

UNIVERSITI TEKNOLOGI MARA

**FACTORS ASSOCIATED WITH
SARCOPENIA AMONG
HOSPITALISED OLDER PERSONS**

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ABSTRACT

This study aimed to 1) compare anthropometry, body composition, physiological measures, psychological function, functional status, length of stay and nutritional status among hospitalised older persons with and without sarcopenia at admission; 2) compare the effects of hospitalisation on anthropometry, body compositions, physiological measures, psychological functions, and functional status among older persons with and without sarcopenia, 3) identify the association of anthropometry, physiological measures, psychological function, functional status, and nutritional status of hospitalised older persons with and without sarcopenia during admission; 4) determine differences in functional status and quality of life of sarcopenic and non-sarcopenic among hospitalised older persons upon follow-up (post-discharge). This cross-sectional cohort study recruited older patients referred to the Medical Ward, Kuala Lumpur Hospital. Three-time measurements were conducted, namely, at admission (within 48 hours following admission), discharge (a day before discharge or once a plan of discharge is indicated), and post-discharge (3 months after being discharged from the hospital). The independent variables included anthropometric measures (weight [Wt] (kg), height [Ht] (m), body mass index [BMI] (kg/m^2) and calf circumference [CC] (cm), muscle mass [MM] (kg) and skeletal muscle index [SMI] (kg/m^2), physiological measures (grip strength HGS(kg), lower limb strength [LLS] (sec) and gait speed [GS] m/s)), psychological function (Cognitive function and depression level), functional status, nutritional status and quality of life [QOL]). Bioelectrical Impedance Analysis was used to measure Wt (kg), BMI and MM. CC and Ht were measured using a tape measure and stadiometer, respectively. HGS, LLS and GS were measured using the handgrip dynamometer and five times sit-to-stand test, respectively. While psychological function, functional status and QOL were measured using the Minicog test, Geriatric Depression Scale [GDS], Barthel Index [BI], Mini Nutritional Assessment [MNA], and EQ5D, respectively. The sarcopenia status (dependent variable) was evaluated using the Asian Working Group for Sarcopenia algorithm (AWGS) to classify participants into sarcopenia and non-sarcopenic. Data analyses were performed using the independent t-tests, Mann-Whitney U test, Wilcoxon signed rank test and binary logistic regression analyses. During admission, the sarcopenic were significantly lower in MM, Wt, SMI, CC and nutritional status (All $p < 0.05$). Upon discharge, the non-sarcopenic were significantly better in HGS, GS, LLS, psychological function (All $p < 0.05$), while the sarcopenic were significantly better in GS, LLS and depression (All $p < 0.05$). The adjusted logistic regression analysis (gender controlled) revealed that BMI (OR=0.73, 95% CI=0.62-0.87, $p=0.001$), GS (OR=0.93, 95% CI=0.86-1.00, $p=0.049$), and NS (OR=1.37, 95% CI=0.16-0.87, $p=0.02$) significantly predicted sarcopenia. At three months post-discharged, the sarcopenic significantly reduced in QOL and FS (All $p < 0.05$). These findings show that sarcopenic older adults are more vulnerable to the effects of hospitalization. Comprehensive guidelines for early screening and management of sarcopenia upon hospitalisation and post-hospitalisation should be recommended, involving a multidisciplinary approach. Continuity of care from hospital management and community care should be addressed to promote functionality and thus enhance QOL of older adults.

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CHAPTER ONE

INTRODUCTION

1.1 Research background

All around the world, the population of those 65 and older is anticipated to increase significantly. The old population is expected to increase significantly more fast over the coming decades than the global population as a whole. The world's population over 65 would likely reach 1.5 billion by 2050, which is double the current population of 703 million (United Nations, 2019).

Similarly, Malaysia's ageing population has increased to 7.3% in 2022 compared to only 6.8% in 2020 (Department of Statistics Malaysia, 2022) as a result in changes in fertility and improving life expectancy. Based on the United Nation's definition, Malaysia has become an ageing society. In addition, the median age also increased from 30.1 years in 2021 to 30.4 years in 2022. This alarming figure means Malaysia is also in the transition towards becoming an ageing population in line with global development.

The increase in the ageing population may contribute to various problems particularly the chronic diseases that effect to their health and well-being. The population of older persons may have more health issues compared to others, with expenses of hospitalization of about 308.9 million (dollars) compared to an average of 240.6 million dollars (González-gonzález et al., 2011). They also presented with an increased percentage of total dependency on basic and instrumental activities of daily living, thus increasing the caregiver's burden (Uesugui et al., 2011). In addition, care dependency also increases with age (Lohrmann et al., 2003).

Physical inactivities are higher among the ageing population (Ribeiro et al., 2016; Sun et al., 2013), which is consistent with a study conducted in Malaysia (Cheah et al., 2014). Another study reported that Chinese ethnicity are engaged significantly less in physical activity, and other races are significantly more physically active than others (Lian et al., 2016). In addition, physical inactivity is the main hazard for non-communicable diseases (coronary heart disease, type 2 diabetes, breast cancer and colon cancer) that account for 60% of all diseases worldwide and lead to massive morbidity