


CLINICAL CORRESPONDENCE

Fear of disease progression and psychological stress in cancer patients under the outbreak of COVID-19

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1 | BACKGROUND

The outbreak of 2019 novel coronavirus disease (COVID-19) caused not only extraordinary public health concerns but also tremendous psychological distress.¹ Soon after the COVID-19 outbreak, the Chinese government has activated level 1 health emergency responses and Wuhan was locked down on January 23, 2020. During the quarantine period, cancer patients represented a significant vulnerable population confronting with high risk of infection and poorer outcomes after infection.²⁻⁴

Public emotional impacts and psychological response have drawn increasing attention of researchers during the COVID-19 epidemic. However, most studies have focused on the mental health situations of general population or medical staff.^{5,6} No study has yet specifically examined the psychological influence of COVID-19 in cancer patients, particularly cancer patients in the initial epicenter of this pandemic.

Therefore, we conducted a survey to study the psychological impacts of COVID-19 epidemic on cancer patients in Wuhan, the epicenter of the epidemic in China. Fear of disease progression and psychological stress were investigated by analyzing the data on self-report questionnaires of Fear of Progression Questionnaire-Short Form (FoP-Q-SF), Self-Rating Anxiety Scale (SAS), and Self-Rating Depression Scale (SDS) from cancer patients, and correlated factors were also explored to help us set up potential appropriate interventions.

2 | METHODS

2.1 | Procedure and data collection

Cancer patients from our cancer institute were contacted by their doctors-in-charge and were asked to respond to an Internet-based survey. Demographic data (gender, age, marriage status, reproductive history, educational level, income, concern degree about COVID-19 outbreak, cancer type, co-morbidity, living style, and impact of COVID-19 outbreak on cancer treatment), scores of FoP-Q-SF, SAS, and SDS were collected from April 15 to 17, 2020. A basic description of the three questionnaires was provided in the Supplementary Information.

2.2 | Statistical analyses

Mann-Whitney U test or Kruskal-Wallis H test was used to compare quantitative variables between groups. Factors with univariate $P < .05$ or clinical factors that may have significance were included in the multiple linear regression model. The statistical analyses were undertaken using SPSS Statistics Version 25. All tests were two-tailed, and a $P < .05$ was considered statistically significant.

2.3 | Ethical issues

The study was approved by the Ethics Committee of Zhongnan Hospital of Wuhan University (2020089K). Informed consent was

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incorporated into the questionnaire and was obtained from all patients.

3 | RESULTS

3.1 | Fear of disease progression, anxiety, and depression in cancer patients

A total of 326 patients completed the survey from 343 patients receiving the questionnaires (completion rate: 95.0%). Of all 326 valid respondents, the mean scores of the FoP-Q-SF, SAS, and SDS were 45.09, 55.27, and 59.02 respectively. Two hundred and eighty-two (86.5%) patients reported fear of disease progression, 220 (67.5%) reported anxiety, and 243 (74.5%) reported depression.

3.2 | Factors correlated to FoP-Q-SF, SAS, and SDS scores

Univariate analysis revealed that educational level ($P < .001$), income ($P < .001$), cancer diagnosis ($P < .001$), deep concern about COVID-19

Key Points

- There is a very high prevalence of fear of disease progression, anxiety, and depression in cancer patients under the outbreak of COVID-19.
- Of all 326 respondents, 282 (86.5%) patients reported fear of disease progression, 220 (67.5%) anxiety, and 243 (74.5%) depression.
- Multiple linear regression revealed that treatment delay or interruption, deep concern about COVID-19, lung cancer, lower educational level, or income were the dominant factors contributing to such prevalence.
- Organization and management for psychological interventions in China were imperfect.
- Appropriate and personalized psychological intervention is in urgent need and should be formulated for cancer patients.

TABLE 1 Characteristics of the study population

Variables	N (%)	FoP-Q-SF score		SAS score		SDS score	
		Mean \pm SD	P	Mean \pm SD	P	Mean \pm SD	P
Gender			.33		.04		.871
Male	174 (53.4)	45.49 \pm 9.35		56.75 \pm 15.01		59.34 \pm 13.01	
Female	152 (46.6)	44.63 \pm 8.52		53.57 \pm 15.58		58.63 \pm 14.09	
Age (years)			.762		.862		.864
18-60	201 (61.7)	45.27 \pm 8.69		55.19 \pm 15.77		58.85 \pm 13.76	
\geq 61	125 (38.3)	44.81 \pm 9.43		55.38 \pm 14.67		59.28 \pm 13.16	
Marriage status			.955		.15		.018
Married	278 (85.3)	45.08 \pm 9.25		54.92 \pm 15.20		58.42 \pm 13.66	
Single/divorced/widowed	48 (14.7)	45.18 \pm 7.24		57.25 \pm 16.12		62.44 \pm 12.15	
Reproductive history			.686		.268		.988
Yes	308 (94.5)	45.15 \pm 9.06		55.52 \pm 15.22		59.09 \pm 13.37	
No	18 (5.5)	44.11 \pm 7.43		50.94 \pm 11.01		57.67 \pm 16.08	
Education level			<.001		<.001		<.001
Junior school or below	124 (38.1)	47.66 \pm 7.69		59.93 \pm 13.74		61.50 \pm 11.57	
High school	94 (28.8)	44.96 \pm 10.31		56.45 \pm 15.41		61.24 \pm 13.38	
Bachelor degree or above	108 (33.1)	42.26 \pm 8.26		48.89 \pm 14.94		54.22 \pm 14.49	
Income (yuan/month)			<.001		.017		.199
<1000	42 (12.8)	43.76 \pm 7.77		58.12 \pm 13.96		62.21 \pm 12.45	
1000-2500	84 (25.8)	48.38 \pm 7.86		56.49 \pm 15.75		58.37 \pm 13.21	
2500-5000	124 (38.0)	45.48 \pm 9.25		56.48 \pm 14.66		59.85 \pm 12.79	
5000-10 000	52 (16.0)	42.20 \pm 8.54		49.52 \pm 11.32		57.46 \pm 10.82	
>10 000	24 (7.4)	40.58 \pm 10.07		52.21 \pm 9.26		54.71 \pm 10.15	
Cancer diagnosis			<.001		<.001		<.001
Head and neck cancer	56 (17.2)	40.41 \pm 8.11		41.46 \pm 8.99		48.13 \pm 10.64	

TABLE 1 (Continued)

Variables	N (%)	FoP-Q-SF score		SAS score		SDS score	
		Mean ± SD	P	Mean ± SD	P	Mean ± SD	P
Breast cancer	61 (18.7)	42.40 ± 8.98		52.85 ± 14.42		58.31 ± 12.66	
Digestive system cancer	79 (24.2)	42.55 ± 7.62		55.77 ± 13.78		60.68 ± 13.20	
Lung cancer	94 (28.8)	51.43 ± 7.32		65.59 ± 7.28		65.40 ± 7.19	
Others	36 (11.1)	45.97 ± 7.96		52.78 ± 9.39		56.81 ± 10.07	
Co-morbidity			.089		.051		.798
Yes	77 (23.6)	46.57 ± 8.37		57.88 ± 14.35		59.52 ± 12.64	
No	249 (76.4)	44.63 ± 9.11		54.46 ± 11.57		58.86 ± 13.79	
Living style			.461		.315		.102
Live alone	40 (12.3)	44.15 ± 7.98		51.00 ± 10.01		57.67 ± 10.08	
Live with family/friends	286 (87.7)	45.22 ± 9.11		55.51 ± 12.22		59.09 ± 13.37	
Concern about COVID-19			<.001		<.001		<.001
Occasionally	159 (48.8)	40.01 ± 7.17		46.74 ± 10.25		53.48 ± 14.25	
Frequent	106 (32.5)	49.11 ± 7.62		62.76 ± 11.73		63.27 ± 10.55	
Always	61 (18.7)	51.34 ± 7.89		64.44 ± 11.03		66.03 ± 9.80	
Cancer treatment disturbance			<.001		<.001		<.001
Normal/completed	72 (22.1)	38.92 ± 7.24		41.50 ± 7.48		48.40 ± 10.66	
Delayed	142 (43.6)	44.54 ± 8.94		57.39 ± 8.81		61.11 ± 7.22	
Interrupted	112 (34.3)	45.09 ± 8.97		67.84 ± 3.50		69.40 ± 3.75	

Abbreviations: FoP-Q-SF, Fear of Progression Questionnaire-Short Form; SAS, Self-Rating Anxiety Scale; SDS, Self-Rating Depression Scale.

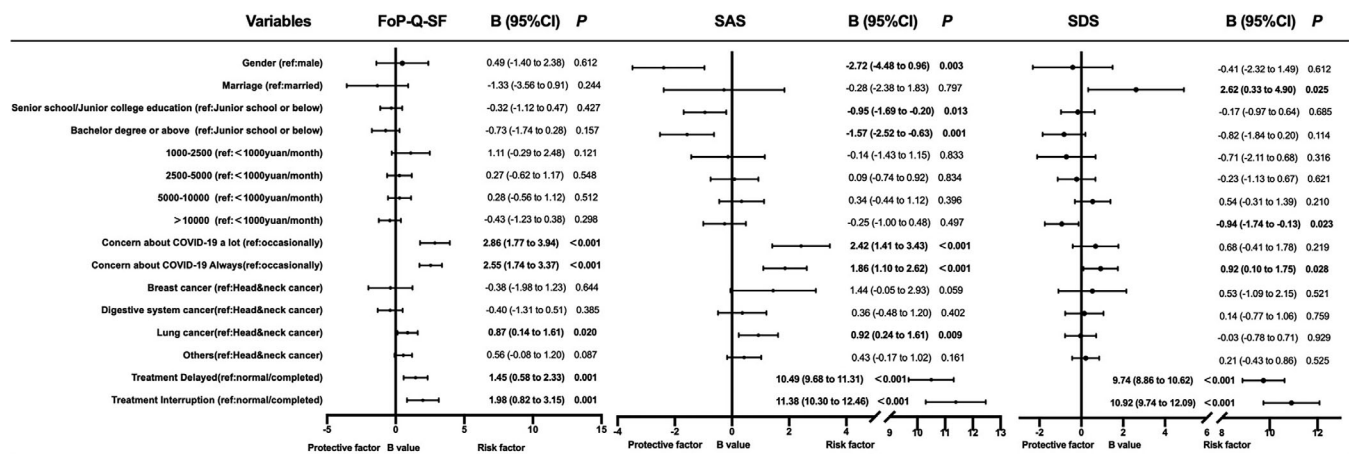


FIGURE 1 Multiple linear regression analysis of factors affecting the psychological stress of cancer patients

($P < .001$), and treatment disturbance ($P < .001$) were associated with FoP-Q-SF scores. Gender ($P = .04$), educational level ($P < .001$), income ($P = .017$), cancer diagnosis ($P < .001$), deep concern about COVID-19 ($P < .001$), and treatment disturbance ($P < .001$) were associated with SAS scores. Marriage status ($P = .018$), educational level ($P < .001$), cancer diagnosis ($P < .001$), deep concern about COVID-19 ($P < .001$), and treatment disturbance ($P < .001$) were associated with SDS scores (Table 1).

Multiple linear regression analysis revealed that FoP-Q-SF scores were positively correlated with treatment delay ($P = .001$),

treatment interruption ($P = .001$), deep concern about COVID-19 ($P < .001$), and lung cancer diagnosis ($P = .020$). SAS scores were positively correlated with treatment delay ($P < .001$), treatment interruption ($P < .001$), deep concern about COVID-19 ($P < .001$), and lung cancer diagnosis ($P = .009$), and it negatively correlated with education level ($P = .001$). SDS scores were positively correlated with treatment delay ($P < .001$), treatment interruption ($P < .001$), deep concern about COVID-19 ($P = .028$), and unmarried status ($P = .025$), and it negatively correlated with higher income ($P = .023$) (Figure 1).

4 | DISCUSSION

In this survey study, we demonstrated that there was a high prevalence of fear of disease progression, anxiety, and depression in cancer patients under the outbreak of COVID-19, which was much higher than results obtained from general populations (16.5% reported depression and 28.8% reported anxiety)⁷ and cancer patients in times without an epidemic (anxiety in 10% of cancer patients, and depression in 20%).⁸ Treatment delay or interruption, deep concern about COVID-19, and lung cancer were the dominant factors contributing to such prevalence. Significant influence of treatment disturbance on psychological stress may reflect that oncologists did not have adequate information to address the sense of uncertainty due to treatment interruption.

Imperfect organization for psychological interventions was another issue of concern.⁶ Under the outbreak of COVID-19, psychosocial clinicians were restricted from the clinics, oncologists became the main personnel providing varied psychological interventions to cancer patients. Poor recognition of depression and anxiety was shown to be associated with impaired survival in cancer patients.^{8,9} And cancer patients receiving early psychological interventions had less aggressive care at the end of life and longer survival.¹⁰ Therefore, appropriate and personalized psychological intervention is in urgent need and should be formulated for cancer patients.

Limitations existed in this study: First, the questionnaire was not randomly distributed but only to patients with integrated comprehensive competence; therefore, the results might not depict the overall scenario of the whole patient population. Second, self-reported results of the survey might not always be able to reflect authentic levels of psychological impact in cancer patients. Last but not least, the sample size was relatively small. Nevertheless, to our knowledge, this is the first study that surveyed fear of disease progression, anxiety, and depression in cancer patients in the epicenter of the COVID-19 epidemic. Our findings would be valuable in that it provided information on the prevalence of psychological disorders and deciphering associated risk factors, which in turn could help identify vulnerable patients and deliver personalized interventions and treatments.

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CONFLICT OF INTEREST

The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

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

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of this article.

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