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A Cross-sectional Study to Assess the Nutritional Status of Cancer Clients at Selected Hospitals of Mangaluru – A Pilot Study

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Authors' contributions

This work was carried out in collaboration between both authors. Authors S and SS designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Managed the literature searches. Both authors read and approved the final manuscript.

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ABSTRACT

Aims: Malnutrition is an overlooked and undertreated problem among the cancer population. It is necessary to identify at-risk patients early and provide appropriate and effective nutritional interventions which in turn help the cancer patients to improve treatment tolerance and prognosis. Hence, the study was undertaken with the aim to assess the nutritional status of cancer clients admitted in the hospital.
Study design: A cross sectional descriptive survey was used.
Place and Duration of Study: Oncology wards of the AJ Institute of Medical Science and Research Centre, Mangalore between December 2019 to March 2020, then again December 2020 to February 2021.

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Methodology: We included 100 cancer patients (39 males and 61 females). Participants were selected purposively. Head, neck and breast cancer patients who are aged above 18 years, admitted in the wards were included in the study. Data were collected by using demographic proforma and Mini Nutritional Assessment (MNA) scale.
Results: Data were analyzed by descriptive and inferential statistics. The findings of the study revealed that more than half (56%) of the cancer clients are malnourished and 43% are at risk for malnutrition. Study found that there is a significant association of degree of malnutrition with demographic variables such as education and family income (at p=.05)
Conclusion: Based on the result, it was concluded that the patients with cancer should undergo nutrition screening at the early so that appropriate nutrition intervention could be planned to have positive outcomes.

Keywords: Cancer; patients; malnutrition.

1. INTRODUCTION

Malnutrition is the commonest comorbidity in cancer patient populations. Studies have demonstrated that 30% to 87% of cancer patients are diagnosed with malnutrition with the highest percentage (80%) is observed in esophageal cancer patients and 67% has been observed on ovarian cancer patients, only 6% of endometrial cancer patients were malnourished. Clinical observations studies showed 95% of cancer patients manifest one or more symptom involving the gastrointestinal (GI) tract contributing to compromise nutritional status. Malnutrition is thus a frequent manifestation of cancer and a significant contributor of morbidity and mortality [1].

The cancer client goes through several stages of cancer includes diagnosis, treatment, recovery, and survivorship. Each stage in this continuum involves specific nutritional challenges to patients. Changes in nutritional status may begin prior to diagnosis, when physical and psychosocial issues commonly have a negative consequence on appetite and food intake. As cancer diagnosis, half of patients present with some manifestation of nutritional deficit.[2] Nutritional status also often turndown further during cancer treatment due to various treatment-related side effects such as anorexia, mucositis, and nausea and vomiting. Chemotherapeutic drugs can stimulate vagal afferents near the enterochromaffin cells in intestine within 24 hours after initiation of chemotherapy by the oxidative action of free radicals generated by chemotherapeutic agents to release serotonin in the area postrema of the brain .[3-5] Chemotherapy drugs can also elicit the release of substance P in both the central and peripheral nervous systems, resulting in NK1-mediated (Neurokinin) vomiting .[4,5] Patients with cancer of the lung, esophagus, stomach, colon, rectum, liver, and pancreas are at greatest risk [6].For some patients, the nutritional deficits can proceed to cancer cachexia, a specific form of malnutrition denoted by loss of lean body mass, muscle wasting, and impaired immune, physical, and mental function [7].

Weight loss has been found to lead to poor end result, with as little as a 5% weight loss predicting decreased response to therapy and decreased survival. Malnutrition also leads to numerous negative outcomes, including decreased quality of life, increased complication rates, decreased treatment tolerance, and increased mortality.[8] Due to the high prevalence of nutritional problems in these patients, nutrition screening, assessment, and intervention are crucial to prevent or minimize the development of malnutrition. Several studies have proved that maintaining a good nutritional status through nutrition therapy can help individuals with cancer to maintain and gain bodyweight, improve quality of life, improve energy levels, manage treatment-related side effects, avoid dose reduction and treatment delays, and reduce unplanned hospital visit.[9,10] American Cancer Society dietary guidelines (ACS) highlighted limiting the amount of processed and red meat, at least two and half cups of vegetables and fruits each day, choosing whole grains instead of refined grain products and also emphasizes small portion of high caloric and high energy meals , helps to maintain a healthy weight [11].

Expert nutrition groups including the American Society for Parenteral and Enteral Nutrition (ASPEN) and the European Society for Clinical Nutrition and Metabolism (ESPEN) have both released clinical guidelines for nutritional

treatment of clients with cancer. These guidelines state that patients with cancer should undergo nutrition screening and assessment and receive early nutrition intervention to have positive outcomes.[12] Research and expert recommendations support a preventive, rather than therapeutic approach that encompasses nutrition screening as early as possible and treatment of nutritional problems through nutrition intervention.[7,12] In researchers' setting currently routine nutritional screening is done for all the patients using 24 hours recall method , whereas MNA (Mini Nutritional Assessment-full form) considers dietary assessment, subjective assessment, global assessment and anthropometric data which is comprehensive and easy to use.

A multidisciplinary approach is a necessary to identify at-risk patients early in the process and provide appropriate and effective nutritional interventions, so that malnutrition does not remain an overlooked and undertreated problem. Therefore, the investigators, the healthcare professionals who care for patients with cancer felt the need to determine the magnitude of the malnutrition among cancer patients.

2. METHODOLOGY

A cross sectional descriptive survey design was adopted. Setting of the study was the oncology wards of the AJ Institute of Medical sciences and research Centre, Mangaluru in Karnataka state. Participants were approached to conduct the study after taking permission from the hospital authorities. We obtained approval from the institutional ethics committee, AJ Institute of Medical Sciences. Data collection period extended for a period of 7 months. Written consent was obtained from the cancer clients. Baseline proforma and Mini Nutritional Assessment (MNA-full) scale was administered to 100 cancer clients who were selected purposively.[13] Prior permission from nestle foundation was obtained to use the MNA scale. Full MNA is composed of 18 questions which are divided in to four main categories; dietary assessment, subjective assessment, global assessment and anthropometric data. MNA gives a maximum of 30 points and it classifies the patients in: malnourished (MNA < 17 points), at risk of malnutrition (MNA: 17–23.5) and well nourished (MNA >23.5 points). Head, neck and breast cancer patients who are aged above 18 years, admitted in the wards were included in the study. Cancer clients those who were critically ill was excluded from the study. Data gathered by the investigator was coded, organized and analyzed using SPSS version 21. Demographic characteristics of the sample, degree of nutrition of cancer clients were analyzed using frequency and percentage. Chi square test was used to find the association of degree of nutrition with demographic variables.

3. RESULTS AND DISCUSSION

3.1 Distribution of the Sample According to their Demographic Characteristics

Out of 100 cancer patients nearly half (41%) were in the age group of > 50 years. More than half of them (61%) were females. In terms of educational status, only 21 of them (21%) were able to attain a graduate degree and 6 (6%) had postgraduate degree. Moreover, only 11 (11%) of the participants have a family income of ≥ Rs 40,001.00. Most of them (85%) were consuming mixed diet. Almost half (49%) of them have breast cancer, and most of the participants (82%) have stage II-III cancer" (Table 1).

3.2 Distribution of the Sample According to the Degree of Malnutrition

Data in the Table.2 depicts Mean ± standard deviation of nutrition score of cancer clients is 16.11±4.004 and range of scores is 19.5.

Data in the Table.3 depicts, maximum (56%) of the cancer clients are malnourished and 43% are at risk for malnutrition.

3.3 Association of Degree of Malnutrition with Demographic Variables

Data in the Table. 4 depicts, there is no significant association of degree of malnutrition with variables such as age, sex, type of diet, type of cancer and stage of cancer but there is a significant association between the degree of malnutrition and variables such as education and monthly family income (at p=.05).

Table 1. Distribution of the sample according to their demographic characteristics (n=100)

Demographic variables		Frequency and percentage
Age (in years)	18 -30	6
	31 – 40	21
	41 – 50	32
	>50	41
	Male	39
Sex	Female	61
Educational Status	No formal education	7
	Primary	30
	Secondary	28
	Pre- University	14
	Graduate/Diploma	15
	Postgraduate	6
Family Income (Rs/month)	< 10,000	9
	10,001 to 20,000	26
	20,001 to 30,000	32
	30,001 to 40,000	22
	≥ 40,001	11
Type of diet	Veg	15
	Mixed	85
Type of cancer	Head	36
	Neck	15
	Breast	49
Stage of cancer	I	6
	II	46
	III	36
	IV	12

Table 2. Mean, standard deviation and range of nutrition scores of cancer clients (n=100)

Mean	Standard deviation	Range
16.11	4.004	19.5

Table 3. Distribution of the sample according to the degree of malnutrition (n=100)

Categories	f(%)
<17 (Malnourished)	56
17-23.5 (At risk for malnutrition)	43
>24 (normally nourished)	1

f-frequency

Table 4. Association of degree of malnutrition with demographic variables (n=100)

Variable	χ^2 Value	d.f.	P Value
Age	3.58	6	0.732 #
Sex	0.042	1	0.837 #
Education	20.564	10	0.024 *
Family income	20.55	8	0.008 *
Type of diet	0.692	2	0.707 #
Type of cancer	2.116	4	0.714 #
Stage of cancer	5.635	6	0.465 #

*P = .05, # - Not Significant, * - Significant*

4. DISCUSSION

The present study shows that nearly half cancer clients were in the age group of more than 50 years. A similar study conducted among four hundred sixty-five advanced lung cancer patients using the Patient-Generated Subjective Global Assessment (PG-SGA) from July 2014 to May 2016 consisted of 51.8% men and 48.2% women with a mean (SD) age of 60.2 ± 9.8 years. [14] We observed majority of subjects were female. An article highlighted by Edgren et al., 2012, the analysis of age- and sex-specific cancer incidence data provided by The International Agency for Research on Cancer (IARC) documented the universal nature of the sex disparity in cancer.[15] In contrast article reported by Jef Akst., emphasized that males are more affected with cancer than female [16]. In our study most of the participants were undergraduate level, of which 30% of them belonged to primary education.

These findings are supported by the study which was conducted by Mathew A et al., in which the result revealed that 27% of the subject were with illiterate/primary education [17]. In present study almost half (49%) were with breast cancer and findings supported by article published in times of India reported that one women gets diagnosed every four minutes with breast cancer in India [18].

In current study 6% of cancer patients were in first stage and majority 46% of subjects were in second stage of cancer, which is consistent with the study was conducted in south India revealed that eight percent of women in the study with breast cancer had stage 1 disease and 37% had stage iii and iv disease [17].

Half of patients present with some manifestation of nutritional deficit at the time of cancer diagnosis and turn down further during treatment [19,20]. In our study more than half (56%) of the cancer clients are malnourished and 43% are at risk for malnutrition. Similar study carried out at the department of oncology at land spitali-university hospital; nutritional screening of all cancer patients with the SSM (Simple Screening tool for Malnutrition) indicated that 41% of the patients were malnourished [21]. Another study was conducted by Gioulbasanis., revealed that 49.5% were at risk and 12.8% were malnourished [22]. nutritional problems are common during the treatment of cancer. A prospective observational study showed that 51.1% of all cancer patients presented nutritional impairment, 9% were overtly malnourished, and 43% were at risk for malnutrition [23].

In present study there is a significant association between the degree of malnutrition and variables such as education and monthly family income (at p=.05). In contrast study conducted in Tehrain , Eran by Karami K et al., revealed that there is no significant association of level of education and occupational status with the nutritional status [24]. Findings supported by cross sectional study conducted by Silva F R et al., which revealed significant association of malnutrition with socio economic classes [25].

This study was conducted in a limited sample size in a single hospital and only MNA scale was used to detect improvement in nutritional status. The study's participants were selected using a purposive sampling technique. Therefore, the results may not be generalized. Future studies done in multiple hospitals employing random sampling techniques is recommended.

5.CONCLUSION

As the study findings revealed, majority of the cancer patients clinically present with either malnourished or at risk for malnutrition. we could conclude that there is a urgent need of routine screening of cancer patients to assess nutritional status using simple screening tool at the early period of hospitalization to plan effective intervention.

CONSENT

We authors declare that "written informed consent was obtained from the patient (or other approved parties) for publication and a copy of the written consent is available for review Patient consent form is uploaded.

ETHICAL APPROVAL

Obtained Institutional Ethics Committee permission. Ref no:(AJCE/RV/209/2018)

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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