

Original Research Article

Psychosocial and quality of life assessment in cancer patients: a pilot study in Indian set up

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ABSTRACT

Background: Routine screening for distress is internationally recommended as a standard of care among cancer patients. This study was conducted to assess the level of stress and determine the association between quality of life (QOL) with demographic, socio-economic status, treatment phase, cancer stage, etc.

Methods: An observational study, performed in the department of Clinical Oncology, Nayati Multi Super Speciality Hospital, Mathura, India. Data of 62 histopathologically proven cancer patients between Nov 2016 and July 2018, were analyzed. This pilot study was conducted to assess the QOL and stress levels of cancer patients by using scales of WHOQOL-BREF, QSC-R23 and Hamilton scale.

Results: Among 62 cancer patients, high distress along with poor QOL was seen maximum in males, 40-60 year age group and educated. In majority of domains, high distress was found in middle class, whereas poor QOL was found in Lower class in Environmental domain ($p < 0.01$). We found higher distress in nuclear families ($p < 0.05$). High distress was seen in cancer patients who were aware of illness and was found to be statistically significant. Poor QOL in stage 4 was found to be statistically significant in Psychological domain of WHOQOL-BREF. High distress was found in patients undergoing treatment in all patients as compared to Pre-treatment phase and Post-treatment phase ($p < 0.05$).

Conclusion: To assess psychological stress in cancer patients using all three scales we could not obtain a conclusive result covering all dimensions of QOL. So, in our next study authors plan to develop one indigenous new scale.

Keywords: Cancer patients, Psychosocial assessment, Psychological distress, Quality of life

INTRODUCTION

In 2015 Cancer alone contributed 8.7 million deaths worldwide and is the second leading cause only after to cardio-vascular disease in non-communicable diseases mortality of which around 0.68 million deaths per year were attributed to cancer in India in 2012 adding to the global death toll of cancer.^{1,2} Most of patients required multimodality treatment in the form of surgery, radiation, chemotherapy and others.

The cancer diagnosis, cancer treatment and its treatment related side effects may cause stressful experiences in cancer patients and stress is often a triggering factor for cancer distress, many of them are suffer from anxiety, depression, or both.^{3,4} The prevalence of psychosocial distress among cancer patients is estimated to be around 15-58%, many factors may contribute to this wide range of prevalence rates with respect to cancer type, stage and treatment modality, etc.^{5,6}

Even mild anxiety can cause increase pain, affect sleep, cause nausea, vomiting and finally affect the quality of life for cancer patients and their families. According to the World Health Organization (WHO), quality of life (QOL) is defined as an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns.⁷ Several studies have shown the psychological distress among cancer patients may reduce the quality of life, have a role in cancer progression, cancer-related death, and the suicide risk.⁸⁻¹³

Thus, routine screening for distress is internationally recommended as a standard of care among cancer patients, it might be beneficial by psychological interventions like psychosocial counselling and psychiatric treatment as per their needs.^{14,15} There are many assessment tools to assess psychological stress in cancer patients, but QSC-R23, WHO QOL-BREF, HAM-D, HADS are common in clinical practice.¹⁶⁻¹⁹

In our outreach activities and clinic based QOL assessments we had always felt need of a such scale which encompasses the international standards but also includes certain specific needs of the local population. In our outreach community based trial on oral mucosal changes due to Tobacco use while data incorporation we found that there were need of modification in QOL studies or epidemiological assessment.²⁰

This study was conducted to assess the QOL and stress levels of cancer patients by using scales of WHOQOL-BREF, QSC-R23 and Hamilton scale along with the association between quality of life with demographic, socio-economic status, awareness about illness, treatment phase & cancer stage of patients, and also to develop an indigenous new scale to assess the quality of life; which may be more relevant, reliable, conclusive, precise and easy to use in our native target population. Being set in a tier 3 city of India, we found while doing our assessment that the socio economic variables were quite unique as compared to the internationally accepted QOL assessment tools. The local population of western Uttar Pradesh is away from the metro-centric type of quaternary care for cancer and hence the understanding of local population, educational and social needs were different.²¹

METHODS

An observational study was performed, at the Clinical Oncology department, Nayati Multi Super Speciality Hospital, Mathura, India. Data of 62 histopathologically proven cancer patients of all sites, more than 18 years of age in northern Indian population registered between Nov 2016 and July 2018 were analyzed. Critically ill patients were excluded from the study. This pilot study was conducted to assess the quality of life and stress levels of cancer patients by using standard scales of WHOQOL-

BREF, QSC-R23 and Hamilton scale. Informed consent in Hindi language was taken from every participant in the study.

Training of health professionals

After thorough evaluation by oncologist, participants were evaluated and interviewed by trained clinical psychologist who briefed regarding the basic psychological assessment and its purpose. The participants were asked about identification particulars, demographic profile, socio-economic parameters, and cancer related information such as current status of disease, and past history of any cancer treatment. The results of the pre-testing of 62 patients will provide useful information in improving the clarity of questions for finalization of the new questionnaire that we plan to develop.

After approval of patients, the interviewer used three different instruments to assess their quality of life. The three instruments were 1) WHOQOL-BREF; 2) QSC-R23 and 3) HAM-D. Forms were filled by the interviewer himself. The instrument was applied in the form of interviews carried out in the room where the patient was undergoing consultation or treatment. Each interview lasted approximately 20-25 minutes, and all patients were thanked by interviewer for their participation at the end. WHOQOL- BREF, a generic instrument to assess quality of life. This is the abbreviated version of the instrument used by WHO, the WHOQOL-100, already validated in Portuguese.²² It consists of two parts: one aimed at the socio-demographic and health aspects and the other at quality of life. The later consists of 26 questions, two about quality of life in general and quality of life as per health and the rest 24 representing each of the facets that make up the original instrument. The questions are organized in four domains that make up the short version: Physical (pain and discomfort, fatigue and energy, sleep and rest); Psychological (positive feelings; learning, thinking, memory and concentration; self-esteem, negative feelings, body image and appearance); Social (support/social support, personal relationships; sexual activity); Environment (physical safety and protection; financial resources; home environment; health and social care: availability and quality; opportunities to acquire skills and new information; participation in, and opportunities for recreation/leisure, physical environment, noise, pollution, transportation, traffic/weather). The score of each question ranges from one to five and higher scores indicate a better evaluation.

To assess psychological distress we used the 'Questionnaire on Stress in Cancer Patients revised version' QSC-R23 (Herschbach P et al; 2003). This is a disease-specific questionnaire to measure psychosocial distress in cancer patients (all diagnoses and treatment settings). It has 23 items that describe potential everyday stress in most areas of life in every aspect and in simple language. The range of the response

categories varies between 0 (=the problem does not apply to me) and 5 (=the problem applies to me and is a very big problem). The items are grouped into five homogeneous scales namely psychosomatic complaints, fears, information deficits, social strains and everyday life restrictions.

The Hamilton Depression (HAM-D) Rating scale provides a suggestion of depression and also a guide to recovery. It is widely used for assessing severity of depression symptoms. It has 21 items, only the first 17 are scored and the remainder provide additional information. Eight items are scored on a 5 point Likert scale, ranging from 0 (=not present) to 4 (=severe). 9 items are scored from 0-2. After that, sum the total of first seventeen items to arrive at total score. Patients were categorized into mild, moderate and severe according to total score.

Statistical analysis

Statistical evaluation was done using the SPSS (Version 21.0). Data analysis was performed using descriptive statistics; Statistical test Chi-square was used to find association between categorical variables and quality of life. The value of $p < 0.05$ was adopted as critical level.

RESULTS

The total sample comprises 62 cancer patients. Majority of patients were in the age group 50-59 and 60-69 years; 59.6% were male. In this study most of the patients were married (87.1%). Only 4% patients were unmarried. One fourth of patients were uneducated, whereas 50% of patients were either secondary or above. Most of the patients (59.6%) belonged to middle class. 40% of the patients were unemployed; 55.7% belonged to nuclear family. More than 80% were aware about their cancer (Table 1).

Association of various factors with different domains of QSC-R23, WHOQOL-BREF and HAMD questionnaires: (Table 2 - 6).

QSC-R23- Everyday life restrictions depicted higher distress with age more than 40 years (89.8%). Similarly, higher distress was found in the domain of Fear. Whereas, high distress was seen to be maximum in 40-60 year age group in Information deficit (52%), Psychosomatic complaints (45.2%) and Social strain (57%) domains.

In table 2 WHOQOL-BREF- Poor quality of life was seen in more than 40 years in Physical (86.1%), Psychological (87.9%) and Social (92.0%) domains. But in Environmental domain, 40-60 year age group had most poor quality of life (61.5%). HAMD- Severe psychological stress was seen in more than 40 years of age (86.4%). Higher distress was seen in males in all

domains of QSC-R23 and WHOQOL-BREF questionnaires. Whereas, severe psychological stress was seen in females (59.1%) and was found to be statistically significant in HAMD scale.

Table 1: Socio-demographic characteristics of study subjects.

Characteristics	No. of patients (n)	Percentage (%)
Age (years)		
<40	8	12.9
40-49	9	14.5
50-59	14	22.5
60-69	20	32.2
>69	11	17.7
Gender		
Male	37	59.6
Female	25	40.3
Marital Status		
Unmarried	3	4.0
Married	54	87.1
Widow	5	8.0
Educational status		
Uneducated	16	25.8
Primary	3	4.8
Middle	12	19.3
Secondary	13	20.9
Higher	18	29.0
Socio-economic status		
Low	7	11.2
Lower middle	10	16.1
Middle	37	59.6
Upper middle	6	9.6
Upper	2	3.2
Occupation		
Unemployed	25	40.3
Self-employed	22	35.4
Employed	15	24.1
Family structure		
Nuclear	34	55.7
Joint	27	44.2
Awareness		
Yes	51	82.3
No	11	17.7

In table 3 high distress was found to be statistically significant among educated patients in the domains of Information deficit and Psychosomatic complaints in approximately 60% of patients.

Similarly, high distress was found to be more in employed patients as compared to un-employed in all domains of QSC-R23 and WHOQOL-BREF but severe stress was observed among un-employed patients (54.5%) as per the HAMD scale.

In table 4 majority of domains, high distress was found in Middle class, whereas poor quality of life was found in Lower class in Environmental domain. It was also found to be statistically significant ($p=0.01$). As per family structure, higher distress was observed in nuclear family

as compared to joint families. Poor quality was observed in Physical and Social domains of WHOQOL-BREF in nuclear family and was found to be statistically significant ($p<0.05$).

Table 2: Association of Age groups and Gender with various domains.

Domains	Age group (in years)			p value	Gender		P value
	<40 n(%)	40-60 n(%)	>60 n(%)		Male n(%)	Female n(%)	
QSC-R23							
Everyday life restrictions							
Low distress	3(23.1)	7(53.8)	3(23.1)	0.80	7(53.8)	6(46.2)	0.63
High distress	5(10.2)	22(44.9)	22(44.9)		30(61.2)	19(38.8)	
Fear							
Low distress	3(13.6)	12(54.5)	7(31.8)	0.58	14(63.6)	8(36.4)	0.63
High distress	5(12.5)	17(42.5)	18(45.0)		23(57.5)	17(42.5)	
Information deficit							
Low distress	5(13.5)	16(43.2)	16(43.2)	0.79	22(59.5)	15(40.5)	0.96
High distress	3(12.0)	13(52.0)	9(36.0)		15(60.0)	10(40.0)	
Psychosomatic complaints							
Low distress	3(15.0)	10(50.0)	7(35.0)	0.80	11(55.0)	9(45.0)	0.60
High distress	5(11.9)	19(45.2)	18(42.9)		26(61.9)	16(38.1)	
Social strains							
Low distress	7(14.6)	21(43.8)	20(41.7)	0.64	30(62.5)	18(37.5)	0.40
High distress	1(7.1)	8(57.1)	5(35.7)		7(50.0)	7(50.0)	
WHOQOL-BREF							
Physical							
Good	3(11.5)	12(46.2)	11(42.3)	0.9	16(61.5)	10(38.5)	0.80
Poor	5(13.9)	17(47.2)	14(38.9)		21(58.3)	15(41.7)	
Psychological							
Good	4(13.8)	14(48.3)	11(37.9)	0.9	17(58.6)	12(41.4)	0.87
Poor	4(12.1)	15(45.5)	14(42.4)		20(60.6)	13(39.4)	
Social							
Good	6(16.2)	17(45.9)	14(37.8)	0.6	23(62.2)	14(37.8)	0.62
Poor	2(8.0)	12(48.0)	11(44.0)		14(56.0)	11(44.0)	
Environmental							
Good	7(14.3)	21(42.9)	21(42.9)	0.4	30(61.2)	19(38.8)	0.63
Poor	1(7.7)	8(61.5)	4(30.8)		7(53.8)	6(46.2)	
HAMD							
Mild	3(14.3)	11(52.4)	7(33.3)	0.93	13(61.9)	8(38.1)	0.04
Moderate	2(10.5)	8(42.1)	9(47.4)		15(78.9)	4(21.1)	
Severe	3(13.6)	10(45.5)	9(40.9)		9(40.9)	13(59.1)	

Table 3: Association of Educational status and Occupation with various domains

Domains	Educational status		p value	Occupation		p value
	Uneducated n(%)	Educated n(%)		Unemployed n(%)	Employed n(%)	
QSC-R23						
Everyday life restrictions						
Low distress	2(15.4)	11(84.6)	0.71	6(46.2)	7(53.8)	0.63
High distress	12(24.5)	37(75.5)		19(38.8)	30(61.2)	
Fear						

Low distress	2(9.1)	20(90.9)	0.11	9(40.9)	13(59.1)	0.94
High distress	12(30.4)	28(70.0)		16(40.0)	24(60.0)	
Information deficit						
Low distress	5(13.5)	32(86.5)	0.03	15(40.5)	22(59.5)	0.96
High distress	9(36.0)	16(64.0)		10(40.0)	15(60.0)	
Psychosomatic complaints						
Low distress	1(5.0)	19(95.0)	0.02	9(45.0)	11(55.0)	0.60
High distress	13(31.0)	29(69.0)		16(38.1)	26(61.9)	
Social strains						
Low distress	10(20.8)	38(79.2)	0.71	18(37.5)	30(62.5)	0.40
High distress	4(28.6)	10(71.4)		7(50.0)	7(50.0)	
WHOQOL-BREF						
Physical						
Good	4(15.4)	22(84.6)	0.35	11(42.3)	15(57.7)	0.78
Poor	10(27.8)	26(72.2)		14(38.9)	22(61.1)	
Psychological						
Good	3(10.3)	26(89.7)	0.03	13(44.8)	16(55.2)	0.49
Poor	11(33.3)	22(66.7)		12(36.4)	21(63.6)	
Social						
Good	8(21.6)	29(78.4)	0.82	14(37.8)	23(62.2)	0.62
Poor	6(24.0)	19(76.0)		11(44.0)	14(56.0)	
Environmental						
Good	9(18.4)	40(81.6)	0.12	21(42.9)	28(57.1)	0.53
Poor	5(38.5)	8(61.5)		4(30.8)	9(69.2)	
HAMD						
Mild	3(14.3)	18(85.7)	0.41	9(42.9)	12(57.1)	0.09
Moderate	4(21.1)	15(78.9)		4(21.1)	15(78.9)	
Severe	7(31.8)	15(68.2)		12(54.5)	10(45.5)	

Table 4: Association of Socio-economic status and family structure with various domains.

Domains	Socio-economic status			p value	Family structure		p value
	Lower n(%)	Middle n(%)	Upper n(%)		Nuclear n(%)	Joint n(%)	
QSC-R23							
Everyday life restrictions							
Low distress	6(46.2)	5(38.5)	2(15.4)	0.18	5(38.5)	8(61.5)	0.18
High distress	11(22.4)	32(65.3)	6(12.2)		29(59.2)	20(40.8)	
Fear							
Low distress	5(22.7)	13(59.1)	4(18.2)	0.59	11(50.0)	11(50.0)	0.57
High distress	12(30.0)	24(60.0)	4(10.0)		23(57.5)	17(42.5)	
Information deficit							
Low distress	8(21.6)	24(64.9)	5(13.5)	0.46	20(54.1)	17(45.9)	0.88
High distress	9(36.0)	13(52.0)	3(12.0)		14(56.0)	11(44.0)	
Psychosomatic complaints							
Low distress	4(20.0)	13(65.0)	3(15.0)	0.73	9(45.0)	11(55.0)	0.28
High distress	13(31.0)	24(57.1)	5(11.9)		25(59.5)	17(40.5)	
Social strains							
Low distress	14(29.2)	29(60.4)	5(10.4)	0.55	25(52.1)	23(47.9)	0.42
High distress	3(21.4)	8(57.1)	3(21.4)		9(64.3)	5(35.7)	
WHOQOL-BREF							
Physical							
Good	4(15.4)	18(69.2)	4(15.4)	0.21	10(38.5)	16(61.5)	0.02
Poor	13(36.1)	19(52.8)	4(11.1)		24(66.7)	12(33.3)	
Psychological							
Good	6(20.7)	18(62.1)	5(17.2)	0.44	15(51.7)	14(48.3)	0.64

Poor	11(33.3)	19(57.6)	3(9.1)		19(57.6)	14(42.4)	
Social							
Good	9(24.3)	24(64.9)	4(10.8)	0.61	15(40.5)	22(59.5)	0.01
Poor	8(32.0)	13(52.0)	4(16.0)		19(76.0)	6(24.0)	
Environmental							
Good	10(20.4)	34(69.4)	5(10.2)	0.01	26(53.1)	23(46.9)	0.58
Poor	7(53.8)	3(23.1)	3(23.1)		8(61.5)	5(38.5)	
HAMD							
Mild	4(19.0)	13(61.9)	4(19.0)	0.53	8(38.1)	13(61.9)	0.08
Moderate	5(26.3)	13(68.4)	1(5.3)		14(73.7)	5(26.3)	
Severe	8(36.4)	11(50.0)	3(13.6)		12(54.5)	10(45.5)	

Table 5: Association of Awareness about illness and Treatment phase with various domains.

Domains	Awareness about illness			Treatment phase			p value
	Yes n(%)	No n(%)	p value	Pre- treatment n(%)	Intra- treatment n(%)	Post- treatment n(%)	
QSC-R23							
Everyday life restrictions							
Low distress	8(61.5)	5(38.5)	0.04	5(38.5)	5(38.5)	3(23.1)	0.08
High distress	43(87.8)	6(12.2)		6(12.2)	32(65.3)	11(22.4)	
Fear							
Low distress	16(72.7)	6(27.3)	0.14	4(18.2)	10(45.5)	8(36.4)	0.16
High distress	35(87.5)	5(12.5)		7(17.5)	27(67.5)	6(15.0)	
Information deficit							
Low distress	29(78.4)	8(21.6)	0.50	7(18.9)	20(54.1)	10(27.0)	0.52
High distress	22(88.0)	3(12.0)		4(16.0)	17(68.0)	4(16.0)	
Psychosomatic complaints							
Low distress	13(65.0)	7(35.0)	0.03	6(30.0)	7(35.0)	7(35.0)	0.02
High distress	38(90.5)	4(9.5)		5(11.9)	30(71.4)	7(16.7)	
Social strains							
Low distress	38(79.2)	10(20.8)	0.22	10(20.8)	28(58.3)	10(20.8)	0.53
High distress	13(92.9)	1(7.1)		1(7.1)	9(64.3)	4(28.6)	
WHOQOL-BREF							
Physical							
Good	19(73.1)	7(26.9)	0.18	7(26.9)	12(46.2)	7(26.9)	0.13
Poor	32(88.9)	4(11.1)		4(11.1)	25(69.4)	7(19.4)	
Psychological							
Good	22(75.9)	7(24.1)	0.32	5(17.2)	15(51.7)	9(31.0)	0.31
Poor	29(87.9)	4(12.1)		6(18.2)	22(66.7)	5(15.2)	
Social							
Good	28(75.7)	9(24.3)	0.09	6(16.2)	23(62.2)	8(21.6)	0.88
Poor	23(92.0)	2(8.0)		5(20.0)	14(56.0)	6(24.0)	
Environmental							
Good	39(79.6)	10(20.4)	0.43	10(20.4)	26(53.1)	13(26.5)	0.17
Poor	12(92.3)	1(7.7)		1(7.7)	11(84.6)	1(7.7)	
HAMD							
Mild	14(66.7)	7(33.3)	0.04	6(28.6)	8(38.1)	7(33.3)	0.14
Moderate	16(84.2)	3(15.8)		3(15.8)	12(63.2)	4(21.1)	
Severe	21(95.5)	1(4.5)		2(9.1)	17(77.3)	3(13.6)	

In table 5 high distress was seen in cancer patients who were aware of illness and was found to statistically significant in domains of Everyday life restrictions and Psychosomatic complaints of QSC-R23.

Statistically significant higher distress was also seen in cancer patients who were aware of disease as per the HAMD scale. High distress was found in patients undergoing treatment in all patients as compared to Pre-

treatment phase and Post- treatment phase. It was found to be statistically significant ($p<0.05$) in Psychosomatic complaints domain.

In table 6 was found that stress was increasing with stage of cancer and was found to be at its peak in fourth stage of cancer in all domains. Poor quality of life in stage 4 was found to be statistically significant in Psychological domain of WHOQOL- BREF.

Table 6: Association of Cancer stage with various domains.

Domains	Cancer stage				p value
	Stage 1 n(%)	Stage 2 n(%)	Stage 3 n(%)	Stage 4 n(%)	
QSC-R23					
Everyday life restrictions					
Low distress	1(7.7)	4(30.8)	2(15.4)	6(46.2)	0.04
High distress	4(8.2)	2(4.1)	11(22.4)	32(65.3)	
Fear					
Low distress	1(4.5)	4(18.2)	4(18.2)	13(59.1)	0.43
High distress	4(10.0)	2(5.0)	9(22.5)	25(62.5)	
Information deficit					
Low distress	3(8.1)	5(13.5)	8(21.6)	21(56.8)	0.67
High distress	2(8.0)	1(4.0)	5(20.0)	17(68.0)	
Psychosomatic complaints					
Low distress	1(5.0)	4(20.0)	2(10.0)	13(65.0)	0.17
High distress	4(9.5)	2(4.8)	11(26.2)	25(59.5)	
Social strains					
Low distress	3(6.3)	5(10.4)	10(20.8)	30(62.5)	0.80
High distress	2(14.3)	1(7.1)	3(21.4)	8(57.1)	
WHOQOL-BREF					
Physical					
Good	2(7.7)	5(19.2)	4(15.4)	15(57.7)	0.19
Poor	3(8.3)	1(2.8)	9(25.0)	23(63.9)	
Psychological					
Good	3(10.3)	6(20.7)	4(13.8)	16(55.2)	0.02
Poor	2(6.1)	0(0.0)	9(27.3)	22(66.7)	
Social					
Good	4(10.8)	6(16.2)	5(13.5)	22(59.5)	0.05
Poor	1(4.0)	0(0.0)	8(32.0)	16(64.0)	
Environmental					
Good	4(8.2)	5(10.2)	11(22.4)	29(59.2)	0.95
Poor	1(7.7)	1(7.7)	2(15.4)	9(69.2)	
HAMD					
Mild	1(4.8)	4(19.0)	3(14.3)	13(61.9)	0.72
Moderate	2(10.5)	1(5.3)	4(21.1)	12(63.2)	
Severe	2(9.1)	1(4.5)	6(27.3)	13(59.1)	

DISCUSSION

Psychological stress in cancer patients is measured by various assessment scales like QSC-R23, WHOQOL-BREF, HAMD, etc.¹⁶⁻¹⁸ The role of psychosocial

intervention in decreasing pain and anxiety, improving QOL, and ability to complete the therapy has been shown. Several reports have also shown the relationship between distress level and QOL consistent with what we have observed in our study.²³⁻²⁷

Abuelgasim KA et al. reported the prevalence of depression (46.5%), anxiety (22.3%), and concurrent anxiety and depression in 18.1% haematological cancer patients.²⁸ In our study most frequent problems faced by cancer patients was going out to spend quality time with friends and family (66.1%), of having trouble sleeping (45.2%), fear of developing pain (43.5%) and difficulty in body care after developing cancer (41.9%).

Nikbakhsh et al. found that 41-50 years of age group are severely depressed ($p=0.008$), however Mystakidou et al. did not find significant association with age.^{26,29} In our study by using various psychological assessment scales the highest distress was noted in 40-60 year age group. QSC-R23- Everyday life restrictions depicted higher distress with age more than 40 years (89.8%). Similarly, higher distress was found in the domain of Fear. WHOQOL-BREF -Poor quality of life was seen in more than 40 years in Physical (86.1%), Psychological (87.9%) and Social (92.0%) domains. But in Environmental domain, 40-60 year age group had most poor quality of life (61.5%). HAMD-Severe psychological stress was seen in more than 40 years of age (86.4%).

Hong et al. reported that females were more depressed ($p=0.008$) but less anxious than males ($p=0.020$).³⁰ In our study, higher distress was seen in males in all domains of QSC-R23 and WHOQOL-BREF questionnaires. Whereas severe psychological stress was seen in females (59.1%) and was found to be statistically significant in HAMD scale.

Hong et al. also reported that patients with low-level education had a higher prevalence of depression; however some studies did not find any association with education.²⁹⁻³⁰ In this study high distress was found to be statistically significant among educated patients in the domains of Information deficit and Psychosomatic complaints in approximately 60% of patients. In majority of domains, high distress was found in Middle class, whereas poor quality of life was found in Lower class in Environmental domain. It was also found statistically significant ($p=0.01$) in published literature.³¹

Family size (<2 children) had a positive impact on the QOL ($p=0.008$).³² In this study the higher distress was observed in nuclear family as compared to joint families. Poor quality was observed in Physical and Social domains of WHOQOL-BREF in nuclear family and was found to be statistically significant ($p<0.05$).

High distress was seen in cancer patients who were aware of illness and was found to be statistically significant in domains of Everyday life restrictions and Psychosomatic complaints of QSC-R23. Statistically significant higher distress was also seen in cancer patients who were aware of disease as per the HAMD scale.³³

Krebber et al. reported the prevalence of depression was highest during treatment 14% (95% $CI=11-17\%$),

measured by diagnostic interviews, and 27% (95% $CI=25-30\%$), measured by self-report instruments.³⁴ Nearly 50% of the women with early breast cancer had depression, anxiety, or both in the year after diagnosis, 25% in the second, third, and fourth years, and 15% in the fifth year. Point prevalence was 33% at diagnosis, falling to 15% after one year.³⁵ In this study high distress was found in patients undergoing treatment in all patients as compared to Pre-treatment phase and Post-treatment phase. It was found to be statistically significant ($p<0.05$) in Psychosomatic complaints domain.

Nikbakhsh et al. reported the high frequency of anxiety and depression can be related to end-stage and poor prognosis, Mhaidat NM et al. also found the stress was positively correlated with advanced stage.^{29,36} In our study, it was found that stress was increasing with stage of cancer and was found to be at its peak in fourth stage of cancer in all domains. Poor quality of life in stage 4 was found to be statistically significant in Psychological domain of WHOQOL-BREF.

CONCLUSION

High psychological distress along with poor quality of life was seen maximum in males, 40-60 years of age, educated, middle class, nuclear family, and those who were aware of illness. It was also found to be significant in patients undergoing treatment, and higher stage of cancer in all domains. To assess psychological stress in cancer patients using all three scales namely WHOQOL-BREF, HAM-D and QSC-R23, we could not obtain a conclusive result covering all dimensions of quality of life. Thus, we are planning to develop one indigenous new scale (Nayati QOL Scale-NQOLS) having all important questions from all three scales to assess quality of life and level of stress; which may be more relevant, reliable, conclusive, precise and easy to use in our native target population. This study needs to be continued with more sample size for further validation of these results.

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