in the group. Compared to the general public, they just come to pick up their medicine and leave. It feels less important than being someone who was chosen.
(Healthcare Personnel B1)

(2) Interpersonal participation referred to chronic disease management that built connections between individuals and those close to them – people who shared experiences and attitudes that supported chronic disease management. There are two points to this participation.

Point 1: Peer support through shared activities and interactions between close individuals, including information sharing, exchanging experiences, and offering encouragement. These interactions help motivate self-regulation. Participation in a group made patients feel chosen and valued, which encouraged better self-care. One informant said,

I feel motivated to make changes. When I see a friend with good blood sugar levels, I ask what they eat or do to keep it that way. We ask each other sometimes.
(Patient A1)

Point 2: Receiving and providing feedback with health personnel refers to patients taking an active role in monitoring and tracking their own health status and communicating health

outcomes with the healthcare team. They also shared the knowledge they gained with their families. One informant expressed,

The doctor said it's getting better – my blood pressure is spot on every time I measure it. I don't have to take multiple readings anymore. One reading is accurate enough.

(Patient A10)

Another informant said,

A LINE group was created to share information and track exercise. Some patients exercise regularly and consistently. After exercising, they take a photo and send it to the LINE group. Patients also measure their own blood pressure and send the results to the group so the staff can see that it's really going down.

(Healthcare Personnel B3)

(3) Community participation refers to the mechanisms of chronic disease surveillance that occur within the community, aiming to create integrated care that is connected with health service units. At the same time, the community serves as a space for acceptance and fosters positive motivation among its members. Community participation consists of three points.

Point 1: Community-based chronic disease surveillance refers to the community's role in monitoring changes in chronic disease at the household level to ensure continuity of care. Local health centers remain closely connected to the community and are located within the area, allowing for care to be provided near patients' homes. One informant expressed,

They provide good service. I mostly go to the health station, and never to the hospital because my blood sugar is good, so the doctor doesn't refer me. They come to do annual blood tests – checking cholesterol and kidney function.

(Patient A15)

Point 2: creating positive motivation from the community and fostering acceptance among patients and community members. This serves as a mechanism connecting health service units and the community by using patients' success stories to inspire others. One informant stated,

It's really good to have joined this training program. I've learned things that helped improve my blood sugar and blood pressure. Over the three-month period, my blood sugar never even reached 100.

(Patient A1)

Point 3: Joint community health activities refer to the organization of community-based activities that provide opportunities for patients and the elderly to engage in physical exercise, such as Baslop dancing, or to care for one another within their groups in the community, such as in prayer groups, at religious offerings, and at home visits by various local clubs established from the collaboration of diverse community members. One informant said,

After starting this project, there was another one related to Baslop dancing. Now I can dance Baslop, which I couldn't do before because my knees hurt so much. I think exercising is really good. I don't have to do it

every day or every week, but at least three times a week for about 30 minutes is still good.

(Patient A23)

Part 3: The evaluation of average hemoglobin A1C (HbA1C) and blood pressure levels was conducted both before and after implementing the integrated community-based participation model for chronic disease care.

The post-test was done three months after implementation. It was found that after receiving care under the developed model, the average HbA1C level of the patients with chronic diseases had significantly decreased by 0.10 (95% CI [0.04–0.16]), and their average systolic blood pressure had significantly decreased by 4.70 (95% CI [2.32–7.07]), as shown in Table 1.

Table 1: Comparison of Mean HbA1C and Blood Pressure Levels Before and Three Months After the Intervention

Variable	Before		After		Mean Difference	95%CI	t	df	p-value
	Mean	SD	Mean	SD					
HbA1C	7.12	0.91	7.02	0.93	0.10	0.04– 0.16	3.48	29	< .01*
Systolic Blood Pressure	125.23	11.50	120.53	9.28	4.70	2.32–7.07	4.05	29	< .01*
Diastolic Blood Pressure	75.10	11.02	74.13	6.57	0.96	-3.38–5.31	0.45	29	.653

Note: * $p < .05$; HbA1C = glycated hemoglobin; SD = standard deviation; CI = confidence interval; df = degrees of freedom.

Discussion

An Integrated Community-Based Model for Chronic Disease Care in a Community in the Lower Southern Peninsular Thailand emerged from the region’s cultural foundation of self-care, combined with peer and community support in managing chronic disease transitions. The model consisted of three key components: (1) individual participation, (2) interpersonal participation, and (3) community participation. This chronic disease care aligned with the Social Determinants of Health (SDOH) framework, which emphasizes reducing chronic diseases and addresses the conditions in which people are born, grow, work, live, and age—rather than relying solely on medical care. It also includes forces and surrounding social systems, such as economic policies, social systems, racial discrimination, climate change, and political structures. For this reason, investing in prevention alongside treatment, from both a lifestyle perspective and the SDOH perspective (Calloway et al., 2019; Hacker, 2024), is essential.

When examining each component and point—starting with individual participation—it was clear that patients had to take the initiative and set their own life and health goals. This involved learning about their internal needs, which significantly influenced long-term behavior change. Lang et al. (2025) found that time perspective was associated with changes in behavior and motivation, particularly in valuing the future. This perspective determined whether individuals were willing to invest in present behaviors to achieve long-term

outcomes such as good health, longevity, or spending time with family and grandchildren. Current discomforts or limitations, such as dietary restrictions or exercise, were viewed as necessary investments to reach those goals. Therefore, the model development for chronic disease management must be patient-centered in design (Eassey et al., 2020; Salulmanon & Khunnikom, 2025). The implementation approach should be diverse, encompassing individual, interpersonal, and community levels.

Moreover, the government should implement policies associated with this integrated community-based model in order to ensure access to nutritious food and opportunities for physical activity. These activities should be encouraged and emphasized as part of everyday life (Bae & Park, 2025). Unlike the Chronic Care Model, which centers on healthcare delivery systems and provider-patient interactions (Xu et al., 2025), or self-management support programs that focus primarily on individual behavior change (Lorig & Holman, 2003; Siddiqui et al., 2024), the proposed model distinctively operates across three interconnected levels—individual, interpersonal, and community—grounded in the lived experiences and cultural practices of a southern Thai rural community. This community-embedded approach addresses the gaps identified in existing frameworks by incorporating community-level social processes, local surveillance mechanisms, and culturally meaningful activities as core model components, consistent with calls for context-specific chronic disease management in low- and middle-income settings (Haldane et al., 2019; Hassan et al., 2025).

Meanwhile, interpersonal participation—involving close individuals with supportive experiences and attitudes toward chronic disease management—highlights the importance of social support from family, friends, and others, including healthcare providers. This support enhances self-management and encourages proactive health behaviors, helping patients achieve their desired health outcomes more effectively (Lin et al., 2025; Luo et al., 2024). Additionally, the context of chronic disease care in primary healthcare settings, located within the community and supported by multidisciplinary teams, ensured comprehensive care, improved disease monitoring, better treatment adherence, and effective patient education (Saint-Pierre et al., 2018). Tandan et al. (2024) found that diverse multidisciplinary teams complemented one another in achieving shared objectives, a process that was crucial to improving clinical outcomes for patients. Meanwhile, community engagement served as a space for creating shared activities, fostering acceptance, and generating positive motivation—not only among patients but also by shaping a community environment that offered healthier choices for everyone (Buettner & Skemp, 2016). Adulyarat et al. (2016), on culturally-based maternal care among Muslim mothers in rural communities in southern Thailand, found that community collaboration and networks had to foster shared goals along with clearly defined roles and responsibilities.

Additionally, health personnel had to understand the community's culture, which often involved distinct ways of life. Communities and healthcare personnel also had to adapt to changes in digital healthcare technology, which required co-designed solutions that fit the local context (Arora et al., 2025). Furthermore, when communities took an active role in health surveillance, they helped mitigate health risks related to resource constraints, budgets, and healthcare workforce shortages (Iyer et al., 2025). Although the results showed a slight decrease in diastolic blood pressure, this change was not statistically significant. This may be due to physiological differences, where behavioral change tends to affect systolic more than diastolic blood pressure, particularly because arterial stiffness increases with age (AlGhatrif & Lakatta, 2015). Additionally, the limited duration and intensity of the model may have influenced the outcomes.

With respect to glycemic outcomes, the HbA1C reduction of 0.10 (from 7.12 to 7.02), while modest in absolute terms, was statistically significant ($p < .01$) and clinically meaningful for a 3-month behavioral-only intervention without medication adjustment. Behavioral chronic disease interventions typically require 6–12 months to produce larger glycemic changes. Furthermore, participants entered with relatively well-controlled baseline HbA1C (mean 7.12, near the therapeutic target), which limited the ceiling for detectable improvement – consistent with regression to the mean in populations near the target range. The 3-month timeframe was a constraint of the R&D design and is further discussed in the Limitations section. However, the significant improvements in HbA1C and systolic blood pressure supported the effectiveness of mechanisms such as self-management enhancement and community-based social support. These reflected the importance of patient, community, and stakeholder engagement in chronic disease care, contributing to sustainability and efficiency (Moore et al., 2025; Pongtriang et al., 2024).

Several limitations warrant consideration. The single-community design in Phatthalung Province restricts geographic generalizability, while purposive sampling may introduce selection bias toward highly motivated participants. The absence of a control group precludes causal attribution, as concurrent contextual factors may have contributed to observed improvements. The three-month evaluation period limits assessment of long-term sustainability, and the restricted eligibility criteria (aged 40–60 years, BMI > 25 kg/m²) may not represent the broader NCD population. Future research should employ randomized controlled designs with longer follow-up periods and multi-site implementation to strengthen the evidence base.

Conclusion

The integrated community-based model for chronic disease care in the lower southern peninsular Thailand consisted of three main components. First, individual participation included two points: setting shared goals, risk awareness, and self-collaboration in learning and behavior change. Second, interpersonal participation was divided into two points: peer support through shared activities, and receiving and providing feedback with health personnel. Finally, community participation contained three points: creating positive motivation from the community and fostering acceptance among patients and community members, joint community health activities, and community-based chronic disease surveillance. The evaluation results showed statistically significant improvements in average HbA1C and blood pressure three months after implementing the integrated community-based model, with decreases in HbA1C by 0.10 (95% CI [0.04–0.16]) and systolic blood pressure by 4.70 (95% CI [2.32–7.07]). Therefore, patient participation was achieved through self-management and social support in the community so that the approach can be effectively integrated within the community context.

These findings carry several practical implications. At the service level, chronic disease clinics in similar rural settings can adopt the three-tiered participation structure by integrating peer support groups and community-based surveillance into existing NCD services without additional infrastructure. At the policy level, primary care networks should formally recognize VHVs and community groups as partners in chronic disease management rather than as auxiliary personnel. Future implementation should incorporate longer follow-up periods and comparison groups to establish the attributable effects of the treatment model temporally.

References

- Adulyarat, M., Parisunyakul, S., Srisuphan, W., & Senaratana, W. (2016). Development of a culturally-based care model for Muslim mothers in a rural community in southern Thailand. *Journal of Population and Social Studies*, 24(2), 49–65. <https://doi.org/10.14456/jpss.2016.5>
- AlGhatrif, M., & Lakatta, E. G. (2015). The conundrum of arterial stiffness, elevated blood pressure, and aging. *Current Hypertension Reports*, 17(2), Article 12. <https://doi.org/10.1007/s11906-014-0523-z>
- Arora, M., Chopra, M., Shrivastav, R., Venkateshmurthy, N. S., Oli, N., Rao, N., Gupta, M., Cassambai, S., Highton, P., Vaidya, A., Singh, K., Crompton, A., Mohan, S., Khunti, K., & Prabhakaran, D. (2025). Co-creating community engagement and involvement strategies: Understanding challenges and needs of people living with multiple long-term conditions and stakeholders' perspectives in India and Nepal. *BMJ Global Health*, 10(9), Article e018968. <https://doi.org/10.1136/bmjgh-2025-018968>
- Bae, S., & Park, H. (2025). Physical activity and eating habits are related to chronic disease in the Basic Livelihood Security Program. *Nutrients*, 17(3), 462. <https://doi.org/10.3390/nu17030462>
- Baker, S. E., & Edwards, R. (2012). *How many qualitative interviews is enough?* [Discussion paper]. National Centre for Research Methods. <https://eprints.ncrm.ac.uk/id/eprint/2273/>
- Boocha, P., & Seangduang, N. (2022). Research and development: Process and application. *Journal of Phrae Public Health for Development*, 1(1), 77–89. <https://www.thaidj.org/index.php/jpphd/article/view/11645>
- Brouwers, M. C., Kho, M. E., Browman, G. P., Burgers, J. S., Cluzeau, F., Feder, G., Fervers, B., Graham, I. D., Grimshaw, J., Hanna, S. E., Littlejohns, P., Makarski, J., Zitzelsberger, L., & AGREE Next Steps Consortium. (2010). AGREE II: Advancing guideline development, reporting and evaluation in health care. *Canadian Medical Association Journal (CMAJ)*, 182(18), E839–E842. <https://doi.org/10.1503/cmaj.090449>
- Buakaew, P., Rukbanglaem, C., & Nawsuwan, K. (2024). Phonlap kan chatkan rai korani to khwamru phruettikam lae radap namtan sasom nai lueat phupuai bao wan chanit thi 2 thi khuapkhum radap namtan mai dai, Rongphayaban Pak Phayun, Changwat Phatthalung [Case management outcomes on knowledge, behaviors, and glycated hemoglobin level among patients with uncontrolled type 2 diabetes, Pakphayun Hospital, Phatthalung Province]. *Journal of Public Health and Innovation*, 4(2), 89–101. <https://he01.tci-thaijo.org/index.php/J-PHIN/article/view/272609>
- Buettner, D., & Skemp, S. (2016). Blue Zones: Lessons from the world's longest lived. *American Journal of Lifestyle Medicine*, 10(5), 318–321. <https://doi.org/10.1177/1559827616637066>
- Calloway, E. E., Parks, C. A., Bowen, D. J., & Yaroch, A. L. (2019). Environmental, social, and economic factors related to the intersection of food security, dietary quality, and obesity: An introduction to a special issue of the *Translational Behavioral Medicine* journal. *Translational Behavioral Medicine*, 9(5), 823–826. <https://doi.org/10.1093/tbm/ibz097>
- Chaimay, B., Woradet, S., Runsaeng, R., Choomai, T., & Sangthong, J. (2016). Khwam chuk khong kan khuapkhum khwam dan lohit nai phupuai rok khwam dan lohit sung Changwat Phatthalung [Prevalence of controllable blood pressure among hypertensive patients in Phatthalung Province]. *Journal of Southern Technology*, 9(1), 103–110. https://so04.tci-thaijo.org/index.php/journal_sct/article/view/82445
- Eassey, D., Reddel, H. K., Ryan, K., & Smith, L. (2020). 'It is like learning how to live all over again': A systematic review of people's experiences of living with a chronic illness from a self-determination theory perspective. *Health Psychology and Behavioral Medicine*, 8(1), 270–291. <https://doi.org/10.1080/21642850.2020.1794879>
- Field, A. (2018). *Discovering statistics using IBM SPSS Statistics* (5th ed.). SAGE Publications.
- Geng, X., Liang, F., & Wang, P. (2026). The global burden of non-communicable diseases attributable to behavioral risk factors and its trends from 1990 to 2021. *Journal of Advanced Research*, 84, 765–774. <https://doi.org/10.1016/j.jare.2025.09.022>
- Hacker, K. (2024). The burden of chronic disease. *Mayo Clinic Proceedings: Innovations, Quality & Outcomes*, 8(1), 112–119. <https://doi.org/10.1016/j.mayocpiqo.2023.08.005>
- Haldane, V., Chuah, F. L. H., Srivastava, A., Singh, S. R., Koh, G. C. H., Seng, C. K., & Legido-Quigley, H. (2019). Community participation in health services development, implementation, and

- evaluation: A systematic review of empowerment, health, community, and process outcomes. *PLOS ONE*, 14(5), Article e0216112. <https://doi.org/10.1371/journal.pone.0216112>
- Hassan, S., Kagwanja, N., Diallo, B., Oyando, R., Perel, P., Etyang, A., Tsofa, B., Nolte, E., & IHCoR-Africa Collaborators. (2025). Implementing community-based interventions for the management of chronic conditions in low- and middle-income countries: A scoping review of qualitative evidence. *PLOS Global Public Health*, 5(7), Article e0004860. <https://doi.org/10.1371/journal.pgph.0004860>
- Huang, Y., Li, S., Lu, X., Chen, W., & Zhang, Y. (2024). The effect of self-management on patients with chronic diseases: A systematic review and meta-analysis. *Healthcare*, 12(21), Article 2151. <https://doi.org/10.3390/healthcare12212151>
- Iyer, A., Bookstein, A., Kim, G., & Po, J. (2025). Community-based solutions for chronic disease management during natural disasters: A systematic review. *PLOS Global Public Health*, 5(8), Article e0004997. <https://doi.org/10.1371/journal.pgph.0004997>
- Lahpunsu, K., Cheloh, N., & Suvarnabhumi, K. (2024). Phon khong prokraem kan chatkan ton-eng ruam kap kan mi suan ruam khong khropkhrua lae asa samak satharanasuk pracham muban to phruettikam sukkhaphap lae radap khwam dan lohit khong phupuai Muslim rok khwam dan lohit sung thi khuapkhum khwam dan lohit mai dai [Effects of self-management with family and village health volunteer participation program on health behaviors and blood pressure levels among Muslim patients with uncontrolled hypertension]. *Journal of Thailand Nursing and Midwifery Council*, 39(2), 269–285. <https://doi.org/10.60099/jtnmc.v39i02.267475>
- Lang, X., Huang, S., & Xiao, Y. (2025). Time perspective and health behaviors in chronic disease patients: A chain mediation model of illness perception via temporal self-regulation theory. *Behavioral Sciences*, 15(8), Article 996. <https://doi.org/10.3390/bs15080996>
- Lin, C., Zhu, X., Wang, X., Wang, L., Wu, Y., Hu, X., Wen, J., & Cong, L. (2025). The impact of perceived social support on chronic disease self-management among older inpatients in China: The chain-mediating roles of psychological resilience and health empowerment. *BMC Geriatrics*, 25, Article 284. <https://doi.org/10.1186/s12877-025-05902-z>
- Lorig, K. R., & Holman, H. (2003). Self-management education: History, definition, outcomes, and mechanisms. *Annals of Behavioral Medicine*, 26(1), 1–7. https://doi.org/10.1207/S15324796ABM2601_01
- Luo, Z., Li, K., Chen, A., Qiu, Y., Yang, X., Lin, Z., Liu, J., Wu, Y., & Chen, J. (2024). The influence of family health on self-efficacy in patients with chronic diseases: The mediating role of perceived social support and the moderating role of health literacy. *BMC Public Health*, 24(1), Article 3398. <https://doi.org/10.1186/s12889-024-20906-x>
- Lynn, M. R. (1986). Determination and quantification of content validity. *Nursing Research*, 35(6), 382–385. <https://doi.org/10.1097/00006199-198611000-00017>
- Moore, T. R., Hennessy, E., Chusan, Y. C., Ashcraft, L. E., & Economos, C. D. (2025). Considerations for using participatory systems modeling as a tool for implementation mapping in chronic disease prevention. *Annals of Epidemiology*, 101, 42–51. <https://doi.org/10.1016/j.annepidem.2024.12.002>
- Department of Disease Control, Ministry of Public Health. (2023). *Phaen patibatkan dan kan pongkan lae khuapkhum rok mai titto khong Prathet Thai* (Pho.So. 2566–2570) [National plan for the prevention and control of non-communicable diseases (2023–2027), Thailand]. <https://ddc.moph.go.th/uploads/publish/1625920241004031950.pdf>
- Pongtriang, P., Rakhab, A., Soontorn, T., & Makyod, W. (2024). Feasibility and acceptability of a chronic disease patient-caregiver network of follow-up model for local caregivers, Phipun, Nakhon Si Thammarat Province: A qualitative study. *Princess of Naradhiwas University Journal*, 16(2), 331–348. <https://li01.tci-thaijo.org/index.php/pnujr/article/view/261599>
- Rahelić, V., Perković, T., Romić, L., Perković, P., Klobučar, S., Pavić, E., & Rahelić, D. (2024). The role of behavioral factors on chronic diseases – Practice and knowledge gaps. *Healthcare*, 12(24), Article 2520. <https://doi.org/10.3390/healthcare12242520>
- Richey, R. C., & Klein, J. D. (2007). *Design and development research: Methods, strategies, and issues*. Lawrence Erlbaum Associates.
- Rukleng, S. (2017). Kan chai ya lai khanan lae kan khuapkhum radap khwam dan lohit khong phupuai khwam dan lohit sung, Changwat Phatthalung [Polypharmacy and blood pressure control among hypertensive patients in Phatthalung Province]. *The Southern College Network Journal of Nursing and Public Health*, 4(2), 77–93. <https://he01.tci-thaijo.org/index.php/scnet/article/view/92831>

- Saint-Pierre, C., Herskovic, V., & Sepúlveda, M. (2018). Multidisciplinary collaboration in primary care: A systematic review. *Family Practice*, 35(2), 132–141. <https://doi.org/10.1093/fampra/cmz085>
- Sakulmanon, T., & Khunnikom, P. (2025). Kan phatthana rupbaep kan dulae phupuai rok bao wan chanit thi 2 hai khao su raya sangop: Korani sueksa rongphayaban chumchon haeng nueng nai Changwat Krabi [Developing a care model for achieving remission in type 2 diabetes patients: A case study of community hospital in Krabi Province]. *Health Science Journal of Thailand*, 7(1), 30–39. <https://doi.org/10.55164/hsjt.v7i1.269532>
- Siddiqui, F., Hewitt, C., Jennings, H., Coales, K., Mazhar, L., Boeckmann, M., & Siddiqui, N. (2024). Self-management of chronic, non-communicable diseases in South Asian settings: A systematic mixed-studies review. *PLOS Global Public Health*, 4(1), Article e0001668. <https://doi.org/10.1371/journal.pgph.0001668>
- Tandan, M., Dunlea, S., Cullen, W., & Bury, G. (2024). Teamwork and its impact on chronic disease clinical outcomes in primary care: A systematic review and meta-analysis. *Public Health*, 229, 88–115. <https://doi.org/10.1016/j.puhe.2024.01.019>
- The Royal College of Family Physicians of Thailand. (2022, November). *Naeothang kan dulae phupuai bao wan chanit thi 2 hai khao su rok bao wan raya sangop duai kan praplian phruettikam yang khem-nguat samrap bukkhalakon thang kanphaet lae satharanasuk* [Diabetes remission in type 2 diabetes with intensive lifestyle intervention guide for healthcare providers]. https://thaigpfm.org/wp-content/uploads/2025/05/Diabetes-remission-in-type-2_web.pdf
- Tuangratananon, T., Julchoo, S., Phaiyarom, M., Panichkriangkrai, W., Pudpong, N., Patcharanarumol, W., & Tangcharoensathien, V. (2021). Healthcare providers' perspectives on integrating NCDs into primary healthcare in Thailand: A mixed method study. *Health Research Policy and Systems*, 19, Article 139. <https://doi.org/10.1186/s12961-021-00791-1>
- Virutsetazin, K., & Pandang, K. (2017). Wichai lae phatthana phuea kan sueksa [Research and development for education]. *Thammasat Medical Journal*, 17(3), 448–455. <https://doi.org/10.70933/2773-9465.2008>
- Wanchai, A., Srisaket, J., & Tienthavorn, V. (2023). Kan prayuk chai pingpong charachon chiwit 7 si nai kan fao rawang rok mai titto ruearang: Kan thopthuan khopkhet ngan wichai [Seven-color balls application in non-communicable diseases: A scoping review]. *Journal of Nursing and Health Science Research*, 15(2), Article e267915. <https://he01.tci-thaijo.org/index.php/unc/article/view/e267915>
- World Health Organization. (2025, September 25). *Noncommunicable diseases*. <https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases>
- Xu, H., Liu, M., Bai, Y., Yang, J., Liu, Y., Gao, X., Cieza, A., & Wu, J. (2025). Community-integrated noncommunicable disease service models: Lessons from China. *Journal of Global Health*, 15, Article 04296. <https://doi.org/10.7189/jogh.15.04296>
- Yokin, N., & Nawsuwan, K. (2023). Kan phatthana rupbaep kan dulae phupuai yang tonueang nai phupuai ruearang praphet tiang 3 lae tiang 4 khruetakhai Rongphayaban Somdet Phrayuppharat Tha Bo, Amphoe Tha Bo, Changwat Nong Khai [Development of continuous patient care model for chronic patients in Bed 3 and Bed 4, Somdej Phrayupparaj Tha Bo Hospital Network, Thabo District, Nongkhai Province]. *Journal of Boromarajonani College of Nursing, Surin*, 13(1), 47–60. <https://he01.tci-thaijo.org/index.php/bcnsurin/article/view/262665>