

# Art in Health: Angklung Musical-Based Interventions for Older Adults in Southeast Asia

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## Abstract

Arts in healthcare can support emotional, cognitive, and social well-being among older adults. Angklung, a traditional Indonesian bamboo instrument recognised by UNESCO, has potential as a culturally grounded, music-based intervention in older adult care. This systematic review, guided by the PRISMA framework, examined Angklung-based interventions for older adults in Southeast Asia. Searches were conducted in PubMed, Scopus, and Google Scholar, with the final search completed on 19 November 2024. English-language studies published between 2010 and 2024 were included if they focused on Angklung-based or Angklung-related interventions involving older adults and reported outcomes related to well-being, cognition, emotion, social engagement, motor function, or accessibility. A total of nine studies met the eligibility criteria. The findings suggest that Angklung-based interventions may support memory recall, emotional regulation, social interaction, motor coordination, and accessibility. Three intervention types were identified: Music Angklung, involving listening-based engagement; Activity Angklung, involving group performance; and Assistive Angklung, involving Smart Band and Internet of Things-based support. Music and Activity Angklung were mainly associated with emotional, cognitive, and social engagement, while Assistive Angklung supported participation among older adults with physical or functional limitations. However, the evidence remains preliminary due to small samples, varied study designs, inconsistent reporting, and limited long-term follow-up. Further research is needed to examine effectiveness, scalability, and integration into community-based older adult care programmes. This review contributes by positioning Angklung as a culturally relevant, non-pharmacological approach with potential application in arts-in-health and older adult care in Southeast Asia.

**Keywords:** Angklung, Older Adults, Music Therapy, Arts in Health, Assistive Technology, Southeast Asia

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## Introduction

The integration of arts in healthcare has gained increasing recognition for its therapeutic, educational, and expressive benefits (Goodman & Sims, 2009). Arts-based interventions, including music therapy, have been shown to support emotional and psychological well-being, particularly among older adults (Grebe, 2019). As the global ageing population continues to rise, with 80% of older adults projected to reside in low- and middle-income countries by 2050 (World Health Organization, 2024), non-pharmacological approaches to enhance quality of life have become increasingly important. Music-based interventions can reduce fear, anxiety, and discomfort while providing participants with a sense of control, engagement, and emotional expression (El Geziry et al., 2018). Previous research further supports the relevance of music and arts-based activities for older adult well-being in Southeast Asia. Passive and active music participation has been associated with healthy ageing among older Thai adults, while arts-based interventions have also been reported to support quality of life and cognition among elderly individuals with mild cognitive impairment (Ponprasit, Tuicomepee & Wiwattanapantuwong, 2024; Sangvanich, Tawankanjanachot & Tangwongchai, 2023).

Among traditional musical instruments, Angklung is uniquely suited for older adult care because of its collaborative, accessible, and culturally familiar characteristics. Unlike many instruments that require advanced technical skill, Angklung is lightweight, easy to hold, and played through simple shaking movements, making it suitable for older adults with varying physical and cognitive abilities. Its ensemble-based structure also requires participants to play individual notes together to create a complete melody, encouraging cooperation, attention, turn-taking, memory recall, and social interaction. In this way, Angklung supports not only musical engagement but also group participation, communication, motor coordination, and emotional connection.

Angklung is also culturally meaningful in Southeast Asia, particularly in Indonesia, Malaysia, and Thailand, where community music-making and collective participation are familiar social practices. Its cultural resonance may strengthen emotional engagement and make the intervention more acceptable in elderly care contexts. Therefore, Angklung musical therapy represents a culturally significant art-based approach that may support cognitive function, emotional well-being, and social connectedness among older adults (Mohd Bakri, 2024). This study explores the potential of Angklung musical-based interventions for older adults in Southeast Asia, with emphasis on their role in supporting mental health, quality of life, and community-based care.

## Literature Review

### Art in Health

The field of arts in health is an expanding multidisciplinary domain that integrates various artistic expressions to enhance healthcare delivery and overall well-being (National Organization for Arts in Health, 2017). By incorporating literary, performing, visual, and design arts into therapeutic and educational settings, these interventions promote stress reduction, emotional resilience, and mental health support (Goodman & Sims, 2009).

Among these interventions, music, art, and dance therapies have proven particularly effective in alleviating pain, anxiety, and depression, especially among elderly populations (Fancourt & Finn, 2019). Non-pharmacological approaches, such as music therapy, empower patients by providing emotional relief and a sense of control over their well-being (El Geziry et al., 2018; University of Michigan Injury Prevention Center, 2023).

Traditional musical art forms, such as Angklung, a bamboo musical instrument from Indonesia, have shown promising potential in elderly care. Research suggests that Angklung-based interventions foster cognitive function, emotional regulation, and social connectedness through group music-making (Raglio et al., 2015). While research on Angklung therapy remains limited, existing studies on collective musical engagement underscore its benefits for aging individuals, reinforcing its role as a valuable non-pharmacological tool for enhancing well-being and social inclusion.

### **Music Therapy**

Music therapy is a critical component of arts-based interventions in healthcare, offering a non-pharmacological approach to enhancing emotional and psychological well-being. As a recognized form of therapy, music engages patients in both active and passive participation, contributing to cognitive function improvement, anxiety reduction, and social interaction enhancement (González-Ojea et al., 2022).

Research indicates that music therapy provides significant benefits for elderly populations, particularly those in institutionalized care settings. It has been shown to alleviate depressive symptoms and encourage creative expression through structured musical activities such as singing, rhythmic exercises, and instrumental play. These interventions play a crucial role in maintaining daily life functions, reinforcing independence, emotional stability, and overall well-being (World Health Organization, 2023).

Studies further highlight that music therapy facilitates emotional regulation and helps alleviate feelings of loneliness, particularly among individuals with cognitive impairments such as dementia (Chu et al., 2014). Given its ability to enhance quality of life, music therapy stands as a viable alternative to conventional treatments, promoting holistic and patient-centered care (Mohd Bakri & Sabran, 2022).

### **Aging**

Aging is a global phenomenon that poses significant challenges to healthcare and social systems worldwide. By 2050, an estimated 80% of older adults will reside in low- and middle-income countries, as the global aging population continues to expand rapidly. In 2020, the number of individuals aged 60 and older exceeded that of children under five years old, with projections indicating that by 2050, the over 60 population will nearly double, increasing from 12% to 22% (World Health Organization, 2024).

Aging also significantly increases the prevalence of dementia, which is the seventh leading cause of death globally. Alzheimer's disease accounts for 60–70% of dementia cases, affecting over 55 million people worldwide, with the majority residing in low- and middle-income countries. As global life expectancy rises, the number of dementia cases is expected to escalate further (World Health Organization, 2023).

Women are disproportionately affected by dementia, both as patients and caregivers, providing nearly 70% of global dementia care hours. Additionally, approximately 15% of the world's population over 1 billion individuals live with disabilities, with older adults being particularly vulnerable to age related impairments that compromise independence and quality of life (United Nations, 2023).

## Angklung

Angklung is a traditional bamboo idiophone consisting of two to four tubes bound with rattan. It is primarily crafted from *Gigantochloa atroviolacea* Widjaja (black bamboo) due to its durability and acoustic resonance (Mohd Bakri, Surip, & Sabran, 2021). Originally used in agricultural rituals and theatrical performances, Angklung has evolved into a medium for visual art appreciation, entertainment, and modern musical expression (Masunah, 1999). On January 18, 2011, UNESCO officially recognized Angklung as part of Indonesia Intangible Cultural Heritage, reinforcing its status as a cultural symbol and artistic heritage (Rosyadi, 2012). In adapting Angklung for therapeutic and elderly care contexts across Southeast Asia, cultural sensitivity is important to ensure that the instrument is not treated merely as a clinical tool, but as a living heritage practice. This includes respecting its Indonesian cultural origins, acknowledging local performance traditions, using culturally appropriate songs and facilitation methods, and adapting activities in ways that preserve the instrument's communal, collaborative, and heritage-based values.

As a percussive instrument, Angklung produces sound when shaken and is traditionally performed in ensemble settings, requiring multiple players to generate harmonized melodies, although solo performances are also possible (Wahono, 2010; Zainal et al., 2009). Beyond its artistic and cultural significance, Angklung has gained increasing recognition in education, therapy, and assistive interventions, expanding its role into cognitive, social, and rehabilitative domains.

The implementation of Angklung therapy varies depending on the setting. Trained music therapists provide structured interventions for cognitive and psychological support Ariani (2012), while community musicians and volunteers, such as those in the Angklung Community of Senang Barokah Sesama (SBS), facilitate cultural and social engagement programs (Prajogi & Daryanto, 2024). Additionally, educators and caregivers incorporate Angklung into interactive learning and therapeutic activities, although not all possess formal music therapy qualifications (Maramis et al., 2021).

## Research Questions

This study aims to explore the role of Angklung musical-based interventions in elderly well-being. The following research questions guide this investigation:

1. What are the cognitive, emotional, and social benefits of Angklung musical based interventions for elderly individuals in Southeast Asia?
2. How do Music Angklung, Activity Angklung, and Assistive Angklung differ in their effectiveness as non-pharmacological interventions for elderly well-being?
3. What are the roles of trained music therapists, community musicians, and caregivers in delivering Angklung musical-based interventions for the elderly?

## Methodology

Systematic literature reviews provide a structured approach for synthesising existing knowledge, identifying research gaps, and informing future research directions (Paul & Barari, 2022). Following a scientific, reproducible, and transparent method (Tranfield et al., 2003), systematic literature reviews (SLRs) have become increasingly common across disciplines (Ghorbani et al., 2022). SLRs can summarise state-of-the-art findings, identify

research gaps, and suggest future research directions (Moher et al., 2009). They may also be organised according to domain, theory, or method, depending on the purpose of the review (Paul & Criado, 2020).

Systematic reviews offer several advantages over traditional literature reviews because they use clear search strategies, predefined inclusion and exclusion criteria, and transparent selection procedures. These features help reduce research bias and improve the reliability of the findings (Mallett et al., 2012). Although global systematic reviews of arts-based interventions and ageing have been conducted, studies focusing specifically on Angklung as an art-based or music-based intervention for older adults remain limited. Therefore, this review examines how Angklung has been used in older adult care and synthesises available evidence on its cognitive, emotional, social, motor, and accessibility-related outcomes. The review also aims to clarify the scope of Angklung-based interventions in Southeast Asia and identify areas requiring further empirical research.

This study focuses on Angklung musical-based interventions for older adults. The methodology section explains the PRISMA framework, search strategy, inclusion and exclusion criteria, article selection process, and data abstraction and analysis procedures used in this review. The review was designed to address the research questions by identifying, selecting, and synthesising relevant studies on Music Angklung, Activity Angklung, and Assistive Technology Angklung interventions.

### **PRISMA**

PRISMA, which stands for Preferred Reporting Items for Systematic Reviews and Meta-Analyses, is a widely recognised framework for conducting and reporting systematic reviews. The purpose of PRISMA is to support transparent, complete, and rigorous reporting of the review process (Moher et al., 2009). In this study, the PRISMA framework was used to guide the identification, screening, eligibility assessment, and final inclusion of studies related to Angklung musical-based interventions for older adults. The framework helped ensure that the search and selection process was systematic, traceable, and aligned with the objectives of the review.

### **Resources**

The search strategy was informed by previous literature and developed to identify studies on Angklung musical-based interventions for older adults. The search focused on Angklung as an art-based, music-based, activity-based, and assistive technology-supported intervention. Three databases were used: Scopus, PubMed, and Google Scholar. As no single database provides complete coverage of all relevant literature, the use of multiple sources increased the likelihood of identifying suitable studies (Younger, 2010). Additional manual checks of relevant papers and reference lists were also conducted to identify related studies.

### **The Systematic Review Process for Selecting the Articles**

#### **Identification**

The systematic review process involved three main stages: identification, screening, and eligibility assessment. In the identification stage, keywords related to Angklung, older adults, music therapy, music-based intervention, well-being, health, assistive technology,

and Southeast Asia were identified. These keywords were combined using Boolean operators and applied in Scopus, PubMed, and Google Scholar. The final search was conducted on 19 November 2024 (see figure 1). The search produced 163 records in total.

**Screening**

The screening stage involved removing duplicate records and applying the inclusion and exclusion criteria. A total of 10 duplicate records were removed. The remaining records were screened according to publication timeline, document type, language, study focus, and relevance to Angklung-based interventions for older adults. Studies were included if they were published between 2010 and 2024, written in English, and focused on Angklung musical-based interventions, Angklung-related activities, or Angklung-supported assistive technology involving older adults. Studies were excluded if they were conference proceedings, book chapters, books, non-English publications, or did not focus on Angklung-based interventions for older adults. After screening, records that did not meet these criteria were excluded from further assessment.

**Eligibility**

During the eligibility stage, the titles, abstracts, and full texts of potentially relevant studies were reviewed to determine whether they met the inclusion criteria. Studies were assessed for relevance to the review objectives, intervention type, participant group, and reported outcomes. After eligibility assessment, nine studies were included in the final review. These studies were then grouped into three categories: Music Angklung, Activity Angklung, and Assistive Technology Angklung. The article selection process followed the PRISMA framework, beginning with database identification, duplicate removal, screening, eligibility assessment, and final inclusion. The complete selection process is shown in Figure 3.

Database	Search string strategy Boolean operators	No. Articles
Scopus	TITLE-ABS-KEY ( "Angklung" ) AND ( "Elderly" OR "Senior Citizen" ) AND ( "Music Therapy" OR "Musical-Based Intervention" ) AND ( "Health" OR "Well-being" ) AND ( "Southeast Asia" ) AND ( LIMIT-TO ( DOCTYPE , "ar" ) ) AND ( LIMIT-TO ( LANGUAGE , "English" ) )	7
PubMed	(( "Angklung"[Title/Abstract] AND ("Elderly"[MeSH Terms] OR "Older Adults"[Title/Abstract] OR "Senior Citizens"[Title/Abstract])) AND ("Music Therapy"[MeSH Terms] OR "Musical-Based Intervention"[Title/Abstract]) AND ("Health"[MeSH Terms] OR "Well-being"[Title/Abstract]) AND ("Southeast Asia"[MeSH Terms] OR "Indonesia"[Title/Abstract] OR "Malaysia"[Title/Abstract] OR "Thailand"[Title/Abstract]) AND (english[Filter]) from 2010/1/1 - 2024/11/19	100
Google scholar	"Angklung" AND ("Elderly" OR "Older Adults" OR "Senior Citizens") AND ("Music Therapy" OR "Musical-Based Intervention" OR "Music Intervention") AND ("Health" OR "Well-being" OR "Cognitive Function") AND ("Southeast Asia" OR "Indonesia" OR "Malaysia" OR "Thailand"), English, from 2010/1/1 - 2024/11/19	56
Scopus, PubMed & Google scholar	Total databases	163

Figure 2. Table of search strings and number of records identified from Scopus, PubMed, and Google Scholar.

Criteria	Inclusion	Exclusion
Publication timeline	2010-2024	2010 and before
Document type	Article (with empirical data), thesis and review	Conference proceeding, chapters in book, book series, books etc
Language	English	Non-English
Nature of the study	Focus on methodology	Not focus on methodology

Figure 2. Table of inclusion and exclusion criteria used for article screening.

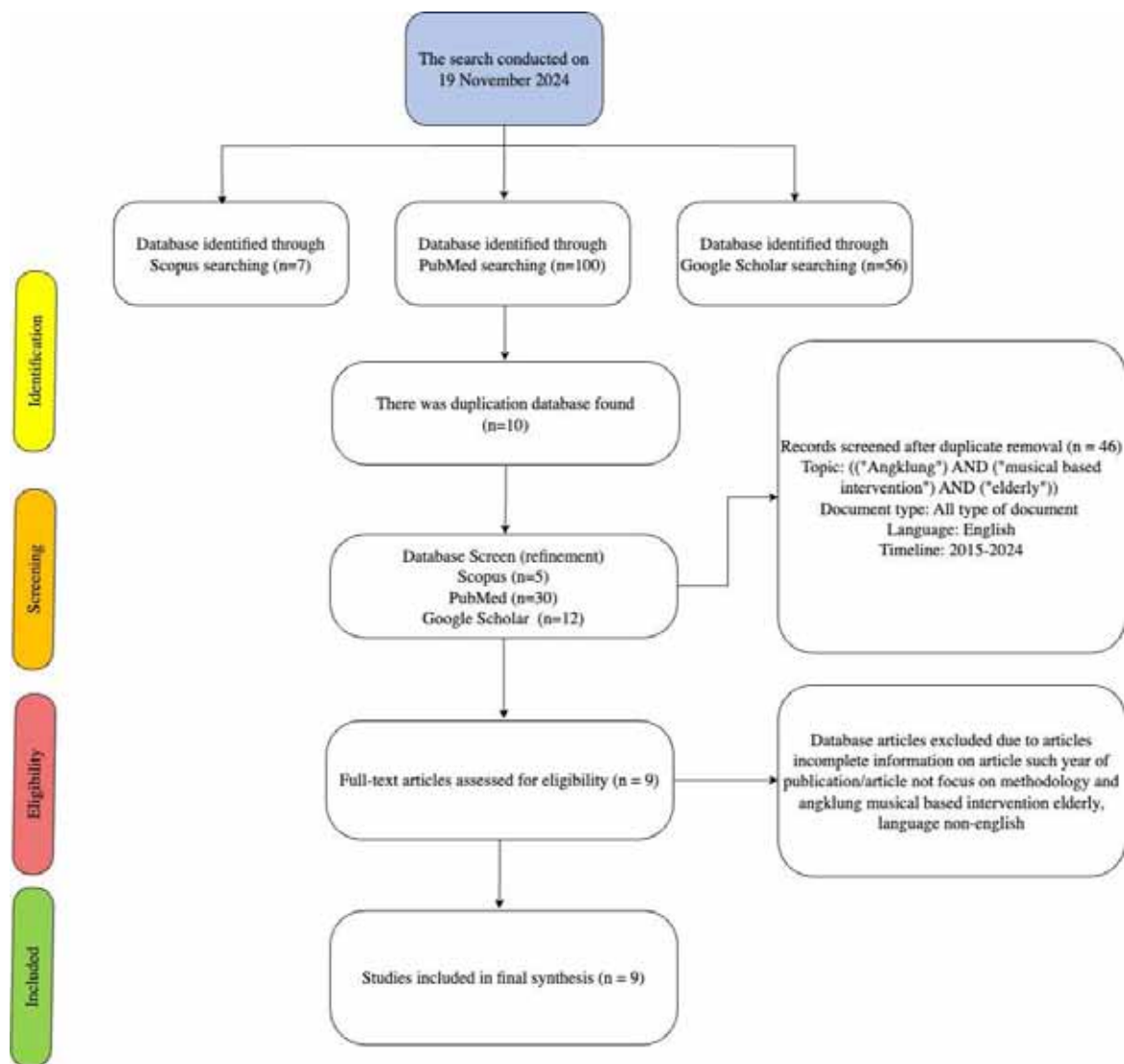


Figure 3. PRISMA flow diagram showing the identification, screening, eligibility assessment, and final inclusion of studies.

### Data Abstraction and Analysis

This study employed an integrative review approach to analyse evidence from qualitative, quantitative, mixed-method, and technology-based studies. An integrative review is appropriate because it allows findings from different research designs to be compared, categorised, and synthesised within a single review framework (Whittemore & Knafl, 2005). In this review, nine eligible studies were examined in detail to extract information relevant to the research questions. The extracted data included study characteristics, country of origin, participant profile, intervention type, provider roles, methods, reported outcomes, and key findings. The studies were then coded and grouped into three intervention categories: Music Angklung, Activity Angklung, and Assistive Technology Angklung. The analysis focused on identifying patterns across the studies, particularly in relation to cognitive, emotional, social, motor, and accessibility-related outcomes. Notes were also maintained during the analysis process to record emerging themes, methodological differences, limitations, and implications for future research. This process enabled the review to distinguish between empirical findings, conceptual interpretations, and future directions for Angklung musical-based interventions among older adults in Southeast Asia.

Study & Country	Participants	Aim	Intervention / Method	Provider Roles	Findings
Music Angklung					
Komariyah (2016) <i>Indonesia</i>	15 older adult women aged 60–90 years	To examine the effect of Angklung music on quality of life among older adult women in nursing homes.	Experimental pre-test and post-test design using Angklung music as the intervention.	Facilitated by music therapists and community volunteers.	Angklung music was reported to improve physical, psychological, social, and environmental domains of quality of life.
Tallutondok (2019) <i>Indonesia</i>	22 older adults aged 60 years and above	To explore reminiscence-based memory screening through childhood-related activities, including music.	Mental activation using Angklung music and music listening.	Delivered by caregivers and community musicians.	Participants showed satisfaction and enthusiasm. Music-based reminiscence activities supported memory recall.

Figure 4. Selected literature matrix of music-based Angklung interventions for older adults. Note: Music Angklung refers to Angklung-based interventions that primarily use listening, sound exposure, or music-based reminiscence rather than active group performance. This category emphasises emotional stimulation, relaxation, memory recall, and quality-of-life support through familiar Angklung sounds and music-related engagement.

Study & Country	Participants	Aim	Intervention / Method	Provider Roles	Findings
Activity Angklung					
Putri (2017) <i>Indonesia</i>	30 older adult women aged 60–90 years	To compare the effects of brain movement exercises and Angklung music therapy on quality of life among older adult women.	Experimental pre-test and post-test design using Angklung music practice as one of the interventions.	Conducted by therapists and caregivers in older adult care homes..	Both interventions had positive effects on selected quality-of-life domains, with Angklung music showing benefits in emotional and social aspects.
Wattanasoei (2016) <i>Thailand</i>	118 older adults	To evaluate the impact of an Angklung-based intervention on older adults' well-being.	Angklung-based music activities designed for social and cognitive engagement.	Implemented by community musicians and caregivers.	Angklung activities supported quality of life, promoted social interaction, and showed potential as a low-cost non-pharmacological intervention.
Fitria et al. (2022) <i>Indonesia</i>	41 older adults	To identify factors associated with depression among nursing home residents.	Cross-sectional study involving various social and activity-based interventions, including Angklung.	Conducted under the supervision of nursing home caregivers.	No direct correlation was found between Angklung participation and depression reduction, but social activities were reported to support overall well-being.
Mohd Bakri et al. (2024) <i>Malaysia</i>	11 older adults	To examine the role of Angklung as an art-based intervention for older adult well-being.	Qualitative study using literature review, expert interviews, and participatory observation.	Facilitated by music therapists, caregivers, and community volunteers.	Angklung was reported to support quality of life in physical, psychological, independence, social interaction, and environmental domains.

Figure 5. Selected literature matrix of activity-based Angklung interventions for older adults. Note: Activity Angklung refers to active, group-based Angklung participation in which older adults play the instrument together rather than only listening to music. This category emphasises collaborative music-making, rhythmic movement, turn-taking, memory recall, motor coordination, and social interaction. In this review, Activity Angklung includes interventions delivered in older adult care homes, community settings, and culturally based group activities.

Study & Country	Participants	Aim	Intervention / Method	Provider Roles	Findings
Assistive Technology Angklung					
Phoasavadi (2022) <i>Thailand</i>	30 older adult women aged 60–84 years	To develop a user-friendly device to support Angklung-based music activities for older adults in foster homes.	Integration of Smart Band devices into Angklung group sessions to assist rhythm and timing.	Supervised by therapists and technology developers.	Smart Band-assisted Angklung playing was reported to support motor and cognitive functions, including concentration during music-based tasks.
Hiranpanthaporn et al. (2022) <i>Thailand</i>	Older adults elderly care facility	To introduce an IoT-based system for Angklung music activities to support older adult well-being.	Development and implementation of an IoT-supported Angklung system.	Managed by caregivers and community trainers.	The Smart Band system supported participation, interaction, and accuracy in Angklung music activities.
Cooharojananone et al. (2022) <i>Thailand</i>	Older adults in nursing homes	To evaluate an IoT-based system that supports Angklung music activities for older adult engagement.	Development and implementation of an IoT-supported Angklung system.	Facilitated by technology developers and nursing home caregivers.	The Smart Band system supported participation, interaction, and accuracy in Angklung music activities among older adults.

Figure 6. Selected literature matrix of assistive technology-based Angklung interventions for older adults. Note: Assistive Technology Angklung refers to Angklung interventions supported by Smart Band or Internet of Things (IoT) systems to improve rhythm, coordination, accessibility, and participation among older adults. IoT refers to connected digital devices or sensors used to support interactive music activities.

### Results

This study focuses on the analysis of musical-based interventions using the Angklung musical instrument for elderly individuals. The findings demonstrate that Angklung-based interventions significantly contribute to cognitive, emotional, social, and motor function improvements among the elderly. These studies primarily originate from Southeast Asia, particularly Indonesia, Thailand, and Malaysia, highlighting the cultural and therapeutic relevance of Angklung.

### Publication Trends

The publication timeline reveals a growing research focus on Angklung musical-based interventions for elderly well-being, with studies expanding across Indonesia, Thailand, and Malaysia. Mohd Bakri et al. (2024) highlight Angklung's potential beyond its traditional settings, reinforcing its role in non-pharmacological elderly care. Earlier works, including Komariyah (2016) and Wattanasoei (2016), demonstrated Angklung effectiveness in mu-

sis therapy, enhancing emotional well-being and social interaction. Putri (2017) and Tallutondok (2019) explored its role in cognitive stimulation and reminiscence therapy. Fitria et al. (2022) found that Angklung participation contributed to emotional health in elderly individuals with depression. Recent advancements in assistive technology, particularly by Phoasavadi (2022), Hiranpanthaporn et al. (2022), and Cooharajanone et al. (2022), integrate Smart Band and IoT applications to enhance participation, cognitive function, and motor coordination. These studies collectively indicate that Angklung is evolving from a cultural and musical tradition into a structured intervention for elderly cognitive, emotional, and social well-being, with increasing cross-cultural adoption and technological innovation expanding its applications in elderly care.

### **Angklung Musical-Based Interventions for the Elderly**

The reviewed studies categorize Angklung musical-based interventions into three primary approaches: Music Angklung, Activity Angklung, and Assistive Technology Angklung.

#### ***Music Angklung Intervention***

Music Angklung is widely used as a therapeutic tool for the elderly due to its lightweight nature, unique timbre, and capacity to enhance cognitive and emotional well-being. The studies reviewed suggest that Angklung music therapy contributes significantly to reducing stress, enhancing memory recall, and improving social engagement among elderly individuals.

- Komariyah (2016) examined the effects of Angklung music therapy on elderly quality of life in a 4-week intervention with 15 participants (aged 60-90 years) in a nursing home setting. The results showed notable improvements in physical, psychological, social, and environmental well-being.
- Tallutondok (2019) investigated reminiscence screening through Mental Activation interventions involving Angklung music in a homecare center. The study found that elderly participants exhibited heightened enthusiasm and engagement in memory recall activities.

#### ***Activity Angklung Intervention***

Activity Angklung incorporates group-based music playing as an interactive method to enhance motor skills, cognition, and social engagement. These interventions often involve structured sessions that encourage elderly individuals to engage actively in music performance, thereby strengthening their motor coordination, memory, and emotional well-being.

- Putri (2017) conducted a comparative study on Angklung Music Practice versus Brain Training Exercises, involving 30 elderly individuals (60-90 years old). The findings confirmed that Angklung music significantly enhanced cognitive and emotional well-being.
- Wattanasoei (2016) assessed the impact of Angklung interventions in Thailand among 118 elderly participants, using a quasi-experimental WHOQOL-OLD framework. The study validated that music-based activities promoted social interaction and improved elderly quality of life.

- Fitria et al. (2022) conducted a cross-sectional study on the determinants of depression among elderly individuals in nursing homes. While no direct correlation was found between Angklung participation and depression reduction, the study suggested that social activities, including Angklung, contributed positively to overall well-being.
- Mohd Bakri et al. (2024) examined the role of Angklung as an art-based intervention in Malaysia, using qualitative methods, expert interviews, and participatory observation. Their study found that Angklung interventions improved physical, psychological, and social well-being, fostering independence among elderly participants.

### *Assistive Technology Angklung Intervention*

Recent advancements have integrated technology with Angklung interventions, expanding accessibility for elderly individuals with motor and cognitive impairments. The integration of assistive devices, such as wearable technology, into Angklung-based therapy demonstrates the growing potential for digital tools to support music interventions for aging populations.

- Phoasavadi (2022) introduced a Smart Band device for Angklung group activities, assessing motor and cognitive skill development in 30 elderly women.
- Hiranpanthaporn et al. (2022) and Cooharajanone et al. (2022) developed IoT-supported Angklung systems, which enhanced participation and coordination among elderly individuals.

Angklung musical-based interventions provide a holistic, non-pharmacological approach to elderly well-being by integrating cultural, musical, and therapeutic elements. Beyond its traditional role, Angklung has been shown to enhance cognitive function, emotional resilience, and social engagement, making it an effective tool in reminiscence and cognitive therapy. The involvement of community musicians and caregivers highlights its accessibility beyond clinical settings, positioning it as a cost-effective intervention for elderly care. Cross-cultural adoption in Malaysia and Thailand demonstrates its adaptability in diverse healthcare environments, while advancements in technology, such as Smart Band and IoT integration, suggest promising applications in digital music therapy. These insights underscore the versatility of Angklung in aging care, emphasizing the need for further research on its scalability, long-term impacts, and integration into modern therapeutic techniques to maximize its benefits for elderly populations worldwide.

### **Discussion**

This study explores the cognitive, emotional, and social benefits of Angklung musical-based interventions for older adults in Southeast Asia. Findings from the selected studies highlight the potential of Music Angklung, Activity Angklung, and Assistive Angklung as non-pharmacological interventions for older adult well-being. Additionally, the role of trained music therapists, community musicians, and caregivers in delivering these interventions is examined to understand their contributions to older adult care. To strengthen analytical clarity, this discussion distinguishes between empirical findings reported in the reviewed studies, conceptual interpretations of why Angklung may be suitable for older adult care, and future implications for research and practice. However, the findings should

be interpreted cautiously because the included studies vary in sample size, study design, intervention type, outcome measurement, and regional coverage.

### **Cognitive, Emotional, and Social Benefits of Angklung-Based Interventions**

Angklung-based interventions may offer cognitive, emotional, and social benefits for older adults. Empirically, the reviewed studies associate Angklung engagement with memory recall, concentration, and mental activation, particularly in studies involving reminiscence activities, structured music participation, and cognitive screening. Studies using WHOQOL-BREF and MMSE assessments (Komariyah, 2016; Putri, 2017; Wattanasoei, 2016) indicate that Angklung interventions may stimulate cognitive function, supporting their potential use in reminiscence therapy and mental activation exercises. Conceptually, these outcomes may be linked to the rhythmic, repetitive, and participatory nature of Angklung playing, which can support attention, cue-based memory recall, and coordinated responses. Nevertheless, these findings should not be interpreted as definitive evidence of cognitive improvement because the reviewed studies used different research designs, sample sizes, intervention durations, and assessment tools.

Emotionally, Fitria et al. (2022) highlighted the positive impact of Angklung-related social activities on emotional well-being. Angklung music provides sensory and rhythmic stimulation, contributing to emotional resilience and psychological well-being. From a conceptual perspective, familiar sound, rhythm, and collective participation may create emotionally meaningful experiences that support enjoyment, relaxation, and a sense of belonging among older adults. However, emotional outcomes were not measured consistently across the reviewed studies. Some studies focused on quality of life, while others discussed satisfaction, enthusiasm, depression, or general engagement. This variation limits direct comparison and suggests that the emotional benefits of Angklung should be understood as promising but still preliminary.

Socially, Angklung fosters interpersonal engagement and social inclusion. Angklung sessions require collaborative music-making, encouraging participants to coordinate, communicate, and interact within a group setting. Wattanasoei (2016) found that group-based Angklung activities significantly improved social engagement, strengthening community bonds among older adult participants. This collaborative nature is one of Angklung's key strengths compared with many individual musical activities, as each participant contributes to a shared melody. Conceptually, the ensemble format transforms individual participation into a shared musical task, supporting turn-taking, listening, cooperation, and mutual dependence. Even so, the regional evidence base remains limited, with studies concentrated mainly in Indonesia and Thailand, and fewer studies from Malaysia or other Southeast Asian countries. Therefore, wider regional studies are needed before the findings can be generalized across Southeast Asia.

### **Effectiveness Among Music Angklung, Activity Angklung, and Assistive Angklung**

The studies reviewed classify Angklung musical-based interventions into three approaches; Music Angklung, Activity Angklung, and Assistive Angklung, each offering distinct benefits. However, the current evidence does not yet allow strong conclusions about which approach is most effective because the studies differ in design, participant characteristics, outcome measures, and intervention delivery.

- Music Angklung focuses on listening to Angklung music and its effects on cognitive function and emotional well-being. Komariyah (2016) and Tallutondok (2019) demonstrated that listening to Angklung music aids reminiscence, reduces loneliness, and promotes relaxation. However, passive engagement may not provide the same level of cognitive and motor stimulation as interactive Angklung activities. Future studies should compare passive listening with active Angklung participation using standardised cognitive, emotional, and quality-of-life measures.
- Activity Angklung emphasizes group-based music playing, which integrates motor coordination, cognitive engagement, and social interaction. Putri (2017) found that participatory Angklung sessions significantly enhanced motor skills, memory function, and social connectedness. These findings indicate that active engagement in Angklung playing may offer stronger cognitive, motor, and social benefits than passive listening. Conceptually, this may be because Activity Angklung requires coordinated shaking movements, attention to timing, response to musical cues, and interaction with other players. However, the sample sizes remain relatively small and intervention procedures are not always reported in detail, including session length, frequency, facilitator training, and follow-up assessment.
- Assistive Angklung incorporates technology to facilitate Angklung participation among older adults with motor or cognitive impairments. Phoasavadi (2022), Hiranpanthaporn et al. (2022), and Cooharajanane et al. (2022) demonstrated that IoT-based and Smart Band-assisted Angklung interventions improved coordination, accuracy, and cognitive response times among older adult participants. These studies suggest that technological integration can enhance accessibility and effectiveness, particularly for older adults with limited mobility or declining cognitive functions. Nevertheless, these studies are more focused on technological development, usability, and participation accuracy than on long-term clinical or psychosocial outcomes. Further research is needed to determine whether Assistive Angklung produces sustained benefits in cognition, emotion, motor function, and quality of life.

### ***Roles of Trained Music Therapists, Community Musicians, and Caregivers in Angklung Interventions***

The effectiveness of Angklung musical-based interventions is influenced by who delivers the therapy. The selected studies highlight three main categories of facilitators: trained music therapists, community musicians, and caregivers or volunteers. This diversity reflects the accessibility of Angklung, but it also creates methodological differences in intervention quality and delivery.

- **Trained Music Therapists:** Studies such as Komariyah (2016) found that Angklung therapy delivered by trained music therapists in nursing homes led to significant improvements in emotional and cognitive well-being. This suggests that formal training in music therapy enhances the structure and effectiveness of Angklung interventions. However, not all studies clearly reported facilitator qualifications, therapeutic protocols, or fidelity monitoring, making it difficult to assess how facilitator expertise influenced outcomes.

- **Community Musicians:** Several studies (Wattanasoei, 2016) show that Angklung interventions are often led by community musicians. This reflects the accessibility and cultural adaptability of Angklung-based therapy, allowing local communities to integrate music interventions into older adult care without requiring formal therapeutic certification. However, future studies should clarify how community musicians are trained, supervised, and guided to ensure participant safety and consistency of delivery.
- **Caregivers and Volunteers:** In settings such as older adult care homes and community centers, Angklung sessions are frequently facilitated by caregivers and volunteers (Fitria et al., 2022; Putri, 2017). While they may lack formal music therapy training, their role in delivering structured Angklung activities contributes to maintaining engagement and social interaction among older adult participants. Clear manuals, simple training modules, and fidelity checklists would strengthen the reliability of caregiver-led Angklung interventions.

Angklung musical-based interventions offer promising but still preliminary cognitive, emotional, and social benefits for older adults in Southeast Asia. Music Angklung aids reminiscence therapy and emotional well-being, Activity Angklung enhances motor coordination and social interaction, while Assistive Angklung integrates technology to improve accessibility for those with impairments. Taken together, the empirical evidence suggests potential benefits, the conceptual interpretation highlights Angklung's collaborative, rhythmic, accessible, and culturally familiar qualities, and the future implications point toward the need for stronger research designs and community-based implementation models. The role of trained music therapists, community musicians, and caregivers varies across interventions, highlighting both professional and community-driven approaches to implementing Angklung-based therapy. However, the current evidence base remains limited by small sample sizes, varied study designs, inconsistent outcome measures, limited follow-up, and uneven regional representation. These limitations suggest that the findings should be treated as preliminary rather than conclusive. Future research should explore scalability, long-term effectiveness, and personalized intervention models, ensuring that Angklung therapy remains an inclusive, culturally relevant, and sustainable intervention for older adult care.

## Conclusion

In conclusion, this article highlights the potential of Angklung musical-based interventions in enhancing older adults' well-being across cognitive, emotional, and social dimensions. The findings suggest that Music Angklung may support memory recall and emotional regulation, Activity Angklung may enhance motor coordination and social engagement, and Assistive Angklung may improve accessibility through technology integration. The studies reviewed from Indonesia, Thailand, and Malaysia underscore the cross-cultural adaptability of Angklung therapy in Southeast Asia, while the involvement of trained music therapists, community musicians, caregivers, and volunteers plays an important role in delivering these interventions. For practical integration, healthcare providers in Southeast Asia could introduce Angklung-based activities into community-based older adult care programmes, day-care centres, nursing homes, and community centres through short group sessions led by trained facilitators, community musicians, caregivers, or volunteers, with support from healthcare professionals where available. Music Angklung can be used for listening, relaxation, and reminiscence activities; Activity Angklung can support group

participation, rhythm exercises, social interaction, and light motor coordination; while Assistive Angklung can be introduced for older adults with mobility or cognitive limitations through Smart Band or IoT-supported systems. To ensure safe and consistent delivery, community centres should provide simple facilitator training, culturally appropriate song selection, clear session guidelines, and basic monitoring of participation, comfort, and well-being outcomes. However, despite these promising outcomes, gaps remain in research on long-term impact, scalability, and the development of assistive technologies for older adults with physical and cognitive limitations. Given UNESCO recognition of Angklung as an Intangible Cultural Heritage, integrating it into older adult care provides a unique opportunity to preserve cultural traditions while improving quality of life. Future research should focus on expanding its application across Southeast Asian community care settings, optimizing intervention strategies, and ensuring inclusivity in therapeutic approaches for ageing populations. Such efforts can help position Angklung not only as a traditional musical instrument, but also as a culturally grounded, accessible, and community-based resource for promoting healthy ageing in Southeast Asia.

### Ethical Considerations

This systematic review was based solely on previously published sources and did not involve direct human participation, interviews, experiments, or new data collection. Therefore, formal human-subject ethics approval was not required. All included studies were reviewed using publicly available academic information, and all sources were appropriately cited.

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