



## Mobility of older palliative care patients with advanced cancer: A Korean study



Sang-Young Roh<sup>a</sup>, Hye-A. Yeom<sup>b,\*</sup>, Myung-Ah Lee<sup>a</sup>, In Young Hwang<sup>c</sup>

<sup>a</sup> The Catholic University of Korea College of Medicine, 224 Banpo-daero, Seocho-gu, Seoul, 137-701, Republic of Korea

<sup>b</sup> Research Institute for Hospice/Palliative Care, The Catholic University of Korea College of Nursing, Arizona State University College of Nursing and Health Innovation, 224 Banpo-daero, Seocho-gu, Seoul, 137-701, Republic of Korea

<sup>c</sup> Kyungbok University Department of Nursing, Sinbuk-myeon, Pocheon, Gyeonggi-do, 487-717, Republic of Korea

### A B S T R A C T

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Mobility limitation  
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Palliative care  
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**Purpose:** to describe the levels of mobility in older cancer patients receiving palliative care in Korea, and to examine the associations of their mobility with lifestyle factors (sleep disturbance, physical activity) and physical symptoms (pain, fatigue).

**Methods:** In this cross-sectional descriptive study, 91 older cancer patients receiving palliative care were interviewed using a semi-structured survey questionnaire. Mobility was measured using the 6MWT. Physical activity behavior was measured using the classification of the ACSM. Sleep disturbance was assessed using the frequency sub-category of the SHQ. Both pain and fatigue were measured using a VAS. **Results:** The mean 6MWT distance was 220.38 m. Participants in their 60 s, 70 s, and 80 s walked, on average, 260.93 m, 205.31 m, and 157.05 m, respectively. Approximately 73% of the participants engaged in regular physical activity. Those engaged in regular physical activity were significantly more mobile than those who were not ( $t = 2.44$ ;  $p = .017$ ). Higher levels of mobility were correlated with lower levels of sleep disturbance ( $r = -.37$ ), fatigue ( $r = -.23$ ), and pain ( $r = -.27$ ). Significant predictors for mobility included levels of sleep disturbance, medication status, age, number of family members and monthly income, accounting for 34.7% of the variance in mobility.

**Conclusions:** Korean cancer patients have relatively low levels of mobility. Cancer patients aged over 80 years are a vulnerable group at risk for impaired mobility. Older palliative care patients are more active than one might expect. Levels of mobility are inversely associated with pain, fatigue, and sleep-related symptoms.

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### Introduction

The goal of palliative care is to increase the physical and psychosocial wellbeing of terminally ill patients in an effort to enhance the quality of life of patients and their families (Morrison and Meier, 2004, World Health Organization, 2010). Preservation of function is important for quality palliative care and is critical in the clinical assessment of palliative care patients (Ferrell et al., 2007). Patients with cancer often report low levels of independence in daily living because of functional impairment, physical and psychological symptoms, and the financial burden associated with the cost of treatment (Baker et al., 2003, Hewitt et al., 2003, Stafford and Cry, 1997, Torvinen et al., 2013). They are also known to be frailer and

their activities of daily living are more limited than those of non-cancer patients (Mohile et al., 2009).

Approximately two-thirds of newly diagnosed cancer patients are older adults (Balducci, 2005) and it is particularly important to institute measures that would preserve the physical function of these patients. While young cancer patients can experience progressive but reversible functional limitation during the course of their diseases, older cancer patients often undergo a slow and permanent decline in function (Ganz et al., 2003). This reduces the older patient's chance of recovery and leads to high levels of frailty in those who become terminally ill (Baker et al., 2003). Considering that frailty is a significant predictor of mortality in elderly cancer patients receiving palliative chemotherapy (Aaldriks et al., 2013), considerations for palliative care that focus on preserving function are clearly necessary.

Mobility is an essential component of physical function as it can ensure the independence of older adults. It is well known that

\* Corresponding author. Tel.: +82 2 2258 7402.

E-mail address: [yha@catholic.ac.kr](mailto:yha@catholic.ac.kr) (H.-A. Yeom).

impaired mobility in older adults is associated with a variety of negative health outcomes, including depression, institutionalization, and mortality (Lyyra et al., 2005, Mutikainen et al., 2011, von Bonsdorff et al., 2006). Whereas previous research has focused on risk factors that limit mobility and interventions for enhancing mobility in well functioning, community dwelling older adults with or without chronic illnesses (Yeom et al., 2008, 2009), there have been limited studies on the mobility of older palliative care patients with advanced cancer. This may well be because studies examining the mobility of older palliative care patients are relatively novel and older cancer patients are often excluded from research studies, although they do not consider their age as a barrier to participation in clinical studies (Townsend et al., 2005).

The 6-minute walk test (6MWT), a performance-based assessment that evaluates mobility, measures the maximum distance that an individual can walk in 6 min at a usual gait speed. Incorporating both gait speed and step length into the assessment, the 6MWT has been shown to be reliable and valid in assessing the level of mobility in older adults (Bean et al., 2002, Morley et al., 2011, Steffen et al., 2002). Results of a 6MWT can be used to assess the actual walking capacity of older palliative care patients and might be useful in guiding healthcare professionals in clinical decision-making and in providing appropriate palliative care, based on the degree of frailty of individual patients.

An in-depth understanding of the correlates of mobility of older cancer patients is necessary to develop effective strategies that would improve the mobility of these patients. Further, recent international trends in palliative care reflect the importance of assessing the palliative care needs of culturally-diverse racial groups (Ahmedzai et al., 2004). Specifically for Koreans, previous studies on mobility have focused on patients with chronic illnesses such as renal failure and stroke (Lee et al., 2005, Park et al., 2001); however, there has been sparse research on mobility of older cancer patients. Therefore, the present study aimed to describe the levels of mobility in older cancer outpatients receiving palliative care in Korea, and to examine the associations of their mobility with lifestyle factors (sleep disturbance, physical activity) and physical symptoms (pain, fatigue).

## Methods

### Design and sample

This was a cross-sectional descriptive study in which 94 cancer patients 65 years of age or older were recruited; all were outpatients of the oncology clinic of a university hospital in Seoul, Korea. Sample size was estimated based on a significance level of .05, a power of .80, and a medium effect size of .30 (Polit and Hungler, 1999). The sample was one of convenience, for which two of the research team members who are oncologists recruited subjects on a voluntary basis during their regular outpatient clinics. Patients were eligible for enrollment if they were (a) receiving palliative care following a diagnosis of advanced cancer (i.e., terminal stage of local cancer or metastatic cancer that involved more than two solid organs), (b) able to walk without assistive devices, (c) living in the community independently, and (d) able to communicate verbally in Korean. The final data included a total of 91 participants after excluding three incomplete surveys (Fig. 1).

### Measurements

General characteristics included age, gender, religion, education, monthly income, medication status, and number of co-morbid diseases.

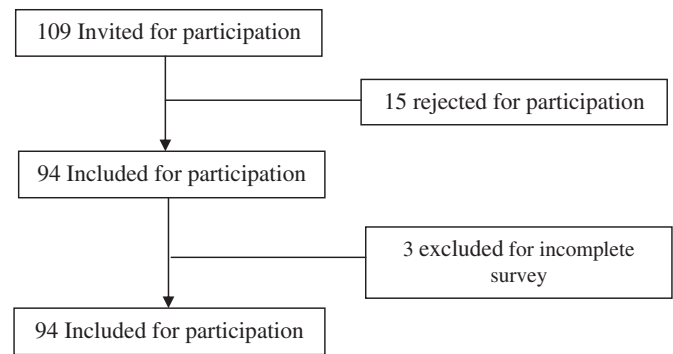


Fig. 1. Flow diagram for subject recruitment.

Mobility was measured using the 6MWT (Guyatt et al., 1985). The 6MWT is an indirect measure of aerobic capacity required to maintain mobility in older adults. The 6MWT evaluates the total distance one can walk for 6 min at a usual gait speed. In the current study, a participant's 6-min walk distance was determined by multiplying the person's stride length and number of walking steps. A stride length was determined by instructing the patient to take 5 steps, measuring the distance from the start to finish lines, and dividing it by 5. A walking step was counted using a pedometer. Each participant was instructed to perform the 6MWT in the flat hallway of the oncology clinic, which is located on the third floor of the 22-story, 1332-bed hospital. The participants were allowed to rest or terminate the test at any time, and chairs were available for rest in the hall-way. There were no seasonal or environmental variations in the participants' responses and performance as the entire data collection was conducted in an indoor setting with an identical physical environment.

Physical activity behavior was measured using a self-reported, single question: "Do you currently do any type of regular physical activity for a minimum of 30 min at least three times a week?" Based on the criteria proposed by the American College of Sports Medicine (ACSM) (Haskell et al., 2007), those who responded "yes" were categorized as engaging in regular physical activity and those who responded "no" were categorized as sedentary. In this study, physical activity was measured as a dichotomous response because the authors were interested more in exploring the engagement status of physical activity, a behavioral outcome, than the intensity of physical activity levels. The validity of the ACSM criteria as a measure for physical activity behavior has also been supported in the literature (Nelson et al., 2007; Pinto et al., 2005).

Sleep disturbance was assessed according to the frequency of sleep symptoms, which was evaluated using the frequency subcategory of the Sleep Habit Questionnaire (Baldwin et al., 2010). This questionnaire consists of 9 items, rated on a 5-point scale from 0 (never) to 4 (almost always, i.e.,  $\geq 4$  nights a week). The possible total score for the Sleep Habit Questionnaire used in this study was 36. A higher score indicates a greater level of sleep disturbance. In the present study, Cronbach's alpha reliability of the scale was .72.

Both pain and fatigue were measured using a visual analogue scale (VAS) (Cline et al., 1992), which ranged from 0 (no pain or fatigue at all) to 10 (the highest level of pain or fatigue that an individual can experience).

### Data collection procedure

This study was approved by the Institutional Review Board of the Catholic University of Korea (IRB approval number MC12QISI0105), and participants were recruited from the oncology outpatient clinic of C University Hospital in Seoul, Korea. The research team reviewed the outpatient register and identified 109 potential patients who

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