ORIGINAL RESEARCH

Symptom burden, psychological distress, and symptom management status in hospitalized patients with advanced cancer: a multicenter study in China

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Available online 14 October 2022

Background: The management of physical symptoms and psychological distress of cancer patients is an important component of cancer care. The purpose of this study was to evaluate the symptom burden, psychological distress, and management status of hospitalized patients with advanced cancer in China and explore the potential influencing factors of undertreatment and non-treatment of symptoms.

Patients and methods: A total of 2930 hospitalized patients with advanced cancer (top six types of cancer in China) were recruited from 10 centers all over China. Patient-reported MD Anderson Symptom Inventory, Hospital Anxiety and Depression Scale (HADS), and Patient Health Questionnaire-9 (PHQ-9) scales and symptom management—related information were collected and linked with the patient's clinical data. The proportion of patients reporting moderate-to-severe (MS) symptoms and whether they were currently well managed were examined. Multivariable logistic regression models were applied to explore the factors correlated to undertreatment and non-treatment of symptoms.

Results: About 27% of patients reported over three MS symptoms, 16% reported over five, and 9% reported over seven. Regarding psychological distress, the prevalence of HADS-anxiety was 29% and that of PHQ-9 depression was 11%. Sixty-one percent of patients have at least one MS symptom without any treatment. Sex [odds ratio (OR) = 2.238, 95% confidence interval (95% CI) 1.502-3.336], Eastern Cooperative Oncology Group (ECOG; OR = 0.404, 95% CI 0.241-0.676), and whether currently undergoing anticancer treatment (OR = 0.667, 95% CI 0.503-0.886) are the main factors correlated with the undertreatment of symptoms. Age (OR = 1.972, 95% CI 1.263-3.336), sex (OR = 0.626, 95% CI 0.414-0.948), ECOG (OR = 0.266, 95% CI 0.175-0.403), whether currently undergoing anticancer treatment (OR = 0.356, 95% CI 0.249-0.509), and comorbidity (OR = 0.713, 95% CI 0.526-0.966) are the main factors correlated with the non-treatment of symptoms.

Conclusions: This study shows that hospitalized patients with advanced cancer had a variety of physical and psychological symptoms but lacked adequate management and suggests that a complete symptom screening and management system is needed to deal with this complex problem.

Key words: symptom burden, psychological distress, symptom management, cancer

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INTRODUCTION

Symptom burden is an important cause of suffering in cancer patients and affects patients of all cancer types, and all disease and treatment stages.[1-6] Symptom management should be an essential part of cancer care. Symptom burden in patients with advanced or metastatic cancer is usually

even heavier, including both physical symptoms and psychological distress, which not only affect patients' quality of life, but also impact their ongoing treatments negatively, cause longer hospital stays, and an even earlier death.[3,7-13]

Although symptom burden is a common problem in cancer patients and there are several guidelines on managing various symptoms, symptom management remains a big challenge in clinical cancer care. There is a lack of research on the factors contributing to inadequate symptom management in advanced cancer patients.[14]

Most previous studies focused on one or two specific symptoms, such as pain.[15] There are few studies on the status of the overall symptom burden of cancer patients. More research is needed to clarify the definition, prevalence, and treatment of symptom burden, especially in different populations, cancer types, or disease stages.

In addition, most of the studies were conducted in western countries. It is unclear whether the same results would be found in eastern countries. Previous studies reported the symptom burden of cancer patients in some specific regions in China,[16-19] but the generalization of the results was limited due to the limitations of the representativeness of the study samples,and a national survey is needed.

Also, few studies explore the factors that influence symptom management. There are two research questions in this area: Firstly, among the patients who were receiving treatments for their symptoms, what factors were related to their uncured symptoms? Secondly, what factors were related to patients receiving treatments for symptoms or not when they all had at least one moderate-to-severe (MS) symptom?

More research is needed to gain a better understanding of the symptom burden and symptom management of hospitalized patients with advanced cancer to help improve symptom management in this population.

The primary objective of this study was to investigate the prevalence of symptoms in hospitalized patients with advanced cancer. The secondary objectives were to explore the potential influencing factors of undertreatment and non-treatment of symptoms.

PATIENTS AND METHODS

Design and subjects

This is a multicenter cross-sectional study. From August 2019 to December 2020, we conducted the investigation in 10 cancer centers distributed in 10 geographically representative provinces in China, covering the eastern (four provinces), middle (four provinces), and western regions (two provinces), which were divided according to both geographic regions and economic developmental levels.

Eligible patients were aged ≥18 years and diagnosed with advanced cancer of hospitalized patients, including esophageal cancer, gastric cancer, colorectal cancer, breast cancer, liver cancer, and lung cancer, with the top six typical solid cancers accounting for 63.5% of new cancer cases and 72.6% of cancer death cases annually in China.[20] We defined patients with advanced cancer as those not being treated with curative intent.[7] Patients with major communication difficulties or cognitive impairment, or those too frail to fill the questionnaire, were excluded.

This study has been registered as a clinical trial, and the project was approved by the local ethics committee on human research and institutional review board of the Peking University Cancer Hospital on 14 May 2019 (study #2019YJZ34). All participants provided their informed consent.

Study process

Before the project started, researchers in each center were trained and assessed regarding the standardized operation manual, electronic patient-reported outcome (ePRO) process, and management procedure. The data collection system on the research electronic data capture (Redcap) were used in this study. PROs are increasingly valued in research and clinical practice, and the use of patient-centered electronic health survey in this study is not only time saving but also can provide a guarantee for data quality.[21,22]

Patients were recruited at their first hospital admission. After informed consent, patients completed clinical and personal general information questionnaires and several standard measures through an ePRO platform within 3 days.

Measures

In this study, we used the MD Anderson Symptom Inventory (MDASI), the Patient Health Questionnaire-9 (PHQ-9), and the Hospital Anxiety and Depression Scale (HADS) to assess physical and psychological symptoms.

MDASI is a widely used symptom inventory. The MDASI Chinese version has good reliability and validity. The current study analyzes 13 core items for symptom severity on a 0-10 scale. Symptoms ranging from 5 to 6 were defined as 'moderate', and 7 to 10 as 'severe'.[23] MDASI symptom scores have been used in previous studies.[24,25]

The PHQ-9 was used to evaluate the depression of patients in the past 2 weeks. The simplified Chinese version of PHQ-9 has a good validation. According to the Diagnostic and Statistical Manual of Mental Disorders-Fourth Edition (DSM-IV), patients were defined to have major depressive disorder (MDD) if they had at least one symptom scored ≥2 in the first two symptoms ('loss of interest', 'low mood'), plus at least five symptoms rated ≥2 (suicidal ideation > 0).[26]

The HADS has 14 items with a score spectrum of 0-3 for each item, which is used to measure the anxiety and depression for the patients in the past week. Patients were defined to have anxiety/depression if the anxiety/depression subscale score was ≥8. It is used in cancer patients with good reliability and validity and recommended for patients with advanced cancer or receiving palliative care.[27]

General demographic and disease data questionnaire: demographic data include age, sex, education, etc. The latter includes disease diagnosis, stage, whether currently receiving cancer therapy, whether currently receiving therapy for symptoms, and comorbidity.

Symptom burden management

Symptom burden was defined as 'at least one MS symptom in the 13 core symptoms of MDASI'.

The status of treatment to control symptoms was determined through two questions: (i) 'Do you currently have any medication to manage symptoms?' (ii) 'Do you currently have non-drug treatment to manage symptoms?' If selecting 'yes' for either of these two questions, it is defined as patients with current symptom management.

Combining the two aforementioned situations, we defined the following: (i) Undertreatment of symptoms, at least one MS symptom and have currently symptom management, to answer the research question 'among the patients who were receiving treatments for their symptoms, what factors were related to their uncured symptoms?' (ii) Non-treatment of symptoms, at least one MS symptom, but no treatment at present, to answer the research question 'what factors were related to patients receiving symptom treatments or not when they all had at least one MS symptom?'

Statistical analysis

The demographic distribution and cancer characteristics of the patients were analyzed. The sample of patients were grouped by the number of reported MS symptoms into five groups: no symptom, at least one MS symptom, at least three MS symptoms, at least five MS symptoms, and at least seven MS symptoms.[25] Cochran—Mantel—Haenszel (CMH) tests were used to examine the association between MS symptoms, psychological distress, cancer primary sites, and current therapy. Odds ratios (ORs) and P values were used to determine the strength of the associations and statistical significance.

The potential related factors for undertreatment of symptoms and non-treatment of symptoms were explored. Univariate and multivariable logistic regressions were used to assess the relationship of undertreatment of symptoms and non-treatment of symptoms and cancer-related variables while simultaneously controlling for all demographic covariates. Survey design (cluster sampling) variables were applied in all logistic regression analyses to account for patient-level clustering within cancer centers. Analyses were conducted using SAS 9.4 (SAS Institute Inc., SAS Campus Drive, Cary, NC).

RESULTS

A total of 3000 patients were enrolled from 10 cancer centers, and finally 2930 patients entered the result analysis, including 702 patients with lung cancer (24%), 511 with breast cancer (17%), 455 with colorectal cancer (16%), 448 with gastric cancer (15%), 418 with esophagus cancer (14%), and 364 with liver cancer (13%). The median age of the sample was 57 years old (Table 1).

Table 1. Patient demographic and disease characteristics (N = 2930)

Characteristic	n	%
Age, years		
18-45	439	(15.38)
46-64	1720	(60.25)
≥65	696	(24.37)
Sex		
Female	1183	(41.26)
Male	1684	(58.74)
Education		
Middle school and under	1595	(56.94)
High school and professional school	774	(27.63)
College and above	432	(15.43)
Smoking history		
No	1659	(58.09)
Yes	1197	(41.91)
Disease stage		
No evidence of disease	125	4.51
Locoregional	968	34.91
Locoregional plus metastatic	210	7.57
Metastatic	1470	53.01
Disease status		
Complete remission	38	(1.37)
Partial remission	546	(19.70)
Stable disease	1046	(37.75)
Progressive disease	802	(28.94)
Primary site		
Breast	511	(17.63)
Stomach	448	(15.46)
Esophagus	418	(14.42)
Liver	364	(12.56)
Lung	702	(24.22)
Colorectal	455	(15.7)
Weight loss in the previous 6 months		
≤5%	1968	(67.91)
5%-10%	554	(19.12)
10%-20%	159	(5.49)
≥20%	66	(2.28)
ECOG PS		
0	839	(28.95)
1	1525	(52.62)
2	534	(18.43)
Prior chemotherapy		
No	1079	(39.31)
Yes	1623	(59.13)
Prior radiotherapy		
No	2236	(81.73)
Yes	456	(16.67)
Prior surgery		
No	1585	(57.14)
Yes	1175	(42.36)
Patient currently receives cancer therapy		
No	759	(27.31)
Yes	1956	(70.39)
Patient currently receives drug therapy for symptoms		
No	1719	(61.9)
Yes	977	(35.18)
Patient currently receives non-drug therapy for symptoms		
No	2162	(85.02)
Yes	278	(10.93)
Patient currently receives strong opioid therapy		
No	2775	(94.71)
Yes	155	(5.29)
Patient currently receives weak opioid therapy		
No	2878	(98.23)
Yes	52	(1.77)
Patient currently receives psychiatric drug		
No	2859	(98.01)
Yes	58	(1.99)

ECOG PS, Eastern Cooperative Oncology Group performance status.

Table 2. Percentages of patients reporting MS symptoms by number and psychological distress

No. of MS symptoms reported	Cancer primary site[a]						Current therapy[b]		
	Lung n = 702	Gastric n = 448	Liver n = 364	Colorectal n = 455	Breast n = 511	Esophagus n = 418	No n = 759	Yes n = 1956	Total N = 2930
0	43.30	44.87	53.96	50.66	39.45	53.96	54.51	44.42	46.79
≥1	56.70	55.13	46.39	49.34	60.55	46.04	45.49	55.58	53.21
≥3	29.34	32.81	17.22	28.19	31.56	20.62	22.28	28.84	27.43
≥5	17.52	18.08	10.56	15.64	19.72	12.71	14.19	16.80	16.18
≥7	8.55	10.71	5.56	9.03	11.44	7.19	7.16	9.63	8.95
HADS-A	30.62	27.01	21.15	33.85	31.90	29.43	31.62	28.07	29.56
HADS-D	31.19	34.82	24.45	36.92	32.49	33.25	36.62	30.78	32.35
PHQ-9 MDD	9.14	9.16	5.77	14.95	8.86	4.19	14.10	10.06	11.27

HADS-A, Hospital Anxiety and Depression Scale-anxiety; HADS-D, Hospital Anxiety and Depression Scale-depression; MS, moderate-to-severe; PHQ-9, Patient Health Questionnaire-9; MDD, major depressive disorder.
[a] Comparison among different cancer types (chi-square test);
[b] Association between undergoing current therapy and symptom burden was explored (Cochran—Mantel—Haenszel test, CMH).

Table 3. Univariable and multivariable logistic regression analyses for undertreatment of symptom

Outcomes	Univariate analysis		Multivariate analysis	
	OR (95% CI)	P	OR (95% CI)	P
Age, years				
18-45	1.466 (1.010-2.128)	**0.044**	1.066 (0.674-1.687)	0.784
46-64	1.232 (0.952-1.595)	0.112	1.202 (0.888-1.627)	0.233
≥65	Ref		Ref	.
Sex				
Female	1.844 (1.469-2.315)	**<0.0001**	2.238 (1.502-3.336)	**<0.0001**
Male	Ref		Ref	
Education				
College and above	1.005 (0.730-1.384)	0.976	0.996 (0.688-1.442)	0.983
High school and professional school	1.484 (1.136-1.939)	**0.003**	1.317 (0.963-1.801)	0.084
Middle school and under	Ref		Ref	
Married or single				
Married	1.122 (0.623-2.022)	0.380	1.087 (0.546-2.166)	0.811
Single	Ref		Ref	
Disease site				
Esophagus	0.850 (0.564-1.282)	0.438	0.774 (0.486-1.234)	0.281
Breast	2.048 (1.394-3.009)	**<0.0001**	1.720 (1.027-2.881)	**0.039**
Colorectal	1.257 (0.870-1.816)	0.222	1.056 (0.683-1.635)	0.805
Liver	0.776 (0.480-1.254)	0.300	0.988 (0.565-1.728)	0.966
Lung	1.512 (1.037-2.205)	0.031	1.238 (0.792-1.935)	0.349
Stomach	Ref		Ref	
Disease status				
Complete remission	1.476 (0.695-3.133)	0.310	1.747 (0.810-3.769)	0.154
Progressive disease	1.256 (0.976-1.616)	0.077	1.169 (0.858-1.592)	0.322
Partial remission	0.805 (0.600-1.080)	0.148	0.932 (0.656-1.324)	0.694
Stable disease	Ref		Ref	
Disease stage				
No evidence of disease	0.706 (0.407-1.225)	0.215	0.566 (0.299-1.071)	0.080
Locoregional plus metastatic	0.931 (0.638-1.358)	0.709	1.099 (0.675-1.789)	0.705
Locoregional	0.995 (0.778-1.272)	0.966	1.013 (0.747-1.375)	0.933
Metastatic	Ref		Ref	
ECOG PS				
0	0.383 (0.254-0.577)	**<0.0001**	0.404 (0.241-0.676)	**<0.0001**
1	0.465 (0.313-0.692)	**0.0002**	0.497 (0.307-0.803)	**0.004**
2	Ref		Ref	
Weight				
≤5%	0.291 (0.168-0.503)	**<0.0001**	0.303 (0.158-0.581)	**0.0003**
5%-10%	0.562 (0.304-1.042)	0.067	0.529 (0.256-1.095)	0.086
≥10%	Ref		Ref	
Patient currently receives therapy				
No	0.653 (0.517-0.826)	**0.0004**	0.667 (0.503-0.886)	**0.005**
Yes	Ref		Ref	
Comorbidity				
No	1.305 (1.012-1.681)	**0.039**	1.236 (0.916-1.669)	0.165
Yes	Ref		Ref	

Bold values indicate statistical significance.
95% CI, confidence interval; ECOG PS, Eastern Cooperative Oncology Group performance status; OR, odds ratio; Ref, reference.

Symptom burden, psychological distress, and symptom management status

Around 27% (802/2930) of patients were rated over three core symptoms in MDASI as MS, 16% (474/2930) rated over five, and 9% (261/2930) rated over seven core symptoms as MS (Table 2). According to the scoring rules of different scales,the prevalence of all kinds of psychological distress was higher than 10%,including anxiety (29.6%, defined as the HADS-anxiety score $\geq$ 8), depression (32.4%, defined as the HADS-depression score $\geq$ 8), and MDD (11.3%, defined by the specific scoring rules of PHQ-9) (Table 3).

A total of 977 (35%) patients received medications for symptom management, and 278 patients accepted non-drug therapies for symptom management. Among patients taking medications to manage symptoms, 155 patients (5.29%) were taking opioids and 58 (1.99%) patients were taking psychiatric medication (Table 1).

Among the patients with at least one MS symptom, 61% (763/1248) patients did not receive any kind of therapies for symptom management (Figure 1).

Comparison of symptom burden among different subgroups

For different cancer sites, the percentage of patients having three or more MS symptoms ranged from 17% to 33%, while the percentage of patients having five or more MS symptoms ranged from 11% to 20%. Patients with breast cancer, lung cancer, and gastric cancer reported a higher percentage of $\geq$1, $\geq$3, $\geq$5, and $\geq$7 MS symptoms than the patients with

esophagus cancer or liver cancer (all $P < 0.05$) (Table 2). Compared with patients without anticancer therapy currently, patients with current anticancer therapy reported a higher percentage of $\geq$3, $\geq$5, and $\geq$7 MS symptoms (29% versus 22%, 17% versus 14%, 10% versus 7%, all $P < 0.001$) (Table 2).

Comparison of psychological distress among different subgroups

There were no differences found on prevalence of any psychological distress among patients with different cancer sites, neither on different disease statues nor on disease stages. Compared with patients receiving anticancer therapies,the patients without current anticancer therapy reported a higher prevalence of depression (HADS-D $\geq$ 8) (37% versus 31%, $P = 0.01$) and MDD (14% versus 10%, $P = 0.002$) (Table 2).

Factors correlated to undertreatment or non-treatment of symptoms

The results from multivariable logistic regressions showed female patients were more likely to report having symptoms despite receiving treatments for their symptom (OR = 2.238, $P < 0.001$), while the patients with ECOG rated 0 (OR = 0.404, $P < 0.001$) or 1 (OR = 0.497, $P = 0.004$), and patients without current anticancer therapy (OR = 0.667, $P = 0.005$) were less likely to report undertreatment of symptoms (Table 3).

Patients younger than 65 years old were more likely to report receiving treatments for their symptoms (OR = 1.972, 1.797, $P = 0.002$, 0.001). Female patients (OR =
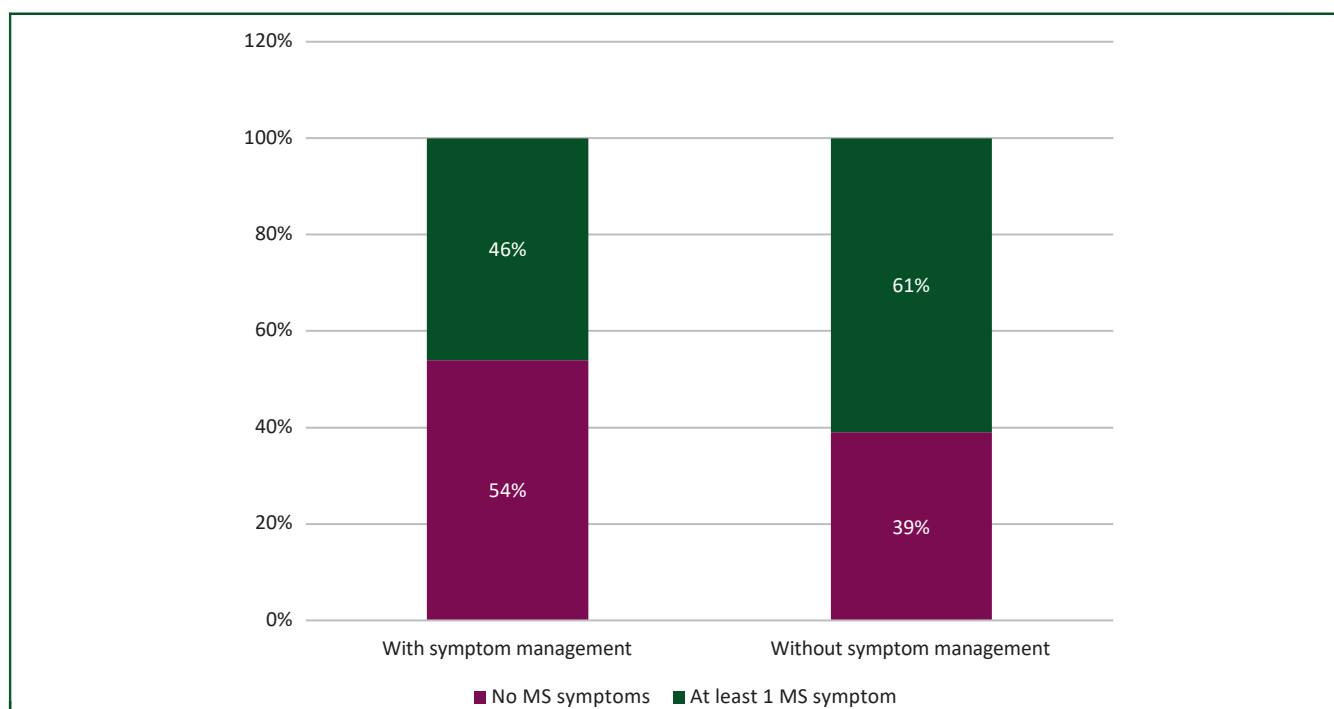

Figure 1. Status of symptom management. Among the patients with at least one MS symptom, 61% (763/1248) did not receive any kind of therapy for symptom management.
MS, moderate-to-severe.

0.626, $P = 0.027$), patients with ECOG rated 0 (OR = 0.266, $P < 0.001$) or 1 (OR = 0.335, $P = 0.004$), the patients without current anticancer therapies (OR = 0.356, $P < 0.001$), and patients without comorbidities (OR = 0.713, $P = 0.029$) were less likely to report receiving treatment for symptoms (Table 4).

DISCUSSION

Our study is the first to reveal the serious problems and challenges of symptom management in hospitalized patients with advanced cancer in China. About 27% of patients suffered at least three MS symptoms and around one-third reported at least one kind of significant psychological distress. However, 61% of patients who reported at least one MS symptom did not receive any treatment for symptom management. The proportion of patients using opioid is 6.6%, and the proportion of patients using psychiatric drug is around 2%, lower than other studies in the western countries.[15] These findings suggest that inadequate symptom management remains a serious problem for cancer patients, especially in developing countries. It is necessary to integrate distress and symptom screening and management into routine care in clinical oncology. One possible reason for poor symptom management is that there are still some wrong perceptions of symptom management in both patients and oncology clinicians, such as the belief that symptoms are necessary consequences of cancers and cancer treatments, and symptom management may affect the anticancer treatments negatively.[15,28,29]

Table 4. Univariable and multivariable logistic regression analyses for non-treatment of symptom

Outcomes	Univariate analysis		Multivariate analysis	
	OR (95% CI)	P	OR (95% CI)	P
Age, years				
18-45	1.832 (1.274-2.635)	**0.001**	1.972 (1.263-3.080)	**0.002**
46-64	1.385 (1.045-1.837)	**0.023**	1.797 (1.262-2.560)	**0.001**
≥65	Ref		Ref	
Sex				
Female	0.739 (0.589-0.928)	**0.009**	0.626 (0.414-0.948)	**0.027**
Male	Ref		Ref	
Education				
College and above	1.437 (1.042-1.982)	**0.027**	1.561 (1.048-2.325)	**0.028**
High school and professional school	1.474 (1.142-1.901)	**0.002**	1.224 (0.909-1.649)	0.183
Middle school and under	Ref		Ref	
Married or single				
Married	1.032 (0.578-1.841)	0.915	1.177 (0.559-2.480)	0.667
Single	Ref		Ref	
Disease site				
Esophagus	1.349 (0.866-2.103)	0.185	0.889 (0.533-1.483)	0.652
Breast	1.001 (0.673-1.490)	0.996	0.673 (0.400-1.132)	0.135
Colorectal	0.633 (0.414-0.967)	**0.034**	0.428 (0.256-0.716)	**0.001**
Liver	2.872 (1.775-4.646)	**<0.0001**	2.368 (1.342-4.177)	**0.002**
Lung	1.613 (1.110-2.346)	**0.012**	0.941 (0.601-1.472)	0.789
Stomach	Ref		Ref	
Disease status				
Complete remission	0.262 (0.088-0.786)	**0.016**	0.742 (0.179-3.073)	0.680
Progressive disease	0.887 (0.683-1.152)	0.369	0.938 (0.682-1.291)	0.694
Partial remission	2.186 (1.668-2.864)	**<0.0001**	2.012 (1.408-2.876)	**0.0001**
Stable disease	Ref		Ref	
Disease stage				
No evidence of disease	0.239 (0.098-0.588)	0.001	0.666 (0.241-1.839)	0.432
Locoregional plus metastatic	0.318 (0.190-0.531)	<0.0001	0.307 (0.174-0.541)	**<0.0001**
Locoregional	1.315 (1.063-1.626)	0.011	0.906 (0.662-1.240)	0.537
Metastatic	Ref		Ref	
ECOG PS				
0	0.220 (0.158-0.306)	**<0.0001**	0.266 (0.175-0.403)	**<0.0001**
1	0.363 (0.270-0.488)	**<0.0001**	0.335 (0.237-0.474)	**0.004**
2	Ref		Ref	
Weight				
≤5%	0.694 (0.462-1.041)	0.077	0.884 (0.538-1.451)	0.624
5%-10%	1.446 (0.924-2.261)	0.106	1.515 (0.883-2.598)	0.131
≥10%	Ref		Ref	
Patient currently receives therapy				
No	0.307 (0.228-0.413)	**<0.0001**	0.356 (0.249-0.509)	**<0.0001**
Yes	Ref		Ref	
Comorbidity				
No	0.723 (0.561-0.932)	**0.012**	0.713 (0.526-0.966)	**0.029**
Yes	Ref		Ref	

Bold values indicate statistical significance.
95% CI, confidence interval; ECOG PS, Eastern Cooperative Oncology Group performance status; OR, odds ratio; Ref, reference.

Another noteworthy finding of our study is that patients receiving active anticancer treatments currently had a greater symptom burden, especially for physical symptoms; however, they reported a lower prevalence of psychological distress compared with patients without any anticancer treatments currently. The possible explanation is that the active anticancer treatments may give hope to patients. Attention should be paid to the psychological distress of patients without active anticancer treatments currently. Another possible reason is the treatment-related side effects brought by the anticancer treatment itself. Previous studies found that the treatment adverse reactions are also a major source of symptom burden,[30-32] especially the burden of somatic symptoms.

Previous studies mostly focused on the factors correlated to heavier symptom burden, while our study fills the gap by exploring the factors correlated to symptom management. Our study found female patients were more likely to have symptoms even when they were receiving treatments for their symptoms; in other words, female patients were more likely to have undertreatment of their symptoms. Even when female patients had symptoms, they were more likely to not be treated. These findings suggest that sex affects symptom burden and management and should be considered for specific assessment and intervention.[33,34] The results from our study showed that poor ECOG status was correlated to both undertreatment and non-treatment of symptoms. Previous studies almost only focused on the relationship between the ECOG status and symptom burden but few studies explored the relationship between ECOG status and symptom management.[5,7,25,35,36] The patients currently receiving cancer therapy were more likely to have no symptom management or poor symptom management,[4,25] which suggests that symptom management should not be ignored during the active anticancer treatments. The priority of symptom management should be valued in clinical care.

Our study has several strengths. It is a large multicenter cross-sectional study and covers the top six typical solid cancers in China. The results highlight that hospitalized patients with advanced cancer in China had heavy symptom burden. At present, more and more guidelines and intervention studies emphasize the importance of symptom/distress screening and management, but most studies focused on one or two specific symptoms, or only physical symptoms. Our study assessed both symptom burden and psychological distress. An ePRO platform was used for data collection, which not only saved survey time but also provided a guarantee of data quality control.

Our study is a cross-sectional study, so the data could not illustrate the changes of symptom burden longitudinally and could not support any causality analysis, which is the main limitation of this study. This study mainly focuses on the symptom burden as a whole and does not analyze the specific symptoms and symptom management. We plan to explore in further analysis, especially the study on the severity and management status of some core symptoms (e.g. pain and fatigue).

Overall, hospitalized patients with advanced cancers have a variety of physical and psychological symptoms but lack adequate management. A construction of a complete symptom screening and management system is needed to deal with this complex problem.

DISCLOSURE

The authors have declared no conflicts of interest.

DATA SHARING

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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