

Psychological Correlates of Stress, Coping and Quality of Life in Patients with Non-Small Cell Lung Cancer

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ABSTRACT

Background: Cancer is a leading cause of death worldwide, accounting for nearly 10 million deaths in 2020, or nearly one in six deaths. Non-small cell lung cancer (NSCLC) is a disease in which malignant (cancer) cells form in the tissues of the lung. It tends to grow and spread quickly, which makes it harder to treat. About 80% to 85% of lung cancers are NSCLC. The main purpose of the present study was to make a survey to identify patients newly diagnosed with NSCLC and to identify cancer hospitals situated in the twin cities of Hyderabad and Secunderabad, India.

Methods: The research design herein adopted was explorative. For the study 10 patients with NSCLC (7 Males, 3 Females) were at stage IIIb and IV and to explore the level of stress, coping strategies and Quality of life in patients with NSCLC by using convenience sampling method. The research instruments were used for the study. The Questionnaire on Stress in Cancer Patients- Revised Version (QSC-R23), Brief Cope questionnaire and European organization for the treatment and research of cancer quality of life questionnaire (EORTC QLQ-C30).

Results: The findings displayed an above average level of stress, maladaptive coping strategies and average level of quality of life in the sample of patients with NSCLC.

Conclusion: The present study proposes that a psychological intervention module be developed which would help in better coping, minimizing stress and improving quality of life.

Keywords: cancer, coping, NSCLC, stress, quality of life,

INTRODUCTION

Cancer arises from the transformation of normal cells into tumor cells in a multi-stage process that generally progresses from a pre-cancerous lesion to a malignant tumor reported by the World Health Organization (WHO) [1]. Cancer is a leading cause of death worldwide, accounting for nearly 10 million deaths in 2020, or nearly one in six deaths studied by Ferlay, et al. [2]. Non-small cell lung cancer (NSCLC) is a disease in which malignant (cancer) cells form in the tissues of the lung. It tends to grow and spread quickly, which makes it harder to treat. About 80% to 85% of lung cancers are NSCLC by the American Cancer Society (ACS) [3]. The prevalence of psychological distress varies by type of cancer, time since diagnosis, degree of physical and role impairment, amount of pain, prognosis, and other variables that differ widely from patient to patient [4]. A study identifies stress in cancer patients undergoing curative treatment within India. Findings revealed that in the presence of pain patients with advanced tumors showed higher distress [5]. In general, cognitive, behavioral and affective coping reactions are distinguished [6]. Quality of life (QoL) in lung cancer patients is a significant predictor of survival and therefore it should be considered as a

clinical status that has to be established by physicians before treatment starts [7]. Another study's findings reveal that high levels of fatigue decrease QoL, physical functional status, symptom management [8] and limited therapeutic options [9]. Another concept has become quite prevalent in the past decade - Palliative care [10]. Palliative care consultation has developed into a new specialty with credentialing of experts in this field based on extensive experience with patients in end-of-life circumstances including those with lung cancer [11]. Considering the studies above, it is felt that the stress, coping strategies and QoL of cancer patients are the dimensions which have been explored considerably in the past decade but in the Indian context as there are limited studies pertaining to understanding the holistic view of patients with terminal illnesses.

Objectives: The main objective of the study is to identify newly diagnosed patients with NSCLC at Omega and Mehdi Nawaj Jung Institute of Oncology and Regional Cancer Centre (MNJ). To explore the level of stress, coping strategies and QoL in patients with NSCLC. To see the relation between stress, coping strategies, quality of life and age in patients with NSCLC.

MATERIALS & METHODS

The study was conducted patients with NSCLC (PWNSCLC) in order to practically administer the research instruments on a sample and to find out the feasibility of the research. The research design herein adopted was explorative. PWNSCLC were included in the present study based on ECOGPS, scores ranging from 0-3. Individuals with any International Classification of Diseases- 10 (ICD-10) disorders or personality disorders, or psychiatric illnesses were not included in the study. For the study, ten PWNSCLC (seven males, three females) were selected from the Omega and MNJ cancer hospitals located in Hyderabad in India. Their age range was 35 to 75 years and all of them were married. Considering the availability

of the PWNSCLC who met the criteria of the research, the investigator established rapport with them and took consent for their involvement in the study. They were briefed about their participation and were requested to fill up the bilingual research instruments. Any doubts raised by the participants during the process of administering the research instrument were clarified by the Investigator.

Research Tools:

The following research instruments were used for the study.

1. Sociodemographic data sheet: developed by researcher, the general information of the participants, such as age, gender, religion, life style issues, family history, ECOG-PS grades, Stages of NSCLC, and marital status. b). The Eastern Cooperative Oncology Group- Performance Status Scale (ECOG-PS): This scale is widely used to quantify the functional status of cancer patients, and is an important factor determining prognosis in a number of malignant conditions. The PS describes the status of symptoms and functions with respect to ambulatory status and need for care. PS '0' means normal activity, PS 1 means some symptoms, but still near fully ambulatory, PS 2 means less than 50%, and PS 3 means more than 50% of daytime in bed, while PS 4 means completely bedridden. This is also an ordinal forced-choice scale. Choices range from 0 (fully active) to 5 (dead). Higher scores reflect worse function [12].

2. The Questionnaire on Stress in Cancer Patients- Revised Version (QSC-R23) developed by Herschbach (2003): is a disease specific questionnaire to assess psychological stress in cancer patients (all diagnosis and treatment settings). It contains 23 items that describe potential everyday stress and in everyday language. Each problem has to be answered twice: 'Does it apply to the test person at present? And - 'If it does apply, what extent does this problem cause distress? 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 very big problem). The items are grouped into five homogeneous scales: psychosomatic complaints, fears, information deficits, Everyday life restrictions and social strains. The scoring was done according to the author's guidelines. In the score ranging from 0-115, higher score indicates, higher stress and lower scores indicate, lower stress. The construct validity of the test has been demonstrated by correlation analysis with diverse psychological tests such as HADS depression ($r = 0.75$, $n = 578$), HADS anxiety ($r = 0.73$, $n = 579$) and SCL-90-R ($r = 0.76$, $n = 171$). The discriminant validity and sensitivity to change have also been demonstrated. The Cronbach's alpha, found to be 0.89 ($n = 1349$) for the total score [13].

3. The Brief Coping questionnaire (The Brief COPE): This scale consists of 28 items which assesses 14 subscales, two items each, which deals with ways a person is coping with stress in his/her life and patients were instructed to report what they usually do when they are under stress. Patients choose their answers based on a 4-point Likert scale that is anchored at 1 = I haven't been doing this at all, 2 = I've been doing this a little bit, 3 = I've been doing this a medium amount, 4 = I've been doing this a lot. Each item in the inventory speaks about particular way of coping (Appendix 6). Carver gave choice for any further research to take further steps according to the convenience in categorizing into domains. The scale possesses four domains, such as problem focused (active coping, planning and seeking of instrumental support), emotion focused (seeking emotional support, positive reframing and religion), adaptive (acceptance and humor), and maladaptive (venting, behavioural disengagement, self-distraction, substance use, self-blame and denial) coping strategies. The researcher has adopted the 14 coping strategies filled into four broad domains as per the above the study. Carver reported high internal Cronbach alpha reliability coefficients for the B-COPE

ranging from 0.50 (venting) to 0.90 (substance use) and this suggests that the coping strategies are quite stable over time. The internal validity of the B-COPE scale shows moderate inter-correlation while the test-retest reliabilities ranged from 0.46 to 0.86 [14].

4. European Organization for the Treatment and Research of cancer quality of life questionnaire (EORTC QLQ-C30): For assessing health related quality of life for cancer patients. The core questionnaire, EORTC- QLQ-C30 contains 30 questions and is designed to cover a range of health-related quality of life issues relevant to most cancer diagnoses. The questionnaire is organized into five functional scales (physical, role, emotional, cognitive and social), three symptoms scales (fatigue, pain, and nausea/vomiting), a Global Health Status and quality of life (GHS/QoL) scale, and a number of single items assessing additional symptoms (dyspnoea, sleep disturbance, constipation and diarrhea) and perceived financial impact. Each item has a 4-point response scale (1- not at all, 2 - a little, 3 - quite a bit and 4 - very much) with the exception of the two items measuring GHS/QoL, which have 7- point response scales such as 1- very poor to 7- excellent [15].

Brief COPE and QSC-R23 English scales were translated into Telugu and EORTC QLQ-C30 was a standard instrument available in various languages including the Telugu language, all tools were obtained permission prior to conduct the study. All tools scoring and interpretation were done according to the direction given in the scale. This study was performed in line with the principles of The Indian Council of Medical Research (ICMR). The approval was granted by the Ethics Committee of the University of Hyderabad-Telangana (Review letter No. UH/IEC/GP/11/8 dated 07.01.2012).

Statistical Analysis:

Demographic characteristics were described using frequency (f) and percentages (%).

Mean (M), and standard deviation (SD) were used to describe the results of the exploration of stress, types of coping strategies and level of quality of in the sample. An attempt was also made to find the relation between stress, coping strategies and quality of life; correlation coefficient (Pearson's r) was calculated by means of SPSS 17.0.

RESULT

Sociodemographic Characteristics: As shown in table 1, the total sample comprises of ten PWNCLC. The patients were between 35-75 years age group, out of them males 70% and females were 30%. Their religious backgrounds showed that the 50% were Hindus and 50% were Muslims. With reference to life style issues, 50% were smokers and 50% were non-smokers. 20% of the patients have family history of cancer and 80% of the patients were no family history of cancer. In the present study, on ECOG - PS 50% of the patients in the sample were found to be categorized in Grade- 1, 40% in Grade -2 and 10% in Grade-3. In the study all (100%) patients were diagnosed with NSCLC stage-IV and all patients were married (100%).

Table 1: Demographic Characteristics of NSCLC patients

Variables		f	%
Gender (age between 35-75)	Male	7	70
	Female	3	30
Religion	Hindu	5	50
	Muslim	5	50
Life style issues	Smoker	5	50
	Nonsmoker	5	50
Family History	Present	2	20
	Nil	8	80
ECOGPS	Grade -1	5	50
	Grade - 2	4	40
	Grade - 3	1	10
Stage of NSCLC	Stage -IV	10	100
Marital status	Married	10	100

n=10

Stress: Table 2 shows values of Mean (M) and Standard Deviation (SD) of the overall stress levels in the patients and the mean scores for the five subscales separately. It was observed that mean value for psychosomatic complaints (M =18.40 and SD = 4.9) which was very high (very strongly distressed). For the subscale Fears,

the obtained values were (M = 16.90 and SD = 5.94) which is also very high (Very strongly distressed). On the scale Information deficits, the obtained values (M = 10.70 and SD = 3.09) were observed to be high (strongly distressed). Values on Everyday life restriction (M = 10.80 and SD = 5.05) and social strains values (M = 8.40 and SD =5.05) were found to be low. The total stress values (M = 63.80 and SD = 14.37) show that the PWNCLC have above average level of stress.

Table 2: Values on the Questionnaire on Stress in Cancer Patients- Revised Version (QSC-R23)

Variables	M	SD
Stress	63.80	14.37
Psychosomatic	18.40	4.94
Fear	16.90	5.94
Information deficit	10.70	3.09
Everyday life restriction	10.80	5.05
Social strains	8.40	2.98

Coping Strategies: Table 3 shows scores for the four types of coping strategies. The obtained values on problem-focused coping (M = 13.30 and SD = 14.37), were low. Values on subscales under problem-focused coping strategies were active coping (M = 4.00 and SD = 1.94); Planning (M = 4.80, SD = 1.75), use of instrumental support (M = 4.50 and SD = 1.34) and all were found to be low. Values on Emotion-focused coping strategies (high M= 19.20 and SD =3.82) values on subscales under emotion coping strategies used for emotional support (M = 7.10 and SD = 1.44) positive reframing (M = 6.30 and SD = 1.56) and religion M = 5.8, SD = 2.61) values on these subscales all were found to be high. Values for Adaptive coping were low (M = 5.10 and SD = 1.57). Values on subscales under Adaptive coping were Acceptance (M =3.10 and SD. 1.37), and humor (M =2.10 and SD =0.00), which were found to be low. This shows that individuals with NSCLC were low on accepting the illness easily and the use of humor to cope with the situation was low. Values on maladaptive coping strategies were high (M = 33.30 and SD = 3.97). Values on subscales under maladaptive coping strategies were venting (M = 5. 80 and SD = 1.81, behavioral disengagement

(M = 68 and SD = 1.81), self-blaming (M = 6.70 and SD = 2.49) and denial (M = 7.10 and SD = 1.81), and all these values were high. This shows that they were high on ventilation related to various aspects of their illness and emotional distress, were more disengaged behaviourally and were blaming themselves more for the occurrence of illness. But Self-distraction (M = 3.60 and SD = 1.35), and usage of substances (M = 3.30 and SD = 1.25) were less used coping strategies.

Quality of life: As shown in table 4 the mean scores of the global health status (QOL) were (M=19.20 and SD=26.58) which shows that overall physical condition and Quality of life (QoL) was average. Values on the functional scales were Physical functioning (M = 32.30 and SD = 30.19), Role functioning (M = 43.20 and SD = 42.38), emotional functioning (M = 34.00 and SD=35.53), cognitive functioning (M = 4.90 and SD=45.17) social functioning (M = 26.90 and SD=40.96). These show that PWNSCLC have functional skills at an average level on physical, emotional, cognitive, and social dimensions. In the symptoms scales pain and insomnia were rated severe (M = 73.00 and SD = 26.48), (M = 79.90 and SD = 35.90). Values for fatigue were rated (M = 49.90 and SD 45.17), for dyspnoea (M=73.00 and SD = 38.76), appetite loss (M = 59.80 and SD = 41.00) and constipation (M = 60.00 and SD = 51.64), all of which were found to be moderate. Values on nausea and vomiting (M = 34.90 and SD = 46.1), for financial difficulties (M = 60.00 and SD = 51.64), which were found to be mild. Diarrhoea was not apparent (M = 00.00 and SD = 00.00). This shows that PWNSCLC experience body related pain and difficulties in attaining sleep. Other symptoms were expressed less, like facing problem with breathlessness, appetite loss, feeling constipated, feeling nausea and vomiting and financial difficulties. The patients did not report any symptoms related to diarrhoea. QoL at an overall level has been

looked at using EORTC –C30-3.0. In addition, QLQ-L13 gives the specific picture of symptom assessment for lung cancer. Hence, these specific symptoms scale QLQ-L13 was used after the core questionnaire EORTC –C30-30 was administered.

Table 3: Coping strategies - Values on Brief COPE

Variables	M	S.D
Problem Focused Coping	13.30	14.37
Active coping	4.00	1.94
Planning	4.80	1.75
Use of instrumental Support	4.50	1.34
Emotion Focused Coping	19.20	3.82
Uses of emotional support	7.10	1.44
Positive reframing	6.30	1.56
Religion	5.80	2.61
Adaptive Coping	5.10	1.37
Acceptance	3.10	1.37
Humor	2.00	.000
Maladaptive Coping	33.30	3.97
Venting	5.80	1.81
Behavioural disengagement	6.80	1.31
Self-distraction	3.60	1.35
Substance use	3.30	1.25
Self-blaming	6.70	2.49
Denial	7.10	1.44

Table 4: Quality of life - Values on EORTC –C30-3.0

Variables	M	S.D	
Global	Global Health Status/ QoL	19.20	26.58
Functional	Physical Functioning	32.30	31.19
	Role Functioning	43.20	42.38
	Emotional Functioning	34.00	35.53
	Cognitive Functioning	49.90	45.17
	Social Functioning	26.60	40.96
Symptoms	Fatigue	49.90	45.17
	Nausea and Vomiting	34.90	46.14
	Pain	73.00	26.48
Single items	Dyspnoea	56.50	38.76
	Insomnia	79.90	35.90
	Appetite Loss	59.80	41.00
	Constipation	60.00	51.64
	Diarrhoea	.00	.00
	Financial difficulties	60.00	51.64

Note. N=10

Correlation between stress, coping strategies, quality of life and age: As seen in Table 5 correlation matrix, a significant positive relationship was found between problem-focused coping strategies and emotion-focused coping strategies ($r=86$, $p<.01$) and between problem-focused coping strategies and adaptive coping strategies ($r = 0.64$, $p<.01$). This showed that in case of the chosen PWNSCLC when the problem-focused coping strategies increased, there was also an increase in emotion-focused coping strategies. When

the problem-focused coping strategies increased, there is also an increase in adaptive coping strategies. The relationship between age and maladaptive coping was

also found to be significantly positive ($r = 0.70, p < .05$). This showed that as age increased, the PWN SCLC used more maladaptive coping strategies.

Table 5. Correlation between stress, coping strategies, quality of life and age

Variables	1	2	3	4	5	6	7
1. Stress	-	-.21	-.38	-.25	-.41	-.41	.29
2. Problem focused coping		-	.86**	.64**	.05	.03	.00
3. Emotion focused coping			-	.54	.13	.29	-.24
4. Adaptive coping				-	.58	.24	.46
5. Maladaptive coping					-	.15	.70*
6. EORTC-QLQ-C30						-	-.30
7. Age							-

Note. n =10 All analyses are two-tailed. * $p < .05$, ** $p < .01$

DISCUSSION

The study which attempts to explore the level of stress, coping strategies and quality of life in PWSCLC. In the study ten newly diagnosed patients PWSCLC and their age ranges 35-75years (seven males and three females) were selected from the OMEGA and MNJ hospitals in Hyderabad India. we assessed their stress, coping strategies and quality of life in PWN SCLC and findings were revealed in following order.

Stress: In our study ten PWN SCLC were assessed for stress by using QSC-23 -R. The results of this study showed that patients in the sample displayed above average levels of stress, after diagnosis of their illness. This is supported by findings of a few studies reported in the review of the literature [16-17] and found that higher perceptions of stress [18]. In addition, the present study also shows high values on psychosomatic complaints, fear of progression of disease and lack of proper information about their condition (Table 2). A few previous studies indicate similar findings related to psychosomatic complaints [19], information deficits [20] and fears [21]. The researcher hence strongly feels the need for information dissemination related to the nature of disease and treatment progression to the patients so as to alleviate related fears.

Coping strategies: The findings were revealed on coping strategies (Table 3) that the PWN SCLC have used greater maladaptive coping, emotion focused

coping, whereas adaptive and problem focused coping strategies were less used. The findings are similar to the study, which reported that after accounting for physical symptom distress, greater frequency of use of emotion-focused coping was associated with higher psychological distress [22]. He or she may be inclined to use more emotion-focused coping strategies and be less inclined to use problem-focused coping strategies [23-24]. The other study findings were revealed that majority of lung cancer patients use effective strategies for coping with the disease, which correlates with a better QoL [25]. Among the maladaptive coping strategies PWN SCLC were used venting, behavioural disengagement, self-blaming and denial. This shows that they were high on ventilation related to various aspects of their illness and emotional distress, were more disengaged behaviourally and were blaming themselves more for the occurrence of illness. The research findings, which stated higher the physical symptom distress and psychological symptom distress along with emotion-focused coping were positively correlated to each other. Most of the previous studies also show that there is practical usage of maladaptive coping strategies like denial, because denial can be adaptive, but also harmful. A mild degree of denial after a serious disease has been diagnosed may be considered to a patient's helpful form of protection against overwhelming emotions.

Quality of life: Cancer patients suffer from multiple physical symptoms such as fatigue and pain [26] and also from psychological changes such as fear of death and fear of progression or recurrence of disease, and changes in the QoL. In the recent literature, limitations in forming and maintaining social life for patients with lung cancer are explained by severe feeling of fatigue. An important aspect about assessing QoL is how the patient's undergoing treatment are perceiving their illness. This was further highlighted that illness perceptions reflect major consequences on NSCLC. This becomes even more crucial to different aspects of one's life that directly impact QoL. The findings of the present study revealed that an overall physical condition and QoL in PWNSCLC was average (Table 4). Their functional skills were at an average level to carry out their daily routine functions in terms of physical functioning, role functioning, emotional functioning, cognitive functioning and social functioning. Findings of the other studies [27] showed that QoL is closely linked to symptom burden and severity in lung cancer. Loss of physical functioning, psychological events such as depression, and reduced overall QoL is associated with uncontrolled symptoms.

In present study, an attempt was made to see the relationship between stress, coping and quality of life and age in PWNSCLC. A significant positive relationship was found between problem focused coping strategies and emotion focused coping strategies, between problem focused coping strategies and adaptive coping strategies (Table 5). This showed that in case of the PWNSCLC in the present sample, when the problem focused coping strategies increased, there was also an increase in emotion focused coping strategies, and when problem focused coping strategies increased, adaptive coping strategies increased. The relationship between age and maladaptive coping was also seen to be significantly positive. This showed that as age increased, the PWNSCLC used more maladaptive

coping strategies. A study results showed that there is a deficit in perceived support from health care professionals for older participants which is collaborated by our findings as well. However, the sample being small (only 10 patients) with varying ages, further exploration needs to be done to understand the above relationships better.

CONCLUSION

The findings from the present study are important in understanding the stress, coping and quality of life in patients with NSCLC. The results displayed above average level of stress, maladaptive coping strategies and average level of quality of life in patients with NSCLC. However, these findings cannot be generalized, as the sample taken for the present study was small (ten patients). The findings hence should be used with caution. After further exploration on a larger sample, the present study findings can be utilized in planning intervention strategies for PW NSCLC from a psychological perspective.

Declaration by Author

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