

BMJ Open Prevalence of functional disability and associated factors among older people in Vietnam: a secondary data analysis

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ABSTRACT

Objectives To explore the prevalence of functional disabilities and associated factors among older people in Vietnam.

Design A cross-sectional survey of older people aged 60 years and over in Vietnam using a multistage sampling method.

Setting The study used weighted data from the Vietnam Ageing Survey in 12 provinces in Vietnam.

Participants The study sample consists of 3183 men and women aged 60 years and over.

Outcome measures The study used the Katz Index of Independence in Basic Activities of Daily Living (ADL) and the Instrumental Activities of Daily Living (IADL) to assess functional disabilities. Bivariate analyses and multivariate logistic regressions were used to explore the association between functional disability indicators and associated factors such as sociodemographic, health status, health behaviours and social participation.

Results The prevalence of ADL limitation, IADL limitation and both ADL/IADL limitations among older people were 44.6%, 35.2% and 26.3%, respectively. After adjustment, the associated factors for ADL limitation, including age (OR=1.04, 95% CI: 1.02 to 1.06), lower education (secondary school vs high school and above: OR=2.11, 95% CI: 1.34 to 3.33), lower wealth quintiles (lowest vs highest quintile: OR=2.36, 95% CI: 1.57 to 3.56), fair/poor/very poor self-rated health (vs good/very good: OR=5.40, 95% CI: 3.42 to 8.52), number of chronic diseases (OR=1.41, 95% CI: 1.24 to 1.62), depressive symptoms (OR=2.58, 95% CI: 1.84 to 3.67), receiving financial support (OR=1.47, 95% CI: 1.021 to 2.12) and lack of social participation (OR=1.97, 95% CI: 1.38 to 2.81). The associated factors for IADL limitation included age (OR=1.07, 95% CI: 1.05 to 1.09), lower education (no schooling/incomplete primary education vs high school and above: OR=2.29, 95% CI: 1.29 to 4.05), lower wealth quintiles (poorest vs wealthiest: OR=2.82, 95% CI: 1.76 to 4.52), not working (OR=3.24, 95% CI: 2.36 to 4.44), did not drink alcohol in the last 6 months (OR=1.56, 95% CI: 1.05 to 2.30), number of chronic diseases (OR=1.23, 95% CI: 1.05 to 1.44), depressive symptoms (OR=2.05, 95% CI: 1.53 to 2.75) and lack of social participation (OR=3.88, 95% CI: 2.64 to 5.71). The associated factors for both ADL/IADL limitations were age, lower education, lower wealth quintiles, not working, fair/poor/very poor self-rated health, number of chronic diseases, depressive symptoms, receiving financial support, and lack of social participation.

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ The study used the most updated nationally representative sample size of older people aged 60 years and over in Vietnam.
- ⇒ The study used the Katz Index of Independence in Basic Activities of Daily Living (ADL) and the Instrumental Activities of Daily Living (IADL), the most common and validated scales to assess functional disability, which is comparable with other studies worldwide.
- ⇒ ADL and IADL limitations were self-reported data that might obtain individual biases, including social desirability, recall and interviewer bias.
- ⇒ Health status variables, including chronic disease and depression, are based on self-reports rather than clinical evaluations, which may result in inaccuracies in reflecting the actual diagnosed prevalence.
- ⇒ The cross-sectional data and analysis did not allow us to interpret the causal relationship between functional disabilities and their determinants.

Conclusion The prevalence of functional disabilities among older people in Vietnam was high. Functional disabilities were multifactorial, and the multicomponent interventions and policies for older people should focus on improving health literacy, preventing and managing depression and chronic diseases, and encouraging social participation.

INTRODUCTION

Functional disability among older people is common and a significant public health issue globally. According to the United Nations, over 46% of individuals aged 60 years and older worldwide experience disabilities.¹ While gait speed is often considered an early indicator of functional decline, Activities of Daily Living (ADL) and Instrumental Activities of Daily Living (IADL) also serve as essential measures of functional impairment in older adults.² These impairments hinder older adults from living independently, reduce the quality of life and increase the risk of morbidity and mortality, thereby putting strain on healthcare systems and increasing

costs for society.^{3–6} Previous studies have indicated that function is dynamic, with episodes of both limitations and recovery observed among older adults.^{7 8} Other studies also noted that early and proactive individually tailored interventions can slow or prevent functional decline in older people.^{9 10} Therefore, understanding the factors associated with functional disability is necessary for developing health promotion and prevention programmes to minimise or slow down the negative consequences of functional decline among older people.

Systematic reviews and meta-analyses have identified sociodemographic characteristics, health status, chronic conditions, health behaviours and social participation as significant risk factors for functional decline among older people. Older age, female sex, lower educational level, lower wealth, chronic diseases, poor self-rated health, depression, smoking, alcohol consumption and lack of social participation are associated with increasing risk of functional disability.^{11–15} Most studies examining the association of variables with functional disability have primarily focused on high-income countries,^{16–21} with limited studies in lower and middle-income countries (LMICs).^{22 23} A higher prevalence of disability was reported among older people in lower income settings than in higher income settings.²⁴ Vietnam is a LMIC that is facing the most rapidly ageing population in the world.²⁵ It is projected to become an aged population by 2036.²⁶ However, research on functional disability among older people in Vietnam remains limited, with most studies relying on non-representative samples, such as one involving 695 participants from two districts in a province and another with 2448 older adults in three northern provinces.^{27 28} While one study used a nationally representative sample, its topics focused on exploring the relationship between ADL limitations and social support rather than other factors.²⁹ Our study uses the most recent nationally representative data on older adults from the Vietnam Ageing Survey (VNAS) to assess the prevalence of functional disability and its associated factors. Unlike previous research, it also examines the co-occurrence of ADL and IADL limitations among older people in Vietnam.

METHOD

Data source

This study analysed data from the VNAS, which included a sample of 3183 older men and women aged 60 years and over. Data collection took place from August to October 2022. The data were accessed for this study on 8 October 2023. The data set we used is deidentified, with all personal identifiers removed to ensure participant confidentiality.

The VNAS was a nationally representative survey that gathered information on sociodemographic characteristics, living arrangements and conditions, physical and mental health, healthcare utilisation, productive activities and social participation of older adults in Vietnam. The

survey employed a cross-sectional design with a multistage sampling method. First, 12 provinces were selected using the population proportionate to size (PPS) method. Next, three districts were chosen within each province, followed by four communes per district, all using the PPS method. A total of 144 communes were selected. Two villages were selected in each commune using a systematic random sampling method. Finally, within each commune, 11 participants were chosen from three age groups, 60–69, 70–79 and 80 and above, using a systematic random sampling method, with the proportions of four, four and three participants, respectively.

The survey was conducted by 24 trained interviewers using the Census and Survey Processing System (CSPro), a computer-assisted personal interviewing programme.³⁰ This system allowed for real-time data quality management through automated logic and consistency checks during the interviews. Additionally, six field supervisors were responsible for quality control by observing selected interviews to ensure proper adherence to data collection procedures. At the end of each day, the supervisors reviewed all complete questionnaires using a data-checking programme. These measures helped detect and promptly address any data errors, such as missing information or logical inconsistencies, either during the interview or at the end of the day of fieldwork.

Variables

Dependent variable

Functional disability was assessed using two validated scales: ADL³¹ and IADL.³²

Activities of Daily Living (ADL) limitation

Participants were asked to rate their difficulty in performing daily activities, including eating, dressing, moving in and out of bed, bathing and toileting, according to the Katz ADL Index.³¹ A four-point Likert scale was used (0=none, 1=mild, 2=severe and 3=cannot do at all). For analysis, responses were dichotomised: a score of 0 indicated no difficulty, while any difficulty (scores 1, 2 or 3) was coded as 1. A composite score was then calculated from these five activities, with ADL limitation defined as a total score of one or higher. In this study, the ADL scale demonstrated strong internal consistency, with a Cronbach's alpha of 0.89.

Instrumental Activities of Daily Living (IADL) limitation

IADL limitation was assessed using the Lawton-Brody IADL Scale,³² which evaluates difficulties in performing complex tasks essential for independent living. The scale includes eight activities: telephone use, shopping, food preparation, housekeeping, laundry, transportation, medication management and financial management. Each activity was rated on a scale indicating the level of difficulty performing each task, with higher scores reflecting greater difficulty. For analysis, responses were dichotomised: a score of 0 indicated no difficulty, while a score of 1 indicated any difficulty. A composite score was

calculated from these eight activities, with participants classified as having an IADL disability if they had a score of 1 or higher, indicating difficulty in at least one activity. The IADL scale also showed strong reliability with a Cronbach's alpha of 0.90.

Both limitations

Were identified if respondents simultaneously experienced both ADL and IADL disabilities.

Independent variables

Sociodemographic variables

Variables 'age', 'number of household members' and 'number of living children' were used as continuous variables. Marital status was dichotomised into 'married' and 'unmarried' (including those who had never married and those who were divorced, separated or widowed). The highest education level was grouped into four categories: no schooling or incomplete primary school, primary school, secondary school, high school or above. The place of residence was classified into urban and rural areas. Ethnicity was classified into Kinh and Other. Having health insurance was defined as yes if respondents had any type of health insurance in the past 12 months and no if they did not. Living arrangements were categorised into three groups: living alone, with spouse/children and with others. Working status was determined by asking whether participants had engaged in income-generating activities within the past 12 months. Economic status was classified based on eight questions about housing characteristics, household utilities and assets, using principal component analysis. The wealth index scores were categorised into five wealth quintiles: the poorest, poor, medium, wealthy, and wealthiest.

Health status and chronic conditions

Health status was assessed through a self-rated health question, where respondents rated their health on a scale from 1 to 5, with 5 being 'very poor', 4 'poor', 3 'fair', 2 'good' and 1 'very good'. The responses were grouped into two categories: fair/poor/very poor and good/very good for data analysis and to ensure comparability with previous studies (eg, ref^{17 19 23}).

Chronic diseases were assessed by asking whether participants had ever been diagnosed with any of the 10 listed chronic diseases (arthritis, angina, diabetes, chronic lung diseases, blood pressure problems, cancer, cataract, heart diseases and liver disease), with the total number of reported conditions recorded for analysis.

Depressive symptoms were measured using the 15-item Geriatric Depression Scale (GDS-15), which was validated and used in previous studies in Vietnam,³³ with scores of 6 or above indicating depressive symptoms.

Health-related behaviours and social capital

Cigarette smoking was assessed by one question asking participants if they currently smoked cigarettes and/or waterpipe.

Alcohol consumption behaviour was assessed by one question asking whether participants had consumed alcohol in the past 6 months.

Receiving financial support in the past 12 months was evaluated to determine whether participants received financial support in the past 12 months from any of the following sources: spouse, children, parents, siblings, other relatives or friends/neighbours.

Social participation was assessed by creating a variable based on responses of participants to three questions: participation in activities at the place of residence (such as visiting people and attending weddings), attendance at social group meetings (such as those of the Farmer Union, Veteran Association or Vietnam Women's Union) and involvement in religious or spiritual groups over the past 12 months. If respondents reported yes, one of three questions was considered social participation.

Analysis

The weighted VNAS data were analysed using Stata (V.14.0) and proceeded in three stages. First, descriptive statistics were conducted to summarise the characteristics of the sample. Second, bivariate analyses were employed to investigate the relationships between individual explanatory variables and limitations in ADL, IADL and both ADL/IADL using χ^2 tests and t-tests. Finally, logistic regression models were constructed to explore the overall associations between these limitations and other factors. Variables with a p-value < 0.05 from the bivariate analyses were included in the logistic regression models.³⁴ Multicollinearity was assessed using the variance inflation factor (VIF) to ensure that the independent variables included in the logistic regression models were not highly correlated. Variables with a VIF greater than 10 were excluded from the regression models.³⁵ No multicollinearity was found among the factors in our study.

Patient and public involvement

No patients or members of the public were involved in the study's design, conduct, reporting and dissemination.

RESULTS

Sample characteristics and bivariate associations

Table 1 shows the characteristics of the survey's participants. Among 3183 persons aged 60 years and over, the mean age of participants was 70.4 (8.6); 58.6% were female; 63.9% were married; 35.9% had no schooling or incomplete primary level, 18.3% had primary school education; 15.8% participants were at the poorest wealth quintile, 28.3% were at the wealthiest quintile; 41.2% participants currently worked; 66.6% lived in rural areas; the majority of participants were Kinh ethnicity (95.8%) and had health insurance (97.4%).

The prevalence of participants having at least one ADL limitation and IADL limitation in the past 30 days was 44.6% and 35.2%, respectively. The most common limitations were getting up when lying down (40.5%) for ADL

Table 1 Sociodemographic characteristics of respondents and prevalence of functional disability among older people aged 60 years and over in Vietnam

Characteristics (n=3183)	Categories	Total, n (%)/ mean±SD
Gender	Male	1295 (41.4)
	Female	1888 (58.6)
Age (mean±SD)		70.4±8.6
Education	No schooling/incomplete primary education	1422 (35.9)
	Primary school	624 (18.3)
	Secondary school	735 (25.9)
	High school and above	398 (19.8)
Marital status	Unmarried	1351 (36.1)
	Married	1832 (63.9)
Wealth quintiles	Wealthiest	629 (28.3)
	Wealthy	634 (19.8)
	Medium	646 (18.8)
	Poor	637 (17.3)
	Poorest	637 (15.8)
Working status in the past 12 months	Working	1178 (41.2)
	Not working	2005 (58.8)
Place of residence	Urban	549 (33.4)
	Rural	2634 (66.6)
Ethnicity	Kinh	2769 (95.8)
	Other	414 (4.2)
Having health insurance	No	130 (2.6)
	Yes	3053 (97.4)
Having ADL limitation in the past 30 days	Eating	531 (12.4)
	Getting dressed and undressed	734 (18.6)
	Self-bathing/washing	717 (17.6)
	Getting up when lying down	1438 (40.5)
	Getting to and using the toilet	792 (19.8)
Having any ADL limitation	No	1570 (55.4)
	Yes	1613 (44.6)
Having IADL limitation in the past 30 days	Ability to use the telephone	822 (17.4)
	Shopping	1115 (26.2)
	Food preparation	819 (19.8)
	Housekeeping	324 (7.2)
	Laundry	414 (10.5)
	Mode of transportation	563 (12.3)
	Responsibility for own medications	520 (12.7)
	Ability to handle finances	284 (6.5)

Continued

Table 1 Continued

Characteristics (n=3183)	Categories	Total, n (%)/ mean±SD
Having any IADL limitation	No	1717 (64.8)
	Yes	1466 (35.2)
Having both ADL and IADL limitations in the past 30 days	No	2119 (73.7)
	Yes	1064 (26.3)
ADL, Activities of Daily Living; IADL, Instrumental Activities of Daily Living.		

limitation and shopping (26.2%) for IADL limitation; 26.3% of participants reported having both ADL and IADL limitations.

Table 2 presents the bivariate analysis results of factors associated with functional disability. A higher prevalence of ADL limitation, IADL limitation and both ADL/IADL limitations was found among the following individuals: female, older age, those with lower educational levels, unmarried, those at lower wealth quintiles, who were not working in the past 12 months, those living in rural areas, those with more living children, those who did not smoking cigarettes, those who did not drink alcohol in the last 6 months, those who reported fair/poor/very poor self-rated health, those with more chronic diseases, those who had depressive symptoms, those receiving financial support for daily living and those who did not engage in social groups/social activities in the last 12 months.

Associated factors for activities of daily living limitation

As shown in table 3, the odds of having ADL limitation increased by 4% with each subsequent year of life among older people (OR=1.04, 95% CI: 1.02 to 1.06). The odds were significantly higher among those with secondary school (OR=2.11, 95% CI: 1.34 to 3.33) compared with those with high school and above, those in lower wealth quintiles (medium: OR=1.59, 95% CI: 1.02 to 2.47; poor: OR=1.84, 95% CI: 1.24 to 2.74; poorest: OR=2.36, 95% CI: 1.57 to 3.56) compared with the wealthiest quintile, and those who rated their health as fair, poor or very poor (OR=5.40, 95% CI: 3.42 to 8.52) compared with those who rated their health as good or very good. Additionally, the number of chronic diseases (OR=1.41, 95% CI: 1.24 to 1.62), depressive symptoms (OR=2.58, 95% CI: 1.84 to 3.67) and receiving financial support (OR=1.47, 95% CI: 1.02 to 2.12) and lack of social participation (OR=1.97, 95% CI: 1.38 to 2.81) were significantly associated with increased odds of ADL limitation.

Associated factors for instrumental activities of daily living limitation

The odds of having IADL limitation increased by 7% with each subsequent year of life among older people (OR=1.07, 95% CI: 1.05 to 1.09). The odds were higher among those with lower education levels (primary school:

Table 2 Bivariate analysis of factors associated with ADL limitation, IADL limitation and both limitations among older people aged 60 years and over in Vietnam

Characteristics (n=3183)	Categories	ADL limitation, n (%) / mean \pm SD		IADL limitation, n (%) / mean \pm SD		Both ADL/IADL limitations, n (%) / mean	
		No	Yes	No	Yes	No	Yes
Gender	Male	757 (62.5)	538 (37.5)*	846 (72.9)	449 (27.1)*	983 (79.9)	312 (20.1)*
	Female	812 (50.4)	1076 (49.6)	871 (59.1)	1017 (40.9)	1135 (69.4)	753 (30.6)
Age (years)		68.4 \pm 6.7	73.4 \pm 10.1*	67.7 \pm 5.7	76.0 \pm 11.1*	68.4 \pm 6.6	76.8 \pm 11.0*
Education	High school and above	264 (74.0)	134 (26.0) *	315 (85.2)	83 (14.8)*	339 (89.8)	59 (10.2) *
	Secondary school	405 (55.5)	330 (44.5)	559 (79.5)	176 (20.5)	604 (84.7)	131 (15.3)
	Primary school	316 (55.1)	308 (44.9)	353 (61.9)	271 (38.1)	423 (70.9)	201 (29.1)
	No schooling/ incomplete primary education	584 (45.2)	838 (54.8)	490 (44.5)	932 (55.5)	752 (58.6)	670 (41.4)
Marital status	Married	1032 (61.2)	800 (38.8)*	1216 (73.5)	616 (26.5)*	1403 (80.6)	429 (19.4) *
	Unmarried	537 (45.1)	814 (54.9)	501 (49.4)	850 (50.6)	715 (61.5)	636 (38.5)
Wealth quintiles	Wealthiest	375 (67.7)	254 (32.3)*	429 (81.5)	200 (18.5)*	493 (87.8)	136 (12.2) *
	Wealthy	355 (60.7)	279 (39.3)	392 (67.7)	242 (32.3)	474 (79.1)	160 (20.9)
	Medium	330 (52.0)	316 (48.0)	363 (62.5)	283 (37.5)	441 (70.4)	205 (29.6)
	Poor	267 (46.2)	370 (53.8)	293 (51.3)	344 (48.7)	366 (60.8)	271 (39.2)
	Poorest	242 (40.8)	395 (59.2)	240 (48.8)	397 (51.2)	344 (59.7)	293 (40.1)
Working status in the last 12 months	Working	759 (68.3)	419 (31.7)*	955 (86.7)	223 (13.3)*	1065 (93.3)	113 (6.7)*
	Not working	810 (46.3)	1195 (53.7)	762 (49.4)	1243 (50.6)	1053 (60.0)	952 (40.0)
Place of residence	Urban	300 (61.8)	249 (38.2)*	322 (72.0)	227 (28.0)**	377 (78.7)	172 (21.3)*
	Rural	1270 (52.1)	1364 (47.9)	1395 (61.2)	1239 (38.8)	1741 (71.3)	893 (28.7)
Ethnicity	Kinh	1372 (55.3)	1397 (44.7)	1548 (65.3)	1221 (34.7)	1863 (73.9)	906 (26.1)
	Other	197 (56.0)	217 (44.0)	169 (53.8)	245 (46.2)	255 (69.3)	159 (30.7)
Living arrangement	Live alone	136 (52.7)	160 (47.3)	148 (59.5)	148 (40.5)	187 (68.9)	109 (31.1)
	Live with spouse/ children	1384 (55.4)	1400 (44.8)	1520 (65.4)	1264 (34.6)	1866 (74.1)	918 (25.9)
	Other	49 (63.1)	54 (36.9)	49 (62.3)	54 (37.7)	65 (75.1)	38 (24.9)
Number of household members		4.2 \pm 2.2	4.1 \pm 2.4	4.1 \pm 2.1	4.2 \pm 2.7	4.1 \pm 2.2	4.2 \pm 2.6
Number of living children		6.2 \pm 3.7	7.8 \pm 4.6*	6.1 \pm 3.3	8.5 \pm 5.2*	6.3 \pm 3.6	8.6 \pm 5.1*
Smoking status	No	1242 (53.6)	1367 (46.4)**	1373 (63.2)	1236 (36.8)*	1695 (72.2)	914 (27.8)**
	Yes	327 (63.9)	247 (36.1)	344 (72.2)	230 (27.8)	423 (81.0)	151 (19.0)
Alcohol consumption in the last 6 months	Yes	564 (64.6)	358 (35.4)*	680 (81.6)	242 (18.4)*	776 (88.0)	146 (12.0) *
	No	1005 (51.5)	1256 (48.5)	1037 (57.7)	1224 (42.3)	1342 (67.7)	919 (32.3)
Having health insurance	No	80 (67.4)	50 (32.6)	55 (53.6)	75 (46.4)	91 (73.5)	39 (26.5)
	Yes	1489 (55.0)	1564 (45.0)	1662 (65.1)	1391 (34.9)	2027 (73.7)	1026 (26.3)
Self-rated health	Good/very good	229 (90.3)	50 (9.7)*	209 (83.4)	70 (16.6)*	253 (95.7)	26 (4.3)*
	Fair/very poor/poor	1341 (50.8)	1563 (49.2)	1508 (62.4)	1396 (37.6)	1865 (70.9)	1039 (29.1)
Number of chronic diseases		0.8 \pm 0.9	1.3 \pm 1.2*	0.9 \pm 0.9	1.2 \pm 1.31*	0.90 \pm 0.90	1.36 \pm 1.32*

Continued

Table 2 Continued

Characteristics (n=3183)	Categories	ADL limitation, n (%) / mean \pm SD		IADL limitation, n (%) / mean \pm SD		Both ADL/IADL limitations, n (%) / mean	
		No	Yes	No	Yes	No	Yes
Having depressive symptoms	No	1361 (64.9)	929 (35.1)*	1447 (73.8)	843 (26.2)*	1756 (83.2)	534 (16.8)*
	Yes	190 (29.1)	526 (70.9)	266 (44.0)	450 (56.0)	343 (51.8)	373 (48.2)
Financial support for daily living in the last 12 months	No	244 (67.6)	176 (32.4)*	278 (75.9)	142 (24.1)*	323 (87.1)	97 (12.9)*
	Yes	1325 (53.2)	1438 (46.8)	1439 (62.8)	1324 (37.2)	1795 (71.4)	968 (28.6)
Social participation in the last 12 months	Yes	1376 (62.5)	1020 (37.5)*	1592 (75.7)	804 (24.3)*	1881 (83.9)	515 (16.1)*
	No	193 (29.4)	594 (70.6)	125 (24.9)	662 (75.1)	237 (36.7)	550 (63.3)

***P-value<0.001, ** p-value<0.01, *p-value<0.05.

ADL, Activities of Daily Living; IADL, Instrumental Activities of Daily Living.

Table 3 Multivariate analysis of factors associated with ADL limitation, IADL limitation and both limitations among older people in Vietnam

Characteristics (n=3183)	Categories	ADL limitation, OR (95% CI)	IADL limitation, OR (95% CI)	Both ADL/IADL limitations, OR (95% CI)
Gender	Male (ref.)	–	–	–
	Female	1.14 (0.81 to 1.61)	0.92 (0.61 to 1.38)	0.77 (0.50 to 1.17)
Age (years)		1.04 (1.02 to 1.06)***	1.07 (1.05 to 1.09)***	1.06 (1.05 to 1.08)***
Education	High school and above (ref.)	–	–	–
	Secondary school	2.11 (1.34 to 3.33)**	1.37 (0.78 to 2.41)	1.56 (0.86 to 2.83)
	Primary school	1.39 (0.81 to 2.36)	2.12 (1.13 to 3.99)*	2.19 (1.13 to 4.24)*
	No schooling/incomplete primary education	1.25 (0.76 to 2.04)	2.29 (1.29 to 4.05)**	1.79 (1.05 to 3.03)*
Wealth quintiles	Wealthiest (ref.)	–	–	–
	Wealthy	1.11 (0.74 to 1.66)	2.04 (1.24 to 3.36)**	1.77 (1.05 to 2.96)*
	Medium	1.59 (1.02 to 2.47)*	2.33 (1.46 to 3.73)***	3.28 (1.99 to 5.39)***
	Poor	1.84 (1.24 to 2.74)**	3.09 (2.03 to 4.72)***	4.49 (2.81 to 7.17)***
	Poorest	2.36 (1.57 to 3.56)***	2.82 (1.76 to 4.52)***	4.40 (3.01 to 6.45)***
Working status in the last 12 months	Working (ref.)	–	–	–
	Not working	1.34 (0.92 to 1.94)	3.24 (2.36 to 4.44)***	4.23 (2.87 to 6.26)***
Alcohol consumption in the last 6 months	Yes (ref.)	–	–	–
	No	0.90 (0.64 to 1.27)	1.56 (1.05 to 2.30)*	1.56 (0.99 to 2.45)
Self-rated health	Good/very good (ref.)	–	–	–
	Fair/poor/very poor	5.40 (3.42 to 8.52)***	1.54 (0.80 to 2.97)	5.45 (2.79 to 10.63)***
Number of chronic diseases		1.41 (1.24 to 1.62)***	1.23 (1.05 to 1.44)*	1.46 (1.26 to 1.71)***
Having depressive symptoms	No (ref.)	–	–	–
	Yes	2.58 (1.84 to 3.67)***	2.05 (1.53 to 2.75)***	2.57 (1.88 to 3.51)***
Financial support for daily living in the past 12 months	No (ref.)	–	–	–
	Yes	1.47 (1.02 to 2.12)*	1.01 (0.63 to 1.61)	1.95 (1.28 to 2.98)**
Social participation in the last 12 months	Yes (ref.)	–	–	–
	No	1.97 (1.38 to 2.81)***	3.88 (2.64 to 5.71)***	3.65 (2.58 to 4.15)***

***P-value<0.001, **p-value<0.01, *p-value<0.05.

ADL, Activities of Daily Living; IADL, Instrumental Activities of Daily Living; Ref, reference group.

OR=2.12, 95% CI: 1.13 to 3.99; no schooling/incomplete primary education: OR=2.29, 95% CI: 1.29 to 4.05), and those in lower wealth quintiles (wealthy: OR=2.04, 95% CI: 1.24 to 3.36; medium: OR=2.33, 95% CI: 1.46 to 3.73; poor: OR=3.09, 95% CI: 2.03 to 4.72; poorest: OR=2.82, 95% CI: 1.76 to 4.52) compared with those with high school and above and those in the wealthiest quintile. Additionally, currently not working (OR=3.24, 95% CI: 2.36 to 4.44), did not drink alcohol in the last 6 months (OR=1.56, 95% CI: 1.05 to 2.30), a greater number of chronic diseases (OR=1.23, 95% CI: 1.05 to 1.44), depressive symptoms (OR=2.05, 95% CI: 1.53 to 2.75) and lack of social participation (OR=3.88, 95% CI: 2.64 to 5.71) were significantly associated with higher odds of IADL limitation (table 3).

Associated factors for both ADL and IADL limitations

The odds of having both ADL and IADL limitations increased by 6% with each additional year of life among older people (OR=1.06, 95% CI: 1.05 to 1.08). The odds were higher among those with lower education levels (primary school: OR=2.19, 95% CI: 1.13 to 4.24; no schooling/incomplete primary education: OR=1.79, 95% CI: 1.05 to 3.03), and those in lower wealth quintiles (wealth: OR=1.77, 95% CI: 1.05 to 2.96, medium: OR=3.28, 95% CI: 1.99 to 5.39, poor: OR=4.49, 95% CI: 2.81 to 7.17; poorest: OR=4.40, 95% CI: 3.01 to 6.45) compared with those with high school and above and those in the wealthiest quintile. Other significant factors were not working (OR=4.23, 95% CI: 2.87 to 6.26), fair, poor or very poor self-rated health (OR=5.45, 95% CI: 2.79 to 10.63), a higher number of chronic diseases (OR=1.46, 95% CI: 1.26 to 1.71), depressive symptoms (OR=2.57, 95% CI: 1.88 to 3.51), receiving financial support (OR=1.95, 95% CI: 1.28 to 2.98) and lack of social participation (OR=3.65, 95% CI: 2.58 to 4.15) (table 3).

DISCUSSION

Using a national survey of older people aged 60 years and over in Vietnam, we found that 44.6% reported limitations in ADL, 35.2% reported limitations in IADL and 26.3% experienced both ADL and IADL limitations. Previous studies presented a wide range in the prevalence of ADL disability, from 2.4% to 55.7%, and IADL disability, from 8.0% to 48%. This vast discrepancy could be due to differences in the study populations (eg, age, education, etc), study settings and tools used to assess functional disability. Overall, the ADL and IADL prevalence in this study is similar to that reported in other studies from LMICs but is significantly higher than that observed in high-income settings.^{16 18–22 36} Existing studies indicate that less developed countries tended to have higher prevalence of disability than developed countries, likely due to weaker social policies and greater socioeconomic inequalities.³⁷ Few studies have examined both ADL and IADL limitations.^{36 38} The study conducted in Kenya reported that the prevalence of both limitations was 4.5%, lower than

our findings. The lack of a standardised tool for assessing IADL limitations and using a small, non-representative sample in the Kenyan study could explain the difference between the two studies.³⁶

Our findings indicated a higher prevalence of ADL limitations compared with IADL limitations. This contrasts with a number of previous studies, which have reported ADL limitations as less prevalent than IADL limitations.^{27 36 39} Our approach to measuring ADL limitations may be a key reason for this discrepancy. Using the Katz scale, we asked respondents to report their level of difficulty in performing five basic daily activities, with response options: none, mild, severe or cannot do at all. We classified individuals as having an ADL limitation if they reported mild or severe difficulty, or an inability to perform the task. Among those identified with ADL limitations, the majority experienced mild difficulty (see online supplemental appendix 1 for details). In contrast, most studies define ADL limitations as the inability to perform a task independently or the need for assistance.^{7 36 39} This methodological difference may explain the higher prevalence of ADL limitations compared with IADL limitations observed in our study.

Consistent with previous studies, we found that sociodemographic factors such as age, lower education levels and lower wealth quintiles were predictors of increased odds of ADL limitation and IADL limitation.^{16 22 27} As a natural part of the ageing process, older people often experience physiological changes in body function, including a decline in muscle strength and cognitive function and an increased prevalence of chronic diseases, all of which could contribute to functional disability.¹⁹ Education and economic status impact physical function through pathways such as health literacy and healthcare accessibility. Lower education often results in reduced health literacy, leading to unhealthy behaviours such as poor diet, physical inactivity, smoking and alcohol consumption. In addition, economic disadvantages can cause inadequate living conditions, insufficient nutrition, heavy physical and psychological workloads and limited access to health services.^{40–42} In addition, a systematic review demonstrated that low education levels, low income and unemployment are associated with a higher prevalence of multimorbidity among older people, one important factor related to functional decline.⁴³ These findings highlight the need to address sociodemographic factors in intervention programmes to prevent functional disability among older people, which should focus on improving health literacy and enhancing access to healthcare services.

Previous studies have confirmed that employment is an important factor associated with functional decline. In this study, we found that the odds of IADL limitation were higher among older people who did not work in the last 12 months than those who did work, consistent with other studies. Working allows older people to be more active and have frequent social interactions, which helps maintain physical function. On the other hand, not working is associated with mental health problems. This finding

suggests the importance of working with older people; interventions and policies should focus on creating opportunities for them to continue working.

The association between self-rated health, chronic diseases and functional disability among older people has been well documented. Our study noted that those with poor self-rated health had higher odds of ADL limitation than those who reported good self-rated health, consistent with previous studies.^{16 17 23} Poor self-rated health reflects an individual's perception of their overall health and may reflect actual physical limitations or undiagnosed conditions. Poor perceived health is more common among those with chronic conditions, morbidity, depression, inactivity and less social engagement, which are risk factors for functional disability. Furthermore, our findings highlighted that having chronic disease was significantly associated with increased odds of ADL and IADL limitations. These findings support existing studies that demonstrated chronic conditions, such as arthritis, diabetes and cardiovascular diseases, directly and indirectly contribute to functional limitations.^{18 19 21 22} These conditions prevent older people from performing physical activities for daily living and social engagement. Chronic conditions are often linked to long-term polypharmacy and its associated side effects that lead to poor nutritional status, muscle mass loss, frailty and stress.^{44–46} Marangoni *et al* found that the combinations of multichronic conditions such as dementia, depression, cerebrovascular disorders and musculoskeletal disorders were linked to the highest prevalence of disability.⁴⁷ Other studies noted that functional declines typically begin to appear within 6–10 years after the initial diagnosis of chronic disease.^{46 48} The findings suggest that interventions should address chronic disease management to mitigate the risk of disabilities. Effective chronic disease management and prevention programmes should address multiple conditions rather than one condition. It is recommended that interventions to prevent and manage functional disability should be initiated as early as possible.

Our study observed that those with depressive symptoms were more likely to have ADL limitations and IADL limitations than those without symptoms, consistent with previous studies.^{16 21 22} Depression was indicated as both contributing to and resulting from limitations in ADL/IADL. Long-term depressive symptoms (eg, insomnia and loss of appetite, etc) can directly contribute to functional decline. The existing studies indicated that depression is associated with decreased physical activities, unhealthy behaviours engagement (eg, smoking, alcohol consumption, etc), lack of social participation and poor management of chronic conditions, significant factors associated with functional disabilities.⁴⁹ On the other hand, functional limitations force older people to rely more on others for basic activities and daily living, restricting their mobility and social interaction, which can, in turn, intensify or trigger depressive symptoms. Kong *et al* noted that depressive symptoms in older adults were linked to the development of ADL/IADL disabilities over 2 years.⁵⁰

These findings suggest that it is important to address depression prevention and treatment in interventions, which could reduce and delay the onset of functional disability in older people.

In this study, we found that drinking alcohol, receiving financial support and social participation were associated with functional disability. We found older people who did not drink alcohol in the past 6 months were more likely to have IADL limitations than those who did, consistent with other studies. Leon-Munoz *et al* found that moderate drinkers had a lower risk of IADL limitations compared with non-drinkers.⁵¹ Our finding noted that receiving financial support was a significant predictor of ADL limitation among older people. In contrast with our study, few studies that examined the relationship between receiving financial support and functional disability found no significant association between the two variables.²⁹ Our study indicated that a lack of social participation increased the odds of ADL limitations and IADL limitations, consistent with findings from previous studies.^{16 21 22} Participating in social activities and social groups helps older people maintain physical flexibility, reduce the risk of motor function and cognitive decline, enhance health literacy through access to health information and reduce the risk of mental problems.^{52–54} Social engagement also reinforces the value and contributions of older people within the community and increases their awareness of their social roles.^{55 56} These findings highlight the important role of social engagement in maintaining older people's functional health. Intervention programmes and policies should focus on encouraging the social participation of older people.

Finally, to the best of our knowledge, few studies have explored the presence of both ADL and IADL limitations among older people,^{36 38} and our study has been the first one in Vietnam to date. We noted that age, lower education levels, lower wealth status, currently not working, lack of social participation, receipt of financial support, a higher number of chronic diseases, poor self-rated health and depressive symptoms were all linked to an increased risk of both ADL and IADL disabilities. These factors are similar to those associated with individual ADL or IADL limitations. Our findings suggest that interventions to reduce ADL and IADL limitations may also be effective in mitigating combined disabilities.

This study has some limitations. First, the cross-sectional data and analysis did not allow us to interpret the causal relationship between functional disabilities and their determinants. Second, self-reported data might result in individual biases, which in turn could affect the study findings. Despite these limitations, however, the results from this study could contribute to the current literature and health policies on patterns and the associated factors of functional disabilities among older people in Vietnam.

Conclusion

This study found that the prevalence of functional disabilities among older people in Vietnam was high. The findings emphasised various factors associated with functional disabilities, including sociodemographics, health status,

health-related behaviours and social participation. Interventions and policies should address these multifactorial issues to prevent, delay and manage functional disabilities among older people. These interventions and policies should focus on improving health literacy, preventing and managing depression and chronic diseases and encouraging social engagement for older people.

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