

## Jordanian Nurses' knowledge and attitudes toward Cancer-related Fatigue as a Barrier of Fatigue Management

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**Abstract:** Cancer related fatigue is the most common symptoms reported by patients. The nurses' lack of knowledge and attitudes considered the most important barrier to its management. **Objective:** To identify the Jordanian nurses' knowledge, attitudes and barriers toward Cancer Related Fatigue (CRF). **Materials and method:** A descriptive cross sectional design was used to collect data from 81 nurses in an oncology specialty hospital in Jordan using Fatigue Knowledge and Attitude Survey guided by the Piper Fatigue Integrated Model and the City of Hope Quality of Life Model. **Results:** The results identified the nurses' attitudes and beliefs about CRF in terms of: incidence and prevalence, pathophysiology, assessment, management, and patient's outcomes. Half of participants recognized low hemoglobin as a cause of fatigue; 68% were able to differentiate between CRF and depression; 60% believed that fatigue is underreported by patients; 58% appreciated fatigue management; and 65% recognized fatigue effects on all aspects of patients' lives. However, 62% of the participants believed that CRF was not associated with reducing children's activities. **Conclusion:** Jordanian nurses' knowledge and attitudes toward cancer related fatigue is not sufficient to improve patient's quality of care. There is a need to improve nurses' knowledge to enhance fatigue management, thus, improving patients' quality of life.

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**Key words:** Cancer related fatigue; knowledge; attitudes; barriers

### 1. Introduction

The number of Jordanian patients diagnosed with cancer is being increased. According to Jordan Cancer Registry, approximately 4606 new cases diagnosed with cancer between 2007 and 2008 (Jordan Cancer Registry, 2010). Cancer patients may suffer from multiple symptoms that originate from the disease progression, its treatment, or co-morbid conditions (Wilkie et al, 2012). One of the most common symptoms is cancer related fatigue (CRF) where 40% of cancer patients experienced fatigue at diagnosis (Hofman, 2007). More than 80% of cancer patients who were treated with radiation or chemotherapy also reported fatigue (Hofman, 2007; Prue, 2006; Spichiger, 2012). Research indicates that fatigue duration may extend from months to years among cancer patients (Baker, 2005; Bower, 2006; Stauder, 2013).

Cancer related fatigue affects negatively on the social well-being and the quality of life of cancer patients (Kim, 2008). Although fatigue is common symptom among cancer patients, there are many barriers to manage it; these barriers are related to the patients themselves or to the health care providers (Panel, 2002; Seo, Ryan, 2005; 2010). The most important health care provider's barriers to fatigue management are the deficiency in knowledge and

attitudes regarding CRF as a sign; and reporting it as a different symptom such as nausea, vomiting, anorexia, and pain (Borneman, 2010; Panel, 2002; Seo, 2010). Improving health care providers' knowledge and attitudes toward fatigue is essential in providing quality of health care in clinical settings (Borneman, 2010); consequently, the enhancement of effective therapeutic chemotherapy, improving physical and social functioning, and reducing emotional distress among cancer patients (Wilkie et al, 2012). Therefore, this study focused on identifying health care providers' knowledge and attitudes toward common barriers to assess and manage CRF.

### 2. Background

CRF is defined by the National Comprehensive Network (NCCN) guidelines committee as "an unusual, persistent, subjective sense of tiredness related to cancer or its treatment that interferes with usual functioning" (Gutstein, 2001; Mock, 2000). CRF differs from fatigue that is experienced after physical activity in terms of being greater in magnitude, not relieved by sleep and rest, and disrupts patient's quality of life (Glaus, 1996; Mock, 2000; Mock, 2001). However, CRF remains poorly understood in the clinical practice, thus, untreated in 45%-90% of patients (Van den,

2009). This happened because patients are often unwilling to report fatigue and health care providers do not assess its presence (Mock, 2000).

Many studies recognized fatigue as a major symptom in cancer patients that needs proper assessment and intervention (Chenille, 2011; Kim, 2008; Hang, 2008). Jemenez et al (2011) collected data from 406 adult cancer patients who have diagnosed with lung, gastrointestinal and breast cancer. The results showed that fatigue was the most frequent symptom reported by cancer patients. Another study conducted on 2500 participants whom diagnosed with lung cancer showed that the fatigue persists over time of lung cancer survivor (Chenille, 2011).

Fatigue has a significant independent negative effect on the quality of life; it may occur after curative period (Kim, 2008; Van den, 2009). There is a strong relationship between fatigue and functional impairment (Hung, 2011). The patient who has fatigue expresses decrease in their ability to participate in family and social activities (Mock, 2000). Additionally, fatigue affects the economic status of patient related to absence from work or changing employment status, the physical status related to the difficulty in performing daily living activities, and psychological status as they experience feeling of isolation, loneliness, helplessness, and loss of control (Curt, 2000; Mock, 2001). Curt et al. (2000) investigates the effect of fatigue among cancer patients in the quality of life. The results showed that 30% of patients reported fatigue in daily basis, 91% of fatigue prevented their normal living and 88% reported alteration in daily routine. Although the high prevalence of CRF and its disruptive effects, there is a major deficiency in assessment and management (Morrow, 2007).

There are many barriers to assessment and management of CRF which reported in the literature (Brimmer, 2010; Borneman, 2010; Sun, 2012; Spichiger, 2012). These studies classified barriers into two categories: barriers related to the patients and barriers produced by the health care providers. Patients' related barriers include the false beliefs about the lack of available fatigue treatment and concerns of the stigma as a complainer (Borneman, 2010). Additionally, individuals' life and illness circumstances, daily activities and unawareness about the treatment options of fatigue were reported as patients' related barriers (Spichiger, 2012). On the other hand, barriers related to the health care providers includes: considering fatigue not important if compared to pain, lack of knowledge regarding fatigue assessment and treatment, and neglecting fatigue because it is unavoidable effect of cancer's treatment (Borneman, 2010; Brimmer, 2010; Seo, 2010; Sun, 2012). Health care providers recognized fatigue as problems among cancer patients but they reported the

need for education and further information about (Brimmer, 2010; Knowles, 2000).

To conclude, there were several gaps in the literature related to the nurses' knowledge and attitudes toward cancer fatigue, especially in Jordan, to utilize them for improving nursing interventions. Therefore, the purpose of this study was to identify the Jordanian nurses' knowledge, attitudes and barriers toward cancer related fatigue.

### **3. Materials and Method**

#### **Research Design**

The study is part of a larger project aimed to improve the quality of cancer management. A descriptive cross sectional design was used to examine the oncology nurses' knowledge and attitudes toward cancer related fatigue.

#### **Sample and Setting**

The study took place in an oncology specialty hospital in Jordan. This hospital treats over 3000 adult and pediatric cancer patients each year. It is dedicated to provide services cover caring for cancer patients from prevention and early detection, through diagnosis and treatment, to palliative care. The hospital has a capacity of 180 beds and includes 440 oncology nurses.

A purposive sampling technique was used to recruit the study participants. The registered nurses care of cancer patients at the selected hospital included in this study if they were:

1. Having a baccalaureate degree in nursing.
2. Currently working with cancer patients in medical and surgical wards.
3. Able to read and understand texts in English (English language is the second language in Jordan) to ensure the understanding of the study questionnaire.

The estimated sample size was 54 nurses using G. power statistical program with alpha ( $\alpha=0.05$ ), Power ( $1-\beta=0.95$ ) and effect size=0.5 according to Cohen's (1990) moderate Effect. An additional 50% of the estimated sample size was added to manage any attrition, missing data, or incomplete questionnaires, and also to strengthen the power of the study results; consequently a total of 81 nurses were included in the study.

#### **Data Collection Method**

Fatigue Knowledge and Attitude Survey was developed to be used in this study. The Piper's Fatigue Integrated Model (Piper, 1998), and the City of Hope Quality of Life Model (Ferrell et al,1995) guided the development of the questionnaire after obtaining the permission and approval from the original authors. Moreover, the approval of the Ethical Research Committee at the Faculty of Nursing in the University of Jordan, and the ethical committee in the selected hospital was secured. The questionnaire is weighted toward the assessment of fatigue which subsequently

affects its' management. In addition, a group of health professionals were consulted to test the cultural and scientific applicability of the questionnaire in the local region: an oncology nurse, oncology physician, dietician, and social worker.

The survey consists of three sections: 1) background information such as the nurses' age, years of experience and level of education; 2) fifteen true/false questions; and 3) ten multiple-choice questions. These sections assess nurses' knowledge and attitudes toward CRF in regard to the incidence, pathophysiology, assessment, management, and patients' outcomes.

#### **Pilot Study for the Instrument:**

To test the reliability of this instrument, a pilot study was performed on 20% of the total sample (n=16). The pilot study was conducted at the selected oncology hospital with nurses who met the inclusion criteria. The analysis of the reliability for the CRF Knowledge and attitudes survey instrument revealed that the instrument was reliable; the Cronbach alpha coefficient was 0.75.

#### **Recruitment Procedure**

The researchers approached the nurses at the oncology medical and surgical wards and distributed the invitation letter and information sheet. Nurses who were interested to participate and met the inclusion criteria were contacted and signed the informed consent after explaining the purpose of the study, and reading the information sheet. Eighty one nurses participated in the study and completed the questionnaires. The completion of each questionnaire took approximately 15 minutes. All questionnaires were kept in a personal computer for purpose of analysis with no names of the participants. After the study results were documented, all data in computer and the raw materials were discarded appropriately and the results were communicated for research purposes only. The study was conducted in this hospital during the period from March to June 2013.

#### **Data Analysis**

The statistical software package of SPSS 17.0 was used for data entry and analysis. The results of the study were analyzed and reflected in tables representing the numerical items contained in the instrument. The data collected from the study was analyzed descriptively using measurement of variability such as percentages and frequencies.

## **4. Results**

### **Participants' Characteristics**

A total of 81 nurses participated in the study. Most of the participants 60 (74.1%) were female with a mean age of 35.2 years. Only 14 (17.3%) of the participants has a Master's Degree in Cancer Nursing and 11 (13.6) had a higher diploma in cancer or

palliative nursing. Other demographic and background data of participants are presented in Table 1.

**Table 1:** Demographics and Background Data of the Participants N=81 (100%).

<b>Participants Characteristics</b>	<b>Number (%)</b>	<b>Range (M)</b>
<b>Gender</b>		
Female	60 (74.1)	
Male	21 (25.1)	
<b>Age (Years)</b>		22–58 (35.2)
22–29	23 (28.5)	
30–39	28 (34.6)	
40–49	20 (24.6)	
50 and older	10 (12.3)	
<b>Education</b>		
Bachelor's Degree	46 (56.8)	
Master's Degree	10 (12.3)	
High Diploma in Cancer Nursing	9 (11.1)	
High Diploma in Palliative Nursing	2 (2.5)	
Master's Degree in Cancer Nursing	14 (17.3)	
<b>Nurses' Position</b>		
Supervisor nurse	4 (5)	
Head nurse	8 (9.9)	
Staff nurse	69 (85.1)	
<b>Experience as a Nurse (Years)</b>		2–18 (9.2)
2–6	26 (32.1)	
7–11	29 (35.8)	
12–16	21 (25.9)	
17 and older	5 (6.2)	
<b>Current Area of Work</b>		
Medical ward	42 (51.9)	
Surgical wards	39 (48.1)	

### **Nurses' knowledge and Attitudes toward Cancer-related Fatigue**

The results of the study have been divided according to the specific themes they addressed. These themes are: incidence and prevalence, pathophysiology, assessment, management, and patients' outcomes (figure 1).

### **Incidence and Prevalence**

The results showed that around 73% of the participants identify fatigue as the most common symptom associated with cancer and its treatment. Forty six (56.8%) of the participants recognized that CRF in radiotherapy lasting more than the procedure of radiotherapy. Although 40 (49.1%) of the participants distinguished CRF from routine fatigue, only 21 (26%)

of them indicated fatigue as unusual feeling of tiredness.



**Figure 1: Themes of Nurses' knowledge and attitudes toward Cancer-related Fatigue**

### Pathophysiology

In relation to the pathophysiology of fatigue, the results revealed that more than half of nurses 43 (53%) perceived a low hemoglobin level as a cause of fatigue. In addition, the majority of the participants 55 (68%) were able to differentiate between CRF and depression. However, only 16 (20%) of the participants were able to recognize all causes of fatigue such as hypothyroidism, electrolyte imbalance and anemia.

### Assessment

This section identifies nurses' knowledge related to the subjectivity nature of CRF assessment. Although 49 (60%) of the participants mentioned that fatigue should be assessed if patients report it, only 16 (20%) of the participants believed that the patient is the accurate judge of CRF severity despite, and 25 (31%) of the participants believed that physicians and primary nurses are the accurate judge of CRF severity. Additionally, only 34 (42%) of the participants perceived fatigue as an issue that is less important than pain.

### Management

The results of the study revealed that more than half of participants 47 (58%) appreciated the management of CRF even if other problems are resolved (such as pain, nausea and vomiting). Fifty eight percent (n=47) of the participants identified that there are other methods in addition to blood transfusion can be used to resolve CRF, and correcting anemia is the best method to resolve CRF. More than half of participants 44 (54%) believed in good night sleep as a source to relieve fatigue. With regards to the strategies that are used to manage CRF, 31 (38%) of participants correctly identified the promoting energy conservation,

a balance between rest and activity and maintaining adequate nutrition as successful options to manage CRF.

### Patients' Outcomes

The results showed that nurses had good understanding of how the CRF could influence aspects of patients' lives; the majority of the participants 53 (65%) recognized that the CRF effects on all aspects of patients' lives. However, 50 (62%) of the participants believed that the CRF was not associated with reducing the children's activities. In addition, there was a lack of knowledge related to life threatening consequences of CRF such as reduced treatment dose, treatment delay and premature death. This reported by 18 (22%) of participants.

## 5. Discussion

The results of this study identified nurses' attitudes and beliefs about CRF in terms to a variety of themes; incidence and prevalence, pathophysiology, assessment, management, and patient's outcomes.

### Incidence and Prevalence of Fatigue

Nurses in this study demonstrated good level of knowledge and positive attitudes regarding fatigue incidence among cancer patients and length of fatigue in relation to radiotherapy. This result is congruent with several studies findings confirmed that fatigue is the most common symptom associated with cancer and its treatment and that CRF in radiotherapy has long duration (Ahlberg, 2005; Hofman,2007; Prue, 2006; Spichiger, 2012; Stone, 2003).

However, the nurses in this study were unable to differentiate CRF from tiredness. This result was also similar to previous findings in the literature (Knowles, 2000; Miller, 2001). For example, the results of a descriptive study conducted in United Kingdom on 84 nurses showed that 62% of the nurses described fatigue as a "tiredness" (Knowles, 2000). An explanation of this finding might be that cancer patients who experience fatigue describe this feeling as unusual tiredness too (Glaus et al, 1996).

### Pathophysiology of Fatigue

The pathophysiology of fatigue is poorly understood (Wagner, 2004). Although the majority of nurses in this study were not able to recognize all causes of fatigue (e.g. hypothyroidism, electrolyte imbalance and anemia), half of them reported anemia as a cause of CRF. This result is approved by few past studies in reporting that the low hemoglobin is the most common cause of fatigue among cancer patients (Foubert, 2006; Morrow, 2002).

Kurzrock (2001) discussed that fatigue in cancer patients is resulted from decrease of erythropoietin response and cytokines substances that suppress the erythropoiesis. On the other hand, on a study conducted on breast cancer survivors by Bower et al (2003)

suggested that the fatigue might be associated with a chronic inflammatory process involving the T-cell compartment. The final significant result related to the pathophysiology of CRF was that nurses in this study were able to differentiate between CRF and depression which is reported by more than half of participants. This may indicate a satisfactory level of knowledge since fatigue and depression are correlated (Knowles, 2000).

#### **Assessment and Management of Fatigue**

Many authors asserted that fatigue is only can be assessed by self report (Ahlberg, 2005). This study reported contradicting results in relation to fatigue assessment. From one side, more than half of the nurses agreed that fatigue should be assessed when only patients report it; on the other hand, they believed that the physicians and the nurses are the accurate judge of CRF severity. In fact, fatigue is considered as subjective data and the patient is the accurate judge who can determine the level of CRF severity (Portenoy & Itri, 1999). Though, less than half of the nurses perceived fatigue as less important than pain which is considered as a barrier to effectively assessing and managing the CRF (Borneman, 2010).

The most appropriate way to symptoms management is to determine the underlying cause and to resolve it (Ahlberg, 2005). Knowles and his colleagues (2000) studied nurses' assessment of CRF and found that nurses believed there are many interventions that could be implemented to manage fatigue (e.g. rest and relaxation, symptoms control, patient and family education, dietary advice and balanced exercise). In addition, a systematic review for 28 studies found that exercise can be very beneficial for patient with CRF (Cramp, 2008).

The results of this study revealed that more than half of the nurses exhibit knowledge and positive beliefs and attitudes regarding CRF. This was evident in the results showed nurses' belief that there are other methods in addition to blood transfusion can be used to resolve CRF, and good night sleep is a source to relieve fatigue. Another positive attitude is that nurses in this study agreed with past studies in consideration of promoting energy conservation (sleep at night, balance between rest and activity, and maintain adequate nutrition) as successful options to manage CRF (Barsevick et al, 2004; Mustian et al. 2007). However, there was a lack of knowledge related to life threatening consequences of CRF such as reduced treatment dose, treatment delay and premature death in 22% of the nurses.

#### **Impact of Fatigue on Patients' Outcomes**

The results generated from this study provide interesting findings regarding to nurses' understanding of how CRF could influence patients' outcomes where the majority recognized that CRF influence all aspects

of patients' lives. A strong evidence from the literature showed that fatigue has a negative impact on cancer patient quality of life (Kim, 2008; Stone, 2003; Van den, 2009). For example, the results of a cross sectional study was conducted among 368 health care providers of cancer patients in United Kingdom revealed that health care providers felt that fatigue had greatly affected patients' ability to work, to enjoy life, and to enjoy sex with their partners (Stone, 2003).

Although past studies confirmed that CRF adversely influence the quality of children life including their physical activities (Yilmaz, 2012), the findings of this study showed that the majority of nurses believed that CRF was not associated with reducing the children activities. In addition, there was a lack of knowledge related to life threatening consequences of CRF such as reduced treatment dose, treatment delay and premature death. This reported by 22% of the nurses in this study. The lack of nurses' knowledge attitudes related to fatigue exhibited in this study is similar to past studies results in different parts of the world (Brimmer, 2010).

#### **6. Conclusion**

The results of this study reflect that nurses had a reasonable knowledge in regards to some issues of CRF (incidence, pathophysiology, management and patients' outcomes). However, they have negative attitudes and lack of knowledge about CRF assessment and adverse consequences of CRF. This study identifies the deficiency in the knowledge and attitudes of nurses toward CRF, thus, developing educational and training programs for nurses is needed. The expansion and advancement of nurses' knowledge, and improving their attitudes toward CRF could have a positive influence on the quality of care provided to the cancer patients.

The findings of the present study need to be viewed in general context of the study's limitations. For example, this study was conducted in one specialized hospital with a limited sample size of nurses which may limit the generalization of the findings to global population. Whilst the limitations of this study are acknowledged, yet, the findings draw attention to prepare competent nurses to care for cancer patients. Promoting education programs, that focus on acquiring skills of symptoms management, can aid in preparing proficient nurses with qualities that help in improving cancer patients' quality of life, and thus decrease costs related to the prolonged stay in the hospitals due to unmanaged fatigue.

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