Original Research

THE PREVALENCE OF STIGMA AND SELF-BLAME AND THEIR ASSOCIATIONS WITH PSYCHOSOCIAL WELL-BEING AMONG VIETNAMESE ADVANCED CANCER PATIENTS: AN APPROACH STUDY

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ABSTRACT

Purpose: *This study aimed to (1) assess perceived stigma, behavioural self-blame (BSB) and characterological self-blame (CSB) among Vietnamese advanced cancer patients, and (2) to investigate the associations between perceived stigma and psychosocial well-being, and between self-blame (behavioural and characterological) and psychosocial well-being.*

Methods: *This study involved 200 Vietnamese stage-4 solid cancer patients. Psychosocial well-being was measured using Center for Epidemiologic Studies Depression Scale (CES-D), and the social well-being (SWB) and emotional well-being (EWB) domains of the Functional Assessment of Cancer Therapy-General. Perceived stigma was assessed using sense of stigma subscale from Kissane's Shame and Stigma Scale. BSB and CSB were identified when patients reported their behaviour or character as the reason for their cancers. Multivariable linear or logistic regressions were used to investigate the associations while controlling for patient characteristics.*

Results: *A large proportion of patients reported perceived stigma [%, 95% Confidence Interval(CI)=79.0% (72.7%,84.1%)], BSB [%(CI)=56.3% (49.3%,63.1%)] or CSB [%(CI)=62.3% (36.9%,50.7%)]. Patients who perceived stigma reported lower EWB [ß(CI)=-0.3 (-0.4,-0.1); p=0.004) and greater depressive symptoms [ß(CI)=0.6 (0.3,0.9); p=0.000). BSB was not significantly associated with poorer psychosocial outcomes while patients with CSB reported lower EWB [ß(CI)=-1.8 (-3.4,-0.3); p=0.021] and greater depressive symptoms [ß(CI)=2.7 (0.1,5.4); p=0.045].*

Conclusion: *This study showed that most patients perceived stigma and reported BSB or CSB; and perceived stigma and CSB were associated with lower EWB and greater depressive symptoms among Vietnamese patients. Interventions should be developed to reduce perceived stigma and self-blame among this population.*

Keywords: *Perceived stigma, behavioural self-blame, characterological self-blame, Vietnam, advanced cancer*

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I. BACKGROUND

The perception of stigma and self-blame among cancer patients is well-documented in several countries. [1-5] Perceived stigma in relation to being a cancer patient refers to the patient's perception that others hold prejudice against them because of their cancer diagnosis which results in less social acceptance. [6] Such perception has been observed across all cancer types. [7-11] Self-blame refers to attribution of self as the cause of a situation, and can be either behavioural or characterological depending on the focus of blame. [12] Behavioural self-blame in the context of cancer focuses on one's own risky health behaviour which is modifiable, such as smoking and drinking. On the contrary, characterological self-blame focuses on an individual's character that is relatively hard to modify, such as the type of person they are.

Understanding cancer patients' perception of being stigmatized and self-blame is important as these are parts of patient's experience with the disease. Perceived stigmatized and self-blame may affect both the intrapersonal (such as depression and emotional well-being) and interpersonal (such as family/social well-being) aspects of well-being. Several studies have shown that perceived stigma is associated with higher depressive symptoms, and lower emotional and social well-being among cancer patients. [7-11] Evidence on the association between self-blame and psychosocial well-being, however, are limited and inconsistent. Among studies that measured self-blame without distinguishing whether it is behavioural or characterological, only one study reported that all domains of quality of life, including emotional and social well-being, were negatively associated with self-blame. [13] When self-blame was distinguished as behavioural or characterological, evidence showed that characterological self-blame was more detrimental on psychological well-being than behavioural self-blame. [14,15] The findings from these studies could be explained by Theory of Learned Helplessness which suggests that characterological self-blame is more detrimental because of its focus on relatively non-modifiable attributes. [12]

The majority of the studies mentioned above, however, were conducted in high-income countries. Very little is known about perceived stigma and self-blame among cancer patients, and the extent to which perceived stigma and self-blame are associated with psychosocial well-being in low- and middle-income countries (LMIC), such as Vietnam. In Vietnam, the burden of cancer has risen rapidly in recent decades. An estimation by the International Agency for Research on Cancer (IARC) reported a total of 164,671 new cases and 114,871 cancer deaths in Vietnam during 2018. [16,17] These figures are three times higher than 1990. [18] Despite the drastically increasing cancer burden in Vietnam over the past thirty years and disproportionately high burden of cancer in LMIC in general, studies focusing on the underlining factors for psychosocial well-being of cancer patients in LMIC, including Vietnam, are scarce. It is important to understand the underlining factors for psychosocial well-being as poor psychosocial well-being contributes to poor survival among cancer patients. [19]. In addition, stigma and self-blame could contribute to health inequities, undermining the resources and efforts invested in care provision. [20]

The aims of this study were 1) to assess perceived stigma and self-blame among advanced cancer patients in Vietnam, 2) to investigate the associations between perceived stigma and psychosocial well-being, and between self-blame (behavioural and characterological) and psychosocial well-being. We hypothesized that patients who reported perceived stigma, behavioural or characterological self-blame will report higher depressive symptoms, lower emotional well-being, and lower social well-being. Our findings will serve as an initial situational analysis for policy makers and health

care providers to understand the relationship between perceived stigma and psychosocial well-being and the relationship between self-blame and the psychosocial well-being of advanced cancer patients in Vietnam.

II. METHODS

Participants and study setting

This study analysed data collected from the Vietnam site of the Asian Patient Perspectives Regarding Oncology Awareness, Care and Health (APPROACH) study. Surveys were conducted through face-to-face interviews with participants recruited at the Hue Central Hospital in Vietnam. The inclusion criteria included (1) being at least 21 years of age; (2) having been diagnosed with stage 4 solid cancer; (3) being aware of cancer diagnosis; (4) being a citizen of Vietnam. Ethics approvals were obtained from the National University Singapore-Institutional Review Board (NUS-IRB B-15-319), Singapore and Hue Central Hospital Ethics Committee, Vietnam (230/QD-BVH-HDDD).

Recruitment was carried out between February 2018 to July 2018 (Figure 1). The medical records of 375 patients were screened for eligibility. 238 patients were found to be eligible and were invited to participate. Of these, 7 were too sick, 16 were not aware of their cancer diagnosis and 7 were uninterested in participating. Informed consent was then obtained from the remaining 208 participants. Of the 208 participants, 2 were subsequently found to be ineligible while 6 participants decided to withdraw from the study due to fatigue. One participant did not answer questions on self-blame and was excluded from analyses related to self-blame. The final analytical sample consisted of 200 participants for stigma and 199 for self-blame.

Survey development and outcomes

The questionnaire included questions developed by the study investigators in consultation with oncologists and questions taken from validated instruments. The questions were first developed in English. They were then translated by professional translators into Vietnamese, and back-translated into English. The original and back-translated English versions were compared, and reconciliations made where necessary. Further revisions were made based on feedback from the physicians and cognitive interviews with ten eligible patients from the study site. Translation of the FACIT questionnaire was approved by the licence owner after following a protocol laid out by the license owner.

Perceived stigma. Perceived stigma was measured by summing the 6 items on sense of stigma from Kissane's Shame and Stigma Scale and transforming the total score on a scale of 0 to 100. [21] A total score of 0 indicates no perceived stigma. Higher score indicates a higher level of perceived stigma.

Self-blame. Behavioural and characterological self-blame were determined by asking patients how much they blamed themselves for their cancer either due to their behaviour (behavioural self-blame) or due to the kind of person they are (characterological). Four options were available, including "1-Not at all", "2-Somewhat", "3-Very much" and "4-Completely". The responses were dichotomized into presence (Somewhat/Very much/Completely) or absence (Not at all) of the respective self-blame.

Psychosocial well-being. Psychosocial well-being was measured by three scores: depression, emotional well-being (EWB), and social/family well-being (SFWB). Depression was measured via a 20-item scale developed by the Center for Epidemiologic Studies (CES-D). Possible score ranges between 0 and 60, with higher CES-D score indicating higher depressive symptoms. A CES-D score of 16 and above suggests the presence of depression. [22] SFWB and EWB are domains derived from the FACT-G (Functional Assessment of Cancer Therapy-General). [23] The domain of

SFWB consists of 7 items while EWB was measured with 6 items. Participants were asked to rate their responses on a 5-point scale ranging from 0 to 4. The possible scores for SFWB and EWB range between 0 to 28 and 0 to 24, respectively. Higher score indicates better well-being in these domains.

Patient characteristics. Socio-demographic characteristics such as age, gender, marital status, years of education, religion, and cancer type were captured through the survey. Financial distress was assessed by summing three questions: (1) How well does the amount of money you have enables you to cover the cost of your treatment? (2) How well does the amount of money you have enables you to take care of your daily needs? (3) How well does the amount of money you have enables you to buy those little 'extras', that is, those small luxuries? Three possible options were available for these three questions, including "0-Very well", "1-Fairly well", "2-Poorly". The possible score for financial distress ranged between 0 to 6, with higher scores reflecting higher financial distress. We also assessed participants' awareness of disease severity by asking participants to report the current stage of their cancer. Patients who reported advanced stage was considered as having accurate awareness of disease severity. Patients were also asked what they thought were the reasons for their disease. Options included smoking, chewing betel nut/tobacco, alcohol consumption, being overweight, stress/anxiety, previous bad deeds, god's will and old age.

Statistical analysis

Demographic information was summarized with mean, standard deviation and 95% confidence intervals (CI) for continuous variables while categorical variables were presented with number, percentage and 95% confidence interval (CI). To investigate the associations between psychosocial outcomes with perceived stigma, behavioural self-blame and characterological self-blame, we conducted separate multivariable linear regressions where dependent variables were depression (CES-D), social well-being (SWB) or emotional well-being (EWB). The independent variables of interest were perceived stigma, behavioural self-blame and characterological self-blame. These analyses were controlled for patient demographics such as gender (male = 1, female = 0), age, marital status (married = 1, separated/widowed/divorced/never married = 0), years of education, religious affiliation (religious affiliation such as Christian, Buddhist or Taoist = 1, no religious affiliation = 0), financial distress, and accurate awareness of disease severity (advanced stage = 1, early stage/don't know = 0). All analyses were conducted using Stata 15.

III. RESULTS

Participant characteristics

Demographic information of study participants was tabulated in Table 1. Participants' age ranged from 22 to 87 years, with a mean age of 55.2 ± 11.1 years. There were slightly more males [% (CI) = 53.5% (46.5%, 60.3%)] than female participants. The two most common types of cancer among the participants were breast cancer [% (CI) = 22.5% (17.2%, 28.8%)] and lung cancer [% (CI) = 21% (16.8%, 28.3%)]. Participants received 9.8 ± 3.4 years of education on average. Majority of the participants were married [% (CI) = 85.5% (79.9%, 89.8%)]. Slightly less than half [% (CI) = 47% (40.1%, 54.0%)] of the participants reported having a religious affiliation. The average reported financial distress reported was 4.1 ± 2.0. About half of the participants [% (CI) = 48.5% (41.6%, 55.5%)] were not aware that they were in the advanced stage of cancer.

Approximately three-fourths [% (CI) = 79.0% (72.7%, 84.1%)] of the participants reported perceived stigma. The average score for perceived stigma was 20.5 ± 18.0. More than half of the participants reported behavioural self-blame [%

(CI) = 56.3% (49.3%, 63.1%)] or characterological self-blame [% (CI) = 62.3% (36.9%, 50.7%)]. The top reasons cited as contributing factors of their disease included smoking [% (CI) = 54.5% (47.5%, 61.3%)], alcohol consumption [% (CI) = 51% (44.1%, 57.9%)] and God's will [% (CI) = 41.0% (34.4%, 48.0%)].

With regards to psychosocial well-being, the average CES-D score was 20.2 ± 9.5. Two-thirds of the participants [% (CI) = 66.5% (59.6%, 72.7%)] had a CES-D score above 16, which indicates potential presence of depressive symptoms. The average emotional well-being and social well-being of study participants were 13.3 ± 5.6 and 21.6 ± 4.5, respectively.

Associations between psychosocial outcomes with perceived stigma and self-blame

The findings from multivariable models on associations between psychosocial well-being with perceived stigma, behavioural self-blame, and characterological self-blame were tabulated in Table 5 (Full list of estimates are available as Supplementary Materials). As hypothesized, participants who perceived stigma reported greater depressive symptoms [ß (CI) = 0.6 (0.3, 0.9); p = 0.000) and lower emotional well-being [ß (CI) = -0.3 (-0.4, -0.1); p = 0.004). However, our analyses showed no associations between social well-being and perceived stigma.

Contrary to our hypotheses regarding behavioural self-blame, the findings showed no significant associations between behavioural self-blame and depression, emotional well-being and social/family well-being. On the other hand, participants who experienced characterological self-blame reported greater depressive symptoms [ß (CI) = 2.7 (0.1, 5.4); p = 0.045] and lower emotional well-being [ß (CI) = -1.8 (-3.4, -0.3); p = 0.021]. However, no significant association was found between social/family well-being and characterological self-blame.

IV. DISCUSSION

Our study showed that more than half of the Vietnamese advanced cancer patients in our sample reported perceived stigma, behavioural self-blame or characterological self-blame. Although the intensity of perceived stigma reported by the patients was relatively low as compared to the maximum possible score, the score of perceived stigma among our study population was higher than those reported by cancer patients in other studies. [21,24] Analysis examining the associations between perceived stigma and psychosocial outcomes revealed that perceived stigma was significantly associated with greater depressive symptoms and lower emotional well-being. This finding is consistent with other studies showing the deleterious effect of perceived stigma on psychological well-being. [2,7,8,10,11,25,26] Consistent with the Theory of Learned Helplessness, our findings showed that the relationship between self-blame and psychological outcomes depended on the type of blame, where only characterological self-blame was associated with greater depressive symptoms and lower emotional well-being. This finding suggests that intervention strategies to reduce self-blame may consider focusing on characterological reasons that may lead to self-blame. Although our findings on self-blame are consistent with some studies [14,27], others reported that both types of self-blame were associated with poorer psychological outcomes. [28-30] The mixed findings in the literature suggest that cultural or other factors might be moderating the relationship between behavioural self-blame and psychological outcomes. This could be a topic for future studies.

Contrary to our hypothesis, social/family well-being was not significantly associated with perceived stigma, behavioural or characterological self-blame. This could be related to the relatively high social capital and social trust among Vietnamese as compared to countries with similar economic development. [31]

In addition, as a society that is deeply rooted in Confucian philosophy, Vietnamese hold firm to the teaching that parents are to be respected regardless of their qualities or faults. Similarly, parents are expected to do their best for their children even at the expense of their own well-being. [31]

Both depression and emotional well-being are related to intrapersonal well-being of an individual while social/family well-being is related to interpersonal relationship. Overall, our findings suggest that perceived stigma and characterological self-blame may be more harmful to intrapersonal well-being, affecting someone's inner life and thoughts about having a cancer which was reflected by greater depressive symptoms and lower emotional well-being reported by those with higher perceived stigma and characterological self-blame in our study. On the other hand, perceived stigma and both types of self-blame did not appear correlated with interpersonal skills, such as relationships with family and friends. Our findings, therefore, suggest that interventions may incorporate intrapersonal skills training such as cultivation of positive inner thinking and development of coping mechanisms around the 'cancer patient' identity.

Lastly, the fact that two-thirds of the participants reported a CES-D score above 16, indicative of possible depression, is worth noting. Depression itself can be a stigmatized topic which patients may not be willing to openly discuss. This may further aggravate perceived stigma and self-blame. Our finding highlights the necessity of mental health interventions to tackle the psychological well-being of cancer patients as poor psychological outcome is a known contributing factor for poor survival. [19] In view of this, it is important to ensure that the psychological needs of advanced cancer patients in Vietnam are adequately addressed through the provision of mental health services. This also echoes the calls of Lancet Commission on Palliative Care and Pain Relief Study Group to alleviate serious health-related suffering among terminally ill patients in LMICs and reiterates the urgency of integrating an affordable Essential Package for palliative care into the national health system which includes intervention to address the psychological needs of terminally ill patients. [32] We suggest that future studies assess the availability, accessibility, and the utilization of mental health services in the country.

There are several limitations in this study. As behavioural self-blame and characterological self-blame were analysed as dichotomous variables, it is possible that the psychosocial outcomes of patients who experienced self-blame of different intensity may vary. In addition, this study was not able to separate the effects of behavioural self-blame and characterological self-blame completely as 69 participants in this study reported both behavioural and characterological self-blame. Therefore, analyses concerning behavioural self-blame might include characterological self-blame, and vice versa. Participants in this study were recruited from Hue Central Hospital which is one of the largest hospitals in the country. We acknowledge the possibility that the results may not be generalizable to patients who live in the rural areas of Vietnam. Lastly, we are unable to establish causal inference between the dependent and independent variables because of the cross-sectional study design.

To the best of our knowledge, this study was the first to show presence of perceived stigma, behavioural self-blame and characterological self-blame among Vietnamese advanced cancer patients. Our results also demonstrated that patients who reported perceived stigma and characterological self-blame reported greater depressive symptoms and lower emotional well-being. These patients can benefit from interventions that address negative inner thoughts and teach coping mechanisms surrounding the issue of cancer stigma and characterological self-blame. Future studies should

identify the predictors for individuals who are more susceptible to cancer-related perceived stigma and characterological self-blame. Knowing this not only allows health care providers to identify this vulnerable population, but also allow policy makers to design targeted approach to reduce stigma and self-blame among cancer patients in Vietnam.

V. CONCLUSION

Most patients perceived stigma and reported BSB or CSB; and perceived stigma and CSB were associated with lower EWB and greater depressive symptoms among Vietnamese patients. Interventions should be developed to reduce perceived stigma and self-blame among this population.

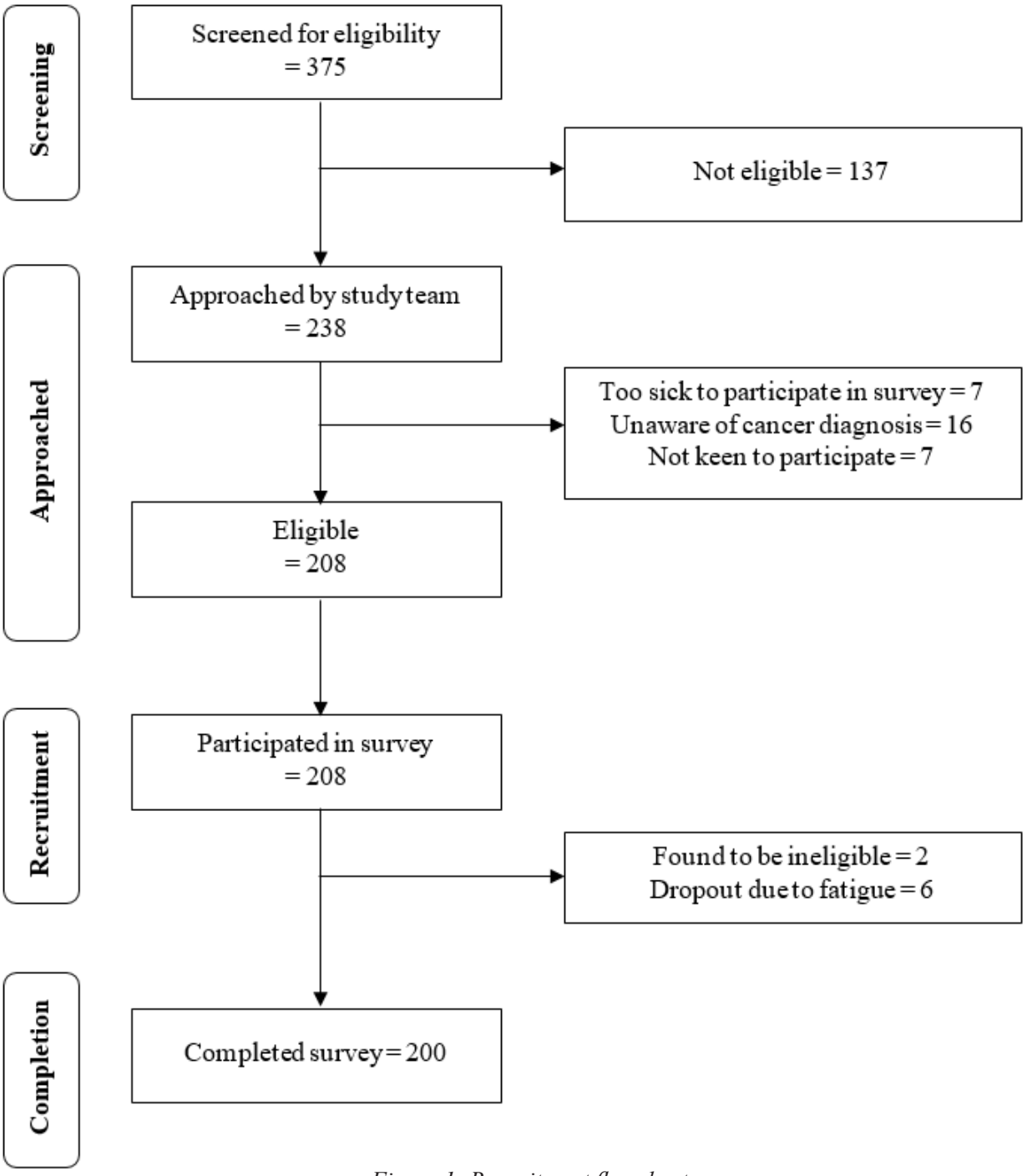

Figure 1: Recruitment flowchart

Table 1: Demographics of study participants (N=200).

Characteristics	N (%) or mean ± standard deviation (SD)	95% Confidence Interval
Age	55.2 ± 11.1	53.6, 56.7
Gender		
Male	107 (53.5%)	46.5%, 60.3%
Female	93 (46.5%)	39.7%, 53.5%
Marital status		
Married	171 (85.5%)	79.9%, 89.8%
Separated, widowed, divorced, never married	29 (14.5%)	10.2%, 20.1%
Years of education received	9.8 ± 3.4	9.4, 10.3
Having a religious affiliation	94 (47.0%)	40.1%, 54.0%
Cancer type		
Breast cancer	45 (22.5%)	17.2%, 28.8%
Lung cancer	44 (22.0%)	16.8%, 28.3%
Nasopharyngeal cancer	21 (10.5%)	6.9%, 15.6%
Colorectal cancer	20 (10.0%)	6.5%, 15.0%
Other cancers	70 (35.0%)	28.7%, 41.9%
Financial distress	4.1 ± 2.0	3.9, 4.4
Accurate awareness about disease severity (i.e. being at advanced stage)		
Aware	103 (51.5%)	44.5%, 58.4%
Not aware	97 (48.5%)	41.6%, 55.5%
Perceived reasons for cancer		
Smoking	109 (54.5%)	47.5%, 61.3%
Alcohol consumption	102 (51.0%)	44.1%, 57.9%
God's will	82 (41.0%)	34.4%, 48.0%
Perceived stigma		
Prevalence	158 (79.0%)	72.7%, 84.1%
Score	20.5 ± 18.0	18.0, 23.0
Prevalence of behavioural self-blame	112 (56.3%)	49.3%, 63.1%
Prevalence of characterological self-blame	124 (62.3%)	36.9%, 50.7%
Depression (CES-D)		
Patients with CES-D above 16	133 (66.5%)	59.6%, 72.7%
Score	20.2 ± 9.5	18.8, 21.5
Emotional well-being	13.3 ± 5.6	12.5, 14.1
Social/Family well-being	21.6 ± 4.5	21.0, 22.2

Table 2: Association between psychosocial well-being vs. perceived stigma and self-blame (OLS estimates).

Psychosocial well-being	Perceived Stigma [a]			Self-blame [a]		
	Presence of behavioural self-blame			Presence of characterological self-blame		
	Coefficient, ß (95% CI)	p-value	Coefficient, ß (95% CI)	p-value	Coefficient, ß (95% CI)	p-value
Depression	0.6 (0.3, 0.9)	0.000***	0.9 (-2.0, 3.7)	0.558	2.7 (0.1, 5.4)	0.045**
Emotional well-being	-0.3 (-0.4, -0.1)	0.004**	-0.9 (-2.6, 0.7)	0.266	-1.8 (-3.4, -0.3)	0.021**
Social/Family well-being	-0.1 (-0.3, 0.0)	0.135	-0.2 (-1.5, 1.2)	0.818	0.4 (-0.9, 1.7)	0.504

[a] Multivariable linear regression controlled for gender, age, marital status, education, religion, financial distress, and awareness of disease severity.

* indicates p<0.01, ** indicates p<0.05, *** indicates p<0.001.

SUPPLEMENTARY MATERIALS

Supplementary 1. Associations between perceived stigma and psychosocial well-being.

	Depression (CES-D) [a]		Emotional well-being [a]		Social/Family well-being [a]	
	Coefficient, ß (95% CI)	p-value	Coefficient, ß (95% CI)	p-value	Coefficient, ß (95% CI)	p-value
Perceived stigma	0.6 (0.3, 0.9)	0.000***	-0.3 (-0.4, -0.1)	0.004**	-0.1 (-0.3, 0.0)	0.135
Male (ref. female)	-2.2 (-5.0, 0.5)	0.108	0.1 (-1.6, 1.7)	0.934	0.0 (-1.4, 1.4)	0.988
Age	0.0 (-0.2, 0.1)	0.586	0.0 (-0.1, 0.1)	0.741	0.0 (-0.0, 0.1)	0.222
Married (ref. not married	2.1 (-1.5, 5.8)	0.257	-1.4 (-3.5, 0.8)	0.224	2.3 (0.5, 4.1)	0.019**
Education	-0.2 (-0.6, 0.2)	0.249	0.0 (-0.2, 0.3)	0.846	0.2 (-0.0, 0.3)	0.069
Have religious affiliation (ref. no religion)	-0.3 (-2.8, 2.3)	0.844	-0.3 (-1.8, 1.3)	0.733	1.1 (-0.2, 2.4)	0.060*
Financial distress	1.3 (0.7, 2.0)	0.000***	-0.8 (-1.2, -0.4)	0.000**	-0.0 (-0.4, 0.3)	0.797
Aware of disease severity (ref. not aware)	3.0 (0.4, 5.7)	0.024**	-2.9 (-4.5, -1.3)	0.000***	-0.8 (-2.2, 0.5)	0.219
Constant	13.5 (4.2, 22.9)	0.005	19.7 (14.1, 25.3)	0.000	16.4 (11.7, 21.1)	0.000
Adj R^2	0.1580		0.1182		0.0548	

[a] Multivariable linear regression controlled for gender, age, marital status, education, religion, financial distress and awareness of disease severity.

* indicates p<0.01, ** indicates p<0.05, *** indicates p<0.001.

Supplementary 2. Associations between behavioural self-blame and psychosocial well-being.

	Depression (CES-D) [b]		Emotional well-being [b]		Social/Family well-being [b]	
	Coefficient, ß (95% CI)	**p-value**	**Coefficient, ß (95% CI)**	**p-value**	**Coefficient, ß (95% CI)**	**p-value**
Behavioural self-blame	0.9 (-2.0, 3.7)	0.558	-0.9 (-2.6, 0.7)	0.266	-0.2 (-1.5, 1.2)	0.818
Male (ref. female)	-1.6 (-4.6, 1.5)	0.307	0.1 (-1.7, 1.9)	0.926	-0.1 (-1.6, 1.3)	0.854
Age	-0.1 (-0.2, 0.0)	0.204	0.0 (0.0, 0.1)	0.412	0.0 (-0.0, 0.1)	0.130
Married (ref. not married)	2.1 (-1.7, 5.9)	0.279	-1.4 (-3.6, 0.9)	0.231	2.2 (0.4, 4.1)	0.018**
Education	-0.2 (-0.6, 0.2)	0.324	0.0 (-0.2, 0.2)	0.957	0.2 (-0.0, 0.4)	0.067*
Have religious affiliation (ref. no religion)	0.1 (-2.6, 2.8)	0.961	-0.4 (-2.0, 1.1)	0.589	1.2 (-0.1, 2.5)	0.069*
Financial distress	1.4 (0.7, 2.1)	0.000***	-0.9 (-1.3, -0.4)	0.000***	-0.0 (-0.4, 0.3)	0.708
Awareness of disease severity (ref. not aware)	2.4 (-0.4, 5.1)	0.089	-2.6 (-4.2, -1.0)	0.002**	-0.7 (-2.0, 0.6)	0.299
Constant	18.0 (8.3, 27.6)	0.000	18.2 (12.6, 23.8)	0.000	15.6 (10.9, 20.2)	0.000
Adj R^2	0.0794		0.0847		0.0468	

[b] Multivariable logistic regression controlled for gender, age, marital status, education, religion, financial distress and awareness of disease severity.

* indicates p<0.01, ** indicates p<0.05, *** indicates p<0.001.

Supplementary 3. Associations between characterological self-blame and psychosocial well-being.

	Depression (CES-D) [b]		Emotional well-being [b]		Social/Family well-being [b]	
	Coefficient, ß (95% CI)	**p-value**	**Coefficient, ß (95% CI)**	**p-value**	**Coefficient, ß (95% CI)**	**p-value**
Characterological self-blame	2.7 (0.1, 5.4)	0.045**	-1.8 (-3.4, -0.3)	0.023**	0.4 (-0.9, 1.7)	0.504
Male (ref. female)	-1.2 (-4.0, 1.6)	0.397	-0.3 (-2.0, 1.3)	0.865	-0.2 (-1.6, 1.2)	0.777
Age	-0.1 (-0.2, 0.0)	0.230	0.0 (-0.0, 0.1)	0.625	0.0 (0.0, 0.1)	0.121
Married (ref. not married)	2.1 (-1.7, 5.9)	0.286	-1.3 (-3.6, 0.9)	0.369	2.2 (0.4, 4.1)	0.019**
Education	-0.3 (-0.7, 0.2)	0.220	0.0 (-0.2, 0.3)	0.619	0.2 (0.0, 0.4)	0.082

Have religious affiliation (ref. no religion)	0.0 (-2.6, 2.7)	0.979	-0.4 (-2.0, 1.2)	0.335	1.2 (-0.1, 2.5)	0.069*
Financial distress	1.4 (0.7, 2.1)	0.000***	-0.8 (-1.2, -0.4)	0.001**	-0.1 (-0.4, 0.3)	0.694
Awareness of disease severity (ref. not aware)	2.4 (-0.3, 5.1)	0.085	-2.6 (-4.2, -1.0)	0.001**	-0.7 (-2.0, 0.6)	0.292
Constant	17.0 (7.4, 26.6)	0.001	18.7 (13.1, 24.3)	0.000	15.3 (10.7, 20.0)	0.000
Adj R^2	0.097		0.1042		0.0488	

[b] Multivariable logistic regression controlled for gender, age, marital status, education, religion, financial distress and accurate awareness of disease severity.

* indicates $p<0.01$, ** indicates $p<0.05$, *** indicates $p<0.001$.

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