Chemotherapy Induced Oral Mucositis Based on Patients` Needs Assessment

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Abstract

Background: Oral mucositis is a major chemotherapy-induced problem that may cause disturbing pain, the inability to tolerate food, infection, and negative effects on the quality of life. Oral mucositis also may entail chemotherapeutic drug dose reduction among patients, in turn reducing their cancer survival rates. Therefore, needs assessment enables the prevention or at least reduction of problems through appropriate early intervention. **Aim:** This study aimed to assess needs for patients having chemotherapy induced oral mucositis. **Design:** A descriptive study design was utilized to achieve the aim of this study. **Setting:** The study was conducted in the inpatients' department at Radiotherapy and Nuclear Medicine Department, affiliated to Ain Shams University. **Subject:** A purposive sample of 70 adult patients. **Tools of data collection:** 1) A structured interview questionnaire 2) Oral assessment guide. **Results:** The results of this study showed that the studied patients had Physical, Psychological, Social, Spiritual and educational needs (32.9, 64.3, 31.4, 21.4& 54.3 percentages respectively), and nearly one third of studied patients had oral mucositis after chemotherapy administration. **Conclusion:** The current study concluded that most of the studied patients had Physical, Psychological, Social, Spiritual, educational needs. **Recommendations:** The current study recommended that, developing of guidelines protocol as regard reducing chemotherapy induced oral mucositis based on patient's needs.

Key words: Assessment, Chemotherapy, Oral mucositis, Patients' need.

Introduction:

Chemotherapy has been witnessing continuous improvement in terms of overall survival rates and progression free survival; nevertheless, it is still accompanied by a cluster of side effects affecting the quality of life. Oral mucositis (OM) is one of the most common and irritable side effects induced by chemotherapy characterized by the presence of erythema and edema of the oral and oropharyngeal mucosa culminating in ulcerative erosive lesions 3–5 days or 7–10 days from the initiation of chemotherapy (CT). **(Sahni et al., 2020)**.

Chemotherapy-induced OM may affect the non-keratinized mucosa of the soft palate, ventral tongue/floor of mouth, and buccal and labial mucosa. This painful oral lesion occurs in 20-40% of patients receiving chemotherapy, and 76% of patients receiving high-dose chemotherapy before hematopoietic stem-cell transplantation (HSCT). Over 90% of patients treated for mouth and oropharynx cancer also develop severe OM **(O'Neill et al., 2020).**

This lesion can be very painful, causing severe impairment to patients' functional ability. For example, patients may experience difficulties with oral communication and dietary intake, possibly leading to malnourishment and dehydration and a drastic reduction in their QOL. This adverse effect may also deter patients from continuing the chemotherapy regimen, thereby causing delayed and/or incomplete treatment and reducing the

possibility of curing the cancer **(Chan et al., 2020)**

Needs assessment is designed to identify how well and how much their needs have been satisfied or not. This assessment leads to the development of a care plan. Case presentation at the multidisciplinary team meeting leading to recommendations tailored to patient need and referral to supportive care services, needs are defined as "the requirement of some action or resource in care that is necessary, desirable, or useful to attain optimal well-being" **(Wolyniec et al., 2020).**

Need assessment completed by a nurse looking at physical, psychological, social and spiritual domains and provides direct index of what patients perceive they need help with and also measures the perceived efficacy of a health services by its users **(Scott & Jewell., 2020)**.

Significance of the study:

Side effects of chemotherapy may lead to feelings of inadequacy, worthlessness, and dependence, changes in family or social roles, functions and loss of motivation. Patients perceiving changes in body appearance and body image may have concerns about attractiveness and fear of social rejection. Lack of oral assessment for patients during treatment can lead to them being poorly equipped to handle side effects and increase their anxiety and distress. Assessment the needs of patients when entering the treatment process, providing the appropriate level of supportive care.

Aim of the study:

This study aimed to assess needs for patients having chemotherapy induced oral mucositis.

Subjects and methods:

A- Research design:

A descriptive exploratory research design was conducted to achieve the aim of this study.

B- Setting:

The study was conducted in the inpatients' department at Radiotherapy and Nuclear Medicine Department, affiliated to Ain Shams University Hospitals.

C- Subject:

A purposive sample of 70 adult patients (male and female) from the above mentioned setting with different ages undergoing chemotherapy. With type I error with significant level alpha (α) = 0.05 (confidence level 95%).

Inclusion criteria:

The study subject was selected according to the following criteria:

▪ Conscious adult patient receiving chemotherapy.

▪ Patients with the same type of chemotherapy protocol.

▪ Patients willing to participate in the study.

D-Tools of data collection

Tool (I): A structured interview questionnaire:

This tool was developed by the researcher in a simple Arabic language to assess the health needs of patients under the study. It was developed after reviewing the most recent and relevant literature from **(Smeltzer & Bare, 2013 and Wang et al 2018)** and included the following parts:

Part I: Patients' socio-demographic characteristics:

It concerned with assessment of socio-demographic characteristics of the studied patients and included (9 items) covering the following; age, gender, marital status, level of education, employment, place of residence, family responsibility, the number of those

responsible for them from the family, and income.

Part I: Patient's Medical Data:

It was (25 items) used to cover clinical data among the studied patients, that was collected using the hospital medical records and patients reported including; patient's weight and height, body mass index, past history, family history, presence of systemic diseases, lab values (WBC, RBC, PLT, HB), Cancer-related information (type of cancer, duration of cancer, cancer stage, onset of treatment by chemotherapy, chemotherapy drugs, number and frequency of treatment cycles), information about oral hygiene habits,

Part III: Patients` health needs which includes:

Physical needs; it was (19 items) concerned with assessment of patients' pain (location, duration, intensity, its effect on sleep, activities, appetite, using medication to relieve the pain (8 items), and activities of daily living (eating habits and problems, practicing exercise, sleeping habits (11 items).

Psychological needs; by using Hamilton Anxiety Rating Scale (HAM-A) (**Hamilton, 1959 and Maier, et al., 1988 and Borkovec, & Costello, 1993**), the scale consists of (14 items), each defined by a series of symptoms, and measures both psychic anxiety (mental agitation and psychological distress) and somatic anxiety (physical complaints related to anxiety), the HAM-A including; Anxious mood, Tension, Fears, Insomnia, Intellectual, Depressed mood, Somatic (muscular), Somatic (sensory), Cardiovascular symptoms, Respiratory symptoms, Gastrointestinal symptoms, Genitourinary symptoms, Autonomic symptoms, and Behavior at interview.

Scoring System for psychological needs:

Each item was scored on a scale of 0 (not present) to 4 (severe), with a total score range of 0–56, where <17 indicates mild severity, 18–24

mild to moderate severity and 25–56 moderate to severe anxiety.

Social needs; it was (20 items) concerned with assessment of self-confidence (4 items), human behavior (7 items) and performance system (9 items).

Spiritual needs; it was (3 items) concerned with; relation with God and motivation.

Educational needs; it was (36 items) concerned with assessment the information about (cancer, types of cancer treatments, chemotherapy and it's side effects, oral side effects during chemotherapy, dental examination, healthy diet for oral health condition, how to strence immunity system (23 items), correct practice for oral hygiene habits (10 items) and using some herbal products for prevent oral mucositis (3 items).

Scoring System:

Physical needs, social needs, and spiritual needs; each item was categorized and scored into either:-

- Always = 2   Sometimes = 1   Never = 0

- Those who obtained less than (50%) were considered to cover the patient's needs.

- From (50% to 70%) were considered to cover little of the patient's needs.

- Those who obtained above (70%) were considered not covering the patient's needs.

Educational needs of the patients, the answer for all 36 items were either Yes (correct) or No (false), the yes answer for each item get (1) mark and no answer get (zero)

- The satisfactory level = 60 % & more. Meanwhile

- UN satisfactory level = less than 60%.

Tool (II): Oral assessment guide (OAG): An oral assessment guide (OAG) was adopted to assess the existence of mucosal alterations using the validated oral-assessment guide adopted from **(Eilers & Epstein, 2004 and Jaroneski, 2006).** It was (8 items) included assessment of voice, ability to swallow, lips, tongue, saliva, mucous membranes, gums, and teeth/dentures.

Scoring system

Each category was punctuated with 1(Normal), 2(Slightly abnormal), or 3(Abnormal) points according to their intensity. The eight subscale scores of oral assessment guide are summed to obtain an overall assessment score that ranging from 8-24. The total assessment score was categorized as follows:

- If an overall assessment score was less than 9, it denotes healthy oral cavity.

- If an overall assessment score ranges from 9-16, it denotes moderate oral mucositis.

- If an overall assessment score ranges from 17-24, it denotes sever oral mucositis.

Tools validity and reliability

The tools were revised by a panel of (7) expertise from Medical Surgical Nursing department, Ain Shams University (3 professors, 3 assistant professors and one lecturer) to assess the tools for clarity, accuracy, relevance, comprehensiveness, understanding, applicability, scoring and items recording. Modifications of tools were done according to the panel's judgment. Testing reliability of the developed tools was done statistically by Cronbach's alpha model which is a model of internal consistency was used in the analysis, the reliability score of tool as above is (0.827, 0.879, 0.858, 0.809, 0.789, 0.744 and 0.818), While validity score of tools is (0.838, 0.827, 0.857, 0.910, 0.788, 0.837 and 0.755) for patients Psychological needs, Social needs, Spiritual Needs, Educational Needs, Practices, Assessment Guide (OAG). This indicated high total internal consistency of the used tool.

- **Pilot Study:**

It was applied on 7 patient how represent 10% of the studied patients to test the applicability and clarity of the tools, as well as to estimate the time needed to fill in the tools. Necessary modifications were done for the used tools and patients included in the pilot study were excluded from the sample group.

Field Work:

Data collections for the sample of this study took about Six months started from November 2019 until April 2020, data were collected on 2 days / week at morning and afternoon shifts in the inpatients' department at Radiotherapy and Nuclear Medicine Department, affiliated to Ain Shams University Hospitals.

- The researcher started by selecting the patients who undergoing chemotherapy and met the inclusion criteria. The researcher explained the aim and nature of the study to patients prior to data collection in order to take their approval to participate in the study.
- The patient interview questionnaire that includes demographic characteristics, patient's medical data, and patient's needs assessment was filled in by the researcher or the patients or family member according to their level of education. It takes about 30-45 minutes to be filled in for every patient.

Patient's oral assessment tool was filled in by the researcher only to assess oral condition. It takes about 10-15 minutes to be filled in for every patient.

Administrative Design:

An official permission was obtained from the Directors of Faculty of Nursing Ain Shams University and Radiotherapy and Nuclear Medicine Department, affiliated to Ain Shams University Hospitals, to conduct this study. Patients' oral consent was obtained for data collection after explaining the study.

Ethical Consideration:

Prior conducting the pilot study, ethical approval was obtained from the scientific ethical committee of Faculty of Nursing Ain Shams University. In addition oral and written informed consent was obtained from each participant prior to data collection. They were assured that anonymity and confidentiality would be guaranteed and the right to withdraw from the study at any time without giving any reason. Ethics, values, culture and beliefs were respected.

Statistical Design:

The collected data were organized, categorized, tabulated and analyzed using the Statistical Package for Social Sciences (SPSS). Quantitative data were presented as mean, standard deviation. Qualitative data were presented as percentages. The observed differences and association were considered as follows:

♦ Non-significant at $P > 0.05$
♦ Significant at $P \leq 0.05$

Results

Table (1): This table shows that (65.71%) of the study sample were aged from 40 to 60 years and the mean age was 46.8±6.25. Male represented a higher percentage (72.9%) of the studied sample. Concerning the educational level, it was found that (28.57%) had higher education. Concerning occupation status more than one third of them (34.28%) were employee. Regarding marital status (71.43%) were married. In relation to residence, more than half of them (68.57%) were from urban area.

Table (2) illustrates that, 32.86% of the studied patients considered to cover the needs. While, 34.28% of the studied patients considered covering little of the needs and 32.86% of them considered not covering the needs.

Table (3) illustrates that, 17.1% of the studied patients had mild level of anxiety. While, 18.6% of the studied patients had moderate level of anxiety and 64.3% of them had sever level of anxiety.

Table (4) illustrates that, 32.9% of the studied patients considered to cover the needs. While, 35.7% of the studied patients considered covering little of the needs and 31.4% of them considered not covering the needs.

Table (5) illustrates that, 52.9% of the studied patients considered to cover the needs. While, 25.7% of the studied patients considered covering little of the needs and 21.4% of them considered not covering the needs.

Table (6) illustrates that, 45.7% of the patients had satisfactory level of educational, were 54.3 % didn't had satisfactory level of educational.

Table (7) shows that 30.0% of the patients had oral mucositis after chemotherapy administration.

Table (8) demonstrate that there was a highly statistically significant difference between total needs and OAG with p-value (<0.001). Also there was positive relation between total needs and OAG with r (0.536).

Table (1): Frequency and percentage distribution of the studied patients regarding their socio demographic characteristics (n=70)

Items	N	%
▪ **Age (years)**		
20 - <40	10	14.29
40 - <60	46	65.71
60 or more	14	20.00
Mean±SD	46.8±6.25	
▪ **Sex**		
Male	51	72.9
Female	19	27.1
▪ **Level of education**		
Read and write	22	31.43
Preparatory school	18	25.71
Secondary school	10	14.29
Higher education	20	28.57
▪ **Occupation**		
Non-working	16	22.86
Employee	24	34.28
Housewife	8	11.43
Free works	12	17.14
Retirement	10	14.29
▪ **Marital status**		
Single	4	5.71
Married	50	71.43
Divorced	2	2.86
Widowed	14	20.00
▪ **Residence**		
Rural	22	31.43
Urban	48	68.57

Table (2): Total frequency and percentage distribution of covering patient's physical needs among the studied patients (n=70)

Total Physical needs	N	%
Considered to cover the needs	23	32.86
Considered to cover little of the needs	24	34.28
Considered not covering the needs.	23	32.86

Table (3): Total frequency and percentage distribution of psychological needs (level of anxiety) among the studied patients (n=70)

Total Psychological Needs (level of anxiety)	N	%
Mild	12	17.1
Moderate	13	18.6
Severe	45	64.3

Table (4): Total frequency and percentage distribution of social needs among the studied patients (n=70)

Total social needs	N	%
Considered to cover the needs	23	32.9
Considered to cover little of the needs	25	35.7
Considered not covering the needs.	22	31.4

Table (5): Total frequency and percentage distribution of spiritual needs among the studied patients (n=70)

Total Spiritual needs	N	%
Considered to cover the needs	37	52.9
Considered to cover little of the needs	18	25.7
Considered not covering the needs.	15	21.4

Table (6): Total frequency and percentage distribution of educational needs among the studied patients (n=70).

Total educational needs	N	%
Satisfactory	32	45.7
Unsatisfactory	38	54.3

Table (7): Total frequency and percentage distribution of oral assessment guide (OAG) among studied patients (n=70).

OAG	N	%
Healthy oral cavity	49	70.00
Moderate oral mucositis	19	27.14
Sever oral mucositis	2	2.86

Table (8): Correlation between total needs and oral assessment guide (OAG)

Items	Total needs	
	r	P-value
OAG	0.536	<0.001**

Discussion

Part I: Patients' socio-demographic characteristics

The finding of the current study revealed that, two-thirds of the study sample was aged from 40 to 60 years and the mean age was 46.8±6.25. This result might be due to this age group considered high risk for exposure to cancer due to old age had low immunity and poor nutritional status. This result was agreement with **Soliman & Shehata., (2015)** who stated that, the mean age of the studied sample was 42.93.

Concerning gender and marital status, nearly three quarters of the studied sample were male and married this finding may be due to that some types of cancer as (Colorectal, Gastric and Pancreatic cancer) occurs in males than females, this opinion is supported by **Lucchese et al., (2016)** who revealed that the majority of the studied patients were male and married.

Concerning the educational level, it was found that more than one quarter of studied sample was university graduate. In relation to income, more than half of them were with insufficient income. In the same field, **Abd Allah et al., (2020)** who revealed that slightly less than one-thirds of studied cancer patients had high education. Also, half of them had not

sufficient income. The explanation of such result is that lower socioeconomic status is associated with less access to healthcare services (as screening program) to detect early signs of cancer disease.

Concerning occupation status more than one third of them were employee. In relation to residence, more than half of them were from urban area. These results were agreement with **Araújo et al., (2015)** who stated that, less than half of cancer patients were working. Also, more than half of them residing in urban areas

Part III: Patients` health needs

Related to patient's physical needs, the current study revealed that only one third of patient's physical needs were covered. This result was consistent with **Oldenmenger et al., (2018)** who mentioned that cancer patients had physical needs before educational interventions to improve cancer-related oral mucositis.

Related to psychological needs (level of anxiety) among the studied patients, the current study revealed that more than half of studied patients had severity degree of anxiety. This result may be due to the first time of chemotherapy session being able to be emotional and overwhelming for the patients. This result was agreement with **Krishnaswamy & Nair., (2016)** about "Effect of music therapy on pain and anxiety levels of cancer patients" and revealed that there was a statistically significant reduction in the post intervention pain scores and anxiety in the test group compared to the control group.

Related to patient's social needs the current study revealed that nearly one third of patient's physical needs were not covered. This result was consistent with **Agboola et al., (2015)** who mentioned that cancer patients had social needs before technology-based interventions.

Related to patient's spiritual needs the current study revealed that nearly one quart of patient's spiritual needs were not covered. This result was agreement with **Kassianos et al., (2018)** who mentioned that cancer patients had

spiritual needs during specialized palliative care.

According to total distribution of educational needs among the studied patients, the current study revealed more less than half of the patients had unsatisfactory level of educational about the cancer and its complications. This result was agreement with **Dadgary & Zareian., (2017)** who demonstrate that there was a marked poor in patient's knowledge regarding chemotherapy problems pre the training programs.

Part III: The oral assessment guide

Regarding to total oral assessment guide (OAG) among studied patients, the current study revealed that about one thirds of the patients had oral mucositis after chemotherapy administration, this result may be due to patients with cancer undergoing chemotherapy frequently developing alterations of the oral cavity. Oral debris is composed of soft foreign matter loosely attached to teeth. It consists of mucin, bacteria, and food. This finding was in conjunction with study done by **Acharya et al., (2017)** who mentioned that more than one third of studied patients had oral changes after session of chemotherapy.

Regarding to correlation between total patients' needs and oral assessment guide (OAG), the current study revealed that there was a highly statistically significant difference between total patients' needs and OAG. This may be due to when the patient's needs (physical, psychological, social, spiritual) increase, the degree of oral mucositis increases. This finding is incongruence with **Dadgary & Zareian., (2017)** who revealed that there was a positive relation between total needs and oral assessment guide.

Conclusion

The current study concluded that most of the studied patients had Physical, Psychological, Social, Spiritual, educational needs. In addition, had alteration in oral health condition after administration of chemotherapy.

Recommendations

The result of this study projected the following recommendations:

▪ Replication of the current study on a larger probability sample is recommended to achieve generalization of the results.

▪ The current study recommended that, developing of guidelines protocol as regard reducing chemotherapy induced oral mucositis based on patient's needs.

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