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Research Article

Role of Symptomatic Management in Understanding Effects of Early Integration of Palliative Care among Nonmetastatic Lung Cancer Patients on Psychological Well-Being

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Aim. The impact of early referral to palliative care on quality of life for patients with lung cancer has already been discussed. However, the benefits of early integration of palliative care service (EIPCS) combined with standard oncology care for nonmetastatic lung cancer patients remain unclear. Hence, we designed a study to assess the impact of EIPCS among nonmetastatic cancer patients in India. *Methods.* In this randomized controlled trial study, we divided the data from 115 patients with diagnosed nonmetastatic lung cancer between age group of >18 years to ≥65 years. Following clinicopathological and radiology diagnosis, patients were referred to pain and palliative medicine department. Patients were randomly assigned by palliative physicians into two groups: Group A ($N = 64$), those who were receiving standard oncology care (chemotherapy or radiation or both) along with EIPCS, and Group B ($N = 51$), receiving standard oncology care. Patients were followed up every 3 weeks up to 3 months. Primary outcomes, symptoms' burden, and psychological well-being were measured by validated tools. To define the impact of EIPCS, appropriate statistics were calculated as the mean ± standard deviation of the score of validated tools. Statistical significance was defined at $p < 0.005$. *Results.* From the beginning, we had taken 115 patients, and on 42 days' follow-up, the number of dropout patients for Group A was 3 (due to unable to contact), and for Group B, 9 (due to physical condition). This was followed by a reassessment after 126 days where dropout patients for Group A was 4 (due to unable to contact), and for Group B, 7 (due to physical condition). Following statistical report compliance at 126 days by WEMWBS was 21.16 ± 3.65 in Group A versus 16.1 ± 1.93 versus in Group B and by ESAS 51.84 ± 0.01 in Group A versus 97.64 ± 2.18 in Group B. *Conclusion.* The findings of this study showed that patients with nonmetastatic lung cancer who received standard oncology care combined with EIPCS had increased the psychological well-being and reduced symptoms burden.

1. Introduction

Lung cancer treatment options have grown in recent times, and with that, there comes a span of new hope in living with advanced lung cancer [1]. Despite a decline in cancer-related deaths, lung cancer continues to be the leading cause of cancer-related deaths, and the median survival period is less than a year. Patients with lung cancer also report a high burden of symptoms including dyspnea, pain and fatigue and unmet psychosocial needs [2, 3]. Palliative care provides

care that focuses on improving quality of life by treating symptoms and supporting patients and families through the stress of illness. Referral to palliative care specialists has been shown to improve quality of life for patients with lung cancer [4]. Anyone caring for patients with lung cancer should be able to provide basic symptoms' management and routine discussion about goals of care and support of patients and families. Contrary to traditional ideology, lung cancer providers should know how to evaluate and manage these more common symptoms, especially when mild. Referral to

palliative care specialist would then be indicated for moderate to severe symptoms, multiple symptoms, if symptoms are affecting treatment options, or symptoms' reflector to primary palliative care treatment [2, 3].

However, barriers to receiving palliative care referral do arise, particularly physician and patient perceptions of palliative care, and there is limited access to the palliative care specialist on the effects of early integration of palliative care service (EIPCS) for metastatic lung cancer patients. There is increasing evidence that EIPCS involvement in patients with cancer may improve many aspects of care including treatment received and cost. Patients with cancer who received EIPCS not only reported quality of life and lower depressive symptoms but were also more likely to discuss wishes for end-of-life care compared with those receiving standard oncology care alone. The main difference between the studies is that the previous palliative care intervention was focused on the quality of life, whereas the present study has elicited the impact of EIPCS on physical symptoms' burden and psychological well-being among nonmetastatic cancer patients [5].

According to the data, there were so many studies which have focused on the assessment about the feasibility of introducing early palliative care in ambulatory patients with advanced lung cancer [6], impact of palliative care to improve a patient's quality of life with reducing severity of symptoms [7], early referral for patients with metastatic lung cancer and nonmetastatic cancers in general [8], and clinical management of stage III non-small-cell lung cancer [9]. However, so far, there are discussion about the impact of early integration of palliative care service (EIPCS) on psychological well-being among nonmetastatic lung cancer patients. Therefore, we conducted the randomized controlled trial (a) to compare the impact of combination of standard oncology care (chemotherapy, radiation, and both) and EIPCS versus only standard oncology care on physical symptoms and (b) to explore whether the improvement in physical factors would mediate the benefits of EIPCS with regard to psychological well-being.

2. Materials and Methods

For the present randomized control trial, researchers were randomly selected patients with diagnosed nonmetastatic lung cancer (stage II and III) receiving oncology care at the outpatient department (OPD) of medical oncology at Super Specialty Hospital in West Bengal, India. Patients were identified for recruitment by a trained clinical research assistant (who attended daily OPD timings) and treating palliative physicians. The study was approved by the Institutional Scientific and Ethical Review Board following terms and conditions of Indian Council of Medical Research (ICMR). A total of 120 patients with nonmetastatic lung cancer were selected as per sample of convenience and consecutive sampling technique during a 9-month period (from March, 2019, to January, 2020). For such a trial, a sample size of 115 as recommended in the literature was adopted for assessing the impact of EIPCS on psychological

symptoms among nonmetastatic lung cancer [10]. 21 days after the first chemotherapy, the physical symptoms and psychological well-being of the patients were assessed to signify the severity of the patients' symptoms' burden. Those patients did not report any symptom burden after taking 1st chemotherapy there and were excluded from the study ($N = 5$). During study visits, the emphasis was on developing a rapport, controlling symptoms, improving coping, and increasing understanding of the condition and its physical effects. Patients were randomly assigned into two groups: Group A ($N = 64$), those were receiving combination of standard oncology care (chemotherapy or radiation or both) and EIPCS, and Group B ($N = 51$), receiving standard care alone. Researchers messaged all the patients as reminder before one day of each session, and no reply from the patients was translated to number of drop-outs in the study. The number of drop-out patients was not significant due to palliative treatment which was combined with standard care treatment protocol.

The palliative physician used the Edmonton Symptom Assessment System (ESAS) to assess physical symptoms' burden and experienced clinical psychologist had assessed the Warwick–Edinburgh Mental Well-Being Scale (WEMWBS) among patients for both groups. Baseline psychological assessment had been done just after a week of receiving 1st cycle of chemotherapy and then followed with chemotherapy scheduled every 3 weekly till 3 months. Time points for EIPCS were day 42, day 63, day 84, and day 105.

Inclusion criteria included the following:

(1) Adults were over the age of 18 years to not more than 65 years

(2) Patients were diagnosed with nonmetastatic lung cancer patients

(3) Patients were able to read and respond to the questions in Bengali

(4) Those which were complete questionnaires with minimal assistance and those who cooperated and agreed to fill out the questionnaires during the interview

Exclusion criteria the following:

(1) Patients with any physical or mental condition impeding

(2) Those who could not understand Bengali were excluded

(3) Patients were excluded if they had one more palliative care consultation in the 3 months before diagnosis or disease progression

(4) Patients deemed cognitively impaired at the discretion of the oncologist and psychologist during the OPD or had a significant psychiatric or other disease that would interfere with participation were not eligible

Patients were informed about the study and were provided with a written informed consent. Patients were interviewed by an experienced psychologist using structured

questionnaires. The questionnaire was validated in the local language, Bengali. It took about 40–45 min to take the interview from a single patient before starting EIPCS and after starting, which was done during the time the patient was waiting to see the doctor or after the completion of their meeting with the doctor. All the information was documented on the standardized questionnaire as per the tool of Edmonton Symptom Assessment System (ESAS) and the Warwick–Edinburgh Mental Well-Being Scale (WEMWBS) which specifically focused on common physical symptoms and psychological well-being, respectively (Figure 1). We are avoiding radiation therapy in this case as the treatment protocol requires less gaps between each follow-up; thus, the effect of palliative care would not be visible.

2.1. Patient Reported Measures

2.1.1. Sociodemographic and Clinical Characteristics. It consists of two domains: sociodemographic and clinicopathological.

Under sociodemographic factors, participants reported their age, gender, residence, relationship status, education, occupation, family income, and smoking history on a demographic questionnaire.

Under clinicopathological factors, participants reported stage of diagnosis, present treatment status, and duration of the treatment.

2.1.2. Psychological Well-Being. The Warwick–Edinburgh Mental Well-Being Scale (WEMWBS) questionnaire is a well-being thermometer among cancer patients. There are nine different types of questions which were pointed from none of the time = 1 to all of the time = 5. Their type of questions was regarding what a patient thought regarding their quality of life [11].

2.1.3. Edmonton Symptom Assessment Score. The Edmonton symptom assessment score (ESAS) was recorded using the ESAS form as a questionnaire to rate the intensity of nine common symptoms experienced by cancer patients, including pain, tiredness, nausea, depression, anxiety, drowsiness, appetite, well-being, and shortness of breath. The total ranges from 0 to 60, with a higher score indicating higher physical symptom burden. The combined score was based on ESAS anxiety and depression. The total ranges from 0 to 20, with a higher score indicating higher emotional symptom burden [12].

2.2. Statistical Analysis. Statistics were analyzed using version 22.0 of SPSS software. Descriptive statistics were calculated as the mean ± standard deviation of age, and the frequency of demographic factors was tabulated according to family structure, residence, education, and per capita family income to determine comparability according to four groups. Along with that, treatment history was also recorded: chi square was applied to observe comparability according to the two cancer groups. Prevalence of

psychological factors including physical symptoms, stress, depression, anxiety, and well-being was calculated as the mean ± standard deviation. Multivariate linear regression analysis, adjusted for baseline scores, was used to present effect size on psychological well-being between EIPC and standard care alone. The two-way ANOVA test was also used to determine the effect of two predictor variables EIPC and only standard care on a continuous outcome variable (WEMWBS and ESAS score). Statistical significance was defined at $p < 0.05$.

3. Results

3.1. Demographic and Clinicopathological Details. A total of 115 patients with diagnosed lung cancer were enrolled and assigned into two groups: Group A ($N = 64$), nonmetastatic lung cancer patients who were receiving combination of standard oncology care and EIPC, and Group B ($N = 51$), receiving standard care alone. From Table 1, it can be seen that all the two groups match in terms of sociodemographic variables. No significant difference is found in terms of any of the observed sociodemographic variables in the current study for the two groups. In Group A, 91.4% were males and 8.6% were females. The age of patients ranged from below 40 to not more than 60+ years with the mean age of 47 ± 13.9 years. 45% among them were urban people and 82% were living with their spouse. Among studied patients 69% were unemployed and 59.5% received only 10 years of formal education. The majority belonged to low socioeconomic status. 61% patients received chemotherapy according to their treatment protocol. In the psychological symptom domain, their mean baseline levels were physical assessment score of 87.47 ± 6.24 and psychological well-being value of 17.69 ± 2.17.

In the case of Group B, 51% patients received chemotherapy. The age range of patients was from below 40 to not more than 60+ years with the mean age of 51 ± 11. 91% and living with their spouse. 61.1% were primarily educated (only up to 10 years of education) and patients 73% were unemployed. In this group too, a large majority belonged to a low socioeconomic status. Their mean baseline levels were physical assessment score of 87.75 ± 3.88 and psychological well-being value of 19.60 ± 2.1.

Both the groups were comparable with each other in part of demographic factors and clinicopathological factors.

In the case of the experimental group, the mean total scores of symptom items at the baseline (first day of chemotherapy) in the case of the experimental group at days 21, 42, 63, 84, 105, and 126 were 87.47, 70.52, 61.44, 59.21, and 51.84, respectively.

In case of the control group, the mean total scores of symptom items at the baseline (first day of chemotherapy) in the case of the experimental group at days 21, 42, 63, 84, and 105 were 87.75, 97.2, 94.02, 94.08, and 97.64 (Table 2)

Table 3 presents bivariate analysis of psychological well-being outcomes at 3 months follow-up. There it had been found that those patients were assigned combined standard oncology care and EIPC had significantly decreased the scores of physical symptoms and simultaneously significantly higher score in psychological well-being than did those assigned only
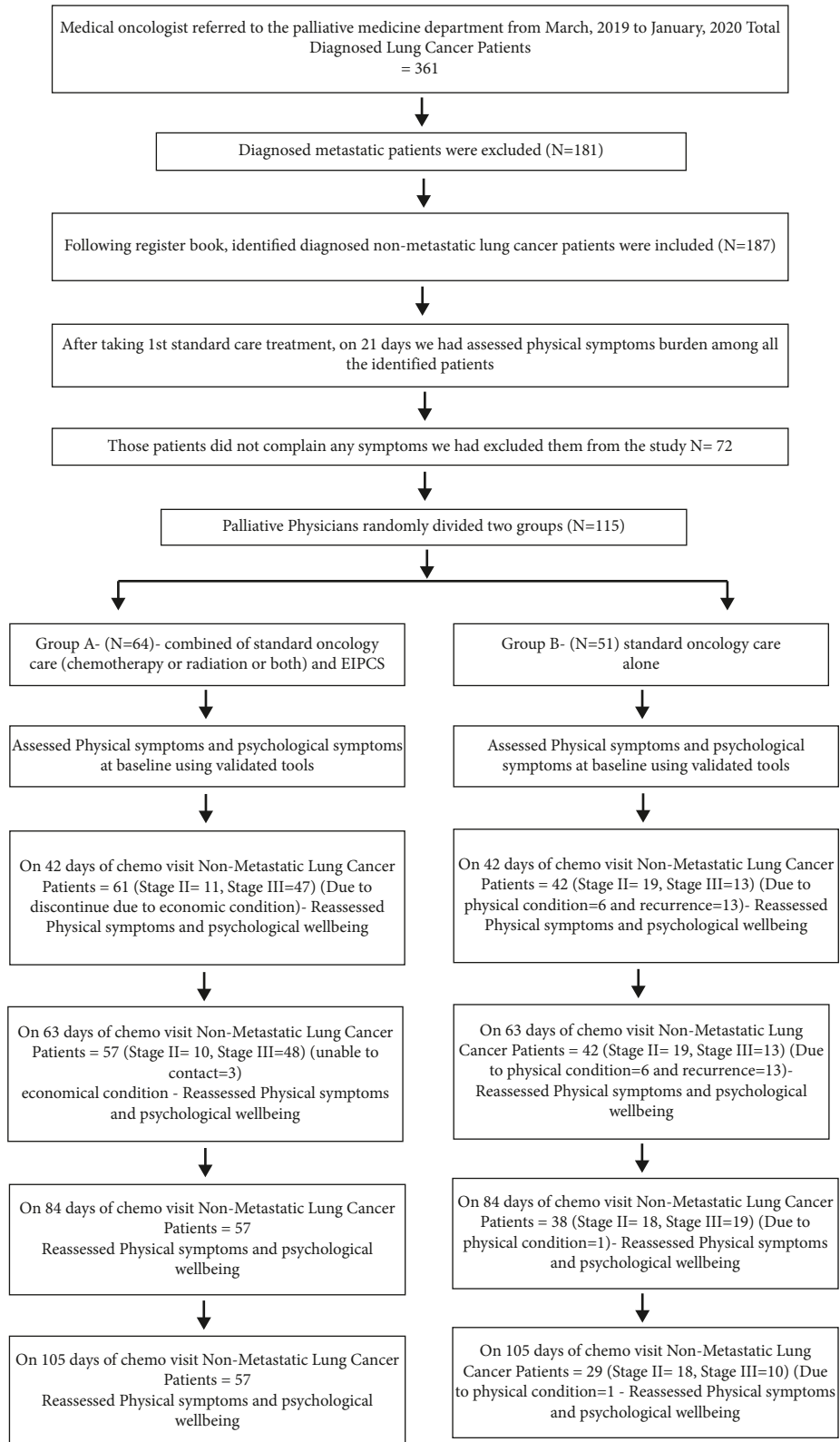
Figure 1: Study design.

TABLE 1: Prevalence of demographic distribution according to the stage of the participant.

Demographic variables	Standard care combined EIPCS (N = 64) (%)	Standard oncology care only (N = 51) (%)	p value
Age			
40–50 years	(13) 20.31	(35) 68.63	
50–60 years	(39) 60.94	(11) 21.57	0.032*
>60 years	(12) 18.75	(5) 9.8	
Residence			
Rural	(35) 54.69	(25) 49.1	
Urban	(29) 45.31	(26) 50.98	1.01
Relationship status			
Living with spouse	(52) 81.25	(44) 86.27	
Living without spouse	(12) 18.75	(7) 13.73	1.42
Family income			
<500	(12) 18.75	(15) 29.41	
500–1000	(45) 70.31	(30) 58.82	1.13
>1000	(7) 10.94	(6) 11.76	
Education			
Primary education	(38) 59.34	(29) 56.86	1.76
Secondary education	(18) 28.12	(15) 29.41	
Graduate	(8) 12.5	(7) 13.73	
Occupation			
Involved with work	(20) 31.25	(17) 33.33	1.34
Unemployed	(44) 68.75	(34) 66.67	
Smoking pattern			
Active smokers	(47) 73.44	(32) 62.75	
Passive smokers	(17) 26.56	(19) 37.25	0.001*
Clinicopathological factors	Standard care combined EIPCS	Standard oncology care	p value
Duration of treatment since diagnosis (early PCS)			
>3 months	(26) 40.62%	(19) 37.25%	
3–6 months	(29) 45.31%	(23) 45.1%	1.65
More than 6 months	(9) 14.07%	(9) 17.64%	
Treatment			
Chemotherapy	(49) 76.56%	(39) 76.47%	
Radiotherapy	(12) 18.75%	(8) 15.69%	1.45
Chemotherapy + radiation	(3) 4.69%	(4) 7.84%	
Psychological factor			
ESAS	87.47 ± 1.03	87.75 ± 1.02	2.96
WEMWBS	17.69 ± 4.17	18.60 ± 2.1	0.89

A significance for "*" is <0.01.

standard oncological care: physical symptoms ($p = <0.001$) and psychological well-being ($p = <0.039$). The effect size for the total ESAS was 0.49, for anxiety 0.41, and psychological well-being 0.52.

4. Discussion

This paper has discussed the effect of EIPCS when it was provided throughout the continuum of care for non-metastatic lung cancer patients. In the present study, those patients with nonmetastatic lung cancer receiving combined standard oncologic care and EIPCS resulted in statistically meaningful improvements in physical symptoms leading to improvement in the patients' psychological well-being that prolonged up to 3 months compared with those who were undergoing standard oncology care alone. Supporting these statistical outcomes, an exploratory finding showed benefits in cognitive function, physical functioning, and existential well-being in patients who received EIPCS compared with those who received usual care [13], and they hypothesized that improvements in physical as well as psychological well-being among patients assigned to EIPCS may report for the statistically significant survival benefit [13]. In addition, the integration of combined standard oncological care and EIPCS may smooth the most favorable and appropriate physical symptoms' management of anticancer therapy [14]. Even oncologists believed that palliative care helped "share the burden" in caring for patients with difficult symptoms during the period of standard oncology care and led to less drastic changes as patients got closer to the end. Earlier referral to a hospice program, patients may receive palliation trade-off from treatment and lead to prolonged survival [15]. In 2010, Temel and colleagues had conducted a randomized clinical trial and observed the effects of EIPCS for patients with lung cancer. They concluded that referral at the time of diagnosis could be able to provide a better quality of life with less use of aggressive medical treatment [16]. With contradicting this statement, Bakitas and his colleagues had compared outcomes for those

TABLE 2: Individual symptom patterns of change of participants across the research duration.
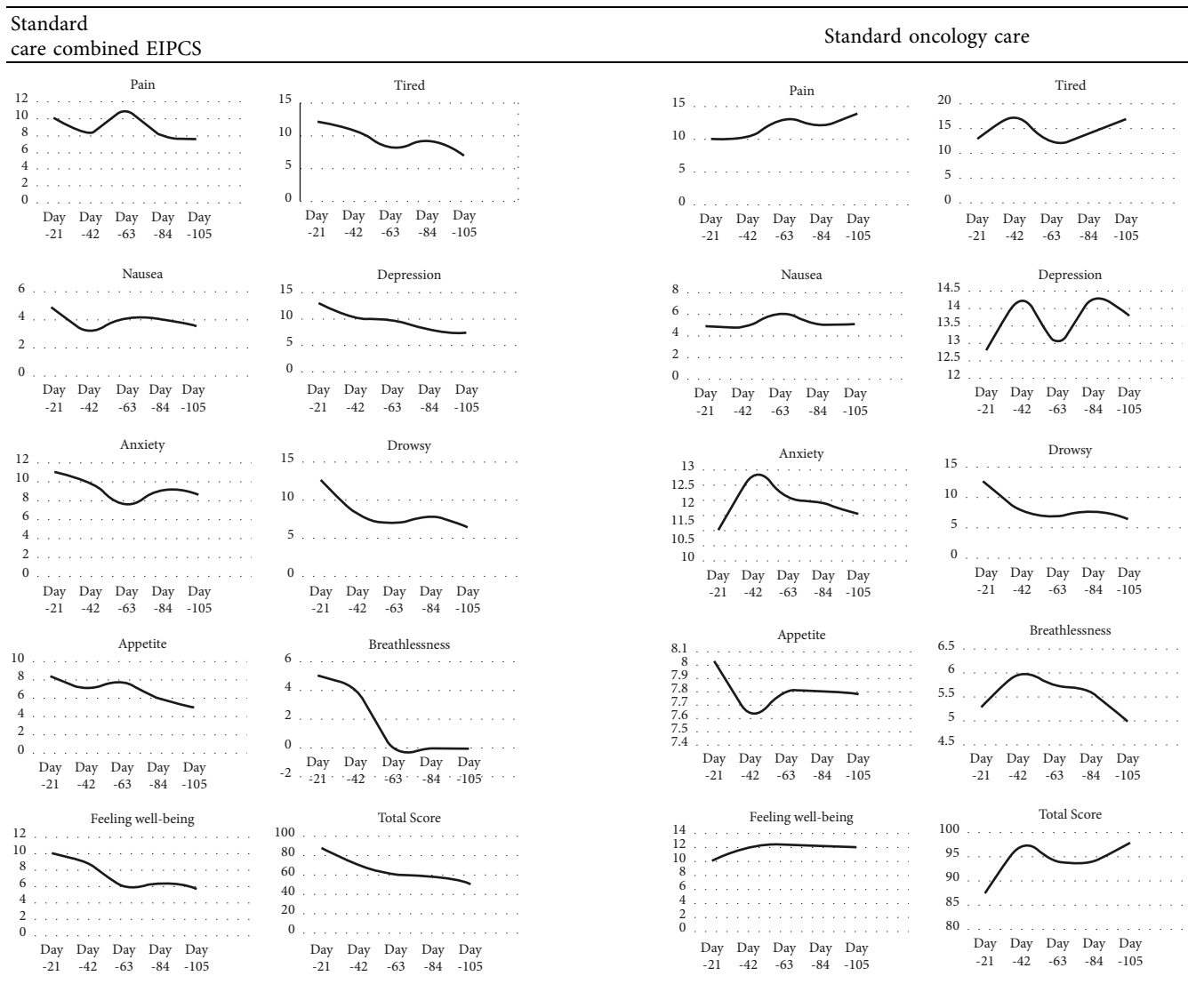

Standard care combined EIPCS

Standard oncology care

TABLE 3: Bivariate analysis of psychological well-being outcomes at 3 months' follow-up among two groups.

Psychological variables	Standard care combined with EIPCS	Standard oncology care only	p value	Difference between early palliative care and standard care 95% CI	Effect size
ESAS	51.84 ± 0.01	97.64 ± 2.18	**0.001***	2.3 (25.25 ± 34.2)	0.49
Well-being	21.16 ± 3.65	16.1 ± 1.93	**0.039***	3.9 (18.06 ± 20.01)	0.52

A significance for "*" and the bold values are <0.01.

referred at the time of diagnosis versus 3 months later and found no difference in the quality of life or resource use for advanced cancer patients where almost half of whom had lung cancer. To our knowledge, determining at what stage a trigger tool is the most beneficial is challenging too and it was reflected in ESAS score in both groups. This might be an indication of a group of patients that struggle mightily to manage their symptoms throughout their illness, leading to

earlier palliative care referrals prior to admission and earlier palliative care reviews upon hospital admission. However, as discussed by May et al., EIPCS is desirable as it has significant financial benefits, in addition to the quality of life improvements [5]. With the evidence presented here, it can be concluded that EIPCS for patients with newly discovered gastrointestinal and lung malignancies improves the psychosocial symptoms of caregivers [17].

Overall, our findings correlating psychological symptoms in Indian outpatients with lung cancer are substantially similar from those of previous studies because we have identified significant sociodemographic factors in our analysis (Table 3), which had been found to be associated with psychological symptoms of lung cancer patients [18], so that after 3 months, the obtained score did not show a significant improvement we expected compared with the pretreatment score. The probable explanation for this is that particularly in developing countries like India, the disease is still associated with significant stigma and discrimination [19]. Due to the diversity in Indian culture and economy, sociodemographic factors such as age, education, and the area of residence directly or indirectly impact a patient's treatment outcomes. Thus, these factors have been included in this study, and its statistical significance has been measured. Compared with other studies in India according to demographic factors, the statistical significant impact of the factors was expected to be higher than the present study results.

4.1. Limitations of the Study. This study has its limitations. It used a sample size that was relatively smaller due to the randomized controlled trial. Along with the present study, the limitation is that we used different levels of analyses for the different measurement instruments in the respective trials. Most patients belonged to lower socioeconomic status and came from rural and suburban areas; hence, it cannot be said to be representative of all Indian lung cancer patients. No follow-up was carried out except for a single sitting with patients to look into their major concerns of life. We hope to address these issues in future studies.

5. Conclusion

In conclusion, this study result supports the impact of EIPCS on physical as well as psychological symptoms among nonmetastatic lung cancer patients. Such results have identified that EIPCS referrals should be made near the time of diagnosis when possible. All health professionals in pain and palliative medicine department for lung cancer patients should build their EIPCS skills and use these skills as soon as they start caring for a patient with lung cancer. EIPCS for patients with lung cancer is a collaborative effort that ensures the best quality of life for those suffering from lung cancer.

Data Availability

The data used to support the findings of this study are included within the article.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Acknowledgments

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