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What are the illnesses associated with frailty in community-dwelling older adults: the Korean Frailty and Aging Cohort Study

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Background/Aims: Frailty is mainly due to an age-related decrease in the physiological reserves needed to maintain biological homeostasis, but it can also occur as a result of chronic diseases. The purpose of this study was to identify illnesses associated with frailty in Korean community-dwelling older adults.

Methods: This was a cross-sectional study that included 2,936 older adults aged between 70 and 84 years who had completed both interviews and physical function assessments for the Korean Frailty and Aging Cohort Study. Current illnesses diagnosed by physicians were included in the analysis. The definition of frailty was derived from the Fried frailty phenotype.

Results: The prevalence of hypertension, diabetes mellitus (DM), arthritis, osteoporosis, urinary incontinence, and lung disease (including asthma, chronic obstructive pulmonary disease, and chronic bronchitis) was higher in the frail group ($p < 0.05$). After adjusting for age, sex, physical activity, alcohol, smoking, education, and presence of a spouse, the odds ratios for DM and urinary incontinence in frailty were 1.51 (95% confidence interval [CI], 1.10 to 2.01; $p = 0.01$) and 1.88 (95% CI, 1.11 to 3.18; $p = 0.02$).

Conclusions: In Korean community-dwelling older adults, DM and urinary incontinence were associated with frailty after adjusting for various factors. In the future, the list of comorbid diseases that are appropriate for Korean population-specific frailty assessment should be inventoried.

Keywords: Frailty; Illness; Korea; Aged; Incontinence

INTRODUCTION

Frailty is described as a loss of the ability to cope with external stressors due to diminished functional reserves and is closely related to clinical adverse outcomes including increased dependence, hospital admission, and mortality, thereby causing increased requirements for social resources that serve the aging population [1-3]. Frailty is measured with the Fried operationalized frailty with a phenotype model, which includes involuntary weight loss, exhaustion, slow gait, poor handgrip strength, and sedentary behavior [2]. The Rockwood and Mitnitski group defined frailty using the Frailty Index, which measures cumulative deficits in the areas of physical, cognitive, psychological, and social health. Many chronic diseases are included in the Frailty Index [4].

Although frailty is understood to be promoted by physiological and biochemical changes due to aging together with malnutrition and a lack of physical activity, research has shown that frailty is highly associated

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with chronic diseases including hypertension, congestive heart failure (CHF), diabetes mellitus (DM), stroke, chronic lung disease, and cancer [5-8].

As a simple screening method for frailty, Morley et al. [9] proposed the Fatigue, Resistance, Ambulation, Illness, and Loss of Weight (FRAIL) questionnaire, with frailty being positive when five out of 11 designated illnesses are present (i.e., hypertension, DM, cancer [other than minor skin cancers], chronic lung disease, heart attack, CHF, angina, asthma, arthritis, stroke, and kidney disease). However, only 2.1% to 2.9% of community-dwelling older adults had five or more illnesses in previous studies per this questionnaire [10]. Also, asthma and chronic obstructive pulmonary disease (COPD) cannot be easily distinguished by laypersons. Indeed, studies showed that community-dwelling older adults in Korea are less aware of their illness status [11,12]. These observations suggest that the "illness items" used to identify high-risk frailty groups or to screen for frailty in community-dwelling older adults must be different.

Therefore, the aim of this study was to identify current illnesses related to frailty in community-dwelling older adults.

METHODS

Study population and protocol

This study was cross-sectional, and participants consisted of older adults aged 70 to 84 years who participated in the Korean Frailty and Aging Cohort Study (KFACS). The KFACS is a nationwide cohort study that began in 2016 for the purpose of identifying and preventing the factors that may contribute to frailty in community-dwelling older adults. The KFACS recruited 3,014 older adults for a baseline survey conducted in 2016 to 2017 at 10 centers, in a nationwide manner. Community residents with no plans to move in the next two years and with no difficulties in conversation were eligible for participation in this study [13]. Uncontrolled hypertension (> 180/100 mmHg), cerebrovascular accident or myocardial infarction (MI) within the past six months, and patients with active malignancy currently under therapeutic treatment were excluded. Of a total of 3,014 participants recruited during the first 2 years, 2,936 participants who completed the survey were included in the final analysis [2].

Definition of current illness

In the KFACS, questions about current illness are based on comorbidities according to Charlson's classification, which are categorized as either cardiovascular, musculoskeletal/connective tissue, pulmonary, gastrointestinal, endocrine, neurologic, genitourinary, cancer, viral, and mental/behavioral [14]. Additionally, urinary incontinence and osteoporosis, relatively common illnesses in older Koreans [15-17], were added to the list of diseases by researcher agreement. Current illness was confirmed through face-to-face questionnaires administered to the subjects that asked about diseases diagnosed by a doctor that were treated continuously for the previous 3 months.

Asthma, COPD, and chronic bronchitis were grouped collectively into the lung disease category, as laypersons, especially older adults, often cannot differentiate these diseases. Similarly, angina, CHF, and MI were grouped into the category of heart disease.

Definition of frailty

For a definition of frailty, we used the Fried phenotype, which comprises five components: unintended weight loss, poor grip strength, exhaustion, reduced walking speed, and low physical activity level [2,18]. For unintended weight loss, one point was given for unintended weight loss of 4.5 kg or more in the last year. Grip strength was measured using a hand dynamometer (Takei TKK 5401, Takei Scientific Instruments, Tokyo, Japan). In the first round of measurements, the grip strength of each hand was measured once. A second round of measurements was performed after three minutes, in which the grip strength of each hand was measured again in an alternate manner. The highest value out of the four measurements was used for the analysis. One point was given for a grip strength less than 26 kg in men or less than 18 kg in women [19]. To quantify exhaustion, one point was given when the participant's response to either one of the following statements from the Center for Epidemiological Studies-Depression (CES-D) scale was yes for three or more days in a week: "I felt that everything I did was an effort" or "I could not get going" [20]. Fried defined "slowness" in frailty phenotype as the slowest 20% of a cohort (by gender, height), but, for the sake of convenience [2], there are many studies that have suggested a single gait speed cutoff irrespective of gen-

der and height [21]. The lowest 20% cutoff values for gait speed in the six community cohorts in Japan were 1.11 m/sec for men and 1.05 m/sec for women [22]. Analysis of the baseline data for the first year of the KFACS revealed that the lower 20% values were less than 0.98 m/sec for men and 0.89 m/sec for women. Furthermore, it is known that measuring with a walking start yields a result that is almost 0.1 m/sec faster than that from a standing start [23]. The KFACS measured gait speed with a walking start [24]. Therefore, we set the cutoff for slow gait speed to be 1 m/sec, with a 4 m/sec walking speed as the usual gait speed. For low physical activity level, one point was given for physical activity happening below 494.65 kcal per week for men and below 283.50 kcal per week for women, according to the International Physical Activity Questionnaire. These values correspond to the lowest 20% of the gender-specific total energy consumed in a general population-based survey of older adults [25]. Participants with a total score of three points or more were classified as frail, those with one to two points were classified as prefrail, and those with zero points were classified as robust.

Covariates

Information on age, marital status, education level, drinking status, smoking status, physical activity level, number of medications, polypharmacy, and comorbidities were acquired through face-to-face interviews. Polypharmacy was defined as five or more prescribed medications per day.

Ethical approval

Our research plan was approved by the Institutional Review Board of Kyung Hee University, and written consent was obtained from each participant prior to commencement of the study (Approval no.: KMC IRB 2019-02-008).

Statistical methods

Participant characteristics are presented in the form of either mean ± standard deviation (SD) or number (%). We performed an analysis of covariance to verify the relationships between various values, diseases, and frail status as determined by the Fried frailty phenotype. The association between frailty and disease was assessed by regression analysis. Odds ratios (ORs) and their corresponding 95% confidence intervals (CIs) were calculated using logistic regression analysis to assess the impact of disease on frailty, after adjusting for age, sex, physical activities, smoking status, alcohol consumption, education, presence of a spouse, and polypharmacy. The SPSS version 23.0 software program (IBM Corp., Armonk, NY, USA) was used for statistical analysis, and statistical significance was determined as a p value less than 0.05.

RESULTS

General characteristics and illness of study participants

The mean age of the participants was 76 years, and 1,397 (47.6%) were male. Among the 2,936 participants, 1,324 (45.1%) were robust, 1,364 (46.5%) were prefrail, and 248 (8.4%) were frail based on the Fried frailty phenotype classification scheme. Age, sex, physical activity, body mass index, alcohol, smoking, physical activity, education, and presence of a spouse were significantly different between groups ($p < 0.001$) (Table 1).

The average number of comorbid diseases in our patient cohort was 2.4 ± 1.7. The most prevalent illness was hypertension (58.0%), followed by arthritis (26.8%), DM (22.2%), COPD (1.1%), CHF (0.7%), angina (6.2%), MI (2.2%), stroke (4.9%), and urinary incontinence (3.8%) (Supplementary Table 1).

Association between frailty and illness

Hypertension was observed in 53.9% of the robust group, 60.8% of the prefrail group, and 64.5% of the frail group ($p < 0.001$). The prevalence rates of DM ($p < 0.001$), asthma ($p = 0.033$), and arthritis ($p < 0.001$) were also significantly higher in the frail group.

The prevalence of MI, CHF, angina, COPD, and chronic bronchitis trended to be higher in the frail group, although without statistical significance. When asthma, COPD, and chronic bronchitis were grouped into a lung disease group, the prevalence of lung disease was significantly higher in the frail group. However, even when angina, CHF, and MI were grouped into a single heart disease category, the prevalence of heart disease was not significantly higher in the frail group ($p = 0.121$). The prevalence rates for osteoporosis and incontinence were 21.8% and 9.7% in the frail group, respectively, which

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Table 1. General characteristics of the study population according to Fried frailty phenotype (n = 2,936)

Characteristic	Robust (n = 1,324)	Pre-frail (n = 1,364)	Frail (n = 248)	*p* value
Age, yr	75.1 ± 3.6	76.4 ± 3.9	78.5 ± 3.7	< 0.001
Male sex	755 (57.0)	533 (40.5)	89 (35.9)	< 0.001
Physical activity, MET-min/wk[a]	59.3 ± 61.9	51.7 ± 65.4	21.5 ± 38.3	< 0.001
Body mass index, kg/m^2	24.5 ± 2.8	24.5 ± 3.2	24.1 ± 3.7	< 0.001
Alcohol drinker	290 (21.9)	206 (15.1)	39 (15.7)	< 0.001
Smoker	591 (44.6)	455 (33.4)	79 (31.9)	< 0.001
Education > 6 yr	1,181 (89.2)	1,013 (74.3)	128 (51.6)	< 0.001
Living with a spouse	984 (74.3)	855 (62.7)	134 (54.0)	< 0.001
Comorbidity, number	2.2 ± 1.7	2.4 ± 1.7	2.7 ± 1.4	< 0.001
Polypharmacy	220 (16.6)	361 (26.5)	107 (43.1)	< 0.001

Values are presented as mean ± SD or number (%). Polypharmacy was defined as the ingestion of five or more prescribed medications.
[a]Met-min/wk, activity amount by metabolic equivalents of task × minutes per week.

were significantly higher compared to the non-frail group ($p < 0.001$). The prevalence of stroke in the frail group was 5.6%, which was higher than the 3.9% in the robust group, although not statistically significantly ($p = 0.067$) (Table 2). Therefore, we considered hypertension, DM, arthritis, osteoporosis, urinary incontinence, lung disease, and stroke as illnesses associated with frailty in the community-dwelling ambulatory older population.

Logistic regression after adjusting for age and sex showed the ORs for DM, arthritis, and urinary incontinence for frailty were 1.53 (95% CI, 1.14 to 2.06), 1.36 (95% CI, 1.02 to 1.82), and 2.44 (95% CI, 1.48 to 4.11), respectively. After adjusting for age, sex, physical activity, alcohol, smoking, education, and presence of a spouse, the ORs for DM and urinary incontinence for frailty were 1.51 (95% CI, 1.10 to 2.01; $p = 0.01$) and 1.88 (95% CI, 1.11 to 3.18; $p = 0.02$), respectively (Table 3).

DISCUSSION

The results of this study revealed that current hypertension, DM, chronic lung disease (i.e., COPD, chronic bronchitis, emphysema, and asthma), arthritis, urinary incontinence, and osteoporosis were significantly related to frailty in Korean community-dwelling older adults.

Several studies have assessed the association of frailty with hypertension. Frailty is common in people with hypertension, as both conditions are associated with an unhealthy lifestyle including high BMI, large waist circumference, high smoking rate, and low physical activity rate [26-28]. In addition, cardiovascular diseases (CVDs) associated with hypertension can accelerate frailty, and frailty increases the risk of adverse outcomes in patients with CVD. This may be because frailty and CVD share pathobiology, particularly inflammatory biomarkers such as interleukin-6 and C-reactive protein. These factors, like immune cells and cytokines, promote atherosclerosis and damage arterial walls, affecting cellular aging and promoting frailty [29]. Through this process, frailty may manifest as clinical heart disease in response to stressors such as coronary ischemia or pressure or volume overload [30], suggesting relevance of frailty in terms of development, manifestation, and progression of heart failure. Several studies indicate that patients with CHF who were frail had high risks of mortality, hospitalization, and impaired quality of life [31-33]. In older patients with acute coronary syndromes, frailty is associated with a significant increase in mortality [34,35].

DM may increase the risk of both CVD and frailty [36]. DM often causes functional impairments in muscles and nerves, thus leading to a deterioration in physical function. Insulin resistance or insulin depletion may be an important factor in the development of frailty in diabetes patients, since insulin is well-known as an anabol-

Table 2. Associations between current illnesses and frailty status

Variable	Robust (n = 1,324)	Pre-frail (n = 1,364)	Frail (n = 248)	*p* value
Hypertension	713 (53.9)	829 (60.8)	160 (64.5)	< 0.001
Diabetes mellitus	244 (18.4)	333 (24.4)	74 (29.8)	< 0.001
Myocardial infarction	27 (2.0)	31 (2.3)	8 (3.2)	0.510
Congestive heart failure	6 (0.5)	10 (0.7)	4 (1.6)	0.119
Angina	75 (5.7)	86 (6.3)	21 (8.5)	0.238
Asthma	37 (2.8)	48 (3.5)	15 (6.0)	0.033
COPD	14 (1.1)	14 (1.0)	3 (1.2)	0.967
Chronic bronchitis	15 (1.1)	23 (1.7)	7 (2.8)	0.114
Emphysema	5 (0.4)	2 (0.1)	0	0.340
Arthritis	248 (18.7)	446 (32.7)	93 (37.5)	< 0.001
Osteoarthritis	241 (18.2)	414 (30.4)	88 (35.5)	< 0.001
Rheumatoid arthritis	11 (0.8)	43 (3.2)	6 (2.4)	< 0.001
Osteoporosis	147 (11.1)	275 (20.2)	54 (21.8)	< 0.001
Stroke	51 (3.9)	78 (5.7)	14 (5.6)	0.067
Depression	35 (2.6)	35 (2.6)	6 (2.4)	0.977
Urinary incontinence	29 (2.2)	60 (4.4)	24 (9.7)	< 0.001
Kidney disease[a]	14 (1.1)	25 (1.8)	7 (2.8)	0.068
Liver disease[b]	17 (1.3)	22 (1.6)	2 (0.8)	0.658
Heart disease[c]	104 (7.9)	124 (9.1)	29 (11.7)	0.121
Lung disease[d]	67 (5.1)	81 (5.9)	24 (9.7)	0.017

Values are presented as number (%).
[a]Kidney disease: includes chronic kidney disease, chronic renal failure, (excluding urinary stones).
[b]Liver disease: includes moderate or severe liver disease (concomitant esophageal varix, hepatic failure, toxic hepatitis, portal hypertension, and hepatorenal syndrome).
[c]Heart disease: includes myocardial infarction, angina, and congestive heart failure.
[d]Lung disease: includes asthma, chronic obstructive pulmonary disease (COPD), chronic bronchitis, and emphysema.

ic hormone in muscle [37].

Frailty is an independent risk factor for the development of COPD, and COPD can lead to frailty [38]. Frailty is increased in the presence of chronic respiratory disease overall, ranging from 5% to 65%. This variation is likely due to differences in the criteria used or settings studied. Physical inactivity due to breathlessness and increasing comorbidity burden in chronic respiratory disease patients increase the prevalence of frailty [39].

Chronic kidney disease (CKD) is known to be associated with frailty [5-8]. The inflammatory state related to CKD not only causes skeletal muscle resistance to insulin but is also associated with an increase in resting energy expenditure that may contribute to an imbalance in muscle protein homeostasis and, in turn, frailty syndrome [40,41].

Similarly, stroke is known to be related to frailty. Previous studies have shown that markers of physical function were consistently associated with survival and recovery after ischemic stroke. Inflammation, kidney function, and frailty also seemed to be determinants of survival and recovery after an ischemic stroke [42].

In accordance with previously reported associations between arthritis, osteoporosis and disability, we found relationship between these skeletal problems and frailty spectrum in this study [30-32]. Similarly, functional limitation and disability are strongly associated with frailty, which affects 4% to 17% of older adults in the community [2,43].

We found that urinary incontinence is correlated with

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Table 3. Logistic regression for frailty according to illnesses

Illnesses	Model 1[a]		Model 2[b]		Model 3[c]	
	OR (95% CI)	*p* value	OR (95% CI)	*p* value	OR (95% CI)	*p* value
Hypertension	1.35 (1.03–1.77)	0.030	1.11 (0.84–1.47)	0.472	1.03 (0.77–1.38)	0.829
Diabetes mellitus	1.56 (1.17–2.07)	0.003	1.53 (1.14–2.06)	0.005	1.51 (1.10–2.01)	0.010
Arthritis	1.72 (1.31–2.26)	< 0.001	1.36 (1.02–1.82)	0.037	1.26 (0.98–1.72)	0.139
Stroke	1.19 (0.67–2.09)	0.554	1.45 (0.80–2.60)	0.218	1.3 (0.70–2.43)	0.404
Kidney disease	1.97 (0.87–4.46)	0.102	1.82 (0.78–4.27)	0.167	2.01 (0.85–5.15)	0.110
Heart disease	1.43 (0.95–2.15)	0.088	1.39 (0.91–2.13)	0.131	1.33 (0.85–1.07)	0.215
Lung disease	1.84 (1.17–2.89)	0.008	1.53 (0.96–2.45)	0.077	1.58 (0.96–2.01)	0.072
Urinary incontinence	3.13 (1.95–5.01)	< 0.001	2.44 (1.48–4.02)	< 0.001	1.88 (1.11–3.18)	0.020
Osteoporosis	1.50 (1.09–2.06)	0.014	1.13 (0.80–1.60)	0.486	1.04 (0.72–0.48)	0.854

OR, odds ratio; CI, confidence interval.
[a]Model 1: not adjusted.
[b]Model 2: adjusted for age, sex.
[c]Model 3: adjusted for age, sex, physical activities, smoking, alcohol, education, spouse.

frailty. According to the results of previous studies, the frailty factors related to urinary incontinence were falls, poor grip strength, unintentional weight loss, and slow walking speed. Slow walking may contribute to diminished mobility and lower body strength that leads to pelvic floor muscle discoordination and urinary incontinence [44,45]. In addition, the presence of frailty indicates a diminished physiological homeostatic capacity that is strictly correlated with a diminished capacity to use energy and leads not only to sarcopenia and cognitive decline but also increased mortality [46-49].

In the Cardiovascular Health Study, only 9.7% of older adults with multiple morbidities were frail, while 67.7% of frail older adults had multiple morbidities [2]. Non-frail older adults had an average of 1.4 chronic diseases, whereas frail older adults had an average of 2.1 chronic diseases [50]. Therefore, identifying comorbid diseases might be a clinically relevant issue in approaching older adults with frailty.

However, community-dwelling older adults often have low awareness of their illnesses. In this study, participants indicated that their prevalence rates of COPD (1.1%), CHF (0.7%), and MI (2.2%) were lower than in previous studies [2,5,8,51]. These findings may be due to the participation of relatively healthy ambulatory people in the study or could have resulted from a low perception of these diseases in Korean older adults. Lee et al. [12] reported that the awareness of cardio-cerebrovascular disease was only 8.9% among the Korean population older than 70 years of age. The prevalence of COPD is reported to be approximately 11% to 17% in Korea, and only 1.7% of the national population is reported to receive treatments for COPD [52-54]. In the Chronic Disease Fact Book published in 2017, awareness and treatment rates for chronic diseases (especially DM, hypertension, dyslipidemia, asthma, and COPD) were very low in Koreans [55]. In addition, asthma and COPD frequently overlap, and angina, MI, and heart failure are not always easily differentiated [56].

Indeed, the results of the study showed a large gap between the level of awareness of illness and objective clinical data. For example, 453 (15.4%) patients in the study had an estimated glomerular filtration rate of less than 60 mL/min/1.73 m^2 according to the Modified Diet of Renal Disease equation, but only 46 participants (1.6%) answered that they had kidney disease. Also, while 76 participants (2.6%) reported they were diagnosed with depression, 651 participants (22.2%) were suspected to be depressive according to the short-form Geriatric Depression Scale using a cutoff value of six points or higher.

Chun et al. [57] demonstrated that a lack of access to information, knowledge, or health care services can lead to a lack of awareness or treatment of disease, and this may be more likely to occur in older people or in

rural area residents. In addition, socioeconomic status is closely related to a lower rate of health information acquisition and may affect the perception accuracy of chronic diseases [58,59].

This study has limitations in that we could not confirm the accuracy of disease history. This may lead to a difference between actual disease findings and the results of the interviewed self-report. However, in one study conducted in Japan, there was a high degree of agreement with the actual medical history of chronic diseases [60]. The average number of comorbidities was 2.4 in this community study as confirmed by the questionnaire, and the prevalence rates of hypertension and DM were 58.0% and 22.2%, respectively among the elderly in the community, also confirmed by the questionnaire. The average is not so different from the results of the 'Living profiles of older people surveys in Korea' reported in 2014, in which the older adults had an average of 2.6 chronic diseases and prevalence rates of hypertension and DM of 56.7% and 22.6%, respectively [17]. However, self-reported disease prevalence can be underestimated compared with actual disease prevalence. COPD is a representative example. Also, MI or stroke within six months, uncontrolled hypertension, and cancer under treatment were excluded from this study and, therefore, the results of CVD prevalence and cancer can be lower than those in the actual conditions.

Unlike many studies, heart and lung disease, and cancer were not significantly related to frailty in this study. The reason for this may be that we excluded those who had experienced a cerebrovascular accident or MI within the past six months or who had an active malignancy currently under therapeutic treatment, and this may explain why heart disease and cancer were not associated with frailty in this study. It may also result from the cross-sectional study design. In particular, many chronic diseases such as CHF, MI, and angina may cause different results in longitudinal studies because they cause functional declines and accelerate frailty. However, the purpose of this study was to investigate illnesses associated with frailty and, based on the results, we can reasonably suspect the presence of frailty in older adults with theses illnesses. Further follow-up studies on the effects of diseases on frailty will be needed in the near future.

Nevertheless, the strength of this study is that the sample size was comparatively large (2,936 participants) and the participants represent typical community-dwelling people aged 70 to 84 years in Korea.

In conclusion, hypertension, DM, chronic lung disease (COPD, chronic bronchitis, emphysema, and asthma), arthritis, urinary incontinence, and osteoporosis were significantly related to frailty in Korean community-dwelling older adults. In particular, DM, and urinary incontinence were significantly associated with frailty even after adjusting for various factors.

KEY MESSAGE

1. Current illness was associated with a frailty phenotype in Korean community-dwelling older adults.
2. Diabetes mellitus and urinary incontinence were associated with frailty in Korean community-dwelling older adults.

Conflict of interest

No potential conflict of interest relevant to this article was reported.

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Supplementary Table 1. General characteristics of study population

Characteristic	Value
Age, yr	76.0 ± 3.9
Male sex	1,397 (47.6)
Body mass index, kg/m^2	24.5 ± 3
Alcohol, yes	535 (18.2)
Smoking, yes	1,792 (61)
Physical activity, kcal, mean	3,345.5 ± 4,096.3
Education, > 6 yr	2,322 (79.1)
Spouse, yes	1,973 (67.3)
Polypharmacy	688 (23.4)
No. of chronic diseases	2.4 ± 1.7
Current illness	
Hypertension	1,702 (58.0)
Diabetes	651 (22.2)
Cancer	46 (1.6)
Myocardial infarction	66 (2.2)
Congestive heart failure	20 (0.7)
Angina	182 (6.2)
Asthma	100 (3.4)
Chronic obstructive pulmonary disease	31 (1.1)
Chronic bronchitis	45 (1.5)
Emphysema	7 (0.2)
Arthritis	787 (26.8)
Osteoarthritis	743 (25.3)
Rheumatoid arthritis	60 (2.0)
Stroke	143 (4.9)
Kidney disease[a]	46 (1.6)
Urinary incontinence	113 (3.8)
Heart disease[b]	257 (8.8)
Lung disease[c]	172 (5.9)
Osteoporosis	476 (16.2)
Liver disease[d]	42 (1.4)
Depression	76 (2.6)
eGFR < 60 mL/min/1.73 m^2	453 (15.4)
Geriatric Depression Scale (short-form) ≥ 6	651 (22.2)
Frailty phenotype	0.89 ± 1.01
Robust	1,324 (45.1)
Pre-frail	1,364 (46.5)
Frail	248 (8.4)

Values are presented as mean ± SD or number (%).
eGFR, estimated glomerular filtration rate.
[a]Kidney disease: includes chronic kidney disease, chronic renal failure, (excluding urinary stones).
[b]Heart disease: includes myocardial infarction, angina, and congestive heart failure.
[c]Lung disease: includes asthma, chronic obstructive pulmonary disease, chronic bronchitis, and emphysema.
[d]Liver disease: includes moderate or severe liver disease (concomitant esophageal varix, hepatic failure, toxic hepatitis, portal hypertension, and hepatorenal syndrome).

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