

Original Article

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Author for correspondence:

Huda Abu-Saad Huijjer, R.N., Ph.D., F.E.A.N.S., F.A.A.N., Hariri School of Nursing, American University of Beirut, Lebanon.
E-mail: huda.huijjer@aub.edu.lb

Huda Abu-Saad Huijjer, R.N., Ph.D., F.E.A.N.S., F.A.A.N.¹, Souha Fares, Ph.D.¹,
Rachele Bejjani, R.N., M.S.N.¹, Suzanne Dhaini, R.N., Ph.D.¹,
Samar Nouredine, R.N., Ph.D., F.A.H.A., F.A.A.N.¹ and Husam Ghusn, M.D.^{2,3}

¹Hariri School of Nursing, American University of Beirut, Beirut, Lebanon; ²Medicine, Lebanese University, Beirut, Lebanon and ³Geriatrics Department, Ain Wazein Medical Village, Beirut, Lebanon

Abstract

Objective. The purpose of this study is to explore symptoms and the effectiveness of their management in older adult palliative care candidates in Lebanon. The aims of this study were to: (1) determine symptom prevalence in Lebanese older adults who qualify for palliative care; (2) identify the severity and distress of symptoms; (3) identify the prevalence of symptom management and its efficacy; and (4) explore the relationship between overall symptom burden and its correlates.

Method. This study uses an observational cross-sectional design using convenience sampling ($N = 203$) to recruit older adults qualifying for palliative care from three major medical centers in Lebanon.

Result. The mean age of the sample was 78.61 years. The most prevalent symptoms were lack of energy (93.5%), worrying (83.2%), and pain (71.4%). Psychological symptoms had the highest mean scores, preceded only by the physical symptoms and lack of energy. The most treated symptoms were physical with pain having the highest treatment prevalence (91%). Although psychological symptoms were the most burdensome, they were poorly treated. Multiple regression analysis showed that symptom scores had significant positive associations with financial status, social functioning, and comorbidities; there was a negative association with age.

Significance of results. Lack of energy and psychological symptoms were the most prevalent, with the latter having the highest mean total symptom scores. Treatment was poor for psychological symptoms and effective for physical ones. Associations were found between age, comorbidity, financial problems, social functioning, and total physical and psychological mean symptom burden scores. More attention needs to be given to psychological symptoms and their management among older adults receiving palliative care.

Introduction

The world's aging population has increased substantially in recent years and the number of people aged ≥ 60 is projected to more than double from 962 million in 2017 to 2.1 billion in 2050 (United Nations Department of Economic and Social Affairs/Population Division, 2017). Even more so, the number of older adults > 80 years of age is expected to triple by 2050 and reach 909 million in 2100, which would be seven times its current value (United Nations Department of Economic and Social Affairs/Population Division, 2017). In 2012, the Lebanese population aged 65 and older was estimated at 10% and is expected to double by 2030 (Yaacoub & Badre, 2012).

Older adults tend to have multiple comorbidities, polypharmacy, frailty, psychosocial problems, and functional impairment, which lead to complex medical management (Alexander et al., 2016). They also have a high symptom burden and complex treatment regimens; therefore, it is important to understand the pathophysiology of the symptoms along with the impact of aging on symptom perception to provide better quality of care (Combs, Kluger, & Kutner, 2013).

Palliative care is defined as “an approach that improves the quality of life (QoL) of patients and their families facing the problems associated with life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psychosocial and spiritual” (World Health Organization, 2006). Pain was reported in approximately one-third of older adults, and its relief was identified as an unmet palliative care need (Steindal et al., 2011). Pain and psychological symptoms were also identified as the most burdensome amongst symptoms experienced by older adults (Hoben et al., 2016; Van Lancker et al., 2017).

In addition to pain, fatigue, lack of energy, and loss of appetite were amongst the most prevalent symptoms in older adults receiving palliative care (Borgsteede et al., 2007; Gestsdottir

et al., 2015; McMillan et al., 2007; Oechsle et al., 2013; Smedback et al., 2017; Tai et al., 2016; Van Lancker et al., 2014, 2017; Yong et al., 2009).

The prevalence of symptoms differed by age group and underlying disease, whereby symptoms were found to be more prevalent in the younger population and in cancer patients (Borgsteede et al., 2007). In addition, symptom burden (overall prevalence, severity, and distress) experienced by patients was influenced by underlying illness and their overall performance status (Kamal et al., 2015). Specifically, older adults were found to have higher symptom burden than the younger population (Van Lancker et al., 2017) and the most severe symptoms were pain, anorexia, constipation, dyspnea, and edema (Tai et al., 2016).

Medication under treatment was found in 60% of patients in a nursing home (Rodrigues et al., 2010). Similarly, Canadian nursing home seniors reported suboptimal QoL resulting from mismanagement of distressing symptoms (Estabrooks et al., 2015). A study conducted by Abu-Saad Huijjer et al. (2012) showed that the least treated symptoms in a sample of Lebanese female cancer patients were psychological; namely, anxiety, sadness, and worry. More attention seems to be paid to physical symptoms despite psychological ones being identified as the most severe (Tai et al., 2016). In terms of relief, pain was reported as the symptom with the highest degree of relief, followed by shortness of breath and confusion in older people in nursing homes (Smedback et al., 2017). Ultimately, poor symptom management was found to significantly increase the risk for rehospitalization and overall burden on the patient and the healthcare system (Zambroski & Bekelman, 2008).

Significant differences in the perception of symptom burden were identified between physicians and patients, with physicians often underestimating them, which could explain ineffective symptom management (Laugsand et al., 2011). The treatment of symptoms, however, depends most on symptom distress and less on frequency or severity, which underscores the importance of comprehensive symptom assessment (Oechsle et al., 2013).

Palliative care programs were found to be associated with significant improvements in symptom burden (Ornstein et al., 2013). Specifically, significant improvement in pain, fatigue, psychological symptoms, and QoL occurred when oncologic management was paired with palliative care management (Bischoff et al., 2013). Moreover, the total length of stay was significantly reduced by almost a week when palliative consultation was done in an emergency geriatric population. Improvement in the management of pain, constipation, nausea, vomiting, and anxiety was noticeable (Kupensky et al., 2015). One study emphasized the importance of adequate symptom assessment early in the disease to improve symptom management and provide holistic palliative care (Khan et al., 2012).

Little is known about symptom management in older adults in Lebanon. The aim of this study is to explore symptoms and the effectiveness of their management in older adults who qualify for receiving palliative care in Lebanon. The objectives are to

1. determine symptom prevalence in Lebanese older adults who qualify for palliative care,
2. determine the severity and distress levels of symptoms,
3. identify the prevalence of symptom management and its effectiveness, and
4. explore the relationship between overall symptom burden and its correlates.

Methods

Study design, setting, and sample

This study used an observational cross-sectional survey of hospitalized older adults in three major medical centers in Lebanon over a period of 2 years (2015–2017). The target population was older Lebanese patients, ≥ 65 years, residing in Lebanon, and who needed basic palliative care provided by geriatricians with palliative care experience at the time of data collection. To standardize screening for inclusion eligibility, the Mini-Mental State Examination and Necesidades Paliativas Centro Colaborador de la Organizacion Mundial de la Salud-Institut Catala d'Oncologia tools were used to assess cognition and palliative care need, respectively. Patients who were cognitively challenged as defined by a cutoff score of 24 on the Mini-Mental State Examination were excluded from the study because the instrument used for data collection required patient input. Moreover, those requiring end-of-life care were also excluded because they are a separate population that would need to be studied separately.

Sample size was calculated for a multiple linear regression with eight predictors and a moderate effect size of $R^2 = 0.13$. For 80% power and 5% alpha, the needed sample size was 109; however, because stratification by age and gender was intended, a sample size of 200 was recommended (Polit & Beck, 2004). A convenience sample of 203 patients was used; key physicians from each of the three medical centers recruited participants into the study ($N = 203$). Only three patients declined to participate because of ill health. Informed consent was obtained from participants even before screening for eligibility and then qualified research assistants conducted face-to-face interviews and filled the questionnaires. All the investigators and research assistants who took part in this study were CITI certified. The institutional review board of the University where the study was conducted and the three medical centers involved approved the study.

Instruments

The outcome variable, symptom burden, was measured with the Memorial Symptom Assessment Scale (MSAS). The MSAS measures the prevalence, severity, and distress associated with 30 physical and psychological symptoms (Portenoy et al., 1994). Respondents replied with a yes or no answer. A Likert scale ranging from 1 to 4 was used for frequency (1 = rarely, 2 = occasionally, 3 = frequently, 4 = almost constantly) and severity (1 = slight, 2 = moderate, 3 = severe, 4 = very severe) and from 0 to 4 for distress (0 = not at all, 1 = a little bit, 2 = somewhat, 3 = quite a bit, 4 = very much). A section was added to the MSAS to measure symptom management, with a yes or no answer. The modified version of the MSAS containing the questions related to symptom management was translated to Arabic and validated by a group of investigators by Cronbach's alpha coefficients that ranged from 0.71 to 0.83 (Abu-Saad Huijjer et al., 2015). Moreover, it has been used in several studies done on cancer patients to address symptom management and efficacy (Abu-Saad Huijjer et al., 2012, 2013). The questionnaire was completed by the research assistants via face-to-face interviews with the patients in one sitting. The questions related specifically to symptom management were as follows: "Did you receive treatment specifically for this symptom?" and "If you did receive treatment, how successfully controlled was each of these symptoms?" Thereafter, management effectiveness was measured with a Likert scale ranging from 1 to 3 (1 = successful, 2 = somewhat successful,

3 = not successful). Total symptom scores were calculated, as per the original MSAS scoring manual ranging from 0 to 4, with 0 being the least intense and 4 being the most (Portenoy et al., 1994). Each specific symptom score was an aggregate of three dimensions of that symptom (frequency, severity, and distress) to get a total symptom intensity score. The more frequent, severe, and distressing the symptom was, the higher the score. Three symptom scores were calculated, a total symptom score (average of the 30 symptom score means), a total physical symptom score (average of the 12 most prevalent physical symptom scores), and a total psychological symptom score (average of the six psychological symptoms). These scores range from 0 to 4 and were summarized using means and *SDs*.

The explanatory variables were the sample characteristics, QoL, anxiety, and depression. The sociodemographic variables including age, educational status, marital status, expenditures, and comorbidities were collected. Different subgroups of educational status and marital status were clustered in two groups each, and descriptive statistics were performed. A comorbidity scale was created by the authors based on information the research assistants compiled from the medical records. Data were then clustered into six diseases: cancer, renal disease, liver disease, heart disease, chronic obstructive pulmonary disease, and neurologic disease. Each patient was given 1 point for the presence of each comorbidity and a total summative comorbidity score was calculated, with a possible range from 0 to 6. A financial problem score of 0–10 was used to assess financial status and a mean score was calculated, with 0 indicating a very bad financial situation and 10 no financial problems. The questions used to produce this scale were part of the Needs at the End-of-Life Screening Test tool and were filled in by the researchers after having asked the patients (Emanuel et al., 2001).

The European Organization for Research & Treatment of Cancer (EORTC QLQ-C30) tool was used to measure QoL along with four subscales; physical, role, cognitive, and social functioning. Overall QoL status was measured using Global Health Status subscale from the EORTC QLQ-C30, which included two items: patient self-perceived overall quality of health, and QoL measured on a 7-point Likert scale (1 = very poor; 7 = excellent) (Aaronson, 1993). The items for all the subscales were rated on a 4-point Likert scale (1 = not at all; 2 = a little; 3 = quite a bit; 4 = very much). The Arabic version of the EORTC was found to be valid and reliable (six of nine subscales had Cronbach's alpha coefficients >0.70) (Abu-Saad Huijjer et al., 2013).

Finally, the Hospital Anxiety and Depression Scale (HADS) was used to screen for anxiety and depression. The HADS is a 14-item tool divided into a 7-item anxiety subscale and a 7-item depression subscale (Zigmond & Snaith, 1983). HADS was translated to Arabic and validated (Cronbach's alpha for the anxiety subscale was 0.83 and 0.77 for the depression subscale) (Terkawi et al., 2017). Each item is rated between 0 (strongly disagree) and 3 (strongly agree). A score of 0–7 is normal, 8–10 borderline abnormal, and 11–21 abnormal for both depression and anxiety subscores.

Statistical analysis

Descriptive statistics were used to summarize the characteristics of the study sample. The overall QoL status was measured using the Global Health Status subscale from the EORTC QLQ-C30 instrument. In addition, mean scores were calculated for each of the EORTC QLQ-C30 functional subscales (physical, role, social,

and cognitive functioning). The mean subscale scores were then linearly transformed to take values from 0 to 100. A higher score on a functional subscale indicates a high level of functioning and a high score for the global health status indicates a high QoL.

To address objectives 1, 2, and 3, each dimension (prevalence, frequency, severity, distress, treatment prevalence, and success) was summarized using frequencies, percentages, means, medians, and *SDs* as appropriate. To address objective 4, total symptom intensity scores were calculated as per the original MSAS scoring manual (Portenoy et al., 1994). The total score was used in examining associations with the explanatory variables. Three linear regression analyses were then carried out to determine the factors associated with high total symptom score, physical score, and psychological score separately. Variables significant at the univariate level were entered in the multivariable regression model.

Normality of the residuals was inspected graphically. Collinearity between the predictors was assessed by variance inflation factors, in which a variance inflation factor >4 indicated the presence of collinearity. Data entry, management, and analyses were done in SPSS, version 24.0, for Windows.

Results

Sample characteristics

The background characteristics of the 203 participants are presented in Table 1. Mean age was 78.61 (*SD* = 7.73) with the majority being males (59%) and married (68%). The split between those who had up to elementary education versus those above elementary was almost equal at 51% and 49%, respectively. QoL scores and subscores were low with mean QoL score being 35.43 (*SD* = 23.45). Moreover, cognitive function had the highest mean among the subscores at 57.64 (*SD* = 30.23), followed by social functioning at 39.08 (*SD* = 31.33), physical functioning at 36.24 (*SD* = 28.08), and role functioning at 28.14 (*SD* = 28.68).

Overall, the mean number of comorbidities among participants was 1.48/6 (*SD* = 1.016) and the financial situation was average with a mean financial problem score of 4.69/10 (*SD* = 2.94). Mean anxiety score was 7.90 (*SD* = 5.01) in comparison to a higher depression mean score of 9.03 (*SD* = 5.23).

Prevalence of symptoms

As summarized in Table 2, a total of 30 symptoms were assessed; 24 physical and 6 psychological. Lack of energy was the most prevalent physical symptom (93.5%), followed by pain (71.4%), shortness of breath (67.3%), lack of appetite (65.5%), weight loss (63.6%), dry mouth (61.6%), and cough (59.6%). The least prevalent physical symptoms were itching (35.2%), sweats (31.7%), mouth sores (30.2%), and hair loss (27.2%).

Of the six psychological symptoms, worrying was the most frequently reported (83.2%) followed by feeling nervous (79.8%), feeling sad (75.6%), difficulty sleeping (73.4%), "I don't look like myself" (68.8%), and difficulty concentrating (54.7%).

Severity and distress of symptoms

As noted in Table 2, hair loss, the least prevalent symptom among all 30, had the highest severity mean of 3.9 (*SD* = 1.48), followed by mouth sores and problems with sexual interest (3.79 ± 1.38 and 3.66 ± 1.48, respectively). Vomiting and nausea were the

Table 1. Sample characteristics

	Mean (SD)
Age	78.61 (7.73)
Gender, N (%)	
Males	119 (59)
Females	83 (41)
Education, N (%)	
Not educated/elementary	103 (51.2)
Intermediate/secondary/technical/university	98 (49)
Marital status, N (%)	
Married	136 (68)
Single/widowed/divorced	64 (32)
Cancer, %	35
Number of comorbidities (0–6)	1.48 (1.016)
Financial problems (0–10)	4.69 (2.94)
EORTC-QLC C-30	
QoL score (0–100)	35.43 (23.45)
Social Functioning (0–100)	39.08 (31.33)
Physical Functioning (0–100)	36.24 (28.08)
Role Functioning (0–100)	28.14 (28.68)
Cognitive Functioning (0–100)	57.64 (30.23)
HADS	
Anxiety score (0–21)	7.90 (5.01)
Depression score (0–21)	9.03 (5.23)

least severe symptoms (2.16 ± 0.79 and 2.17 ± 0.77 , respectively). Lack of energy, which was the most prevalent symptom, had a mean severity score of 3.23 ($SD = 0.68$). As for distress, the most distressing symptoms were mouth sores and hair loss (3.81 ± 1.36 and 3.76 ± 1.69 , respectively). Dizziness was the least distressing symptom with a mean score of 2.12 ($SD = 0.98$).

Treatment prevalence and effectiveness of treatment

Table 2 further displays the treatment prevalence of the reported physical and psychological symptoms. The most treated symptoms were physical, with pain having the highest treatment prevalence (91%), followed by respiratory symptoms: shortness of breath (86%) and cough (85%). Gastrointestinal symptoms followed, with constipation, vomiting, nausea, and diarrhea being the most frequently treated (82%, 80%, 76%, and 71%, respectively).

Although psychological symptoms were the most reported symptoms with the highest mean scores, they were poorly treated. Worrying had a treatment prevalence of 20%, feeling nervous (24%), and feeling sad (13%). Difficulty sleeping had the highest treatment prevalence at 46%, but still low in comparison to treatment of physical symptoms. Pain was successfully treated at 96%, shortness of breath at 94%, and vomiting at 97%. Psychological symptoms, when treated, had a good result; sadness treatment was 88% successful followed by 85% treatment success for difficulty sleeping. Even symptoms with low prevalence had high

treatment success, when treated, with mouth sores and hair loss treatment exhibiting a 100% treatment success rate.

Total, physical, and psychological symptom scores

Figure 1 displays the mean total score of the most prevalent symptoms. Psychological symptom scores appeared to be among the highest mean scores (1.7–2.1) only preceded by the physical symptom lack of energy, which had a mean score of 2.9. The mean scores of worrying (2.1), pain (2.0), difficulty sleeping (1.9), feeling nervous (1.89), and feeling sad (1.87) followed in succession.

Relationship between symptom score and participants' characteristics

At the univariate level, age, financial problems, and number of comorbidities were significantly associated with total physical and psychological scores and were included in the multivariate analysis, where they remained significant (Table 3). An increase in age was found to be significantly associated with a decrease in total symptom score ($B = -0.013$, $p = 0.002$), physical symptom score ($B = -0.015$, $p = 0.003$), and psychological symptom score ($B = -0.024$, $p = 0.000$). An increase in the number of comorbidities was associated with a significant increase in total symptom score and psychological symptom score ($B = 0.084$, $p = 0.008$ and $B = 0.112$, $p = 0.023$, respectively) and a borderline significant increase in physical symptom score ($B = 0.072$, $p = .053$). Financial problems were significantly associated with increased total symptom score, physical symptom score, and psychological symptom score ($B = 0.029$, $p = 0.008$; $B = 0.029$, $p = 0.029$; and $B = 0.059$, $p = 0.001$, respectively).

Relationship between symptom score, QoL, and QoL subscales

Concerning the four QoL subscales, an increase in social functioning was found to be associated with a significant decrease in total, physical, and psychological symptom scores ($B = -0.004$, $p = 0.002$; $B = -0.005$, $p = 0.001$; and $B = -0.007$, $p = 0.001$, respectively). Cognitive, role, and physical functioning were not significantly related to any of the three symptom scores. No significant relationship was found between total QoL score and symptom scores.

Relationship between symptom score and anxiety and depression

For the physical symptom score, association with HADS Anxiety and HADS Depression scores were assessed and both showed significant associations at the univariate level; however, they lost their significance in the multivariate model. These variables were not tested for total symptom score and psychological symptom score because of the presence of overlapping items (Table 3).

In conclusion, significant correlates of the total symptom score are age, financial problems, number of comorbidities, and social functioning, with 24% of the variance explained. For the psychological symptoms, predictors are age, financial problems, comorbidities, and social functioning with 21% of the variance explained. As for the physical symptoms, age, financial problems, and social functioning are the significant correlates with 39% of the variance explained.

Table 2. Symptom prevalence and treatment efficiency

Symptom	Prevalence, <i>n</i> (%)	Frequency		Severity		Distress		Treatment prevalence, <i>n</i> (%)	Success of treatment, <i>n</i> (%)
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Lack of energy	188 (93.5)	3.19	0.815	3.23	0.682	3.31	1.615	57 (32.95)	49 (85.96)
Worrying	168 (83.2)	2.46	0.852	2.64	0.778	2.72	1.83	29 (20.14)	22 (75.86)
Feeling nervous	162 (79.8)	2.33	0.831	2.45	0.772	2.38	0.901	33 (23.91)	28 (84.85)
Feeling sad	152 (75.6)	2.42	0.919	2.6	0.786	2.62	0.945	17 (13.28)	15 (88.24)
Difficulty sleeping	149 (73.4)	2.59	0.963	2.7	0.81	2.66	0.936	60 (46.15)	51 (85.00)
Pain	145 (71.4)	2.82	0.91	2.95	0.699	2.86	0.82	117 (91.14)	112 (95.73)
I don't look like myself	139 (68.8)	2.51	1.116	2.72	0.883	2.69	1.038	5 (4.67)	4 (80.00)
Shortness of breath	136 (67.3)	2.85	1.181	3.12	1.028	3.08	1.095	104 (85.95)	98 (94.23)
Lack of appetite	133 (65.5)	2.52	0.987	2.69	0.817	2.5	0.975	15 (14.15)	12 (80.00)
Weight loss	126 (63.6)	2.9	1.284	3.09	1.218	2.87	1.403	18 (17.48)	16 (88.89)
Dry mouth	125 (61.6)	2.34	0.994	2.64	0.822	2.35	0.872	23 (23.96)	21 (91.30)
Cough	121 (59.6)	2.68	1.29	2.97	1.191	2.89	1.246	87 (84.47)	84 (96.55)
Swelling of arms and legs	116 (57.4)	2.59	1.309	2.98	1.095	2.9	1.212	64 (77.11)	64 (100)
Constipation	111 (55.0)	2.5	1.387	3.07	1.197	3.04	1.244	61 (82.43)	59 (96.72)
Difficulty concentrating	111 (54.7)	1.99	0.877	2.26	0.703	2.09	0.99	8 (10.13)	8 (100)
Problems with urination	107 (53.0)	2.58	1.302	3	1.158	2.98	1.251	56 (73.68)	52 (92.86)
Dizziness	107 (52.7)	2.0	0.862	2.29	0.758	2.12	0.98	41 (52.56)	35 (85.36)
Numbness/tingling in hands/feet	102 (51.5)	2.21	0.983	2.55	0.773	2.5	0.959	20 (27.03)	16 (80.00)
Changes in skin	103 (51.0)	2.55	1.44	3.21	1.259	3.1	1.366	14 (22.22)	13 (92.86)
Change in the way food tastes	93 (46.3)	2.04	1.01	2.49	0.796	2.36	0.912	9 (16.07)	6 (66.67)
Nausea	92 (45.3)	2.04	0.833	2.17	0.767	2.26	0.756	50 (75.76)	47 (94.00)
Bloated	90 (44.6)	2.58	1.492	3.19	1.363	3.13	1.398	19 (35.19)	18 (94.74)
Diarrhea	84 (42.0)	2.41	1.562	3.24	1.426	3.25	1.45	32 (71.11)	31 (96.88)
Vomiting	81 (39.9)	1.94	0.837	2.16	0.788	2.16	0.757	44 (80.00)	43 (97.73)
Difficulty swallowing	81 (39.9)	2.57	1.558	3.29	1.369	3.19	1.469	7 (14.29)	7 (100)
Problems with sexual interest	66 (38.8)	2.62	1.718	3.66	1.479	3.56	1.643	1 (3.85)	1 (100)
Itching	70 (35.2)	2.52	1.568	3.34	1.332	3.17	1.58	18 (47.37)	14 (77.78)
Sweats	64 (31.7)	2.42	1.705	3.57	1.544	3.44	1.713	1 (5)	0 (0)
Mouth sores	61 (30.2)	2.64	1.74	3.79	1.377	3.81	1.358	12 (48.00)	12 (100)
Hair loss	55 (27.2)	2.53	1.818	3.9	1.478	3.76	1.694	3 (18.75)	3 (100)

Discussion

The information brought forth in this article is novel in determining the prevalence, severity, and distress of symptoms in a Lebanese older adult population qualifying for palliative care. Moreover, data were provided regarding symptom treatment provision and success rates of said treatment. The most prevalent symptom was lack of energy, which is in line with other studies among palliative care patients (Steindal et al., 2011, Van Lancker et al., 2017).

Psychological symptoms were among the top five most prevalent symptoms, such as the findings of a study on breast cancer patients in Lebanon (Abu Saad et al., 2012) and others (Oechsle et al., 2013; Steindal et al., 2011). Psychological symptoms as perceived by patients were also found to be the most burdensome (Currow et al., 2015; Oechsle et al., 2013; Steindal et al., 2011). Pain was the sixth most prevalent symptom in our sample, contrary to other palliative care studies in which pain was reported most prevalently (Smedback et al., 2017; Tai et al., 2016). These

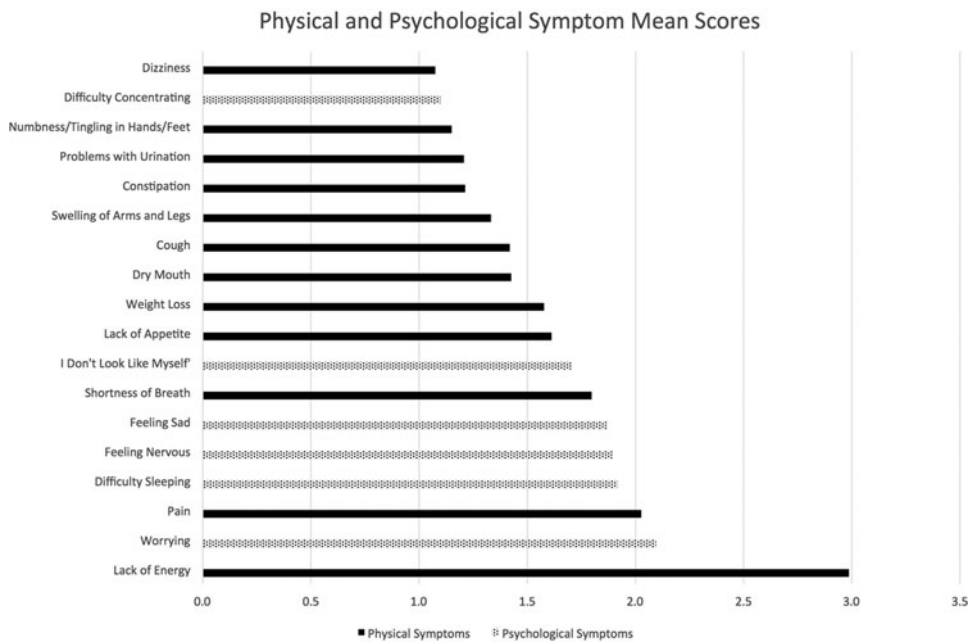


Fig. 1. The 12 most prevalent physical symptoms in the sample.

results may be due to a mix of cancer and noncancer patients in our sample, which had a prevalence of 35% cancer patients. Cancer patients in general tend to have more pain and a higher symptom severity in comparison to noncancer patients (Smedback et al., 2017; Tai et al., 2016). Moreover, symptom prevalence is more frequent in younger patients than in older and in cancer than in noncancer patients (Borgsteede et al., 2007). This necessitates conducting age specific research to better guide symptom assessment and management in older adults.

Hair loss and mouth sores are common with cancer patients and were the most severe and distressing, contrary to studies showing pain and psychological symptoms to be the most severe and distressing (Alexander et al., 2016; Tai et al., 2016; Van Lancker et al., 2017). This result may be due to low anxiety and depression scores at baseline and pain not being one of the most prevalent symptoms. Negative aging stereotypes was found to increase pain threshold (Bernardes et al., 2015), which may affect prevalence of pain. Culture and religion may also affect the reporting of pain; many religious patients see pain as the will of God and do not report it. Middle Eastern patients tend to normalize pain and not see the need for reporting; however, when reported, they tended to have pain of higher severity compared to their Western counterparts (Briggs, 2008).

Overall, the most burdensome symptoms were psychological, because they had the highest mean total scores, which compares well to the findings of other studies (Van Lancker et al., 2017). Unfortunately, psychological symptoms were very poorly treated, with rates as low as 20%. This indicates poor management and compares well with the results of a similar study (Laugsand et al., 2011). These findings may be due to provider underestimation of symptom intensity and may reflect the Lebanese perception of physical symptoms as more important. In fact, the most treated symptoms were physical, namely pain, and gastrointestinal, and respiratory, which is in line with several studies showing high success rates (Gomez-Batiste et al., 2010; Steindal et al., 2011). Moreover, healthcare provider education may need to be revisited to assess whether

psychological symptoms and their management are adequately represented. Overall, when treatment was given, it was highly successful in relieving the symptoms, which is in line with studies showing an improvement of symptom burden and hospitalization rates following palliative care and medical treatment (Bischoff et al., 2013; Khan et al., 2012; Kupensky et al., 2015; Ornstein et al., 2013).

Other studies found symptom scores to be negatively associated with QoL (Abu Saad et al., 2012; Yong et al., 2009), which was not apparent in our study possibly because of low QoL scores. Age was found to have a negative correlation with symptom scores, which is in line with the findings of other studies in which older age groups tended to have less frequent, less severe, and less distressing symptom profile (Borgsteede et al., 2007; Tai et al., 2016). In addition, an increase in financial problems was positively correlated with symptom score, similar to the results of a study in Lebanon (Abu Saad Huijjer et al., 2012) that found an increase in medical expenses to be associated with an increase in pain, constipation, and insomnia. Financial burdens may lead to compliance problems and result in ineffective symptom management.

An increase in comorbidity was positively correlated with an increase in symptom score similar to the results conducted on cancer and noncancer patients, with cancer patients reporting more intense symptoms (Kamal et al., 2015; Steindal et al., 2011). Poor symptom management of chronic illness could lead to frequent rehospitalization because of an increase in symptom burden (Zambroski & Bekelman, 2008). Herein lies the need for national palliative care strategies to be developed by the Ministry of Health.

Increased social functioning was found to be associated with a decrease in mean symptom score. The increase in symptoms was found to be associated with a decrease in social functioning (Soo & Larson, 2016) and a decrease in social provisions in nursing homes was associated with a decrease in physical and cognitive health (Dale et al., 2010). Decreasing symptom burden as a result may result in improved social functioning.

Table 3. Relationship among total, physical, and psychological symptom score and sample characteristics, EORTC QLQ-C30, and HADS

Variable	Total score		Psychological score		Physical score	
	Adjusted $R^2 = 0.240$		Adjusted $R^2 = 0.392$		Adjusted $R^2 = 0.214$	
	<i>B</i>	<i>CI</i> _{95%}	<i>B</i>	<i>CI</i> _{95%}	<i>B</i>	<i>CI</i> _{95%}
Sample characteristics						
Age	-0.013*	(-0.021, -0.005)	-0.024*	(-0.036, -0.011)	-0.015*	(-0.024, -0.005)
Financial problems	0.029*	(0.008, 0.051)	0.059*	(0.025, 0.093)	0.029 [†]	(0.003, 0.055)
Number of comorbidities	0.084*	(0.023, 0.146)	0.112 [†]	(0.015, 0.209)	0.072 [‡]	(-0.001, 0.145)
EORTC QLQ-C30						
QoL score	-0.001	(-0.004, 0.002)	-0.002	(-0.007, 0.003)	-0.002	(-0.006, 0.001)
Physical Functioning	0	(-0.003, 0.003)	-0.003	(-0.008, 0.002)	0.001	(-0.003, 0.004)
Role Functioning	0	(-0.003, 0.003)	-0.001	(-0.006, 0.003)	-0.003	(-0.006, 0.001)
Cognitive Functioning	-0.001	(-0.003, 0.002)	-0.003	(-0.007, 0.001)	0	(-0.003, 0.003)
Social Functioning	0.004*	(-0.007, -0.001)	-0.007*	(-0.011, -0.003)	-0.005*	(-0.009, -0.002)
HADS						
HADS Depression	-	-	-	-	-0.012	(-0.035, 0.011)
HADS Anxiety	-	-	-	-	-0.007	(-0.029, 0.016)

EORTC QLQ-C30, European Organization for Research & Treatment of Cancer; HADS, Hospital Anxiety and Depression Scale; QoL, quality of life.

* $p \leq 0.01$; [†] $p \leq 0.05$; [‡] $p < 0.1$.

Conclusion

Older adult palliative care patients in Lebanon have a high prevalence of low energy and psychological symptoms. Although psychological symptoms have the highest burden with the highest mean symptom scores, they were poorly treated when compared with physical symptoms. Increase in age and social functioning was related to a decrease in symptom score. An increase in comorbidities and financial problems was associated with an increase in symptom score. In conclusion, a better understanding of symptom prevalence, severity, and distress in Lebanese older adults may lead to better symptom management. Hence, the authors recommend a reinforcement of healthcare provider education to improve detection of symptoms and ultimately their management. Recruitment of advanced practice nurses specialized in geriatrics and palliative care could also be of benefit in this area.

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