

THE RELATIONSHIP BETWEEN MUSCLE MASS PERCENTAGE AND HbA1c LEVELS WITH FRAILTY IN ELDERLY RESIDENTS AT NURSING HOME

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ABSTRACT

Background: Increasing elderly population globally and in Indonesia has increased attention to the issue of quality of life among older adults, especially in terms of frailty. Frailty is a geriatric syndrome characterized by physiological decline and increased vulnerability to stressors, potentially leading to adverse outcomes in elderly. Frailty is commonly found among institutionalized older adults in nursing homes. Several studies have explored the roles of muscle mass and HbA1c levels in relation to frailty, but findings remain varied and mostly limited to community-dwelling or hospitalized elderly populations.

Objective: Examine the relationship between muscle mass percentage and HbA1c levels with frailty among elderly residents in nursing homes

Methods: This is a quantitative study of secondary data analysis using a cross-sectional design. A total of 54 participants were recruited from three nursing homes in the Special Region of Yogyakarta. The dependent variable, frailty, was assessed using FRAIL Scale. Independent variables included muscle mass percentage measured by BIA and HbA1c levels obtained from laboratory results. Data were analyzed using One-way ANOVA, Kruskal-Wallis, Mann-Whitney U, Independent T-test, and Spearman's Rank Correlation.

Results: A significant negative correlation was found between frailty and muscle mass percentage of the whole body, trunk, and arms ($p < 0.1$; $\rho = -0.348$, $\rho = -0.334$, $\rho = -0.337$). No significant association was found between leg muscle mass percentage or HbA1c levels with frailty ($p > 0.1$). However, HbA1c levels were significantly correlated with trunk muscle mass percentage ($\rho = -0.244$, $p < 0.1$).

Conclusion: There is a significant negative correlation between frailty and the percentage of whole body, trunk, and arm muscle mass. No significant relationship was found between leg muscle mass or HbA1c levels and frailty. Additionally, HbA1c levels were significantly associated only with trunk muscle mass percentage.

Keywords: elderly; frailty; HbA1c; muscle mass percentage; nursing home

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HUBUNGAN PERSENTASE MASSA OTOT DAN KADAR HbA1c DENGAN *FRAILTY* PADA LANSIA DI PANTI WREDA

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INTISARI

Latar Belakang: Bertambahnya populasi lansia secara global dan di Indonesia mendorong perhatian terhadap isu kualitas hidup lansia, salah satunya dari segi *frailty* (kerentanan). *Frailty* merupakan sebuah sindrom geriatri yang ditandai dengan penurunan fisiologis dan kerentanan terhadap stresor yang dapat menyebabkan dampak buruk bagi lansia. Kondisi *frailty* banyak ditemukan pada lansia yang tinggal di panti wreda. Beberapa studi menunjukkan adanya peran massa otot dan kadar HbA1c terhadap *frailty* tetapi hasil studi bervariasi dan cukup terbatas pada populasi lansia di masyarakat atau rumah sakit.

Tujuan: Mengetahui hubungan antara persentase massa otot dan kadar HbA1c dengan *frailty* pada lansia di panti wreda.

Metode: Penelitian merupakan studi kuantitatif analisis data sekunder dengan desain *cross sectional*. Subjek penelitian berjumlah 54 orang dari tiga panti wreda di Daerah Istimewa Yogyakarta. Variabel terikat yaitu *frailty* diukur menggunakan *FRAIL Scale*. Variabel bebas yaitu persentase massa otot diukur dengan BIA dan kadar HbA1c diperoleh dari hasil analisis laboratorium. Data dianalisis menggunakan uji *One-way ANOVA*, *Kruskal Wallis*, *Mann-Whitney U*, *Independent T-test*, dan *Spearman's Rank Correlation*.

Hasil: Hasil menunjukkan bahwa terdapat hubungan bermakna antara *frailty* dengan persentase massa otot pada bagian *whole body*, *trunk*, dan lengan ($p < 0,1$) dengan arah korelasi negatif ($\rho = -0,348$, $\rho = -0,334$, $\rho = -0,337$). Tidak ditemukan hubungan signifikan antara persentase massa otot bagian kaki dan kadar HbA1c dengan *frailty* ($p > 0,1$). Selain itu, kadar HbA1c hanya ditemukan berhubungan signifikan dengan massa otot bagian *trunk*, dengan arah korelasi negatif ($\rho = -0,244$, $p < 0,1$).

Kesimpulan: Terdapat hubungan negatif signifikan antara *frailty* dengan persentase massa otot *whole body*, *trunk*, dan lengan. Tidak terdapat hubungan signifikan antara persentase massa otot kaki dan kadar HbA1c dengan *frailty*. Selain itu, hanya ditemukan hubungan signifikan antara kadar HbA1c dengan persentase massa otot bagian *trunk*.

Kata kunci: *frailty*; HbA1c; lansia; panti wreda; persentase massa otot

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