

Anxiety, Depression, and Associated Factors among Cancer Patients and Survivors in Japan Following the Reclassification of COVID-19 to a Category V Infectious Disease

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Abstract

Background: The COVID-19 pandemic has had a significant impact on cancer patients and survivors, raising concerns about increases in anxiety and depression. In Japan, COVID-19 was reclassified as a Category V Infectious Disease in May 2023, and social interactions gradually resumed. However, there is limited knowledge about the psychological state of cancer patients and survivors and associated factors. This study aimed to clarify the actual state of anxiety and depression among cancer patients and survivors after the pandemic and their associated factors. **Materials and Methods:** In June 2023, an Internet survey was conducted targeting 700 cancer patients and survivors (mean age, 63.1 ± 13.0) to evaluate anxiety and depression (HADS), social support, physical symptoms (STAS-J), and other factors. **Results:** HADS anxiety and depression scores were significantly higher in cancer patients and survivors younger than 64 years than in those 65 years or older ($p < 0.05$). Anxiety and depression scores were higher in women than in men ($p < 0.05$). All components of support (emotional, instrumental, informational, and appraisal) were significantly associated with anxiety and depression, and scores were lower among those receiving support ($p < 0.05$). The proportion of patients receiving support was low, particularly in patients younger than 65 years. Anxiety and depression scores were significantly higher among those with severe symptoms ($p < 0.05$). **Discussion:** Even after the COVID-19 pandemic, cancer patients and survivors continue to experience a substantial psychological burden. Levels of anxiety and depression tended to be higher particularly in adults younger than 64 years, women, those receiving inadequate social support, and those with severe symptoms. In the future, support strategies should emphasize facilitating social interaction among adult patients and survivors and strengthening symptom management. The findings of this study serve as a basis for considering appropriate support measures during future pandemics or periods of social restriction.

Keywords: Cancer Patients- Cancer Survivors- Covid-19- Anxiety- Depression

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Introduction

The spread of COVID-19 after 2020 had very detrimental effects on patients with chronic diseases. Cancer patients were particularly vulnerable to the effect of COVID-19 [1], and it has been pointed out that when infected, they were at higher risk of exacerbation and death than non-cancer patients [2]. Thus, cancer patients themselves were very anxious about contracting COVID-19. It has been suggested that anxiety about contracting COVID-19 affected the QOL of cancer

patients [3] and that a feeling of loneliness experienced during the coronavirus pandemic was associated with depression [4]. It was also observed in Japan that cancer patients and survivors tended to avoid going to the hospital out of a fear of infection [5], and hospitals were forced to restrict opportunities for them to interact each other such as at patient group meetings and cancer salons held at the hospital. Cancer patients and survivors in Japan during the COVID-19 pandemic lost opportunities to

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discuss the physical symptoms of their illness and physical symptoms due to treatment (and how to deal with them), openly talk about psychological and social problems, and communicate with others. Thus, we think it is likely that they had a variety of psychological and social problems.

In Japan, after the first state of emergency was declared in April 2020, various restrictions on social activities and interactions to prevent the spread of infection, such as self-restraint on nonessential and nonurgent outings and restricted use of public facilities, were imposed. However, in May 2023, COVID-19 was reclassified according to the Infectious Diseases Control Law, and its risk level was determined to be no greater than that of common infections such as seasonal influenza. As a result, restrictions to prevent the spread of infection began to be lifted, and social interactions among people gradually began to resume. However, it is not clear what psychological impacts cancer patients and survivors experienced after the pandemic. As the number of infections continues to fluctuate, the effects on cancer patients and survivors are likely to be ongoing.

Thus, this study aimed to clarify the anxiety and depression experienced by cancer patients and survivors after the COVID-19 pandemic and their associated factors and collect information in order to gain insights into what would help to support cancer patients and survivors during future pandemics or in situations where social interaction is limited.

Materials and Methods

1. Study design and participants

This study was conducted as an anonymous online questionnaire survey. A domestic Internet survey company was commissioned to recruit participants and collect data. Individuals registered with the survey company whose profile indicated “cancer patient/survivor” were invited to participate.

In June 2023, eligible participants were sampled according to the following criteria:

(1) individuals who had been diagnosed with cancer in the past, and

(2) individuals aged 20 years or older at the time of the survey.

This study was approved by the Ethics Review Committee of Hyogo Medical University (Approval No. 4291). All procedures were conducted in accordance with the principles of the Declaration of Helsinki. Informed consent was obtained electronically from all participants prior to participation.

2. Measures for evaluation

1) Anxiety and depression

Anxiety and depression were measured using the HADS (Hospital Anxiety and Depression Scale). The HADS is a self-rating scale consisting of 7 items for anxiety and 7 items for depression, 14 items in total. The reliability and validity of the Japanese version have been confirmed [6].

2) Social support

On the basis of the definition of social support by House [7], we asked the following questions: Emotional support: Is there anyone who listens to your worries or anxieties and empathizes with you?; Instrumental support: Is there anyone who helps with housework or personal care or provides financial assistance?; Informational support: Is there anyone you can consult with related to problems with illness or treatment or you can ask questions about things you cannot understand?; and Appraisal support: Is there anyone who acknowledges your efforts or encourages you?

3) Physical symptoms

Twenty items were selected from the Japanese version of the Support Team Assessment Schedule (STAS-J) [8] excluding psychological content that overlapped with HADS. These indices were selected for the following reasons: because subjects in this study had a variety of cancer types, treatments, and disease stages, comprehensive indices to capture symptoms that could affect many subjects were needed; the STAS-J evaluates symptoms on the basis of the severity of the effect they have on daily life; and the indices cover a wide range of symptoms and are easy to use for a diverse range of cancer patients and survivors.

4) Demographic data

As personal background factors, age, sex, comorbidities, marital status, cohabiting of family members, employment status, and participation in social activities were surveyed.

3. Analysis methods

Comparative analyses (t test, analysis of variance, and χ^2 test) were performed by combining anxiety, depression, social support, QOL, physical symptoms, and personal factors from demographic data (such as cancer type, age, and sex). Results were considered statistically significant if the p value was less than 0.05. SPSS for Windows 23 was used for statistical analyses.

Results

1. Demographic data

There were 700 subjects with a mean age of 63.1 ± 13.0 years. Their cancer types included colorectal cancer (n = 131), gastric cancer (n = 110), and lung cancer (n = 98) (Table 1).

2. Anxiety and depression in cancer patients and survivors after the COVID-19 pandemic and associated factors

1) Proportions by age group

The mean HADS anxiety scale score was 6.23 (SD, 4.65) in adult cancer patients and survivors younger than 64 years, which was significantly higher than 2.97 (SD, 3.30) in those 65 years or older. Regarding depression scale scores, the mean was 8.96 (SD, 4.37) in adult cancer patients and survivors, which was also higher than 6.24 (SD, 4.14) in those 65 years or older.

Table 1. Demographic Data

		n = 700	
		Mean $\pm$ SD [range] or n (%)	
Age		63.1 $\pm$ 13.0	[23-85]
Sex	Women	350	(50.0)
Employment Status	Full-time Employment	187	(26.7)
	Part-time/Temporary Employment	95	(13.6)
	Retired	123	(17.6)
	Homemaker	147	(21.0)
	Student	7	(1.0)
	Unemployed	120	(17.1)
Co-residing Family Members ^a	Spouse	502	(71.7)
	Child / Children	198	(28.3)
	Father / Father-in-law	52	(7.4)
	Mother / Mother-in-law	77	(11.1)
	Living Alone	118	(16.9)
Age at Diagnosis		54.6 $\pm$ 13.5	[22-79]
Cancer Type	Stomach	110	(15.7)
	Colorectal	131	(18.7)
	Lung	98	(14.0)
	Liver	37	(5.3)
	Breast	86	(12.3)
	Prostate	67	(9.6)
	Uterus	40	(5.7)
	Esophagus	33	(4.7)
	Pancreas	27	(3.9)
	Kidney/Urinary Tract	22	(3.1)
	Malignant Lymphoma	37	(5.3)
	Other	154	(26.6)
Current Treatment Status	Curative Treatment	141	(20.1)
	Palliative care/Prolongation of Life	26	(3.7)
	In Remission or Cured /Under Follow-up	384	(54.6)
	Not Receiving Treatment	106	(15.1)
Past Treatment History ^b	Surgery	548	(78.3)
	Hormone Therapy	83	(11.9)
	Drug Therapy	256	(36.6)
	Radiation Therapy	158	(22.6)

Missing data excluded, Abbreviations. SD = standard deviation. a, b) multiple answers allowed

2) Comparison by sex

The mean HADS anxiety scale score was 5.17 (SD, 4.26) in female cancer patients and survivors, which was significantly higher than 3.89 (SD, 4.30) in male cancer patients and survivors. Regarding depression scale scores, the mean was 8.01 (SD, 4.38) in female cancer patients and survivors, which was higher than 7.05 (SD, 4.49) in male cancer patients and survivors (Tables 2 and 3).

3) Comparison by the presence/absence of severe symptoms

In this analysis, the presence of one or more

symptoms of “4 = severe and often” or “5 = severe and persistent” in the STAS-J was regarded as “the presence of a severe symptom.” There were 136 subjects (19.4%) who had severe symptoms, and 63 (16.4%) of 384 survivors whose cancer was cured or in remission also had one or more severe symptoms. Both anxiety and depression were significantly higher in patients and survivors with severe symptoms (Tables 2 and 3).

4) Comparison by the presence/absence of social support

Subjects who replied that they were receiving social support for all support items had significantly lower anxiety and depression values. The proportion of those

Table 2. Age, Sex, Presence of Severe Symptoms and Anxiety

	n	HADS Anxiety [range: 0-21]	
		Score	P-value
		Mean $\pm$ SD	
Age group			
Under 65 years old	332	6.3 $\pm$ 4.7	
65 years old and over	368	3.0 $\pm$ 3.3	< .0001
Gender			
Male	350	3.9 $\pm$ 4.3	
Female	350	5.2 $\pm$ 4.3	< .0001
Presence of Severe Symptoms			
Absence of severe symptoms	564	3.8 $\pm$ 3.7	
Presence of severe symptoms	136	7.6 $\pm$ 5.1	< .0001
Social Support			
Emotional Support Available	542	4.2 $\pm$ 4.2	
Emotional Support Not Available	158	5.7 $\pm$ 4.5	< .001
Instrumental Support Available	457	4.3 $\pm$ 4.3	
Instrumental Support Not Available	243	5.0 $\pm$ 4.4	0.053
Informational Support Available	492	4.2 $\pm$ 4.2	
Informational Support Not Available	208	5.4 $\pm$ 4.5	< .001
Appraisal Support Available	517	4.3 $\pm$ 4.2	
Appraisal Not Available	181	5.3 $\pm$ 4.5	< .001

The presence of one or more symptoms of “4 =severe and often” or “5 = severe and persistent” in the STAS-J was regarded as “the presence of a severe symptom.”

Table 3. Age, Sex, Presence of Severe Symptoms and Depression

	n	HADS Depression [range: 0-21]	
		Score	P-value
		Mean $\pm$ SD	
Age group			
Under 65 years old	332	9.0 $\pm$ 4.4	
65 years old and over	368	6.2 $\pm$ 4.1	< .0001
Gender			
Male	350	7.0 $\pm$ 4.5	
Female	350	8.0 $\pm$ 4.4	< .0001
Presence of Severe Symptoms			
Absence of severe symptoms	564	6.9 $\pm$ 4.3	
Presence of severe symptoms	136	10.1 $\pm$ 4.2	< .0001
Social Support			
Emotional Support Available	542	6.7 $\pm$ 4.1	
Emotional Support Not Available	158	10.3 $\pm$ 4.5	< .001
Instrumental Support Available	457	6.7 $\pm$ 4.1	
Instrumental Support Not Available	243	9.0 $\pm$ 4.8	< .001
Informational Support Available	492	6.7 $\pm$ 4.1	
Informational Support Not Available	208	9.6 $\pm$ 4.6	< .001
Appraisal Available	517	6.7 $\pm$ 4.1	
Appraisal Not Available	181	9.9 $\pm$ 4.6	< .001

The presence of one or more symptoms of “4 =severe and often” or “5 = severe and persistent” in the STAS-J was regarded as “the presence of a severe symptom.”

who replied that they were receiving some form of social support was 87.7% (n = 307) in men and 88.0% (n = 308) in women, indicating no difference by sex.

When adult cancer patients younger than 65 years were compared with elderly patients 65 years or older, the number of subjects who replied that they were receiving emotional, informational, and appraisal support was significantly lower in younger adult patients than in the elderly. Instrumental support did not differ significantly between younger adults and the elderly (Table 2 and 3).

Discussion

1. Factors associated with anxiety and depression

This study revealed the characteristics of anxiety and depression among cancer patients and survivors after the COVID-19 pandemic. Regarding characteristics by sex, women were found to have higher levels of anxiety and depression than men. This finding is consistent with the results of a prior study [9].

On the other hand, many previous studies that investigated the association between age and anxiety or depression found that levels of both anxiety and depression were higher in the elderly compared to younger adults [10-15]. In contrast, in the present study, a higher proportion of the elderly reported having social support compared to younger adults, which may have mitigated their anxiety and depression [8, 9]. It is generally thought that the elderly are more likely to be satisfied by deepening existing human relationships and less likely to perceive restrictions on social interaction as problematic [10]. However, as the coronavirus pandemic gained momentum, adult patients and survivors became to have decreased opportunities to receive social support: they experienced restrictions in social activities, such as work and hobbies and lost peer support previously obtained by actively participating in patient group meetings or other meetings. These may have contributed to their anxiety and depression.

Moreover, patients with severe symptoms exhibited higher levels of anxiety and depression, underlining the importance of symptom management. Obviously, symptom management is crucial for cancer patients undergoing treatment and for cancer survivors immediately after the completion of treatment. However, the present study revealed that not only patients currently being treated but also many who had been cured or were in remission continued to experience symptoms. In Japan, it was found that cancer patients tended to avoid hospital visits after the COVID-19 pandemic. However, the number of advanced treatments did not decrease [16]. Patients undergoing active treatment such as surgery and pharmacotherapy have the opportunity to regularly interact with healthcare professionals at the hospital and discuss symptom management. After the completion of cancer treatment, however, survivors tend to have longer intervals between follow-up visits, which increases the likelihood that they have no one close to them they can easily consult about their symptoms. This highlights the importance of ongoing support for survivors after the completion of treatment.

2. Implications for practice

Currently, in Japan, in addition to COVID-19, small-scale epidemics such as seasonal influenza continue to occur. As a result, cancer patients and survivors may still experience anxiety about visiting hospitals or accessing face-to-face support services. The present study highlighted the importance of social support to alleviate anxiety and depression among patients and survivors. Based on these findings, healthcare professionals need to implement strategies to not only reduce patients' fear of infection but also to provide social support. Specifically, holding patient group meetings remotely and utilizing social networking services (SNSs) could be effective ways to ensure that cancer patients and survivors have opportunities to receive psychological support. The present study found no age-related differences in the need for instrumental support (such as help with housework and financial support), indicating that these forms of support are needed across all age groups from young adults to the elderly.

Designated cancer hospitals and other hospitals in Japan have established Cancer Consultation and Support Centers [17]. These serve as a continuous support hub for cancer patients and survivors, providing medical and nursing care consultations, psychological support, introductions to patient groups, and connections to local resources through the involvement of nurses and social workers. It is essential for medical personnel to play a role that enhances ongoing support not only for patients currently undergoing treatment but also for survivors who have completed treatment.

Limitation of the study

This study has several limitations. First, the cross-sectional design precludes any inference of causal relationships between anxiety, depression, and associated factors. Second, the participants in this study were relatively young. Because the survey was conducted online, individuals who were more familiar with digital technology may have been more likely to participate, resulting in potential selection bias. In Japan, more than 75% of cancer patients are aged 65 years or older; therefore, the findings may not fully represent the demographic composition of the broader cancer population.

In conclusions, characteristics of cancer patients and survivors with high levels of anxiety and depression after COVID-19 was reclassified as a Category V Infectious Disease included being female, having severe symptoms, and having no social support. Given that outbreaks of COVID-19 continue to occur, the findings highlight the ongoing need to monitor and address the psychological and social problems faced by patients and survivors.

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