ORIGINAL RESEARCH

Evidence of a higher burden of multimorbidity among female patients in Albania

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Abstract

Aim: The purpose of this study was to assess sex-differences in the prevalence of multimorbidity and the number of comorbid conditions among hospitalized patients in Tirana, the capital of Albania, a transitional country in Southeastern Europe.

Methods: The current study was a case-series, which was carried out in the period August 2013–June 2014. Overall, 974 patients were enrolled (46.6% men with a mean age of 61.2±13.8 years, and 53.4% women with a mean age of 61.3±13.1 years), who were admitted at the Service of Internal Medicine and Hypertension, University Hospital Center "Mother Teresa" in Tirana. A comprehensive clinical profile was assembled for all patients in addition to socio-demographic data and information on lifestyle factors. General linear model was used to assess the association between multimorbidity (total number of diseases/conditions) and sex of the patients, controlling for socio-demographic characteristics and lifestyle factors.

Results: In crude (unadjusted) models and in age-adjusted models, female patients had a higher mean value of diseases/conditions compared to males (for both: 4.4 vs. 4.1, respectively, P=0.03). Likewise, upon adjustment for all socio-demographic characteristics, the mean number of disease/conditions was significantly higher in female patients compared to their male counterparts (4.2 vs. 3.9, respectively; P=0.03). After additional adjustment for lifestyle factors, the association between sex and number diseases/conditions was not significant anymore (p=0.16), notwithstanding the evidence of a higher mean value in women compared to men (4.2 vs. 4.0).

Conclusion: Current evidence from transitional Albania suggests a higher burden of multimorbidity among female patients compared to males, which is a cause of concern. These findings should raise the awareness of health professionals and particularly policymakers and decision-makers in order to address gender issues and inequity gaps in health outcomes and burden of disease of the Albanian population.

Keywords: Albania, female patients, internal medicine, male patients, multimorbidity, patients, sex.

Conflicts of interest: None.

Introduction

The burden of non-communicable diseases and the burden of multimorbidity has increased in Albania in the past few decades (1,2), a process which is also in line with an increase in life expectancy and continuous aging of the Albanian population (3). Regarding the major causes of mortality, the ischemic heart disease was the top cause of death in the Albanian population in 2016, followed by cerebrovascular disease and lung cancer (1). Notably, only during the past decade, there has been an increase of about 19% in the mortality rate attributable to the ischemic heart disease and/or lung cancer, and an increase of about 10% due to cerebrovascular disease in Albania (1). In addition, in the past decade, there has been an increase of about 20% of other cardiovascular diseases, and an increase of 11% of the chronic obstructive pulmonary disease (1). It is assumed that a large share of especially the older Albanian population suffer from multimorbidity and comorbidty (2,4). In terms of premature mortality, in the past decade, there has been a considerable increase (about 49%) in the mortality rate due to Alzheimer disease in Albania, followed by lung cancer (11%) and ischemic heart disease (6%). Also, the burden of cerebrovascular disease in Albania has increased by about 41% in the past decade (1). The five main risk factors contributing to the overall burden of disease (death and disability combined) in Albania in 2016 consisted of high blood pressure, dietary risks, tobacco smoking, high body mass index, and high total cholesterol level (1).

Multimorbidity is conventionally considered as the presence of several diseases or conditions in a single individual or patient (5). In the contemporary clinical practice there are other important constructs including comorbidity (presence of other diseases/conditions along with a main pathology), morbidity burden (referring to the overall impact of various disease or conditions in a single patient), or disease complexity (referring not only to the presence of various disease/conditions in a single patient, but also to the severity and duration of each condition) (5). In all cases though, these classifications are largely based on considerations from medical doctors and other health professionals, but not necessarily on self-reports, or feelings and perceptions of patients suffering from several diseases (either in the framework of multimorbidity or comorbidity situations) (6).

Notwithstanding the lack of proper evidence and scientific documentation, the burden of multimorbidity is high in the Albanian adult population, especially in the elderly people category (4). Anecdotic evidence suggests a higher burden of multimorbidity among older women than in men, which may be partly explained by a higher life expectancy among Albanian females compared to their male counterparts (3,4). Yet, to date, scientific reports about the burden and impact of multimorbidity and comorbidity in Albanian patients are scant.

In this framework, the aim of the current study was to assess sex-differences in the prevalence of multimorbidity and the number of comorbid conditions among hospitalized patients in Tirana, the capital of Albania, a transitional country in Southeastern Europe.

Methods

The current study consisted of a case-series design. This study was carried out between August 2013 and June 2014. During this period of time, there were recruited 974 patients admitted at the Service of Internal Medicine and Hypertension, University Hospital Center "Mother Teresa" in Tirana, which is the capital city of Albania. Of the 974 patients recruited in this study, 46.6% were men and 53.4% were women.

For all the patients included in this study, it was performed a whole range of clinical examinations including assessment of the main disease, presence of comorbid conditions, hematological parameters, lipid profile, as well as other clinical examinations.

In addition, a structured questionnaire was administered to all the patients aiming at collecting useful information about their socio-demographic characteristics and lifestyle factors. The socio-demographic information included age (which was dichotomized in the analysis into: ≤60 years vs. ≥61 years), current place of residence (which was also dichotomized in the analysis into: Tirana vs. other districts of Albania) and current employment status (trichotomized in the analysis into: employed, unemployed, retired). On the other hand, the lifestyle (behavioral) factors consisted of tobacco smoking and alcohol consumption (in the analysis, these two variables were dichotomized into: yes vs. no).

Fisher's exact test was used to assess the differences between male and female patients regarding the prevalence of multimorbidity (ranging from presence of at least two diseases/conditions up to ten diseases/conditions).

Spearman's correlation coefficient (rho) was used to assess the linear association between the number of disease/conditions and age of the patients, number of their hospitalizations, and the length (duration) for the current hospitalization episode.

Conversely, general linear model was employed to assess the association between multimorbidity (total number of diseases/conditions) and sex of the patients included in this study. Initially, crude (unadjusted) mean values, their 95% confidence intervals (95%CIs) and p-values were calculated. Next, general linear models were adjusted for the age of study participants. Subsequently, general linear models were adjusted for all socio-demographic characteristics of the patients (age, current place of residence and current employment status). Finally, general linear models were additionally adjusted for lifestyle/behavioral factors (smoking and alcohol consumption). Multivariable-adjusted mean values, their 95%CIs and p-values were calculated.

All statistical analyses were performed with the Statistical Package for Social Sciences (SPSS for windows, version 19.0).

Results

Overall, mean age among patients included in this study was 61.3±13.1 years (median age: 62 years; interquartile range: 71-53=18 years). Mean age was similar in male and female patients. Around 54% of the patients were ≥61 years old; about 38% of participants were residing in Tirana; and about 46% of the patients were currently employed. Overall, the prevalence of smoking was 16%, whereas the prevalence of alcohol consumption was 9% (data not shown in the tables).

Table 1 presents the distribution of multimorbidity (total number of diseases) by sex of the patients included in this study. Overall, about 96% of the patients had at least two diseases/conditions; 89% had at least three conditions; 76% had at least four conditions; 60% had at least five conditions; 42% had at least six conditions; 28% had at least seven conditions; 18% had at least eight conditions; 12% had at least nine conditions; and about 6% of the patients had at least ten diseases (conditions).

As for sex-differences, there was a significant difference only for the presence of at least five or six conditions (P=0.04 and P<0.01, respectively) with men exhibiting a higher prevalence than women. Conversely, there were no sex-differences for the other combinations. As a matter of fact, looking at the two extremes, the prevalence of at least two diseases/conditions (95% in men 96% in women) and the prevalence of at least ten diseases/conditions (5.5% in men 5.6% in women) were very similar in both sexes (Table 1).

Table 1. Distribution of patients according to the number of diseases and sex

Number of diseases	Total (N=974)	Men (N=454)	Women (N=520)	P[†]
Two diseases:				
No	41 (4.2)[*]	21 (4.6)	20 (3.8)	0.632
Yes	933 (95.8)	433 (95.4)	500 (96.2)	
Three diseases:				
No	112 (11.5)	51 (11.2)	61 (11.7)	0.841
Yes	862 (88.5)	403 (88.8)	459 (88.3)	
Four diseases:				
No	237 (24.3)	105 (23.1)	132 (25.4)	0.454
Yes	737 (75.7)	349 (76.9)	388 (74.6)	
Five diseases:				
No	388 (39.8)	165 (36.3)	223 (42.9)	0.042
Yes	586 (60.2)	289 (63.7)	297 (57.1)	
Six diseases:				
No	568 (58.3)	237 (52.2)	331 (63.7)	<0.001
Yes	406 (41.7)	217 (47.8)	189 (36.3)	
Seven diseases:				
No	698 (71.7)	312 (68.7)	386 (74.2)	0.064
Yes	276 (28.3)	142 (31.3)	134 (25.8)	
Eight diseases:				
No	795 (81.6)	360 (79.3)	435 (83.7)	0.082
Yes	179 (18.4)	94 (20.7)	85 (16.3)	
Nine diseases:				
No	861 (88.4)	395 (87.0)	466 (89.6)	0.229
Yes	113 (11.6)	59 (13.0)	54 (10.4)	
Ten diseases:				
No	920 (94.5)	429 (94.5)	491 (94.4)	0.998
Yes	54 (5.5)	25 (5.5)	29 (5.6)	

[*] Absolute numbers and column percentages (in parentheses).

[†] P-values from Fisher's exact test.

There was evidence of a significant correlation between the number diseases/conditions and age of the patients (Spearman's rho=0.35, P<0.01), number hospitalizations (rho=0.15, P<0.01) and length of stay for the current hospitalization episode (rho=0.21, P<0.01) [data not shown].

Table 2 presents the association between multimorbidity (number of diseases/conditions) with sex of the patients included in the study. In crude (unadjusted) models (model 1), there was evidence of a significant relationship with sex, with women displaying a higher mean value of diseases/conditions compared to men (about 4.4 vs. 4.1, P=0.03). Similar findings were evident after adjustment for age of the patients (model 2): mean value of diseases/conditions was about 4.4 in women, whereas in men it was 4.1 (P=0.03). Likewise, upon adjustment for all socio-demographic characteristics (model 3), the mean number of diseases/conditions was significantly higher in female patients compared to their male counterparts (4.2 vs. 3.9, respectively; P=0.03). However, after additional adjustment for lifestyle/behavioral factors (smoking and alcohol consumption) of study participants, the association between sex and number diseases/conditions was not significant anymore

(p=0.16), notwithstanding the evidence of a higher mean value in women compared to men (4.2 vs. 4.0) [Table 2, model 4].

Table 2. Association of multimorbidity with sex of the patients; mean values, 95% confidence intervals (95%CIs) and p-values from the general linear models

MODEL	Men		Women		P
	Mean	95%CI	Mean	95%CI	
Model 1[*]	4.11	3.91-4.30	4.43	4.22-4.64	0.028
Model 2[†]	4.06	3.87-4.25	4.37	4.16-4.57	0.029
Model 3[‡]	3.89	3.62-4.17	4.20	3.91-4.49	0.031
Model 4[§]	4.01	3.63-4.37	4.21	3.88-4.56	0.158

[*] Crude (unadjusted) models.

[†] Age-adjusted models.

[‡] Adjusted for all socio-demographic characteristics (age, place of residence and employment status).

[§] Adjusted also for lifestyle/behavioral factors (smoking and alcohol consumption).

Discussion

The main findings of this study consist of a significantly higher mean value of diseases among Albania female patients compared to their male counterparts, e finding which was evident irrespective of several demographic and socio-economic characteristics. Hence, female patients appeared to experience a higher burden of multimorbidity, which is a cause of concern pointing to a significant gender issue and health inequity gap in the context of transitional Albania. Nonetheless, the sex-difference in the burden of multimorbidity disappeared upon additional adjustment for lifestyle/behavioral factors including tobacco smoking and alcohol consumption. On the face of it, smoking and harmful alcohol consumption account for a considerable share of multimorbidity and comorbidity in Albanian males, which goes in line with a previous report (4).

Currently, at a global scale, there is a great interest from health professionals, policymakers and decision-makers concerning the impact of comorbidity and multimorbidity on a whole range of clinical outcomes including mortality, health-related quality of life, physical functioning, and quality of health care services (5,7-9). As a matter of fact, healthcare systems worldwide are currently dealing with an increasing demand for provision of effective and efficient medical services for patients with evidence of multimorbidity and comorbidity (8).

The burden of multimorbidity has a negative impact on the health status of the populations worldwide, but it also bears an enormous cost for the health care sectors and societies at large (8,10,11). Indeed, patients with several diseases/conditions experience not only a higher mortality rate (12), but also require more frequent hospitalization episodes with a longer duration (length of stay) for each hospitalization episode (12,13).

The current study may suffer from several drawbacks which may have stemmed from patients' recruitment and the information gathering. As for study population representativeness, this study involved all consecutive hospitalized patients with evidence of multimorbidity over a certain period of time. All patients enrolled in the current study were admitted at the Service of Internal Medicine and Hypertension of the University Hospital Center "Mother Teresa" in Tirana which, to date, is the only tertiary care facility in Albania. Therefore, it is likely that most of the adult patients with evidence of multimorbidity are

hospitalized in this very University Hospital Center in Tirana, which is specialized and in title of providing this type of qualified medical services. From this point of view, the sample of patients included in this study may be largely representative of the overall Albanian adult patients with presence of multimorbidity requiring hospitalization. Nonetheless, the sample of patients involved is representative only for the duration of the recruitment process that is the period of time over which this study was carried out. In addition, the diagnosis of different diseases and various conditions was based on contemporary guidelines and clinical protocols which consist of recent examination techniques and procedures employed also in other research and medical centers in different countries worldwide. Yet, the information about demographic and socioeconomic characteristics, as well as about behavioral factors was collected through interviews and, therefore, it is not possible to completely exclude the possibility of information bias for these factors which were based on patients' self-reports. Notwithstanding these considerations, there is no evidence supporting a differential reporting of socio-demographic characteristics and lifestyle factors between male and female patients with presence of multimorbidity.

Comparison of morbidity trends including multimorbidity and comorbidity during the past decades in Albania is very important because it provides valuable information for health professionals, and especially for policymakers and decision-makers who are involved particularly in the fight against non-communicable diseases, which are currently rising in Albania, likewise the situation evidenced in most of the countries of the European Region (14).

In conclusion, this study informs about the sex-differences of multimorbidity among hospitalized patients in Tirana, the Albanian capital. Our findings demonstrate that the burden of multimorbidity is higher in women than in men in this transitional society, which is a cause of concern. Therefore, these findings should raise the awareness of health professionals and particularly policymakers and decision-makers in order to address gender issues and inequity gaps in health outcomes and the burden of disease in the Albanian population.

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