Effect of educational guidelines on reducing chemotherapy induced oral mucositis based on patients’ needs assessment

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ABSTRACT

Oral mucositis is a distressing complication of chemotherapy-induced toxicity in cancer patients, it effect on the well-being of patients, demonstrating its negative impact on patients’ quality of life, and may lead to dose reduction among patients. Hence, the present study was conducted to evaluate the effect of educational guidelines on reducing chemotherapy induced oral mucositis based on patients’ needs assessment. A quasi-experimental research design (pretest and posttest) has been conducted to achieve the aim of this study. This study was conducted in the inpatients’ department at Radiotherapy and Nuclear Medicine Department, affiliated to Ain Shams University. A purposive sample of 70 adult patients was selected based on certain inclusion criteria. A structured interview questionnaire, Oral assessment guide, and Patients’ health condition assessment (Patient-related outcomes PROMs) are methods used to collect the data among the studied patients. There was statistically significant improvement in the post-test implementation of educational guidelines as regard patient’s mouth care practice with p-value <0.001 and 88.6% of the patients had healthy oral cavity and didn’t have any degree of oral mucositis. This study revealed the implementation of educational guidelines has a positive effect on the reducing chemotherapy induced oral mucositis for the patients undergoing chemotherapy.

INTRODUCTION

Chemotherapy represents one of the most effective antineoplastic therapies to treat malignancies. Multiple drug regimens of chemotherapy have been shown to have a more effective response and increased survival time, but have their inherent toxicities and adverse effects. One of the most common adverse effects associated with chemotherapy is oral mucositis (OM) (Chan et al., 2020). Oral mucositis, refer to inflammation of the oral mucosa cavity include the non-keratinized mucosa of the soft palate, ventral tongue/floor of mouth, buccal and labial mucosa. It is clinically characterized by the presence of erythematous areas and ulcera-
tions which appear within 4-5 days after the start of chemotherapy and its peak intensity within 7 to 14 days. Unless presence of infection, it is declining slowly and complete recovery may last approximately 2 to 3 weeks (O’Neill et al., 2020). This oral lesion leads to bio-psycho-social problems such as a reduction in dietary intake, difficulty in communication, speech problem, impaired body image and decreased self-esteem, change in comfort due to pain, possibly leading to delayed and/or incomplete treatment and reducing the possibility of treating the cancer (Sahni et al., 2020). Oral mucositis occurs in 20-40% of patients receiving chemotherapy, 76% of patients receiving high-dose chemotherapy before hematopoietic stem-cell transplantation (HSCT), and over 90% of patients treated for mouth and oropharynx cancer (Viveiros, 2020). The Mucositis Study Group of the Multinational Association of Supportive Care in Cancer/International Society of Oral Oncology (MASCC/ISOO) guidelines report that the main component of strategies used to minimize oral mucositis are oral health care protocols and patient education (Ranna et al., 2019). Good understanding of the patients’ needs will provide effective level of care for reducing oral mucositis. Needs assessment is done by looking at physical, psychological, social and spiritual domains (Scott and Jewell, 2019). Implementation of educational guidelines based on the patients’ needs, and the use of knowledge and skills to reduce oral mucositis, helps patients to cope with the illness and achieve maximum health and ability (Yüce and Yurtsever, 2019).

MATERIALS AND METHODS

A quasi-experimental research design with one group pretest and posttest was utilized to conduct this study in the inpatients’ department at Radiation therapy and Nuclear Medicine Department, affiliated to Ain Shams University Hospitals.

Participants

A purposive sample of 70 adult patients was selected according to certain inclusion criteria. The inclusion criteria were both sex with different ages undergoing chemotherapy, adult patient receiving chemotherapy for first time, patients receiving chemotherapy protocol (Oxaloplatin – leucovorin-5 Flurouracil (FOLFOX) or (Irinotecanleucovorin-5 Flurouracil (FOLFIR), and not receiving radiation therapy combined with chemotherapy.

Instruments

A structured interview questionnaire was developed by the researcher after reviewing the most relevant literature (Smeltzer and Bare, 2013; Çakmak and Nural, 2019) which include patients’ socio-demographic characteristics, medical data and patients’ health needs (physical, psychological, social, spiritual, and educational). Oral assessment guide (OAG); an oral exploration was adopted to assess the existence of mucosal alterations, adopted from Eilers et al. (1988); Jaroneski (2006). Patients’ health condition assessment (Patient-related outcomes PROMs) adopted from Gusgaard et al. (2014) to evaluate patients’ self-perception of oral discomfort.

Interventions and Data Collection

The ethical approval was obtained from the ethical research committee at faculty of nursing of Ain Shams University before initiating the study. All participated patients were informed that they are allowed to withdraw from the study at any time. Data collections for the sample of this study took about 12 months (one year) started from February 2019 until January 2020; on 2 days/ week at morning and afternoon shifts. The educational guideline (booklet) was designed by the researcher, consistent with the related literatures and met patients’ needs to reduce the development of oral mucositis. The educational guidelines were presented in theoretical sessions (included necessary knowledge about chemotherapy induced oral mucositis and management strategies to reduce it), and practical sessions (included necessary skills to reduce OM as; brushing teeth, flossing, the use of non-medicated rinses e.g., saline, or sodium bicarbonate rinse, applying ice ships before administration of chemotherapy, perform breathing exercises and other relaxation techniques to remove stress and tension). Total hours of the guidelines sessions were 81 hours and 40 minutes for all patients.

RESULTS AND DISCUSSION

Sample characteristics

The average age of studied patients was 46.8±6.25. Male represented a higher percentage 72.9% of the studied sample. 28.57% of them had University graduate, 34.29% were employee, 71.43% of them were married, 68.57% were from urban area and 61.4%with insufficient income. 51.42% of them had colon cancer, 45.71% of studied subjects with third stage of cancer disease, 62.86% of them were used FOLFOX protocol of chemotherapy, frequented their treatment cycles every 14 days, and 48.57% required 6 treatment cycles.

The study shows that there was a statistical significant difference between educational needs (satis-
Table 1: Total distribution of educational needs among the studied patients pre/post and Follow up educational guidelines (n=70)

| Educational needs | Satisfactory | Un satisfactory | Chi-square | X² | P-value |
|-------------------|--------------|----------------|------------|----|---------|
|                   | N            | %              | N          | %  |         |
| Pre               | 32           | 45.7           | 38         | 54.3 |         |
| Post              | 55           | 78.6           | 15         | 21.4 | 16.062  | <0.001** |
| Follow up         | 64           | 91.4           | 6          | 8.6  | 4.538   | 0.033*   |

* Significant at p< 0.05; **Highly significant at p < 0.001

Table 2: Total oral assessment guide (OAG) among studied patients pre/post and Follow up educational guidelines (n=70)

| Items                | Healthy oral cavity | Moderate oral mucositis | Sever oral mucositis | Chi-square | X²   | P-value |
|----------------------|----------------------|-------------------------|----------------------|------------|------|---------|
|                      | N                    | %                       | N                    | %          |      |         |
| Pre                  | 63                   | 90.0                    | 7                    | 10.0       | 0    | 0.0     |
| Post                 | 57                   | 81.4                    | 11                   | 15.7       | 2    | 2.9     | 28.465 | <0.001** |
| Follow up            | 62                   | 88.6                    | 8                    | 11.4       | 0    | 0.0     | 2.684  | 0.261    |

** Highly significant at p < 0.001

Table 3: Total Patient - Reported Outcomes Questionnaire (PROMS) among studied patients post and Follow up educational guidelines (n=70)

| Total PROMS          | Post      | Follow up | Chi-square | X²   | P-value |
|----------------------|-----------|-----------|------------|------|---------|
|                      | N         | %         | N          | %   |         |
| Serious side effects | 2         | 2.8       | 0          | 0.0 | 2.801   | 0.432  |
| Moderate side effects| 5         | 7.1       | 3          | 4.3 |         |        |
| Mild side effects    | 6         | 8.6       | 5          | 7.1 |         |        |
| No side effects      | 57        | 81.4      | 62         | 88.6|         |        |

Table 4: Correlation between total practice of mouth care with oral assessment guide (OAG) and Patient-Reported Oral Mucositis Experience Scale Questionnaire (PROMS)

| Items          | Pre r   | P-value | Total practice mouth care Post | Pre r   | P-value | Follow up | Pre r   | P-value |
|----------------|---------|---------|--------------------------------|---------|---------|-----------|---------|---------|
| OAG            | -0.412  | 0.007*  | -0.254                         | 0.027*  |         | -0.516    | <0.001**|         |
| PROMS          | -0.332  | 0.012*  | -0.590                         | <0.001**|         | -0.377    | <0.001**|         |

* Significant at p< 0.05; ** Highly significant at p < 0.001

factory and unsatisfactory) pre /post educational guidelines with p-value (<0.001) and statistical significant difference between educational needs (satisfactory and unsatisfactory) post/follow up educational guidelines with p-value (<0.05), where improvement was indicated post guidelines compared to pre (Table 1).

The study outcomes point to the application of the educational guidelines that can be improving the patients’ knowledge.

These results are in agreement with Piombo et al. (2020) who revealed that the implementation of an oncology nurse-led pre-chemotherapy intervention improved self-reported knowledge for cancer patients undergoing chemotherapy.

The oral assessment guide (OAG) and Patient-related outcomes (PROMS)

The present study reveals that 90% of the patients had healthy oral cavity before the first session of chemotherapy, which only changed to 88.6% of them had healthy oral cavity after follow up educational guidelines (Table 2).
This finding may be due to follow a prescribed oral hygiene care regimen that was written in the educational guidelines. This finding is in congruence with Hong et al. (2019) who demonstrated that more than half of the studied patients had healthy oral cavity after implementation of basic oral care.

The current study demonstrates that 81.4% of the patients post educational guidelines didn’t have side effects of oral mucositis, which changed to 88.6% after follow up educational guidelines (Table 3). This result may be due to implementation of educational guidelines that impact on improving patients’ oral condition. These findings are in agreement with Rogers and Barber (2017) who revealed that there was a statistical significant difference between patient’s reported oral mucositis experience at pre /post guidance where improvement was post guidelines.

Relation between the study variable

It was found that a statistically significant difference between the total practice of mouth care (pre/post educational guidelines) and OAG with p-value (<0.05). There was a statistically significant difference between total practice of mouth care follow up educational guidelines and OAG with p-value (<0.001) (Table 4). This finding is in congruence with Umeda et al. (2020) who demonstrated that there was statistically significant difference between total patient’s practices of mouth care and oral assessment guide.

It was found statistically significant difference between total practice of mouth care post/follow educational guidelines and PROMS with p-value (<0.001) (Table 4). This result is in agreement with Cheng et al. (2017) who stated that there was statistically significant difference between total patient’s reported oral mucositis experience and their practices of mouth care.

CONCLUSION

The present study concluded that the implementation of educational guidelines has statistically significant positive effect on the reducing chemotherapy-induced oral mucositis for the studied patients undergoing chemotherapy, which supports the study hypothesis. It was observed from the current study that there was a statistically significant difference between total practice of mouth care pre /post educational guidelines and OAG.

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