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Occupational Independence Among Older Adults in a Semi-Urban Indonesian Community: A Cross-Sectional Study Using the FIM

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Abstract:

- ***Background:***
  Population aging in Indonesia necessitates evidence on functional resilience in local contexts. In semi-urban areas like Kalasan, Yogyakarta, sociocultural factors may buffer age-related functional decline, yet empirical data remain scarce.

- ***Objective:***
  This study aimed to describe patterns of occupational independence and examine associations between sociodemographic/health factors and functional performance among older adults in Kalasan.

- ***Methods:***
  A cross-sectional study was conducted with 52 community-dwelling adults (aged 41–84 years) in Brintikan Hamlet, Kalasan. Occupational independence was assessed using the Functional Independence Measure (FIM). Data on demographics, education, marital status, and chronic diseases were collected via questionnaire. Descriptive statistics and Pearson correlation analyses were performed ($\alpha = 0.05$).

- ***Results:***
  The mean FIM score was 124.9 ± 3.4 (median = 126; range: 113–126). A total of 96.2% (n = 50) scored ≥119, indicating high independence despite high comorbidity (84.6% had ≥1 chronic condition, mainly hypertension and diabetes). Age showed a significant negative correlation with FIM score (r = –0.378, p = 0.006). No significant associations were found for gender (r = 0.041, p = 0.770), education (r = 0.042, p = 0.766), or chronic illness (r = –0.238, p = 0.090).

- ***Conclusion:***
  Older adults in Kalasan exhibit remarkable functional independence, likely sustained through culturally embedded occupations, multigenerational support, and active community roles. Age remains the only modest predictor of decline. Findings support community-based, occupation-centered interventions aligned with local strengths.

Keywords: *Occupational Independence; Older Adults; Functional Independence Measure; Indonesia; Meaningful Occupation.*

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I. INTRODUCTION

Population aging represents one of the most significant demographic transitions of the 21st century, both globally and in Indonesia. According to the (1)The number of individuals aged 60 years or older in Indonesia has reached 27 million, accounting for approximately 9.6% of the total population. This proportion is projected to increase steadily, with Indonesia anticipated to achieve "aging society" status—defined as ≥14% of the population aged 60 or older—by 2035 (2). At the local level, Kalasan subdistrict, Sleman Regency, in the Special Region of Yogyakarta, exhibits a comparable trend. Data from the (3) indicate that older adults constitute 12.3% of Kalasan's population,

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rendering it one of the areas with the highest density of older residents in the province.

The aging process is inherently associated with physiological, cognitive, and psychosocial changes that may compromise an individual's capacity to perform basic activities of daily living (ADLs) and instrumental activities of daily living (IADLs). Age-related declines in muscle strength, balance, visual acuity, and cognitive functions—particularly short-term memory and executive functioning—are well-documented contributors to functional dependence in later life (3)(4). In Kalasan, preliminary field assessments suggest that certain older adults encounter difficulties with tasks such as bathing, dressing, ambulating over extended distances, or managing household finances, particularly among those aged 70–79 years (middle-old) and ≥80 years (oldest-old).

In Brintikan Hamlet, Kalasan Village, older adults remain actively engaged in productive occupations, including subsistence gardening, grandchild caregiving, and participation in community-based social or religious gatherings—activities that hold cultural significance and reinforce social identity. Nevertheless, variability in functional independence has been observed, particularly among middle-old and oldest-old individuals who report challenges in mobility and memory. Although primary healthcare services are accessible through the Kalasan Community Health Center (Puskesmas), structured occupational therapy interventions are not routinely integrated into community-based geriatric care. While the relatively flat terrain and adequate road infrastructure facilitate physical mobility, environmental modifications—such as grab bars in bathrooms or optimized indoor lighting—remain uncommon. This discrepancy between functional potential and actual performance warrants empirical investigation.

Within this context, occupational independence—defined as the capacity to engage autonomously and meaningfully in necessary daily activities, desired, or expected (5)—serves as a critical indicator of the quality of life among older adults. Occupational independence is not solely determined by physical capacity but is also mediated by psychosocial, environmental, and cultural factors, as well as the subjective meaning ascribed to specific activities (6). In Kalasan, the agrarian lifestyle and ethos of cooperation (gotong royong) provide older adults with sustained opportunities to participate in meaningful occupations, such as horticulture, intergenerational caregiving, and artisanal crafts—activities empirically linked to the preservation of cognitive and physical function (7).

Despite the supportive socio-cultural milieu, no prior study has systematically examined patterns of occupational independence among older adults in Kalasan using an evidence-based, standardized instrument. The Functional Independence Measure (FIM) is an internationally validated tool for assessing functional performance across motor and cognitive domains (8). In the present study, FIM was selected as the primary outcome measure due to its sensitivity in detecting subtle functional variations, even among high-functioning community-dwelling older adults.

This research contributes to the literature in three key respects: (1) it addresses a geographically specific gap by focusing on Kalasan, Yogyakarta—a setting underrepresented in national occupational therapy research; (2) it applies the FIM within a semi-urban Indonesian community, aligning local practice with global measurement standards; and (3) it adopts a holistic analytical framework that integrates demographic characteristics (age, education, marital status), health status (e.g., hypertension, diabetes, post-stroke), and socio-environmental context in the assessment of occupational independence.

The findings are expected to advance theoretical understanding in gerontology and occupational science while informing the development of culturally responsive, community-based interventions. This aligns with the WHO's Healthy Ageing framework (2) and supports the achievement of the Sustainable Development Goals (SDGs), particularly Goal 3 (ensuring healthy lives and well-being at all ages) and Goal 10 (reducing inequalities in access to health and social services).

II. MATERIAL AND METHOD

This study employed a quantitative, descriptive-analytical design to characterize patterns of occupational independence among older adults and examine their associations with demographic and health-related factors. A purposive sample of 52 community-dwelling adults in Brintikan Hamlet, Kalasan, Yogyakarta, was recruited based on the following inclusion criteria: age ≥45 years, permanent residency in the area, capacity to communicate verbally, and absence of acute medical conditions.

The Functional Independence Measure (FIM) was administered during data collection due to pragmatic considerations and the high level of functional status of the participants. The FIM comprises 18 items across six domains: Self-Care, Sphincter Control, Transfers, Locomotion, Communication, and Social Cognition, yielding a total score ranging from 18 (total dependence) to 126 (complete independence). Supplementary data on sociodemographic characteristics and medical history were collected via a structured questionnaire.

Data were analyzed using SPSS version 26.0. Descriptive statistics (frequencies, percentages, means, standard deviations) summarized sample characteristics. Pearson's correlation coefficient was computed to examine bivariate associations between age, gender, education, chronic disease status, and total FIM score ($\alpha = 0.05$). The study received ethical approval, and all participants provided written informed consent.

III. RESULTS

This study aimed to describe patterns of occupational independence among older adults in Kalasan, Yogyakarta,

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and to examine associations between age, gender, educational attainment, and health status with functional independence as measured by the FIM. Data were collected from 52 pre-elderly and elderly individuals residing in the study area. Total FIM scores ranged from 113 to 126.

A. Demographic Characteristics of Participants

- *Demographic Data for the 52 Participants are Presented in Table 1.*

Table 1 Demographic Characteristics of Participants

Variables	Category	Frequency (n)	Percentage (%)
Gender	Man	22	42.3%
	Woman	30	57.7%
Age (years)	Young elderly (60-69)	13	25.0%
	Middle-aged (70-70)	7	13.5%
	High-risk elderly (≥80)	2	3.8%
Last Education	Elementary School	4	7.7%
	Junior High School	4	7.7%
	Senior High School	29	55.8%
	Diploma/Bachelor's/Master's Degree	15	28.8%
History of Chronic Disease	There is	44	84.6%
	There isn't any	8	15.4%

The sample comprised individuals aged 41 to 84 years (mean = 58.5; SD = 10.3). The majority were classified as pre-elderly (45–59 years; 57.7%), followed by young-old (60–69 years; 25.0%), middle-old (70–79 years; 13.5%), and oldest-old (≥80 years; 3.8%). Most participants were female (57.7%), married (82.7%), and had completed secondary education or higher (55.8%). Notably, 84.6% reported at least one chronic condition, with hypertension (36.5%), osteoarthritis (13.5%), and diabetes mellitus (11.5%) being the most prevalent.

- *Occupational Independence Based on FIM Scores*

Table 2 Occupational Independence of the Elderly Based on FIM Scores

Total FIM Score	
Mean (SD)	124.9 ± 3.4
Median	126
Range	113 – 126
Score ≤118 (low)	2 (3.8%)
Score ≥119 (high)	50 (96.2%)

FIM total scores are summarized in Table 2. The mean FIM score was 124.9 (SD = 3.4), with a median of 126. The score range was 113–126. Fifty participants (96.2%) achieved scores of 119 or higher, indicating high functional independence, whereas only two individuals (3.8%) exhibited mild functional limitations (FIM scores of 113 and 119).

B. Pearson Correlation Analysis

Pearson correlation analysis was conducted to test the relationship between the independent variables (age, gender, education, and chronic disease) and the total FIM score. This analysis is presented in Table 3.

Table 3 Pearson Correlation Analysis

Independent Variables	r (Correlation Coefficient)	p-value	Interpretation
Age	-0.378	0.006	Significant negative correlation
Gender	0.041	0.770	Not significant
Education	0.042	0.766	Not correlated
Health Status	-0.238	0.090	Negative correlation (trend, not significant)

Bivariate correlations between independent variables and total FIM score are presented in Table 3. Age demonstrated a statistically significant negative correlation with FIM score (r = –0.378, p = 0.006), indicating that advancing age was associated with marginally lower functional independence, though this trend was evident only among participants aged ≥70 years. This finding aligns with established gerontological literature linking aging to declines in physical and cognitive performance.

No significant association was observed between gender and FIM score (r = 0.041, p = 0.770), suggesting equivalent levels of basic ADL independence between men and women in this sample. This contrasts with global epidemiological patterns but may reflect the local context in which both genders remain actively engaged in household and community roles.

Chronic disease status showed a non-significant negative trend (r = –0.238, p = 0.090), consistent with theoretical expectations but lacking statistical significance—

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likely due to limited variance in FIM scores (50 out of 52 participants scored within the ceiling range). Similarly, educational attainment was not significantly correlated with functional independence ($r = 0.042$, $p = 0.766$), possibly due to the high baseline education level and continued physical engagement among participants.

IV. DISCUSSION

- *Key Finding: High Levels of Functional Independence Despite Comorbidity*

The results demonstrate that 96.2% of participants achieved FIM scores ≥119, with a mean score approaching the maximum of 126. This indicates a high degree of independence in basic ADLs, even among individuals with chronic conditions such as hypertension (36.5%), diabetes mellitus (11.5%), and post-stroke sequelae (5.8%). Only two participants (3.8%) exhibited mild functional limitations—one in cognitive domains (memory and problem-solving) and the other in functional mobility (ambulation and stair negotiation), both of whom were aged ≥70 years. These findings are consistent with evidence that mobility and cognition are the most vulnerable domains in late-life functional decline (9)(10).

It is noteworthy that functional independence was maintained despite a high prevalence of multimorbidity. This supports the proposition that medical diagnosis alone does not determine functional outcomes; rather, participation in meaningful occupations and robust social support are critical mediators (4). In Kalasan, multigenerational co-residence (63.5%) and active engagement in subsistence or microeconomic activities likely serve as protective factors.

However, the FIM does not assess IADLs (e.g., financial management, medication adherence, transportation), which may reveal greater functional variability. Thus, the current findings may reflect ceiling effects in basic ADL performance and should be interpreted accordingly. Nevertheless, the FIM remains a valid and reliable measure for evaluating foundational functional independence (11).

- *Age as a Predictor of Functional Decline*

The significant negative correlation between age and FIM score ($r = –0.378$, $p = 0.006$) corroborates biological theories of aging, which posit progressive degeneration of musculoskeletal and neural systems (12). However, the modest effect size suggests that chronological age is not deterministic. The cultural emphasis on active aging—through continued household contribution, social participation, and physical activity—appears to mitigate age-related functional loss, consistent with the WHO's Active Aging framework (2).

- *Gender Equity in Functional Performance*

The absence of gender-based differences in FIM scores ($r = 0.041$, $p = 0.770$) contrasts with global trends showing greater dependency risk among older women (13). In Kalasan, however, traditional Javanese gender roles do not preclude either sex from functional engagement. Women commonly participate in economic activities (e.g., small trade, crafts), while men remain involved in gardening and caregiving. This functional parity may reflect the egalitarian ethos of rukun (harmonious coexistence) embedded in local culture (14).

- *Non-Significance of Education and Chronic Illness*

Contrary to expectations, neither education nor chronic illness significantly predicted functional independence. This may reflect the compensatory role of informal knowledge systems, community-based learning, and culturally embedded health practices (Narwanti & Hartini, 2023). Moreover, effective household-level disease management—through diet, light physical activity, and traditional remedies—may preserve functional capacity despite clinical diagnoses.

These findings support a strengths-based approach in occupational therapy, which emphasizes existing capabilities rather than deficits (6)(5). For individuals with severe impairments (e.g., post-stroke hemiparesis), however, targeted interventions—including ADL adaptation, assistive technology, and environmental modification—remain essential (15).

- *Sociocultural Context as a Protective Framework*

The Javanese values of guyub (communal solidarity) and gotong royong (mutual assistance) foster a social environment conducive to continued occupational engagement. Activities such as gardening, herbal medicine preparation, and intergenerational caregiving serve not only as functional tasks but also as sources of identity, purpose, and cognitive stimulation. This aligns with the principle of occupational justice, which asserts the right of all individuals—regardless of age or health status—to participate in meaningful occupations (16).

V. CONCLUSION

This study examined patterns of occupational independence among 52 older adults (aged 45–84 years) in Kalasan, Yogyakarta, using the Functional Independence Measure (FIM). Results indicated that 96.2% of participants demonstrated high to full independence in basic ADLs, despite a high prevalence of chronic disease. Age was significantly and negatively correlated with FIM score ($r = –0.378$, $p = 0.006$), whereas gender, education, and chronic illness status showed no significant associations.

These findings underscore that occupational independence in later life is shaped not merely by biomedical factors but by sustained participation in culturally meaningful activities, multigenerational family support, and inclusive social structures.

Although the use of FIM—rather than the originally planned COPM or AMPS—limits assessment of IADLs and subjective performance, the data nonetheless highlight the functional resilience of older adults in this semi-urban Indonesian setting.

Implications for practice include the integration of occupation-based, community-level interventions that

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leverage existing cultural strengths. Future research should employ mixed-methods designs and comprehensive measures (e.g., AMPS, COPM) to capture the full spectrum of occupational performance and compare rural, semi-urban, and urban contexts.

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