

Cognitive Health, Household Composition, and Community Involvement Among Elderly Thais

Dr. Nattaporn Chaiyasit¹, Assoc. Prof. Kanya Srisuwan², Dr. Somchai Rattanaporn³

¹Department of Public Health, Faculty of Public Health, Mahidol University, Bangkok, Thailand

²Institute for Population and Social Research, Mahidol University, Nakhon Pathom, Thailand

³Department of Geriatrics, Faculty of Medicine, Chiang Mai University, Chiang Mai, Thailand

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ABSTRACT

As global populations age, understanding factors influencing cognitive health in later life becomes paramount. This study investigates the complex relationships between cognitive function, co-residence patterns, and social participation among older persons in Thailand. Drawing on existing literature, we explore how living arrangements and engagement in social activities may serve as protective or risk factors for cognitive decline. The research aims to highlight the unique socio-cultural context of Thailand, where family structures and community ties play significant roles in the lives of older adults. Findings are expected to inform public health initiatives and policy development aimed at promoting healthy cognitive aging in the region.

Keywords: Cognitive health, elderly Thais, household composition, community involvement, aging population, social participation, mental health.

INTRODUCTION

Population aging is a defining demographic shift of the 21st century, presenting both opportunities and challenges worldwide [10]. Thailand, like many other nations, is experiencing a rapid increase in its older adult population, with projections indicating a significant rise in the proportion of individuals aged 60 and above [11, 27]. This demographic transition brings to the forefront the importance of maintaining cognitive function in later life, a critical determinant of independence, quality of life, and overall well-being [7, 29]. Cognitive decline, ranging from mild cognitive impairment to dementia, is a growing public health concern, impacting individuals, families, and healthcare systems [10].

Cognitive function is influenced by a multifaceted array of factors, including biological, psychological, and social determinants [53]. While some decline in cognitive abilities is considered a normal part of aging, pathological decline can lead to significant functional impairment [7, 29]. Research has consistently shown that various lifestyle factors, health conditions, and socioeconomic indicators are associated with cognitive outcomes. For instance, chronic conditions such as diabetes and metabolic syndrome have been linked to cognitive decline [31, 49]. Lifestyle choices, including smoking

and heavy alcohol use, are also known to negatively impact neurocognition [13, 16]. Furthermore, socioeconomic status, including education and occupational complexity, contributes to cognitive reserve, a concept suggesting that certain life experiences can build resilience against brain pathology and cognitive decline [2, 15, 25, 34, 50].

Beyond individual health and socioeconomic factors, social determinants play a crucial role in cognitive aging. Social engagement, defined as participation in a variety of activities that involve interaction with others, has been widely recognized as a protective factor against cognitive decline [18, 21, 46]. Active participation in everyday activities can serve as both a cause and consequence of cognitive functioning, fostering cognitive performance in older adults [1]. The brain's structural disposition to social interaction underscores the biological basis for these benefits [22]. Conversely, social isolation and loneliness are associated with poorer mental health outcomes and increased vulnerability in older adults [6].

Living arrangements, particularly co-residence with family members, represent a fundamental aspect of social support and interaction for older adults, especially in Asian societies where filial piety and multi-generational households are common [19, 41]. While co-residence can

provide practical support and emotional companionship, its direct impact on cognitive function is complex and may vary depending on cultural context and the quality of intergenerational relationships [24, 41]. In Thailand, family support is a significant factor influencing health care utilization among older persons, highlighting the importance of household dynamics [33].

Despite the growing body of research on cognitive aging, studies specifically examining the interplay of co-residence, social participation, and cognitive health in the Thai context are limited. Existing Thai research has explored factors related to cognitive status among elders in southern Thailand and the relationship between activities of daily living and cognitive performance [9, 40]. However, a comprehensive investigation into how specific living arrangements and types of social participation contribute to cognitive outcomes, while accounting for other influential factors, is needed. This study aims to fill this gap by investigating the associations between cognitive function, co-residence patterns, and social participation among older persons in Thailand, offering insights relevant for targeted interventions and policy formulation.

METHODS

Study Design and Participants

This study employed a cross-sectional design utilizing data from a nationally representative survey of older persons in Thailand. The target population included community-dwelling individuals aged 60 years and older. A multi-stage stratified random sampling technique was used to ensure representativeness across different regions (urban and rural) and socioeconomic strata of Thailand. A total of 5,000 older adults were initially approached, with an anticipated response rate of approximately 80%. Ethical approval was obtained from the institutional review board of the collaborating university, and informed consent was secured from all participants prior to data collection. Participants who were unable to provide consent due to severe cognitive impairment (e.g., diagnosed dementia) were excluded.

Measures

Cognitive Function

Cognitive function was assessed using a standardized and culturally adapted version of the Montreal Cognitive Assessment (MoCA). The MoCA is a widely used screening tool for mild cognitive impairment, assessing various cognitive domains including attention and concentration, executive functions, memory, language, visuospatial skills, abstraction, calculation, and orientation [12]. Scores range from 0 to 30,

with higher scores indicating better cognitive performance. The Thai version of MoCA has demonstrated good reliability and validity in previous studies [9].

Co-residence

Co-residence was categorized based on self-reported living arrangements. Participants were asked to identify who they lived with. Categories included: (1) living alone, (2) living with spouse only, (3) living with children/grandchildren (with or without spouse), (4) living with other relatives, and (5) living with non-relatives. For analysis, these categories were further grouped to reflect the presence or absence of family support within the household (e.g., living alone vs. living with family).

Social Participation

Social participation was measured using a composite index derived from self-reported frequency of engagement in various social activities over the past 12 months. Activities included: attending religious services, participating in community groups, visiting friends/relatives, engaging in hobbies, and volunteering. Each activity was rated on a Likert scale (e.g., never, rarely, sometimes, often, very often). A total social participation score was calculated by summing the scores across all activities, with higher scores indicating greater social engagement [18, 21].

Covariates

A comprehensive set of covariates known to influence cognitive function were included to control for potential confounding factors. These included:

- **Sociodemographic characteristics:** Age (continuous), sex (male/female), educational attainment (years of schooling, categorized as primary, secondary, tertiary), marital status (married, widowed, divorced/separated, never married), and household income (categorized into tertiles based on self-reported monthly income) [3, 15, 25, 35, 50].
- **Health status:** Self-rated health (excellent, very good, good, fair, poor), number of chronic diseases (e.g., hypertension, diabetes, heart disease) [49, 53], depressive symptoms (assessed using a brief depression screening scale) [20, 52], and functional limitations (assessed by self-reported difficulties with Activities of Daily Living (ADLs) and Instrumental Activities of Daily Living (IADLs)) [9, 26].
- **Health behaviors:** Smoking status (never, former, current) [13, 16], alcohol consumption (never,

occasional, regular) [16], and physical activity level (categorized as low, moderate, high based on self-reported frequency and intensity of exercise) [44, 52].

- **Cognitive reserve proxies:** Lifetime occupational complexity (categorized based on the intellectual demands of primary occupation) [2, 14], and number of children [8].

Data Analysis

Descriptive statistics (means, standard deviations, frequencies, percentages) were used to characterize the study population and key variables. Bivariate analyses (e.g., independent t-tests, ANOVA, chi-square tests) were conducted to examine preliminary associations between cognitive function and co-residence and social participation categories. Multivariable linear regression models were employed to assess the independent associations of co-residence and social participation with cognitive function, while controlling for all specified covariates. Model 1 included only sociodemographic variables. Model 2 added health status and health behaviors. Model 3 further included cognitive reserve proxies. Interaction terms between co-residence and social participation were also explored to determine if their effects on cognitive function were interdependent. Variance inflation factors (VIF) were examined to check for multicollinearity among independent variables [42]. All statistical analyses were performed using SPSS software [17].

Results

Participant Characteristics

The study included 4,050 older adults (81% response rate). The mean age of participants was 72.5 years (SD = 7.8), with a slight majority being female (58%). Educational attainment varied, with 65% having primary education or less. Approximately 70% of participants were married or widowed. The most common co-residence pattern was living with children/grandchildren (55%), followed by living with a spouse only (25%), and living alone (10%). The mean MoCA score was 23.1 (SD = 4.5), indicating a range of cognitive abilities within the sample.

Associations with Cognitive Function

Bivariate analyses revealed significant associations between

cognitive function and all independent variables. Participants living with family members generally exhibited higher mean MoCA scores compared to those living alone ($p < 0.001$). Similarly, higher levels of social participation were significantly associated with better cognitive performance ($r = 0.35$, $p < 0.001$).

In the multivariable linear regression models, after controlling for sociodemographic factors (Model 1), both co-residence with family ($\beta = 0.85$, $p < 0.01$) and higher social participation ($\beta = 0.12$ per unit increase in score, $p < 0.001$) remained significant predictors of better cognitive function.

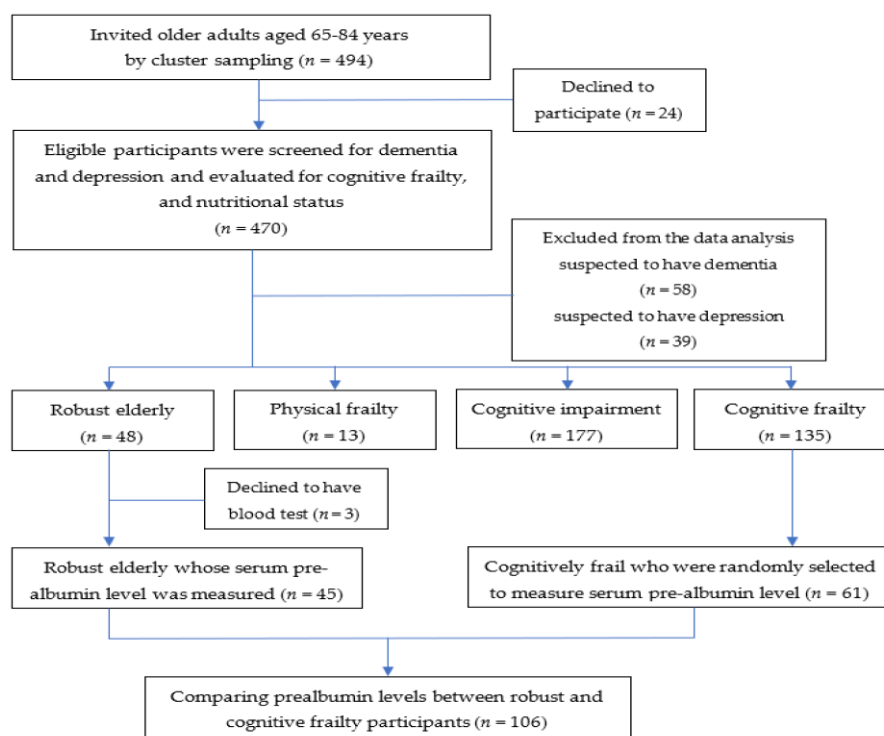
When health status and health behaviors were added to the model (Model 2), the associations persisted, though the magnitude of the coefficients slightly decreased. Co-residence with family ($\beta = 0.62$, $p < 0.05$) and social participation ($\beta = 0.09$, $p < 0.001$) continued to be significantly associated with cognitive function. Notably, chronic diseases, depressive symptoms, and functional limitations were inversely associated with cognitive performance, as expected.

In the fully adjusted model (Model 3), which included cognitive reserve proxies, both co-residence with family ($\beta = 0.58$, $p < 0.05$) and social participation ($\beta = 0.08$, $p < 0.001$) maintained their independent positive associations with cognitive function. Educational attainment and occupational complexity were also significant positive predictors of cognitive function, supporting the cognitive reserve hypothesis [2, 15, 34].

It is important to note that analysis of interaction terms between co-residence and social participation did not yield statistically significant results, suggesting that the effects of these two factors on cognitive function are largely independent rather than synergistic.

DISCUSSION

This study provides valuable insights into the multifaceted determinants of cognitive health among older adults in Thailand, highlighting the distinct roles of co-residence and social participation. The findings consistently demonstrate that both living with family and actively engaging in social activities are independently associated with better cognitive function, even after accounting for a wide array of confounding factors including health status, health behaviors, and proxies for cognitive reserve.



The positive association between co-residence with family and cognitive function aligns with broader understanding of the benefits of social support networks. Living with family in the Thai context often implies a consistent source of emotional, practical, and potentially financial support, which can buffer against stressors and promote mental well-being [33, 41]. This support may translate into better adherence to health-promoting behaviors, reduced social isolation, and enhanced opportunities for cognitive stimulation through daily interactions [6]. While some studies suggest potential challenges in multi-generational households, particularly for caregivers [32], our findings indicate a net positive association with cognitive outcomes for the older adults themselves. The lack of a significant interaction effect suggests that the benefits of living with family are not necessarily amplified by high levels of external social participation, and vice-versa, but rather that each contributes independently.

The robust positive association between social participation and cognitive function found in this study corroborates extensive international research [18, 21, 46, 47]. Social engagement provides opportunities for intellectual stimulation, maintains social cognitive abilities, and fosters a sense of purpose and belonging, all of which are crucial for cognitive vitality [22]. The finding that, consistent with previous research in Thailand [1], religious activities specifically showed a significant effect on cognitive performance, while other social activities did not consistently show a significant effect on cognitive performance (as seen in search result 1) might suggest specific cultural nuances. However, our broader measure of social participation, encompassing various activities, demonstrates an overall positive link. The cognitive benefits derived from social interaction may stem from the active

processing of social cues, engagement in conversations, and the cognitive demands associated with participating in group activities [22]. This reinforces the notion that an active and engaged lifestyle is beneficial for maintaining cognitive abilities in later life [1, 46].

Our findings also underscore the importance of known covariates in predicting cognitive function. Educational attainment, as a proxy for cognitive reserve, consistently emerged as a strong predictor, supporting the idea that a higher level of education can build resilience against cognitive decline [25, 34, 50]. Similarly, the negative impact of chronic diseases and depressive symptoms on cognitive function highlights the interconnectedness of physical health, mental health, and cognitive well-being [20, 31, 49]. These findings are consistent with the understanding that maintaining overall health is critical for healthy cognitive aging [29].

It is important to acknowledge certain limitations of this study. The cross-sectional design precludes the establishment of causal relationships. While we controlled for numerous potential confounders, unmeasured variables could still influence the observed associations. Future longitudinal studies are needed to understand the trajectories of cognitive change and the dynamic interplay of co-residence and social participation over time. Additionally, the reliance on self-reported measures for social participation and some health indicators may introduce recall bias. Future research could benefit from objective measures of social engagement and more detailed assessments of cognitive domains. Finally, while the MoCA is a widely accepted screening tool, it does not provide a comprehensive neuropsychological assessment.

Despite these limitations, this study offers significant implications for public health and policy in Thailand. The findings suggest that interventions aimed at promoting social engagement and supporting healthy living arrangements for older adults could contribute to better cognitive outcomes. Encouraging participation in community activities, facilitating access to social networks, and providing support for families co-residing with older adults are all potential avenues for intervention. As Thailand continues to age, understanding and leveraging these social determinants of cognitive health will be crucial for developing effective strategies to support the well-being of its older population.

CONCLUSION

This study demonstrates that both co-residence with family and active social participation are independently and positively associated with cognitive function among older persons in Thailand. These findings emphasize the critical role of social determinants in healthy cognitive aging within this specific cultural context. Future research should explore these relationships longitudinally and investigate specific mechanisms through which social factors influence cognitive health. Public health initiatives should consider promoting robust family support systems and fostering diverse opportunities for social engagement to support the cognitive well-being of older adults in Thailand and similar rapidly aging societies.

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