Psychosocial factors influencing distress among cancer patients in South India
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Abstract
Background: The increase of cancer rates in India over the last decade has placed a significant psychosocial burden on patients and their families. To address the psychosocial issues, cancer centers in India have integrated psychosocial services into cancer care by routinely measuring the distress of patients and responding to their distress. In this study, we sought to determine the association between self-reported distress and patient demographic and clinical variables and awareness of their diagnosis and prognosis.

Methods: The Department of Psycho-oncology conducted a cross-sectional, cohort study of patients who were being treated for a variety of cancers in a comprehensive cancer center in Chennai, India. Cancer patients (N=2019) completed a standardized measure of distress and participated in a clinical interview during their admission to a ward or at the time of referral to psycho-oncology. The level of distress was measured by the NCCN Distress Thermometer and problem list. Chi-square tests were used to examine variations in overall distress. Multi-nominal logistic regression analyses were used to assess the level of patients’ reported distress as a function of clinical characteristics (stage of cancer, awareness of diagnosis and prognosis, physical symptoms).

Results: The majority (60.3%) of the sample reported a moderate to high level of emotional distress. There were significant associations (P < .05) of younger age, awareness of diagnosis, prognosis, sleep issues, and physical pain with higher levels of distress. Patients who were aware of their diagnoses were more likely to report moderate (P < .01) or severe distress (P < .05) than those who were unaware. Patients who were aware of their prognoses were less likely to report moderate distress (P < .001) and severe distress (P < .001). Implications for Practice and Research: Given that a majority of patients rated at or above the clinical cut-off for distress, oncology centers in India need to provide training for professional psycho-oncology clinicians and incorporate psycho-oncology services to adequately address patients’ distress. Qualitative research may be needed to advance our understanding of specific social and cultural factors that may influence the psychosocial challenges faced by patients. Further investigation of patient distress related to diagnostic disclosure may be helpful in informing practice.

Keywords: Distress, distress thermometer, India, oncology, psychosocial

Background
Although there have been many medical advances in the treatment for cancer patients in India, there has not been a similar attention to addressing the psychological and social (psychosocial) distress associated with the disease. Yet, the dramatic increase of cancer rates in India over the last decade has placed an enormous burden on families and society.[1] Psychosocial distress accompanying cancer can include depression, anxiety, or other emotional distress; lack of financial resources for treatment or transportation; disruptions in work and family life; and existential issues related to meaning of life. The failure to assess, manage, and monitor the psychosocial distress related to cancer diagnoses and treatments can compromise the effectiveness of health care and adversely affect the health of cancer patients.[2] Hence, it is paramount, especially in cancer centers in low-to-middle income countries, that patient distress be routinely monitored and assessed to provide quality cancer care for every patient. Furthermore, collecting and analyzing data on distress and the sources of distress among a center’s patient population will help psychosocial providers identify needs and determine how best to address gaps in services. Screening protocols that are routinely followed in clinical practice can improve access to mental health services, rather than a system that relies solely on physical referrals or patients’ self-referrals.[3]

The experience of cancer and delivery of psychosocial services to Indians may be unique in several ways. Nearly three-fourths of the cancer diagnoses are in stages 3 and 4, affecting treatment options and outcomes.[4] Stigma can play a role in emotional distress in that patients can feel responsible for their cancer, fostering a sense of shame.[5] Cancer is a family disease and Indian families play a major role in cancer care. They are often very involved in the patient’s treatment decisions and a family member can be the person to decide whether to disclose or not disclose the diagnosis and prognosis of the cancer to the patient.[6] Hence, they can be helpful in reducing a patient’s emotional adjustment to the cancer or less helpful by reinforcing the denial of the cancer diagnosis. India, a country of 1.37 billion people, has 131 comprehensive cancer programs in the country. Access to care may depend on patients and their family caregivers traveling long distances to receive treatment. This can put a financial burden on families if it requires the patient and family members to take off time from work, hire
childcare for their children, and pay for transportation and lodging expenses.\textsuperscript{[7]}

Screening for distress and understanding what could be driving the distress are critical to identifying needs of patients who are early in the cancer trajectory. To this end, psychosocial providers in India have started to implement routine distress screening as part of clinical care in their cancer centers. To determine the level of emotional distress among patients with new diagnoses of cancer and potential factors (demographic, socioeconomic, clinical characteristics) that were associated with their distress, we implemented a cross-sectional, cohort study at a comprehensive cancer institute in South India. Our specific aims were to 1) assess the level of distress and psychosocial issues related to the distress as reported by patients using a standard measure of distress (NCCN Distress Thermometer) and 2) to determine whether there were demographic factors (sex, age, socioeconomic status, religion) and clinical factors (awareness of diagnosis and prognosis, type of cancer, physical symptoms) that were significantly associated with the level of distress.

Methods

Sample and recruitment

This study occurred at Cancer Institute (WIA), a comprehensive cancer center in Chennai, India. Using a clinic-based convenience sample, psychosocial providers (psycho-oncologists) collected the data as a part of their routine clinical work and documented the data in a case record form which was maintained by the Department of Psycho-oncology. Study approval was obtained from the Cancer Institute’s Institutional Review Board.

Patients (older than 13 years of age) who had a confirmed diagnosis of cancer between August 2015 and August 2017 were included in the study. As this study was set out to assess the distress levels of patients throughout the cancer trajectory, the inclusion of subjects was not only restricted to the patients being admitted for the first line of treatment, but admitted for any line of treatment, including palliative and supportive psychosocial care during the mentioned time.

The data were collected through in-person clinical assessment interviews by psychosocial care providers. The patient’s distress was assessed for the out-patients at the time of referral to Psycho-oncology and for the in-patients at the time of admission to the ward. Interviews were conducted in the respective language of the cancer patient. These data were entered into a case record form that had been developed and used by the Department of Psycho-oncology at the Institute. The summary of the psychosocial concerns and management were uploaded in electronic records.

Measures

Distress. The outcome variable of this study was the level of distress as measured by the Distress Thermometer (DT).\textsuperscript{[8]} The DT is a one-item visual analog scale (VAS) in the shape of a thermometer, ranging from 0 (no distress) to 10 (extreme distress) on which the individual rates the level of distress experienced during the previous week. A score of $\geq 4$ is recommended as the cutoff for distress, as supported by previous research on the sensitivity and specificity of the instrument.\textsuperscript{[9]} A recent meta-analysis\textsuperscript{[10]} found that when the results of 42 studies ($N=14,808$ patients) were pooled, the DT showed a sensitivity of $82\%$, a specificity of $73\%$, a positive predictive value of $48\%$, and a negative predictive value of $93\%$. According to the protocol at the study site, if a patient scores at least $\geq 4$ on the scale at any visit, a response or referral to an appropriate service should be initiated.

The distress variables also included psychosocial issues which were listed in the NCCN Distress Thermometer (DT) as physical (eg, pain, fatigue, eating, sleep), family (dealing with children, dealing with partner, ability to have children, family health issues), emotional (depression, nervousness, fears, sadness, worry, loss of interest in usual activities), spiritual/religious concerns and practical issues (child care, housing, insurance/financial, transportation, work/school, treatment decisions). These issues are considered possible psychosocial issues that cancer patients commonly experience and were recorded as “yes” or “no.” The pain levels were obtained from the patients using the Visual Analog Scale, which consisted of a rating scale from 0 to 10. The correct identification and explaining the nature of the diagnosis as stated by the physician were considered as being completely aware of one’s diagnosis. Explaining the nature and intent of treatment to the question “What do you know about the prognosis of your current diagnosis?” were considered as being completely aware of their prognosis.

Clinical and demographic characteristics. The case record form was developed with expert guidance and consisted of patient-related and disease-related information, and psychosocial reports and observations. Patient-related demographic data included age, sex, education, income, occupation, marital status, and religion which were all coded as categorical variables. Clinical characteristics including the patient’s cancer diagnosis, staging of the disease, treatment received, other comorbid health conditions, and psychiatric illness, if any, were obtained from the hospital records. Cancers were considered advanced if they were metastatic, secondary, recurrences or relapse conditions with failing first line of treatment with curative intent. Two questions were used to measure patients’ awareness of their diagnosis and prognosis: “Can you name the diagnosis of your health condition?” and “Are you aware of the prognosis of your disease?”

The data were checked for any missing information in essential psychosocial variables and data with missing values were excluded from analysis. In some cases, patient-related or disease-related missing information were obtained from the hospital records. Only those cases with complete data were included in the final analysis.

Statistical analysis

The data were entered, validated, and analyzed using IBM SPSS Statistics 20.0. The outcome variable was distress coded as a categorical variable: none or mild (0–3), moderate (4–7), severe (8–10). To assess the level of self-reported distress among the sample (Aim 1), descriptive statistics of demographic and clinical characteristics, psychosocial concerns, and distress were calculated. To further examine associations between distress and the demographic and clinical variables, $\chi^2$ tests were conducted. Multinomial logistics regression analyses were conducted to evaluate the overall distress by demographic variables and clinical variables.

After identifying variables that had significant correlations with distress, multi-nominal logistic regression analyses were conducted to assess the level of patients’ reported distress as a function of clinical characteristics, controlling for demographic variables that were associated with distress (Aim 2). All the clinical characteristics and demographic variables that had
significant association with distress were entered into the regression model at one time.

**Results**

The sample included were categorized under major demographic variables including gender (male/ female), age (Teenage/ young adult/ adulthood/ middle age/old age), marital status (single/ married/separated/widowed), education (primary/secondary/ graduate/missing) and occupation (employed/unemployed/students/ missing), income (0–10,000 USD/10,000–20,000 USD/20,000–675 USD/ >675 USD) and religion (Hindu/Christian/Muslim). Of the 2019 cases, the participants had approximately equal gender distribution, wherein 1,122 (55.6%) were female. A majority of the patients fell within the middle-age group (41–60 years old) (46.4%) and young adulthood (25–40 years old) (20.3%), followed by 17.3% who were older adults (>60) and 15.4% who were teens. Most of the patients (75.3%) were married and the sample was almost equally distributed across different educational categories. Although 57.8% were employed, most of them (87.0%) were found to earn only between INR 0 and 10,000 per month (Table 1).

Tables 2 and 3 present the descriptive statistics for the clinical characteristics namely the diagnosis (categories mentioned in Table 2), advanced stage of the disease (yes/ no), history of psychiatric illness (yes/ no) and psychosocial factors including the knowledge of diagnosis (aware/ unaware), knowledge of prognosis (aware/ unaware), sleep (normal/ not normal), appetite (adequate/ inadequate), pain (mild/ moderate/ severe) and distress (none-mild/ moderate/ severe) as reported by the patients. The most common cancer diagnoses involved the female reproductive system (20.0%) and patients with hematological malignancies (17.4%). Nine percent of the patients were identified as being in...
their advanced stages of the disease. Although 86.7% of the patients were aware of their diagnosis, only about one-half (51.4%) were aware of their prognosis. Sleep and appetite complaints were reported by 42.0% and 34.0% of the patients, respectively. The majority of patients (64.5%) had reported only a mild level of pain (Tables 4).

To assess the level of distress reported by patients, the scores on the Distress Thermometer (DT) were divided into three levels: none to mild (0–3), moderate (4–7), and severe (8–10). Looking at all 3 levels of distress, 39.7% reported none/mild distress, 43.4% were experiencing moderate levels, and 16.9% reported severe levels of distress. Approximately sixty percent (60.3%) of the patients had reported the level of distress to be ≥4 which is the cut-off for distress management. Higher level of reported distress was associated with younger age (p < 0.001), knowing the diagnosis, not knowing the prognosis (P < .001), sleep issues (P < .001), and pain (P < .001).

The patients also reported on the absence or presence of psychosocial and physical concerns related to their distress. Practical issues were the most frequently reported concerns with 51.5% (N = 1039) of the sample reporting them. Physical concerns were reported by 50.2% (N = 1014) of the sample. The emotional, family, and spiritual concerns were reported less frequently at 15.7%, 6.0%, and 4.1% respectively.

Table 5 presents the results from the multi-nominal logistic regressions where we entered the variables that prior chi-square analyses had indicated an association with distress and demographic variables. When compared with older patients (>60 years), adolescent/young adults and middle-aged adults were more likely to report moderate or severe distress (versus mild distress). Specifically, adolescent/young adults were 2.0 times and middle-aged adults were 1.5 times more likely to report moderate distress (vs mild distress) than their older counterparts. Similarly, adolescent/young adults and middle-aged adults were more likely to report severe distress (vs mild distress). Specifically, adolescent/young adults were 3.8 times more likely and middle-aged adults were 2.2 times more likely to report severe distress (vs mild distress) than their older counterparts. When compared with patients who have early stage cancer, patients with advanced cancers were more likely to report severe distress (versus mild distress).

Patients who were aware of their diagnoses were more likely to report moderate distress (versus mild distress) or severe distress (versus mild distress) than those who were unaware of their diagnosis. Patients who were aware of their prognoisis were 39.1% less likely to report moderate distress and 37.7% less likely to report severe distress (versus mild distress) than patients who are unaware of their prognosis.

Patients who reported no sleep problems (normal) were 56.5% less likely to report moderate distress and 81.1% less likely to report severe distress than patients reporting sleep problems. When compared with patients who reported severe pain, those reporting mild pain were 57.8% less likely to report moderate distress and 83.3% less likely to report severe distress (versus mild distress). Patients who reported moderate pain were 52.6% less likely to report severe distress than those who reported severe pain.

Discussion

In this study, we sought to determine what demographic, clinical, and psychosocial factors were associated with distress among cancer patients at a major cancer center in India. We extracted the data needed to address our questions from the clinical psychosocial oncology case records and patients’ medical charts. A majority of the sample (60%) reported a moderate to high level of emotional distress as measured by a score ≥4 on the Distress Thermometer. Studies that have used standardized instruments to measure anxiety and depression, have found similar rates of moderate to high levels of anxiety and depression among cancer patients. However, one study with a sample of breast cancer patients reported a lower rate of 22% of the patients with moderate to severe depression. Our sample represented 12 different types of cancers and we did not find significant differences in the level of distress among the types of cancer.

A second aim of our study was to determine whether there were demographic and clinical factors that were significantly associated with the level of distress. In previous studies with Indian cancer patients, high distress has been associated with socio-demographic factors such as lower income and financial stress, single, widowed, or divorced status, and living 3 to 6 hours from the cancer center. Unlike these studies, our findings did not reveal a significant association with income and marital status. However, the data on income were quite skewed in that most of the patients reported a very low income between 0 and 1000 INR (≤135 USD). We did not include a measure of distance from cancer center. As many of the patients in India travel long distances to comprehensive cancer centers, this may be an important variable to explore in future research.

In the present study, age was associated with distress. When compared with older adults, adolescents/young adults and middle-age adults were more likely to experience moderate and severe distress. This finding related to age is consistent with a recent publication of a cross-sectional study of cancer patients in Bengaluru. Sleeping problems and physical pain were also positively associated with distress. The association between pain and distress among Indian cancer patients is consistent with studies by Raipal et al (2018) and Pandey et al (2006).

Finally, our findings revealed that awareness of the diagnosis and awareness of the prognosis are associated with distress but in different ways. Consistent with previous studies, awareness of the cancer diagnosis was associated with higher levels of distress. This finding may reinforce the notion that being unaware of the diagnosis may buffer a patient from undue distress. It could also be interpreted as denial which may buffer a patient from distress but may hinder a patient from engaging in active and effective coping strategies. In contrast to our findings, Chittem et al (2015) found that patients who reported being unaware of the cancer diagnosis experienced higher levels of anxiety and depression. However, after controlling for awareness, education, income, cancer symptoms, and cancer stage, the patients’ perception of their illness (illness identity, representation, coherence, and so on) accounted for their anxiety and depression. The patients who were aware of their cancer diagnosis were more likely involved in medical decisions and treatments, and had a greater perceived understanding of their illness.

Our study also examined whether awareness of the patient’s prognosis influenced the patient’s distress. Although awareness of diagnosis was associate with higher distress, patients who reported awareness of the prognosis were less likely to experience moderate or severe levels of distress when compared to mild distress. A patient’s prognosis can be either good or bad and we did not assess this. We surmise that just knowing the prognosis may alleviate some ambiguity and accompanying distress. In other words, having some knowledge about prognosis may be
| Variable                  | Mild distress (0–3) | Moderate (4–7) | Severe (8–10) | \( \chi^2 \) | \( P \) |
|---------------------------|---------------------|---------------|---------------|-------------|-------|
| Sex                       |                     |               |               |             |       |
| Male                      | 351                 | 391           | 149           | 0.499       | .779  |
| Female                    | 451                 | 402           | 192           | 1.71        |       |
| Age                       |                     |               |               |             |       |
| Teenage (13–18)           | 65                  | 39.6          | 76            | 23          | 14.0  |
| Young adults (19–24)      | 54                  | 36.5          | 63            | 31          | 20.9  |
| Adult (25–40)             | 130                 | 51.7          | 188           | 92          | 22.4  |
| Middle age (41–60)        | 378                 | 40.3          | 407           | 152         | 16.2  |
| Old age (>60)             | 170                 | 48.6          | 138           | 42          | 12.0  |
| Marital status            |                     |               |               |             |       |
| Single                    | 130                 | 38.9          | 148           | 56          | 16.8  |
| Married                   | 612                 | 40.2          | 658           | 251         | 16.5  |
| Separated                 | 10                  | 30.3          | 17            | 6           | 18.2  |
| Widowed                   | 50                  | 39.2          | 53            | 28          | 21.4  |
| Education                 |                     |               |               |             |       |
| Primary                   | 331                 | 39.1          | 369           | 147         | 7.4   |
| Secondary                 | 341                 | 42.3          | 337           | 129         | 16.0  |
| Graduate                  | 117                 | 35.2          | 158           | 57          | 17.2  |
| Occupation                |                     |               |               |             |       |
| Employed                  | 475                 | 40.7          | 495           | 196         | 16.8  |
| Unemployed                | 235                 | 37.8          | 275           | 112         | 18.0  |
| Students                  | 81                  | 40.5          | 93            | 26          | 13.0  |
| Income                    |                     |               |               |             |       |
| 0–10,000 (0–135 USD)      | 681                 | 38.8          | 764           | 311         | 17.7  |
| 10,000–20,000 (135–270 USD)| 68                  | 48.9          | 58            | 13          | 9.4   |
| 20,000–50,000 (270–675 USD)| 43                  | 41.7          | 46            | 14          | 13.6  |
| >50,000 (>675 USD)        | 5                   | 35.7          | 6             | 3           | 21.4  |
| Religion                  |                     |               |               |             |       |
| Hindu                     | 722                 | 39.8          | 784           | 307         | 16.9  |
| Christian                 | 39                  | 47.0          | 35            | 9           | 10.8  |
| Muslim                    | 41                  | 33.3          | 57            | 25          | 20.3  |
| Diagnosis                 |                     |               |               |             |       |
| Hematological             | 125                 | 35.6          | 152           | 74          | 21.1  |
| Head and neck             | 122                 | 43.6          | 121           | 37          | 13.2  |
| Sarcoma                   | 59                  | 38.3          | 73            | 22          | 14.3  |
| Respiratory               | 48                  | 44.0          | 40            | 21          | 19.3  |
| Breast                    | 83                  | 43.0          | 78            | 32          | 16.6  |
| Brain and nervous system  | 3                   | 30.0          | 4             | 3           | 30.0  |
| Urinary system            | 11                  | 36.7          | 11            | 8           | 26.7  |
| Reproductive system (female)| 174                | 43.2          | 171           | 58          | 14.4  |
| Digestive system          | 114                 | 36.3          | 145           | 55          | 17.5  |
| Skin                      | 11                  | 45.8          | 11            | 2           | 8.3   |
| Endocrine system          | 22                  | 36.1          | 30            | 9           | 14.8  |
| Unknown primary           | 6                   | 23.1          | 14            | 6           | 23.1  |
| Reproductive system (male)| 23                  | 36.5          | 26            | 14          | 22.2  |
| Advanced nature           |                     |               |               |             |       |
| Yes                       | 59                  | 32.6          | 80            | 42          | 23.2  |
| No                        | 742                 | 40.4          | 796           | 299         | 16.3  |
| Knowledge of diagnosis    |                     |               |               |             |       |
| Yes                       | 675                 | 38.6          | 774           | 301         | 17.2  |
| No                        | 127                 | 47.2          | 102           | 37.9        | 40    |
| Knowledge of prognosis    |                     |               |               |             |       |
| Yes                       | 464                 | 44.7          | 413           | 161         | 15.5  |
| No                        | 338                 | 34.5          | 463           | 180         | 18.3  |
| Family history of cancer  |                     |               |               |             |       |
| Yes                       | 119                 | 46.1          | 105           | 34          | 13.2  |
| No                        | 683                 | 38.8          | 771           | 307         | 17.4  |
| Past psychiatric history  |                     |               |               |             |       |
| Yes                       | 11                  | 36.7          | 13            | 6           | 20.0  |
| No                        | 791                 | 39.8          | 863           | 335         | 16.8  |
| Sleep                     |                     |               |               |             |       |
| Normal                    | 598                 | 51.1          | 470           | 103         | 8.8   |
| Not normal                | 204                 | 24.1          | 406           | 238         | 28.1  |
| Pain                      |                     |               |               |             |       |
| Mild                      | 627                 | 48.2          | 530           | 145         | 11.1  |
| Moderate                  | 142                 | 26.6          | 274           | 118         | 22.1  |
| Severe                    | 33                  | 18.0          | 72            | 39.3        | 78    | 42.6  |
better than no knowledge. However, there are a number of barriers to disclosure of prognosis in an Indian oncology setting wherein Indian oncologists revealed that a primary barrier to truthful communication was family carers’ requests for nondisclosure and patients not explicitly expressing a desire to know their diagnosis.\textsuperscript{19} Given the results of this study, it is strongly recommended that clinicians should proceed with the practice of disclosing the prognosis to the patient, wherever there is a significant need for information and also ensure that the family understands the psychological impact that the withholding of information causes. Knowing one’s prognosis may help a patient with their coping.

**Limitations**

The findings of the study can have implementations for practice, keeping in mind the following limitations. First, the data were collected at only one cancer center located in South India. Although the sample had representation of patients from almost all of the southern states, the findings may not be generalized to other regions outside of South India. Second, although the validity and reliability of the Distress Thermometer has been assessed in numerous countries and with different ethnic groups, the psychometrics have not been assessed with an Indian cancer population. The clinicians in this study verbally administered the thermometer and could explain the instrument in the patient’s own language. However, a measure of reliability of the assessment would strengthen the study. Third, the cross-sectional design of the study does not allow us to make causal attributions since the variables associated with distress could be bidirectional. For example, do sleeping problems cause distress or does distress cause an individual to have sleeping problems?

**Implications for psycho-oncology practice & research**

This study demonstrates that it is feasible to implement a distress screening protocol with a large patient population in a major cancer institute. Using a protocol with a standardized instrument assists with this implementation. Given that more than half of the patients reported high levels of distress that warranted a referral, cancer centers need to be equipped with adequate psycho-oncology services with trained professionals to assist patients and families to manage their distress. The existing challenge with the number of trained professionals in the country must be addressed in the coming years by increasing the number of training programs or courses, thereby making psychosocial care accessible to everyone in need.

Since younger age was a significant factor associated with higher distress, cancer centers may need to pay particular attention to the psychosocial needs of the adolescent/young adult patient population and their special needs for psychosocial care. The significant association between sleeping problems and physical pain with high distress levels indicate that supportive care should optimize the management of cancer symptoms and treatment side effects in order to reduce distress. Also, it is critical that the patients’ families are involved in the psychosocial care of patients from the point of diagnosis to the end of treatment. In particular, communication between providers and patients needs to be patient-centered and family-centered. Screening for distress and understanding the underlying concerns, worries, and unmet needs that may be driving the distress are critical to identifying the appropriate responses by the psycho-oncology team.

The findings on the relationship between awareness of diagnosis and prognosis and distress have implications for provider-patient communication. Communication about the

### Table 5

Multinominal logistic regression models\textsuperscript{1}.

|                          | Moderate (vs mild distress) | Severe (vs mild distress) |
|--------------------------|-----------------------------|---------------------------|
|                          | Adj OR (95% CI) | P | Adj OR (95% CI) | P |
| **Age (ref: >60 years’ old)** |                |   |                |   |
| Adolescent/young adult (25–40) | 2.035 (1.366–3.032) | .000\textsuperscript{*} | 3.814 (2.004–7.257) | .000\textsuperscript{**} |
| Adults (41–60) | 1.528 (1.048–2.227) | .028\textsuperscript{**} | 2.178 (1.168–4.062) | .014\textsuperscript{***} |
| **Sex (ref: female)** |                |   |                |   |
| Male | 1.198 (.954–1.503) | .120 | 1.188 (.870–1.624) | .278 |
| **Income (ref: >50,000)** |                |   |                |   |
| 0–10,000 (0–135 USD) | .813 (242–2.734) | .738 | .479 (102–2.245) | .351 |
| 10,000–20,000 (135–270 USD) | .566 (160–2.003) | .378 | .171 (.032–899) | .037\textsuperscript{***} |
| 20,000–50,000 (270–675 USD) | .755 (209–2.725) | .668 | .304 (.057–1.618) | .163 |
| **Advanced nature (ref: no)** |                |   |                |   |
| Yes | 1.203 (.831–1.741) | .328 | 1.647 (1.030–2.635) | .037\textsuperscript{***} |
| **Knowledge of diagnosis (ref: unaware)** |                |   |                |   |
| Aware | 1.549 (1.144–2.099) | .005\textsuperscript{**} | 1.530 (.992–2.360) | .054 |
| **Knowledge of prognosis (ref: unaware)** |                |   |                |   |
| Aware | .609 (.495–749) | .000 | .623 (.468–830) | .001\textsuperscript{**} |
| Normal | .436 (.350–542) | .000 | .189 (.140–255) | .000 \textsuperscript{**} |
| **Pain (ref: severe)** |                |   |                |   |
| Mild | .522 (.334–816) | .004\textsuperscript{***} | .167 (.103–270) | .000 \textsuperscript{*} |
| Moderate | 1.042 (.649–1.674) | .864 | .474 (286–787) | .004 \textsuperscript{*} |

\textsuperscript{1} OR (95% CI) and P values of clinical variables in distress. The reference category of the dependent variable is mild distress.

**AYA = adolescents and young adults, CI = confidence interval, OR = odds ratio.**

\textsuperscript{*} P<.01.

\textsuperscript{**} P<.001.

\textsuperscript{***} P<.05.
diagnosis between practitioners and patients and their families has been explored in another Asian setting. [20] Wong et al found that sensitive and empathetic patient–physician communication during the “breaking news” of a cancer diagnosis may mitigate a patient’s emotional distress. Future research could focus on how communication about the diagnosis between practitioners and patients and their families in India may affect a patient’s distress with the ultimate aim to develop communication approaches to reduce the emotional distress.

There is a need for qualitative research that will help us to better understand the experience of living with the cancer diagnosis, its treatment and its recovery from the Indian perspective. There is a paucity of research that deals with the cultural aspects of Indians, specifically, their different views on life, family functioning, the availability of social supports, coverage of medical expenses and social attitudes to cancer. A second area of research that we endorse examines the effectiveness of psychosocial interventions with cancer patients. There is still much research to be done to close the gap in knowledge about the effectiveness of our psychosocial cancer care.

Conclusions

This study is the first empirical investigation of predictors of distress with a large sample of cancer patients in India. More than half of the cancer patients experience moderate to severe distress and require psychosocial intervention. Age, knowledge of diagnosis and prognosis, and physical symptoms were strong predictors of distress among cancer patients. The findings of this study provide clinicians with an empirical understanding of their patients that has potential to advance our development of effective interventions in promoting patients’ quality of life.

Acknowledgment

The authors acknowledge Dr Anao Zhang, University of Michigan for his assistance towards statistical analysis.

Conflicts of interest statement

The authors report no conflicts of interest.

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