

Exploring Challenges in Walking Frame Use Among the Elderly: A Study in Klang Valley, Malaysia

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Abstract

The elderly utilize a walking frame to address deficiencies in balance, coordination, strength, and the risk of falling during walking. Despite previous research highlighting the advantages and benefits of walking frame use for this demographic, some individuals have encountered various issues concerning its use. Thus, this study aims to explore issues of walking frame use among the elderly in Klang Valley, Malaysia. A total of 30 participants of community-dwelling elderly aged 60 and above in Selangor and Kuala Lumpur who are current and former walking frame users and were selected via purposive sampling, were involved in this study. This study utilized the qualitative approach using semi-structured questions. Interview data in the form of verbatim transcripts were analyzed thematically. The majority of respondents were female with a mean age of 71.7 years old, (SD=8.06), Malay, married, primary education level, retirees, living with a spouse and children and staying in Selangor. On the health aspect, the majority of them had hypertension and Body Mass Index (BMI) was pre-obese (25.0 – 29.9 kg/m²). In terms of walking frame usage, most respondents used a standard walking frame (without wheels), used a walking frame for 1 year or less, purchased it by themselves or through family members, indoor usage and reason for use because of leg weakness due to injury. Thematic analysis results show that there were several issues identified such as the respondents' physical and psychological condition, as well as walking frame issues on quality, design, use and cost. Furthermore, issues concerning the physical environment of the home were reported. It is hoped that these findings can serve as a reference for relevant parties to further explore aspects related to the use, product development, and management of physical environments concerning walking frames.

Keywords: community-dwelling, elderly, Malaysia, qualitative, walking frame



1.0 Introduction

Although the population of the elderly in Malaysia is still low compared to the total population, this scenario will change over the next decade. According to the database in 2022, about 3.63 million (11.12%) of the total population of 32.65 million are elderly age 60 and above (DOSM, 2023). The number of the elderly will continue to grow over the years. Thus, Malaysia is expected to achieve the status of an aged nation in 2030 when its older persons reach 15 per cent of the total population (Ramely et al., 2016). This increase is thought to have the potential to contribute to an increase in disability issues as well as non-communicable diseases among the elderly (WHO, 2023).

Disability is the result of limitations not only on spiritual and mental functions but also on physical functions (Todorov & Kirchner, 2000). Physical function declines are directly related to mobility limitations in the elderly (Bennett & Hackney, 2018). Mobility limitations can be attributed to negatively affecting the quality of life (de Paula et al., 2013). Thus, it is crucial to maintain independence and mobility for continuous well-being, especially in old age. As known, the elderly with limitations of physical, emotional, and cognitive ability will be more vulnerable to the risks of falls and hazards, which can lead to injuries or fatal. In general, older persons and those at a greater risk of falling may be vulnerable to instability during stepping and other balance-correcting functions (Rogers & Mille, 2003). Thus, there is an urgent need for assistive devices to help them avoid falling while walking.

Walking devices, including canes, walkers and crutches are often prescribed for and used by older adults to compensate for decrements in balance, coordination, sensation, strength, and risk of falls (Gell et al., 2015). Although the findings of previous studies show the advantages and benefits of walking frame usage, previous studies show that the elderly still face several issues or challenges related to walking device use that lead them to falls and injuries (Steven et al., 2009; Van Riel et al., 2014). Older Malaysians are also not excluded from using this walking frame in their daily lives because this product is marketed in this country. However, how well does this walking frame meet the needs and is suitable for the Malaysian elderly? Thus, this study aims to explore issues of walking frame use among the elderly in Klang Valley, Malaysia.



2.0 Literature Review

2.1 Older People in Malaysia

There are various definitions used for the elderly. Most developed countries have accepted the chronological age of 65 as a definition of 'elderly' or the elderly (Kowal & Dowd, 2001). The United Nations has no standard numerical criterion for 'elderly'. However, the U.N. agreed cut-off is 60+ years of age when referring to the older population (Swaminathan & Audisio, 2012). In Malaysia, the elderly are defined as those who are 60 years old and above. This definition is based on the definitions made in the "World Assembly on Aging 1982" in Vienna (DOSW, 2023). The ageing trend has increased worldwide. Like other countries in the world, Malaysia is also experiencing an ageing population. Declining fertility and mortality rates (Rashid et al., 2016), advanced healthcare facilities, better prevention of infectious diseases and improvement in nutritional status contributed to this increase (Jacob, 2016).

2.2 Disability Among Older People

As people age, they will experience changes on physiological and psychological, which will result in challenges in interaction with their environment due to functional decreases or declines in these aspects. Psychological problems such as dementia, agitation, anxiety, loneliness, and social exclusion are subsequent effects on elderly health (Kourkouta et al., 2015). Physiological changes are one of the factors associated with a decline in muscular strength, movement, and postural balance (de Souza Santos et al., 2011; Haus et al., 2007; Trappe, 2009 in Seene & Kaasik, 2012) among the elderly due to ageing process.

2.3 Mobility Aid/Assistive Technology Walking Devices

As the ageing population rapidly increases, there is a need to maintain mobility and quality of life in old age. The role of mobility aid/assistive walking devices is also seen to contribute to increased mobility among the elderly. The assistive mobility device is a tool used to encourage patients to increase their independence level in persons with impaired balance control walking ability or lower limb muscle weakness (Poncumhak, 2013). Mobility/walking aids such as wheelchairs, scooters, canes, and crutches including walking frames can enhance the movement of persons with physical disabilities (Yusif,



Soar & Hafeez-Baig, 2016). While research findings demonstrate the advantages of using a walking frame, it is important to acknowledge that certain issues reported by other studies on walking frame use could potentially impact personal health and increase the risk of falls, particularly for elderly users.

According to Harwood and Saboori (2020), the current design of the walking frame develops long-term health problems such as chronic lower back pain. It encourages a slumping posture, which causes curvature in the spine. The issue was also reported by Thies et al. (2020a) on incorrect usage patterns and was associated with environmental constraints, specific frame design features and reduced stability. Moreover, some of the walking frame designs may not consider anthropometry and biomechanical points of view, such as inappropriate height, width, and weight (Bradley & Hernandez, 2011; Godilano et al., 2018; Shy et al., 2020; Şuteu Băncilă & Buzatu, 2015; Takanokura, 2010). As mentioned by Alves et al. (2016), these mobility devices also have been associated with falls and injuries because lifting and advancing the device can destabilize biomechanical forces, resulting in a loss of balance. Another study also found that fatigue exists in fixed walking frames due to increased heart rate and low walking speed on rollator walking frames. This model may be inconvenient to use and should be considered in case of cardiac or respiratory disorders (Cetin et al., 2010).

Furthermore, high injury (fracture and contusions) rates and hospital admissions for falls associated with walking frames were frequent in these vulnerable groups, which are mostly older women (Stevens et al., 2009). Some of the walking frames may also affect slow movement (Perera, 2017), are less versatile, and potentially cause problems on uneven surfaces or in tight spaces like doorways (Okamoto, 2014). As more businesses realize that the emotional impact of a product has a significant effect on the product experience, the stigmatization of the elderly towards the perceived vulnerability of using a walking frame should not be dismissed (Gudmundsson et al., 2011).

Analysis of cross-sectional and longitudinal data from the 2011–12 National Health and Aging Trends Study shows that participants with a history of device use and a history of falls had the highest rate of incident falls and multiple falls (Gell et al., 2015). Although the use of mobility devices did not appear to be associated with the incidence of falls (Gell et al., 2015), this is not entirely surprising given that



mobility device use is strongly associated with many of the risk factors for falls. According to Stevens et al. (2009), about 47,312 elderly fall injuries are associated with walking aids annually in the United States, where the highest is among walking frame users. The present study confirmed that using an assistive device to walk, especially the walking frame, is a strong risk factor for future falls among the elderly (Roman de Mettelinge & Cambier, 2015). The risk of falls among elderly walking frame users is significant in community-dwelling (Okubo et al., 2015) and institutionalized elderly (Whitney et al., 2012).

3.0 Methodology

The narrative study design, a kind of qualitative approach, was used in this study. A total of 30 participants of community-dwelling older persons aged 60 and above who are current and former walking frame users were involved in this study that was conducted between November 2021 and March 2022. The sampling method used in this study was purposive sampling. The semi-structured interview technique using an interview guide was conducted face-to-face or over the phone. The questions related to walking frames such as walking frame ownership and usage, issues with walking frames, suggestions for improvement and the respondent's basic information of sociodemographic background. The interview duration was around 30 to 45 minutes to minimize fatigue and was conducted either in the respondent's house, the hospital or over the phone. The interviews were digitally recorded using a voice recorder. Thematic analysis of the six-phase framework (data familiarization, initial coding, search for a theme, review themes, define themes, and write-up) by Braun & Clark (2006) was used to analyze interview transcripts information. This study has obtained ethical approval from the Ethics Committee for Research Involving Human Subjects UPM (reference: JKEUPM-2018-122). Permission to collect data has also been obtained from the Clinical Research Unit at UPM Hospital. Respondents identified and volunteered to participate in this study were also given information about the study and signed their consent using the form created.



4.0 Findings

4.1 Respondents Social-Demographic Background, Ownership and Use of Walking Frame

The majority of respondents were female with a mean age of 71.7 years old, (SD=8.06), Malay, married, primary education level, retirees, living with a spouse and children and staying in Selangor. On the health aspect, the majority of them have hypertension and BMI pre-obese (25.0 – 29.9 kg/m²). Previous research has revealed that most people who use walking aids are elderly people aged 60 and above (Andrade et al., 2022; Charette et al., 2018). Decisions to use walking aids are also based on beliefs about ageing as well as physical needs (Goberman-Hill & Ebrahim, 2007). Thus, the same approach was used in these studies, where the selection of respondents was individuals aged 60 years and above. For gender, significant gender differences exist with more elderly females than males using assistive walking devices in community living (Peterson et al., 2017; West et al., 2015) which it is seen in parallel with the findings of this study. Probably elderly females have more problems with walking imbalance and require walking aids compared to males. There were similarities between the findings of this study and previous studies on the relationship between ethnicity and the use of walking aids (Gell et al., 2015). Since the Malay ethnic group has the largest population in Malaysia, it influences the number of respondents in this study to some extent. Marital status is another variable that is frequently measured in socio-demographics. It is used to distinguish between respondents who are still single, married, divorced, and widowed to determine whether this marital status also contributes to the use of walking aids. As a result, the findings of this study were consistent with previous research (Lezzoni et al., 2009). The likelihood of using a walking aid is not solely determined by a person's marital status, but also by the person's physical disability. Education status is also used to determine the educational level of a study population. The findings of this study were found to be consistent with previous studies that reported that the use of a walking aid was related to education level (Van der Esch et al., 2003). In terms of employment status, findings from this study seem to be similar to another study that reported that employment status also contributed to walking aids use (Lezzoni et al., 2009). This is because the elderly are no longer working or have retired, the use of walking aids is considered synonymous and relevant at this age probably due



to physical or health weakness. In terms of living arrangements, previous research has found a link between the use of mobility aids and the type of living arrangement (Ishigami, Jutai & Kirkland, 2021), which is consistent with the findings of this study. As a result, it is possible that the use of this walking aid, particularly at home, is intended to encourage the elderly to be independent as well as to serve as one of the physiotherapy approaches. It is also possible that family members will only assist if required. In terms of health, the findings of this study were found to be similar to the findings by Koris et al. (2019), who discovered that hypertension is the most common NCD disease among the elderly today. Meanwhile, for BMI, the findings of this study are consistent with previous studies by Kyaw et al. (2022), in which the elderly are pre-obese. It is possible that dietary practices and physical activity, which are seen to be less emphasized in daily life, are contributing factors for both issues as above.

Meanwhile, for walking frame ownership and usage, most respondents still use their walking frame, and usage duration is less than 1 year. Previous studies have also reported that some users no longer use this walking frame due to physical and/or mental health conditions that are improving or deteriorating (Mann et al., 1995). Besides, the study by Roman de Metteling & Cambier (2015) on the duration of use of the walking frame was nearly identical to the findings of this study, which revealed that most people only use it for a short period. As stated by Stowe et al. (2010), a walking frame is typically useful for short-term rehabilitation, such as after lower limb surgery. The respondents typically use a standard walking frame without wheels. They likely believe that using this type of walking frame gives them more confidence in terms of stability. Furthermore, the walking frame is stable and suggested for users with enough back and arm strength to lift the walking frame and propel it forward (Yasin et al., 2016). Most of the respondents reported that they purchased the walking frame on their own. The findings of this study are consistent with previous findings by Logan et al. (2007), in which most older users purchase the aids they require, including walking frames, within their considerable cost. Respondents with limited income, after retirement/no longer working, may still be able to purchase these tools of the standard type, which is less expensive. Respondents also mentioned that they use the walking frame indoors due to limb weakness after surgery or injury, where this tool has enabled them to



walk. Their perspectives were consistent with previous research findings (Roman de Metteling & Cambier, 2015).

4.2 Issues on Walking Frame Use Among Malaysian Elderly

This study revealed three main themes from current walking frame use among Malaysians elderly. These themes were “user conditions”, “walking frame issues”, and “physical environment”.

Previous findings on assistive walking/mobility aids, including walking frames are also seen to have similarities with the results of this study, whether in issues related to the user's condition (Charette et al., 2018; Angani & Djoar, 202), the device (Thies, 2020; Stowe et al., 2010) and the physical environment (Frizera-Nato et al., 2011). According to Kostadinović, Nikolić, & Milićević (2018), aging causes a variety of physical limitations, including reduced muscle strength, vision impairment, balance issues, and joint stiffness, all of which can have a significant impact on mobility and independence. Chronic conditions such as arthritis and osteoporosis frequently worsen these challenges, limiting movement and increasing the risk of falls among the elderly (Ebeling et al., 2019). As mentioned by Rivagi et al. (2020) in their study, fear of falls was experienced by nearly one-fifth of older persons who had depressed symptoms at baseline and were using a walking device. Previous studies have also reported on the condition of the walking devices itself, such as component damage and design failure (Mali et al., 2023).

In addition to walking devices, the environmental factors observed add to the difficulty for walking frame users. Many studies have reported the impact of the physical environment on those using assistive mobility/walking devices (Lindemann et al., 2016; Crytzer et al., 2017; Thoreau, 2015). Based on studies by Clarke (2014), almost three-quarters of community-dwelling older Americans live in a home with stairs at the entrance. Stairs at the entrance to a home have a negative impact on older adults who use a walking frame to get around, effectively doubling their chances of reporting difficulty going outside independently. Other issues reported was difficulties moving over a level difference, difficulties moving through doors and difficulties turning around in the house (Kuboshima & McIntosh, 2021).

The statements below were the respondents' feedback, which has become a reference in identifying related theme issues. The statements below were some of the respondents' feedback, which has become a reference in identifying related theme issues.



Theme: User conditions

Sub-theme: Physical Issue

Participants had mixed perceptions or feelings about their physical condition. Some of the issues mentioned were physical imbalance, limb weakness, injuries to body parts such as legs and hands, and fatigue.

“But the biggest issue for people who have had a stroke was balancing. Even when I stand up to put on my shoes, there is still a little left but not much left. When I want to put on my shoes, my feet don't go in properly.” (Respondent 1, Malay male, 69 years old)

“It's difficult to walk without this thing. It's possible to walk on your own but your body is not balanced.” (Respondent 2, Malay female, 63 years old)

Sub-theme: Psychology issue

The participants' responses about their physical condition were also mixed. Some of the issues raised included fear/worry of falls and being less confident.

“I'm a little worried. Afraid of falling. Afraid I won't be able to control it.” (Respondent 3, Malay male, 63 years old)

“Yes, he is afraid of falling.” (Respondent 22, Indian female, 84 years old)

Theme: Walking Frame Issues

Sub-theme: Quality issue

Participants raised several concerns about the quality of their walking frames. Noise, an easily damaged handle, a loose, broken wheel, a damaged rubber base (bottom leg), and the problem with the adjuster button were among the issues mentioned.



“In terms of that thing, the rubber part of the leg wears out quickly. Now I just ignore it. It has lost its rubber. When walking, it makes a clicking sound. It is noisy.”
(Respondent 11, Malay male, 60 years old)

“There was a sound. Sometimes it sounded like kik,kik,kik.” (Respondent 14, Indian female, 74 years old)

Sub-theme: Design issue

Respondents expressed concerns about design issues in addition to quality concerns. The walking frame does not have a width adjustment function, and the wheels slide easily. They cannot climb stairs/levels and are less stable due to being lightweight.

“The width is not adjustable.” (Respondent 2, Malay female, 63 years old)

“The width cannot be adjusted. It is fixed.”
(Respondent 10, Malay male, 75 years old)

Sub-theme: Usage issue

Respondents also reported issues with using a walking frame, which was difficulty standing up and moving slowly while using this device.

“It is difficult to stand up while using this device.”
(Respondent 4, Malay female, 78 years old)

“It's not possible because it usually tilted when I stand up.” (Respondent 21, Malay female, 63 years old)

Sub-theme: Price issue

Respondents in this study also raised concerns about the cost of walking frames. The high price of the walking frame was the issue mentioned.

“It's hard for me to spend money...it's expensive...but I must buy it because I'm concerned about my safety. I



purchased it by myself.” (Respondent 9, Malay female, 68 years old)

“The cost is around RM70-RM80. It's pricey. But if we want to use it, we must buy it if my situation is like this haha.” (Respondent 23, Malay male, 67 years old)

Theme: Physical environment

Sub-theme: Home environment issues

Respondents also raised concerns about the home environment. Among the complaints made by respondents were slippery floors, uneven floors, narrow spaces, and obstacles

“Because it is made of tiles, it is slippery.” (Respondent 8, Indian male, 79 years old)

“We are afraid of being slippery if the floor surface is very slippery, right? concerned about being slick.” (Respondent 20, Malay female, 68 years old)

5.0 Conclusion and Recommendations

Even though many studies abroad have been conducted on using walking frames among the elderly, such knowledge it is quite limited in the Malaysian context. As a result, this study was conducted and was able to investigate further the use of this walking frame among the Malaysian elderly. These findings are expected to provide valuable insights for relevant stakeholders, encouraging further exploration of aspects related to the utilization, product development, and management of physical environments involving walking frames.

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