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Original Article

Health Management and Policy Section

The Impact of Evidence-Based Practices on Postoperative Pain in Patients undergoing Gastrointestinal Surgery in Amiralmomenin Hospital in Zabol During 2014-2015

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ABSTRACT

Introduction: The Evidence-Based Practices (EBP), have gained considerable ground in treatment and care, increases the quality of nurses' clinical care. Yet EBP is less frequently employed despite its efficiency and importance. Pain management is an important component of nursing care and sufficient pain control has still remained as a challenge despite routine nursing practices that are already provided.

Aim: The present study intended to define the impact of evidence-based nursing practices on postoperative pain in patients undergoing gastrointestinal surgery.

Materials and Methods: The present study was a single group quasi-experimental study with before/after design. The study was conducted in the General Surgery Departments of the Amiralmomenin Hospital in Zabol during 2014-2015. A purposive sampling method was used to study 55 patients undergoing abdominal surgery. The data collection tool was a questionnaire. The patients pain severity was defined before and after implementing evidence-based practices. The collected data were analysed in SPSS using descriptive statistics and inferential statistics.

Results: The results showed that 61.8% of patients experienced severe postoperative pain. The mean perceived pain ratings in women and men were 7.88±1.78 and 9.42±0.81, respectively. The mean pain intensity was 8.48±1.66 before the intervention and reached 7.16±1.71 after the intervention, which was significant based on Kruskal-Wallis test (p=0.003). The mean postoperative pain experienced by the patients (p<0.01) and pain-relief following the intervention (p=0.002) was significant for gender.

Conclusion: This study suggests that a high percentage of patients experienced acute postoperative pain despite routine nursing care, while evidence-based nursing practices could significantly alleviate pain.

Keywords: Evidence-based medicine, Surgery, Pain

INTRODUCTION

Surgeries are applied in treating numerous diseases [1]. More than hundreds of millions of patients undergo surgery annually and they experience postoperative pain as the most common nursing problem [2].

Following a surgery, the pain receptors are stimulated and cause pain as a result of incision, soft tissue injury, severed nerve fibers, as well as stretching forces that are imposed on tissues [3]. Pain is an unpleasant feeling and an emotional experience which is justified by actual or potential tissue damage or similar injuries [4]. Acute pain stimulates stress response and severely affects heart and immune system. The transmission of pain increases muscle contractions and acts like a local vasoconstrictor. The occurrence of local ischemia stimulates pain receptors more and the transmission of these harmful waves increases heart's need for oxygen. The stress response of hypothalamus increases blood viscosity and platelet adhesion, and eventually causes thromboembolism and pulmonary embolism [5]. Pain can also lead to patient dissatisfaction, prolonged hospital stay and increased healthcare costs [6]. Furthermore, the postoperative pain is among primary sources of fear and stress for patients and causes anger, irritation, resentment and ineffective communication between patients and physicians/nurses [7-9].

Nurses have the maximum contact with patients since they represent as the largest healthcare providers. Therefore, they play a significant role in pain assessment and management [10]. Pain management is considered an important component in healthcare delivery, so the American Pain Society refers to pain using the term "the fifth vital sign" to emphasize its importance and raise knowledge of healthcare providers about controlling it [11]. Insufficient pain control still remains a challenge despite evidence that supports postoperative pain management [12] Thus, nursing cares can significantly improve the results of clinical care if they are based on scientific research findings [13].

The Evidence-Based Practice (EBP) is defined as the use of scientific evidence in order to improve clinical decision makings and procedures. EBP is the basis for advanced nursing practices, but it is not employed in all situations due to the lack of required skills [14]. Implementation of EBP in nursing can fill the gap between research and clinical practices and develop professional identity of nurses [15]. Applying EBP helps use to utilize large data in the shortest time, carry out practices with the most efficient and best standard methods, ensure provision of accurate care services, improve nursing care quality, and improve health status and patient outcomes. Further, it also improve patient satisfaction, support high quality care and wise decision making in a supportive environment, pay specific attention to research evidence in nursing practices [16].

Despite the importance of EBP in nursing and the necessity of using novel scientific methods in postoperative pain control as the major component of healthcare, several studies suggest that only 38% of nursing cares are based on research results [17] . Drew et

al., showed that instructions provided from the best resources can properly guide required practices in cardiac care [18]. Wang and Lin also showed that proper scientific interventions can reduce the pain and stress in patients undergoing abdominal surgery in a medical centers in southern Taiwan [19]. Nezamzadeh et al., designed a guideline for EBP in patients with angina pectoris and they proved the efficiency of EBP guideline in improving nursing care indices [20]. The present study intended to investigate the impact and importance of EBP in nursing care on reducing postoperative pain in patients undergoing gastrointestinal surgery. The considered fact is untreated acute pain which has the potential to have significant physiological and psychological effects and current traditional methods have proved inefficient in pain management.

MATERIALS AND METHODS

Design

The present quasi-experimental study was conducted on single group of 55 patients and pain assessment was done before and after surgery. The research objective was investigating the impact of EBP on perception of postoperative pain in patients undergoing abdominal surgery (appendectomy, laparoscopic cholecystectomy, inguinal and femoral hernia repair) in the General Surgery Departments of the Amiralmomenin Hospital in Zabol during 2014-2015.

Data collection

The first research phase involved making necessary arrangements and obtaining the approval for conducting the research. Following that, the researchers used purposive sampling technique to choose patients who met the inclusion criteria including orientation to time, place and person; being in the age group of 15-65 years, informed consent; having no addiction to opioids; having no pain caused by other diseases such as cancer. The subjects were briefed on the study and methods, and their consents were obtained. Then the data were collected by filling out demographic, clinical and McGill Pain questionnaires [21]. Visual Analogue Scale is a measurement instrument in a 10-cm line, where 0 stands for "No Pain" and 10 stands for "Extreme Pain". This questionnaire was developed by McGill in 1998 and numerous Iranian researchers have reported its reliability and validity [22,23]. The content validity was confirmed by 10 experts in Nursing and clinicians fields, and reliability was assessed through Cronbach's alpha in a pilot study (with correlation coefficient of 0.9). The score range of the pain scale was 0-10, where 0-4 indicated minimal pain, 5-7 indicated mild pain, 8-9 indicated severe pain, and 10 indicated extreme pain. The second research phase involved implementing evidence-based care and education.

So EBP nursing guidelines for patients undergoing gastrointestinal surgery was used while the focus of the study was on pain management. The procedures were extracted using Stetler model of research including: 1) preparation; 2) validation; 3) comparative evaluation; 4) application and implementation [24].

Phase I (preparation) included identification of objectives and challenges to caring for patients and problem definition, phase II (validation) included assessment of published studies with an EBP approach and confirmation of guidelines by conducting a survey of faculty members, phase III (comparative evaluation) included determination of feasibility of guidelines in Departments of Surgery at Amiralmomenin Hospital in Zabol, and phase IV (application and implementation) included problem definition, assessing expected outcomes and providing evidence-based nursing recommendations for pain management. So the practices were outlined for patients undergoing gastronomic surgery. These practices included: convenient position and relative resting; skin care and back massage; pain intensity assessment; distracting activities; imagery therapy and deep breathing techniques. The duration of intervention ranged 1-2 hours according to patient's condition. The pain intensity questionnaires were once again filled by the samples after completion of intervention.

Ethical consideration

The goals of intervention were explained to subjects and consent forms completed. The study was approved by ethical committee of the Zabol University of Medical Sciences, and then permission for investigation was obtained.

STATISTICAL ANALYSIS

The collected data were analysed in SPSS Version 21 using descriptive statistics (frequency distribution, mean and standard deviation) and inferential statistics Pearson's correlation coefficient, independent t-test, and ANOVA). The levels of p-value and confidence coefficient were considered 0.05 and 95%, respectively.

RESULTS

The demographic data of 55 participants showed that the mean age was 35.43±12.60 (range: 15 to 56 years), while 34 patients (61.8%) were women and 21 patients (38.2%) were men. Forty participants were married (72.7%) and 27 patients were high school graduates (49.1%). More than 78% of the patients were undergoing surgery for the first time (43 patients) and 12 (21.8%) were experiencing their second surgery. The patients were undergoing different abdominal surgery with 56.4% having appendectomy, 36.4% (20 patients) having cholecystectomy and 7.3% (4 patients) having hernia repair surgery. Approximately half of the participants experienced severe pain (41.8%) and 20% experienced extreme pain. The results of Pearson's correlation coefficient did not show a significant difference in mean pain intensity changes for participants' age (p=0.108, r=0.43). The differences between mean pain intensity were not significant for demographic variables of marital status (p=0.213), history of surgery (p=0.367) (using independent t-test) and level of education (p=0.073) (using ANOVA). However, independent t-test indicated a significance relationship between mean pain intensity and gender (p=0.002) [Table/Fig-1].

Variables		Frequency	Mean±SD	Independent Sample T-test Results
Gender	Female	34	0.82±1.24	p=0.002 T=-3.22 Df=53
	Male	21	2.09±1.67	
Marital status	Single	15	1.37±1.27	p=0.213 T=1.25 Df=53
	Married	40	1.15±1.61	
The number of surgery	First surgery	43	1.20±1.58	p=0.367 T=-0.909 Df=53
	Second surgery	12	1.66±1.37	

[Table/Fig-1]: Comparison between mean values of pain intensity in studied units according to three variables of gender, marital status, history of surgery.

The normality of data was assessed using Kolmogorov-Smirnov test and since the data were not normally distributed, a non-parametric test was employed for the variable of perceived pain while parametric-test was used for the variable of mean pain intensity, which was normally distributed.

The research findings showed that the perceived pain level reduced from 8.47±1.66 before the intervention to 7.16±1.71 after the intervention and this reduction was statistically significant (p=0.03) [Table/Fig-2].

DISCUSSION

The findings of the present study showed that 61.8% of the patients experienced severe and extreme postoperative pain and

Perceived pain	Mean and standard deviation of perceived pain		p-value
	Before intervention	After intervention	
	8.47±1.66	7.16±1.71	p=0.03

[Table/Fig-2]: The distribution of mean and standard deviation of perceived pain before and after implementing evidence-based practices.

38.2% experienced moderate pain following an abdominal surgery. These results are aligned with findings of Shahdadi H et al., study who reported severe pain in 62% of the patients undergoing acute abdominal surgery [25]. However, the study of Tavakoli et al., suggested that 78.3% of the patients undergoing surgery in Kerman's teaching hospitals experienced a worst-possible, severe and very severe pain for the first 24 hours postoperatively [26]. The study of Eghbali et al., titled "Patients' viewpoints concerning postoperative pain management" showed that 92% of patients experienced postoperative pain [27]. J Watt-Watson reported moderate to severe postoperative pain in most patients [28]. Sommer et al., reported that 41% of patients experienced moderate or severe postoperative pain [29]. The results of these studies indicate the necessity of postoperative pain management which is of particular importance to nursing care. The above data also suggest that sufficient pain management still remains an unsolved problem and current pain management practices as well as traditional nursing practices are not efficient and delay expected outcomes.

The results of the present study suggest that EBP could significantly reduce postoperative pain. The mean perceived pain by patients reduced from 8.47±1.66 before the intervention to 7.16±1.1 after implementing EBP. EBP provides healthcare solutions by integrating the best scientific research results and clinical expertise with patients' desires and values. Implementing EBP results in effective decision making, prevents casual repetitive care provision, facilitates the provision of various nursing practices, and enhances the capability of healthcare providers to maintain and improve patients' health [30].

Carlson objected that no proper postoperative pain management has been provided during previous 30 years and suggested that employing EBP is essential in efficient postoperative pain control. His research result showed that nurses need to use different sources of information including professional nursing journals to identify solutions to clinical problems and use EBP to soothe postoperative pain [31].

The results from the current study showed that nursing cares based on scientific research results can significantly improve care outcomes. The research of Motahediyantabrizi et al., showed that care guidelines collected based on reliable resources could reduce the complications in patients undergoing dialysis [32], which is aligned with the results of the present study except that they studied patients receiving dialysis. The studies of Considine, Melnyk et al., Drew et al., and Gilber et al., all indicated nursing care quality and performance improvement by employing EBP [18,33-35].

This study reported the mean values of perceived pain as 7.88±1.78 and 9.42±0.81 in women and men, respectively. This finding suggests that men experience more postoperative pain. The study of Tavakoli et al., showed lower pain tolerance in men [26] while several clinical studies, including Cepeda and Carr and Taenzer et al., showed that postoperative pain intensity was higher in women than in men, which is not aligned with the current research results [35,36]. The results of Rosseland's study determined gender as a risk factor in developing pain following the initial surgery. The same study reported significantly higher prevalence of moderate to severe pain in women [37]. These findings can be explained by the fact that pain perception varies according to gender and it depends on factors including age, underlying diseases, and mental and emotional state.

LIMITATION

The limitation of our study was unwillingness to participate in the study, hard access to the sample population.

CONCLUSION

The participants of the present study experienced severe postoperative pain although routine pain-relieving interventions were practiced. On the other hand, EBP in nursing significantly reduced pain especially in men. Therefore, it is recommended to carry out extensive studies on EBP in nursing in different clinical settings. Consequently, patients' health would be improved by providing the results of such studies to students and nursing personnel.

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