

PREDICTIVE CULTURAL MODEL FOR FAMILY
CAREGIVERS OF OLDER PEOPLE WITH
MUSCULOSKELETAL PAIN IN EAST COAST
MALAYSIA

BY

NURIN SYAFIQAH BINTI MOHD JAIAS

INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA

2026

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A thesis submitted in fulfillment of the requirement for the
degree of Master in Nursing Science.

Kulliyyah of Nursing
International Islamic University Malaysia

JUNE 2026

ABSTRACT

Malaysia's ageing population faces a high prevalence of chronic musculoskeletal pain, particularly among older adults, placing significant demands on family caregivers. Despite a lack of culturally tailored caregiving models, Malaysians continue to embrace strong cultural values that place family-centered care and filial piety at the heart of the caregiving experience. This study aimed to develop a predictive cultural model for caregivers of older adults with chronic musculoskeletal pain in East Coast Malaysia. This cross-sectional study recruited a total of 290 caregivers from community settings and administered validated instruments to assess caregiving strain (M-CSI), attitudes, needs (FIN-Importance), and healthcare providers' cultural competency attributes. Data were analysed using descriptive statistics, multivariate regression, and structural equation modelling. Multivariate analysis discovered protective factors included the ability to maintain routines/traditions, knowledge of the care recipient's health, care aligned with cultural values, caregiving confidence, and healthcare staff involvement. Higher strain was associated with greater involvement of significant others, stronger connections to community resources, and comfort in sharing personal information with providers. The structural model explained 57.1% of the variance in caregiver challenges, indicating a moderate explanatory power for the model and highlighting the complex interplay between cultural beliefs, caregiving needs, and healthcare interactions. The proposed model emphasises culturally sensitive practices, clear health communication, and caregiver empowerment to reduce burden and enhance care quality. These results can guide the development of targeted, culturally integrated interventions and policies to support caregiver well-being and improve outcomes for older adults in multicultural settings, particularly in Malaysia.

ملخص البحث

يواجه المجتمع الماليزي المتقدم في العمر انتشاراً مرتفعاً لآلام العضلات والعظام المزمنة، لا سيما بين كبار السن، مما يفرض أعباءً كبيرة على مقدمي الرعاية من أفراد الأسرة. تؤثر القيم الثقافية بشكل كبير في تجارب تقديم الرعاية، إلا أن النماذج التي تعالج هذه العوامل في السياق الماليزي ما تزال محدودة. هدفت هذه الدراسة إلى تطوير نموذج ثقافي تنبؤي لمقدمي الرعاية الأسرية لكبار السن المصابين بآلام عضلية هيكلية مزمنة في الساحل الشرقي لماليزيا. استخدمت هذه الدراسة المقطعية عينة مكونة من 290 من مقدمي الرعاية من المجتمع، وتم استخدام أدوات مقننة لتقييم وخصائص، (FIN-Importance) والمواقف، والاحتياجات، (M-CSI) عبء الرعاية، الكفاءة الثقافية لدى مقدمي الرعاية الصحية. تم تحليل البيانات باستخدام الإحصاءات الوصفية والانحدار المتعدد المتغيرات، ونمذجة المعادلات الهيكلية. كشفت التحليلات متعددة المتغيرات عن عوامل وقائية شملت القدرة على الحفاظ على الروتين والتقاليد، والمعرفة بالحالة الصحية لمتلقي الرعاية، وتقديم رعاية متوافقة مع القيم الثقافية، والثقة في تقديم الرعاية، ومشاركة الطاقم الصحي وارتبط ارتفاع عبء الرعاية بزيادة إشراك الآخرين المهمين، وتعزيز الارتباط بموارد المجتمع، والراحة % في مشاركة المعلومات الشخصية مع مقدمي الرعاية الصحية. وقد فسّر النموذج البنيوي 57.1

من التباين في تحديات مقدمي الرعاية، مما يشير إلى قوة تفسيرية متوسطة للنموذج ويزر التفاعل المعقد بين المعتقدات الثقافية واحتياجات الرعاية والتفاعلات مع النظام الصحي. يؤكد النموذج المقترح على أهمية الممارسات الحساسة ثقافياً، والتواصل الصحي الواضح، وتمكين مقدمي الرعاية من أجل تقليل العبء وتحسين جودة الرعاية. ويمكن أن تسهم هذه النتائج في توجيه تطوير تدخلات وسياسات موجهة ومتكاملة ثقافياً لدعم رفاهية مقدمي الرعاية وتحسين النتائج الصحية لكبار السن في البيئات متعددة الثقافات، لا سيما في ماليزيا.



APPROVAL PAGE

I certify that I have supervised and read this study and that in my opinion, it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a thesis for the degree of Master in Nursing Science.

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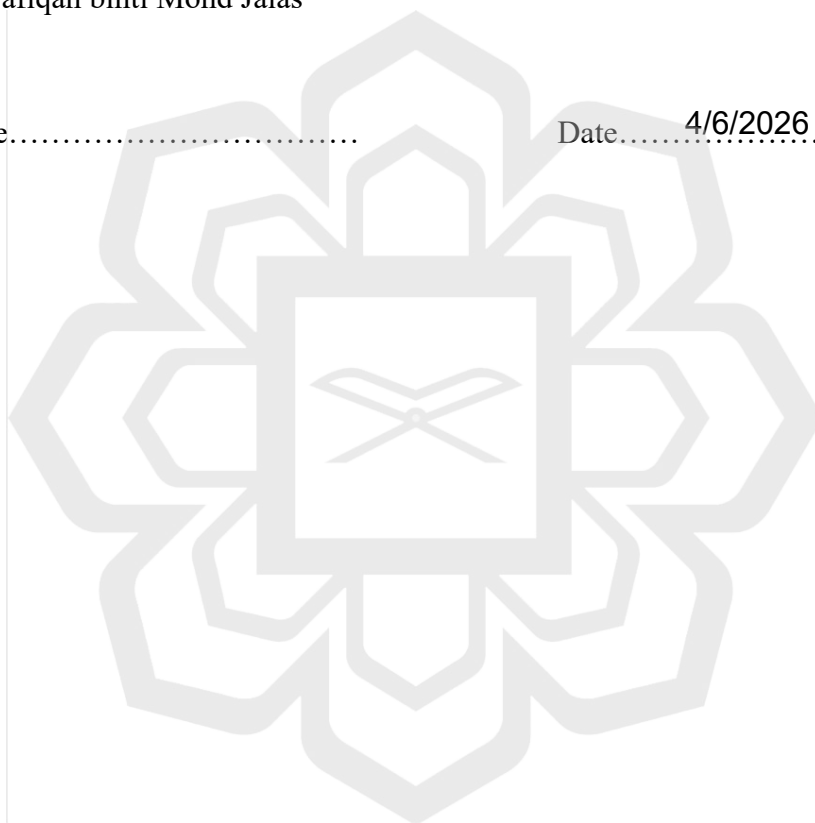
DECLARATION

I hereby declare that this thesis is the result of my own investigations, except where otherwise stated. I also declare that it has not been previously or concurrently submitted as a whole for any other degrees at IIUM or other institutions.

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This thesis is dedicated to my parents, who made this journey possible.

ACKNOWLEDGEMENTS

Notably, I begin by expressing my deepest gratitude to Allah SWT for His guidance, strength, and blessings throughout this academic journey. His mercy and wisdom made it possible for me to persevere and complete this thesis. Alhamdulillah.

Utter appreciation is extended to my supervisors, Dr. Che Azunie, Dr. Khairul and Dr. Ain for their invaluable guidance, constructive feedback, and continuous encouragement. Their expertise, patience, and commitment were instrumental in shaping this research and enhancing its quality. As well as Dr. Kamil, for his support and mentorship during conference participation and academic travels, which greatly enriched my scholarly development.

Respectful thanks are also conveyed to the faculty members, academic staff, and the relevant institutions for their support and assistance during my postgraduate studies. I am sincerely grateful to all participants who generously contributed their time and cooperation to this research.

I am deeply thankful to my parents, Encik Jaias and Puan Radzilah, for their unwavering love, sacrifices, and constant encouragement. Their support has been my greatest source of strength throughout my academic journey.

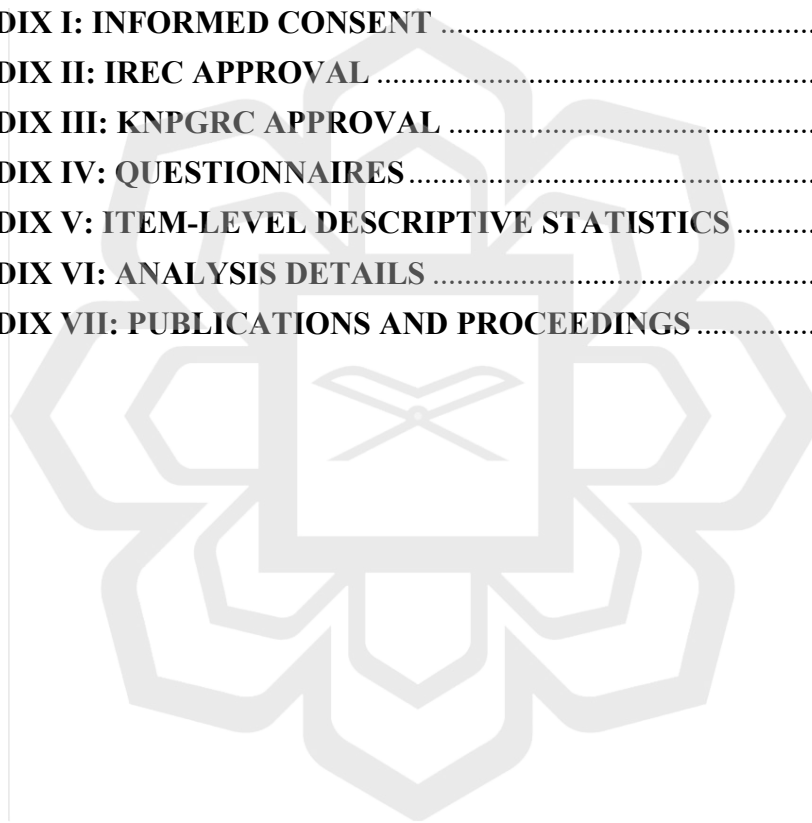
Not to mention my family and friends (Single Sendu Solo bestie as always), who have provided moral support, understanding, and motivation along the way. I sincerely thank the participants and everyone who has contributed, directly or indirectly, to the successful completion of this thesis.

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CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Musculoskeletal pain is pain that affects the structures of the musculoskeletal system, such as the bones, muscles, joints, ligaments, and tendons, as stated by the World Health Organisation (WHO). This type of pain can be acute (sudden) or chronic (lasting more than three months) and is commonly linked to injury, degenerative disorders such as osteoarthritis, or bad posture. The prevalence of chronic pain rises rapidly with age, and majority older people suffered musculoskeletal pain worldwide and in Malaysia. Local research repeatedly demonstrates that musculoskeletal issues are a highly prevalent issues among Malaysian elderly, greatly limiting their functional ability and wellbeing. Knee pain is a frequently reported precise site of pain (Ahmad et al., 2024; Che Hasan et al., 2021). Chronic pain among older people (over 60 years old) was determined to be 47.6 per cent, and majority reported knee joint (64.5%) as source of chronic pain among the older people, followed by the lower back (21.7%), shoulder (7.5%), and neck (6.6%) (Kirubakaran & Dongre, 2019). It is consistent with a study that stated that knee pain was the prevalent pain type encountered by older people in the previous year (58.8%) (Che Hasan et al., 2021).

Many concurrent circumstances affect the lives of older people, putting them at risk in terms of physiological, psychological, and economic aspects. For example, strenuous physical activity, lengthy walks, and sexual indulgence were reported to increase chronic pain, and it is believed to be worse in a noisy atmosphere, the winter season, and bright weather (Kirubakaran & Dongre, 2019). Because of their age and other health issues such as diabetes, hypertension, and bone disorders, older persons were at risk of developing chronic musculoskeletal discomfort. Adding to the situation, an ageing population and increased frequency of comorbidities and incapacities, the needs for prolonged care in

Malaysia is rising (Jawahir et al., 2021). This eventually increases the economic burden on families, employers, and the healthcare system.

The pain had impeded persons with musculoskeletal pain's capacity to perform their daily routines (Tutton et al., 2021). They may require assistance from their family in performing specific activities and avoiding other difficulties, such as falls, which may exacerbate them. Personal hygiene care, nutrition management, medication management, housekeeping, organising necessary equipment, fall prevention, assistance in commuting for medical check-ups and treatment, and companionship were among the most common services provided by family members. (Wicha et al., 2018). In addition, they frequently reported trouble working leading to a low productivity level due to knee pain (Che Hasan et al., 2021). As the frequency of incapacities increases, the needs for prolonged care in Malaysia is rising (Jawahir et al., 2021). This eventually increases the economic burden on families, employers, and the healthcare system. Furthermore, reduced functions may worsen social isolation, contributing to despair and suffering among older people (Che Hasan et al., 2021) might be the consequences of the persistent pain can contribute to feelings of frustration, helplessness, anxiety, and depression, particularly when older people experience difficulty performing daily activities or maintaining independence.

Globally, family, including spouses, is the dominant social structure for caring for older people, and they rely heavily on their relatives for health and financial aids. They provide informal care to the elderly members of their family. (Aung et al., 2021; Barbosa et al., 2021). Similarly in Malaysia, this caregiving concept is practised, with addition to its culturally diverse country with many ethnic groups (e.g: Bumiputera, Chinese and Indian), each with their own traditions, beliefs, and rituals. Culture is a vast and complicated notion; it refers to the shared beliefs, values, practices, and behaviours that characterise a group or society and are passed down from one generation to the next. However, evidence showed that cultural beliefs and practices can influence how individuals perceive and manage musculoskeletal pain, and lead to the vital needs in understanding the cultural context when providing care to older people.

For example, studies have shown that due to filial obligations, family caregivers face the burden due to the responsibility to care for their family, and they are frustrated at not being able to provide proper care as they would want due to their strong filial responsibilities (Funk et al., 2013; Miyawaki, 2015). This circumstance causes a tremendous deal of pain for family caregivers since they see caring as necessary and meaningful because it allows them to connect and support other family members. Particularly, the caregivers who were anchored in Muslim and Christian beliefs, which helped them to be resilient, endure, and find purpose in their roles (Mthembu et al., 2016). It should be stressed that, despite the challenges, the caregivers emphasised a strong feeling of filial responsibility that push them to continue caring.

This filial obligation could be explained by the evidence reported that the burden was caused by cultural disparities in how people see disease and what it means to care for others. (Aman et al., 2020). According to Malay culture and being a Muslim, Allah (God) will be above everything, and Muslims should accept hardships since they are viewed as God's will (Jawahir et al., 2021). However, there are other areas of potential dangers associated with personal care and caregiving, needed to be considered in order to prevent detrimental effects on both family carers and older people. For example, when guided by faith and acceptance, caregivers who bear a heavy responsibility are at risk of emotional exhaustion, health decline, social isolation, and spiritual disgrace, particularly if religious traditions prevent expressing concern or seeking assistance.

Apart from that, in other context, the impact of culture on pain, care and treatment could be explained by the traditional cultural beliefs that may shape older people's perception and understanding of pain. For example, they could ascribe their back pain to "qi" imbalance in traditional Chinese medicine or "wind" in traditional Malay medicine. These beliefs may shape their view of pain's causes and influence their treatment preferences, such as choosing acupuncture or herbal therapies. The use of herbal items and

the local application of lotions, gels, compresses, acupuncture, yoga, meditation, exercise, and walking were the most frequent pain self-care practices that have been passed by family tradition concerning the usage of specific self-care practises from one generation to the next (Kovačević et al., 2018). Other than that, relaxation, massage with cream and ointment, pain relief medication, and posture change were also among the most employed interventions (Ahmad et al., 2018).

Some cultures also impact them in expressing their thoughts/concern and feelings. They may choose indirect communication over confrontation. This may influence how older people express their pain experience to healthcare providers. Improper communications may potentially lead to underreporting of symptoms or a reluctance to share concerns about treatment. Besides, cultural views about healthcare and prior experiences with healthcare systems, can influence older people and their family caregiver perception to seek medical attention and follow treatment recommendations. For instance, older people with knee pain adhering to physiotherapy may be explained by the belief that exercise, and physiotherapy helped to improve symptoms and avoid deterioration, thus physiotherapists who follow up on patients with knee pain need to consider education on home exercise regimens and address noncompliance (Ahmad et al., 2018). Negative experiences or perceived discrimination in healthcare settings may discourage them from obtaining prompt treatment.

Understanding and resolving cultural issues is critical in this context for delivering good pain management and support. Healthcare practitioners must use a culturally sensitive approach, recognise the consequences of cultural beliefs and values on caregiving experiences, and work with patients and their families to create tailored treatment regimens that reflect their cultural preferences and needs.

1.2 Problem statement

The prevalence of chronic pain among older individuals (over 60 years old) was determined to be alarming; 47.6 percent and musculoskeletal discomfort, for example, the knee joint (64.5%) was a frequently discovered source of chronic pain among older persons. (Kirubakaran & Dongre, 2019). It parallels with a study that found that majority older people experienced knee pain in the past year (58.8%). (Che Hasan et al., 2021). Chronic musculoskeletal discomfort may hinder older people's ability to carry out their activities of daily living (ADLs), necessitating support from family members in performing specific activities and avoiding other challenges, such as falls, which can exacerbate their condition. Older people primarily expects their families for health care. Caring for others was taught through practice and modelled within the family; even children participated in caring activities.(Cooper et al., 2020), which they are expected to cultivate as a culture of caregiving in their houses. (Cooper et al., 2020).

However, families who assume the role of informal caregivers often encounter significant challenges, as documented in many studies (Aung et al., 2021; Loo et al., 2021; Moon et al., 2020; Phetsitong et al., 2019), despite the widespread cultural expectation that they should manage these responsibilities effectively. They faced many difficulties while caring for their loved ones due to time, physical, social, emotional, and cultural constraints. This resonance that culture indeed influences caregiving experiences and their results (Loo et al., 2021). Structural and cultural factors determine how stressful caring becomes, and negative caregiving experiences and quality of resources accessible outside of the caregiving context. (Moon et al., 2020). They also have been reported to receive insufficient assistance, and if these services are not accessible, family caregivers' abilities to provide culturally appropriate care are jeopardised (Cooper et al., 2020). However, evidence is scarce on the effects of caring on carers and the factors that influence them (Aman et al., 2020 & Kong et al., 2021).

Therefore, it is vital to analyse the challenges, requirements, and attitudes of family members who care for older people with musculoskeletal pain, as they are responsible for caring for fragile old people upon discharged from healthcare services or returned home. Identifying characteristics that influence the lives of family caregivers of older people with chronic diseases will guide in the developing an appropriate supporting intervention for this vulnerable group. (Duggleby et al., 2016). Furthermore, cultural elements are necessary to ensure that older people and family members receive proper care. (Cooper et al., 2020). This is extremely important to examine because Malaysian caregivers are multi-ethnic and deeply shaped by their culture in many parts of their lives. This feature possessed by Malaysian caregivers may make it difficult for health care providers to provide appropriate support for them, particularly while caring for ailing older people. As a result, it is strongly thought that any intervention or support created for them must be culturally appropriate in order to properly meet their needs. Therefore, while establishing culturally relevant policies and efforts to promote caregiving health, the key sociodemographic differences must be acknowledged. (Do et al., 2014).

Numerous studies have investigated the load and challenges of family caregivers. (Aung et al., 2021; Loo et al., 2021; Moon et al., 2020; Phetsitong et al., 2019) as well as cultural competency among healthcare personnel (Antón-Solanas et al., 2022; Lai et al., 2023; Pocock et al., 2020). However, very few studies have been scrutinising the association between culturally relevant features of family caregivers for older people with musculoskeletal pain, and no predictive cultural model has been created particularly for Malaysia to adapt treatment strategies to their cultural demands. Findings can help identify future training needs for family caregivers, highlighting the need for more research on their unmet requirements. Tailored resources are essential to support their caregiving roles, and healthcare professionals play a key role in connecting them to these resources. (Kong et al., 2021). As a result, the development of a predictive cultural model for family caregivers to support family caregivers of older people with musculoskeletal pain, as demonstrated in this study, is expected to improve understanding of the concept of patient and family-

centered care, particularly for their cultural needs, improve caregivers well-being, improve care recipient outcomes, and promote cultural sensitivity in caregiving practices.

1.3 Significance of the study

Family members typically manage the older people once they are discharged from the hospital. Thus, this study's findings will help to improve healthcare services by ensuring that an appropriate intervention, health education, and information on musculoskeletal care for older people are provided to the family caregiver prior to discharge to prevent the morbidity and mortality of both family carers and older people enough resources must be provided.

Malaysians are a diverse group of ethnicities with diverse cultures and religious beliefs. They undoubtedly have different ideas, needs, beliefs, and perception in caring, and the manner in performing care to the older people may also differ. Family caregivers may encounter varied difficulty and burden in caregiving owing to cultural differences in language and cultural traditions. Ethnicity and education were independent predictors of stressed family members, with Chinese and Indian caregivers reporting feeling more stressed than Malay carers due to cultural differences in how individuals perceive illness and what it means to care for others. (Aman et al., 2020). Healthcare professionals should be able to accept or appreciate caregivers who use their culture to care for the older people. This might eventually lessen their burden of care. Thus, it is critical to assess the relationship among cultural related factors of family caregivers to examine the training gaps requirements of Malaysian family caregivers as the resources adapted to the needs of the caregiver is critical in supporting their caring responsibilities. Besides, it also aims to create cultural awareness among healthcare providers, which entails recognising the importance of culture, identifying the potential influence of cultural differences, developing cultural knowledge, and adapting interventions to fit their cultural needs.

This study has the potential to strengthen nursing practice by offering a culturally appropriate framework for better understanding the experiences and challenges that family caregivers of older people with musculoskeletal pain confront on Malaysia's East Coast. The findings could help nurses create culturally sensitive interventions, education methods, and support systems that address caregivers' attitudes, needs, and cultural expectations. Furthermore, the predictive cultural model may assist community nurses and healthcare providers in identifying carers at risk of caring difficulties and enhancing overall pain treatment and caregivers support services. The study may also have implications for nursing education, policy improvement, and future research in gerontological and community health nursing. Healthcare providers may be able to deliver more person-centred and culturally appropriate care if they gain awareness of caregivers' cultural perspectives and challenges. Improved caregiver support may indirectly improve older people physical functioning, mental well-being, treatment adherence, and general quality of life, while also encouraging healthy ageing.

1.4 Research objectives

1.4.1 General objectives

To identify the predictive cultural model for family caregiver in managing chronic musculoskeletal pain among older people in East Coast of Peninsular Malaysia.

1.4.2 Specific objectives

1. To identify the relevant factors that contribute to predictive cultural model for family caregiver in managing chronic musculoskeletal pain among older people in East Coast of Peninsular Malaysia.

2. To examine the directional relationship of each factor and develop the predictive cultural model that informs culturally sensitive support for family caregivers in managing chronic musculoskeletal pain among older people in East Coast of Peninsular Malaysia.

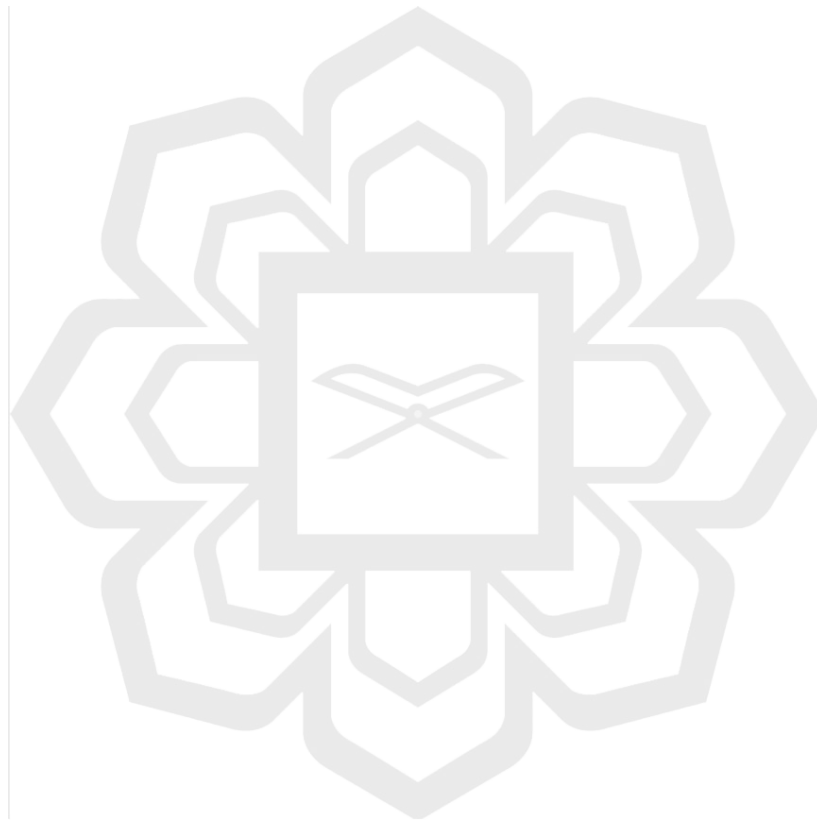
1.5 Research questions

1. What are the relevant factors that contribute to predictive cultural model for family caregiver in managing chronic musculoskeletal pain among older people in East Coast of Peninsular Malaysia?
2. Is there any relationship of each factor in predictive cultural model for family caregiver in managing chronic musculoskeletal pain among older people in East Coast of Peninsular Malaysia?
3. What is the predictive cultural model for cultural sensitivity for family caregiver in managing chronic musculoskeletal pain among older people in East Coast of Peninsular Malaysia?

1.6 Research hypotheses

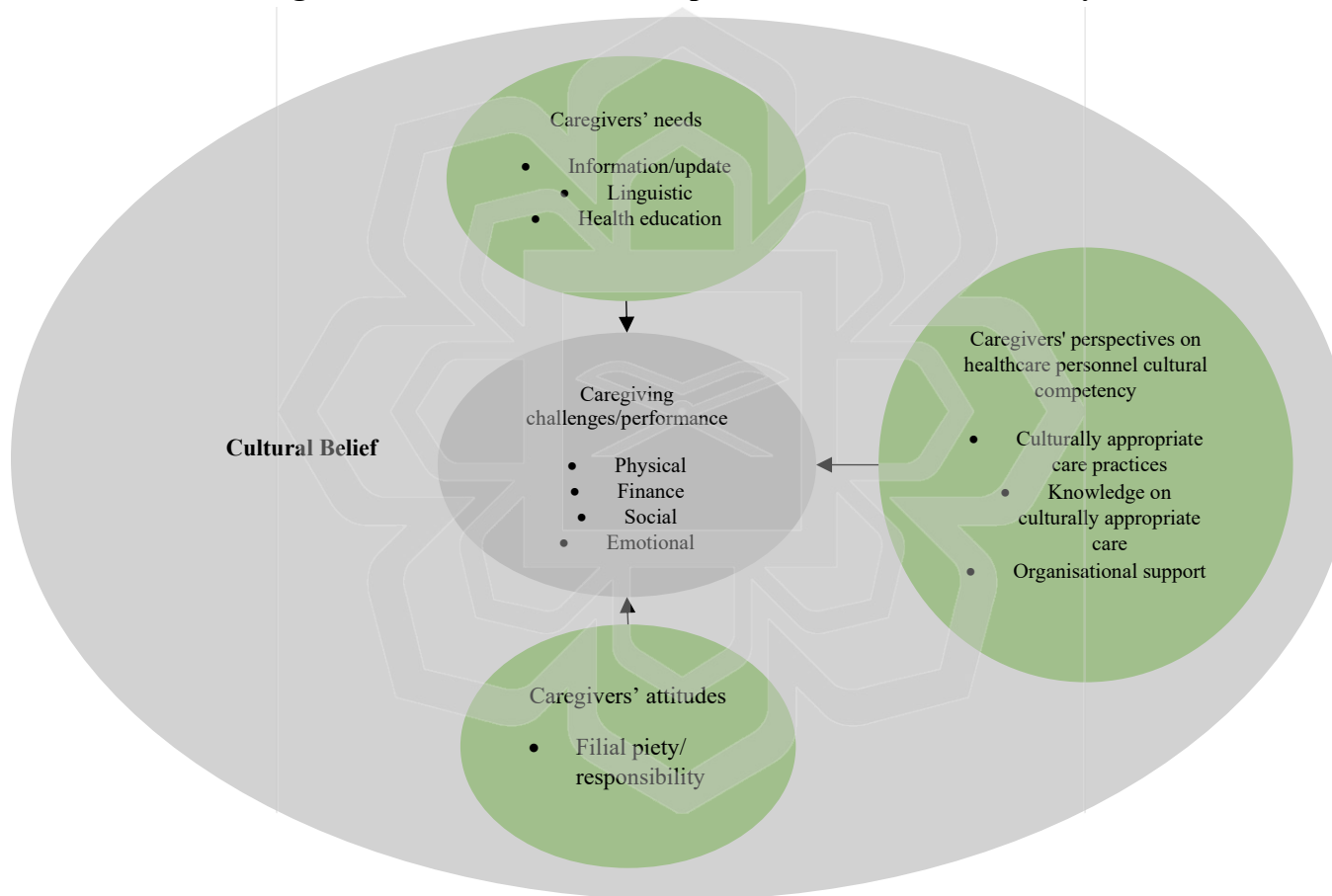
1. Null hypothesis: Caregivers attitudes, caregivers needs and caregiver perspectives on healthcare personnel cultural competency attributes (practices, knowledge and support) does not explain a statistically significant proportion of variance in caregiving challenges among caregivers of older people with musculoskeletal pain.
2. Alternate hypothesis: Caregivers attitudes, caregivers needs and caregiver perspectives on healthcare personnel cultural competency attributes (practices,

knowledge and support) explains a statistically significant proportion of variance in caregiving challenges among caregivers of older people with musculoskeletal pain.



1.7 Conceptual framework

Figure 1.1 Cultural belief conceptual frameworks of the study



Caregiving for older individuals is influenced by a myriad of factors, many of which are deeply embedded in cultural contexts. According to the literature findings, the indicated elements, which include caregiving challenges, caregiving attitudes, caregiving needs, and healthcare personnel factors, have culturally influenced family caregivers in caring for older persons. In terms of challenges, cultural norms and beliefs may shape the demands placed on family carers. For example, in some cultures, there is a great emphasis on filial piety, which puts additional pressure on family members to care for older relatives despite personal obstacles or limits. Socioeconomic factors intersect with culture, affecting the availability of resources for caregiving. Cultural beliefs about finances, work, and family roles can impact the feasibility of providing care. For instance, in cultures where multigenerational households are common, caregiving may be easier due to shared resources and responsibilities, while in individualistic cultures, caregiving might be more challenging due to the expectation of self-reliance.

Caregivers' attitudes are related to the cultural beliefs about aging and illness shape attitudes towards caregiving. For example, in cultures where filial piety is strongly valued, ageing is cherished, and elders are highly valued, caring may be viewed as a duty and an honour, resulting in more favourable attitudes among family carers. In contrast, in societies where ageing is stigmatised or considered as a burden, carers may endure increased stress and unfavourable attitudes.

Cultural values influence the types of needs and resources that family caregivers perceive as necessary. For instance, in collectivist cultures, family members may prioritise emotional support and companionship for the older people, while in individualistic cultures, there may be a greater emphasis on professional services and medical interventions. In addition, cultural preferences for explanations are given in understandable terms, and also alternative forms of care, such as traditional medicine or spiritual practices, may influence the types of interventions that family caregivers seek out for their loved ones. They also believe that caring education for discharge is important since they are taking on the tasks

of healthcare staff at home, and some of them lack the essential knowledge and abilities to care for the older people.

Cultural competence among healthcare professionals based on caregivers' perspectives is crucial in understanding and supporting family caregivers from diverse cultural backgrounds. Effective communication and respect for cultural values can enhance collaboration between healthcare providers and family caregivers. Access to culturally relevant healthcare services and information is critical for family caregivers as they negotiate the intricacies of caregiving efficiently. Language barriers, cultural insensitivity, and a lack of understanding about available services can all make it difficult for family carers to get the help they need.

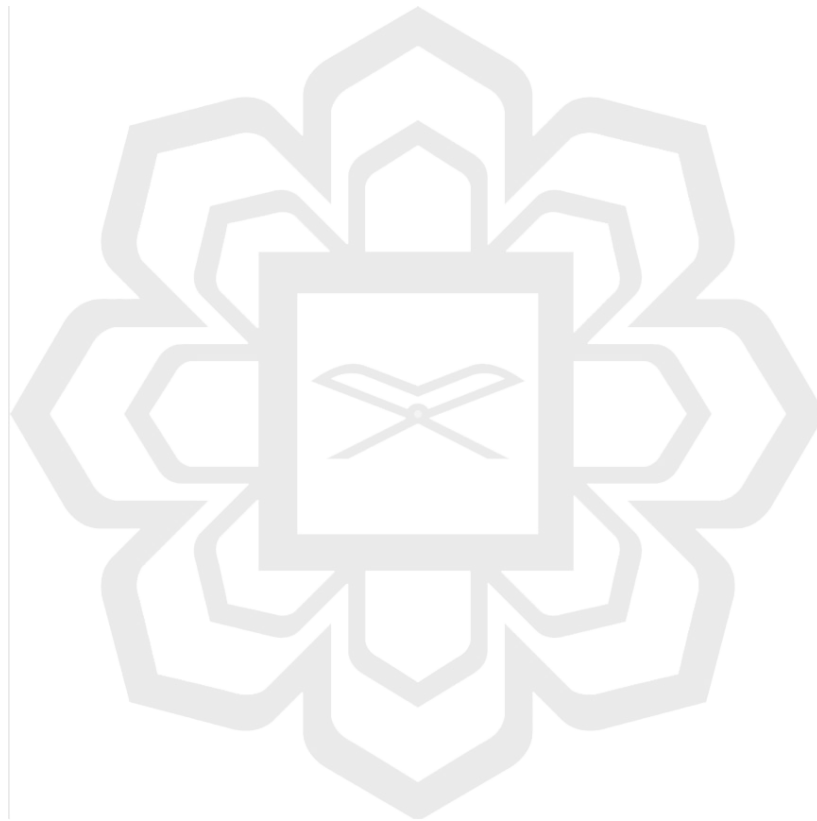
In conclusion, cultural effects pervade all aspects of caring for the elderly, impacting issues, attitudes, demands, and relationships with healthcare workers. Recognising and addressing these cultural issues is significant in providing comprehensive and effective support to family caregivers and their loved ones.

1.8 Definition of terms

Caregivers: Family caregivers who care for and live with older people with chronic musculoskeletal pain including biological, non-biological family caregivers.

Chronic musculoskeletal pain: Pain caused by musculoskeletal structures such muscles, bones, joints, tendons, ligaments, or soft tissues that lasts more than three months, whether clinically reported or self-reported.

Cultural: Cultural refers to the cultures in caregiving on how ideas, principles, and traditions influence how families, communities, and healthcare systems understand, provide, and receive care.



CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter will analyse the literature related to the family caregivers' experience and challenges when caring for older people with chronic musculoskeletal pain. It will cover their cultural beliefs and cultural needs in caregiving and focus on the problems that family caregivers encounter when caring for older people while respecting their culture. Aside from that, it will incorporate the literature regarding healthcare personnel perspectives on culturally appropriate care for caregivers in a multi-ethnic community. This review will examine this area of interest in a larger context, allowing us to identify any gaps in existing evidence-based knowledge.

2.2 Literature review question

Table 2.1 The review question was developed using the PCC strategy by JBI

Review question	i. What is the cultural framework available for family caregivers in managing older people living with musculoskeletal pain? ii. What are the relevant factors that contribute to a predictive cultural model for family caregivers in managing chronic musculoskeletal pain among older people? iii. What are the caregiver perspectives on healthcare personnel's cultural competency attributes that contribute to a predictive
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	cultural model for family caregivers in managing chronic musculoskeletal pain among older people?
Population	Older people living with musculoskeletal pain.
Concept	A research review that describes family involvement in community care for older adults suffering from chronic musculoskeletal pain.
Context	In the community.
Study design	A review, quantitative, qualitative, and mixed-method study.

2.3 Search strategy

Systematic articles search has been conducted in the health-related databases such as PubMed, Cambridge Journal, Clinical Key, Oxford Journal, ScienceDirect and SpringerLink using keywords of “family caregiver”, AND/OR “older people”, AND/OR “challenges” AND/OR “culture”, AND/OR “healthcare personnel” following the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA), 2020. PCC strategy suggested by the Joanna Briggs Institute (JBI) was used to develop the review question. In systematic literature reviews, a critical appraisal was done using the Joanna-Briggs Institute (JBI) tools, a practise of methodically reviewing research findings to determine their trustworthiness, internal validity, risk of bias and applicability in a specific context of studies that fulfil the review inclusion criteria. Some alternative keywords (e.g., elderly, strain, informal caregiver) were used in different databases to gain more related articles as the databases search for the precise words and phrases entered.

Original research papers of any design published in peer-reviewed publications after June 2013 were considered. The studies needed to be published in English. Eligible

studies focused on family carers who care for older people with chronic musculoskeletal pain. Eligible papers discussed caregivers' experiences and obstacles in caring for older people with musculoskeletal pain, as well as the challenges of providing culturally appropriate care for the older people. Papers published prior to June 2013 and/or that did not demonstrate family engagement in caring for older people with persistent musculoskeletal pain were omitted. Opinion/editorial papers, dissertations, conference papers, and those not available in English were rejected. Based on the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA), 2020 below, initially, 49652 articles were identified through database searching. After removing duplicates, 53 articles remained for title and abstract screening. Following screening, 21 full-text articles were assessed for eligibility. Articles that did not meet the inclusion criteria were excluded, resulting in 21 studies being included in the final review.

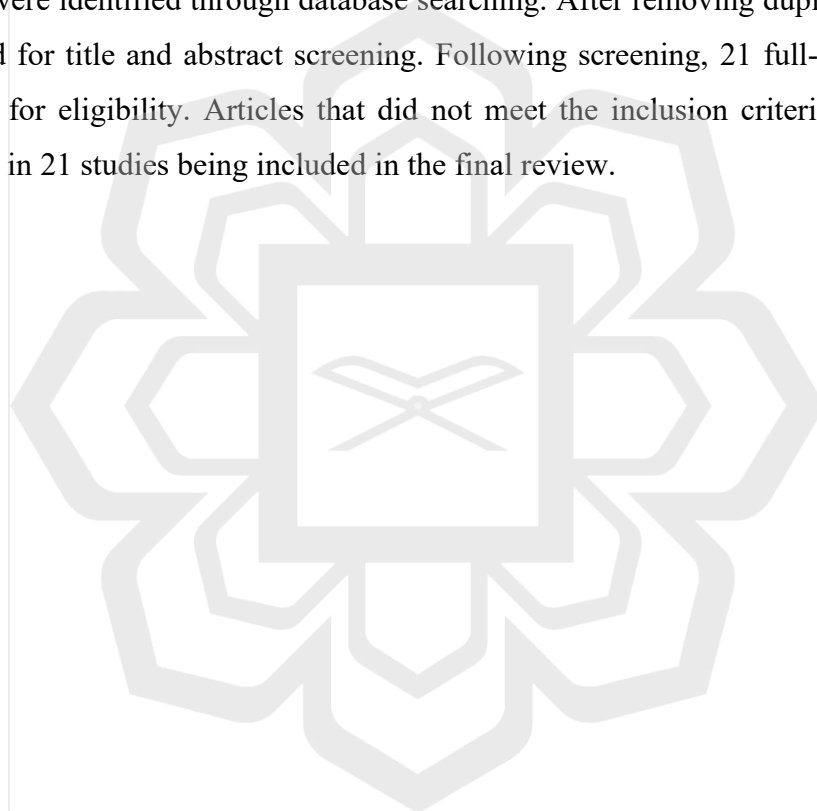
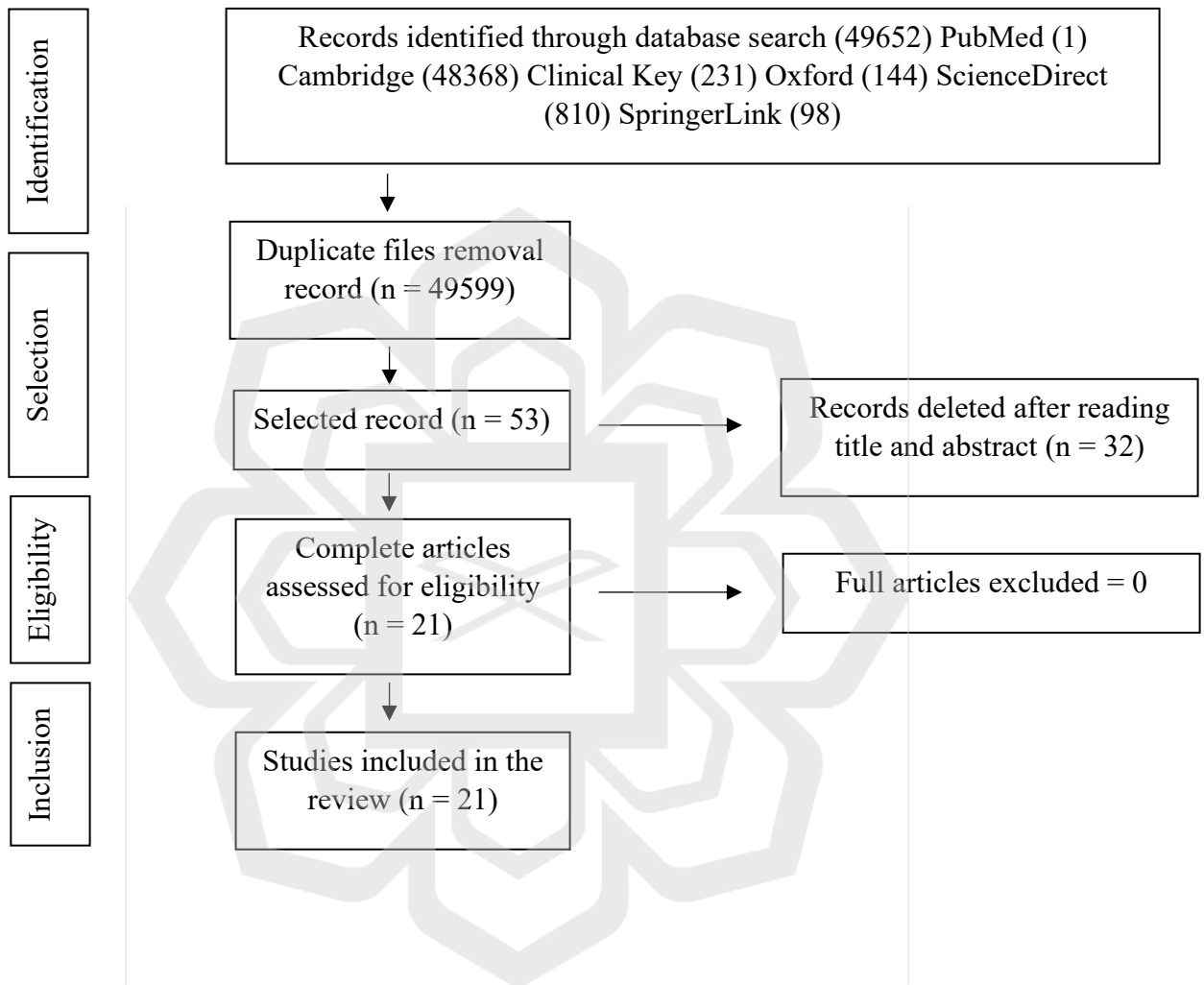


Figure 2.1 Flowchart of intersections and search results, based on the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA), 2020



2.4 Data organisations

After selecting the articles, an information sheet was generated for each one, summarising the research design, sample, measurements, and main results. Research thematic domains were used determined to address broad caring issues based on the most frequently addressed topics raised by family caregivers. Therefore, four domains addressed are the (a)

challenges in caregiving, (b) caregiving attitudes, (c) needs in caregiving, and (d) healthcare personnel factors.

2.5 Literature findings

2.5.1 Factors of the family caregivers

2.5.1.1 Challenges in caregiving

A recurring subject matter was the constant burden placed on caregivers (Smith et al., 2021). Although caring is frequently meaningful, family caregivers bear significant caregiving difficulties, and this problem places additional strain on already overburdened family caregivers to complete their responsibilities. (Cooper et al., 2020). Some caregivers are required to care for multiple older family member in the same household, a stress that can significantly affect their physical and psychological, social, and financial well-being (Phetsitong et al., 2019). It also influences carers' everyday life and can result in declined physical and psychological health outcomes (Duggleby et al., 2016). In addition, caregivers may ignore their social needs to devote more time to their caregiving obligations (Kong et al., 2021). Informal caregivers indicated difficulty going away for vacation because they were anxious about their loved one's safety at home while they were gone, and an emotional burden because of a deprived social life (Sun et al., 2021). Research discovered that family caregivers with prior training experience were more affected in their everyday work than those without, which might be due to the increased responsibility of care placed on individuals who have been taught, causing difficulty focusing and fulfilling their job (Kong et al., 2021). Caregivers with training carry a significant burden than those without training, maybe because they believe they are obligated to care for older people since they have caring knowledge. There may be a further increase in caregiver stress among the sandwich generation of individuals who care for both older family members and children at the same time (Do et al., 2014).

Carers who received education and provided care for two years or more were 2.10 times more likely to suffer health problems than caregivers who did not get education and provided care for less than two years (Kong et al., 2021). Caregivers prioritise the needs of the care recipient over their own and jeopardise their health and well-being by avoiding healthy lifestyles such as eating a balanced diet, exercising frequently, and attending medical appointments (Sabo & Chin, 2021). As a result of their caring obligations, carers were at risk of injury or exacerbating pre-existing health concerns due to exhaustion, which not only has a detrimental influence on their health, but it may also pose a risk to the physical well-being of the older people. (Sun et al., 2021).

Financial assistance is a typical source of assistance for older people (The et al., 2014). However, the relationship between caring and health varied according to income (Do et al., 2014). Caregivers were financially pressured because of the high expense of caring and were unable to work due to their caregiving duties (Haya et al., 2018). Caregivers claimed that their dedication to caring activities resulted in job instability and income loss owing to the frequency with which they were absent from work (Sun et al., 2021). Other than that, because of language issues, some carers may be unable to get well-paying work, making their caring more difficult (Miyawaki, 2015) This might be because some employers require their employees to be proficient in their native language. Financial constraints restrict carers from accessing private-pay services that would enable them time for self-care and limit the leisure activities they may engage in (Sabo & Chin, 2021). Higher income was substantially associated with a worse overall quality of life (Haya et al., 2018) might be due to how a person views money, and their beliefs about money influence their quality of life.

It was discovered that, despite being trained to care, and caring is frequently perceived as meaningful, carers' quality of life was reduced because of the aforementioned burdens. As a result, it is possible that existing caregiver training, knowledge and support

are still insufficient to assist them in caring for the older people while also caring for themselves and their family. Positive caring dyads were shown to have a strong emphasis on knowledge, as lack of preparation and an ad hoc approach to learning caregiving skills contributed to a negative impact on caregiving (Smith et al., 2021). It is critical to know the caregivers' needs and healthcare workers should be able to provide adequate resources to them to increase person-centred care for older people, improve their performance in caring and their quality of life. Person-centred care is a crucial strategy to enhancing the quality of care for community-dwelling older persons by delivering care based on the older people's needs (Liao et al., 2023). This will eventually lead to improved health for both carers and the older people.

2.5.1.2 Caregiving attitudes

Some caregivers expressed frustration at unable to provide as much care as they would want due to their strong filial responsibilities (Funk et al., 2013; Miyawaki, 2015), but together, they accepted caregiving as their reciprocal commitment for their parents' previous service (Miyawaki, 2015). Cultural expectations about responsibility and dedication to provide care for their loved ones, on the other hand, were quite high among several ethnic communities. For example, an information carer with an Asian background (Sun et al., 2021). However, there is a chance that strong filial responsibility has a favourable influence on caregiver outcomes, possibly for individuals from diverse cultural settings, or the effects on satisfaction with life domains that contribute to overall well-being (Funk et al., 2013). According to Aman et al. (2020), caring for older people may be perceived as a source of self-fulfilment and status if caregiving is viewed as a sacrifice in one's culture. It means that caregiver outcomes might be related to their own culture, belief, and perception of caring, as few caregivers have positive experiences in caring since they saw caregiving as satisfying and other caregivers might not be due to a different view on caring. However, a study stated that attitudes towards the caring role change over time and

a dynamic scenario is impacted by variables that can influence the lived experience in managing chronic musculoskeletal pain (Smith et al., 2021). Thus, providing caregivers with support and guidance on supporting positive aspects can improve their lived experience (Smith et al., 2021).

Ethnicity was a characteristic that was independently related to stressed caregivers, as Chinese and Indian caregivers reported feeling more stressed than Malay carers (Aman et al., 2020). Individual coping mechanisms of caregivers, as well as social assistance from unofficial and official sources, may potentially lessen the negative effects of stress on health and well-being (Funk et al., 2013). One of the mechanisms in addressing the negative parts of care, faith, spirituality, and religious activities has been identified as a significant coping technique used by carers to deal with stress, despair, and overload caused by the care process (Couto et al., 2018).

Although caregivers accept caregiving for older people as one of their responsibilities, some of them see it as a difficult task owing to the numerous hurdles put on them. However, some caregivers have coping techniques, support and resources viewing caring as a great feeling and a way to compensate their parents for rearing them as children. Therefore, during the recommended advice and support actions, healthcare personnel must acknowledge, respect, and value family caregivers. This might help maintain and strengthen positive feelings in caring. There may be inadequate psychological support regarding caregiving from the healthcare personnel, which may cause carers to view caring as a tough task.

2.5.1.3 Needs in caregiving

Carers reported feeling abandoned by the official healthcare system for services such as information, resources, maintaining their own health, as well as respite care (Cooper et al., 2020). Caregivers emphasised the importance of language as it is used to assert autonomy and control in situations, which means the necessity for culturally specific assistance and services (Cooper et al., 2020). Language and cultural differences were found to be prime barriers to formal healthcare service utilisation, as well as a lack of proper services and more acculturated caregivers, on the other hand, were more willing to accept official assistance (Miyawaki, 2015). Some of the significant ideas for enhancing caregiving practices were adequate access to care in a preferred language, an increase in the number of formal carers of the same race, and greater access to these services (Cooper et al., 2020). Malaysia is one of the popular destinations for under-skilled migrants seeking employment in various labour such as construction, and manufacturing (Pocock et al., 2020). Due to a foreign language, career duties, and a little to no social support network, their immigrant status and new circumstances have made their caregiving duty more challenging (Miyawaki, 2015). Family caregivers also want to be involved in decision-making because they are unsure when drugs should be given or when follow-up visits should be planned, and thus are unable to ensure that adequate care is in place (Cooper et al., 2020). Furthermore, caregivers stressed the necessity of providing culturally relevant care to their loved ones, such as herbal medication and old people treatments (Sun et al., 2021). Thus, healthcare workers should be able to understand be mindful and respect of their culture care if it does not harm the older people.

There is little evidence of different needs for caregivers of different ethnicities. Because carers' differences exist so much, treatments must be customised to the unique needs of the individual caregiver. Caregivers stated a need for assistance from a range of sources such as from healthcare providers as they wanted their requirements to be appraised and the necessary resources deployed (Sabo & Chin, 2021). Practitioners, researchers, and educators must create and evaluate culturally appropriate treatment strategies for a varied

caring group (Moon et al., 2020) to bridge the cultural and caregiving demands which may reduce their burden in caring. Thus, it is essential to investigate the specific needs of carers in multi-ethnic country as Malaysia.

2.5.2 Factors of the healthcare personnel

2.5.2.1 Cultural appropriate care practices

Nurses can give better care and support to their patients and their families when they understand their patients' cultural origins as it can produce a clear communication that builds rapport and gains the trust of patients. (Bit-Lian et al., 2020) . When caring for different patients and their families, language was viewed as a huge challenge (Antón-Solanas et al., 2022) to formal service utilisation among older people and caregivers (Miyawaki, 2015). According to one study, 42 percent of patients are dissatisfied with the clarity and usage of language by health care professionals when conveying post-discharge information (Almutairi, 2015). Language issues also raised in homecare which may cause miscommunication, resulting in a caregiver's failure to satisfy the client's self-care needs and the clients also claimed that it difficult for them to navigate the healthcare system and determine what kind of services were available in the neighbourhood that could best meet their health requirements as a consequence of health literacy problems (Sun et al., 2021). Communication barriers between patients and health care personnel can result in avoidable errors, poor quality care, and even mortality (Almutairi, 2015).

Families also want to be involved in decision-making to assure that adequate care is in place (Cooper et al., 2020). Older people reported that there was a lack of emphasis on collaborative decision-making among healthcare workers and most healthcare workers made choices rather than including older people in the development of care plans (Liao et al., 2023). As a result, effective social interactions between older people, family carers, and

health care workers should be developed to achieve client-centred and increase quality care and strong mutual communication (Liao et al., 2023).

Although Malaysia is a multiethnicity country, there is scarce evidence on how ineffective communication affect the older patient and their family caregivers of different ethnicities. Linguistic barriers may lead to struggle among Malaysian health providers to provide care and comprehend older people and their families from other countries and ethnicities. Besides, due to language difficulties and a lack of interpreters in healthcare institutions, families and older people have been excluded from decision-making, and as a result, they are unable to preserve their autonomy in obtaining healthcare treatments. According to Pocock et al. (2020), interventions aimed at improving cultural competency among health personnel should target both migrant and indigenous populations such as interpreters for local Indian Malaysian and Chinese Malaysian communities who do not understand Malay might also help migrant workers from India and China communicate with their doctors. This will eventually have an impact on the quality of service and may result in medical error in our healthcare system. This scenario also underscores an important research gap: the limited proficiency in Malay, the national language, among various groups across the Malaysian population. Future studies should examine how this linguistic limitation contributes to persistent health literacy challenges and explores strategies to strengthen language competency as part of broader health literacy improvement efforts.

2.5.2.2 Knowledge on cultural appropriate care

A study stated that caregivers reported that their family caregiver's cultural background influences what they can and cannot do for their loved ones at home, as well as the need of providing culturally appropriate care to their loved ones at home, such as herbal medication or traditional folk treatments (Sun et al., 2021). However, they added that healthcare staff

do not understand why people use it and believe it is unsafe, but this is merely a part of their tradition that has been passed down from generation to generation. Thus, cultural understanding among healthcare staff remains poor, which may influence both patients and caregivers in terms of how they manage self-care and informal caregiving at home. It is critical that a health care professional should be aware and culturally competent, and that he or she can effectively engage with people from many cultures (Almutairi, 2015). Cultural awareness, cultural skills, cultural knowledge, and the healthcare setting are all key determinants for cultural competency, according to the research by Bit-Lian et al. (2020).

Nurses showed a lack of knowledge and abilities to care for varied ethnicity patient, and they were occasionally conscious of stereotyping when engaging with patients from cultures other than their own, but they struggled to overcome this difficulty (Antón-Solanas et al., 2022). Besides, healthcare personnel in Malaysia did not have access to Ministry of Health guidelines on cultural competence and in general, their attitude and cultural competency were seen to be acquired on the job (Pocock et al., 2020). Therefore, more emphasis on cultural curriculum should be included into nursing or medical courses (Antón-Solanas et al., 2022; Pocock et al., 2020) as health worker had never undergone formal cultural diversity training at work, medical school or continued professional development which may enable them in providing better care to patients (Pocock et al., 2020).

While working with and providing care to patients of all ethnicities, there is a need of cultural competency training for healthcare staff in Malaysia. However, there is insufficient study on cultural competency among Malaysian healthcare workers because the literature found is from a European setting. Despite the need of cultural knowledge and abilities for transcultural care, healthcare personnel are capable of dealing with problems owing to a lack of training and expertise. Thus, nursing institutions should take an active part in the practical teaching and learning of cultural and indigenous practises, as well as

cultural training for nurses and nursing students in clinical, community, and academic settings (Shahzad et al., 2021).

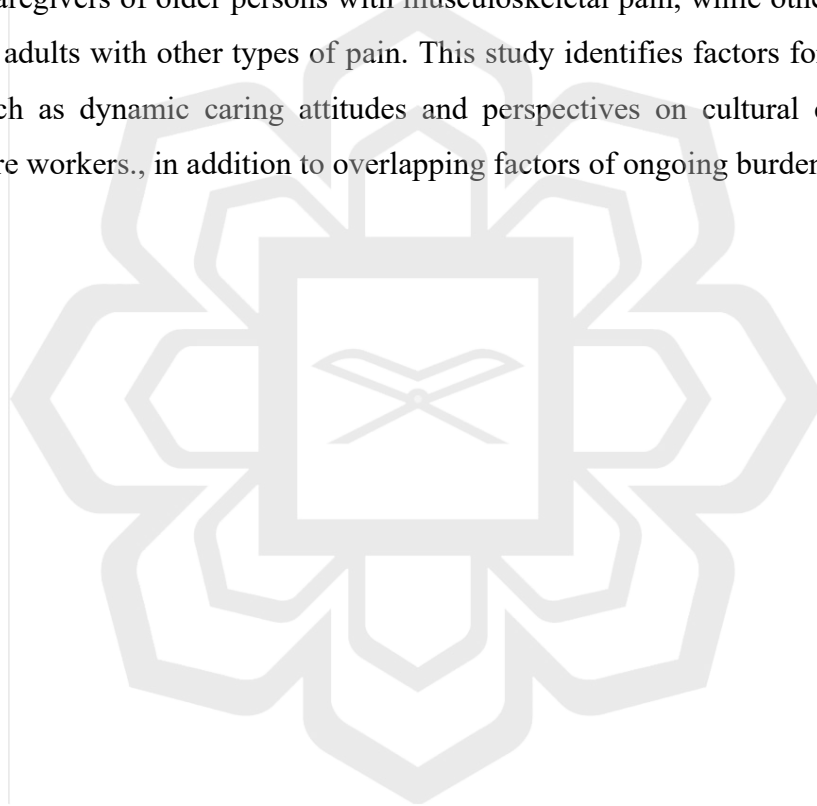
2.5.2.3 Organisational support for cultural appropriate care

The main philosophy of family caregivers' "sharing" of caregiving includes caregiving by both family and formal healthcare services, as long as these services meet care recipients' needs, are provided by competent providers, provide recipients with privacy and a sense of home, and are culturally congruent. However, issues on formal healthcare service utilisation and inappropriate services were discovered, primarily due to language and cultural differences (Miyawaki, 2015). This might be explained by our healthcare system's lack of policy support for cultural care and competency as healthcare personnel in Malaysia did not have access to Ministry of Health guidelines on cultural competence (Pocock et al., 2020). Participant in a study by Antón-Solanas et al. (2022) mentioned (in general) individual attempts to alleviate healthcare disparity but nurses wanted greater help from health management, as well as health decision-makers and policymakers to reduce healthcare disparities.

Little is known regarding healthcare provider methods for meeting the needs of people from various ethnicities, as well as whether and how policies that encourage communication and understanding (e.g., interpretation systems) are in place/being followed (Pocock et al., 2020). Given this gap, it is necessary that health and community organisations have a better insight into cultural competence support so that they may design strategies and policies to assist nurses in providing successful transcultural care.

2.6 Summary

Family caregivers for people suffering from chronic musculoskeletal pain play a complex and dynamic role. Positive lived experiences can be fostered by acknowledging the burdens faced by the caregivers and how they perceived filial piety in their cultures, identifying the needs of the caregivers, increasing knowledge about cultural care in healthcare, and increasing appreciation for the caregiving role in society, particularly among healthcare professionals. A major limitation of current evidence was that few studies addressed the family caregivers of older persons with musculoskeletal pain, while other studies focused on older adults with other types of pain. This study identifies factors for musculoskeletal pain, such as dynamic caring attitudes and perspectives on cultural care provided by healthcare workers., in addition to overlapping factors of ongoing burden and needs.



CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter explains the methodology of the study in how it was conducted. It includes the study flowchart, ethical approval, materials, and method for the study.

3.2 Materials and method

3.2.1 Study design

A cross-sectional study was conducted as the study took place at one specific moment in time which was done in East Coast of Peninsular Malaysia to identify the appropriate predictive cultural model for family caregivers in managing chronic musculoskeletal pain among older people in East Coast of Peninsular Malaysia. A cross-sectional study design was employed to identify an appropriate predictive cultural model for family caregivers in managing chronic musculoskeletal pain among older adults in the East Coast of Peninsular Malaysia. This approach was judged ideal since it allowed for the gathering of data at a single point in time, thereby providing a snapshot of the caring experience within this demographic.(Sedgwick, 2014; Wang & Cheng, 2020). By using a cross-sectional approach, the study was able to examine the relationships between multiple caregiving factors such as cultural beliefs, knowledge, caregiver burden, and social support including their potential contributions to the predictive model. Although this methodology does not allow for causal inferences or evaluation of changes over time, it is considered efficient in

terms of cost and time, particularly when investigating complex psychosocial and cultural aspects in a large sample. (Wang & Cheng, 2020)

3.2.2 Study setting

The study was done via either physical or online form at Activity Centre for Older Persons or known as *Pusat Aktiviti Warga Emas* (PAWE) in East Coast of Peninsular Malaysia which includes family caregivers from Pahang. Seven *Pusat Aktiviti Warga Emas* (PAWE) in Pahang were visited to reach the participants. In addition, online social platforms also were used to reach participants from other states in the East Coast of Peninsular Malaysia (Kelantan and Terengganu), specifically Pahang which comprises state with distinct cultural, social, and demographic characteristics compared to other parts of the country. This setting was selected because family caregiving practices in the East Coast of Peninsular Malaysia are strongly influenced by traditional values, religious beliefs, and close-knit community structures, all of which play a critical role in shaping caregiving behaviours. Furthermore, in Malaysia, the National Health and Morbidity Survey (NHMS) 2018 discovered that 57.5% of older people (aged 60 and up) lived in rural areas. In the east-coast states of Pahang and Terengganu, a large number of enumeration blocks covered by the survey were classed as rural (91.6% for Pahang and 98.6% for Terengganu), indicating that older persons in these states are likely concentrated in rural areas. By focusing on this region, the study was able to capture the cultural nuances and caregiving dynamics that may differ from those in more urbanised or industrialised parts of Malaysia. These insights are essential for developing a predictive cultural model that is both contextually relevant and culturally sensitive, thereby ensuring that the findings are meaningful for policy development and practice in geriatric and community nursing within similar cultural settings.

3.2.3 Sampling strategy

The population sample was chosen using the purposive sampling approach and convenience sampling. Participants in this study included family caregivers who matched all of the inclusion criteria, as well as those who were available, willing, easily accessible, or contactable. Participants were recruited using a combination of purposive and convenience sampling. Purposive sampling was used to choose individual family caregivers who met the study's inclusion criteria, ensuring that the participants were directly relevant to the research objectives. A convenience sample was selected to include caregivers who were readily available, willing, and accessible, making data collecting accessible given the demanding nature of caring activities. This method ensured a sample that was both suitable for answering the research objectives and possible to recruit within the study time.

3.2.4 Sample size

In structural equation modelling (SEM), sample size plays a critical role in ensuring reliable estimation and adequate statistical power. Hoyle & Gottfredson (2015) note that while acceptable performance of fit indices and parameter estimates may be achieved with as few as 50 cases when variables are normally distributed and indicator reliability is moderate, such small samples can be problematic. Complex models, particularly those incorporating multiple latent constructs, typically require larger samples to achieve stable estimates and sufficient power, with 200 participants often recommended as a benchmark. Guided by this recommendation, the present study aimed to recruit a minimum of 200 respondents to ensure that the predictive cultural model developed for family caregivers of older people with chronic musculoskeletal pain would yield valid and generalisable results. This sample size was also considered sufficient to accommodate potential issues such as missing data, non-normality, or reduced reliability of some indicators, thereby strengthening the

robustness of the model. Thus, the sample size was based on the rule of thumb is five to ten subjects for each question cited by Pacquiao et al. (2021). The sample size was calculated with one item equalling five responses. So, a total of 55 items were used in this study, yielding $n = 275$ respondents. The study also added 30% drop out of the total respondents. Hence, the estimated ultimate sample size was 358 respondents.

2.2.5 Inclusion criteria for family caregivers

To be eligible for the study, the selected family caregiver had to meet the following inclusion criteria:

1. Family caregiver aged 18 years and older.
2. Family caregiver of older people with chronic musculoskeletal pain aged ≥ 60 years.
3. Serving as a family caregiver for at least 3 months.
4. Living with older people for at least 3 months.
5. Own a mobile phone or any gadget to answer the online questionnaires.
6. Able to understand in Malay or English language.

The Age of Majority Act of 1971 specifies that a person must be 18 years old to be considered competent to engage into an agreement. The legal assumption that this group of minors cannot comprehend the nature and consequences of contractual commitments serves as the foundation for establishing the age of majority (Hashim & Dusuki, 2023). Chronic musculoskeletal pain may be linked to musculoskeletal structures include muscles, bones, joints, tendons, ligaments, and soft tissues. lasting longer than 3 months whether clinically diagnosed or self-reported pain by the older people and family caregivers. Aside from that, responders must have at least three months of experience caring for their loved

ones to ensure that they understand what it is like to care, the nature of caring, and the demands that come with caring.

3.2.6 Exclusion criteria for family caregivers

The following are the exclusion criteria for this study:

1. Those caring for older people with chronic musculoskeletal pain and any other diseases including cancer or stroke.
2. Family caregiver caring for older people who have intellectual disabilities and/or cognitive impairment.
3. Being paid to provide care and receiving help from informal caregivers.
4. Caregiver of older people living in an old folk's home, nursing, or residential home.

3.2.7 Data collection strategy

A questionnaire series was disseminated using two methods: online and face-to-face. Online surveys were incorporated into a Google Form and sent through email or social media platform email such as Facebook, Instagram and X (formerly known as Twitter). Face-to-face, family caregivers were approached in person or over the phone to complete the questionnaire. The public respondent and respondent from Pusat Aktiviti Warga Emas (PAWE) in Pahang including family caregivers who are accompanying the older people were approached in person to complete the questionnaire. These two techniques of data collecting were conducted because internet surveys offer the opportunity to collect large amounts of data efficiently, economically, and fast. (Regmi et al., 2016). The surveys contained participant information sheets (PIS), screenings, and questionnaires.

Respondents were provided the PIS, which included study description, consent, and the researcher's contact information (phone number and email address). The screening questions included the caregiver's sociodemographic background, their relationship with older people, and the forms of musculoskeletal pain experienced by them. Questionnaires examined the caregiver's challenges, attitudes, and needs in caring and their perspectives on healthcare personnel's knowledge, practices, and organisational support toward culturally appropriate care in managing older people. An additional 30% drop out was able to address potential challenges or limitations in data collection, such as participant recruitment difficulties, non-response bias, or data quality issues (Bujang, 2021). No honorarium was provided as the participations was voluntary.

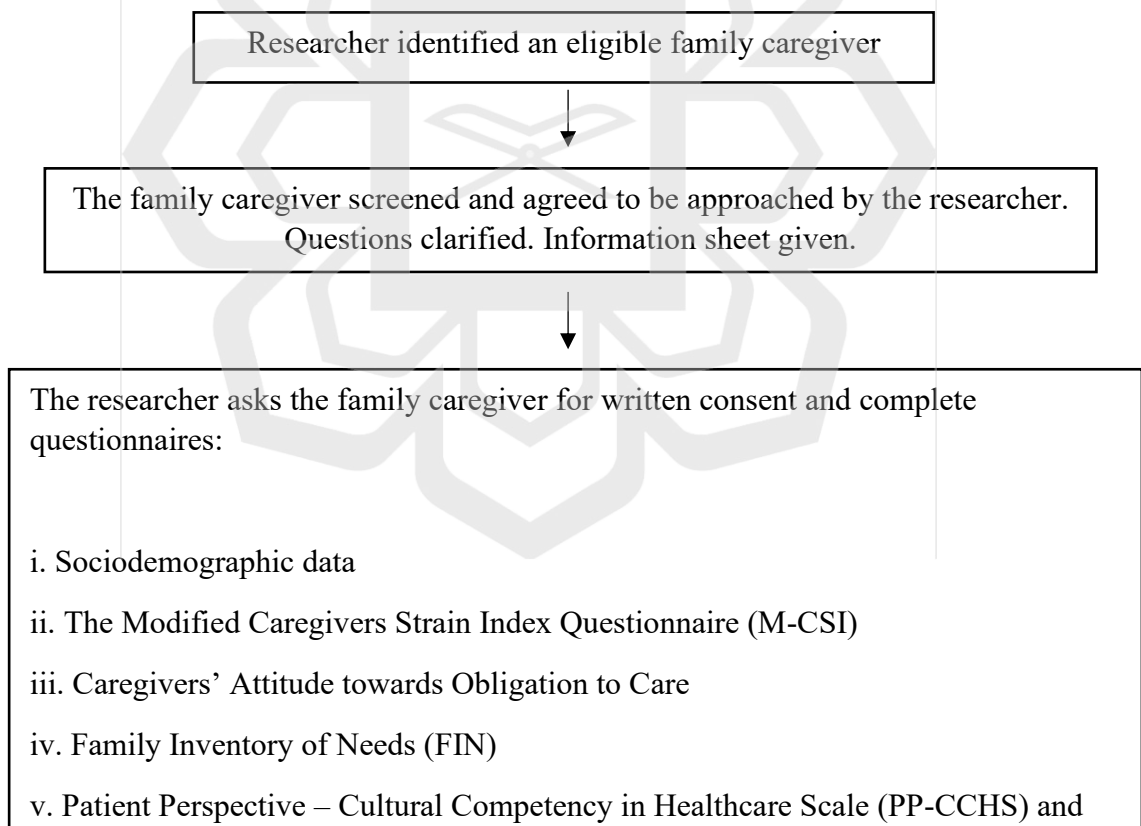


Figure 3.1 Data collection flowchart (face-to-face)

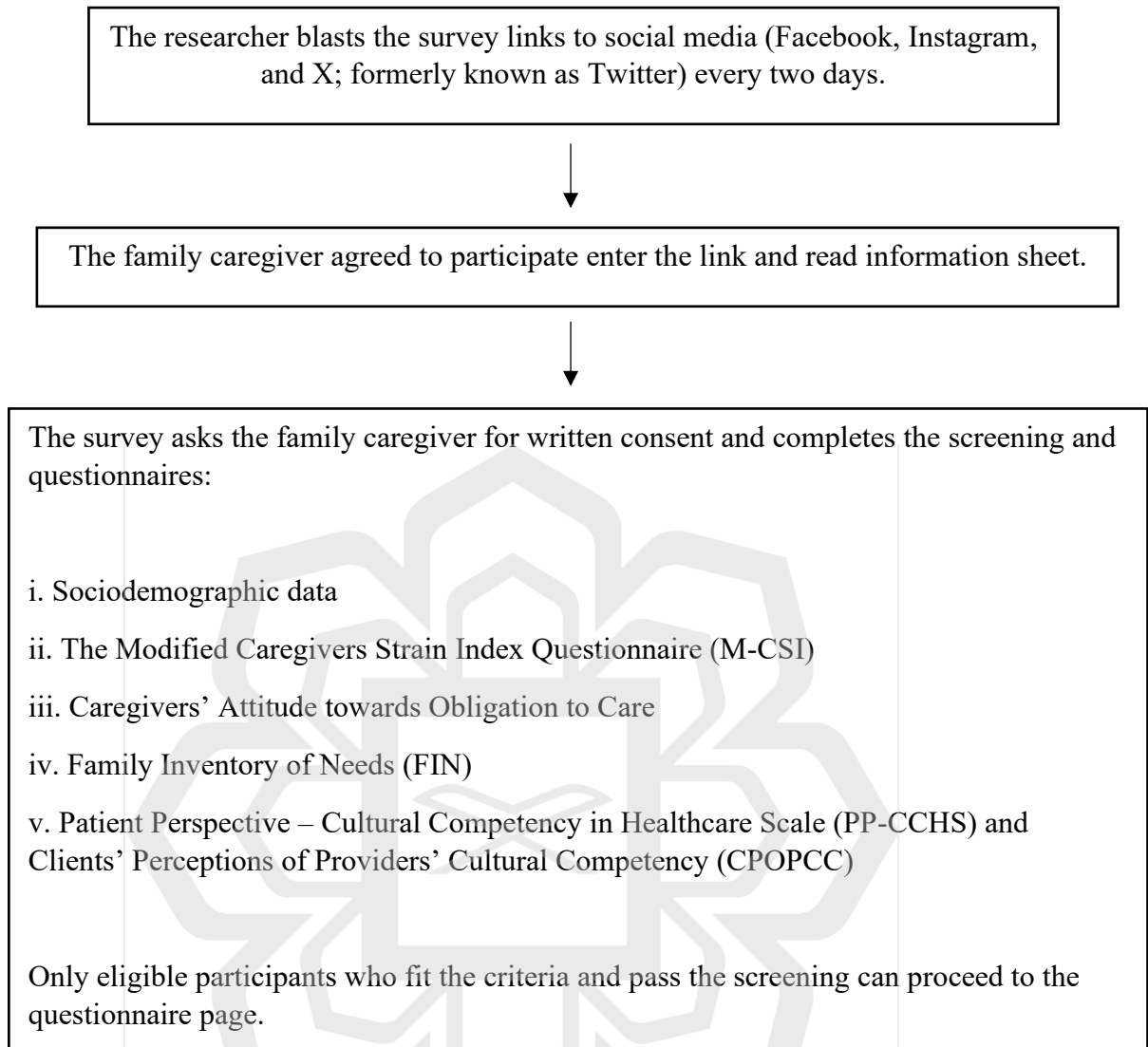


Figure 3.2 Data collection flowchart (Online)

3.2.8 Research instrument

A set of questionnaires was utilised to identify caregiver's challenges, attitudes, and needs in caring and their perspectives on healthcare personnel's knowledge, practices, and organisational support towards culturally appropriate care in managing older people and the family caregiver. The questionnaire consisted of five parts, Part A to Part E. Part A is a

description of the participants' demographic data. Part B, Part C, and Part D were consisting of three instruments used to assess the cultural care delivery of family. Part B contains the data assessing the challenges in caring. Part C assessed the caregiving attitudes while Part D described the needs of family caregivers.

In Part E, three instruments were utilised in the study to assess the caregivers' perspectives on the healthcare personnel's knowledge, practices, and organisational support toward culturally appropriate care. This part measured the healthcare personnel factors which contain three factors of healthcare personnel's knowledge, practices and organisational support for culturally appropriate care. The questionnaires have been adapted and adopted to fit this current study.

Therefore, a pilot data was collected to ensure the validity of the instruments, with at least 30 respondents answering the questionnaire. The results of the pilot study were used to inform the feasibility of the current study and indicated changes that are needed by checking the terms and statements of the instruments, improving the instruments, designing instruments and research strategy (Hazzi & Maaldaon, 2015). Cronbach's Alpha was used to assess internal consistency, and its value increases as the item measures are linked. According to Hazzi & Maaldaon (2015), The internal consistency of a scale, which indicates the degree to which all the items on the scale measure the same construct and stated that George and Mallery (2003) define reliability values as follows: >0.9 "Excellent," >0.8 "Good," >0.7 "Acceptable," >0.6 "Questionable," >0.5 "Poor," and <0.5 "Unacceptable". The result of the pilot study explained thoroughly in the next chapter 4.

Aside from that, the instruments were back-to-back translated by professionals from English to Malay to ensure that participants understood the questionnaire. To achieve accurate translations, researchers consulted two bilingual specialists. The first translator, who works from the source to the target, is an expert in the source language and is particularly conversant with the vocabulary of the field covered by the instrument. The

second, who blindly translates back from the target to the source, is an expert in the content of a data collection instruments itself. (Hazzi & Maaldaon, 2015).

3.2.8.1 Part A: Sociodemographic data

Sociodemographic information was collected from the participants including gender, age, race, occupation, relationship with older people, duration of caring and types of musculoskeletal pain experienced by the older people.

3.2.8.2 Part B: Challenges in caring

Challenges in caring were measured using the Modified Caregivers Strain Index Questionnaire (M-CSI) by (Onega, 2013) contains 13 items where the statements receive a numeric score of "yes, on a regular basis" = 2; while "yes" sometimes = 1; and "no" = 0. The M-CSI was modified and developed in 2003 with a sample of 158 family caregivers assisting older adults living in a community-based setting. The higher the score, the higher the level of caregiver strain. The M-CSI is a reliable tool for the evaluation of caregiving strain levels experienced by family caregivers. The Modified Caregiver Strain Index (M-CSI) was selected due to its brevity, ease of administration, and suitability for community-based caregivers. The instrument allows rapid assessment of caregiver strain across physical, emotional, social, and financial domains fit with the aim of the study while easing the participants. The higher the score, the higher the level of caregiver strain. Scoring ranges from 0 to 26, with 0 indicating no caregiver strain and 26 indicating extreme strain. The internal reliability coefficient is slightly higher ($=0.90$) than the coefficient originally reported for the CSI in 1983 ($=0.86$) (Onega, 2013).

3.2.8.3 Part C: Caregivers' attitude

The caregivers' attitude in caring was measured through the Caregivers' Attitude towards Obligation to Care by Kosloski et al. (2002). The instrument was considered appropriate because it adequately assessed the dimensions of caregiver attitudes within the Malaysian cultural context, relevant to the objectives of this study. It is nine composite variables to measure aspects of caregivers' attitudes and beliefs about caregiving and responsibility for care. However, we only select the variables from the obligation of care to assess the attitudes in caring for older people contains 6 items with the response set of (1) not at all true, (2) a little true, (3) somewhat true, (4) quite a lot true, (5) completely true. The higher the score, the higher the feeling of obligation to care. The questionnaire had a reliability of 0.78 (Kosloski et al., 2002).

3.2.8.4 Part D: Needs of family caregivers

The needs of family caregivers were assessed using the Family Inventory of Needs (FIN) by Schur et al. (2013). Given the lack of locally validated and culturally suitable instruments for measuring caregiving needs among Malaysian family caregivers, the chosen instrument was deemed adequate for this study. It contains 20 items, each of which is rated on two subscales of (FIN–Importance) measures the importance of each care need and the second subscale (FIN–Fulfillment) asks respondents to indicate whether each need scoring above 0 on FIN–Importance is met by healthcare professionals. This current study utilised the first subscale of (FIN–Importance) which contains 6 items to measure the importance of each care need on a scale between 0 (not at all important) and 10 (very important) as it measures the importance of needs of the family caregivers. The internal consistency of FIN–Importance had a Cronbach's α of 0.94 and the results suggest that the FIN is suitable for clinical settings (Schur et al., 2013).

3.2.8.5 Part E: Healthcare personnel factors

From the family caregivers' perspective, the healthcare personnels' knowledge on cultural appropriate care was assessed using the Patient Perspective – Cultural Competency in Healthcare Scale (PP-CCHS) by Sattler (2016). 3 items from the PP-CCHS were used to ask the family caregiver to rate the level of importance for each item on a 4-point. Likert scale, ranging from 1 (not important) to 4 (very important). Cronbach's alpha of the PP-CCHS was 0.83 indicating it is reliable to be used (Sattler, 2016).

The healthcare personnel's practices on cultural appropriate care from the family caregivers' perspective were assessed using the self-assessment question (Marshall et al., 2017). It consists of 5 questions from the questionnaire with the rate level of frequency from 0 (low/disagree strongly) to 10 (high/agree strongly). The Cronbach's alpha for items is 0.86 (Marshall et al., 2017). Clients' Perceptions of Providers' Cultural Competency (CPOPCC) by (Pacquiao et al., 2021) also utilised as it adds a unique measure of culturally competent attributes of care providers and organisations as perceived and experienced by client (Pacquiao et al., 2021). It assesses individual and organisational cultural competency holistically based on the entire quality of client experiences with individual and groups of providers within a specific context of care setting. Organisational characteristics are transferred into human judgments of the quality of encounters in care setting (Pacquiao et al., 2021). The instrument was revised from using a Likert-type scale to yes/no for ease of use with less proficient English clients and Cronbach's alpha for the total scale (22 items) was 0.89. CPOPCC was scored in the dichotomous format (1 = yes, 0= no). Due to the limitations of the available instruments, these two questions were merged to assess patients' perceived cultural competency and adaptability for multi-ethnic settings. As a result, a total of 30 questions were used to assess family caregivers' views on healthcare personnel's knowledge, practices, and organisational support for culturally appropriate care.

3.3 Data analysis

The analysis was based on the study objectives as stated:

1. To identify the relevant factors that contribute to predictive cultural model for family caregiver in managing chronic musculoskeletal pain among older people in East Coast of Peninsular Malaysia.
2. To examine the directional relationship of each factor in predictive cultural model for family caregiver in managing chronic musculoskeletal pain among older people in East Coast of Peninsular Malaysia.
3. To develop the predictive cultural model for cultural sensitivity for family caregiver in managing chronic musculoskeletal pain among older people in East Coast of Peninsular Malaysia.

Statistical software, IBM SPSS software was utilised to analyse the data in the first phase using descriptive statistics which includes means and SDs of the outcome variables and the demographic data of the caregivers. Multivariate analysis was performed to identify key predictive factors to caregiver' strain. In second phase, structural equation modelling approach (SEM) was used through AMOS software to examine the directional relationship of each factor which are the caregivers' challenges, were caregiver attitudes, caregiver needs and caregivers' perspective on healthcare personnels' knowledge, practices and organisational support for cultural appropriate care. The SEM analysis was conducted on the full sample. The endogenous variable is caregiver challenges while the exogenous variables were caregiver attitudes, caregiver needs and caregivers' perspective on healthcare personnels' knowledge, practices and organisational support. The level of acceptable indexes ($\chi^2/df = < 3.0$, $CFI \geq 0.90$, $RMSEA \leq 0.08$) were considered as a part of assessment of the model fit. The model was constructed based on cultural context and tested for predictive associations using SEM. A final predictive cultural model was developed for cultural sensitivity for family caregiver in managing chronic musculoskeletal pain among older people in East Coast of Peninsular Malaysia.

3.4 Ethical approval

The approval from Kulliyyah of Nursing Postgraduate Research Committee (KNPGRC) was applied beforehand. Then, the approval from International Islamic University Malaysia Research Ethics Committee (IREC) was gained. The researcher performed a pilot study which was to validate the questionnaires that have been used in the study. After that, the researcher recruited the participants, and the participants were explained regarding the study. Verbal or written informed consent was obtained from the participants before conducting the interview. A copy of the informed consent form was given to the participants. The participants were given the information regarding the study and the participants' identity was confidential and kept anonymous. They have the right whether they want to participate or not in this study without being forced. The participants also have the right to withdraw from the study at any time without any penalty.

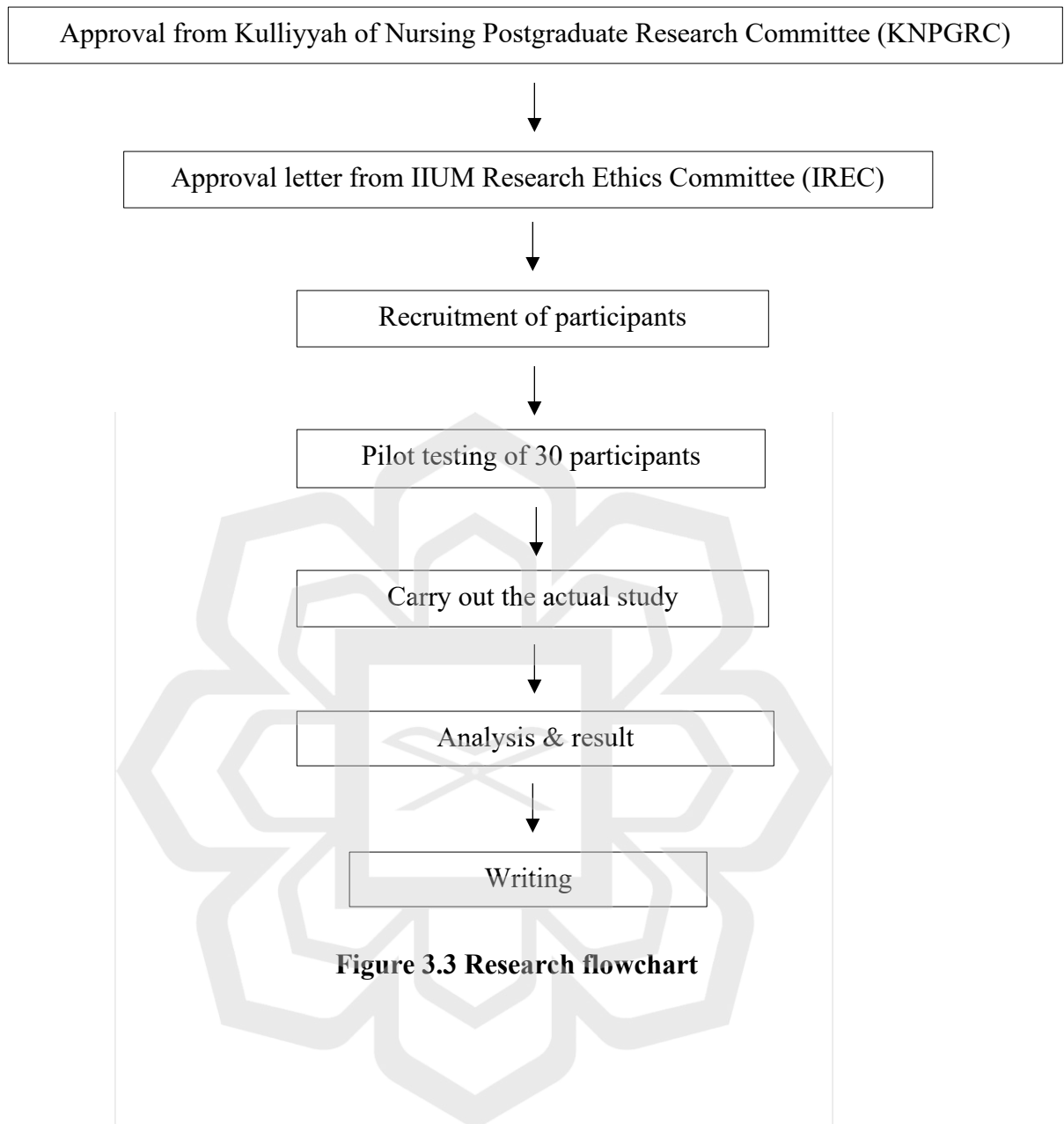


Figure 3.3 Research flowchart

CHAPTER FOUR

ANALYSIS AND FINDINGS

4.1 Introduction

This chapter presents the study analysis and main findings, which was preceded by phase one of the descriptive study. It highlights reliability of the instruments, sociodemographic data and predictive factors which are the caregivers' attitudes, needs in caring and healthcare personnel, including healthcare personnels' knowledge, practices, and support for culturally appropriate care significantly predicted the level of caring challenges. In phase two, predictive model designing employed to examine the associations among factors which are the caregivers' challenges, attitudes, needs in caring and healthcare personnel, including healthcare personnels' knowledge, practices, and organisational support for culturally appropriate care. The structural equation modelling approach (SEM) was used to test the associations among factors. The results concern how these factors for culturally appropriate care affect each other. The results concern how these factors for culturally appropriate care affect caring challenges. Recognizing and addressing these cultural factors is essential for providing holistic and effective support to family caregivers and their loved ones. A set of questionnaires was utilised to identify caregiver's challenges, attitudes, and needs in caring and their perspectives on healthcare personnel's knowledge, practices, and organisational support towards culturally appropriate care in managing older people and the family caregiver.

4.2 Reliability of instruments

Since a sample size of at least 30 respondents is often adequate to assess the reliability of the questionnaire, the translated version of the instruments was pre-tested with 30 participants (Bujang et al., 2024). Table F1 (Appendix F) shows the internal reliability of the Modified Caregivers Strain Index Questionnaire (M-CSI). The instruments consisted of 13 items and the value for Cronbach's Alpha for the survey was $\alpha = .916$. Therefore, the value is generally regarded as an excellent Cronbach's alpha. Table F2 (Appendix F) shows the internal reliability of the Caregivers' Attitude towards Obligation to Care. The instruments consisted of 6 items and the value for Cronbach's Alpha for the survey was $\alpha = .610$. Therefore, the value is generally regarded as an acceptable Cronbach's alpha. Table F3 (Appendix F) shows the internal reliability of the Family Inventory of Needs - Importance (FIN - Importance). The instruments consisted of 6 items and the value for Cronbach's Alpha for the survey was $\alpha = .863$. Therefore, the value is generally regarded as a good Cronbach's alpha. Table F4 (Appendix F) shows the internal reliability of the healthcare personnel factors instruments. The instruments consisted of 30 items and the value for Cronbach's Alpha for the survey was $\alpha = .854$. Therefore, the value is generally regarded as a good Cronbach's alpha.

To compare, the adapted version of M-CSI ($\alpha = 0.916$), Caregiver's Attitude towards Obligation to Care ($\alpha = 0.610$), FIN-Importance ($\alpha = 0.863$), and healthcare factors ($\alpha = 0.854$) are comparable to the original version of M-CSI ($\alpha = 0.90$), Caregivers' Attitude towards Obligation to Care ($\alpha = 0.78$), FIN-Importance ($\alpha = 0.94$), and healthcare factors ($\alpha = 0.89$)

4.3 Participants' sociodemographic characteristics

The participants in this study were recruited from the community, encompassing various demographics, including gender, race, marital status, employment status, and caregiver recipient status. 309 family caregivers were recruited for this study. Of them, 290 (93.8%) completed the survey and were considered in the final analysis. The remaining 19 participants (6.2%) withdrew or did not complete all required items.

Table 4.1 Descriptive statistics of sociodemographic data

	Frequency (n = 290)	Percentage (%)
Gender		
Male	120	41.4
Female	170	58.6
Race		
Malay	276	95.2
Chinese	8	2.8
India	6	2.1
Marital status		
Single	135	46.6
Married	139	47.9
Divorced	16	5.5
Employment status		
Unemployed	54	18.6
Employed	212	73.1

Retired	24	8.3
Caring for their		
Siblings	4	1.4
Grandparents	105	36.2
Parents	174	60.0
Spouse	7	2.4

Table 4.1 showed that 58.6% female caregivers, 41.4% male. The sample was predominantly Malay (95.2%), reflecting East Coast demographics, with smaller Chinese (2.8%) and Indian (2.1%) representation. 73.1% employed, 18.6% unemployed, 8.3% retired. Nearly equal distribution between single (46.6%) and married (47.9%) caregivers. Most caregivers (60%) cared for their parents.

Table 4.2 Descriptive statistics of sociodemographic data

	SD	Mean	Min	Max
Age	14.1	32.9	19	80
Total income (RM)	1372.6	2572.8	0	7000
Caregiving duration (month)	28.6	24.2	3	276

Participants are characterised by average age of 32.9 years old, involved in caring at average of 24.2 month and their average monthly income are RM 2573.

4.4 Descriptive statistics and normality of the measured variables

This section highlights the descriptive statistics of the measured variables Modified Caregiver Strain Index (M-CSI), Caregivers' Attitude towards Obligation to Care, Family Inventory of Needs (FIN–Importance), and tools assessing perceptions of healthcare providers' cultural competency.

4.4.1 Modified Caregiver Strain Index (M-CSI)

Table 4.3 Descriptive statistics of M-CSI score

Descriptives			
		Statistic	Std. Error
Total M-CSI score	Mean	13.3241	.34145
	95% Confidence Interval for Mean	Lower Bound	12.6521
		Upper Bound	13.9962
	5% Trimmed Mean	13.5900	
	Median	13.5000	
	Variance	33.812	
	Std. Deviation	5.81477	
	Minimum	.00	
	Maximum	26.00	
	Range	26.00	
	Interquartile Range	6.00	
	Skewness	-.514	.143
	Kurtosis	-.147	.285

The mean caregiver strain score among caregivers was 13.23 (SD = 5.81), indicating a moderate to high level of caregiving strain. The scores ranged from 0 to 26, with higher values reflecting greater perceived burden. The variables' skewness and kurtosis values were within acceptable bounds (skewness < ± 2 ; kurtosis < ± 7), indicating no significant deviations from normal.

The highest-rated strain included “Caregiving is a physical strain” (M = 1.16, SD = .785) and “It is upsetting to find the person I care for has changed so much from his/her former self” (M = 1.15, SD = .791). These findings indicate that caregiving is not only physically taxing, but also emotionally challenging, especially when dealing with changes in the care recipient's health or personality.

4.4.2 Caregivers’ Attitude towards Obligation to Care

Table 4.4 Descriptive statistics of Caregivers’ Attitude score

Descriptives				
			Statistic	Std. Error
Total Caregivers’ Attitude score	Mean		20.7621	.31128
	95% Confidence Interval for Mean	Lower Bound	20.1494	
		Upper Bound	21.3747	
	5% Trimmed Mean		20.8238	
	Median		20.0000	
	Variance		28.099	
	Std. Deviation		5.30084	

	Minimum	7.00	
	Maximum	30.00	
	Range	23.00	
	Interquartile Range	9.00	
	Skewness	.019	.143
	Kurtosis	-.774	.285

The average attitude score was 20.76 (SD = 5.30) on a 5-point Likert scale (range: 7-30), indicating a generally high sense of caregiving obligation rooted in cultural and familial values. Otherwise, the variables' skewness and kurtosis values were within acceptable bounds (skewness < ± 2 ; kurtosis < ± 7), indicating no significant deviations from normal.

The highest-rated strain included “I personally must protect my [relative]’s interests.” (M = 3.66, SD = 1.29) and “It is my obligation to help my [relative].” (M = 3.56, SD = 1.418). These findings show that caregiving is directed not just by practical acts, but also by personal commitment and moral obligation, highlighting the importance of familial and cultural values in motivating caregiving activity.

4.4.3 Family Inventory of Needs (FIN–Importance)

Table 4.5 Descriptive statistics of FIN-Importance score

Descriptives				
			Statistic	Std. Error
Total score	FIN-Importance	Mean	39.6103	.79929
		95% Confidence Interval for Mean	Lower Bound	38.0372
			Upper Bound	41.1835
		5% Trimmed Mean	39.7529	
		Median	36.0000	
		Variance	185.270	
		Std. Deviation	13.61138	
		Minimum	12.00	
		Maximum	60.00	
		Range	48.00	
		Interquartile Range	24.25	
		Skewness	.051	.143
		Kurtosis	-1.341	.285

Descriptive statistics revealed that caregivers rated most needs as highly important, particularly those related to receiving clear information from healthcare professionals, understanding the care recipient's condition, and being involved in decision-making. The overall mean score was 39.61 (SD = 13.61), with scores ranging from 12 to 60, suggesting a widespread acknowledgment of unmet yet highly valued caregiving needs. The variables

had acceptable skewness and kurtosis values (skewness $< \pm 2$ and kurtosis $< \pm 7$), indicating no significant deviations from normality.

The highest-rated needs included “Know what treatment the patient is receiving” ($M = 6.84$, $SD = 3.23$) and “Have explanations given in terms that are understandable” ($M = 6.82$, $SD = 2.96$). These findings indicate that caregivers place a high importance on swift, clear, and culturally sensitive communication, as well as participation in healthcare planning for their loved ones.

4.4.4 Patient Perspective – Cultural Competency in Healthcare Scale (PP-CCHS)

Table 4.6 Descriptive statistics of PP-CCHS score

Descriptives			
		Statistic	Std. Error
Total PP-CCHS score	Mean	8.87	.130
	95% Confidence Interval for Mean	Lower Bound	8.62
		Upper Bound	9.13
	5% Trimmed Mean	8.95	
	Median	9.00	
	Variance	4.908	
	Std. Deviation	2.215	
	Minimum	3	
	Maximum	12	
	Range	9	
	Interquartile Range	3	

	Skewness	-.353	.143
	Kurtosis	-.676	.285

Descriptive statistics revealed that caregivers rated the healthcare personnel's knowledge on cultural care is highly important, particularly those related to life events (i.e. death, pregnancy, childbirth). The overall mean score was 8.87 (SD = 2.215), with scores ranging from 3 to 12. Cultural awareness among healthcare staff is regarded as a crucial component of care, yet variations in caregiver experiences and expectations are reflected in the variety of responses. The variables also exhibited acceptable skewness and kurtosis values (skewness < ± 2 and kurtosis < ± 7), indicating no major deviations from normal.

Highest-rated score is "Knowledgeable about the patient and family's opinions about life events (i.e. death, pregnancy, childbirth, etc)? with (M = 3.08 SD = 1.066). These findings demonstrate that caregivers value healthcare personnel's understanding of cultural beliefs connected to major life events, implying that such knowledge is a vital component of culturally appropriate care.

4.4.5 Healthcare personnel's practices on culturally appropriate

Table 4.7 Descriptive statistics of HCP Practice score

Descriptives				
			Statistic	Std. Error
Total HCP Practice score	Mean		31.79	.582
		Lower Bound	30.64	

	95% Confidence Interval for Mean	Upper Bound	32.93	
	5% Trimmed Mean		31.80	
	Median		31.00	
	Variance		98.342	
	Std. Deviation		9.917	
	Minimum		6	
	Maximum		50	
	Range		44	
	Interquartile Range		19	
	Skewness		.026	.143
	Kurtosis		-.916	.285

Descriptive statistics showed that caregivers generally rated healthcare personnel's cultural care practices as relatively moderate. However, caregivers acknowledged that healthcare personnel demonstrated better performance in specific areas, particularly in removing obstacles for patients from different cultural backgrounds and being aware of caregivers' expectations in care. The overall mean score was 31.79 (SD = 9.917), with scores ranging from 6 to 50. These findings suggest that while cultural care practices are viewed as an essential component of quality care, caregivers still perceive considerable gaps in the consistent implementation of such practices among healthcare personnel. The variables showed acceptable skewness and kurtosis values (skewness < ± 2 and kurtosis < ± 7), indicating no substantial deviation from normality.

The highest-rated score is "They act to remove obstacles (e.g., lack of insurance and need for interpreter) for patients of different cultures when they identify such obstacles."

(M = 6.61 SD = 2.829) and “They ask patients and families about their expectations for care.” with (M = 6.56 SD = 3.149). These findings show that caregivers notice specific strengths in healthcare personnel's cultural care practices, particularly their steps to reduce access barriers and their efforts to understand patient and family expectations.

4.4.6 Clients’ Perceptions of Providers’ Cultural Competency (CPOPCC)

Table 4.8 Descriptive statistics of CPOPCC score

Descriptives			
		Statistic	Std. Error
Total CPOPCC score	Mean	14.51	.274
	95% Confidence Interval for Mean	Lower Bound	13.97
		Upper Bound	15.05
	5% Trimmed Mean	14.54	
	Median	14.00	
	Variance	21.842	
	Std. Deviation	4.674	
	Minimum	3	
	Maximum	22	
	Range	19	
	Interquartile Range	7	
	Skewness	.066	.143
	Kurtosis	-1.146	.285

Descriptive statistics revealed that family members regarded healthcare providers and organisational cultural competency as moderately high, particularly in terms of spiritual and religious expectations, as well as comfort in sharing personal information. The entire mean score was 14.51 (standard deviation = 4.674), with scores ranging from 3 to 22. Results reveal that the organisational and healthcare personnel's cultural competency is perceived positively, particularly in the area of spirituality, religion, and comfort in sharing. The variables exhibited acceptable skewness and kurtosis values (skewness $< \pm 2$ and kurtosis $< \pm 7$), showing no major deviations from normality.

The highest-rated scores are “The patient’s spiritual and religious needs were met.” (M = 0.73 SD = 0.442), “The provider worked with me to identify patient’s needs and goals.” (M = 0.73 SD = 0.446), and “I was comfortable sharing private and personal information with the provider.” with (M = 0.70 SD = 0.458). These findings reveal that carers recognise significant strengths in healthcare personnel's and organisational cultural competency, particularly in satisfying spiritual needs, collaborating in care planning, and assuring comfort in sharing personal information.

4.5 Multivariate analysis

A multiple linear regression analysis was conducted to examine whether caregivers’ attitudes toward obligation to care, their perceived needs, and their perceptions of healthcare providers’ cultural competency significantly predicted the level of caregiver strain. The dependent variable was caregiver strain, measured using the Modified Caregiver Strain Index (MCSI) total score. A total of 42 observed variables were entered into the model.

The overall regression model was statistically significant, $F(42, 247) = 5.60, p < .001$, indicating that the combination of predictors reliably predicted caregiver strain. The model explained 40.0% of the variance in caregiver strain scores, with an adjusted R^2 of .400, suggesting a moderate level of explanatory power.

Several predictors demonstrated statistically significant contributions to the model:

- i. Routine and traditions. Caregivers who reported a greater ability to maintain health-related routines and traditions experienced significantly lower levels of strain ($B = -2.536, p < .001$).
- ii. Comfort in sharing personal information, those who felt comfortable sharing personal information with healthcare providers reported higher levels of strain ($B = 1.732, p = .017$).
- iii. Connection to Community Resources, caregivers who were connected to external resources (e.g., health information, support, services) reported higher strain levels ($B = 1.380, p = .045$).
- iv. Involvement of important others in care, the involvement of individuals important to the caregiver in patient care was positively associated with strain ($B = 1.777, p = .012$).
- v. Knowledge of the patient's health condition, proper knowledge of the patient's health was associated with lower caregiver strain ($B = -0.848, p = .027$).
- vi. Care matched with the cultural and family values, when caregivers perceived that care received was consistent with patients' beliefs and family practices, strain was significantly lower ($B = -1.708, p = .012$).
- vii. Confidence in providing care, caregivers who felt confident in their caregiving ability reported lower levels of strain ($B = -1.739, p = .012$).

- viii. Healthcare personnel involvement in care, perceived direct involvement of healthcare staff in patient care was associated with reduced caregiver strain ($B = -1.865, p = .004$).

Other predictors, including most components of caregivers' attitudes and perceptions of health information delivery, were not statistically significant contributors to caregiver strain in this model ($p > .05$). Multicollinearity diagnostics (Tolerance and VIF values) indicated that multicollinearity was not a major concern in this analysis. These findings suggest that both the quality of cultural care received, and the caregiver's knowledge and confidence play critical roles in influencing caregiver burden. The significance of specific culturally competent practices emphasises the need for targeted interventions that support caregivers' values, knowledge, and involvement in the care process.

Table 4.9 Summary of key predictors

Predictor Variable	B	Std. Error	β (Beta)	p-value
Can practice routines/traditions	-2.536	0.677	-0.218	<.001
Comfortable sharing personal info	1.732	0.719	0.136	.017
Connected to community resources	1.380	0.684	0.112	.045
Important others involved in care	1.777	0.702	0.145	.012
Knowledge about the patient's health	-0.848	0.380	-0.135	.027
Care tailored to beliefs/family values	-1.708	0.677	-0.147	.012
Confidence in caregiving ability	-1.739	0.688	-0.150	.012
Healthcare staff involved in patient care	-1.865	0.646	-0.160	.004

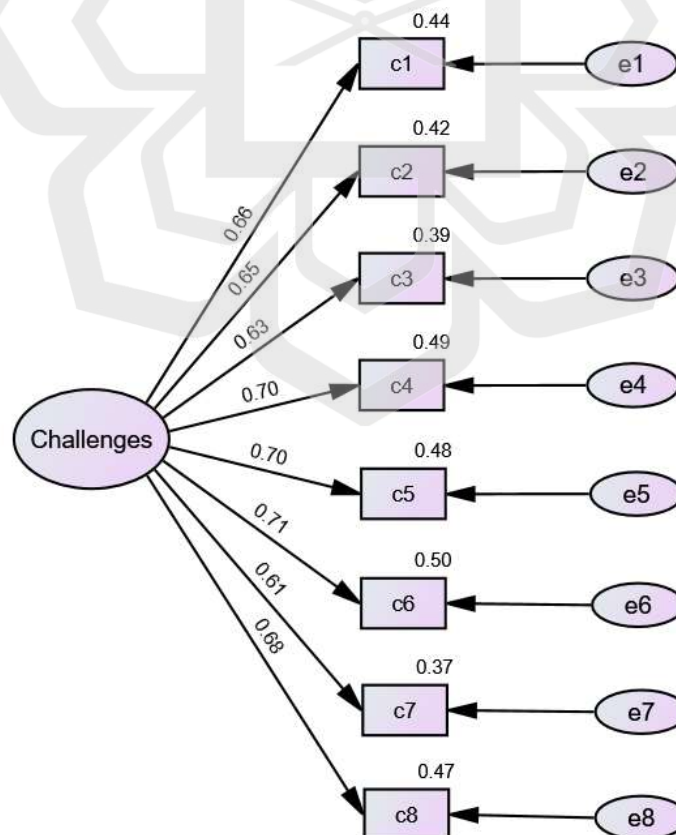
4.6 Measurement model assessment

Structural Equation Modelling (SEM) was employed using AMOS to test the hypothesised relationships among needs, attitudes, healthcare provider competency, and caregiving challenges. The model was recursive and estimated using Maximum Likelihood (ML) with a sample size of 290.

4.6.1 Model fit

4.6.1.1 *Challenges in caregiving*

Figure 4.1 Model diagram for caregiving challenges



The hypothesised model demonstrated a reasonable fit to the data:

Table 4.10 Structural model fit index for caregiving challenges

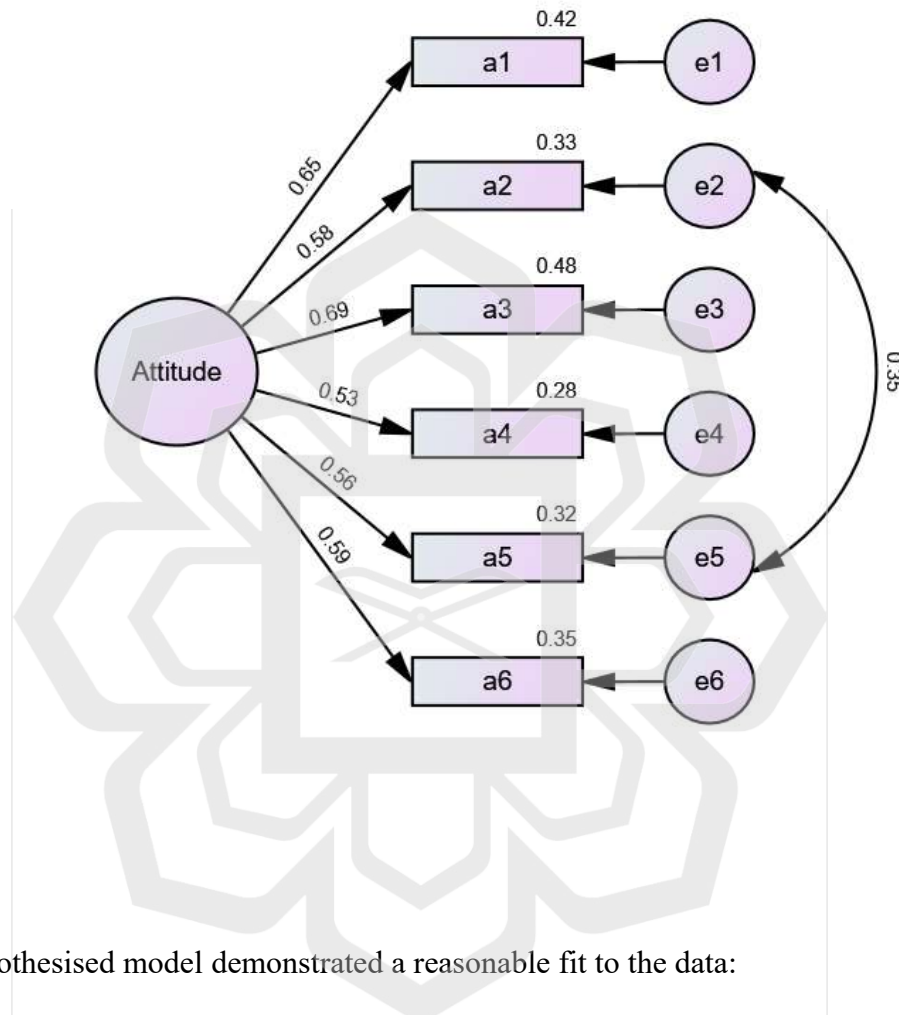
Fit Index	χ^2/df	CFI	RMSEA
Model Values	.82	1.000	.000

$$\chi^2 = 16.471$$

The results showed that the hypothesised model fit the data well. The chi-square statistic was $\chi^2 = 16.471$, with a normed chi-square value (χ^2/df) of 0.82. This was lower than the recommended threshold of 3.0, indicating a satisfactory model fit. The Comparative Fit Index (CFI) value of 1.000 was higher than the specified cut-off value of 0.90, indicating an excellent fit between the hypothesised model and the observed data. Furthermore, the Root Mean Square Error of Approximation (RMSEA) value was 0.000, which was less than the permissible threshold of 0.08, showing a tight approximation fit to the model. As a result, the overall fit indices indicate that the structural model accurately captured the links between healthcare professional cultural care qualities, caring demands, caregiving attitudes, and caregiving challenges. Therefore, the results supported the adequacy of the hypothesised structural model.

4.6.1.2 Caregiving attitudes

Figure 4.2 Model diagram for caregiving attitudes



The hypothesised model demonstrated a reasonable fit to the data:

Table 4.11 Structural model fit index for caregiving attitudes

Fit Index	χ^2/df	CFI	RMSEA
Model Values	.63	1.000	.000

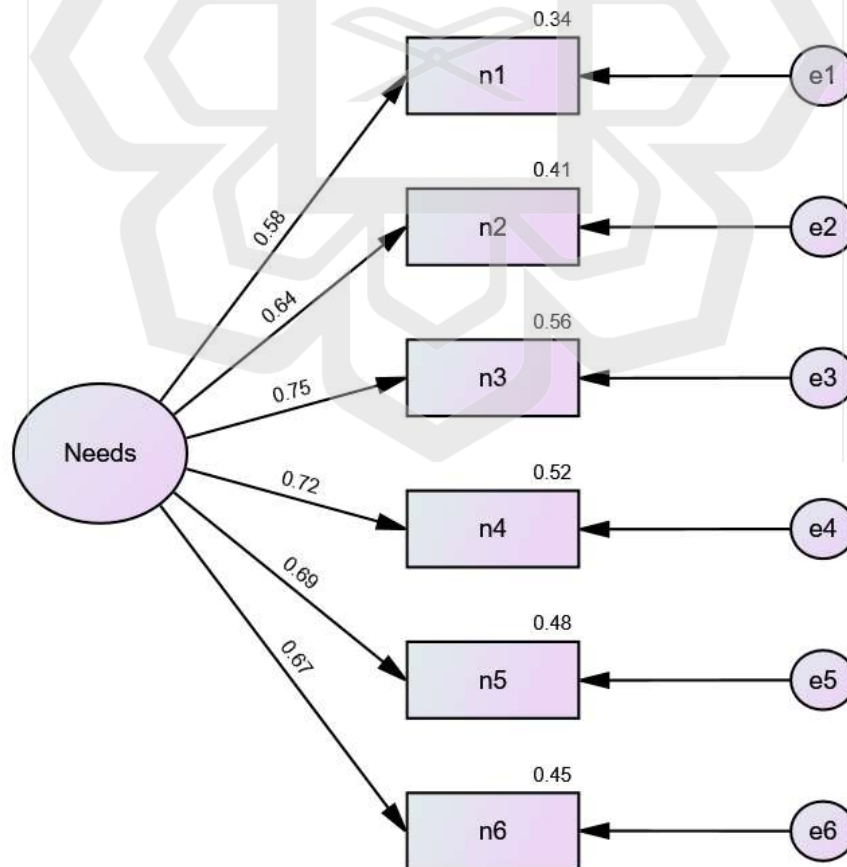
$$\chi^2 = 5.065$$

The findings indicated that the hypothesised model achieved a satisfactory fit to the data. The chi-square statistic was $\chi^2 = 5.065$, with a normed chi-square value (χ^2/df) of 0.63,

which was below the recommended threshold of 3.0, indicating a good model fit. The Comparative Fit Index (CFI) value of 1.000 exceeded the recommended cut-off value of 0.90, demonstrating an excellent fit between the hypothesised model and the observed data. Furthermore, the Root Mean Square Error of Approximation (RMSEA) value was 0.000, which was lower than the acceptable threshold of 0.08, indicating a close approximate fit of the model. Therefore, the overall fit indices supported the adequacy of the hypothesised structural model.

4.6.1.3 Caregiving needs

Figure 4.3 Model diagram for caregiving needs



The hypothesised model demonstrated a reasonable fit to the data:

Table 4.12 Structural model fit index for caregiving needs

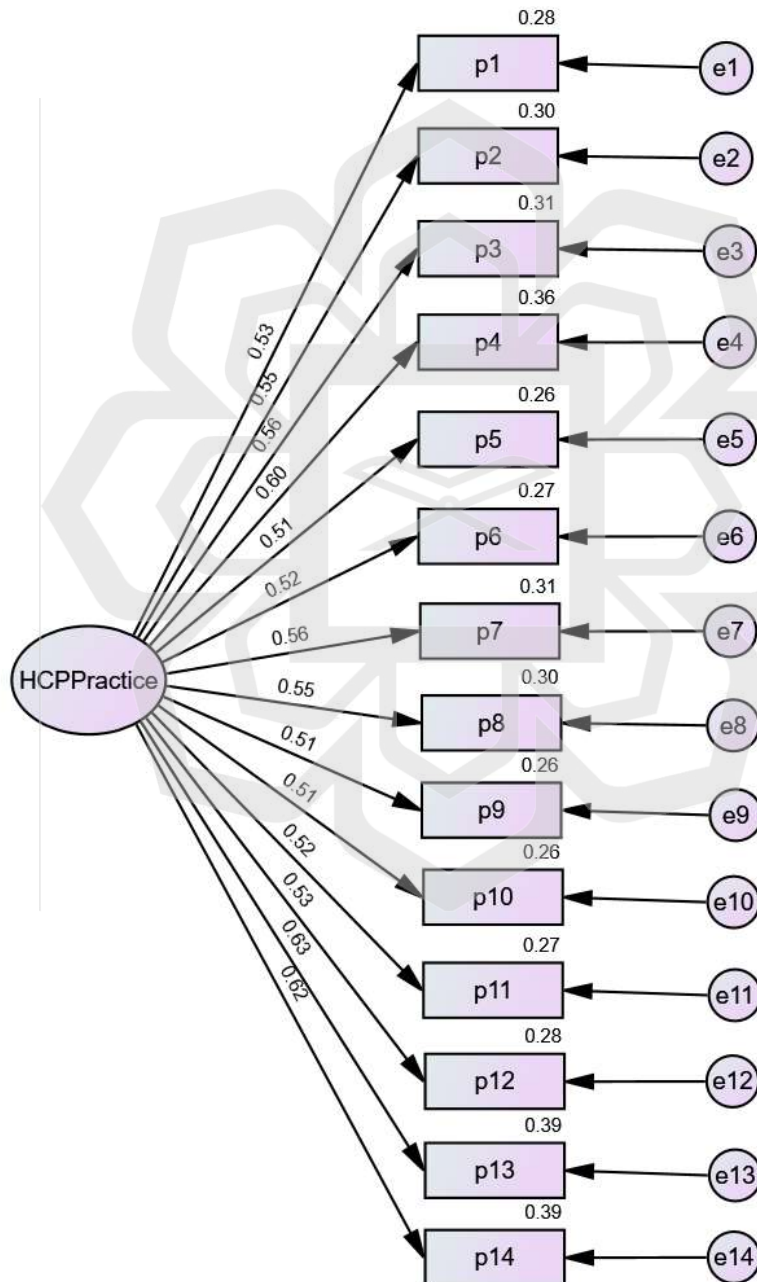
Fit Index	χ^2/df	CFI	RMSEA
Model Values	1.30	.995	.033

$$\chi^2 = 11.756$$

The findings indicated that the hypothesised model achieved a satisfactory fit to the data. The chi-square statistic was $\chi^2 = 11.756$, with a normed chi-square value (χ^2/df) of 1.30, which was below the recommended threshold of 3.0, indicating a good model fit. The Comparative Fit Index (CFI) value of 0.995 exceeded the recommended cut-off value of 0.90, demonstrating an excellent fit between the hypothesised model and the observed data. Furthermore, the Root Mean Square Error of Approximation (RMSEA) value was 0.033, which was lower than the acceptable threshold of 0.08, indicating a close approximate fit of the model. Therefore, the overall fit indices suggest that the structural model adequately represented the relationships among healthcare personnel cultural care attributes, caregiving needs, caregiving attitudes, and caregiving challenges. The results supported the adequacy of the hypothesised structural model and justified proceeding with the evaluation of the structural relationships among the constructs.

4.6.1.4 Healthcare personnel' practices on cultural appropriate care

Figure 4.4 Model diagram for HCPPractices



The hypothesised model demonstrated a reasonable fit to the data:

Table 4.13 Structural model fit index for HCPPractice

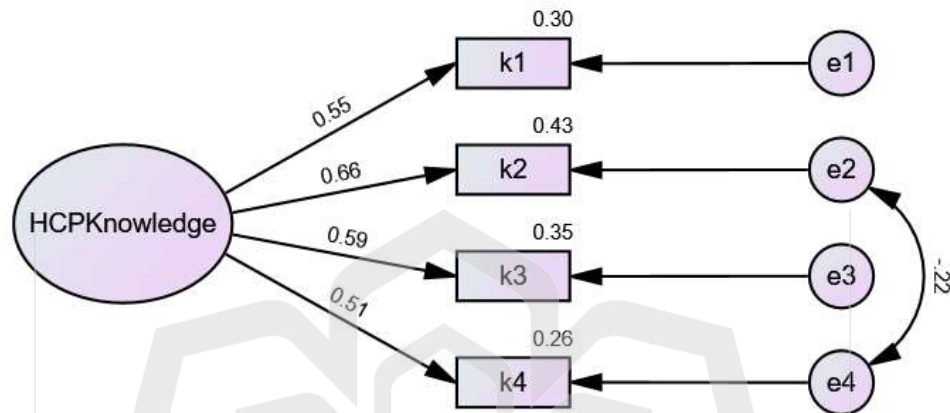
Fit Index	χ^2/df	CFI	RMSEA
Model Values	1.63	.948	.047

$$\chi^2 = 125.734$$

The findings indicated that the hypothesised model achieved a satisfactory fit to the data. The chi-square statistic was $\chi^2 = 125.734$, with a normed chi-square value (χ^2/df) of 1.63, which was below the recommended threshold of 3.0, indicating a good model fit. The Comparative Fit Index (CFI) value of 0.948 exceeded the recommended cut-off value of 0.90, demonstrating an excellent fit between the hypothesised model and the observed data. Furthermore, the Root Mean Square Error of Approximation (RMSEA) value was 0.047, which was lower than the acceptable threshold of 0.08, indicating a close approximate fit of the model. Therefore, the overall fit indices suggest that the structural model adequately represented the relationships among healthcare personnel cultural care attributes, caregiving needs, caregiving attitudes, and caregiving challenges. The results supported the adequacy of the hypothesised structural model and justified proceeding with the evaluation of the structural relationships among the constructs.

4.6.1.5 Healthcare personnel's knowledge on cultural appropriate care

Figure 4.5 Model diagram for HCPKnowledge



The hypothesised model demonstrated a reasonable fit to the data:

Table 4.14 Structural model fit index for HCPKnowledge

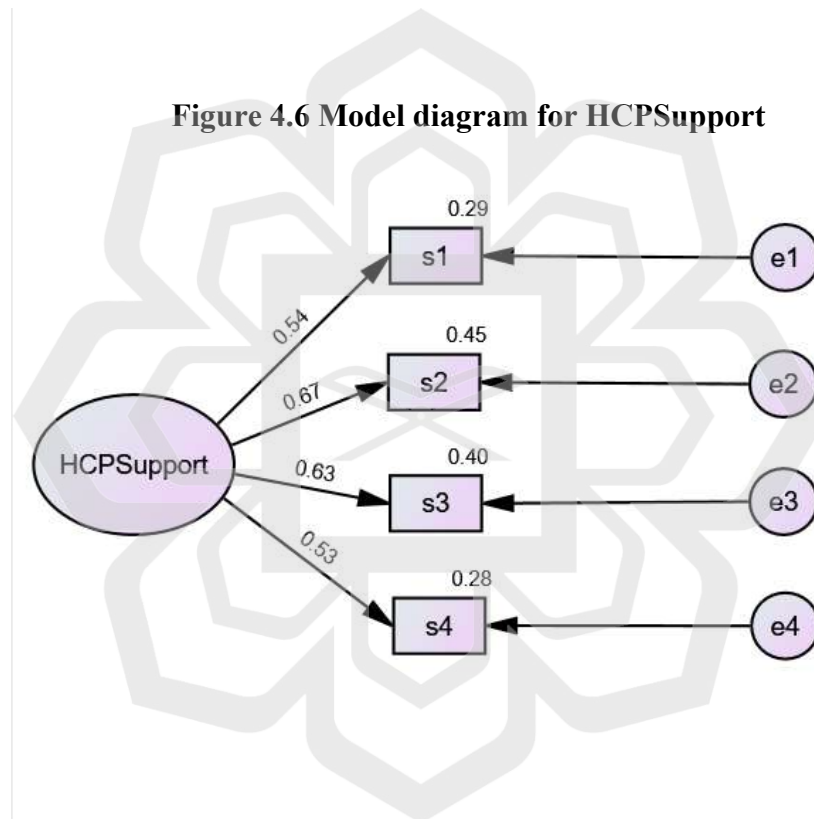
Fit Index	χ^2/df	CFI	RMSEA
Model Values	.295	1.000	.000

$$\chi^2 = 0.295$$

The findings indicated that the hypothesised model achieved a satisfactory fit to the data. The chi-square statistic was $\chi^2 = 0.295$, with a normed chi-square value (χ^2/df) of 0.295, which was below the recommended threshold of 3.0, indicating a good model fit. The Comparative Fit Index (CFI) value of 1.000 exceeded the recommended cut-off value of 0.90, demonstrating an excellent fit between the hypothesised model and the observed data. Furthermore, the Root Mean Square Error of Approximation (RMSEA) value was 0.000, which was lower than the acceptable threshold of 0.08, indicating a close approximate fit of the model. Therefore, the overall fit indices suggest that the structural model adequately

represented the relationships among healthcare personnel cultural care attributes, caregiving needs, caregiving attitudes, and caregiving challenges. The results supported the adequacy of the hypothesised structural model and justified proceeding with the evaluation of the structural relationships among the constructs.

4.6.1.6 Supports culturally appropriate care



The hypothesised model demonstrated a reasonable fit to the data:

Table 4.15 Structural model fit index for HCPSupport

Fit Index	χ^2/df	CFI	RMSEA
Model Values	.986	1.000	.000

$$\chi^2 = 1.971$$

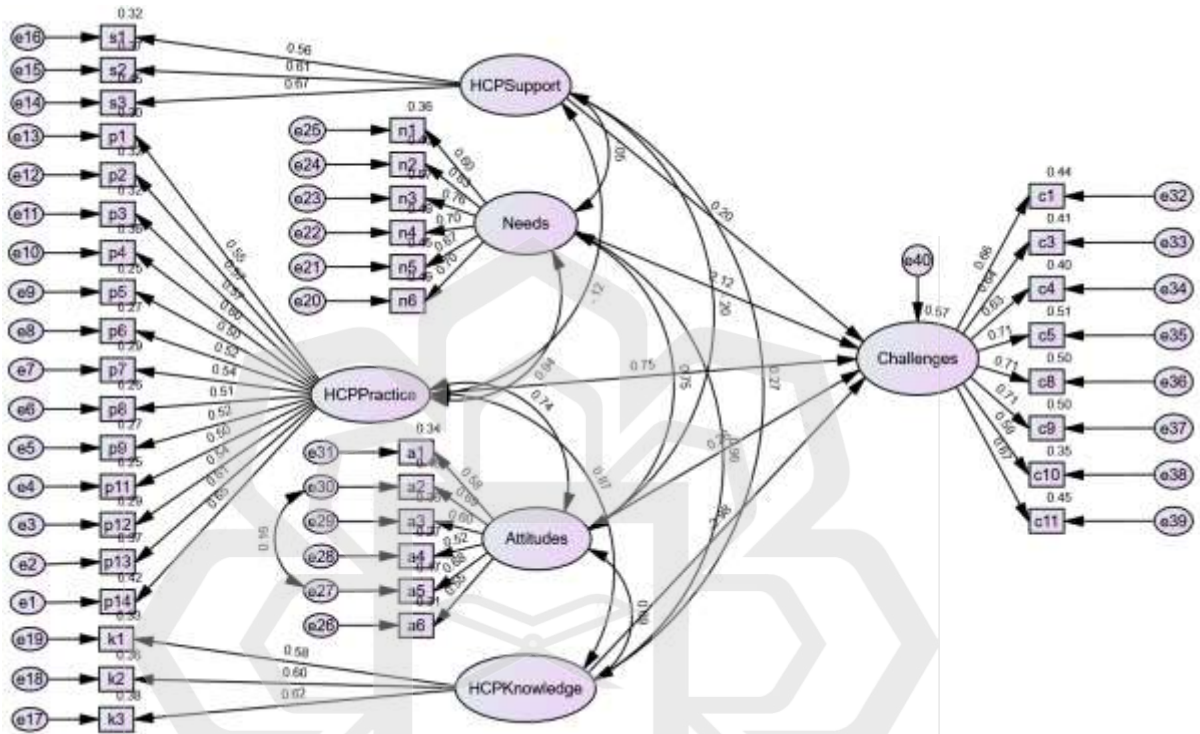
The findings indicated that the hypothesised model achieved a satisfactory fit to the data. The chi-square statistic was $\chi^2 = 1.971$, with a normed chi-square value (χ^2/df) of 0.986, which was below the recommended threshold of 3.0, indicating a good model fit. The Comparative Fit Index (CFI) value of 1.000 exceeded the recommended cut-off value of 0.90, demonstrating an excellent fit between the hypothesised model and the observed data. Furthermore, the Root Mean Square Error of Approximation (RMSEA) value was 0.000, which was lower than the acceptable threshold of 0.08, indicating a close approximate fit of the model. Therefore, the overall fit indices suggest that the structural model adequately represented the relationships among healthcare personnel cultural care attributes, caregiving needs, caregiving attitudes, and caregiving challenges. The results supported the adequacy of the hypothesised structural model and justified proceeding with the evaluation of the structural relationships among the constructs.

4.7 Structural model assessment

Using Confirmatory Factor Analysis (CFA), a 42-item dimensional matrix with six factors explaining 57.1% of the variance was recovered. The research team named six variables based on the semantic content of the components that make up each one. From a total of 55 elements, 13 were removed because their weights were less than 0.5 or because they shared more variance than a single factor could account for. (Awang, Z., 2012). The 42 items extracted by CFA were included in the initial parameter calculation with AMOS SPSS, Items k4, s4, and p10 were later deleted from the model due to collinearity and/or weights of less than 0.5. To investigate the content validity of the 39 final items a path map was created that connected the six elements, and the hypotheses given for the current study, based on the conceptual framework, were always examined.

4.7.1 The standardised regression weight

Figure 4.7 Structural diagram with standardised regression weight



The hypothesised model demonstrated a reasonable fit to the data:

Table 4.16 Structural model fit index

Fit Index	χ^2/df	CFI	RMSEA
Model Values	1.608	.90	.046

$$\chi^2 = 1102.998$$

Table 4.17 The Standardised Regression Weight

Path		Path	Standardised Beta Estimate
Challenges	<---	HCPPractice	.745
Challenges	<---	HCPSupport	.201
Challenges	<---	HCPKnowledge	-2.982
Challenges	<---	Needs	2.121
Challenges	<---	Attitudes	.257
sds8	<---	HCPPractice	.647
sds7	<---	HCPPractice	.605
sds6	<---	HCPPractice	.536
sds5	<---	HCPPractice	.501
sds3	<---	HCPPractice	.523
sds1	<---	HCPPractice	.510
es4	<---	HCPPractice	.542
es2	<---	HCPPractice	.520
es1	<---	HCPPractice	.501
ads6	<---	HCPPractice	.599
ads3	<---	HCPPractice	.568
ads2	<---	HCPPractice	.567
ads1	<---	HCPPractice	.546
s6	<---	HCPSupport	.671
s5	<---	HCPSupport	.608
s1	<---	HCPSupport	.564
k3	<---	HCPKnowledge	.620
k2	<---	HCPKnowledge	.596

k1	<---	HCPKnowledge	.579
n6	<---	Needs	.697
n5	<---	Needs	.668
n4	<---	Needs	.704
n3	<---	Needs	.757
n2	<---	Needs	.634
n1	<---	Needs	.601
a6	<---	Attitudes	.553
a5	<---	Attitudes	.684
a4	<---	Attitudes	.524
a3	<---	Attitudes	.600
a2	<---	Attitudes	.692
a1	<---	Attitudes	.583
c1	<---	Challenges	.665
c3	<---	Challenges	.641
c4	<---	Challenges	.629
c5	<---	Challenges	.713
c8	<---	Challenges	.709
c9	<---	Challenges	.708
c10	<---	Challenges	.591
c11	<---	Challenges	.673

The definition of the standardized regression weight is given below.

Extracted from Table 4.17

Path		Path	Standardized Beta Estimate
Challenges	<---	HCPPractice	.745

When HCPPractices goes up by 1 standard deviation, Challenges goes up by 0.75

Path		Path	Standardized Beta Estimate
Challenges	<---	HCPSupport	.201

When HCPSupport goes up by 1 standard deviation, Challenges goes up by 0.20

Path		Path	Standardized Beta Estimate
Challenges	<---	HCPKnowledge	-2.982

When HCPKnowledge goes up by 1 standard deviation, Challenges goes up by -2.98

Path		Path	Standardized Beta Estimate
Challenges	<---	Needs	2.121

When Needs goes up by 1 standard deviation, Challenges goes up by 2.12

Path		Path	Standardized Beta Estimate
Challenges	<---	Attitudes	.257

When Attitudes goes up by 1 standard deviation, Challenges goes up by 0.26

Most standardised factor loadings in Table 4.17 were significant ($CFA > 0.5$), supporting convergent validity. Although some (Challenges $\rightarrow$ HCPSupport, Challenges $\rightarrow$ HCPKnowledge, Challenges $\rightarrow$ Attitudes) exceeded $CFA < 0.5$, they were retained based on theoretical distinctiveness consistent with the study's conceptual framework.

Table 4.18 The Correlation Estimate for each Pair of Exogenous Construct

			Estimate
HCPKnowledge	<-->	Needs	.963
Attitudes	<-->	Needs	.752
HCPPractice	<-->	Needs	.937
HCPPractice	<-->	HCPSupport	-.116
HCPSupport	<-->	HCPKnowledge	.268
Attitudes	<-->	HCPSupport	-.205
HCPPractice	<-->	HCPKnowledge	.873
Attitudes	<-->	HCPPractice	.739
HCPSupport	<-->	Needs	-.047
Attitudes	<-->	HCPKnowledge	.693

High correlations were observed among several exogenous constructs in Table 4.18, particularly between HCP Knowledge and Needs ($r = .963$), HCP Practice and Needs ($r = .937$), and HCP Practice and Knowledge ($r = .873$). Although Fornell & Larcker (1981) introduced AVE and discriminant validity criteria (correlations $< .85$), the constructs indicate potential multicollinearity and were retained due to theoretical justification and their distinct conceptual contributions within the caregiving support framework. Such overlaps may reflect the interconnected nature of cultural practice, professional competence, and the perceived needs of caregivers within the Malaysian healthcare context.

Table 4.19 The Squared Multiple Correlations

Variables	Estimate
Challenges	.571

The model explained 57.1% in Table 4.19 (Table F5 Appendix F) of the variance in Caregiving Challenges ($R^2 = .571$). In other words, the error variance of Challenges is approximately 42.9 percent of the variance of Challenges itself. The results indicate that the combination of HCP practice, HCP support, HCP knowledge, caring needs, and caring attitudes collectively accounted for a moderate proportion of the variance in caregivers perceived challenges. This suggests that while the predictors were conceptually meaningful, other unmeasured factors may also influence caregivers' strain and burden.

4.7.2 The unstandardized regression weight

Figure 4.8 Structural diagram with unstandardized regression weight

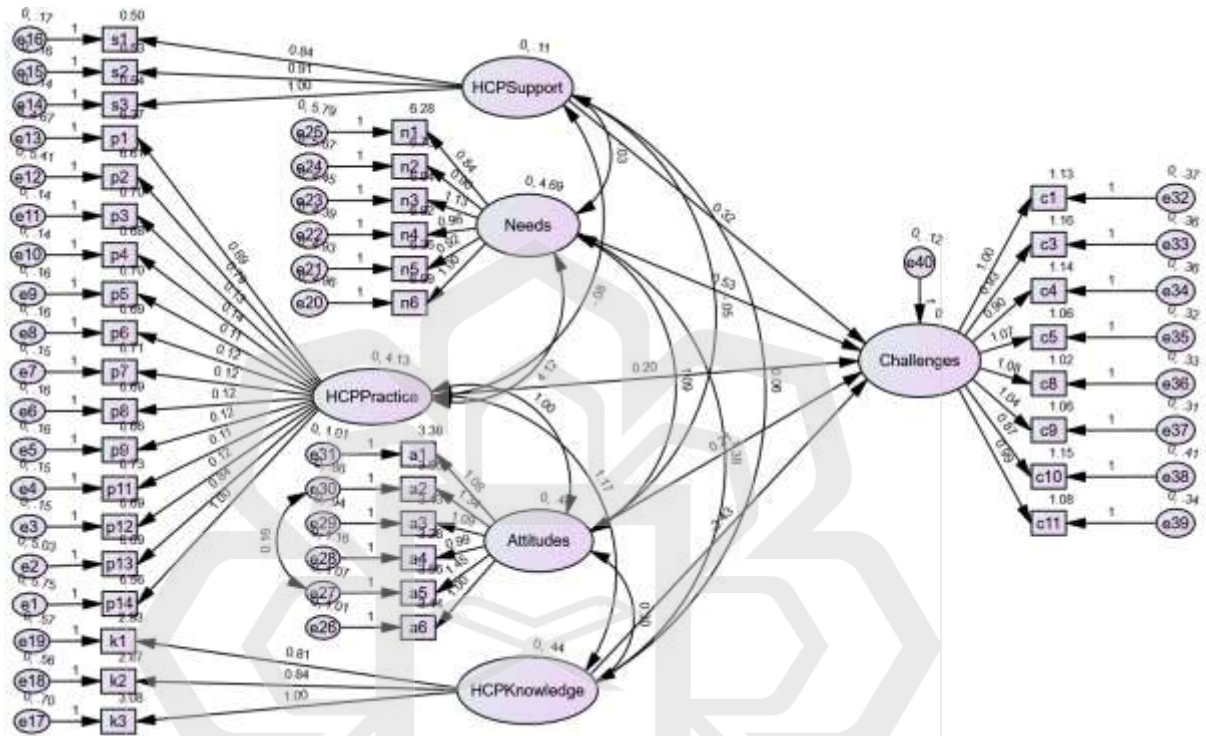


Table 4.20 The regression weight for HCPPractice, HCPSupport, HCPKnowledge, Caring Needs and Caring Attitude in predicting Caring Challenges

			Estimate	S.E.	C.R.	P
Challenges	<---	HCPPractice	.197	.244	.809	.419
Challenges	<---	HCPSupport	.324	3.928	.082	.934
Challenges	<---	HCPKnowledge	-2.435	6.222	-.391	.696
Challenges	<---	Needs	.528	1.843	.286	.775
Challenges	<---	Attitudes	.208	.464	.447	.655

*** indicates a highly significant at < 0.001

Table 4.21 The regression weight for HCPPPractice

			Estimate	S.E.	C.R.	P
Challenges	<---	HCPPPractice	.197	.244	.809	.419

Definition for actual beta 0.197: When HCPPPractice goes up by 1 unit, Challenges goes up by 0.197 unit. Definition for Standard Error of regression weight 0.244: The regression weight estimate of 0.197 has standard error of about 0.244. Definition of Critical Ratio for regression weight: Dividing the regression weight estimate by the estimate of its standard error gives $z = 0.197/0.244 = 0.809$. In other words, the regression weight estimate is 0.809 standard error above zero. Definition of Level of significance for regression weight: The probability of getting a critical ration as large as in absolute value 0.419. In other words, the regression weight for HCPPPractice in the prediction of Challenges is significantly different from zero at the 0.05 level (two-tailed).

Table 4.22 The regression weight for HCPSupport

			Estimate	S.E.	C.R.	P
Challenges	<---	HCPSupport	.324	3.928	.082	.934

Definition for actual beta 0.324: When HCPSupport goes up by 1 unit, Challenges goes up by 0.324 unit. Definition for Standard Error of regression weight 3.928: The regression weight estimate of 0.324 has standard error of about 3.928. Definition of Critical Ratio for regression weight: Dividing the regression weight estimate by the estimate of its standard error gives $z = 0.324/3.928 = 0.082$. In other words, the regression weight estimate is 0.082 standard error above zero. Definition of Level of significance for regression

weight: The probability of getting a critical ration as large as in absolute value 0.934. In other words, the regression weight for HCPSupport in the prediction of Challenges is significantly different from zero at the 0.05 level (two-tailed).

Table 4.23 The regression weight for HCPKnowledge

			Estimate	S.E.	C.R.	P
Challenges	<---	HCPKnowledge	-2.435	6.222	-.391	.696

Definition for actual beta -2.435 When HCPKnowledge goes up by 1 unit, Challenges goes up by -2.435 unit. Definition for Standard Error of regression weight 6.222: The regression weight estimate of -2.435 has standard error of about 6.222. Definition of Critical Ratio for regression weight: Dividing the regression weight estimate by the estimate of its standard error gives $z = -2.435/6.222 = -0.391$. In other words, the regression weight estimate is -0.391 standard error above zero. Definition of Level of significance for regression weight: The probability of getting a critical ration as large as in absolute value 0.696. In other words, the regression weight for HCPKnowledge in the prediction of Challenges is significantly different from zero at the 0.05 level (two-tailed).

Table 4.24 The regression weight for Caring Needs

			Estimate	S.E.	C.R.	P
Challenges	<---	Needs	.528	1.843	.286	.775

Definition for actual beta 0.197: When Needs goes up by 1 unit, Challenges goes up by 0.528 unit. Definition for Standard Error of regression weight 1.843: The regression weight estimate of 0.528 has standard error of about 1.843. Definition of Critical Ratio for regression weight: Dividing the regression weight estimate by the estimate of its standard error gives $z = 0.528/1.843 = 0.286$. In other words, the regression weight estimate is 0.286 standard error above zero. Definition of Level of significance for regression weight: The probability of getting a critical ration as large as in absolute value 0.775. In other words, the regression weight for Needs in the prediction of Challenges is significantly different from zero at the 0.05 level (two-tailed).

Table 4.25 The regression weight for Caring Attitudes

			Estimate	S.E.	C.R.	P
Challenges	<---	Attitudes	.208	.464	.447	.655

Definition for actual beta 0.197: When Attitudes goes up by 1 unit, Challenges goes up by 0.208 unit. Definition for Standard Error of regression weight 0.464: The regression weight estimate of 0.208 has standard error of about 0.464. Definition of Critical Ratio for regression weight: Dividing the regression weight estimate by the estimate of its standard error gives $z = 0.208/0.464 = 0.447$. In other words, the regression weight estimate is 0.447 standard error above zero. Definition of Level of significance for regression weight: The probability of getting a critical ration as large as in absolute value 0.655. In other words, the regression weight for HCPPractice in the p rediction of Challenges is significantly different from zero at the 0.05 level (two-tailed).

Although the direction of the standardised estimates in Table 4.17 was generally consistent with theoretical expectations (i.e., positive associations between HCP

characteristics and caregiver challenges, except for Knowledge), none of the hypothesised direct paths were statistically significant ($p < 0.05$) in Table 4.20. The strongest positive standardised relationship was observed between HCP Practice and Challenges ($\beta = 0.745$ standardised, but unstandardized $p = .419$), suggesting that caregivers' challenges tended to increase slightly with perceived HCP practice quality, though this effect was not statistically supported. Conversely, HCP Knowledge exhibited a negative relationship ($\beta = -2.982$), implying that greater HCP cultural knowledge could correspond with fewer challenges, yet the effect lacked statistical significance ($p = .696$). Despite the absence of significant paths, these relationships were retained in the model due to their theoretical and contextual relevance to the conceptual framework underpinning culturally competent caregiving support in Malaysia.

Table 4.26 Covariance Estimate between Exogenous Variables

			Estimate	S.E.	C.R.	P
HCPKnowledge	<-->	Needs	1.376	.183	7.506	***
Attitudes	<-->	Needs	1.086	.172	6.330	***
HCPPractice	<-->	Needs	4.122	.538	7.669	***
HCPPractice	<-->	HCPSupport	-.079	.054	-1.453	.146
HCPSupport	<-->	HCPKnowledge	.059	.021	2.792	.005
Attitudes	<-->	HCPSupport	-.046	.019	-2.362	.018
HCPPractice	<-->	HCPKnowledge	1.170	.168	6.978	***
Attitudes	<-->	HCPPractice	1.002	.163	6.141	***
HCPSupport	<-->	Needs	-.034	.058	-.592	.554
Attitudes	<-->	HCPKnowledge	.305	.054	5.684	***

***indicates a highly significant at < 0.001

Since regression weight in Table F6 (Appendix F) of all items are significant ($p < 0.001$), convergent validity is achieved. Based on above Table 4.26, a substantial positive correlation exists between HCP knowledge and caregiving needs, implying that higher levels of HCP knowledge are related with increased awareness or reporting of caregiver needs. This association may represent the reciprocal aspect of culturally competent care, in which knowledgeable healthcare providers are better able to detect and address caregivers' individual needs. The correlation between caring attitudes and caregiving needs also was substantial, indicating that caregivers with greater demands had stronger caregiving attitudes. Caregivers with higher needs frequently have a positive connection with healthcare professionals who are more active, culturally sensitive, and helpful. They are more likely to engage with HCPs who practise culturally competent care, because these providers tend to detect and address such needs better. A large positive correlation between HCP practice and HCP knowledge suggests that as personnel's knowledge of the culturally competent care grows, so do their culturally sensitive behaviour patterns. A significant positive correlation between caring attitude and HCP practice suggests that when healthcare providers practice more culturally competently, caregivers likely to have more positive caregiving attitudes, and vice versa. A substantial positive correlation was found between caring attitude and healthcare provider knowledge, indicating that caregivers with more positive attitudes are more likely to work with healthcare professionals who are more culturally aware. This link emphasises the significance of HCP knowledge in encouraging positive caregiver perceptions and involvement in care. However, those constructs ($>.001$) show potential multicollinearity and were maintained because of their theoretical validity and significant conceptual contributions to the caring support framework.

Based on the p-values (< 0.001) in Table F7 (Appendix F), it can conclude that the variance for all variables in the model is significantly different from zero. The majority of standardised residuals in Table F8 and Table F9 (Appendix F) smaller than two in absolute values imply a correct model. The Residual Covariance Matrix, which compares sample covariance to model-implied covariance, revealed that most standardised residuals were

below ± 2 , indicating a good local model fit. This indicates that the model accurately represented the observed relationships between measured variables. Minor residuals detected across a few items may indicate shared variance that is not fully captured by the current model, requiring more refining in future studies.



4.8 Summary

Table 4.27 Hypothesis testing in predicting Caregiver Challenges

Hypothesis	Path	Standardized β	C.R.	P	Result	Interpretation
H1	HCPPractice → Challenges	0.745	0.809	0.419	Not Supported	Positive but nonsignificant effect
H2	HCPSupport → Challenges	0.201	0.082	0.934	Not Supported	No significant effect
H3	HCPKnowledge → Challenges	-2.982	-0.391	0.696	Not Supported	Negative and nonsignificant effect
H4	Needs → Challenges	2.121	0.286	0.775	Not Supported	Positive but nonsignificant effect
H5	Attitudes → Challenges	0.257	0.447	0.655	Not Supported	Positive but nonsignificant effect

Note: The significance level is set at $p < 0.05$. Neither of the expected routes obtained statistical significance, indicating that healthcare provider attributes, caring demands, and attitudes were not important predictors of caregivers with this model.

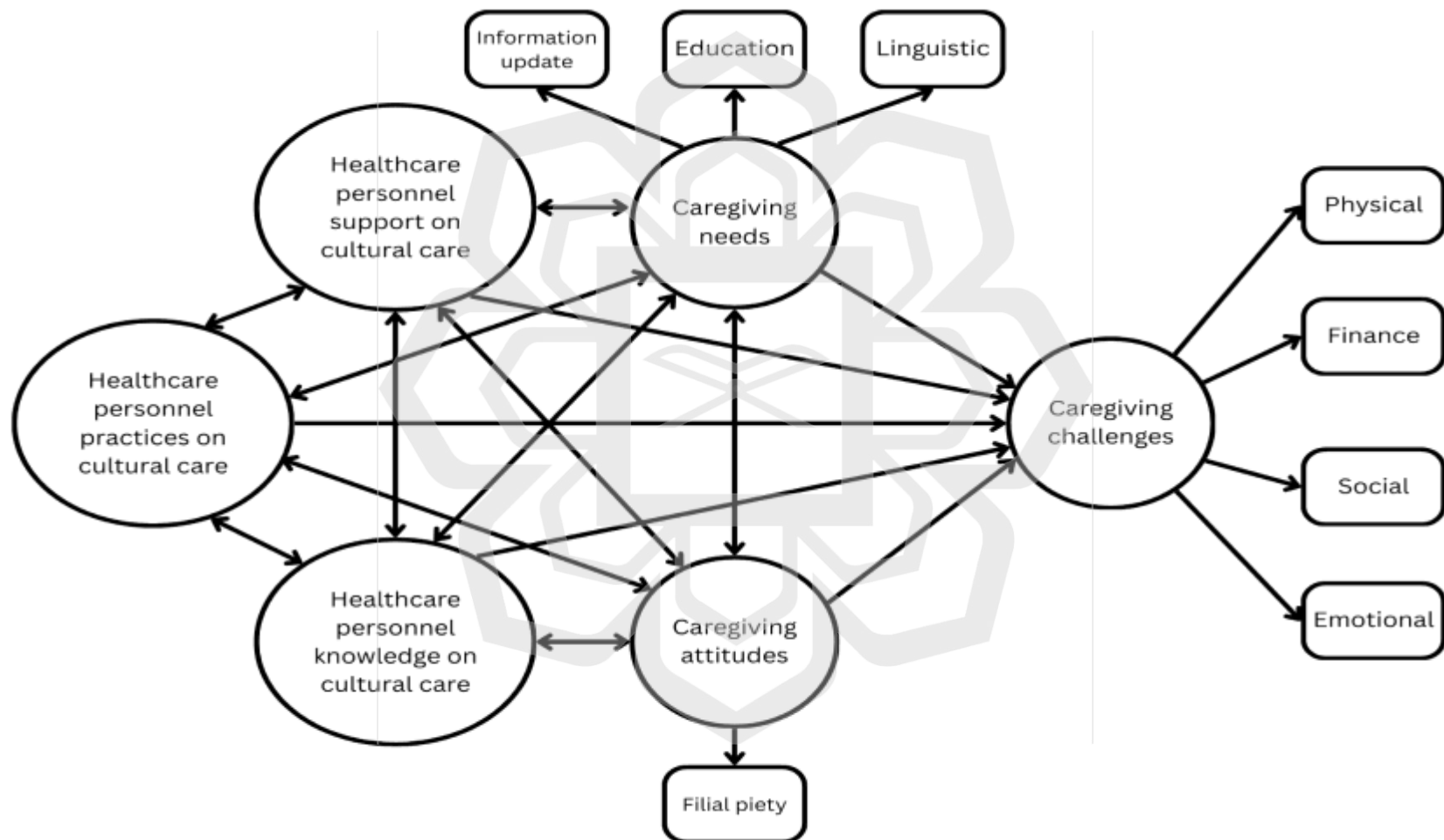
The SEM results showed that healthcare provider practice ($\beta = .75$) and support ($\beta = .20$) were positively related to caregiver challenges, while knowledge had a negative but nonsignificant association ($\beta = -2.98$, $p > .05$). Although not statistically significant, both needs ($\beta = 2.12$) and attitudes ($\beta = .26$) exhibited positive trends. These factors explained 57.1% of the variance in caregiver challenges, indicating a moderate explanatory power for the model. Overall, the structural equation modelling results support the adequacy of the proposed cultural caregiving model in fitting the data, even though none of the direct paths to caregiver challenges were statistically significant. The findings highlight that while HCP

practice, support, attitudes, and knowledge contribute conceptually to caregivers' challenges, their effects may operate indirectly or be mediated by other cultural or contextual factors not captured in this model. The model nonetheless provides a statistically sound foundation for developing culturally sensitive interventions aimed at supporting family caregivers of older adults with chronic pain.

Figure 4.9 below illustrates the final structural model for caregiving challenges among family caregivers of older people with chronic musculoskeletal pain. The model was developed to examine the relationships between caregivers' perspective on healthcare personnel cultural care attributes, caregiver needs, caregiver attitudes, and caregiver challenges. The model consists of five exogenous constructs, namely caregiver needs, caregiver attitudes, healthcare personnel practices on cultural care, healthcare personnel support on cultural care, and healthcare personnel knowledge on cultural care. These constructs represent the caregiver needs, attitudes and perspectives on cultural care attributes provided by healthcare personnel that may influence caregivers' experiences and caregiving outcomes. Caregiving needs were represented by three dimensions: information update, education, and linguistic needs. Meanwhile, caregiving attitudes were represented by filial piety, reflecting the cultural values and responsibilities of family caregivers toward older adults.

The final endogenous construct was caregiving challenges, which comprised four dimensions: physical, financial, social, and emotional challenges. The model hypothesised that the caregiver needs, attitudes and perspectives on healthcare personnel cultural care attributes directly influenced caregiving challenges. The directional paths in the model indicate the hypothesised relationships among the constructs. The findings demonstrated that the proposed structural model achieved an acceptable model fit, suggesting that the relationships among the constructs adequately represented the observed data. Overall, the model supports the importance of recognising the caregiving needs, caregiving attitudes, and culturally appropriate healthcare personnel practices, support, and knowledge in influencing caregiving challenges among family caregivers.

Figure 4.9 Final structural model



CHAPTER FIVE

DISCUSSION

5.1 Introduction

This chapter discussed the research findings and was guided by research questions. It utilises descriptive and multivariate analysis to identify the relevant factors that can contribute to a predictive cultural model for family caregivers in managing chronic musculoskeletal pain among older people in East Coast of Peninsular Malaysia. Apart from that, structural equation modelling was used to test the relationships among factors in the predictive cultural model, which ultimately created a predictive cultural model for cultural sensitivity in family caregivers managing chronic musculoskeletal pain among older people on the East Coast of Peninsular Malaysia.

5.2 Key predictors of family caregivers' strains

This section of the study discusses the key predictors of family caregivers' strains. Multivariate analysis was done to identify relevant factors. Based on the findings, this study examined the predictive role of caregivers' attitudes, perceived needs, and perceptions of healthcare providers' cultural competency on caregiver strain among family caregivers of older adults with chronic pain in Malaysia. The regression model explained nearly half of the variance in caregiver strain ($R^2 = 0.488$), highlighting the complex interplay between cultural practices, caregiver resources, and healthcare provider engagement in shaping caregiver experiences.

A key finding was that caregivers who were able to maintain health-related routines and traditions reported significantly lower strain. This aligns with evidence that culturally

congruent care reinforces a sense of continuity, identity, and meaning for both family caregivers and care recipients (Knight et al., 2024). In collectivist societies such as Malaysia, where family caregiving is deeply rooted in religious and cultural values, the ability to practice traditions during care can reduce emotional distress and strengthen coping mechanisms. Studies in East Asian populations have also shown that honouring family and religious practices during care promotes caregiver resilience and reduces psychological stress (Xiao et al., 2024).

The perception that care was matched to patients' beliefs and family values was also shown as a significant predictor of lower strain. This emphasises the importance of cultural competency in healthcare delivery, especially in multiethnic settings like Malaysia. When care aligns with cultural and family expectations, caregivers may feel validated and supported, reducing the psychological toll of caregiving (Chamberlain et al., 2024).

Another important protective factor was caregiver's knowledge about the patient's health condition. Caregivers with a better understanding reported lower levels of strain, underscoring the importance of accessible health education and training. Similarly, confidence in caregiving ability and the active involvement of healthcare personnel in patient care were associated with reduced burden. Caregivers who are better informed about their loved one's condition are more confident in managing care tasks and are less likely to experience feelings of helplessness, aligning with prior evidence from both Middle East and Asian contexts (Amin Abdelhalim et al., 2025; Nasreen et al., 2024). These findings suggest that interventions should not only empower caregivers with knowledge and skills but also ensure that healthcare providers share caregiving responsibilities through supportive, hands-on engagement.

Interestingly, comfort in sharing personal information with healthcare providers and involvement of important others in care were associated with higher caregiver strain. One possible explanation is that while openness and involvement may indicate greater

engagement with the healthcare system, they could also reflect a higher level of caregiving complexity, exposure to difficult conversations, or family tensions in decision-making. This finding contrasts with some Asian studies that associate family involvement and open communication with reduced caregiver stress, suggesting that cultural norms around privacy, hierarchy, and collective responsibility may play a role in how Malaysian caregivers perceive these interactions (Wang Z et al., 2024).

Conversely, caregivers who were connected to community resources reported higher levels of strain. This paradoxical finding may indicate that caregivers who seek external resources already experience a higher burden, prompting them to reach out for support, suggesting that community engagement could be more of a reactive coping strategy rather than a proactive support system. A recent Taiwanese cohort study showed that while needs assessments led to increased long-term care service use and eventual reductions in moderate–severe burden over time, caregivers initially reported heightened strain due to emotional stressors and environmental barriers such as managing accessibility challenges (Su et al., 2025). It could also reflect challenges in navigating fragmented or inadequate community services. This suggests that strengthening the accessibility and cultural relevance of community-based programs may be critical in reducing caregiver strain. Although a significant paradoxical relationship was discovered, additional research employing cross-validation, larger samples, and multi-group analyses are required to establish the robustness and generalisability of the findings.

5.3 Relationships among key predictors

The primary goal of this study was to investigate how healthcare provider (HCP) qualities for cultural care namely Practice, Knowledge, and Support as well as caring Needs and caring Attitudes connect to caregiver Challenges among family caregivers of older people with chronic pain in Malaysia. Although the overall model suited well to the data, none of the direct expected routes were statistically significant. Model respecification (e.g.,

eliminating items owing to collinearity) was performed because they were theory-driven decisions rather than purely statistics. These findings shed light on the multifaceted and culturally rooted nature of caring relationships in Malaysia.

The structural model revealed that caregiver challenges were conceptually related to HCP Practice ($\beta = 0.197$, $p = .419$), HCP Support ($\beta = 0.324$, $p = .934$), HCP Knowledge ($\beta = -2.435$, $p = .696$), Needs ($\beta = 0.528$, $p = .775$), and Attitudes ($\beta = 0.208$, $p = .655$), but their effects were not statistically significant. This pattern indicates that, while healthcare professionals' cultural competence and caregivers' attitudes and needs are theoretically important, they may not have a direct impact on caregivers' perceived obstacles. Instead, these variables are likely to influence caregivers' challenges indirectly, via mechanisms such as caregiver coping, confidence, cultural understanding, or perceived fairness of care. A comparable finding was observed in a Chinese hospital study: nurse cultural competency had a significant effect on patient satisfaction, but this effect was mediated by patient trust (Tang et al., 2018). This lends credence to the notion that HCP cultural competency has an indirect impact on caregiver experience, affecting trust, communication, and collaboration in care rather than immediately minimising challenges. Furthermore, a broader systematic study discovered insufficient evidence that cultural competence interventions create high direct patient outcomes, even when provider competences improve (Truong et al., 2014). These analogies show that cultural care practices, knowledge, and support influence caregiver outcomes in complicated, nonlinear ways. Their impact may become more apparent when intermediary factors (such as caregiver satisfaction, coping skills, or perceived respect) are included in the model.

Malaysia's multicultural and collectivist setting could explain the non-significant results. Family caregiving is strongly founded in cultural and religious commitments, with caring for older parents being considered as a moral duty rather than a negotiable chore. (Wahab et al., 2024). As a result, caregivers' issues may be due to personal, familial, and emotional burdens rather than professional characteristics of healthcare professionals. Furthermore, HCP cultural care practices in Malaysia are constantly developing. According

to studies, while providers recognise the value of cultural sensitivity, systemic impediments, such as insufficient training, massive workloads, and time limits, minimise the visible influence of cultural care practices on caregiver outcomes. (Lai et al., 2023; Vandecasteele et al., 2024).

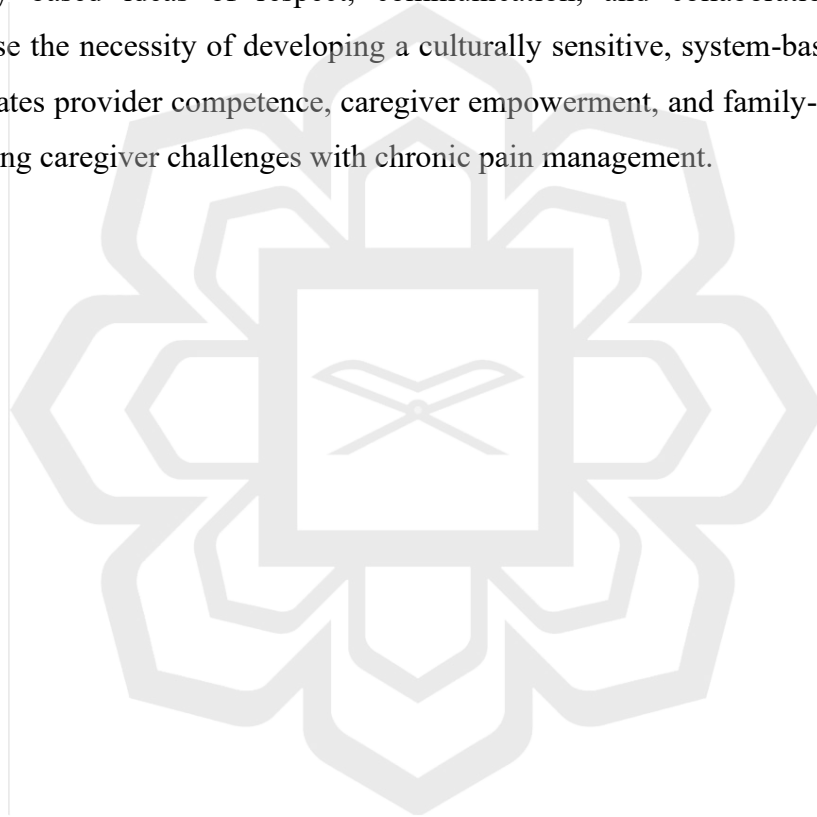
The substantial correlations between HCP Knowledge and Needs ($r = .963$), HCP Practice and Needs ($r = .937$), and HCP Practice and Knowledge ($r = .873$), indicate conceptual overlap; these could represent interconnected dimensions of cultural care delivery. Fornell & Larcker (1981) introduced AVE and discriminant validity requirements (correlations $< .85$), however, the constructs signal potential multicollinearity and were preserved due to theoretical justification and different conceptual contributions within the caring support framework. Furthermore, Hair et al. (2022) contend that retaining theoretically grounded constructs, even in the presence of multicollinearity, preserves the postulated structural relationships. Furthermore, keeping them in the model was justified by theory: cultural competence is complex, covering interconnected dimensions of awareness, knowledge, skills, and participation (Campinha-Bacote, 2018). The findings suggest that caregivers may perceive these components as part of a broader context of care quality. This is consistent with the Cultural Competence Continuum paradigm, which defines effective practice as a combination of knowledge, sensitivity, and support within cultural contexts. (Campinha-Bacote, 2018).

5.4 Summary

Taken together, these findings show that caregiver strain is influenced not just by practical and emotional demands, but also by cultural appropriateness, knowledge empowerment, and healthcare provider participation. The findings highlight the need for culturally appropriate interventions that strike a balance between traditional caregiving demands and current treatments. Programs should stress caregiver training, confidence building, and

incorporating cultural values into care planning, as well as addressing systemic gaps in community support.

The predictive modelling results indicate that cultural care traits of healthcare providers which are their practice, knowledge, and support along with caring needs and attitudes, are conceptually relevant but do not directly predict caregiver challenges in this Malaysian environment. Instead, these qualities most likely have an indirect impact through culturally based ideas of respect, communication, and collaboration. The findings emphasise the necessity of developing a culturally sensitive, system-based paradigm that incorporates provider competence, caregiver empowerment, and family-centered methods to reducing caregiver challenges with chronic pain management.



CHAPTER SIX

CONCLUSION

6.1 Introduction

This final chapter outlines the accomplishments and contributions of the study. It sought to examine how healthcare provider characteristics, caring needs, and caregiver attitudes relate to the challenges experienced by family caregivers of older people with chronic pain in Malaysia. This chapter explores their practical and theoretical implications reflects on the study's strengths and limits and offers recommendations for future research and policy.

6.2 Achievement of the study

This study met its objective of investigating how healthcare provider cultural competency attributes, caring needs, and caregiver attitudes influence the challenges faced by family caregivers of older people with chronic pain in Malaysia. By incorporating cultural concerns into the analysis, the study gives a more nuanced understanding of caring dynamics in a multicultural setting, emphasising the interaction between caregiver traits and the support provided by healthcare personnel.

The study adds to the literature by expanding on existing caregiving models and frameworks, specifically by including cultural competence as a critical element impacting caregiver experiences. It explains how healthcare provider cultural competency attributes, caring needs, and caregiver attitudes impact caregiver challenges can directly or indirectly, using empirical evidence to connect theoretical concepts with real-world caregiving experiences.

Methodologically, the study used a culturally appropriate and psychometrically verified questionnaire that included aspects from many existing scales. This technique not only ensured relevance to the Malaysian context but also improved the accuracy and application of the results. The use of confirmatory factor analysis and structural equation modelling increased the study's rigor, allowing for a more thorough exploration of complex interactions between variables.

In practice, the findings highlight critical areas where healthcare providers and policymakers might intervene to better support family caregivers. The study provides actionable insights for establishing culturally sensitive treatments, training programs, and support systems adapted to the Malaysian context by highlighting distinct caregiving needs, attitudes, and provider qualities associated mitigating caregiver challenges.

Overall, the study allows theoretical and practical advancements. It increases our understanding of culturally impacted caregiving issues, informs methods to improve healthcare assistance for family caregivers, and lays the groundwork for future research focused at enhancing caregiver well-being in multicultural contexts.

6.3 Strengths and limitations of the study

The study used SEM allowing simultaneous testing of multiple culturally embedded constructs. One of the study's most prominent strengths is its contextual relevance. While caring has been extensively studied in Western contexts, there is minimal information in Malaysia, specifically regarding cultural implications on family caregiving for older persons with chronic musculoskeletal pain. By putting the study in a multicultural setting, the research provides findings that are locally grounded and culturally meaningful, making it more applicable to Malaysian caregivers. Another virtue of this study is its holistic

approach. Rather than assessing caregiver strain on isolation, the study took into account several aspects such as emotional, physical, economic, social, and cultural issues, resulting in a complete framework for understanding caregiving in this group. A recent systematic study of caregiver burden among family caregivers of older individuals with chronic illnesses emphasises the necessity of including multimodal support customised to community needs. (Choi et al., 2024).

This study also contributes significantly to the creation of culturally appropriate caregiver support programs. The suggested predictive cultural model can help healthcare professionals and policymakers build interventions that address the different needs of caregivers. The inclusion of validated instruments, such as the M-CSI and the FIN, adds to the credibility of the findings by assuring reliability and comparability with current research. National-level evidence, such as analyses from the NHMS, show how factors like caregiving intensity, ethnicity, training, and assistance significantly influence caregiver health, daily, and social lives (Jawahir et al., 2021; Kong et al., 2021). This methodological rigor enhances the robustness of the results and contributes to the field of caregiver research in Malaysia.

Despite its strengths, this study has some drawbacks that should be noted. First, the cross-sectional design limits the ability to draw causal conclusions. While connections between cultural characteristics and caregiver burden have been observed, their directionality cannot be determined conclusively. This restriction is consistent with those identified in national survey analyses of caregiving intensity and its effects (Jawahir et al., 2021). Second, the findings' generalizability is limited. Because the study focused on caregivers from Peninsular Malaysia's East Coast, the findings may not accurately reflect caregiver experiences in other locations or cultural situations. Future research should investigate broader sample options to improve external validity.

This study did not employ split-sample cross-validation to assess model stability due to sample size issues, as dividing the dataset may lower statistical power and model stability in Structural Equation Modelling. Although the model demonstrated acceptable fit, the findings should be interpreted with caution as the model has not been validated on an independent sample. Future studies are recommended to perform cross-validation using split samples for calibration and validation to enhance the generalizability of the proposed model and confirm the stability and robustness of the model across different caregiver populations and settings.

Another drawback is the dependence on self-reported information. Caregivers may have under- or over-reported their experiences due to social desirability bias, recall problems, or a reluctance of sharing sensitive information. Furthermore, while purposive and convenience sampling are useful for reaching the target population, they may introduce selection bias and impair representativeness. While national surveys provide greater generalizability, they frequently lack cultural complexity and do not thoroughly investigate variables such as caregiving duration or disease severity (Jawahir et al., 2021; Kong et al., 2021). These methodological limitations should be recognised when interpreting the findings, and future research could examine mediated and moderated models, include qualitative validation of the constructs, and investigate how religious or cultural beliefs influence the caregiver-provider interaction.

6.4 Implications and recommendations for the study

The study has significant implications for framework development. The non-significant direct effects do not invalidate the theoretical model; rather, they emphasise the need for a refined predictive framework that incorporates indirect or mediated pathways (e.g., HCP cultural care → caregiver satisfaction → challenges), moderating variables, such as caregivers' cultural values, family size, or level of social support. Other than that, system-

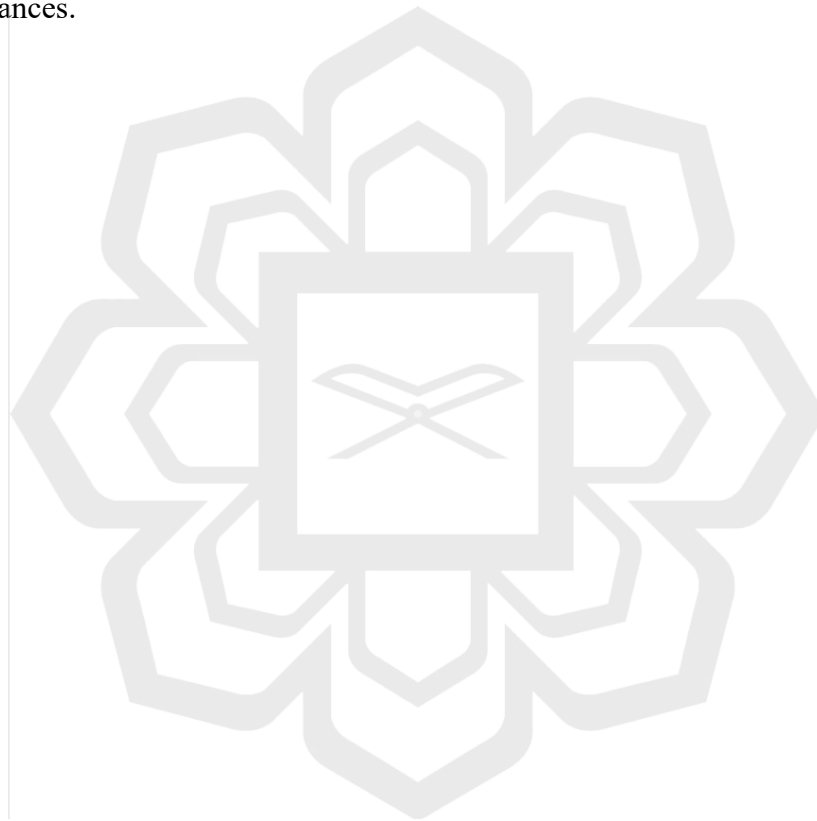
level factors, like healthcare accessibility and cultural training among professionals. For practical applications, this suggests that training healthcare providers in cultural communication, empathy, and family engagement could have an indirect but meaningful effect on caregiver well-being, even if immediate statistical links are weak. The study's findings have important implications for policy, practice, and future research.

At the policy level, the study highlights the significance of embedding culturally responsive frameworks into national health and social policies dealing with caregivers assistance. Policymakers should understand Malaysian caregivers' cultural diversity and ensure that policies reflect varied ethnic customs, beliefs, and caregiving practices. NHMS-based research underlines the importance of tailored community and government help, such as health information, caregiving skills training, respite, and financial support, in order to sustain informal caregiving in the face of demographic changes (Jawahir et al., 2021).

In terms of healthcare practice, the study highlights the importance of increasing healthcare providers' cultural competence. Training programs should be created to teach healthcare personnel how to communicate culturally responsively, recognise cultural caring behaviours, and plan collaboratively with families. This would increase trust and collaboration among healthcare systems, caregivers, and care recipients. Although caregiving attitudes, needs, and healthcare personnel cultural competency did not predict caregiving challenges, the findings had major implications for nursing practice. Nursing care should shift from basic cultural competency to pain-specific, caregiver-centered treatments. Routine carer strain evaluation, carer inclusion into care planning, and interprofessional teamwork are critical in addressing the complex issues of caring for older people with musculoskeletal pain. These findings highlight the importance of practical, tailored nursing methods that apply across care settings.

For community-based initiatives, the predictive cultural model developed in this study serves as a practical guideline for building interventions that address caregivers'

multidimensional needs, notably emotional support, health education, and respect for cultural customs. A framework designed for dementia caregivers in Malaysia has showed potential, notably with psychoeducation and mobile health (mHealth) information suited to local situations (Rashid et al., 2024). Finally, the study provides opportunities for further research. Longitudinal designs might be used to capture the dynamic character of caregiving across time, whilst comparison research between ethnic groups would provide more detailed insights into cultural differences in caregiving experiences. Such evidence would help to refine the cultural framework and make it more applicable in a variety of circumstances.



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APPENDIX I: INFORMED CONSENT



Informed Consent Form for family caregiver who are caring for older people with chronic musculoskeletal pain in the community and who we are inviting to participate in research titled “Predictive Cultural Model for Family Caregiver of Older People with Musculoskeletal Pain in East Coast Malaysia.”

Name of Researcher:

Nurin Syafiqah binti Mohd Jaias

Name of Institution:

International Islamic University of Malaysia, Kuantan Campus.

Sponsorship:

Self-sponsored.

Site of Study:

Pusat Aktiviti Warga Emas (PAWE) in Pahang and community-based groups on online platform.

Name of Study:

Predictive Cultural Model for Family Caregiver of Older People with Musculoskeletal Pain in East Coast Malaysia.

This Informed Consent Form has two parts:

- i Information Sheet (to share information about the study with you)
- ii Certificate of Consent (for signatures if you choose to participate)

You will be given a copy of the full Informed Consent Form

Part I: Information Sheet

Introduction:

I am Nurin Syafiqah binti Mohd Jaias, a Postgraduate student (Master in Nursing Science) of the Kulliyah Nursing, International Islamic University of Malaysia (IIUM). I am doing a study on the family members of older adults with chronic musculoskeletal pain to manage the symptoms and support provided to older adults. The study will be carried out among family members of older adults with chronic musculoskeletal pain who attended Pusat Aktiviti Warga Emas (PAWE) and community-based groups on online platform in Pahang, Terengganu, and Kelantan. I will give you information and invite you to be part of this

study. You do not have to decide today whether or not you will participate in the research. Before you decide, you can talk to anyone you feel comfortable with about the research. This consent form may contain words that you do not understand. Please ask me to stop as we go through the information, and I will take time to explain. If you have questions later, you can ask them of me.

Purpose of this study

Family member is the primary social structure for the care of older adults. We want to identify the appropriate predictive cultural model for family caregiver in managing chronic musculoskeletal pain among older people in East Coast Malaysia. In doing that, we need to identify the relevant factors that contribute to predictive cultural model for family caregiver and examine the directional relationship of each factor in predictive cultural model. We believe that you can help us by telling us your insight in caring for older adults with chronic musculoskeletal pain. Eventually, we will be able to develop the predictive cultural model for cultural sensitivity for family caregiver in managing chronic musculoskeletal pain among older people in East Coast Malaysia.

Type of Research Intervention

This research will involve your participation in completing a survey that will take about five to ten minutes.

Participant Selection

You are being invited to take part in this research because we feel that your challenges, perspectives on healthcare, attitudes, and needs as a family caregiver can contribute much to our understanding and knowledge in caring for older adults with chronic musculoskeletal pain.

Voluntary Participation

Your participation in this research is entirely voluntary. It is your choice whether to participate or not. If you choose not to participate in all the services, you receive at this Centre will continue and nothing will change. The choice that you make will have no bearing on your job or any work-related evaluations or reports. You may change your mind later and stop participating even if you agreed earlier.

Procedures

We are asking you to help us learn more about your challenges, perspectives on healthcare, attitudes, and needs as a family caregiver in caring for older adults with chronic musculoskeletal pain. We are inviting you to take part in this research project. If you accept, you will be asked to fill out a survey which will be provided by me and collected by me OR you may answer the questionnaire yourself, or it can be read to you, and you can say out loud the answer you want me to write down. The survey consists of five (5) parts which are:

- i. Part A: Socio-demographic background
- ii. Part B: Challenges in caring
- iii. Part C: Caregiver's attitude to caring

- iv. Part D: Needs of the caregiver
- v. Part E: Caregivers' perception on healthcare personnel

If you do not wish to answer any of the questions included in the survey, you may skip them and move on to the next question. The survey will be distributed to you and will be collected on the same day after you complete the survey. The information recorded is confidential, your name is not being included on the forms, only a number will identify you, and no one else except me will have access to your survey.

Duration

The survey will take about fifteen to twenty minutes to be completed.

Risks

If for example, the question is on opinions on government policies and community beliefs, and in general no personal information is sought, then the text under risks could read something like "There is a risk that you may share some personal or confidential information by chance, or that you may feel uncomfortable talking about some of the topics. However, we do not wish for this to happen. You do not have to answer any question if you feel the question(s) are too personal or if talking about them makes you uncomfortable.

Benefits

There will be no direct benefit to you, but you will receive information about the topic and your participation is likely to help us find out more about:

- i Provide baseline information and insight about your challenges, perspectives on healthcare, attitudes, and needs as a family caregiver in caring for older adults with chronic musculoskeletal pain to manage the symptoms and support provided by family members.
- ii Findings from this study will enable to development of the predictive cultural model for cultural sensitivity for family caregivers in managing chronic musculoskeletal pain among older people in East Coast Malaysia.
- iii Findings from this study will facilitate improving the healthcare delivery system to ensure that a culturally appropriate plan for the patient, health education, and information regarding musculoskeletal care of the elderly are given to the family caregiver.
- iv The findings of this study can help in raising cultural awareness among healthcare providers to ensure the quality of care and reduce healthcare disparities.
- v Findings will contribute to the development of training for family members in supporting older adults with chronic musculoskeletal pain in the community for future reference.

Reimbursements

You will not be provided any incentive to take part in the research.

Confidentiality

Your information will be kept confidential. We will not share any information provided by you with anyone outside of the research team. The information that we collect will be kept

private. A code will be used on the survey form instead of your name. Only the researcher team will know your code number, and we will lock that information up with a lock and key. It will not be shared with or given to anyone except the researcher team.

Sharing the Results

Nothing that you shared with us today will be shared with anybody outside the research team, and nothing will be attributed to you by name. The knowledge that we get from this research will be shared with you and your community before it is made widely available to the public. Each participant will receive a summary of the results. There will also be small meetings in the community, and these will be announced. Following the meetings, we will publish the results so that other interested people may learn from the research.

Right to Refuse or Withdraw

You do not have to take part in this research if you do not wish to do so and choosing to participate will not affect your job or job-related evaluations in any way. You may stop completing the survey at any time that you wish without your job being affected. You will be able to review your answer at the end, and you can ask to modify it if you do not agree with it.

Who to Contact

If you have any questions, you can ask them now or later. If you wish to ask questions later, you may contact any of the following:

Researcher's Name: Nurin Syafiqah binti Mohd Jaias

Telephone number: 013-9956961

Email: nurins111@gmail.com

This proposal has been reviewed and approved by IIUM Research Ethics Committee of Kuantan Campus, which is a committee whose task it is to make sure that research participants are protected from harm. If you wish to find out more about the IIUM Research Ethics Committee of Kuantan Campus, contact:

IIUM Research Ethics Committee of Kuantan Campus Secretary

Telephone number: 09-5704733.

Part II: Certificate of Consent



INFORMED CONSENT FORM

Title of Study: Predictive Cultural Model for Family Caregiver of Older People with Musculoskeletal Pain in East Coast Malaysia

By signing below I confirm the following:

- I have been given oral and written information for the above study and have read and understood the information given.
- I have had sufficient time to consider participation in the study and have had the opportunity to ask questions and all my questions have been answered satisfactorily.
- I understand that my participation is voluntary and I can at anytime free withdraw from the study without giving a reason and this will in no way affect my future treatment. I am not taking part in any other research study at this time. I understand the risks and benefits, and I freely give my informed consent to participate under the conditions stated. I understand that I must follow the study doctor's (investigator's) instructions related to my participation in the study.
- I understand that study staff, qualified monitors and auditors, the sponsor or its affiliates, and governmental or regulatory authorities, have direct access to my medical record in order to make sure that the study is conducted correctly and the data are recorded correctly. All personal details will be treated as STRICTLY CONFIDENTIAL
- I will receive a copy of this subject information/informed consent form signed and dated to bring home.
- I agree/disagree* for my family doctor to be informed of my participation in this study. (**delete which is not applicable*)

Subject:

Signature:

I/C number:

Name:

Date:

Investigator conducting informed consent:

Signature:

I/C number:

Name:

Date:

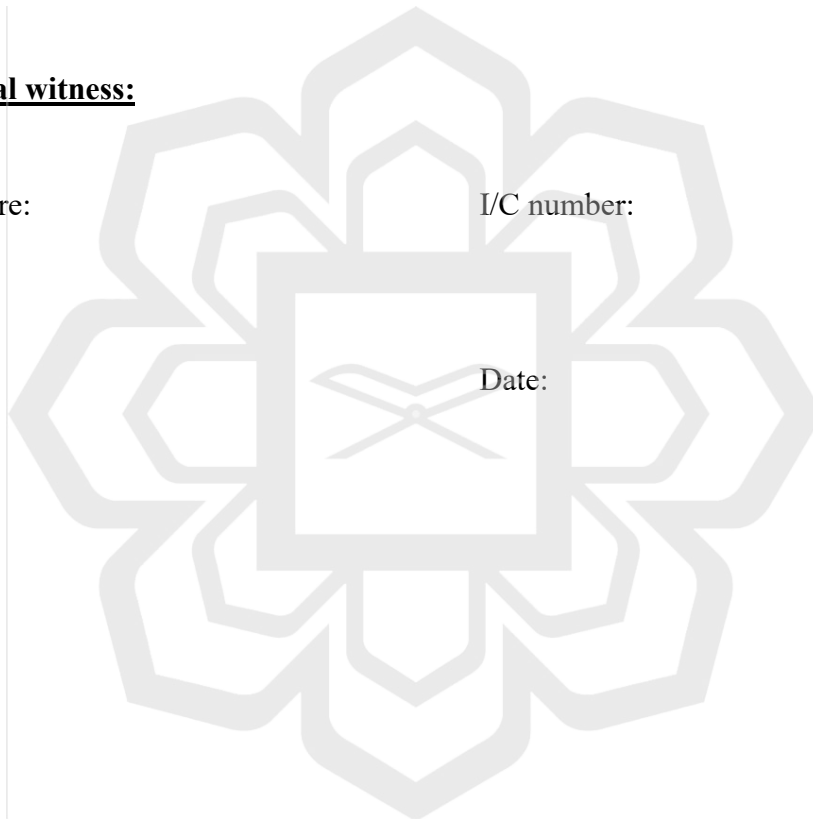
Impartial witness:

Signature:

I/C number:

Name:

Date:



APPENDIX II: IREC APPROVAL



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INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA
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LEADING THE WORLD

INTERNATIONAL MULTI-AWARD WINNING
INSTITUTION FOR SUSTAINABILITY

RESEARCH MANAGEMENT CENTRE (RMC)

Our Ref : IIUM/504/14/11/2/IREC 2024-233
Date : 12 Jul 2024

Asst. Prof. Dr. Che Azunie binti Che Abdullah (Principal Investigator)
Kulliyyah of Nursing
IIUM Kuantan Campus

Dear Asst. Prof. Dr.,

The IIUM Research Ethics Committee (IREC) has reviewed your study protocol as mentioned below:-

ID NO. : IREC 2024-233
RESEARCH TITLE : Predictive Cultural Model for Family Caregiver of Older People with Musculoskeletal Pain in East Coast Malaysia
REGISTRATION DATE : 16 May 2024
CO-INVESTIGATOR : Assoc. Prof. Dr. Muhammad Kamil bin Che Hasan
Asst. Prof. Dr. Mohd Khairul Zul Hasymi bin Firdaus
Asst. Prof. Dr. Nur Ain binti Mahat
STUDENT : Nurin Syafiqah binti Mohd Jaais (Postgraduate Student)
STUDY SITE : Pusat Aktiviti Warga Emas (PAWE) in East Coast Malaysia
SAMPLE SIZE : 358
ETHICAL EXPIRY DATE : 12 July 2025

The IIUM Research Ethics Committee (IREC) operates in accordance with the Declaration of Helsinki, International Conference of Harmonization Good Clinical Practice Guidelines (ICH-GCP), Malaysia Good Clinical Practice Guidelines and Council for International Organizations of Medical Sciences (CIOMS) International Ethical Guidelines

The following documents have been received and reviewed to the above study: -

1. Study Proposal/Protocol: Version 1, dated 19 May 2024
2. Informed Consent Form (ICF) –
 - i. Information Sheet (English) – Version 1, dated 19 May 2024
 - ii. Consent Form (English) - Version 1, dated 19 May 2024
3. Questionnaire - Version 1, dated 19 May 2024
4. Approval Letter from Kulliyyah of Nursing, IIUM
5. Principal Investigator's CV



APPENDIX III: KNPGRC APPROVAL



الجامعة الإسلامية العالمية ماليزيا
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA
بُنيَتْ بِرِسْقٍ أَسْلَافُهَا بِإِسْنَادٍ رَجَسًا مُلَمَّسًا
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SUSTAINABILITY INSTITUTION OF THE YEAR

KULLIYAH OF NURSING

Our Reference: IIUM/313/DDPRRI/13/12/8 (G2216150)

Date : 13 March 2024/ 2 Ramadan 1445 H

Nurin Syafiqah Mohd Jaia

G2216150

Postgraduate Student

Master in Nursing Science (MINS)

Kulliyyah of Nursing IIUM

Dear Sr.,

APPROVAL OF POSTGRADUATE RESEARCH PROPOSAL - MASTER IN NURSING SCIENCE (MINS)

May this letter find you in the best of health.

With reference to the above matter, kindly be informed that your research proposal entitled "PREDICTIVE CULTURAL ADAPTIVE MODEL FOR FAMILY CAREGIVER OF OLDER PEOPLE WITH MUSCULOSKELETAL PAIN IN EAST COAST MALAYSIA," has been approved by the Kulliyyah of Nursing Postgraduate and Research Committee (KNPGRC) Meeting No. 3/2024 dated 6th March 2024.

Kindly proceed with necessary action accordingly.

Thank you, والسلام

ASSOC. PROF. DR. MUHAMMAD KAMIL CHE HASAN

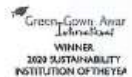
Dean

Kulliyyah of Nursing

International Islamic University Malaysia

cc : Deputy Dean (Postgraduate & Responsible Research and Innovation)
Kulliyyah of Nursing

: Filing/ Student file



APPENDIX IV: QUESTIONNAIRES

ENGLISH VERSION



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INTERNATIONAL MULTI-AWARD WINNING INSTITUTION FOR SUSTAINABILITY QUESTIONNAIRES

Part A: Socio-demographic information

Please answer all questions below:

No	Question	Answer scale
1.	Gender:	☐ Female ☐ Male
2.	Age	_____ (years)
3.	Races:	☐ Malay ☐ Chinese ☐ Indian ☐ Others: _____
4.	Marital status:	☐ Single ☐ Married ☐ Divorced ☐ Others: _____
5.	Occupation:	
6.	Income:	RM _____
7.	Family caregiver to:	☐ Parents ☐ Grandparents ☐ Others: _____
8.	Duration of care provided:	_____ (months)

9.	Type of chronic musculoskeletal pain experienced:	☐ Knee ☐ Back ☐ Hip ☐ Neck ☐ Others: _____
10.	Other comorbidities:	☐ Yes, please state: _____ ☐ No

Part B: Challenges in caring

The Modified Caregivers Strain Index Questionnaire

Please answer all questions below:

Questions	Yes, On a Regular Basis	Yes, sometimes	No
1. My sleep is disturbed (For example: the person I care for is in and out of bed or wanders around at night)			
2. Caregiving is inconvenient (For example: helping takes so much time or it's a long drive over to help)			
3. Caregiving is a physical strain (For example: lifting in or out of a chair; effort or concentration is required)			
4. Caregiving is confining (For example: helping restricts free time or I cannot go visiting)			
5. There have been family adjustments (For example: helping has disrupted my routine; there is no privacy)			
6. There have been changes in personal plans (For example: I had to turn down a job; I could not go on vacation)			
7. There have been other demands on my time (For example: other family members need me)			
8. There have been emotional adjustments (For example: severe arguments about caregiving)			

9. Some behavior is upsetting (For example: incontinence; the person cared for has trouble remembering things; or the person I care for accuses people of taking things)			
10. It is upsetting to find the person I care for has changed so much from his/her former self (For example: he/she is a different person than he/she used to be)			
11. There have been work adjustments (For example: I have to take time off for caregiving duties)			
12. Caregiving is a financial strain.			
13. I feel completely overwhelmed (For example: I worry about the person I care for; I have concerns about how I will manage)			

Part C: Caregivers' attitude to caring

Caregivers' Attitude towards Obligation to Care

Please answer all the statements and indicate if you agree or disagree with each affirmation, by selecting the appropriate number.

Items	Not at all true	A little true	Somewhat true	Quite a lot true	Completely true
1. It is my duty to care for my [relative].					
2. I personally must protect my [relative]'s interests.					
3. I feel I have to assume caregiving tasks for my [relative].					
4. I am morally bound to care for my [relative].					
5. It is my obligation to help my [relative].					
6. I am responsible for my [relative].					

Part D: Needs of family caregiver

Family Inventory of Needs (FIN-Importance)

Please answer all the statements and indicate the importance of each care need on a scale between **0 (not at all important)** and **10 (very important)**.

Items	0	1	2	3	4	5	6	7	8	9	10
I need to:											
1. Be informed of changes in the patient's condition.											
2. Know exactly what is being done for the patient.											
3. Know what the treatment the patient is receiving.											
4. Have explanations given in terms that are understandable.											
5. Be told about treatment plans while they are being made.											
6. Have information about what to do for the patient at home.											

Part E: Caregivers' perspectives to healthcare personnel

Caregiver Perspective – Cultural Competency in Healthcare

Please answer all the statements and indicate if you think it is important or not important with each affirmation, by selecting the appropriate number.

Items	Not important	Somewhat important	Important	Very important
How important is it for the healthcare provider to be...				

1. knowledgeable about the patient's healthcare?				
2. knowledgeable about what food the patient eats?				
3. knowledgeable about the patient and family's opinions about life events (i.e. death, pregnancy, childbirth, etc)?				

Healthcare Personnel's Practices on Cultural Appropriate Care

Please answer all the statements and indicate if you agree or disagree with each affirmation on a scale between **0 (low/strongly disagree)** and **10 (high/strongly agree)**.

Items											
How often do the healthcare provider do the following things when seeing patients:	0	1	2	3	4	5	6	7	8	9	10
1. They ask patients and families about their own explanations of health and illness. (cultural assessment)											
2. They ask patients and families about their expectations for care. (cultural assessment)											
3. They recognize potential barriers to service that											

might be encountered by different people. (adaptations)											
4. They act to remove obstacles (e.g., lack of insurance and need for interpreter) for patients of different cultures when they identify such obstacles. (conflict resolution)											
5. They find ways to adapt services to patients and family cultural preferences. (adaptations)											

Caregivers' Perceptions of Providers' Cultural Competency

Please answer all questions below:

Items	Yes	No
1. I was able to practice important routines and traditions related to patient's health. (P) negotiation		
2. I was comfortable sharing private and personal information with the provider. (P) empathic		
3. I was provided with information and educational materials that were easy to understand and in my preferred language. 4. (S) adaptations		
5. I was understood and comforted after speaking with the care provider. (P) empathic		

6. I had enough time to talk to the care provider. (P) empathic		
7. Patient and I were treated with respect. (P) conflict resolution		
8. I was consulted regarding the patient's care. (P) decision-sharing		
9. The provider worked on my behalf with others on the care team. (P) conflict resolution		
10. The provider was interested in knowing about my family and community. (P) cultural assessment		
11. My family or friends were involved in the patient's care. (P) decision-sharing		
12. I was connected with resources (e.g., health information, support, services, etc.) available in my community. (K)		
13. Other people I consider important participated in the patient's care. (P) decision-sharing		
14. I was asked to provide input to the patient's care. (P) decision-sharing		
15. The patient received care that fit their beliefs, work, and family. (P) negotiation		
16. The provider worked with me to identify patient's needs and goals. (P) decision-sharing		
17. I am confident in my ability to get care for myself when needed. (S)		
18. My family or friends have access to resources to help me. (S)		
19. I can get help whenever I need it. (S)		
20. My provider understood patient's needs. (K)		
21. The provider was directly involved in patient's care. (P) negotiation		
22. The care that patient received helped them feel better and comfortable. (P) empathic		
23. The patient's spiritual and religious needs were met. (P) adaptations		

MALAY VERSION



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Bahagian A: Maklumat sosio-demografi

Sila jawab semua soalan di bawah:

No	Soalan	Skala jawapan
1.	Jantina:	☐ Lelaki ☐ Perempuan
2.	Umur:	____ (tahun)
3.	Kaum:	☐ Melayu ☐ Cina ☐ India ☐ Lain-lain: _____
	Status perkahwinan:	☐ Bujang ☐ Berkahwin ☐ Berceraai
4.	Pekerjaan:	
	Jumlah pendapatan:	RM _____
5.	Penjaga kepada:	☐ Ibu bapa ☐ Datuk nenek ☐ Lain-lain: _____
6.	Tempoh penjagaan:	____ (bulan)
7.	Jenis sakit muskuloskeletal kronik yang dialami:	☐ Lutut ☐ Belakang ☐ Pinggul ☐ Tengkuk ☐ Lain-lain: _____

8.	Komorbiditi lain:	☐ Ya, nyatakan: _____ ☐ Tidak
----	-------------------	--

Bahagian B: Cabaran dalam penjagaan

Soal Selidik Indeks Beban Penjaga

Sila jawab semua soalan di bawah:

Soalan	Ya, secara berkala	Ya, kadang-kala	Tidak
1. Tidur saya terganggu (sebagai contoh: individu dibawah jagaan saya naik dan turun dari katil atau merayau-rayau pada waktu malam)			
2. Khidmat penjagaan adalah memeritkan (sebagai contoh: membantu seseorang mengambil terlalu banyak masa atau pemanduan yang jauh untuk menghulurkan bantuan)			
3. Khidmat penjagaan merupakan suatu beban fizikal (sebagai contoh: mengangkat seseorang ke kerusi atau menurunkan seseorang daripada kerusi; usaha atau tumpuan diperlukan)			
4. Khidmat penjagaan mengehadkan kebebasan diri (sebagai contoh: membantu seseorang mengehadkan masa lapang atau saya tidak boleh menziarahi sesiapa)			
5. Terdapat perubahan keluarga (sebagai contoh: membantu telah mengganggu rutin saya; tiada privasi)			
6. Terdapat perubahan dalam perancangan peribadi (sebagai contoh: saya terpaksa menolak suatu pekerjaan; saya tidak dapat pergi bercuti)			
7. Terdapat keperluan lain untuk masa saya (sebagai contoh: ahli keluarga yang lain memerlukan saya)			
8. Terdapat perubahan emosi (sebagai contoh: pertengkaran teruk tentang khidmat penjagaan)			
9. Sesetengah tingkahlaku membimbangkan (sebagai contoh: inkontinens; individu di bawah jagaan saya mempunyai masalah mengingati			

sesuatu; atau individu di bawah jagaan saya menuduh orang lain mengambil barang)			
10. Sesuatu yang menyedihkan apabila mengetahui individu dibawah jagaan saya telah banyak berubah berbanding dirinya dahulu (sebagai contoh: beliau berbeza daripada dirinya sebelum ini)			
11. Terdapat perubahan kerjaya (sebagai contoh: saya perlu mengambil cuti untuk memberikan khidmat penjagaan)			
12. Khidmat penjagaan merupakan suatu beban kewangan			
13. Saya rasa benar-benar terbeban (sebagai contoh: saya bimbang tentang individu di bawah jagaan saya; saya khuatir bagaimana untuk menanganinya)			

Bahagian C: Sikap penjaga keluarga

Sikap Penjaga terhadap Kewajipan Menjaga

Sila jawab semua pernyataan dan nyatakan jika anda bersetuju atau tidak bersetuju dengan setiap pengesahan, dengan memilih nombor yang sesuai.

Item	Sama sekali tidak benar	Sedikit benar	Agak benar	Agak banyak benar	Benar sepenuhnya
1. Adalah menjadi tanggungjawab saya untuk menjaga [saudara] saya.					
2. Saya secara peribadi mesti melindungi kepentingan [saudara] saya.					
3. Saya rasa saya perlu memikul tugas penjagaan untuk [saudara] saya.					
4. Saya terikat secara moral untuk menjaga [saudara] saya.					

5. Adalah menjadi kewajipan saya untuk membantu [saudara] saya.					
6. Saya bertanggungjawab untuk [saudara] saya.					

Bahagian D: Keperluan penjaga keluarga

Inventori Keperluan Keluarga (FIN-Kepentingan)

Sila jawab semua pernyataan dan nyatakan kepentingannya setiap keperluan penjagaan pada skala antara **0 (tidak sama sekali penting)** dan **10 (sangat penting)**.

Item	0	1	2	3	4	5	6	7	8	9	10
Saya perlu:											
1. Dimaklumkan tentang perubahan dalam keadaan pesakit.											
2. Ketahui dengan tepat apa yang sedang dilakukan untuk pesakit.											
3. Ketahui rawatan apa yang diterima oleh pesakit.											
4. Mempunyai penjelasan yang diberikan dari segi yang boleh difahami.											
5. Diberitahu tentang rancangan rawatan semasa ia dilakukan.											

6. Mempunyai maklumat tentang apa yang perlu dilakukan untuk pesakit di rumah.											
--	--	--	--	--	--	--	--	--	--	--	--

Bahagian E: Kakitangan kesihatan

Perspektif Penjaga – Skala Kecekapan Budaya dalam Penjagaan Kesihatan

Sila jawab semua pernyataan dan nyatakan jika anda fikir ia penting atau tidak penting dengan setiap penegasan, dengan memilih nombor yang sesuai.

Item	Tidak penting	Agak penting	Penting	Sangat penting
Berapa pentingnya kakitangan kesihatan...				
1. Berpengetahuan mengenai penjagaan kesihatan pesakit?				
2. Berpengetahuan tentang makanan apa yang pesakit makan?				
3. Berpengetahuan tentang pendapat pesakit dan keluarga tentang peristiwa kehidupan (iaitu kematian, kehamilan, melahirkan anak, dll)?				

Amalan Kakitangan Kesihatan Mengenai Penjagaan Yang Sesuai Dengan Budaya

Sila jawab semua pernyataan dan nyatakan skala setiap amalan kakitangan kesihatan pada skala antara 0 (rendah/sangat tidak setuju) dan 10 (tinggi/sangat setuju).

Item	0	1	2	3	4	5	6	7	8	9	10
Berapa kerap kakitangan kesihatan melakukan perkara-perkara berikut											

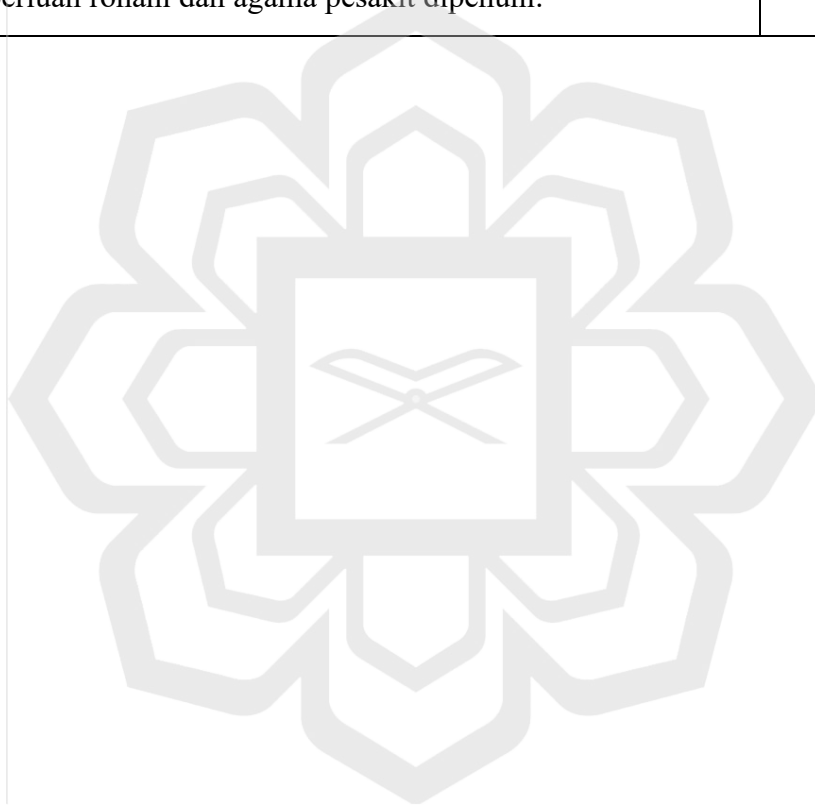
apabila menjaga pesakit anda:											
1. Mereka bertanya kepada pesakit dan keluarga tentang penjelasan mereka sendiri tentang kesihatan dan penyakit.											
2. Mereka bertanya kepada pesakit dan keluarga tentang jangkaan mereka untuk penjagaan.											
3. Mereka mengenali potensi halangan untuk perkhidmatan yang mungkin dihadapi oleh orang yang berbeza.											
4. Mereka bertindak untuk menangani halangan (cth., kekurangan insurans dan keperluan untuk jurubahasa) untuk pesakit yang berbeza budaya apabila saya mengenal pasti halangan tersebut.											
5. Mereka mencari cara untuk menyesuaikan perkhidmatan kepada pesakit dan pilihan budaya keluarga.											

Persepsi Penjaga Terhadap Kecekapan Budaya Kakitangan

Sila jawab semua soalan di bawah:

Item	Ya	Tidak
1. Saya dapat mengamalkan rutin dan tradisi penting yang berkaitan dengan kesihatan pesakit.		
2. Saya selesa berkongsi maklumat peribadi dengan kakitangan kesihatan.		
3. Saya diberikan maklumat dan bahan pendidikan yang mudah difahami dan dalam bahasa pilihan saya.		
4. Saya difahami dan selesa setelah bercakap dengan kakitangan kesihatan.		
5. Saya mempunyai masa yang cukup untuk bercakap dengan kakitangan kesihatan.		
6. Saya dan pesakit dilayan dengan hormat.		
7. Saya dirujuk mengenai penjagaan pesakit.		
8. Kakitangan kesihatan bekerja bagi pihak saya dengan orang lain dalam pasukan penjagaan.		
9. Kakitangan kesihatan berminat untuk mengetahui tentang keluarga dan komuniti saya.		
10. Keluarga atau rakan-rakan saya terlibat dalam penjagaan pesakit.		
11. Saya dihubungkan dengan sumber (contohnya, maklumat kesihatan, sokongan, perkhidmatan, dan lain-lain) yang terdapat dalam komuniti saya.		
12. Orang lain yang saya anggap penting mengambil bahagian dalam penjagaan pesakit.		
13. Saya diminta memberi input kepada penjagaan pesakit.		
14. Pesakit menerima penjagaan yang sesuai dengan kepercayaan, kerja, dan keluarga mereka.		
15. Kakitangan kesihatan bekerjasama dengan saya untuk mengenal pasti keperluan dan matlamat pesakit.		
16. Saya yakin dengan keupayaan saya untuk menjaga pesakit apabila diperlukan.		

17. Keluarga atau rakan-rakan saya mempunyai akses kepada sumber untuk membantu saya.		
18. Saya boleh mendapatkan bantuan bila-bila masa saya memerlukannya.		
19. Kakitangan kesihatan pesakit memahami keperluan pesakit.		
20. Kakitangan kesihatan terlibat secara langsung dalam penjagaan pesakit.		
21. Penjagaan yang pesakit terima membantu mereka berasa lebih baik dan selesa.		
22. Keperluan rohani dan agama pesakit dipenuhi.		



APPENDIX V: ITEM-LEVEL DESCRIPTIVE STATISTICS

Table E1 Descriptive statistics of M-CSI items

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Modified Caregivers Strain Index Questionnaire (M-CSI) [Tidur saya terganggu (sebagai contoh: individu dibawah jagaan saya naik dan turun dari katil atau merayau-rayau pada waktu malam)]	290	0	2	1.13	.811
Modified Caregivers Strain Index Questionnaire (M-CSI) [Khidmat penjagaan adalah memeritkan (sebagai contoh: membantu seseorang mengambil terlalu banyak masa atau pemanduan yang jauh untuk menghulurkan bantuan)]	290	0	2	.88	.643
Modified Caregivers Strain Index Questionnaire (M-CSI) [Khidmat penjagaan merupakan suatu beban fizikal (sebagai contoh: mengangkat seseorang ke kerusi atau menurunkan seseorang daripada kerusi; usaha atau tumpuan diperlukan)]	290	0	2	1.16	.785
Modified Caregivers Strain Index Questionnaire (M-CSI) [Khidmat penjagaan mengehadkan kebebasan diri (sebagai contoh: membantu	290	0	2	1.14	.773

seseorang menghadkan masa lapang atau saya tidak boleh menziarahi sesiapa)]					
Modified Caregivers Strain Index Questionnaire (M-CSI) [Terdapat perubahan keluarga (sebagai contoh: membantu telah mengganggu rutin saya; tiada privasi)]	290	0	2	1.06	.808
Modified Caregivers Strain Index Questionnaire (M-CSI) [Terdapat perubahan dalam perancangan peribadi (sebagai contoh: saya terpaksa menolak suatu pekerjaan; saya tidak dapat pergi bercuti)]	290	0	2	.88	.641
Modified Caregivers Strain Index Questionnaire (M-CSI) [Terdapat keperluan lain untuk masa saya (sebagai contoh: ahli keluarga yang lain memerlukan saya)]	290	0	2	.91	.643
Modified Caregivers Strain Index Questionnaire (M-CSI) [Terdapat perubahan emosi (sebagai contoh: pertengkaran teruk tentang khidmat penjagaan)]	290	0	2	1.02	.821
Modified Caregivers Strain Index Questionnaire (M-CSI) [Sesetengah tingkahlaku membimbangkan (sebagai contoh: inkontinens; individu di bawah jagaan saya mempunyai masalah	290	0	2	1.06	.795

mengingat sesuatu; atau individu di bawah jagaan saya menuduh orang lain mengambil barang)]					
Modified Caregivers Strain Index Questionnaire (M-CSI) [Sesuatu yang menyedihkan apabila mengetahui individu dibawah jagaan saya telah banyak berubah berbanding dirinya dahulu (sebagai contoh: beliau berbeza daripada dirinya sebelum ini)]	290	0	2	1.15	.791
Modified Caregivers Strain Index Questionnaire (M-CSI) [Terdapat perubahan kerjaya (sebagai contoh: saya perlu mengambil cuti untuk memberikan khidmat penjagaan)]	290	0	2	1.08	.792
Modified Caregivers Strain Index Questionnaire (M-CSI) [Khidmat penjagaan merupakan suatu beban kewangan]	290	0	2	.96	.659
Modified Caregivers Strain Index Questionnaire (M-CSI) [Saya rasa benar-benar terbeban (sebagai contoh: saya bimbang tentang individu di bawah jagaan saya; saya khuatir bagaimana untuk menanganinya)]	290	0	2	.90	.642

Table E2 Descriptive statistics of caregiving attitudes items

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Caregivers' Attitude towards Obligation to Care [Adalah menjadi tanggungjawab saya untuk menjaga [saudara] saya.]	290	1	5	3.38	1.240
Caregivers' Attitude towards Obligation to Care [Saya secara peribadi mesti melindungi kepentingan [saudara] saya.]	290	1	5	3.66	1.290
Caregivers' Attitude towards Obligation to Care [Saya rasa saya perlu memikul tugas penjagaan untuk [saudara] saya.]	290	1	5	3.43	1.216
Caregivers' Attitude towards Obligation to Care [Saya terikat secara moral untuk menjaga [saudara] saya.]	290	1	5	3.28	1.265
Caregivers' Attitude towards Obligation to Care [Adalah menjadi kewajipan saya untuk membantu [saudara] saya.]	290	1	5	3.56	1.418
Caregivers' Attitude towards Obligation to Care [Saya bertanggungjawab untuk [saudara] saya.]	290	1	5	3.44	1.208

Table E3 Descriptive statistics of FIN-Importance items

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation

Dimaklumkan tentang perubahan dalam keadaan pesakit.	290	0	10	6.28	3.015
Ketahui dengan tepat apa yang sedang dilakukan untuk pesakit.	290	0	10	6.73	3.083
Ketahui rawatan apa yang diterima oleh pesakit.	290	0	10	6.84	3.233
Mempunyai penjelasan yang diberikan dari segi yang boleh difahami.	290	0	10	6.82	2.953
Diberitahu tentang rancangan rawatan semasa ia dilakukan.	290	0	10	6.36	2.987
Mempunyai maklumat tentang apa yang perlu dilakukan untuk pesakit di rumah.	290	0	10	6.59	3.112

Table E4 Descriptive statistics of PPCCHS items

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Berpengetahuan mengenai penjagaan kesihatan pesakit?	290	1	4	2.93	.925
Berpengetahuan tentang makanan apa yang pesakit makan?	290	1	4	2.87	.936
Berpengetahuan tentang pendapat pesakit dan keluarga tentang peristiwa kehidupan (iaitu kematian, kehamilan, melahirkan anak, dll)?	290	1	4	3.08	1.066

Table E5 Descriptive statistics of HCP Practice items

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Mereka mengenali potensi halangan untuk perkhidmatan yang mungkin dihadapi oleh orang yang berbeza.	290	0	10	6.37	2.584
Mereka mencari cara untuk menyesuaikan perkhidmatan kepada pesakit dan pilihan budaya keluarga.	290	0	10	6.61	2.829
Mereka bertindak untuk menangani halangan (cth., kekurangan insurans dan keperluan untuk jurubahasa) untuk pesakit yang berbeza budaya apabila saya mengenal pasti halangan tersebut.	290	0	10	6.17	2.755
Mereka bertanya kepada pesakit dan keluarga tentang penjelasan mereka sendiri tentang kesihatan dan penyakit.	290	0	10	6.09	2.822
Mereka bertanya kepada pesakit dan keluarga tentang jangkaan mereka untuk penjagaan.	290	0	10	6.56	3.149

Table E6 Descriptive statistics of CPOPCC items

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Persepsi Penjaga Terhadap Kecekapan	290	0	1	.70	.461

Budaya Kakitangan Kesihatan [Saya diberikan maklumat dan bahan pendidikan yang mudah difahami dan dalam bahasa pilihan saya.]					
Persepsi Penjaga Terhadap Kecekapan Budaya Kakitangan Kesihatan [Keperluan rohani dan agama pesakit dipenuhi.]	290	0	1	.73	.442
Persepsi Penjaga Terhadap Kecekapan Budaya Kakitangan Kesihatan [Saya dan pesakit dilayan dengan hormat.]	290	0	1	.68	.468
Persepsi Penjaga Terhadap Kecekapan Budaya Kakitangan Kesihatan [Saya selesa berkongsi maklumat peribadi dengan kakitangan kesihatan.]	290	0	1	.70	.458
Persepsi Penjaga Terhadap Kecekapan Budaya Kakitangan Kesihatan [Saya difahami dan selesa setelah bercakap dengan kakitangan kesihatan.]	290	0	1	.69	.462
Persepsi Penjaga Terhadap Kecekapan Budaya Kakitangan Kesihatan [Saya mempunyai masa yang cukup untuk bercakap dengan kakitangan kesihatan.]	290	0	1	.69	.462
Persepsi Penjaga Terhadap Kecekapan	290	0	1	.71	.454

Budaya Kakitangan Kesihatan [Penjagaan yang pesakit terima membantu mereka berasa lebih baik dan selesa.]					
Persepsi Penjaga Terhadap Kecekapan Budaya Kakitangan Kesihatan [Kakitangan kesihatan berminat untuk mengetahui tentang keluarga dan komuniti saya.]	290	0	1	.66	.476
Persepsi Penjaga Terhadap Kecekapan Budaya Kakitangan Kesihatan [Kakitangan kesihatan pesakit memahami keperluan pesakit.]	290	0	1	.72	.448
Persepsi Penjaga Terhadap Kecekapan Budaya Kakitangan Kesihatan [Kakitangan kesihatan terlibat secara langsung dalam penjagaan pesakit.]	290	0	1	.46	.499
Persepsi Penjaga Terhadap Kecekapan Budaya Kakitangan Kesihatan [Saya yakin dengan keupayaan saya untuk menjaga pesakit apabila diperlukan.]	290	0	1	.50	.501
Persepsi Penjaga Terhadap Kecekapan Budaya Kakitangan Kesihatan [Keluarga atau rakan-rakan saya mempunyai akses kepada sumber untuk membantu saya.]	290	0	1	.71	.453

Persepsi Penjaga Terhadap Kecekapan Budaya Kakitangan Kesihatan [Saya boleh mendapatkan bantuan bila-bila masa saya memerlukan.]	290	0	1	.71	.453
Persepsi Penjaga Terhadap Kecekapan Budaya Kakitangan Kesihatan [Saya dihubungkan dengan sumber (contohnya, maklumat kesihatan, sokongan, perkhidmatan, dan lain-lain) yang terdapat dalam komuniti saya.]	290	0	1	.66	.474
Persepsi Penjaga Terhadap Kecekapan Budaya Kakitangan Kesihatan [Pesakit menerima penjagaan yang sesuai dengan kepercayaan, kerja, dan keluarga mereka.]	290	0	1	.53	.500
Persepsi Penjaga Terhadap Kecekapan Budaya Kakitangan Kesihatan [Saya dapat mengamalkan rutin dan tradisi penting yang berkaitan dengan kesihatan pesakit.]	290	0	1	.54	.499
Persepsi Penjaga Terhadap Kecekapan Budaya Kakitangan Kesihatan [Saya dirujuk mengenai penjagaan pesakit.]	290	0	1	.69	.462
Persepsi Penjaga Terhadap Kecekapan Budaya Kakitangan	290	0	1	.65	.478

Kesihatan [Keluarga atau rakan-rakan saya terlibat dalam penjagaan pesakit.]					
Persepsi Penjaga Terhadap Kecekapan Budaya Kakitangan Kesihatan [Orang lain yang saya anggap penting mengambil bahagian dalam penjagaan pesakit.]	290	0	1	.66	.475
Persepsi Penjaga Terhadap Kecekapan Budaya Kakitangan Kesihatan [Saya diminta memberi input kepada penjagaan pesakit.]	290	0	1	.68	.468
Persepsi Penjaga Terhadap Kecekapan Budaya Kakitangan Kesihatan [Kakitangan kesihatan bekerjasama dengan saya untuk mengenal pasti keperluan dan matlamat pesakit.]	290	0	1	.73	.446
Persepsi Penjaga Terhadap Kecekapan Budaya Kakitangan Kesihatan [Kakitangan kesihatan bekerja bagi pihak saya dengan orang lain dalam pasukan penjagaan.]	290	0	1	.69	.462

APPENDIX VI: ANALYSIS DETAILS

Table F1 Internal reliability of M-CSI

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.916	.917	13

Table F2 Internal reliability of Caregivers' Attitude towards Obligation to Care

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardised Items	N of Items
.610	.654	6

Table F3 Internal reliability of (FIN - Importance)

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardised Items	N of Items
.863	.902	6

Table F4 Internal reliability of the healthcare personnel factors instruments.

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardised Items	N of Items
.854	.935	29

Table F5 The Squared Multiple Correlations

Variables	Estimate
Challenges	.571
c8	.453

c7	.349
c6	.501
c5	.503
c4	.508
c3	.396
c2	.411
c1	.442
a1	.340
a2	.479
a3	.360
a4	.274
a5	.467
a6	.306
n1	.361
n2	.402
n3	.573
n4	.495
n5	.446
n6	.486
k1	.335
k2	.356
k3	.384
s1	.318
s5	.370
s6	.450
p1	.298
p2	.322
p3	.322
p4	.359

p5	.251
p6	.270
p7	.294
p8	.260
p9	.273
p11	.251
p12	.287
p13	.366
p14	.418

Table F6 The Regression Weight for each item – Note: 1.00 Indicate the Reference Point

			Estimate	S.E.	C.R.	P
p14	<---	HCPPpractice	1.000			
p13	<---	HCPPpractice	.839	.092	9.112	***
p12	<---	HCPPpractice	.122	.015	8.195	***
p11	<---	HCPPpractice	.110	.014	7.710	***
p9	<---	HCPPpractice	.122	.015	8.017	***
p8	<---	HCPPpractice	.116	.015	7.834	***
p7	<---	HCPPpractice	.121	.015	8.275	***
p6	<---	HCPPpractice	.118	.015	7.972	***
p5	<---	HCPPpractice	.113	.015	7.711	***
p4	<---	HCPPpractice	.138	.015	9.039	***
p3	<---	HCPPpractice	.128	.015	8.623	***
p2	<---	HCPPpractice	.788	.092	8.614	***
p1	<---	HCPPpractice	.693	.083	8.331	***
s3	<---	HCPSupport	1.000			
s2	<---	HCPSupport	.908	.108	8.375	***

s1	<---	HCPSupport	.844	.107	7.875	***
k3	<---	HCPKnowledge	1.000			
k2	<---	HCPKnowledge	.844	.097	8.720	***
k1	<---	HCPKnowledge	.810	.095	8.509	***
n6	<---	Needs	1.000			
n5	<---	Needs	.920	.086	10.642	***
n4	<---	Needs	.958	.086	11.186	***
n3	<---	Needs	1.128	.094	11.985	***
n2	<---	Needs	.901	.089	10.126	***
n1	<---	Needs	.835	.087	9.612	***
a6	<---	Attitudes	1.000			
a5	<---	Attitudes	1.452	.182	7.998	***
a4	<---	Attitudes	.991	.145	6.837	***
a3	<---	Attitudes	1.092	.146	7.498	***
a2	<---	Attitudes	1.336	.166	8.057	***
a1	<---	Attitudes	1.083	.147	7.362	***
c1	<---	Challenges	1.000			
c2	<---	Challenges	.933	.097	9.608	***
c3	<---	Challenges	.901	.095	9.456	***
c4	<---	Challenges	1.068	.101	10.523	***
c5	<---	Challenges	1.079	.103	10.478	***
c6	<---	Challenges	1.044	.100	10.463	***
c7	<---	Challenges	.866	.097	8.943	***
c8	<---	Challenges	.988	.099	10.025	***

***indicates a highly significant at < 0.001

Note: Since all items are significant, convergent validity is achieved.

Table F7 The Variance Estimate for each Variable in The Model

	Estimate	S.E.	C.R.	P
--	-----------------	-------------	-------------	----------

HCPPractice	4.130	.696	5.935	***
HCPSupport	.112	.020	5.622	***
HCPKnowledge	.435	.081	5.387	***
Needs	4.687	.714	6.565	***
Attitudes	.445	.096	4.651	***
e40	.125	.190	.656	.512
e1	5.750	.516	11.143	***
e2	5.030	.444	11.318	***
e3	.152	.013	11.533	***
e4	.149	.013	11.616	***
e5	.163	.014	11.565	***
e6	.157	.014	11.597	***
e7	.145	.013	11.517	***
e8	.155	.013	11.573	***
e9	.156	.013	11.616	***
e10	.140	.012	11.339	***
e11	.143	.013	11.443	***
e12	5.410	.473	11.445	***
e13	4.669	.406	11.506	***
e14	.136	.015	9.061	***
e15	.157	.016	9.997	***
e16	.171	.016	10.448	***
e17	.697	.066	10.531	***
e18	.562	.052	10.773	***
e19	.568	.052	10.925	***
e20	4.961	.454	10.926	***
e21	4.927	.444	11.096	***
e22	4.387	.403	10.883	***
e23	4.452	.427	10.430	***

e24	5.666	.503	11.254	***
e25	5.792	.509	11.381	***
e26	1.009	.093	10.873	***
e27	1.068	.115	9.316	***
e28	1.157	.105	11.040	***
e29	.943	.089	10.550	***
e30	.864	.094	9.217	***
e32	.366	.034	10.773	***
e33	.362	.033	10.923	***
e34	.359	.033	10.989	***
e35	.320	.031	10.392	***
e36	.334	.032	10.425	***
e37	.315	.030	10.436	***
e38	.405	.036	11.177	***
e39	.342	.032	10.715	***
e31	1.011	.095	10.674	***

***indicates a highly significant at < 0.001

Table F8 Residual Covariance – Comparison between Sample and The Model-Implied Covariance

c4	c5	c8	c9	c10	c11	
.003	.027	.006	-.018	.002	.000	c11
.012	-.002	-.006	.025	.000		c10
-.033	-.003	-.001	.000			c9
-.020	-.025	.000				c8
.016	.000					c5
.000						c4
						c3
						c1
						a1
						a2
						a3
						a4
						a5
						a6
						n1
						n2
						n3
						n4
						n5
						n6
						k1
						k2
						k3
						s1
						s5
						s6
						ads1
						ads2
						ads3
						ads6
						es1
						es2
						es4
						sds1
						sds3
						sds5
						sds6
						sds7
						sds8

sds1	es4	es2	es1	ads6	ads3	ads2
-.023	-.019	.004	.012	-.053	-.010	.152
.027	.033	-.001	-.001	.006	-.025	.275
.011	-.023	.003	.001	-.013	-.014	.014
-.002	-.039	.004	-.001	-.009	-.044	.038
-.031	.000	-.001	.014	-.017	-.019	.056
.022	.012	-.002	.025	.004	-.002	.021
-.011	.002	.026	.012	-.012	.001	.054
-.005	-.044	-.002	-.005	-.024	-.017	-.029
-.056	-.038	-.024	.009	-.002	.035	-.187
-.031	-.001	.011	.025	.021	.036	.426
-.048	-.031	-.030	-.029	-.001	-.050	-.126
-.015	-.012	.017	.012	-.020	-.029	.124
.038	.020	-.028	-.012	.017	-.010	.328
-.010	-.037	.060	.002	-.023	-.004	.161
-.079	-.033	-.032	-.078	-.058	-.114	1.046
-.041	.041	.009	.042	.025	.106	-.888
-.036	-.065	.029	.004	.049	.105	-.047
-.006	-.006	-.046	-.030	.012	-.014	.526
.003	.056	.001	-.069	-.055	-.023	.039
-.095	.059	.065	-.009	-.015	.064	.277
.020	-.012	-.024	-.011	.005	.008	-.376
.001	-.026	-.012	-.022	.025	-.012	-.255
.019	.011	-.004	.029	.018	.017	.214
.023	.008	-.011	.021	.018	-.009	-.051
-.005	.028	.002	-.014	.001	.005	-.042
-.003	-.012	.014	.008	.006	.003	-.072
-.022	-.068	.023	.014	.023	-.050	1.012
.010	-.035	-.032	.017	.057	-.117	.000
-.010	.010	-.004	-.005	-.005	.000	
.015	.011	-.003	.010	.000		
.010	-.008	.016	.000			
-.002	-.003	.000				
-.005	.000					
.000						

sds8	sds7	sds6	sds5	sds3
.384	-.309	.020	-.034	-.008
.388	-.065	.018	-.001	.051
.328	-.199	.030	.011	.001
.224	-.184	.006	-.001	.010
.227	-.202	.008	-.031	.024
.297	-.156	.038	-.005	.039
.249	-.128	.011	.009	.023
.264	-.279	-.014	-.001	-.041
-.176	-.122	.027	-.042	.043
.124	.076	.085	-.025	.087
-.307	-.324	.021	-.012	.005
-.105	-.181	.037	.022	-.002
.301	-.089	.005	.010	.006
.000	-.172	.046	-.065	-.005
.288	-.059	.121	-.009	.019
.230	.108	.047	-.023	-.053
-.122	-.286	-.136	.035	.001
-.490	.412	-.088	.107	-.013
-.110	-.479	-.072	-.025	-.016
.544	.078	-.002	.027	.003
-.356	.104	-.010	-.034	.004
-.321	.162	.002	-.065	.007
.359	.171	.040	-.001	.045
-.152	.120	.024	.002	.010
-.217	.069	-.015	-.020	.004
-.210	.129	-.006	-.012	-.004
.318	.179	-.112	-.135	-.045
.183	.004	-.172	.012	-.104
-.039	.095	.004	.011	.011
-.050	-.056	-.016	.002	.000
-.040	.001	.004	.006	-.023
-.070	.011	.005	.004	.005
-.030	.020	-.001	.018	.019
-.064	.143	.006	.016	-.008
-.074	-.031	.010	-.003	.000
-.021	.016	-.001	.000	
.156	-.005	.000		
-.236	.000			
.000				

Table F9 Standardized Residual Covariance – The Difference between Sample and The Model-Implied Covariance

c11	c10	c9	c8	c5	c4	c3	c1	a1	a2	a3	a4	a5	a6	n1	n2	n3	n4	n5	n6	k1	k2	k3	s1	s5	s6	ads1	ads2	ads3	ads6	es1	es2	es4	sds1	sds3	sds5	sds6	sds7	sds8
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sds3	sds1	es4	es2	es1	ads6	ads3
-.382	-1.065	-.901	.181	.548	-2.427	-.468
2.304	1.252	1.570	-.061	-.063	.255	-1.187
.031	.510	-1.071	.156	.052	-.581	-.656
.456	-.086	-1.757	.187	-.049	-.409	-1.989
1.054	-1.419	.016	-.045	.643	-.774	-.848
1.810	1.067	.561	-.114	1.218	.193	-.118
1.051	-.534	.075	1.210	.571	-.575	.068
-1.793	-.233	-2.003	-.110	-.249	-1.085	-.754
1.219	-1.636	-1.107	-.704	.255	-.070	1.028
2.336	-.856	-.032	.301	.701	.572	.989
.130	-1.431	-.918	-.891	-.860	-.026	-1.478
-.047	-.440	-.338	.483	.360	-.550	-.830
.155	.950	.520	-.697	-.301	.415	-.262
-.142	-.311	-1.128	1.786	.058	-.671	-.121
.216	-.931	-.394	-.373	-.929	-.664	-1.331
-.593	-.469	.471	.106	.492	.281	1.201
.013	-.386	-.701	.314	.047	.510	1.117
-.151	-.069	-.076	-.542	-.355	.134	-.169
-.183	.031	.662	.010	-.817	-.631	-.269
.032	-1.067	.675	.729	-.100	-.166	.717
.164	.765	-.452	-.916	-.429	.182	.304
.263	.026	-1.021	-.454	-.867	.945	-.438
1.464	.633	.386	-.147	.969	.598	.581
.705	1.710	.602	-.820	1.583	1.294	-.643
.273	-.341	2.100	.181	-1.027	.061	.357
-.316	-.221	-.900	1.067	.625	.457	.225
-.604	-.307	-.946	.315	.193	.311	-.683
-1.264	.122	-.447	-.403	.216	.693	-1.455
.821	-.744	.779	-.305	-.379	-.363	.000
.033	1.143	.821	-.257	.754	.000	
-1.782	.813	-.605	1.268	.000		
.357	-.173	-.233	.000			
1.481	-.415	.000				
-.592	.000					
.000						

sds8	sds7	sds6	sds5
2.607	-2.344	.925	-1.641
2.644	-.493	.852	-.032
2.211	-1.498	1.371	.522
1.462	-1.347	.283	-.031
1.505	-1.497	.366	-1.474
2.065	-1.216	1.803	-.234
1.707	-.982	.512	.446
1.745	-2.062	-.632	-.034
-.739	-.575	.780	-1.275
.494	.339	2.352	-.720
-1.314	-1.554	.620	-.367
-.438	-.843	1.067	.663
1.091	-.361	.122	.258
-.001	-.834	1.364	-2.004
.487	-.112	1.419	-.115
.378	.198	.538	-.275
-.186	-.492	-1.454	.394
-.828	.783	-1.039	1.314
-.185	-.907	-.842	-.306
.873	.141	-.025	.311
-1.982	.650	-.386	-1.367
-1.764	.998	.063	-2.563
1.724	.919	1.315	-.028
-1.648	1.442	1.739	.162
-2.345	.839	-1.072	-1.522
-2.280	1.567	-.441	-.912
.630	.397	-1.534	-1.929
.328	.008	-2.146	.152
-.434	1.180	.338	.868
-.545	-.682	-1.193	.156
-.445	.016	.325	.499
-.775	.139	.399	.348
-.336	.251	-.108	1.464
-.711	1.790	.488	1.261
-.801	-.378	.733	-.269
-.238	.207	-.063	.000
1.732	-.065	.000	
-.422	.000		
.000			

APPENDIX VII: PUBLICATIONS AND PROCEEDINGS

Mohd Jaia et al., (2025) International Journal of Care Scholars, 8(3): 64-70

ORIGINAL ARTICLE

OPEN ACCESS

Predictive Cultural Model for Family Caregivers of Older People with Musculoskeletal Pain in East Coast Malaysia: A Pilot Validation Study

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ABSTRACT

Background: In Malaysia, family members play a major role in caring for the elderly as informal caregivers. Caregiving can be physically, emotionally, financially, socially, and culturally demanding. Despite these challenges, many caregivers continue to provide care because of a strong sense of family responsibility rooted in Malaysian culture and its multiethnic society. Therefore, culturally appropriate assessment tools are important to ensure valid and meaningful results across different populations. This pilot study aimed to validate the psychometric properties of the translated tools to support the development of a predictive cultural model for family caregivers.

Methods: A pilot cross-sectional study involved 30 caregivers from East Coast Malaysia. They completed the translated questionnaires which assess caregiver burden, attitudes, needs, and views on culturally competent healthcare. Internal reliability only was tested using SPSS version 29.

Results: A total of 30 caregivers took part (23.3% male, 76.7% female), and 90% were caring for their own parents. The length of caregiving ranged from 3 to 120 months, with an average of 31 months. All tools showed acceptable to excellent reliability, with Cronbach's Alpha values between 0.610 and 0.916.

Conclusion: The tools are reliable and suitable for measuring caregiver burden, attitudes, needs, and views on culturally appropriate care. Future studies should involve a larger and more diverse group of caregivers to make the findings more general.

Keywords: Family caregiver; Older people; Strain; Musculoskeletal pain; Measurement tools

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Article History:

Submitted: 8 August 2025
Revised: 2 November 2025
Accepted: 11 November 2025
Published: 30 November 2025

DOI: 10.31436/ijcs.v8i3.484
ISSN: 2600-898X



PREDICTIVE CULTURAL ADAPTIVE MODEL FOR FAMILY CAREGIVER OF OLDER PEOPLE WITH MUSCULOSKELETAL PAIN IN EAST COAST MALAYSIA :A LITERATURE REVIEW

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Abstract

Family is the primary social structure and older people mostly rely on their families for health and assistance. Yet, there are several dimensions of factors associated with caring burden including physical, emotional, cognitive, financial, social, and cultural. It should be highlighted that, despite the burden of caregiving, the carers emphasized a strong feeling of filial obligation that drove them to continue caring. It is important to understand the caring responsibilities in the perspective of family caregivers. Thus, this review aims to identify and describe the cultural framework available for family caregivers in managing older people living with musculoskeletal pain and to describe the cultural-related factors in caring for older people living with chronic musculoskeletal pain in the community. Systematic articles search has been conducted in the health-related databases such as PubMed, Cambridge Journal, Clinical Key, Oxford Journal, ScienceDirect and SpringerLink yielded into 20 articles were included in this review. The review discovered that, despite being trained, caregivers who are needed to care for older family members are impacted in terms of physical and psychological health, social life, and financial well-being. They felt frustrated that they could not offer as much care as they wanted owing to strong filial duties, and felt abandoned by the formal care system in terms of culturally appropriate services. Furthermore, healthcare personnel may have an impact on family caregivers through their practise, knowledge, and support for culturally appropriate care, as indicated by a lack of culturally appropriate practises and knowledge among healthcare personnel, as well as little support for policies to reduce healthcare disparities. These factors may have made it more difficult for family caregivers to keep their responsibility in caring. Thus, healthcare in Malaysia should focus on the burden faced by the caregiver and be more culturally sensitive in providing care to older people. Findings will assist in assessing the requirements of caregivers while giving care to the elderly. Consequently, we will be able to improve our healthcare services in terms of cultural sensitivity in the future.

Keywords: Family Caregiver, Burden, Pain, Culture

Introduction

Globally, the family is the primary social structure for the care of elderly individuals and older people mostly rely on their families for health and monetary assistance. Caregiving by family members is a type of informal care in which family caregivers offer care to elderly members of their families (Aung et al., 2021). Spousal care is also a substantial source of informal care (Barbosa et al., 2021). According to one survey, 5.7% of the adult population in Malaysia are informal caregivers (Kong et al., 2021). Due to filial obligations, family caregivers face the burden due to the responsibility to care for their loved ones and they are frustrated at not being able to provide proper care as they would want due

APPENDIX H: ORAL/POSTER PRESENTATION

During the completion of this thesis, I have presented parts of it at several conferences.

- i The 14th National and the 10th International PIM Conference, 13 -14 June 2024, Panyapiwat Institute of Management, Bangkok, Thailand – Oral Presentation.
- ii Universiti Malaya International Nursing Conference (UMINC), 9 - 10th August 2024, Universiti of Malaya. Malaysia – Poster.
- iii The 15th International Nursing Conference (INC) & 28th East Asian Forum of Nursing Scholars (EAFONS), 13-14 February 2025, COEX, Seoul, South Korea – Poster
- iv The 6th International Agronursing Conference (IANC), 30 – 31 July 2025, Jember, Indonesia – Oral Presentation
- v The Asian and Pacific Congress for Nurse Practitioners (APCNP), 1 – 2 November 2025, Taipei, Taiwan – Poster
- vi The 5th National Nursing Colloquium for Postgraduate Scholars, 12 December 2025 – Oral Presentation

