Stress and Mental Well-being in Post-COVID-19 among Community Dwellers in Central Thailand: A Mixed-Methods Study

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Abstract: Global mental health has been markedly disrupted following the COVID-19 pandemic, and Thailand has similarly faced considerable psychological consequences among its communities. This embedded mixed-methods study was conducted in Bueng Yi Tho sub-district, Pathum Thani province, central Thailand. For the quantitative strand, 115 community dwellers aged 18-59 years were recruited via proportionate stratified random sampling. They completed validated questionnaires measuring stress (Thai Perceived Stress Scale-10) and mental well-being (Scales of Psychological Well-Being). For the qualitative strand, 45 participants with moderate-to-high stress were purposively selected from the quantitative sample and participated in five focus group discussions. Qualitative data were analyzed using hermeneutic phenomenological analysis. The study is reported here following the STROBE and COREQ guidelines.

Quantitative findings revealed that the majority experienced moderate-to-high stress, with insufficient income, chronic disease, education level, occupation, and female sex as key sociodemographic predictors. Mental well-being was inversely correlated with stress levels. Qualitative findings yielded two themes: 1) stress experiences and management in the post-pandemic context; and 2) mental well-being promotion through hybrid support systems. Integration of findings confirmed that economic insecurity was the predominant stressor, with qualitative data revealing specific mechanisms such as the inability to support children's education and fear of economic collapse. Effective coping integrated traditional Thai practices (herbal medicine, Buddhist principles, sufficiency economy philosophy) with modern approaches. Community support through village health volunteers and structured activities buffered the impact of stress. These integrated findings provide evidence for developing culturally appropriate, multi-level mental health interventions for post-pandemic Thai communities.

Keywords: Lived experiences, Mixed methods, Sociodemographic predictors, Stress and mental well-being, Stress management

Received 7 November 2025; Revised 5 March 2026; Accepted 5 March 2026

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Introduction

In the aftermath of the pandemic, post-COVID-19 has emerged as a pressing global public health concern. According to the World Health Organization,

https://doi.org/10.60099/prijnr.2026.278322

this condition is characterized by signs and symptoms that develop following SARS-CoV-2 infection, persist for more than 12 weeks, and cannot be attributed to an alternative diagnosis.[1] Studies reveal 23-76% of COVID-19 survivors experience persistent symptoms, with fatigue (38%) and shortness of breath (32%) most common.[2] Psychiatric symptoms represent a main symptom cluster alongside physical symptoms and cognitive impairment.[3] Research indicates 22% of COVID-19 patients experience persistent mental health symptoms, particularly stress, anxiety, and depression.[2]

Healthcare workers show concerning patterns, with 22% reporting persistent mental health symptoms at least 12 weeks post-recovery.[4] A 6-month longitudinal study found that over 90% of COVID-19 survivors experienced mental health problems significantly affecting quality of life.[2] These symptoms often co-occur with insomnia (40%) and cognitive impairment (25%), affecting work performance and daily functioning.[2,4]

Economic instability resulting from widespread business shutdowns and rising unemployment during the pandemic placed considerable strain on mental health problems affected 57.9% of Thai undergraduate students,[5] depressive symptoms were present in 32.2%, and poor sleep quality was reported by 68.1%.[5] Significant risk factors included chronic diseases, family relationships, educational problems, and perceived COVID-19 impacts.[5]

Stress remains a critical mental health problem. A study of Thai COVID-19 survivors found a 4.5% prevalence of stress, predominantly mild to moderate.[6] Risk factors include being female, smoking, alcohol consumption, marital status, and a low income.[7] Exploring the associations between mental well-being and stress management is crucial, emphasizing mental health support services and early screening to prevent long-term impacts.[6]

Likewise, mental well-being in the post-COVID-19 era was severely impacted among children and youth worldwide, with significant increases in anxiety and depression rates being observed. Systematic research has revealed that mental health impacts vary depending on socioeconomic status, living conditions, and social factors.[8] Across multiple countries, children, youth, and their family units experienced worsening mental health outcomes, including elevated rates of fear, depressive symptoms, and anxiety, with impacts varying by socioeconomic, geographic, and occupational context.[8,9] Recent studies indicate that in the post-pandemic era, comprehensive proactive strategies are essential to restore and promote the well-being of children and youth, particularly in the dimensions of social connectedness, learning, and emotional resilience.[8]

Community-based support systems have emerged as critical protective factors during and after the pandemic. A longitudinal panel study across Austria and Italy revealed that social support networks and community connections significantly buffered psychological distress throughout pandemic phases, with individuals maintaining strong community ties demonstrating greater resilience.[10] Furthermore, qualitative evidence suggests that informal support networks--including neighbors, religious communities, and lay health workers—often provide more accessible and culturally congruent assistance than formal mental health services, particularly for marginalized populations with limited healthcare access.[11-13]

Therefore, managing stress and promoting mental well-being post-COVID-19 is essential for all ages, especially adolescents, adults, and seniors. Despite increased research on post-COVID-19 mental health in Thailand, significant gaps remain. Most studies have focused on hospitalized patients or specific populations, lacking research on general urban communities. While quantitative evidence exists on the prevalence of depression, anxiety, and stress, there

is limited understanding of stress management mechanisms appropriate to the Thai social context. Although socioeconomic risk factors have been identified, insufficient research exists on the complex effects of economic insecurity on mental health. This study addresses these gaps through an explanatory sequential mixed-methods design. Stress and mental well-being are studied together because they are strongly inversely correlated and represent complementary dimensions of psychological health: stress represents the burden of perceived demands, while mental well-being reflects positive psychological functioning. Addressing both constructs provides a more complete picture of post-pandemic mental health than either measure alone. The quantitative strand identifies which sociodemographic factors predict levels of stress and mental well-being. In contrast, the embedded qualitative strand illuminates the subjective mechanisms and culturally specific coping experiences among those most affected, enabling a contextually grounded understanding of post-pandemic mental health in this Thai urban community. The community of Bueng Yi Tho sub-district, Thanyaburi district, Pathum Thani province—an urban community of over 33,000 residents with diverse socioeconomic profiles, including government employees, wage workers, traders, and homemakers—provides a relevant and complex setting for exploring these issues, as its residents have experienced both the economic disruptions and social changes characteristic of post-pandemic urban Thailand.

Review of Literature and Theoretical Framework

Post-COVID-19 pandemic stress has emerged as a global mental health crisis. During the early pandemic, significant increases in psychiatric morbidity occurred, including stress, anxiety, depression, insomnia, and PTSD, with prevalence substantially higher than pre-pandemic levels.[14-16] During and after the pandemic, populations continued experiencing persistent fatigue, sleep problems, memory loss, and concentration difficulties alongside elevated psychological symptoms.[17-19] Two years post-pandemic onset, approximately 28% of participants met high-risk psychosis criteria, nearly double the first wave prevalence.[14] Individuals with post-pandemic insomnia reported significantly higher stress (mean = 21.42), anxiety (mean = 46.51), and depression (mean = 11.14) compared to those without insomnia (stress mean = 15.31, anxiety mean = 34.42, depression mean = 5.07; all $p < 0.001$), with over 25% reporting suicidal ideation.[20] Evidence shows psychological symptoms persist for years after quarantine, lasting several months to three years.[21]

This study draws upon two interrelated theoretical frameworks. The Transactional Model of Stress and Coping developed by Lazarus and Folkman[22] explains how individuals cognitively appraise stressors and select coping responses, differentiating between problem-focused coping (targeting the stressor directly) and emotion-focused coping (managing emotional distress). The model highlights that perceived stress arises from two sequential appraisal processes: primary appraisal, in which environmental demands are assessed as threatening, and secondary appraisal, in which available coping resources are evaluated. In parallel, Ryff and Keyes's Psychological Well-being Model[23] guides the measurement of mental well-being through six core dimensions: self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth. Together, these frameworks form an integrated conceptual foundation that addresses both the mechanisms of stress and the determinants of well-being, incorporating sociodemographic factors, cultural influences, and resource contexts relevant to post-pandemic recovery (**Figure 1**).

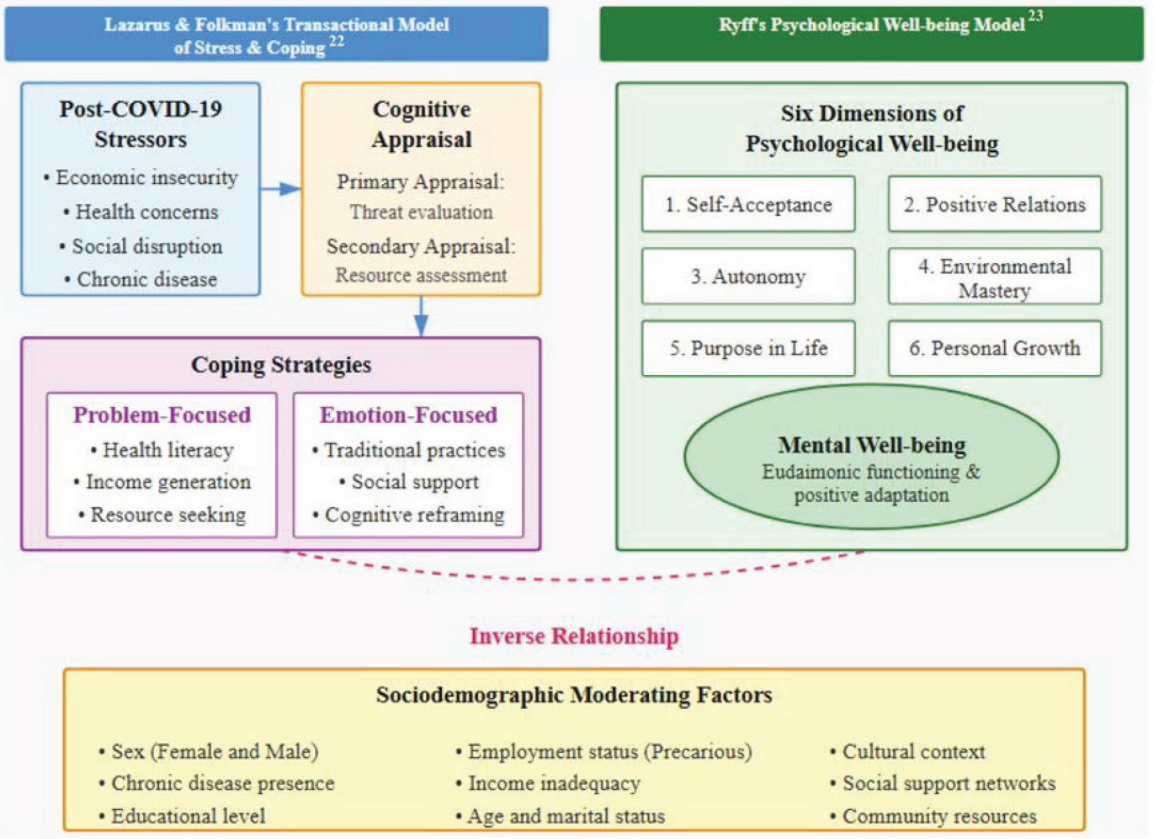

Figure 1. Framework of this study

The selection of sociodemographic predictor variables in this study was grounded in these theoretical frameworks. Within the Transactional Model of Stress and Coping developed by Lazarus and Folkman,[22] secondary appraisal, defined as the evaluation of available coping resources, is directly influenced by income adequacy (financial resources), occupation (employment stability and economic security), and chronic disease (physical health resources and additional stressor burden). These variables determine whether individuals perceive sufficient resources to manage demands, thereby shaping stress levels. Primary appraisal, defined as the evaluation of threat magnitude, is theoretically moderated by sex: evidence indicates that women appraise pandemic-related demands as more threatening due to intersecting caregiving and economic roles, and by education level, as greater health literacy may amplify threat perception through fuller comprehension of pandemic risks.

Within Ryff and Keyes's Psychological Well-Being Model,[23] sociodemographic factors are anticipated to exert a comparable influence on specific well-being dimensions, including environmental mastery, autonomy, and purpose in life. In particular, financial sufficiency and stable employment are expected to reinforce environmental mastery, whereas the presence of chronic illness may compromise both self-acceptance and personal growth. Together, these frameworks provide the theoretical rationale for examining how sex, age, education, occupation,

chronic disease, and income adequacy predict both stress and mental well-being in this post-pandemic community sample. However, data triangulation through the systematic integration of quantitative and qualitative findings has been recognized as a methodological strength in mixed-methods post-pandemic research, with evidence that converging quantitative and qualitative strands yields a more comprehensive understanding of psychological phenomena than either approach alone.

Research indicates that older adults with higher psychological well-being demonstrate greater capacity to cope with crises.[24] On the other hand, economic recession, unemployment, and job insecurity represent major risks for suicide and mental health deterioration.[21] Evidence demonstrates cognitive-behavioral interventions produce superior outcomes compared to relaxation techniques for stress reduction.[25,26] Global mental health impact has been substantial, with working women reporting higher stress than men (52-62% in the United States and Canada), and healthcare workers experiencing moderate COVID-19 and job burnout post-pandemic.[27] On the other hand, protective factors such as social support and resilience buffer pandemic-related distress. Among nurses, these factors significantly reduced burnout, with resilience showing stronger protective effects (adjusted $\beta = -0.399$ to -0.529, all $p < 0.001$).[27] Organizations must prioritize gender-inclusive well-being programs and evidence-based interventions.[28]

Qualitative research has provided crucial insights into post-COVID-19 stress experiences and coping mechanisms across diverse populations. A systematic review synthesizing qualitative evidence in the older adult population amid the COVID-19 health crisis revealed that coping strategies encompassed both emotion-focused approaches (acceptance, positive reframing, spiritual practices) and problem-focused strategies (information-seeking, maintaining routines, physical activity).[12] An empirical phenomenological study with COVID-19 survivors in China identified two primary coping clusters: "self-comfort" techniques to cultivate confidence in overcoming illness, and "diverting attention" strategies to manage negative emotions.[13] These findings demonstrate that effective coping integrates cognitive reframing with behavioral activation, consistent with emotion-focused and problem-focused coping frameworks.

Cultural factors significantly shape stress management approaches, particularly in Asian contexts. Qualitative research with South Asian Canadians revealed that culturally adapted cognitive behavioral therapy addressing collectivistic family values, religious beliefs, and traditional healing practices proved more acceptable and effective than standard Western interventions.[11] Community-based participatory research with Asian populations emphasized the importance of culturally responsive mental health training that acknowledges collectivistic coping strategies, family engagement, and cultural conceptualizations of mental distress.[29] These studies underscore the necessity of integrating cultural wisdom with evidence-based approaches rather than imposing Western psychological models.

Furthermore, qualitative research has explored lived experiences relevant to promoting mental well-being in post-pandemic contexts. According to Ryff and Keyes,[23] psychological well-being encompasses six interrelated dimensions, namely self-acceptance, environmental mastery, positive relations with others, purpose in life, autonomy, and personal growth, all of which are shaped by the cumulative influences of everyday experience. Scoping review evidence demonstrates that well-being promotion in post-pandemic communities involves multi-dimensional approaches, including social engagement, meaningful activity, and access to

community resources.[8] Qualitative evidence among older adults further reveals that coping strategies encompassing social connection, spiritual practices, and maintenance of daily routines contribute not only to stress reduction but also to positive psychological functioning consistent with Ryff and Keyes's well-being dimensions.[12] Similarly, qualitative findings with COVID-19 survivors identify self-efficacy building and community support as mechanisms sustaining psychological well-being beyond the acute illness phase.[13] These qualitative insights underscore that mental well-being in post-pandemic communities is not merely the absence of stress, but an active, socially embedded, and culturally shaped process, and that understanding this process requires qualitative inquiry alongside quantitative measurement. The Thai Perceived Stress Scale-10 (TPSS-10) was selected for its validated Thai version. It demonstrated applicability to community populations, while the Scales of Psychological Well-Being (SPWB-18) was selected because it operationalizes Ryff and Keyes[23] theoretical framework across six well-being dimensions.

Study Aims

This study had two aims: 1) to identify levels of stress, mental well-being, and their sociodemographic predictors among dwellers in a Thai community in the post-pandemic period; and 2) to explore the lived experiences of stress and stress management among community dwellers with moderate-to-high stress levels. The overarching integrative question guiding this study was: To what extent do qualitative findings on lived experiences explain and contextualize the quantitative findings on sociodemographic predictors of stress and mental well-being? The purpose of mixing was to use qualitative insights to contextualize and explain the quantitative findings, thereby achieving a more comprehensive understanding of post-COVID-19 mental health in this community.

Methods

Design: This study utilized an explanatory sequential mixed-methods design, in which quantitative data collection and analysis served as the primary component, while qualitative data were subsequently gathered to elaborate upon and contextualize the quantitative findings. Reporting adhered to the STROBE guidelines for the quantitative component and the COREQ guidelines for the qualitative component. A mixed-methods approach was warranted because, while quantitative data identified statistical predictors of stress and mental well-being, qualitative methods were required to illuminate the underlying mechanisms, cultural contexts, and lived experiences. Integration occurred at the interpretation stage through joint display analysis, enabling methodological triangulation to identify convergence, expansion, and complementarity across both strands.

Participants and Setting: This study was conducted in Bueng Yi Tho Sub-district, an urban community in Thanyaburi District, Pathum Thani Province, Thailand, from 2024 to 2025. It covers 15.393 square kilometers and has 33,926 residents, and was selected to reflect diverse populations and address previous research gaps. The setting provided access to participants with varied sociodemographic backgrounds, employment statuses, education levels, and health conditions—factors identified as important predictors. Thai people aged 18-59 years who were registered as its residents were eligible. Inclusion criteria required the ability to read, write, and communicate in Thai; full consciousness with intact orientation; no physician-diagnosed severe physical conditions (like advanced stage of cancer, end-stage renal failure, heart disease with dependent or dementia), psychiatric conditions (such as schizophrenia, major depressive disorders, severe PTSD); and voluntary informed consent. Exclusion criteria included serious

comorbidities or severe psychiatric disorders that occurred during the data collection period.

Sample Size and Sampling: The quantitative sample size of 115 participants was determined through power analysis conducted using G*Power software (Version 3.1.9.7), based on the following parameters: effect size (r) = 0.30, based on Cohen's guideline[30] for a medium effect size in correlation analysis; alpha = 0.05 (one-tailed); and power = 0.95, yielding a minimum required sample of 115 participants.

A proportionate stratified random sampling approach was employed across four villages within the sub-district. The research team obtained population data from the Bueng Yitho Medical and Rehabilitation Center, which identified 5,847 eligible residents aged 18 years and above. Sample allocation was proportionate to each village's population: Village 1 had 1,467 registered residents (25% of the total population) and was allocated 29 participants (25% of 115); Village 2 had 1,469 residents (25%) and was allocated 29 participants; Village 3 had 1,442 residents (25%) and was allocated 29 participants; and Village 4 had 1,469 residents (25%) and was allocated 28 participants. This proportionate allocation ensured representativeness across all geographic areas while maintaining adequate statistical power.

Participants were randomly selected from each village's resident list by four village health volunteers (VHVs) using computer-generated random numbers. The recruitment process involved coordination with VHVs, delivery of invitation letters to participants' homes, follow-up telephone calls to confirm willingness and verify eligibility, and obtaining written informed consent prior to data collection. Replacement sampling was employed when participants declined or did not meet the eligibility criteria.

Regarding the qualitative component, 45 participants were selected through purposive sampling from the quantitative samples who had moderate-to-high stress (scores of 14-40 on the TPSS-10). The 45 qualitative participants, therefore, constitute a nested subset of the 115 quantitative participants, not a separate group. Of the 115 quantitative participants, 101 met this criterion and were eligible to participate in the qualitative study. The research team stratified this pool by key demographic characteristics (age, sex, occupation, and education level) to ensure maximum variation in the sample. Potential participants were contacted by telephone, provided with detailed explanations of the qualitative study objectives and procedures, and invited to participate in focus group discussions. Those who expressed interest and provided verbal consent were scheduled for focus group sessions at mutually convenient times.

Research Instruments: *Quantitative*

Demographic Questionnaire: Collected sociodemographic information, including sex, age, marital status, chronic diseases, education, occupation, and income.

Stress was assessed using the Thai Perceived Stress Scale-10 (TPSS-10).[31] This 10-item instrument evaluates perceived helplessness and self-efficacy deficits on a 5-point Likert scale (0 = never, 1 = rarely, 2 = sometimes, 3 = fairly often, 4 = very often), yielding total scores ranging from 0 to 40. Items with negative wording (items 4, 5, 7, and 8) were subjected to reverse scoring prior to summation. Score interpretation is based on established cutoff points: low stress (0-13), moderate stress (14-26), and high stress (27-40).[32] Elevated scores reflect greater levels of perceived stress, with moderate to high scores indicating the need for further evaluation and appropriate intervention. The scale has demonstrated satisfactory reliability, with an original Cronbach's alpha of 0.85,[31] in the present study, internal consistency was similarly strong, yielding a Cronbach's alpha of 0.87.

Mental well-being was evaluated using the Thai version of the Scales of Psychological Well-Being (SPWB-18), originally developed by Ryff and Keyes[23] and subsequently translated by Klainin-Yobas et al.[33] This 18-item instrument measures six dimensions

of psychological well-being on a 6-point Likert scale (1 = strongly disagree to 6 = strongly agree), encompassing autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance. Aggregate scores range from 18 to 108, with higher scores reflecting superior psychological well-being. Score interpretation is based on the following cutoff points: scores of 18–42 denote low well-being, 43–72 indicate moderate well-being, and 73–108 represent high well-being. The Thai version has demonstrated acceptable reliability, with Cronbach's alpha coefficients ranging from 0.68 to 0.85 across dimensions;[33] in the present study, overall internal consistency yielded a Cronbach's alpha of 0.88.

Qualitative Instrument: Focus Group Discussion Guide: A semi-structured focus group discussion guide was constructed by the principal investigator in consultation with the research team, which consisted of three nursing faculty members specializing in mental health nursing and two with proficiency in qualitative research methodology. Subsequently, all questions underwent quality review by a panel of five experts, consisting of two psychiatrists, two nursing faculty members specializing in mental health, and one community nursing faculty member with experience in stress management. Experts independently evaluated each question for relevance, clarity, and cultural appropriateness in the Thai community context. Expert feedback was incorporated through revisions, followed by pilot testing with three community members to ensure comprehensibility and cultural sensitivity prior to use.

The focus-group discussion guide was specifically designed to explore the lived mechanisms underlying the quantitative predictors identified in this study, namely how economic insecurity, sex, chronic disease, education, and occupation shape stress and well-being experiences within the Thai cultural context. Drawing upon the appraisal-based framework of stress and coping proposed by Lazarus and Folkman[22] and the six-dimensional model of psychological well-being conceptualized by Ryff and Keyes,[23] it sought to illuminate the cultural and experiential processes through which these sociodemographic factors operate, thereby fulfilling the explanatory purpose of the embedded qualitative strand.

Furthermore, the guide explored participants' lived experiences with stress and mental well-being in the post-COVID-19 context through seven key domains: a) emotional responses to the COVID-19 pandemic situation; b) stress management strategies employed during the pandemic; c) knowledge and experiences with effective stress management approaches; d) recommended components for stress management interventions; e) knowledge and experiences with effective mental well-being promotion; f) recommended components for mental well-being promotion programs; and g) critical analysis of the strengths and limitations of proposed intervention approaches.

Example questions included: "What were your main concerns during the COVID-19 pandemic peak?"; "What strategies or practices helped you manage stress and maintain mental well-being during and after the pandemic?"; "Have you used traditional Thai practices such as herbal remedies, Buddhist principles, or sufficiency economy philosophy alongside modern health approaches?"; and "What components would make a mental health support program culturally appropriate and accessible for your community?"

Ethical Considerations: Ethical approval for this study was granted by the Research Ethics Committee of the Faculty of Nursing, Rattana Bundit University (RBAC-EC-NUS-2-007/67). Permission was obtained from municipal authorities and community leaders. All participants received comprehensive explanations before enrollment. Participation was voluntary with written informed consent. Confidentiality

and anonymity were maintained throughout the study, and participants could withdraw at any time.

Data Collection: Quantitative data were collected in June 2024 from 115 participants at community centers. Participants completed three questionnaires—a demographic questionnaire, the TPSS-10, and the SPWB-18—which required 30-45 minutes per participant. Participants were randomly selected from village resident lists using computer-generated random numbers in coordination with four VHVs. The recruitment process included delivering invitation letters to participants' homes, making follow-up telephone calls for confirmation, and obtaining written informed consent before data collection. Replacement sampling was used for participants who declined to participate or did not meet the eligibility criteria.

Then, purposive sampling was used to select 45 participants with moderate-to-high stress levels for three focus groups of 15 participants each. Five focus group sessions were held in the community activity room between June 2024 and January 2025: Groups 1 and 2 each conducted one session, while Group 3 conducted three sessions to deepen exploration of emerging themes and conduct member checking. Analysis continued iteratively until no new significant statements emerged that could alter the findings' essential structure. Each focus group discussion lasted 60-90 minutes.

All focus group discussions were conducted and moderated by four female nursing faculty with PhDs in nursing and expertise in mental health nursing and qualitative research methodology (1-5 years of experiences in focus group facilitation). The principal investigator served as primary facilitator, supported by three co-facilitators. A trained research assistant with a master's degree in psychology was responsible for recording field notes on group dynamics, non-verbal behaviors, and contextual observations, and for managing audio recordings.

Data Analysis: Prior to analysis, the researcher verified the following statistical assumptions: 1) The assumption of normality was examined through the Shapiro-Wilk test, supplemented by visual inspection of Q-Q plots and histograms; 2) Linearity was examined through scatter plots; 3) Independence of observations was verified; and 4) Homoscedasticity was assessed. After confirming that all assumptions were met, the analysis proceeded as follows: descriptive statistics were used to characterize the demographic and study variables. Pearson correlations examined relationships between stress and mental well-being. Stepwise multiple regression identified sociodemographic predictors, with a significance level at $p < 0.05$.

Qualitative data were analyzed using van Manen's[34] hermeneutic phenomenological approach. The analytical process followed six iterative steps: 1) the principal investigator engaged in repeated and thorough reading of each focus group transcript to attain deep immersion and a holistic understanding of the data; 2) meaningful statements reflecting participants' lived experiences of stress and well-being were systematically identified and extracted from each transcript; 3) interpretive meanings were derived by composing reflective analyses of each meaningful statement in relation to the phenomenon under study; 4) initial sub-themes were inductively generated by clustering meaningful units, and connections among sub-themes were established to form overarching themes; 5) the full research team reviewed and critically discussed emerging themes and sub-themes, resolving disagreements through consensus; and 6) an external expert in qualitative research independently reviewed the analytical process and the thematic structure. Member checking was then used to verify that themes accurately represent participants' experiences.

Trustworthiness: Rigor was evaluated in accordance with the trustworthiness criteria established

by Lincoln and Guba.[35] Credibility was ensured through member checking, in which five participants independently reviewed the identified themes and representative verbatim quotations to verify the accurate portrayal of their experiences, as well as through methodological triangulation across multiple focus group sessions and participant subgroups. Transferability was strengthened by offering a detailed, thick description of the study context, setting, participant characteristics, and data collection procedures, thereby enabling readers to appraise the applicability of the findings to comparable community settings. Dependability and confirmability were upheld through a systematic inquiry audit, in which an independent peer researcher, uninvolved in the data collection process, critically examined the analytical procedures, decision-making trail, and emerging themes. The research team maintained reflexive journals and conducted regular debriefing sessions to identify and bracket potential biases arising from their clinical and academic backgrounds in mental health nursing.

Results

Quantitative findings:

Sociodemographic characteristics of the study participants

The study sample consisted of 115 participants, with a predominance of female respondents (76.5%, n = 88), with ages ranging from 20 to 59 years (mean ± SD: 45.06 ± 10.61). Participants aged 50–59 years constituted the largest age group (44.4%), followed by those aged 40–49 years (31.3%) (**see Table 1**). However, significant differences in stress and mental well-being emerged across several demographic variables (**Table 1**). Females reported significantly higher stress (23.48 ± 6.85 vs. 18.04 ± 6.56; $p < 0.001$) and lower well-being (74.33 ± 14.77 vs. 83.70 ± 14.00; $p = 0.004$) compared to males. Educational level significantly affected stress ($p = 0.007$), with postgraduate-educated participants reporting the highest stress levels (24.36 ± 6.46).

Table 1. Comparison of stress scores and mental well-being classified by demographic characteristics (N = 115)

Demographic characteristic	N (%)	Stress	p-value	Mental well-being	p-value
		Mean ± SD		Mean ± SD	
Sex			< 0.001		0.004
Male	27 (23.5)	18.04 ± 6.56		83.70 ± 14.00	
Female	88 (76.5)	23.48 ± 6.85		74.33 ± 14.77	
Age (years)			0.401		0.163
20-29	15 (13.0)	21.47 ± 6.37		77.87 ± 16.33	
30-39	13 (11.3)	20.23 ± 6.13		81.46 ± 12.02	
40-49	36 (31.3)	21.50 ± 8.13		79.03 ± 16.06	
50-59	51 (44.4)	23.41 ± 6.82		73.12 ± 14.31	
Birth order			0.523		0.613
First-born	61 (53.0)	21.56 ± 7.15		76.03 ± 14.72	
Second-born	24 (20.9)	22.38 ± 7.86		79.21 ± 17.04	
≥ Third-born	30 (26.1)	23.37 ± 6.56		75.40 ± 14.37	
Number of siblings			0.905		0.713
Only child	19 (16.5)	21.53 ± 7.96		73.95 ± 17.25	
2-3 siblings	45 (39.1)	22.36 ± 6.74		76.82 ± 14.05	
≥ 3 siblings	51 (44.4)	22.31 ± 7.30		77.24 ± 15.29	

Table 1. Comparison of stress scores and mental well-being classified by demographic characteristics (N = 115) (Cont.)

Demographic characteristic	N (%)	Stress	p-value	Mental well-being	p-value
		Mean ± SD		Mean ± SD	
Religion			0.822		0.542
Buddhism	107 (93.0)	22.16 ± 7.08		76.77 ± 14.95	
Other	8 (7.0)	22.75 ± 8.43		73.38 ± 17.41	
Educational level			0.007		0.232
Below bachelor's degree	37 (32.2)	19.97 ± 6.55		79.03 ± 13.11	
Bachelor's degree	56 (48.7)	22.82 ± 7.48		75.63 ± 16.00	
Above bachelor's degree	22 (19.1)	24.36 ± 6.46		74.64 ± 15.84	
Congenital disease			< 0.001		0.001
No	67 (58.3)	19.80 ± 6.71		80.05 ± 14.99	
Yes	48 (41.7)				
Diabetes mellitus	7 (6.1)				
Hypertension	21 (18.3)	26.54 ± 5.75		70.17 ± 13.15	
Dyslipidemia	12 (10.4)				
Asthma/allergies	3 (2.6)				
Other	5 (4.3)				
Marital status			0.933		0.841
Single	20 (17.4)	22.60 ± 7.20		76.50 ± 16.24	
Living together	73 (63.5)	22.01 ± 6.93		77.04 ± 14.81	
Widowed/divorced/separated	22 (19.1)	22.45 ± 8.05		74.86 ± 15.45	
Occupation			0.012		0.025
Hired worker	29 (25.2)	22.62 ± 7.66		75.69 ± 15.74	
Private business	27 (23.5)	22.11 ± 6.87		74.33 ± 13.70	
Government employee	33 (28.7)	19.36 ± 6.77		82.88 ± 14.54	
Unemployed/homemakers	26 (22.6)	25.42 ± 6.09		71.69 ± 14.44	
Average monthly income			0.254		0.284
< 10,000 baht (< 321.34 USD)	37 (32.2)	23.68 ± 6.25		73.46 ± 13.38	
10,000-20,000 baht (321.34-642.67 USD)	41 (35.7)	21.00 ± 7.40		78.83 ± 16.05	
> 20,000 baht (> USD 642.67)	37 (32.1)	22.05 ± 7.58		77.05 ± 15.42	
Family income			0.819		0.886
< 10,000 baht (< 321.34 USD)	12 (10.5)	21.17 ± 4.61		74.83 ± 14.45	
10,000-20,000 baht (321.34- 642.67 USD)	30 (26.0)	21.93 ± 7.62		77.37 ± 16.11	
> 20,000 baht (> USD 642.67)	73 (63.5)	22.48 ± 7.33		76.47 ± 14.91	
Income sufficient to meet needs			0.001		0.007
Insufficient	19 (16.5)	27.16 ± 7.21		67.32 ± 14.89	
Sufficient but no savings	47 (40.9)	22.34 ± 6.73		76.64 ± 14.01	
Sufficient and savings	49 (42.6)	20.14 ± 6.63		80.00 ± 14.92	

The presence of chronic disease was strongly associated with elevated stress (26.54 ± 5.75 vs. 19.80 ± 6.71; p < 0.001) and diminished well-being (70.17 ± 13.15 vs. 80.05 ± 14.99; p =0.001). Occupation significantly influenced both outcomes (p = 0.012 for stress; p = 0.025 for well-being), with government employees demonstrating the most favorable profile (stress: 19.36 ± 6.77; well-being: 82.88 ± 14.54) and unemployed/homemakers the poorest outcomes (stress: 25.42 ± 6.09; well-being: 71.69 ± 14.44). Income adequacy strongly predicted both stress (p = 0.001) and well-being (p = 0.007), with insufficient income associated with the worst mental health outcomes.

Stress and mental well-being levels

Perceived stress scores ranged from 8-37 (mean ± SD: 22.20 ± 7.14), with the majority experiencing moderate stress levels (59.1%), followed by high stress (28.7%) and low stress (12.2%). Mental well-being scores ranged from 44 to 108 (mean ± SD: 76.53 ± 15.07), indicating moderate overall psychological well-being. The six dimensions of well-being showed relatively balanced scores: Self-Acceptance (13.11 ± 3.27), Personal Growth (13.02 ± 3.45), Environmental Mastery (12.62 ± 3.17), Purpose in Life (12.79 ± 2.92), Positive Relations (12.60 ± 2.89), and Autonomy (12.39 ± 2.65). Pearson correlation analysis demonstrated a significantly strong negative association between stress and mental well-being (r = -0.812, p < 0.001), suggesting that elevated levels of stress were correspondingly associated with markedly reduced psychological well-being.

Predictive Modeling

Stepwise multiple regression identified seven significant predictors explaining 47.6% of stress variance (R^2 = 0.476, F = 10.589, p < 0.001) (**Table 2**). The strongest predictor was chronic disease presence (β = 0.367, p < 0.001), followed by insufficient income (β = 0.362, p < 0.001), postgraduate education (β = 0.300, p < 0.001), hired worker status (β = 0.271, p = 0.003), unemployment/homemaker status (β = 0.256, p = 0.007), bachelor's degree (β = 0.255, p = 0.003), and female sex (β = 0.177, p = 0.017).

Table 2. Regression coefficients of variables used to predict stress in the sample (N = 115)

Variables	Unstandardized coefficients		Standardized coefficients	t
	B	SE	Beta	
(Constant)	16.306	1.742		9.361***
Sex				
Female	2.975	1.230	0.177	2.419*
Male	ref			
Chronic disease				
Yes	5.438	1.102	0.367	4.937***
No	ref			
Education level				
Below bachelor's degree	ref			
Bachelor's degree	3.629	1.178	0.255	3.081**
Above bachelor's degree	5.418	1.490	0.300	3.637***
Occupation				
Hired worker	4.436	1.466	0.271	3.026**
Trading/private business	2.461	1.505	0.147	1.635^{ns}
Unemployment/homemaker	4.019	1.458	0.256	2.756**
Government official/state employee	ref			

Table 2. Regression coefficients of variables used to predict stress in the sample (N = 115) (Cont.)

Variables	Unstandardized coefficients		Standardized coefficients	t
	B	SE	Beta	
Income adequacy				
Insufficient	6.937	1.506	0.362	4.606***
Sufficient but no savings	1.416	1.122	0.098	1.262^{ns}
Sufficient with savings	ref			

Note. R^2 = 0.476, SE (standard error) = 5.385, F = 10.589, *p < 0.05, **p < 0.01, ***p < 0.001, ns = non-significant

For mental well-being, five predictors explained 25.8% of the variance (R^2 = 0.258, F = 5.302, p < 0.001) (**Table 3**). Insufficient income emerged as the strongest negative predictor (β = -0.275, p = 0.003), followed by unemployment/homemaker status (β = -0.244, p = 0.028), hired worker status (β = -0.225, p = 0.035), chronic disease (β = -0.221, p = 0.013), and female sex (β = -0.188, p = 0.030). Government employment and sufficient income with savings served as reference categories, indicating optimal mental health outcomes. Pearson correlation analysis revealed a strong inverse relationship between stress and mental well-being (r = -0.812, p < 0.001), confirming that higher stress levels corresponded with significantly lower psychological well-being.

Table 3. Regression coefficients of variables used to predict mental well-being in the sample group (N = 115)

Variables	Unstandardized coefficients		Standardized coefficients	t
	B	SE	Beta	
(Constant)	82.379	3.969		20.753***
Sex				
Female	-6.665	3.038	-0.188	-2.194*
Male	ref			
Chronic disease				
Yes	-6.925	2.736	-0.221	-2.531*
No	ref			
Occupation				
Hired worker	-7.772	3.642	-0.225	-2.134*
Trading/private business	-2.069	3.732	-0.058	-0.554^{ns}
Unemployment/homemaker	-8.093	3.628	-0.244	-2.231*
Government official/state employee	ref			
Income adequacy				
Insufficient	-11.112	3.691	-0.275	-3.010**
Sufficient but no savings	-2.965	2.776	-0.097	-1.068^{ns}
Sufficient with savings	ref			

Note. R^2 = 0.258, SE (standard error) = 13.405, F = 5.302, *p < 0.05, **p < 0.01, ***p < 0.001, ns = non-significant

Qualitative findings:

The 45 qualitative participants were predominantly female (82.2%, n = 37), aged 38–58 years, and drawn from four occupational groups: hired workers (n = 18, 40.0%), private business owners (n = 15, 33.3%), homemakers (n = 8, 17.8%), and government employees (n = 4, 8.9%). All reported moderate-to-high stress (TPSS-10 scores 14–40) and resided in Bueng Yi Tho sub-district, an urban community characterized by close-knit neighborhood ties, active village health volunteer (VHV) networks, and strong integration of Buddhist practices and Thailand's sufficiency economy philosophy into daily life. This cultural context, in which communal reciprocity, spiritual coping, and self-sufficient living are normative values, shaped participants' experiences of stress and well-being in ways distinct from those in Western urban contexts and must be understood as the backdrop against which the following themes were constructed.

Phenomenological analysis of focus group discussions with 45 participants experiencing moderate-to-high stress levels revealed the essence of participants' lived experiences: the dialectical tension between vulnerability and resilience within community embeddedness. Participants navigated amid economic instability and collective support, anxiety and acceptance, and traditional wisdom and modern knowledge. This essence manifested as individuals simultaneously experiencing profound stress from external circumstances (economic insecurity, pandemic fears, health concerns) while drawing strength from cultural practices, community networks, and adaptive coping strategies. Rather than passive victims, participants embodied active agents who creatively integrated multiple resources to maintain psychological equilibrium despite ongoing adversity. This existential reality unfolded through two interconnected phenomenological themes that illuminate how Thai community dwellers live through and make meaning of post-pandemic stress and well-being.

Theme 1: Stress experiences and management in the post-pandemic context

This theme captures participants' embodied experience of stress as a pervasive yet manageable condition, fundamentally shaped by economic uncertainty. Rather than being passive victims, participants described themselves as active agents navigating multiple stressors through culturally-rooted practices. Their narratives revealed stress as not merely psychological distress but as a relational phenomenon embedded in family obligations, community expectations, and survival imperatives. The lived experience of stress was characterized by constant negotiation between fear and action, worry and coping, individual burden and collective support.

Sub-theme 1.1: Stress contexts in post-pandemic life

Participants described psychological distress ranging from persistent anxiety to adaptive adjustment. Economic insecurity emerged as the primary stressor, manifesting as the inability to provide for children's education, business disruptions, and concerns about family survival. Participants reported a range of stress symptoms, including persistent worry, panic, and a sense of helplessness, particularly in relation to income loss and uncertainty about the future, as evidenced in the following excerpts.

> *"Still have stress, but thinking about how to support the family financially."* (W 42 YO, HW)

> *"Stressed about one thing – no income, children need to go to school."* (W 45 YO, HW)

> *"Can't sell anything, customers are afraid to come out and buy."* (M 42 YO, HW)

> *"Wondering if COVID comes back again; will stores have to stop selling?"* (W 52 YO, PB)

Sub-theme 1.2: Stress management through integrated approaches

Participants employed a rich repertoire of stress management strategies that integrated traditional Thai practices with modern approaches, demonstrating both individual agency and collective resourcefulness. Physical self-care combined vaccination, mask-wearing, and hand hygiene with traditional herbal medicine, including *Andrographis paniculata* and herbal steam baths, reflecting a holistic approach rooted in Thai healing knowledge. Alongside physical practices, participants employed cognitive reframing strategies informed by Buddhist principles of acceptance and impermanence, enabling emotional regulation and reducing reactivity to stressors. Prior pandemic experience also served as a psychological resource, building confidence and reducing fear over time. Altruistic behavior, such as helping neighbors and contributing to community welfare, further buffered individual stress by fostering a sense of purpose and social belonging. Active health information-seeking across multiple channels, including social media, television, the internet, and community networks, reduced uncertainty-related anxiety and enabled informed decision-making, functioning as a form of problem-focused coping that empowered participants to act rather than remain helpless. For example:

> *"COVID is not a serious disease if we take care of ourselves through exercise, try to prevent by wearing masks, washing hands, exercising, listening to Dhamma."* (W 38 YO, HW)

> *"Try to take care of ourselves and consume herbs like Andrographis paniculata."* (W 45 YO, HW)

> *"We used the knowledge of traditional Thai medicine that we had learned - herbal steam baths, drinking warm water, used everything."* (W 48 YO, PB)

> *"The second time we got vaccinated, we felt good."* (W 52 YO, PB)

> *"Try to look on the bright side, keep yourself comfortable, exercise at home."* (W 42 YO, HW)

> *"Facebook, children told us, listened to TV."* (M 59 YO, PB)

> *"We searched for information on the computer about what to do, how to help them."* (W 48 YO, PB)

> *"Try to tell villagers not to be afraid of COVID anymore, now if you get it you won't die, there's treatment available."* (W 52 YO, PB)

Theme 2: Mental well-being promotion and hybrid support systems

This theme illuminates how participants actively cultivated well-being through meaningful engagement with their environment and community. The lived experience of well-being was not passive contentment but active construction through purposeful activities, social connections, and continuous learning. Participants described well-being as emerging from the intersection of personal agency, community solidarity, and access to resources - both traditional and modern.

Sub-theme 2.1: Mental well-being promotion through meaningful engagement

Participants promoted their mental well-being through lifestyle adjustments, structured activities, social participation, and ongoing learning, all reflecting active, self-directed approaches to psychological flourishing. Lifestyle adaptations embodying Thailand's sufficiency economy philosophy, particularly home gardening of herbs and vegetables, provided practical economic relief while simultaneously fostering a sense of control, self-efficacy, and reduced financial anxiety. Helping neighbors and participating in community activities further strengthened social

bonds and generated happiness through altruistic contribution. Structured activities at community centers offered diverse pathways to well-being through social connection, skill development, and meaningful daily routines, including aqua aerobics, cooking groups, bag sewing, karaoke, and meditation, which reduced anxiety and fostered a sense of purpose. Learning opportunities additionally enhanced self-care capacity and informed decision-making: herb cultivation provided therapeutic benefits alongside practical knowledge, health education addressed medication safety concerns, and post-pandemic mental health training introduced modalities such as music therapy and horticultural therapy, which participants found particularly effective and culturally resonant. A strong interest emerged in community-based mental health literacy training for village health volunteers (VHVs) and lay members, suggesting that participants recognize knowledge as a key resource for sustaining well-being. For instance:

> *"We grew plants around the house in empty spaces - lemongrass, galangal, don't have to buy, can pick and use for curry or anything, saved money, didn't worry about finding more income, we lived sufficiently."* (W 55 YO, homemaker)

> *"At least we can take care and help others, then we are happy."* (W 45 YO, HW)

> *"Now I don't feel anxiety, have many activities - cooking, VHV group, helping others, at night sitting listening to Dhamma, sitting meditation."* (W 58 YO, PB)

> *"Must join groups with community, and join groups where we think we are happy, then we will be happy."* (W 58 YO, PB)

> *"Come to aqua aerobics, learn bag sewing, do activities we like at the center, sometimes invite friends to sing, swim, sew bags, on Wednesdays we cook together."* (W 48 YO, PB)

> *"Want music therapy type. Music therapy is very good, like it moves our brain, we can feel it right there, makes us relax."* (W 58 YO, PB)

Sub-theme 2.2: Hybrid support systems bridging traditional and modern approaches

Participants' mental well-being was sustained through layered support systems that bridged informal community networks with formal institutional resources. At the community level, informal networks comprising neighbors, peers, and VHVs provided essential practical and emotional assistance, including distributing survival bags, preparing fresh food for quarantined households, delivering medicines, and administering vaccinations. These forms of tangible mutual aid reinforced social cohesion and a collective sense of security. VHVs played a pivotal bridging role, connecting community members with formal health systems by coordinating municipal resources, disseminating public health information door-to-door, and facilitating early identification of individuals with mental health concerns. At the institutional level, formal systems complemented community resources through medical consultation services, organized health training, and professional therapeutic programs. Despite the comprehensiveness of these layered supports, participants identified persistent unmet mental health needs, particularly residual pandemic anxiety and a desire for ongoing psychological support, underscoring the continued importance of sustainable, community-based mental health infrastructure in the post-pandemic period. For example, this was mentioned in the group discussion.

> *"Neighbors are kind, it depends more on us, how we live with this disease."* (W 42 YO, HW)

> *"For houses with COVID infections, they provided survival bags and prepared fresh food for patients in those houses."* (W 52 YO, PB)

> *"Houses that needed medicine, VHVs received medicine from medical centers to give to patients initially."* (W 52 YO, PB)

"Fortunately, in Bueng Yitho, the municipality opened and VHVs provided initial care. When they knew which house had COVID, they provided survival bags and cooked fresh food." (W 52 YO, PB)

"Deep inside our minds, there's still worry. Even now, everyone wonders if COVID will spread again. Will we get infected again? Will stores have to close? Want organizations related to mental health to come relax and advise." (W 52 YO, PB)

"Want training for VHVs or villagers to have basic knowledge about mental health. I've seen them for two years, encountered two patients. I knew immediately their mental health was not the same, then I reported this to the doctor." (W 48 YO, PB)

Mixed-Method Analysis

Integration of quantitative and qualitative findings through joint display analysis (**Table 4**) produced meta-inferences that go beyond what either dataset could yield independently. Both datasets were analyzed independently before being systematically compared and synthesized. For each statistical predictor, corresponding phenomenological themes were categorized as: Confirmation (qualitative data converges with and validates quantitative patterns); Expansion (qualitative data reveals mechanisms, cultural contexts, and meanings not visible in quantitative data alone); or Complementarity (each strand illuminates distinct dimensions of the same phenomenon). These meta-inferences are summarized in **Table 4**. Two key insights emerged exclusively from integration and were not available through either strand alone. First, the paradoxical finding that higher education predicted greater stress ($\beta = 0.300$, $p < 0.001$) was interpretable only through qualitative data, which revealed that more educated participants demonstrated a fuller comprehension of pandemic risks, amplifying threat appraisal rather than enhancing coping—an insight invisible to quantitative analysis alone. Second, the protective role of Thailand's sufficiency economy philosophy was only visible qualitatively through participants' narratives of home cultivation and self-sufficient living, while its connection to income adequacy as the strongest predictor ($\beta = 0.362$, $p < 0.001$) was only identifiable quantitatively; integration revealed how cultural practice actively mediates the economic stress-well-being pathway. Beyond these integration-specific insights, economic insecurity was confirmed as the predominant stressor across both strands. Women experienced significantly higher stress ($p < 0.001$) due to intersecting caregiving and financial burdens, as illuminated qualitatively. Chronic disease amplified stress ($\beta = 0.367$, $p < 0.001$) through infection-related anxieties described in narratives. Community social support networks buffered individual stress despite economic hardship, as evidenced by participants' descriptions of mutual assistance and collective resilience (**Table 4**).

Table 4. Joint display analysis of mental well-being and stress management predictors in post-COVID-19 Thai communities

No.	Quantitative findings	Qualitative findings	Mixed-method meta-inferences
1	Strong inverse correlation ($r = -0.812$, $p < 0.001$). Stress (Mean ± SD: 2.20 ± 7.14), 59.1% moderate. Well-being (Mean ± SD: 76.53 ± 15.07).	*"We all experienced stress and anxiety about many things"* (Man, 58 YO, HW); *"Still have stress, thinking about supporting family financially"* (Woman, 42 YO, HW)	**Confirmation:** High prevalence of stress and a strong negative association with well-being were confirmed qualitatively. Stress manifested as psychological symptoms that affected daily functioning, particularly during economic uncertainty.

Table 4. Joint display analysis of mental well-being and stress management predictors in post-COVID-19 Thai communities (Cont.)

No.	Quantitative findings	Qualitative findings	Mixed-method meta-inferences
2	Insufficient income strongest stress predictor (β = 0.362, p < 0.001) and well-being predictor (β = -0.275, p = 0.003). Income adequacy strongly associated (p = 0.001; p = 0.007).	*"Stressed - no income, children need school"* (Woman, 45 YO, HW); *"Can't sell anything, customers are afraid"* (Man, 42 YO, HW)	**Expansion:** Economic insecurity predominant stressor. Qualitative data revealed mechanisms: inability to afford children's education, business disruptions, customer avoidance, fears of economic collapse, and the need to establish economic stabilization as a critical intervention target.
3	Women significantly higher stress (23.48 ± 6.85 vs. 18.04 ± 6.56; p < 0.001) and lower well-being (74.33 ± 14.77 vs. 83.70 ± 14.00; p = 0.004). Females predicted higher stress (β = 0.177, p = 0.017).	*"If too afraid, family suffers. We took the risk"* (Woman, 38 YO, HW); *"Had to separate from partner, take care of things, thought too much"* (Woman, 42 YO, HW)	**Confirmation:** Sex disparities are consistently identified. Women described intersecting burdens, including caregiving, household management, financial decision-making, and income generation. Narratives illuminated how women's disproportionate stress resulted from role overload.
4	Chronic disease predicted higher stress (26.54 ± 5.75 vs. 19.80 ± 6.71; p < 0.001) and lower well-being (70.17 ± 13.15 vs. 80.05 ± 14.99; p = 0.001). Strongest predictor (β = 0.367, p < 0.001).	*"It's endemic, we just need self-care"* (Man, 38 YO, HW); *"We used traditional Thai medicine - herbal steam baths, warm water, everything"* (Woman, 48 YO, PB)	**Expansion:** Chronic disease amplified stress through heightened infection risk perception, medication access concerns, and healthcare disruption fears. Participants demonstrated adaptive responses integrating traditional remedies with modern care.
5	Higher education predicted increased stress. Bachelor's (β = 0.255, p = 0.003) and postgraduate (β = 0.300, p < 0.001) significant predictors.	*"Like being deaf and blind because of panic, worrying 'Will I get infected?'"* (Woman, 52 YO, PB); *"We searched information on the computer"* (Woman, 48 YO, PB)	**Expansion:** A paradoxical relationship was observed: higher education was associated with greater health information literacy and deeper pandemic comprehension, leading to heightened threat appraisal, consistent with Lazarus and Folkman's primary appraisal process.
6	Occupation significantly influenced stress (p = 0.012) and well-being (p = 0.025). Wage workers (β = 0.271, p = 0.003) and unemployed/ homemakers (β = 0.256, p = 0.007) elevated stress. Government officials optimal.	*"We grew vegetables, saved money, didn't worry, we lived sufficiently"* (Woman, 59 YO, homemaker); *"Wondering if COVID comes back, will stores close?"* (Woman, 52 YO, PB)	**Confirmation:** Occupational patterns reflected employment stability differences. Qualitative accounts revealed business closures, income loss, customer avoidance, and fears of economic disruption. Adaptive responses included subsistence gardening and sufficiency economy practices.

Table 4. Joint display analysis of mental well-being and stress management predictors in post-COVID-19 Thai communities (Cont.)

No.	Quantitative findings	Qualitative findings	Mixed-method meta-inferences
7	Of those with moderate stress, 59.1% employed coping strategies, maintaining moderate (not severe) levels despite challenges.	*"COVID not serious if we care for ourselves through exercise, masks, washing hands, listening to Dhamma"* (Woman, 38 YO, HW); *"Try to consume An-drographis paniculata"* (Woman, 45 YO, homemaker)	**Expansion:** Self-care emerged as the primary coping mechanism, integrating preventive behaviors (mask-wearing, hand hygiene, vaccination), traditional Thai medicine (herbal remedies, steam baths), and lifestyle practices (exercise, Buddhist practices), thereby providing a sense of control and self-efficacy.
8	Mental well-being was maintained at moderate levels (76.53 ± 15.07) despite high stress, suggesting effective coping maintained psychological functioning.	*"Try to look on the bright side, keep comfortable"* (Woman, 42 YO, HW); *"Better than before, we have experience"* (Woman, 56 YO, HW); *"Let it all go, don't stress"* (Woman, 47 YO, homemaker)	**Expansion:** Cognitive reframing emerged as a crucial emotion-focused coping. Participants employed positive thinking, acceptance, and recognition of impermanence, and leveraged experience to reduce threat appraisal, thereby buffering the strong negative stress-well-being relationship.
9	Moderate stress levels and maintained well-being suggest unmeasured protective factors are operating.	*"Facebook, children told us, listened to TV"* (Man, 59 YO, PB); *"We searched information on the computer"* (Woman, 48 YO, PB); *"We received public health information"* (Woman, 52 YO, PB)	**Expansion:** Health information literacy functioned as an unmeasured moderator, reducing pandemic anxiety. Participants actively sought information from multiple sources (social media, television, internet, medical centers), applied knowledge, reducing uncertainty, enabling informed decision-making.
10	Moderate stress and maintained well-being despite economic hardship suggest community-level protective factors buffered stress.	*"Neighbors are kind"* (Woman, 42 YO, HW); *"Villagers took care of us, helped each other without abandoning anyone"* (Woman, 38 YO, HW); *"They provided survival bags and fresh food"* (Woman, 52 YO, PB)	**Confirmation:** Community social capital emerged as a critical protective factor. VHVs, neighbors, and organizations provided tangible support (survival bags, meals, medicine delivery, vaccination) and emotional support (mutual assistance, non-abandonment), demonstrating the importance of community-level interventions.
11	Income adequacy, as a stress predictor (β = 0.362), was mediated by cultural practices, thereby modifying the relationship between economic status and psychological outcomes.	*"We grew plants - lemongrass, galangal, don't have to buy, can pick and use, saved money, didn't worry, we lived sufficiently"* (Woman, 55 YO, homemaker)	**Expansion:** The Sufficiency Economy philosophy represented a uniquely Thai protective factor not captured by Western measures. Kitchen gardens, subsistence agriculture, and resource conservation provided practical economic relief and psychological benefits through self-reliance, reduced financial anxiety, and cultural values alignment.

Table 4. Joint display analysis of mental well-being and stress management predictors in post-COVID-19 Thai communities (Cont.)

No.	Quantitative findings	Qualitative findings	Mixed-method meta-inferences
12	Mental well-being dimensions relatively even distribution across six domains (Autonomy 12.39 ± 2.65, Environmental Mastery 12.62 ± 3.17, Personal Growth 13.02 ± 3.45, Positive Relations 12.60 ± 2.89, Purpose in Life 12.79 ± 2.92, Self-Acceptance 13.11 ± 3.27).	*"Come to aqua aerobics, bag sewing, activities we like, swim, sew, on Wednesdays, cook together"* (Woman, 48 YO, PB); *"Music therapy very good, moves our brain, makes us relax."* (Woman, 58 YO, PB)	**Confirmation:** Structured community activities supported multiple well-being dimensions: social connection, skill development, autonomous choice, meaningful engagement, and mastery experiences. Participants expressed a strong preference for activity-based interventions over talk therapy, suggesting culturally appropriate interventions should emphasize experiential and embodied approaches.
13	High stress prevalence (87.8% moderate-to-high) persisted despite endemic transition, indicating lasting psychological impact requiring sustained intervention.	*"Deep inside our minds, there's still worry. Everyone wonders if COVID will spread again, will we get infected, will stores close?"* (Woman, 52 YO, PB)	**Confirmation:** Residual pandemic anxiety persisted despite endemic status, reflecting traumatic experiences creating lasting impacts. Qualitative accounts revealed ongoing vigilance, anticipatory anxiety about resurgence, and economic disruption fears, suggesting post-pandemic mental health services must address longer-term adjustment and trauma recovery.
14	Demand for mental health knowledge suggests gaps in mental health literacy contributing to stress experiences.	*"Want training for VHV or villagers to have basic mental health knowledge. I've seen two patients, I knew immediately their mental health was not the same."* (Woman, 48 YO, PB)	**Expansion:** Strong demand for mental health literacy training emerged, suggesting task-shifting approaches could extend support networks. VHVs and lay members expressed a need for basic assessment skills, stress recognition training, referral knowledge, and alignment with WHO recommendations to expand mental health service coverage through community-based approaches.

Note: VHV = Village health volunteer; PB = Private business; YO = Years old; HW = Hired worker

Discussion

This study provides comprehensive evidence of sustained mental health impacts in post-COVID-19 Thai communities, with 87.8% reporting moderate-to-high stress and a strong inverse stress-well-being correlation (r = -0.812). Findings align with global evidence of persistent psychological burden[20,39] and confirm the Transactional Model's proposition that sustained stressor exposure without adequate resources diminishes psychological functioning.[22] This quantitative pattern was confirmed qualitatively through sub-theme 1.1 (stress contexts in post-pandemic life), in which participants described pervasive yet manageable stress

consistent with moderate-level quantitative findings (**Table 4**, no. 1).

Economic insecurity emerged as the predominant stressor and the strongest predictor across analyses, consistent with global evidence identifying financial instability as a major mental health risk factor.[21] Qualitative findings revealed specific pathways, including the inability to support children's education and persistent fear of economic collapse, establishing economic stabilization as a critical intervention target. These qualitative mechanisms, drawn from sub-theme 1.1, directly expand the quantitative predictor finding, demonstrating how insufficient income operates through specific lived pathways consistent with Lazarus and Folkman's[22] secondary appraisal framework (**Table 4**, no. 2).

Sex disparities warrant attention, as females experienced significantly higher stress and lower well-being, consistent with global patterns.[27] Qualitative data illuminated underlying mechanisms, including intersecting burdens of caregiving responsibilities and financial management, suggesting that gender-responsive interventions must address the disproportionate pressures affecting Thai women. This convergence between quantitative sex predictor findings and sub-theme 1.1 qualitative narratives constitutes a Confirmation meta-inference in **Table 4** (no. 3), corroborating sex disparities while expanding understanding of the intersecting mechanisms through which they operate.

Although the female predominance (76.5%) aligns with broader patterns of women's greater healthcare engagement and community participation in Thai contexts, it may introduce selection bias. The urban sub-district setting limits generalizability to rural communities; however, the diverse socioeconomic profiles within the study community (including government officials, wage workers, traders, and homemakers) provide insights applicable to similar urban settings across Thailand.

The paradoxical finding of higher education predicting greater stress challenges conventional assumptions. Lazarus and Folkman's[22] framework suggests this may reflect primary appraisal processes in which fuller comprehension amplifies threat perception. This highlights the necessity of mixed methods for revealing counterintuitive patterns. Mixed-methods approaches have proven particularly valuable for understanding complex mental health phenomena in post-pandemic contexts. A protocol for mixed-methods research on university student resilience and mental health in the post-pandemic era demonstrates how parallel embedded designs enable simultaneous assessment of quantitative mental health outcomes and qualitative exploration of lived experiences, providing a comprehensive understanding of resilience processes.[40] This methodological integration allows researchers to identify statistical predictors while illuminating the mechanisms and cultural contexts through which these factors operate, bridging the gap between epidemiological patterns and individual experiences. The current study exemplifies this approach through its joint display analysis (**Table 4**), in which quantitative predictors were enriched with qualitative narratives explaining how and why these factors influenced mental health outcomes, revealing culturally specific mechanisms such as sufficiency economy practices and collective coping strategies that would remain invisible through quantitative analysis alone. Specifically, the education-stress paradox constitutes an expansion meta-inference in **Table 4** (no. 5): the quantitative predictor ($\beta = 0.300$, $p < 0.001$) is only interpretable through sub-theme 1.1 qualitative narratives, in which higher-educated participants described heightened threat appraisal ("worrying, 'Will I get infected?'"), confirming that fuller pandemic comprehension amplified perceived threat rather than enhancing coping capacity.

Chronic disease status, as the strongest stress predictor ($\beta = 0.367$) and a significant well-being predictor ($\beta = -0.221$) (**Tables 2 and 3**), underscores the need for integrated mental health support within chronic disease management, particularly during crises. Occupational patterns reflected differences

in employment stability, with government officials achieving optimal outcomes while informal workers faced precarious conditions. Qualitative data from sub-theme 1.2 (stress management through integrated approaches) expand these quantitative findings: participants with chronic disease described heightened infection-risk perception and reliance on traditional Thai remedies, constituting an Expansion meta-inference (**Table 4**, no. 4). Occupational differences were similarly expanded by sub-theme 2.1 qualitative accounts of sufficiency economy practices among homemakers and informal workers (**Table 4**, no. 6), demonstrating that employment instability shapes stress not only through income loss but through differential access to cultural coping resources.

The cultural integration of traditional Thai practices (sufficiency philosophy, herbal medicine, Buddhist principles, community mutual support) with modern approaches (health information literacy, vaccination, structured activities) represents a significant finding that is not fully captured by Western instruments. This hybrid approach reflects successful adaptation, in which participants "use all the knowledge," suggesting that interventions should respect and leverage cultural strengths rather than imposing exclusively Western models. These findings constitute expansion meta-inferences in **Table 4**: Sub-theme 1.2 qualitative narratives explain the coping mechanisms underlying the quantitative predictor pattern (no. 7), while sub-theme 2.1 reveals how sufficiency economy philosophy mediates the income adequacy-well-being relationship (no. 11) — insights that are exclusively visible through mixed-methods integration and cannot be derived from either strand alone.

Community social capital emerged as a critical protective factor, with participants valuing mutual assistance and collective problem-solving. Research confirms that social support significantly reduces pandemic-related burnout.[27] Mental health promotion should leverage existing community structures rather than focusing exclusively on individual-level interventions. This finding constitutes a confirmation meta-inference: the quantitative pattern of maintained well-being despite economic hardship is corroborated and expanded by sub-theme 2.2 (hybrid support systems bridging traditional and modern approaches), in which participants described VHV networks, neighbor assistance, and community-organized activities as concrete mechanisms sustaining psychological functioning (**Table 4**, no. 10).

Strong demand for mental health literacy training—"training for VHVs or villagers to know basics"—suggests that task-shifting approaches could extend support networks in resource-limited settings, aligning with WHO recommendations to expand mental health service coverage.[1] This demand, voiced through sub-theme 2.2 qualitative data, expands the quantitative indication of mental health literacy gaps into a specific, actionable intervention recommendation (**Table 4**, no. 14, expansion meta-inference).

A preference for structured activities over talk therapy—particularly music therapy, described as "very relaxing, like moving our brain"—suggests activity-based interventions may be more culturally acceptable. This supports research showing that cognitive-behavioral interventions produce superior outcomes,[25,26] while demonstrating cultural adaptation to Thai preferences. These qualitative findings from sub-theme 2.1 expand quantitative well-being maintenance data through two expansion meta-inferences: Cognitive reframing as an emotion-focused coping mechanism sustaining well-being despite stress (**Table 4**, no. 8), and structured community activities supporting multiple well-being dimensions simultaneously (**Table 4**, no. 12), confirming Ryff and Keyes's[23] multi-dimensional model.

Persistent pandemic anxiety despite endemic status—"worried that COVID will spread again"—suggests traumatic experiences created lasting impacts requiring sustained support. Mental health services should address not only acute symptoms but also longer-term adjustment challenges as the community

transitions to post-pandemic life. This confirmation meta-inference integrates the quantitative finding of persistent high stress prevalence despite endemic transition with sub-theme 2.2 qualitative narratives of residual worry (**Table 4**, no. 13), corroborating that sustained psychological impact reflects traumatic stress responses rather than situational anxiety alone.

Limitations

Limitations should be acknowledged. First, the single urban sub-district setting limits transferability to rural or socioeconomically distinct communities; findings should be interpreted as applicable to similar urban Thai contexts. Second, data collection in 2024-2025 represents a specific post-pandemic phase and may not reflect experiences at other points in the pandemic trajectory. Third, the qualitative strand was constrained by quantitative sampling criteria, which allowed only participants with moderate-to-high stress to participate in focus groups, potentially excluding perspectives of those with low stress levels. Fourth, focus group discussions on sensitive mental health topics may have introduced social desirability bias; future studies should consider supplementing with individual interviews to elicit more candid accounts. Finally, the predominantly female sample (76.5%) limits representativeness for male community members, and gender-specific patterns should be interpreted with caution.

Conclusion and Implications for Nursing Practice

Dwellers in this urban Thai community continue experiencing significant mental health impacts in the post-COVID-19 period, with economic insecurity, female sex, chronic disease, and precarious employment identified as key sociodemographic predictors of stress, and insufficient income, chronic disease, occupation, and female sex as predictors of mental well-being. Integration of quantitative and qualitative findings through joint display analysis revealed novel insights not attainable through either method alone: culturally specific protective factors, including sufficiency economy philosophy, Buddhist coping principles, and community mutual support networks, emerged as central mechanisms through which sociodemographic factors influence mental health outcomes. Such findings highlight the utility of mixed-methods approaches in comprehensively capturing the multifaceted nature of post-pandemic mental health.

With regard to nursing practice, the findings suggest the importance of comprehensive screening strategies targeting vulnerable populations, the incorporation of mental health care within chronic disease management frameworks, the implementation of gender-sensitive interventions addressing the intersecting challenges encountered by Thai women, and the development of culturally adapted health promotion programs that integrate traditional Thai practices with contemporary approaches. Implications for nursing education include developing mental health literacy training programs for village health volunteers and lay community members to extend the reach of mental health services through task-shifting. Implications for nursing administration include allocating resources for community-based mental health programs, advocating for organizational policies that address economic stressors affecting community mental health, and supporting activity-based and group-oriented intervention models aligned with community preferences.

Recommendations for Further Research

Priority research directions include: longitudinal studies tracking pre-to-post-pandemic trajectories; rural and regional comparisons; randomized trials testing culturally adapted interventions (music therapy, group exercise, sufficiency economy education); gender-specific research examining role interactions;

economic intervention studies evaluating cash transfer or employment support impacts; chronic disease-mental health comorbidity research; cultural adaptation and validation of instruments incorporating Thai concepts; community-based participatory research; task-shifting evaluation for VHVs; investigation of education-stress paradox mechanisms; social network analysis; technology-enhanced intervention studies; children and family mental health research; resilience factor identification; healthcare worker mental health studies; cost-effectiveness analyses; and vulnerable population research ensuring equity considerations. These directions would build comprehensive, culturally appropriate, evidence-based mental health support systems for Thai communities navigating post-pandemic challenges.

Acknowledgements

The authors wish to thank all participants for their significant contributions to this study. We would also like to extend special thanks to the Faculty of Nursing, Rattana Bundit University; Bueng Yitho Municipality; Bueng Yitho Medical and Rehabilitation Center; and Professor Dr. Manyat Ruchiwit, who served as our consultant.

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Conceptualization, Visualization, Method and design: A.S., N.C.
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Data analysis and interpretation: A.S.
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ความเครียดและสุขภาวะทางจิตใจในระยะหลังโควิด-19 ในกลุ่มผู้อยู่อาศัยในชุมชนแห่งหนึ่งของภาคกลางประเทศไทย : วิธีวิจัยแบบผสมผสาน

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บทคัดย่อ: การระบาดของโรคโควิด-19 ในระยะหลังการระบาดส่งผลกระทบอย่างมากต่อสุขภาพจิตในระดับโลก โดยประเทศไทยได้รับผลกระทบมากเช่นกัน การศึกษาครั้งนี้เป็นการวิจัยแบบผสมผสานเชิงอธิบาย (Explanatory sequential mixed-methods design) ดำเนินการในตำบลบึงยี่โถ อำเภอธัญบุรี จังหวัดปทุมธานี ภาคกลางของประเทศไทย สำหรับระยะการวิจัยเชิงปริมาณ ได้สุ่มตัวอย่างผู้อยู่อาศัยในชุมชนจำนวน 115 ราย อายุระหว่าง 18–59 ปี ด้วยวิธีการสุ่มแบบแบ่งชั้นตามสัดส่วน และให้กลุ่มตัวอย่างตอบแบบสอบถามที่ผ่านการตรวจสอบความเที่ยงตรงสำหรับวัดระดับความเครียด (แบบวัดการรับรู้ความเครียดฉบับภาษาไทย PSS-10) และสุขภาวะทางจิตใจ (Scales of Psychological Well-Being) สำหรับระยะการวิจัยเชิงคุณภาพ ได้คัดเลือกผู้เข้าร่วมจำนวน 45 ราย ที่มีระดับความเครียดปานกลางถึงสูงจากกลุ่มตัวอย่างเชิงปริมาณด้วยวิธีการเลือกแบบเจาะจง และเข้าร่วมการสนทนากลุ่มเป้าหมายจำนวน 5 กลุ่ม การรายงานผลการวิจัยเป็นไปตามแนวทาง STROBE และ COREQ

ผลการวิจัยเชิงปริมาณพบว่า กลุ่มตัวอย่างส่วนใหญ่มีระดับความเครียดปานกลางถึงสูง โดยมีรายได้ไม่เพียงพอ การมีโรคเรื้อรัง ระดับการศึกษา อาชีพ และเพศหญิง เป็นปัจจัยทำนายทางสังคมประชากรที่สำคัญ สุขภาวะทางจิตใจมีความสัมพันธ์เชิงผกผันกับระดับความเครียด ผลการวิจัยเชิงคุณภาพได้ประเด็นหลัก 2 ประเด็น ได้แก่ 1) ประสบการณ์ความเครียดและการจัดการในบริบทหลังการระบาด และ 2) การส่งเสริมสุขภาวะทางจิตใจผ่านระบบการสนับสนุนแบบผสมผสาน การบูรณาการผลการวิจัยยืนยันว่า ความไม่มั่นคงทางเศรษฐกิจเป็นปัจจัยก่อความเครียดที่โดดเด่นที่สุด โดยข้อมูลเชิงคุณภาพเผยให้เห็นกลไกเฉพาะ เช่น การไม่สามารถให้การสนับสนุนการศึกษาของบุตรหลาน และความกลัวต่อการล่มสลายทางเศรษฐกิจ กลวิธีการรับมือที่มีประสิทธิภาพได้บูรณาการแนวปฏิบัติดั้งเดิมของไทย ได้แก่ การใช้สมุนไพร หลักพุทธธรรม และปรัชญาเศรษฐกิจพอเพียง เข้ากับแนวทางสมัยใหม่ การสนับสนุนจากชุมชนผ่านอาสาสมัครสาธารณสุขประจำหมู่บ้าน และกิจกรรมที่มีโครงสร้างชัดเจนช่วยบรรเทาผลกระทบจากความเครียด ผลการวิจัยแบบบูรณาการนี้เป็นหลักฐานเชิงประจักษ์สำหรับการพัฒนาการช่วยเหลือด้านสุขภาพจิตที่เหมาะสมกับบริบทวัฒนธรรมในหลายระดับสำหรับชุมชนไทยในยุคหลังการระบาด

Pacific Rim Int J Nurs Res 2026; 30(3) 584-610

คำสำคัญ: ประสบการณ์ชีวิต วิธีวิจัยแบบผสมผสาน ปัจจัยทำนายทางสังคม ความเครียดและสุขภาวะทางจิตใจ การจัดการความเครียด

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