Frailty, Anxiety, and Depression Among Elderly Patients with Advanced Cancer in a Tertiary Hospital in Cebu City

Josemari B. Lozano, MD,[1] Arnold John B. Uson, MD,[1] and Mark M. Ando, MD[1]

Abstract

Objectives. As the population ages, the likelihood of cancer increases. Aging-related deficits that eventually manifest as frailty may be associated with poor emotional health in older patients with advanced cancer. This study aimed to determine whether frailty was strongly associated with emotional distress, particularly anxiety and depression.

Method. This is a single center, cross-sectional, descriptive study using the Geriatric 8 (G8) Frailty Screening Scale and the Hospital Anxiety and Depression Scoring (HADS) Scale.

Results. One hundred five patients (105) were included in the study. Over-all, 86 (81.9%) were frail. Majority of them were female (50, 47.6%), married (57, 54.3%), and were able to graduate college (62, 59.0%). Hypertension (70, 66.7%) and diabetes mellitus (33, 31.4%) were the most common co-morbidities. There was significant association between the patients' functional status (ECOG score) and frailty ($p = 0.001$). Our results showed that the likelihood of being frail increased by 30% per unit increase in the ECOG score (OR 3.685, CI 1.623 – 8.366). More so, our results showed strong association between frailty, depression & anxiety ($p = 0.000$ & 0.001, respectively). We also found that the likelihood of being anxious & depressed was 7-times as much for those patients who were frail (OR 7.000, CI 2.132 – 22.981; OR 7.150 (CI 2.406 – 21.246, respectively).

Conclusion. Frailty had a strong association with both anxiety and depression. Frailty, in addition, had a good predictive value for emotional distress. Those who were frail had a 7-time likelihood of being anxious and depressed. Frailty was also associated with functional status. The chances of being frail increased by 30% for every unit increase in the ECOG score.

Keywords: Frailty, Elderly, Depression, Anxiety, Advanced Cancer

Introduction

The aging population is a global phenomenon, with 1 billion adults ≥ 60 years of age. This number is estimated to reach 1.4 billion by 2030, and will be on the rise in the ensuing decades (World Health Organization, 2018, 2019).[1]

Frailty is a condition of loss of homeostasis due to multiple systemic dysregulations yielding to lower biological reserve against different forms of stressors. Geriatric societies generally agree that biomedical frailty is clinically characterized by diminished strength, endurance, and a reduced physiologic function of several organ systems. Frailty predicts future adverse health outcomes, like falls and fractures, physical disability, restricted activities of daily living, hospitalization, and in particular, mortality.[2] In the general population, about 10% of people aged 65 and over have frailty, rising to between 25% and 50% of those aged 85 and over.[3] As the population ages, the numbers of vulnerable and frail older persons will increase dramatically.[4] Thus, identifying the robust from the frail based on assessment of biologic, psychologic, and social aspects of the aging process becomes imperative.[5]

Cancer disproportionately affects older people, with more than one-third of cancers diagnosed in those over the age of 70, advancing age is shown as an important risk factor for most cancers.[3,6] Approximately 70% of cancer deaths and 60% of all new cancer cases occur in adults aged 65 years and older. Cancer incidence is 11 times higher than the younger population.[7]

Cancer is a grave illness which influences physical and emotional wellbeing of patients.[8] Incurable cancer disease is often referred to as advanced cancer. Around 40-50% of all new cancer cases will enter the advanced stages of the disease. These patients typically experience

[1]Department of Internal Medicine, Perpetual Succour Hospital of Cebu
Corresponding Author: Josemari B. Lozano, MD eMail lozanojosemari@ymail.com

Table I: The Geriatric 8 (G8) Frailty Screening Scale

A	Has food intake declined over the past 3 months due to loss of appetite, digestive problems, chewing, or swallowing difficulties?	0	Severe decrease in food intake
		1	Moderate decrease in food intake
		2	No decrease in food intake
B	Weight loss during the last 3 months	0	Weight loss > 3 kgs
		1	Does not know
		2	Weight loss between 1 and 3 kgs
		3	No weight loss
C	Mobility	0	Bed or chair bound
		1	Able to get out of bed/chair but does not go out
		2	Goes out
E	Neuropsychological problems	0	Severe dementia or depression
		1	Mild dementia or depression
		2	No psychological problems
F	Body Mass Index (BMI = Weight in kg/height in m^2)	0	BMI < 19
		1	BMI = 19 to BMI < 21
		2	BMI = 21 to BMI < 23
		3	BMI = 23 and > 23
H	Takes more than 3 medications per day	0	Yes
		1	No
P	In comparison with other people, how does the patient consider his/her health status?	0	Not as good
		0.5	Does not know
		1	As good
		2	Better
	Age	0	> 85 years
		1	80 to 85 years
		2	< 80 years
	TOTAL SCORE	0-17	

a high disease load accompanied by an increased number of symptoms, as well as functional decline as the disease progresses.[9]

Older cancer patients, however, are often under-treated & under-represented in clinical trials, and have poorer outcomes than younger individuals. Both cancer and the systemic treatments offered by oncologists are significant stressors that have potential to challenge the physiological reserve of the elderly cancer patient.[3] Chronological age alone is a poor predictor of cancer treatment tolerance, and the heterogeneity of the older cancer patient population requires a carefully tailored approach to care that considers individual frailty.[3]

Although the public importance of frailty is widely acknowledged by the World Health Organization, physical frailty is largely neglected in geriatric mental health.[2] The incidence of psychological distress – depression and anxiety – in patients with cancer ranges from 35% to 50%.[10] The impact of a cancer diagnosis on a patient's health is profound and multifaceted. Irrespective of cancer type, a patient's physical and psychosocial health are adversely affected leading to impaired physical and social functioning, reduced ability to carry out activities of daily living, and an overall diminished quality of life.[11]

Depression, the persistent feelings of sadness,[12] is one of the most common psychiatric diseases seen in patients with advanced cancer.[13] Only restricted evidence is available for Asian communities.[8] Depression, however, is a difficult task to study in these patients, as manifestations occur over a range of spectrum, being unique in different patients.[8] Yet all too often, depression goes undiagnosed and undertreated in the elderly population.[13] Major depression in these patients is common, with average prevalence rate estimate of around 15%.[9]

Anxiety, the presence of persistent and excessive worry, has been shown to mutually exist with depression.[12,13] Given the real threats of malignant diseases, cancer-related anxiety is understandable and may be even considered a normal psychosocial reaction. In some patients, however, anxiety rises to a disproportionately high level, does not resolve, and leads to functional impairments.[14]

Studies investigating the association between frailty and psychological distress is limited. Studies in older adults without cancer have shown that those with depression were 1 to 2-times more likely to be classified as frail.[12] However, the relationship between frailty, depression, and anxiety in older Filipino patients with advanced cancer is not yet fully understood and investigated.[12]

Methodology

This was a single center, cross-sectional, prospective study aimed to determine whether there was significant association between frailty, anxiety, and depression among elderly patients diagnosed with advanced cancer.

The study was conducted in the Cebu Cancer Institute (CCI), the cancer center of Perpetual Succour Hospital, a private tertiary hospital in Cebu City, from March to September 2022.

Elderly patients (≥ 60 years of age) diagnosed with advanced cancer were the respondents of the study. A primary solid malignancy should have been documented through a tissue biopsy. Patients with gynecologic malignancies and lymphomas were included in the study. However, patients with primary hematologic malignancies (e.g. leukemia, multiple myeloma) were excluded from the study. In addition, advanced disease (Stage IV) should have been documented by the presence of distant metastases. Only patients who were with a sound mind and who were competent enough to complete the interview process were included in the study.

A research protocol was submitted and approved by the hospital administrator and by the Institutional Ethics & Review Board (IERB). A complete enumeration was done of all elderly cancer patients with advanced disease, while adhering to the inclusion and exclusion criteria.

Table II: The Hospital Anxiety and Depression Scoring (HADS) Scale

D	A		D	A	
		I feel tense or "wound up":			I feel as if I am slowed down:
	3	Most of the time	3		Nearly all the time
	2	A lot of the time	2		Very often
	1	From time to time, occasionally	1		Sometimes
	0	Not at all	0		Not at all
		I still enjoy the things I used to enjoy:			I get sort of frightened; feeling like "butterflies" are in my stomach:
0		Definitely as much		0	Not at all
1		Not quite so much		1	Occasionally
2		Only a little		2	Quite often
3		Hardly at all		3	Very often
		I get sort of frightened feeling as if something awful is about to happen:			I have lost interest in my appearance:
	3	Very definitely and quite badly	3		Definitely
	2	Yes, but not too badly	2		I don't take as much care as I should
	1	A little, but it doesn't worry me	1		I may not take quite as much care
	0	Not at all	0		I take just as much care as ever
		I can laugh and see the funny side of things:			I feel restless as I have to be on the move:
0		As much as I always could		3	Very much indeed
1		Not quite so much now		2	Quite a lot
2		Definitely not so much now		1	Not very much
3		Not at all		0	Not at all
		Worrying thoughts go through my mind:			I look forward with enjoyment to things:
	3	A great deal of the time	0		As much as I ever did
	2	A lot of the time	1		Rather less that I used to
	1	From time to time, but not too often	2		Definitely less than I used to
	0	Only occasionally	3		Hardly at all
		I feel cheerful:			I get sudden feelings of panic:
3		Not at all		3	Very often indeed
2		Not often		2	Quite often
1		Sometimes		1	Not very often
0		Most of the time		0	Not at all
		I can sit at ease and feel relaxed:			I can enjoy a good book or radio or TV program:
	0	Definitely	0		Often
	1	Usually	1		Sometimes
	2	Not often	2		Not often
	3	Not at all	3		Very seldom

Table III. The Eastern Cooperative Oncology (ECOG) Performance Status Scale

0	Fully active Able to carry on all pre-disease performance without restrictions
1	Restricted in physically strenuous activity but ambulatory Able to carry out work of a light or sedentary nature
2	Ambulatory and capable of all self-care but unable to carry out any work activities Up and about more than 50% of waking hours
3	Capable of only limited self-care Confined to bed or chair more than 50% of waking hours
4	Completely disabled; Cannot carry on any self-care; Totally confined to bed or chair
5	Dead

Participants were selected and screened with prudence. All 105 patients were eligible to participate in the study. There were neither drop-outs nor any missing data.

The participants were made to thoroughly understand the objectives of the study. An Informed Consent was secured and signed prior to the acquisition of data and information. Data collection was done through face-to-face interview between the investigator and the participants in the study site. The Geriatric 8 (G8) Screening Scale (*Table I*) was used to screen for frailty. Anxiety and depression were determined through the Hospital Anxiety and Depression Scoring (HADS) Scale (*Table II*). The Eastern Cooperative Oncology Group (ECOG) Score (*Table III*) was used to determine the patients' functional/performance status. Safety protocols were strictly observed during the entire duration of the

Table IV. Patients' Socio-Demographic Profile and Frailty

Demographic Profile	TOTAL	FRAILTY INDEX		*p*-value
	(n = 105)	Robust	Frail	
Age (Years), Mean ± S.D.	67.07 ± 6.436	65.11 ± 5.332	67.50 ± 6.604	0.139
Sex, *n* (%)				0.153
Male	40 (38.1%)	4 (3.8%)	36 (34.3%)	
Female	65 (61.9%)	15 (14.3%)	50 (47.6%)	
Place of Interview, *n* (%)				0.228
Outpatient (CCI)	80 (76.2%)	17 (16.2%)	63 (60.0%)	
Admitted	25 (23.8%)	2 (1.9%)	23 (21.9%)	
Marital Status, *n* (%)				0.422
Single	33 (31.4%)	4 (3.8%)	29 (27.6%)	
Married	72 (68.6%)	15 (14.3%)	57 (54.3%)	
Educational Attainment, *n* (%)				0.422
High School	27 (25.7%)	3 (2.9%)	24 (22.9%)	
College	78 (74.3%)	16 (15.2%)	62 (59.0%)	
Comorbid Conditions, *n* (%)				
Hypertension	70 (66.7%)	13 (12.4%)	57 (54.3%)	1.000
Diabetes Mellitus Type 2	33 (31.4%)	4 (3.8%)	33 (31.4%)	0.422

interview. The data collected was then collated, compared, and analyzed, while being handled with utmost confidentiality.

Frailty. Table I shows the G8 (Geriatric 8) Screening questionnaire. The G8 tool contains 8 questions, with a total score ranging from 0 to 17 points. A threshold of 14 points was used in this study; a higher score indicated better health status. Frailty scores between 14 to 11 points were classified as pre-frail (vulnerable). While patients who had a score of 10 and below screened positive for frailty – that is, these patients would benefit from a more comprehensive geriatric evaluation and assessment (CGA).

In this study, patients who were classified as pre-frail/vulnerable (11 to 14 points) and those who screened frail (11 points and lower) were all designated as "Frail".

Emotional Distress (Anxiety & Depression). Table 2 shows the Hospital Anxiety and Depression Scale (HADS). The HADS aims to measure symptoms of anxiety and depression. The anxiety component focuses mainly on symptoms of generalized anxiety disorder and the depression component is focused on anhedonia, the main symptom of depression. Recommended cut-off scores according to Zigmond & Snaith are 8–10 for borderline cases and ≥11 for definite cases. An optimal balance between sensitivity and specificity was found using a cut-off score of 8 or above for both HADS Anxiety and HADS Depression.[15]

The beauty of the HADS score lies in its simplicity, speed and ease of use. It assesses both anxiety and depression, which commonly coexist. The questionnaire comprises seven questions for anxiety and seven questions for depression, and takes 2 to 5 minutes to complete. Although the anxiety and depression questions are interspersed within the questionnaire, it is vital that these are scored separately.[16]

In this study, those with borderline symptoms (scores 8-10) and those who screened positive for anxiety and depression were also considered "Anxious" and "Depressed", respectively.

Performance/Functional Status. Table 3 shows the Eastern Cooperative Oncology Group (ECOG) Performance/Functional Performance Status Scale. This scoring system was the instrument used in this study to measure the patients' performance/functional status.

A number of studies have measured the accuracy and reliability of both Karnofsky and ECOG scores. Buccheri et al. compared the Karnofsky and ECOG Performance Scores in patients with terminal cancer and found that the ECOG test was better than the Karnofsky score at predicting patient prognosis.[17]

Categorical variables were presented in terms of frequency and percentage. To determine its association with frailty, a Chi Square Test was used. Numerical variables were presented in terms of mean and standard deviation (S.D.). To determine its association with frailty, a T-Test was used for normally distributed data and the Mann Whitney U-Test was used for the data that was not normally distributed. To determine the predictors of frailty, anxiety and depression, a Binary Logistic Regression was used. All computations were done using SPSS Version 22. A $p < 0.05$ was considered significant.

Results

Socio-Demographic Profile & Frailty. One hundred five patients were included in the study. *Table IV* shows the basic socio-demographic profiles of the patients. The mean age of the patients was 67 years (S.D. ± 6), the oldest was 87 years. Sixty-five patients (61.9%) were female. Majority of the patients (72, 68.6%) were married. Among those who were single (33 patients, 31%), fourteen (14) were widowed, 6 were religious, and 2 were separated from their spouses. More than half of the patients (78, 74.3%) had at least graduated from college. Hypertension (70, 66.7%) and diabetes mellitus (33, 31.4%) were the most common comorbid conditions reported.

Table V. Common Tumor Types, Sites of Metastases, and Reasons for Admission

	Frequency (%)
Tumor Type:	(*n* = 105)
Breast	31 (29.53)
Lung	17 (16.20)
Prostate	14 (13.25)
Gynecologic	12 (11.34)
Colorectal	11 (10.58)
Nasopharyngeal and Head & Neck	5 (4.76)
Lymphoma	3 (2.96)
Thyroid	3 (2.96)
Pancreatic	3 (2.96)
Urinary System	2 (1.86)
Cholangiocarcinoma	1 (0.90)
Gastric	1 (0.90)
Soft Tissue	1 (0.90)
Testicular	1 (0.90)
Sites of Metastasis	(*n* = 105)
Bones	63 (60.0)
Lung	30 (28.6)
Liver	28 (26.7)
Pelvic Area	9 (8.6)
Peritoneum	7 (6.7)
Colon	3 (2.9)
Spleen	2 (1.9)
Brain	1 (1.0)
Reason for Admission:	(*n* = 25)
Infection	12 (48.0)
Spinal Cord Compression	4 (16.0)
Malignant Fluid Accumulation	3 (12.0)
Procedures	3 (12.0)
Obstruction	2 (8.0)
Electrolyte Imbalance	1 (4.0)

Eight-six (81.9%) patients were frail over-all. Frail patients were mostly female (50, 47.6%), married (57, 54.3%), and were able to at least graduate college (62, 59.0%). Majority of these patients were hypertensive (57, 54.3%) and non-diabetic (57, 54.3%). Patients' age, sex, marital status, educational status, and comorbidities were not significantly associated with frailty (p = 0.139, 0.153, 0.422, 0.422, 1.000 for hypertension & 0.422 for diabetes mellitus, respectively).

Oncologic Profile & Frailty. Table 5 shows that the most common malignancy among the patients in the study was breast cancer (21, 29.53%). Cancers of lungs (17, 16.20%), prostate (14, 13.25%), female reproductive tract (12, 11.34%), & colorectum (11, 10.58%) were also among those reported. The bones were the most common sites of metastasis (63, 60%), followed by the lungs (30, 28.6%) and the liver (28, 26.7%) respectively.

Eighty patients were interviewed as outpatient in the Cebu Cancer Institute, while 25 patients were interviewed while they were hospitalized in Perpetual Succour Hospital for an acute condition. Infection (48%) was the most common cause of hospital admission, followed by malignant spinal cord compression (4, 16%) and malignant effusions (3, 12%). There were 3 patients (12%) who were admitted for contemplated surgical procedures (i.e. placement of tracheostomy & PEG tubes). Unsurprisingly, almost all patients (23, 21.9%) interviewed while they were admitted for an acute illness were frail. This, however, had no significant statistical association to frailty (p = 0.228).

Table VI shows the patients' oncologic profile. Over-all, the average time from when the diagnosis of cancer was first made among these patients was 27 months (S.D. ± 34). Majority of the patients (55, 59.8%) were already in the advanced stage at the time of diagnosis. Twenty-four (22.9%) patients had disease recurrence. Only 4 (4.3%) were diagnosed in the early stage while 33 (14, 15.2% and 19, 20.7%) were diagnosed when the disease was locally advanced (stage 2 and stage 3, respectively). About half of the patients (50, 47.6%) underwent primary surgical resection and chemotherapy thereafter (adjuvant treatment). Majority (98, 93.3%) of the patients were undergoing systemic chemotherapy. Most of them (62, 59.0%) were receiving intravenous (IV) chemotherapy in the Cebu Cancer Institute with majority in the 3rd to 4th cycle (S.D. ± 4) of treatment. Twenty-seven (25.7%) patients were receiving treatment orally and 9 (8.6%) were injecting anti-neoplastic drugs intramuscularly (IM). Seven (6.7%) patients were not and/or opted not to receive any form of chemotherapy at all.

Among those who were frail, the average period of time from when cancer was diagnosed was 26 months (S.D. ± 35), with majority of the patients (44, 47.8%) diagnosed with advanced disease. Twenty-one (20.0%) patients had history of recurrence. All patients (4, 4.3%) diagnosed during the early stage and majority (11, 12.0% and 16, 17.4%) of those diagnosed with locally advanced disease (stage 2 and stage 3, respectively) were frail. The stage of cancer upon diagnosis and the history of recurrence both had no significant associations with frailty (p-value of 0.963 & 0.611, respectively). Forty-one (39.0%) frail patients underwent adjuvant treatment. Fifty (47.6%) frail patients were receiving intravenous chemotherapy in the Cebu Cancer Institute, with majority of them in the 3rd (S.D. ± 4) cycle of treatment also. Twenty-two (21.0%) patients were receiving treatment orally and 7 (6.70%) intramuscularly. Chemotherapy, whether administered intravenously, orally, or intramuscularly, was not associated with frailty (p-value of 0.885, 1.000, & 1.000, respectively). All patients (7, 6.70%) not being treated or those who opted not to receive any form of anti-neoplastic treatment were frail. This finding, however, had no significant association with frailty (p = *0.436*).

Frailty and Functional Status. Over-all, the average time from the time from when the patients were diagnosed with advanced disease was 9 months (S.D. ± 15). Those who were frail were on the 9th month (S.D. ± 13) from when they were diagnosed with advanced disease; those who were robust, on the other hand, were on the 10th month (S.D. ± 13) from the time when they were diagnosed with stage IV cancer. The period of time from the diagnosis of advanced disease had no significant association with frailty (p = 0.391).

Table VI. Patients' Oncologic Profile and Frailty

ONCOLOGIC PROFILE:	TOTAL	FRAILTY INDEX		*p*-value
	(n = 105)	Robust	Frail	
1. No. of Months from the Diagnosis of Cancer, Mean ± S.D.	26.55 ± 34.171	24.84 ± 35.326	26.93 ± 35.326	0.963
2. Stage of Cancer during Diagnosis, *n* (%)				0.762
a. Stage I	4 (4.3%)	0 (0.0%)	4 (4.3%)	
b. Stage II	14 (15.2%)	3 (3.3%)	11 (12.0%)	
c. Stage III	19 (20.7%)	3 (3.3%)	16 (17.4%)	
d. Stage IV	55 (59.8%)	11 (12.0%)	44 (47.8%)	
3. Adjuvant Treatment, *n* (%)	50 (47.6%)	9 (8.6%)	41 (39.0%)	1.000
4. Recurrence, *n* (%)	24 (22.9%)	3 (2.9%)	21 (20.0%)	0.611
5. No. of Months from the Diagnosis of Advanced Cancer, (Mean ± SD)	9.46 ±15.211	10.21 ± 12.603	9.29 ± 12.603	0.391
6. Current Treatment, *n* (%)				
a. Intravenous (IV)	62 (59.0%)	12 (11.4%)	50 (47.6%)	0.885
b. Oral	27 (25.7%)	5 (4.8%)	22 (21.0%)	1.000
c. Intramuscular (IM)	9 (8.6%)	2 (1.9%)	7 (6.7%)	1.000
d. No treatment	7 (6.7%)	0 (0.0%)	7 (6.7%)	0.436
7. No. of Chemotherapy Cycles (Mean ± SD).	3.52 ± 4.128	4.00 ± 5.274	3.40 ± 3.860	0.847
8. Functional Status (ECOG Score), (Mean ± SD)	2 ± 1.0	1 ± 1.0	2 ± 1.0	0.001*
a. ECOG 0	2 (1.9%)	1 (1.0%)	1 (1.0%)	
b. ECOG 1	38 (36.2%)	13 (12.4%)	25 (23.5%)	
c. ECOG 2	41 (39.0%)	4 (3.8%)	37 (35.2%)	
d. ECOG 3	24 (22.9%)	1 (1.0%)	23 (22.0%)	

Table VII. ECOG Score as a Predictor of Frailty

	p-value	Odds Ratio	95% Confidence Interval (C.I.) for Odds Ratio	
			Lower	*Upper*
ECOG Score	0.002	3.685	1.623	8.366

Table VIII. Emotional Distress (Anxiety & Depression) and Frailty

EMOTIONAL DISTRESS	TOTAL	FRAILTY INDEX		*p*-value
	(n = 105)	Robust	Frail	
1. Anxiety, *n* (%)				
a. Normal	45 (42.9%)	4 (3.8%)	30 (28.6%)	0.001*
b. Anxious	60 (57.1%)	15 (14.35)	56 (53.3%)	
2. Depression, *n* (%)				
a. Normal	33 (31.4%)	13 (12.4%)	20 (19.0%)	0.000*
b. Depression	72 (68.6%)	6 (5.7%)	66 (62.9%)	

Table IX. Frailty as a Predictor of Anxiety

	p-value	Odds Ratio	95% Confidence Interval (C.I.) for Odds Ratio	
			Lower	*Upper*
Frailty	0.001	7.000	2.132	22.981

Table X. Frailty as a Predictor of Depression

	p-value	Odds Ratio	95% Confidence Interval (C.I.) for Odds Ratio	
			Lower	*Upper*
Frailty	0.000	7.150	2.406	21.246

Table VII shows significant association was seen between frailty and the functional status, as expressed through the European Cooperative Oncology Group (ECOG) Score (*p = 0.001*). Overall, the patients had an average ECOG Score of 2 ± 1. On average, robust patients had better ECOG Scores (1 ± 1) as opposed to those who were frail (ECOG Score 2 ± 1). The ECOG Score was found to be a good predictor for frailty, as the odds of being frail increased by 30% for every unit increase in the ECOG Score, with a computed OR of 3.685 (CI 1.623 – 8.366).

Frailty and Emotional Distress. Table VIII shows that 60 patients (57.1%) considered themselves anxious. Among them, 56 (53.3%) were frail. Among those who were robust, on the other hand, only 4 (3.8%) patients were anxious.

Seventy-two patients (68.6%) reported themselves depressed. Among them, 66 (62.9%) were frail. Only 6 (5.7%) of robust patients considered themselves depressed.

In this study, we found that there was a strong association between frailty, anxiety, and depression ($p = 0.001$ and $p = 0.000$, respectively). Interestingly, frailty, scored using the G-8 Frailty Scoring System, was found to be a good predictor for both anxiety and depression. As shown in *Tables IX and X*, the odds of being anxious and of being depressed was 7-times as much for frail, as opposed to those who were robust, with a computed OR of 7.000 (CI 2.132 – 22.981) and 7.150 (CI 2.406 – 21.246), respectively.

Discussion

This study found that 82% of elderly patients with advanced cancer were frail. This implies that majority of our elderly patients need a Comprehensive Geriatric Assessment (CGA) – an interdisciplinary approach where multidimensional medical, functional, psychosocial, and environmental assessments are conducted to develop a coordinated & long-term plan for the treatment of elderly patients with cancer.[7]

Expectedly, almost all patients who were enrolled in the study during a hospital admission for an acute illness were frail. Over-all, infection was still the most common cause of hospital admission. This finding was consistent with the article of R. Finberg[18] claiming that infections remain to be a common cause of death and an even more common cause of morbidity in cancer patients. This was followed by the frequently encountered oncologic emergencies -- spinal cord compression (16%) and malignant effusions (12%).

The patients' physiologic reserve, measured through the functional/performance status is a major determinant of outcome and mortality among cancer patients in general.[15] This study found that functional status was significantly associated with frailty. The study done by Takahashi et al.[19] found that both a lower G8 frailty score and a poorer ECOG Score were equally associated with worse survival. Our study found that on average, frail patients had an ECOG score of 2, while those who were robust had an average ECOG score of 1. Furthermore, this investigation found that the ECOG Score had a good predictive value for frailty – that is, the chances of being frail increased by 30% for every unit increase in the ECOG Score. The same investigation conducted by Takahashi et al. also found that frailty, using the G8 score, enhanced the prognostic value of the ECOG Sore in elderly patients with advanced cancer.[19]

The recognition of cancer, especially when in the advanced stage, is a tough event causing significant psychological anguish.[8] Major depression in patients with advanced cancer is common, with an average prevalence rate estimate of 15%.[9] In this study, we found that majority (67.8%) of elderly cancer patients with advanced disease were depressed. Depression had a very strong association with frailty. In the investigation done by Aprahamian et al., depression severity highly correlated with frailty severity, showing that frailty and depression were distinct but overlapping constructs that can even be difficult to distinguish in clinical practice.[2] Furthermore, this same study supported the predictive validity of frailty in depression, and thus for risk stratification in geriatric mental health care. Similarly, in our study, we observed that frailty is a fairly good predictor for depression. The chance of being depressed was 7-times as much for frail patients. All these findings were consistent with the results of the study done by L. Cao et al. which showed a bidirectional association between frailty and depressive symptoms. The same study reported that frailty was a risk predictor for subsequent depressive symptoms.[1]

Anxiety has been shown to mutually exist with depression.[8] Our study found that more than half (57.1%) of elderly patients with advanced cancer were anxious. Anxiety, like depression, had a strong association with frailty. This finding was consistent with the study done by Gilmore et al., which showed that as frailty increased in older patients with advanced cancer, patient's symptoms of depression and anxiety worsened and levels of distress rose.[12] Frailty was found to be good predictor of anxiety too. Our results revealed that the chance of being anxious was also 7-times as much for frail patients.

Conclusion

Frailty had a strong association with both anxiety and depression. Frailty, in addition, also had good predictive value for both anxiety and depression.

Physiologic reserve, as measured through the ECOG score, had a strong association and a good predictive value for frailty as well.

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