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Prevalence of Frailty Among Elders in Rural Lebanon

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Abstract

Objective: The prevalence of frailty among elders living in rural Lebanon is unknown. This study aimed to determine the prevalence of frailty in rural Lebanon.

Methods: Frailty prevalence among 340 elders recruited from towns and villages in one main region of Lebanon was determined using a cross-sectional design approach based on Fried criteria. Socio-demographics, self-rated health, physical function and comorbidities were ascertained. The mean age was 76.2±7.6 yrs. Most of the male participants were married (88.6%), whereas 50% of women were widowed. 63.3 % of seniors rated their health as good to excellent while 36.7 % rated it fair to poor. 84.7% of the elders reported the presence of chronic illness: musculoskeletal diseases (49.4%), cardiac diseases (42.9%), and diabetes mellitus (32.4%). The majority were either frail (164, 48.2%) or pre-frail (131, 38.5%), and only 45 (13.3%) were found to be robust. Frail elders were more likely to be older (78.2 ± 7.4 years), female (72%) or married. They were more likely to be uneducated, never performed any work prior to retirement (57.9%), and currently not working (94.5%). Frail participants were more likely to lack a monthly income, and totally dependent on their family members (57.3%).

Conclusion: Frailty is highly prevalent among older adults living in rural Lebanon and is associated with advancing age, the absence of a regular income, financial dependency and a worsening health status. Strategies to improve health status, nutrition, exercise and socioeconomic status are needed in order to reduce the prevalence of frailty.

Keywords: Lebanon; Shouf region; Frailty; Prevalence

Introduction

Like many developing countries, Lebanon is reporting similar demographic changes and the proportion of elders is expected to reach 10.2% of the overall population by 2025 [1] with three quarters of them suffering from at least one comorbidity [2]. With increasing comorbidities, frailty is more likely to occur and is associated with a high prevalence of short-term adverse health-related outcomes [3] such as poor functional and cognitive status, falls, dependency, disability [4] hospitalization [5] institutionalization, and higher mortality [4,6]. The prevalence of frailty worldwide is estimated to range from 4 to 59% depending on the operationalization framework. [4] Governments are facing a rapidly increasing challenge of providing health care to their frail population; thus, early detection and prevention of progression from robust to prefrail or frail status is of paramount importance in improving the quality of life and health care utilization. With respect to Lebanon, scant data on the prevalence of frailty among the older segment of its population could be found. Boulos et al. [7] reported a 36.4% prevalence rate of frailty and 30.4% of prefrailty among a cohort of Lebanese elders being screened for malnutrition utilizing the SOF index [7]. The aim of this paper is to report on the prevalence of Frailty in rural Lebanon by utilizing the gold standard criteria of Fried6 and to identify risk factors that correlate with frailty.

Study Design

A cross-sectional study was conducted among rural community-dwelling elders residing in one of the eight Mohafazats in Lebanon (the Shouf region). The sample size was calculated using an estimated population size of 166140, 8% of whom were reported to be 65 years and older. Using an estimated frailty prevalence rate of 36.4% and a 95% confidence level, a sample size of at least 340 people was determined. Taking into consideration

that 10% of the elders might refuse to participate in the study, a total of 385 elders were recruited from all the towns and villages of the Shouf region based on the proportionality of elders to the total population. Forty-five elders refused to participate in the study, yielding a sample size of 340 older adults who consented to participate in the study

Procedures of the study

Each town and village in the Shouf region was visited by one of the investigators. Participants were randomly selected to participate in the study after the goals of the study were explained in detail. A multicomponent questionnaire was conducted by two trained researchers. Functional assessment was done through measurements of activities of daily living. Estimates of health status was done using a self-rated health status questionnaire (SRH), based on a 5-item scale (excellent, very good, good, fair and poor) [8]. Frailty was then assessed using the golden Fried criteria (weight loss, exhaustion, low physical activity, slowness and weakness). A score of 0 or 1 was given to each component according to their cutoff as defined by Fried et al.6 Based on the previous criteria, the participants were then divided into three stages: non-frail (score 0), pre-frail (score 1-2) and frail (score 3-5). The study was approved by the Ethics committee at Ain Wazein Medical Village.

Statistical Analysis

Statistical analysis was performed with SPSS version 16.0 statistic software package. Descriptive statistics were then used to describe demographic and health characteristics, as well as lifestyles. Outliers were identified and removed from further analysis in order to provide a better picture of the study at hand. Relationships between frailty stages and various independent variables were conducted.

Results

The average age of the participants was 76.2 ± 7.6 years (65-97), with 38.9% being males. Of the participants, 36.8% were between the ages of 75 and 84 years, and 17.9% were older than 85 years (Table 1). Most of the males (88.6%) were married whereas 50% of the females were widowers at the time of the study. About 19.1% of the elders lived alone, with women being three times more likely than men to be living alone. The majority had low education level, 41.8% had less than 8 years of education and 39.1% were illiterate. 12.6% (of whom 28% were males) were still working with a monthly income of 500$ or less and 51.4% had monthly incomes between 500-1000$. Nearly half of the participants (47.9%) did not have any monthly income and were totally dependent on family members or relatives. The mean number of adults living in the same household was 1.8. Some elders were taken care off by housekeepers.

Almost 50% of the studied population rated their health as good, 36.8% as poor and only 12% perceived their health to be in a very good or excellent status (Table 2).

Table 1: Socio-demographic Characteristics

Variable (%)	Total (n=340)	Male n (%)	Female n (%)	P-value
Age in yrs. (mean± SD)	76.2 ± 7.7±	77.9 ± 7.8	75.2 ± 7.4	**P<0.05**
Age Group				
Young old	45.3	36.4	51	**P<0.05**
Middle old	36.8	37.1	36.5	
Old old	17.9	26.5	12.5	
Marital Status				
Single/divorced	5.6	0.8	8.7	**P<0.05**
Married	59.7	88.6	41.3	
Widowed	34.7	10.6	50	
Living Condition				
Living alone	19.1	9.1	25.5	**P<0.05**
Living with others	80.9	90.9	74.5	
Level of Education				
Illiterate	39.1	31.1	44.2	**P<0.05**
8 yrs. or less	41.8	46.2	38.9	
9-12 yrs.	12.6	15.2	11.1	
13-15 yrs.	5	6.1	4.3	

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University	1.5	1.5	1.4	
Currently working				
Yes	12.6	28	2.9	**P<0.05**
No	87.4	72	97.1	
Current monthly income				
Yes	42.9	56.8	34.1	**P<0.05**
No	57.1	43.2	65.9	
Approximate Monthly Income ($)				
<500	40.4	40	40.8	0.82
500-1000	51.4	53.3	49.3	
1001-2000	8.1	6.7	9.9	

Table 2: Medical conditions and self-rated health.

Variable (%)	Total (n=340)	Male n (%)	Female n (%)	P-value
Current health Status				**P<0.05**
Excellent	3.2	5.3	1.9	
Very Good	9.5	16.7	4.8	
Good	50.6	54.5	48.1	
Fair	32.9	20.5	40.9	
Poor	3.8	3	4.3	
Musculoskeletal and joint Disease	49.4	18.1	69.2	**P<0.05**
Cardiac Disease	42.9	45.5	41.3	0.458
Diabetes	32.4	23.5	38	**P<0.05**
Lungs Disease	17.4	15.2	18.8	0.146
Thyroid Disease	12.6	5.3	17.3	**P<0.05**
CVA	7.6	13.6	3.8	**P<0.05**
Cancer	2.6	1.5	3.4	0.529
Parkinson Disease	1.5	1.5	1.4	0.695
Dementia	1.5	2.3	1	0.097
Kidney Disease	4.1	3.8	4.3	0.285
Liver Disease	0.9	0	1.4	

Chronic illness was reported by 84.7% of the studied sample, 42.9% suffered from cardiac disease, such as congestive heart failure, valvopathy, or coronary syndrome, 32.4% had diabetes mellitus, 26.8% suffered from joint and lumbosacral disease, including osteoarthritis, 22.6% reported musculoskeletal disease like osteoporosis, 17.4% suffered from lung problems, 12.6% had thyroid disease, 7.6% reported cerebrovascular accidents and only 2.6% had cancer. The mean number of medication used was 4.9+3.2 drugs/day. Most elders (64.1%) reported dental problems with 25% having chewing problems and 4.7% noted swallowing difficulties. The studied population was mostly sedentary, with only 13.2% reported regular physical exercise, 90% were nonsmokers, and 86.8% never consumed alcohol.

Of the participants, few elders (13.3%) were classified as robust based on the Fried criteria (Table 3). The majority were labeled as either frail (48.2%), or prefrail 38.5%. Frailty varied between the genders; more males (24.2%) were classified as robust compared to females (6.2%, p value < 0.05), whereas more females tended to be frail (56.8%) as compared to males (34.8%, p <0.05).

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Table 3: Frailty subtypes.

Frailty* Assessment	Frailty Components	Male n =132 (%)	Female n=208 (%)	Total n=340 (%)
Robust	**0**	32 (24.2)	13(6.2)	45 (13.3)
Pre- frail	**1**	19 (14.4)	15 (7.2)	34 (10)
	2	35 (26.5)	62 (29.8)	97 (28.5)
Frail	**3**	28 (21.2)	57 (27.4)	85 (25)
	4	14 (10.6)	49 (23.6)	63 (18.5)
	5	4 (3.1)	12 (5.8)	16 (4.7)

*P <0.05.

Noteworthy is that frail adults tended to be older (78.2 ± 7.4 years), more likely to of female gender (72%), married (51.2%), with children (5.1 ± 2.3 living children), and not well educated, as compared with pre-frail and non-frail people (Table 4). A significant proportion (57.9%) have never performed any work prior to retirement and 94.5% are currently not working. However, 23.8% were fortunate to have a monthly stipend. Overall, the majority were totally dependent on their family members (57.3%) for support.

Table 4: Characteristics of study sample according to frailty type.

Variable (%)	Robust (n=45)	Pre-frail (n=131)	Frail (n=164)	p-value
Age Mean (SD)	72.7 (7.1)	75.1 (7.6)	78.2 (7.4)	**P <0.05**
Young Old	68.9	50.4	34.8	**P <0.05**
Middle Old	22.2	35.1	42.1	
Old-Old	8.9	14.5	23.2	
Marital Status				
Single /divorced	4.4	6.1	5.5	**P <0.05**
Married	75.6	64.9	51.2	
Widowed	20	29	43.3	
Living Condition				
Living Alone	22.2	16	20.7	0.544
Living with others	77.8	84	79.3	
Level of Education				
Illiterate	24.4	29	51.2	**P <0.05**
8 year or less of Education (Primary School)	46.7	45.8	37.2	
8-12y of education (Middle School)	17.8	16	8.5	
12-15y of education (High School)	8.9	6.1	3	
University	2.2	3.1	0	
Currently Working				
Yes	31.1	15.3	5.5	**P <0.05**
No	68.9	84.7	94.5	
Current Monthly Income				
Yes	73.3	45	32.9	**P <0.05**
No	26.7	55	67.1	

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Source of Income				
Current working	17.8	9.9	5.5	**P <0.05**
Stipend	42.2	25.2	23.8	
Using own saving	15.6	13.7	9.1	
More than one source (Partially Dependent)	2.2	6.2	4.2	
Totally dependent on Family member	22.2	45	57.3	
Old Occupation				
Without Work (including Household)	22.2	48.9	57.9	**P <0.05**
Agriculture	15.6	6.9	8.5	
Military	24.4	9.2	5.5	
Employee or Manager	22.2	20.6	7.9	
Self-employed Heavy Activity	11.1	4.6	7.3	
Self-employed Light Activity	4.4	9.9	12.8	

Multiple regression analyses were conducted to examine the relationship with the variables under study. In conclusion, the resulting significant regression equation containing: self-rated health, age, gender and educational level was found to explain 33.0% of the total variation in frailty.

Discussion

The studied population is a representative sample of older adults from rural Lebanon and is comparable to other older groups reported by Sibai et al. [9] It had a predominance of female participants and a higher number of widowed females. As in the national pan Arab project for family health (PAPFAM) study, older women tended to be more often illiterate, financially dependent on their family members and more often living alone. Noteworthy is that 28% of older men continue to work after the official age of retirement, while only 2.9% of older women do so. Similar percentages were reported in the PAPFAM survey [2].

Generally speaking, women considered their health as being fair or poor more so than men and they quite often reported chronic pain. Similar findings were reported by Chemaitelly et al. [8] in underprivileged communities in Beirut9 and by Wranker et al. [10] in Sweden.

A high prevalence of frailty, 48.2%, was found in this sample of community-dwelling older Lebanese citizens in the Shouf area, which is slightly higher than that reported by Boulos et al. from another cohort in Lebanon, (36.4%) [8]. However, it is similar to that reported by Al. Kuwaiti et al about older adults in the United Arab Emirates (47%) [11]. Although this study was concerned with frailty prevalence rates in rural areas, the reported rates are applicable to urban areas as well, as noted by Sabah et al, who indicated that major differences between urban and rural settings have decreased in severity due to internal and external displacements of the Lebanese population and to the rapid evolution of communication services in Lebanon [12]. Similar high rates have also been reported from other developing nations such as Latin America (30%-42.6%) [13]. In contrast, developed European countries reported lower frailty rates ranging from 27.3% in Spain, 23% in Italy, 12.1% in Germany, and the lowest rate (11.3%) was reported from the Netherlands. These discrepancies between the different countries, may be related to ethnic differences between the studied countries, maximum achieved muscle mass for the population studied, nutritional and exercise habits, differences in health care delivery and chronic illnesses, psychosocial wellbeing, or case finding techniques.

Older Lebanese women living in rural areas seemed to be the most disadvantaged group using objective indicators such as number of drugs taken, hospitalization frequency, length of stay and falls during the preceding year. Likewise, women considered their health as being fair / poor more so than men and very often reported chronic pain. These findings compare well with the results of studies about SRH and pain conducted by Chemaitelly et al. [8] in underprivileged communities in Beirut [10] and by Wranker et al. [10] in Sweden [12]. Compared to males, older women were more likely to be widowed, and were less likely to be financial independent. This may translate into lower support for women in their later years, the need for more assistance in their daily activities, a higher propensity for nutritional deficiencies, and loss of companionship which could explain the gender disparity in terms of frailty prevalence between the two groups.

This study points to the need for practicing physicians to be cognizant of the high prevalence of frailty among older adults, especially among older poor widowed women. These patients

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have high morbidity and mortality rates, more falls and pressure ulcer development [5,6,14]. Healthcare strategies are needed to help physicians better identify this syndrome, and to institute rehabilitative measures to prevent the development of frailty, or to promote its reversal among older adults. Such efforts may translate into better quality of life and hopefully a meaningful longevity. Such targets could be addressed in future research studies.

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