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## Disability among older adults with hypertension in Southeast Asia: A scoping review

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## 1. Introduction

Disability encompasses the challenge of engaging in various aspects of life difficulties and spanning a wide range of activities across multiple domains. These activities can range from essential tasks like taking care of personal hygiene, completing errands to pursue hobbies, and even getting a proper sleep. The underlying cause of these difficulties stem from health or physical conditions that hinder individuals from performing fully those activities (Verbrugge & Jette, 1994). World Health Organization (WHO) and the World Bank's first-ever World Report on Disability revealed that over one billion individuals worldwide are living with a disability. This accounts for approximately 15% of the global population. In additions, it was estimated that more than 250 million individuals experience moderate to significant disabilities, while over 45% of adults aged 60 and above encounter challenges in carrying out their daily activities (Eurostat, 2022). It is noteworthy that the majority, around 80% of individuals with disabilities reside in developing countries (World Health Organization, 2011). In additions, when considering the older population group, a notable disparity in disability prevalence between developed and developing countries was discovered. It was found that, among individuals aged 60 and above, the occurrence of disabilities in developing countries was notably higher at 43%, in contrast to the prevalence of approximately 30% observed in developed countries. Furthermore, people with disabilities generally experience poorer health, lower educational attainment, limited economic opportunities, and higher poverty rates compared to those without disabilities (World Health Organization, 2011b). Besides those consequences of disabilities, significant costs associated with disabilities had been observed, and these costs tend to differ based on the severity of the disability, the stage of life the individual was in, and the composition of their household (Mitra et al., 2017).

It is indeed possible for the situation of disability to worsen under certain circumstances. Previous studies indicated that non-communicable diseases (NCDs) and disability were on the rise due to the aging population and the increasing burden of chronic illnesses (Kruk et al., 2015). In addition, NCDs had emerged as the primary causes of mortality and disability on a global scale (Lim et al., 2012; Murray et al., 2012). Furthermore, there was a strong two-way association between disability and NCDs. In simple terms, NCDs can lead to disabilities. Conversely, people with disabilities were more susceptible to NCDs. Individuals with NCDs might experience impairments, which could result in limitations in daily activities and reduced participation unless they had proper personal and environmental support (Kruk et al., 2015).

Hypertension is a common noncommunicable disease among older adults, with more than 50% of this population suffering from it (Buford, 2016; Chou et al., 2021; Marmamula et al., 2021; Muli et al., 2020; Seow et al., 2015). Previous study

indicated that hypertension not only increased the risks of developing other NCDs but also significantly increased the odds of experiencing disability (Hajjar et al., 2007). An Indian population-based study on the prevalence of disabilities and NCDs in older population reported that there was a high prevalence of morbidity due to disability. This study further revealed that approximately 20% of the older population reported experiencing at least one self-reported disability. Interestingly, the overall prevalence of having at least one NCD was found to be approximately 34%, with hypertension being the most prevalence systemic condition (Marmamula et al., 2021). A study from Taiwan indicated that hypertension was a top three of disease leading to increasing functional disability in later stage disease (Chou et al., 2021). In China, it was reported that people living with hypertension having additional comorbid conditions were more likely to encounter functional disability. Main factors associated with functional disability among Chinese hypertension patients were aging, gender, marital status (never married, divorced and separated), low education, and living in a village (Qian & Ren, 2016).

Currently, approximately 67% of people with hypertension living in low- and middle-income countries (Porapakkham et al., 2008; World Health Organization, 2021). The population within the WHO South-East Asia Region is experiencing a rapid aging process. In 2017, individuals aged 60 and above accounted for approximately 10% of the total population. However, projections indicate that this proportion will rise significantly to approximately 14% by 2030 and will be greater than 20% by 2050 (World Health Organization, 2023). The demographic shift towards an aging population in the WHO South-East Asia Region highlights the need for collaboration among policymakers, healthcare professionals, and communities. This collaboration is essential to ensure that the aging population affected by disabilities caused by hypertension receive the necessary care, support, and resources to enhance the overall quality of life and well-being of older adults. However, the study regarding the risk factors of disability among older adults with hypertension in Southeast Asia is limited. Therefore, this paper aimed to investigate published evidence on disability among older people with hypertension in Southeast Asia.

## **2. Methods**

A scoping review is a useful tool for evaluating the volume and caliber of the body of knowledge already available on a given subject. The value of scoping reviews lies in their ability to explore emerging evidence and identify areas. A Scoping review serves the purpose of identifying and mapping the existing evidence (Munn et al., 2018; Tricco et al., 2018).

### **2.1 Search strategy**

The literature search was conducted in four databases including Web of science, Pubmed, CINAHL, Cochrane, and a google with publications from 2000 to 2023. Additional studies were searched by reviewing reference lists of relevant studies using the Google searching engine. The review was conducted following the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines for a scoping review (Tricco et al., 2018).

The relevant keywords were used for a search as following:

**Table 1:** The key terms and alternate iterations for a scoping review

Search terms	Alternate iterations
Older adults with hypertension	'older people with hypertension' OR 'older adults with hypertension' OR 'aged people with hypertension' OR 'aging people with hypertension' OR 'elderly with hypertension' OR 'geriatric with hypertension' OR 'senior people with hypertension' OR 'older adults people with high blood pressure' OR 'older people with high blood pressure'
Disability	'disability' OR 'disability prevention' OR 'disability intervention' OR 'risk of disability' OR 'functional disability' OR 'functional impairment' OR 'impairment' OR 'disable'
Southeast Asia	'Southeast Asia' OR 'Brunei' OR 'Cambodia' OR 'East Timor' OR 'Indonesia' OR 'Laos' OR 'Malaysia' OR 'Myanmar' OR 'Philippines' OR 'Singapore' OR 'Thailand' OR 'Vietnam'

We employed the conjunction "AND" to combine essential terms for conducting searches in the specified databases.

## 2.2 Study Selection - Inclusion and Exclusion Criteria

The inclusion criteria were: 1) studies conducted in the region of Southeast Asia., 2) studies had a clear demonstration on disability among older adults with hypertension in Southeast Asia, and 3) language is restricted to English language.

Two independent reviewers assessed all studies to determine if they met the inclusion criteria for the review. The studies that fulfilled the inclusion criteria were gathered and stored in the Zotero library database, and any duplicate entries were eliminated. Studies that did not meet the specified criteria for inclusion were not considered. Two independent reviewers thoroughly evaluated the entire text in

accordance with the inclusion criteria. Any conflicts arising between two reviewers during each stage of the selection process were resolved through discussion and the involvement of an additional reviewer. The complete findings of the search and the process of selecting relevant studies were documented in the final scoping review. The results were presented using the Preferred Reporting Items for Systematic Reviews and Meta-analyses extension for scoping review (PRISMA-ScR) flow diagram (Tricco et al., 2018).

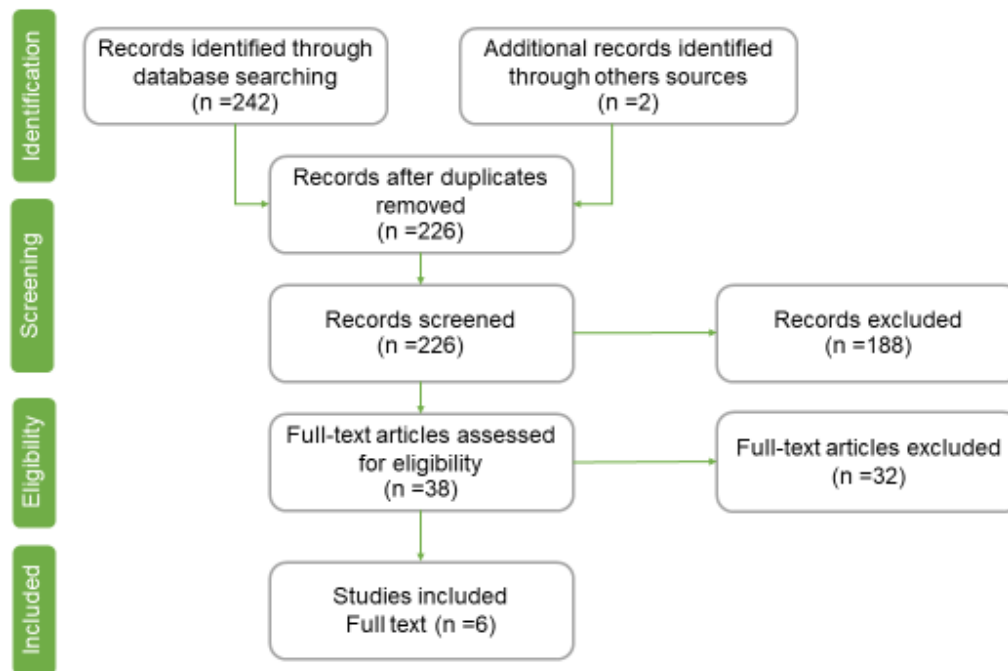
### **2.3 Data Extraction**

Data extraction was done by two independent reviewers. The data extracted included: author citations, study objective, study design, setting and participants, and findings.

## **3. Results**

### **3.1 Literature search results**

According to the PRISMA guidelines, authors screened the abstracts of all discovered articles and assessed the available full text articles based on the eligibility criteria to finalize the selected articles to be included in the review. A total of 6 articles from 244 potential articles were included in this scoping review (Figure 1).



**Figure 1:** A flowchart of selection process and studies included in a scoping review

These observational studies were conducted in four countries, including Indonesia (n=1), Vietnam (n=1), Malaysia (n=3) and Thailand (n=1) (Table 2). There were no intervention studies and registered protocol met selection criteria.

#### Summary of finding regarding to country

##### Indonesia

The study explored the associations between biometric screening indicators and declines in activities of daily living (ADLs) among the Indonesian older people (Madyaningrum et al., 2021). Using the Indonesian family life survey 4 (2007-2008) and 5 (2014-2015). The findings revealed that hypertension was associated with ADL functioning. Furthermore, hypertension was linked to an increase in the likelihood of declining ADL function.

##### Vietnam

Only one study conducted from Vietnam (Bang et al., 2017). The study examined the health status and health-related quality of life (HRQoL) of Vietnamese older people and determined healthcare service's needs. The findings revealed that hypertension was the second most common chronic disease, and it

was associated with functional status. There were 154 participants from 713 who required home healthcare services, including rehabilitation.

#### Malaysia

Three observational studies conducted in Malaysia (Ahmad et al., 2017), (Rezali et al., 2021), (Momtaz et al., 2018). National surveys were used in these studies to investigate the prevalence and factors associated with disabilities. The findings revealed that older people with hypertension were significantly associated with disabilities. Furthermore, in Malaysia, the risk of disability was about 13 times higher among older adults. Concerning visual impairment, 5.6% of the elderly people with hypertension had it. Conversely, a research found that although 50.25% of participants had hypertension, after adjusting for potential covariates, there was no statistically significant relationship between hypertension and cognitive function.

#### Thailand

There was only one study conducted in Thailand (Wongsin & Chen, 2023). The study examined risk factors of disability among community-dwelling older adults with hypertension and investigate sex differences in the risk factors that were associated with disability in this target group. Longitudinal data from the Health, Aging, and Retirement in Thailand (HART) were employed. The findings indicated that individuals who belonged to an older age group, had a greater number of chronic conditions, were obese, and had a disability at the beginning of the study were identified as significant factors that predicted disability. 2) The impact of risk factors at the beginning of the study on disability at the end of the study is similar for both males and females. 3) Among older Thai women with hypertension, advanced age, having multiple chronic conditions, and being obese were significant predictors. On the other hand, for older Thai men with hypertension, poor self-rated health was associated with disability.

In summary, the prevalent risk factor of disability among older adults with hypertension in these countries was the presence of multiple chronic conditions. On the other hand, potential risk factors that vary include obesity, older age groups, and disability at the base year, depending on the country context.

**Table 2:** Summary of studies on disability among older adults with hypertension in Southeast Asia

Author citations	Study objective	Study design	Setting and participants	Findings
Madyaningrum E et. al (2021)	To explore the associations between biometric screening indicators (BMI, waist circumference, anemia status, stage of hypertension, high-density lipoprotein level, lung capacity, and sit to stand) and declines in ADLs functioning among the Indonesian elderly.	A prospective cohort study	<p>Setting: Indonesian family life survey (IFLS) 4 (2007-2008) and 5 (2014-2015) conducted in 13 provinces of Indonesia.</p> <p>Sample size: 1,605 individuals</p> <p>Age: 60 years old and above</p>	Hypertension was linked to the functioning of activities of daily living (ADLs). After adjusting for demographic, social, and health factors, the presence of anemia, stage 2 hypertension, longer sit-to-stand times, and lower lung capacity were found to be significantly linked to an increased likelihood of experiencing a decline in activities of daily living (ADLs) function.
Bang K-S et. al (2017 )	To explore the health status and health-related quality of life (HRQoL) of rural elderly in Vietnam and its determinants, and to assess needs for healthcare services.	A joint cohort study	<p>Setting: Vietnam, the rural Quoc-Oai district, Hanoi. The area is divided into two strata, namely, lowland and mountainous areas.</p> <p>Sample size: 713 individuals</p> <p>Aged: 60 years old and above.</p>	In Vietnam, there has been a transition in epidemiological patterns from a prevalence of communicable diseases to non-communicable diseases (NCD). Hypertension ranked as the second most commonly reported chronic ailment. Women exhibited a higher prevalence of functional limitations compared to men. The prevalence of non-communicable diseases (NCDs) was a strong indicator of health-related quality of life (HRQoL). The study findings recorded



<b>Author citations</b>	<b>Study objective</b>	<b>Study design</b>	<b>Setting and participants</b>	<b>Findings</b>
				the diverse requirements for health information, healthcare, and rehabilitation services.
Rezali MS et.al (2021)	To determine the prevalence and factors associated with vision disability among the elderly in Malaysia.	A cross-sectional study.	Setting: Malaysia, the national health and morbidity survey 2018.  Sample size: 3,977 individuals Aged: 60 years old and above.	The prevalence of visual impairment among hypertensive older people was 5.6%. Hypertension was a significant risk factor for Vision Disability among older adults in Malaysia, based on their comorbid status.
Ahmad NA et.al (2017)	To examine the prevalence of disability among adults in Malaysia and its determinants, particularly the socioeconomic characteristics and comorbidities.	A cross-sectional study	Setting: Malaysia, the national health and morbidity survey 2015  Sample size: 19,959 individuals and 11.9% was age 61 years and above.  Age: 18 years old and over.	When considering comorbidities, individuals with hypertension were nearly three times more likely to have a disability compared to those without the condition. Individuals who are 61 years and older in Malaysia had a significantly higher likelihood, approximately 13 times greater, of being at risk for disability.
Momtaz YA et.al (2021)	To describe the prevalence of hypotension in older adults and to determine the association between hypotension and	A cross-sectional study	Setting: Malaysia, the nationally survey 'Identifying Psychosocial and Identifying Economic Risk Factor of	The results showed that 50.25% of the participants were found to have hypertension. To examine the correlation between blood pressure category and cognitive function across different age groups. The study revealed a significant correlation between low

Author citations	Study objective	Study design	Setting and participants	Findings
	cognitive function		Cognitive Impairment among older adults  Sample size: 1,607 individuals  Aged: 60 years old and above.	blood pressure (hypotension) and a decline in cognitive abilities during older age. There is no notable correlation between hypertension and cognitive function, even when accounting for potential confounding factors.
Wongsin U and ChenT-Y (2023)	To investigate predictors of disability and examined sex differences in the risk factors that were associated with disability among community-dwelling older adults in Thailand	A longitudinal study	Setting: Thailand, the Health, Aging, and Retirement in Thailand study (HART) wave 1(2015) and wave 2 (2017).  Sample size: 916 individuals.  Aged: 60 years old and above.	Among community-dwelling Thai older adults with hypertension, being in an older age group, having more chronic conditions, experiencing obesity, and having disability at baseline were significant predictors of disability at the 2-year follow-up. There was no difference in the impact of these risk factors on disability at follow-up based on sex. However, distinct risk factors for disability were observed between males and females.

#### **4. Discussion**

This study has provided information concerning disability among older adults living hypertension in Southeast Asia. Studies were available from four countries of the eleven southeast Asian countries. Of those, five studies mainly investigated the prevalence, potential risk factors, and sex difference in risk factors associated with disabilities among the older population. Another one study explored the health status and health-related quality of life (HRQoL) and healthcare services needed. The study showed that hypertension is associated with disability among older adults. Besides, the common risk factor of disability observed among older adults with hypertension in these countries was the coexistence of multiple chronic conditions. Conversely, differences risk factors of disability among older adults with hypertension were obesity, older age groups, and disability at the base year, contingent upon the specific country context.

Regarding disability among older people with hypertension, our result showed that hypertension increases the risks of functional disability. It is in line with other studies in China (Qian & Ren, 2016), India (Marmamula et al., 2021), Taiwan (Chou et al., 2021), and South Carolina (Hajjar et al., 2007) found that hypertension associated with disability among older people. One possible explanation is that older adults who have hypertension may struggle to perform routine tasks effectively, which increases their risk of developing disabilities.

Regarding factors associated with disability, our result showed that aging, low education, unemployment status, BMI were the main factors. Similar studies found in India (Marmamula et al., 2021) the result showed a relationship between age and disability, but there were not the relationship between gender, education, BMI and disability. This could be attributed to variations in country-specific factors. Therefore, additional investigation is warranted. A study in China found that aging and low education were associated with functional disability (Qian & Ren, 2016). It is worth considering that as individuals grow older, there may be an increased likelihood of experiencing a decline in physical health. This decline can manifest in various ways, such as reduced gait speed and balance, ultimately impacting one's ability to perform activities of daily living.

To our knowledge, this is the first scoping review and synthesis of literature related to disability among older adults with hypertension in Southeast Asia. However, there were a few studies related to disability among older adults living hypertension especially in Southeast Asia. Therefore, additional research is needed to explore risk factors and interventions that can help reduce the prevalence of functional disability in this population. This aligns with Sustainable Development Goal 3, which pertains to promoting good health and well-being. The objective is to guarantee optimal health and well-being for all individuals.

#### **5. Conclusion**

The prevalence of hypertension among older adults has increased as a result of the aging population and advancements in technology. Hypertension is highly likely to exacerbate functional disability in older individuals, thereby affecting both the individual and their family. Therefore, it is imperative to develop a health program specifically designed to decrease the occurrence of disability among the target population.

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