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Effect of family presence on pain and anxiety during invasive nursing procedures in an emergency department: A randomized controlled experimental study

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ABSTRACT

Background: Patients generally prefer to have their family present during medical or nursing interventions. Family presence is assumed to reduce anxiety, especially during painful interventions.
Aim: This study employed a randomized controlled experimental design to determine the effects of family presence on pain and anxiety during invasive nursing procedures.
Method: The study population consisted of patients hospitalized in the observation unit of the internal medicine section in the emergency department of a university hospital. The sample comprised 138 patients assigned into the experimental and control groups by drawing lots. The invasive nursing procedure was carried out in the presence of family members, for members of the experimental group, and without family members, for members of the control group. Thus, the effects of family presence on pain and anxiety during the administration of an invasive nursing procedure to patients were analyzed.
Results: The results showed that members of the experimental and control groups did not differ with respect to the pain and state anxiety scores during the intervention.
Conclusion: Family presence does not influence the participants' pain and anxiety during an invasive nursing procedure. Thus, the decision regarding family presence during such procedures should be based on patient preference.

1. Introduction

An individual with a health problem generally prefers to have his or her family present during medical or nursing interventions. Family presence has been shown to reduce anxiety, especially during painful interventions (Çelik, 2013a). It is also believed to reduce pain perception. A decrease in a patient's anxiety and perceived pain increases compliance with care and treatment procedures, thus quickening the recovery process (Zempsky and Cravero, 2004). However, no study has explored the effects of family presence on adults' anxiety and pain levels during invasive nursing interventions.

2. Background

The usage of the term "emergency care" often evokes fear and anxiety among patients and their families. Hence, families who bring patients to the emergency department face a difficult situation. As a means of coming to terms with the situation, they solicit detailed information regarding the intervention and prognosis of the disease (Fry et al., 2014; Holzhauser et al., 2006; Madden and Condon, 2007).

Family presence is defined as the presence of the family in an area where they can have visual or physical contact with the patient during invasive procedures and resuscitation in healthcare institutions (Emergency Nurses Association [ENA], 2010; McGahey-Oakland et al., 2007). In many professional healthcare establishments, family presence is recommended during diagnosis, care, and treatment procedures; directives regarding family presence during these procedures have been prepared. The first of these directives was adopted in 1994 and revised in September 2010 by the Emergency Nurses Association, to endorse family presence (Baumhover and Hughes, 2009).

A holistic health service includes both the patient and the family (Duran et al., 2007). Although the family's participation in invasive

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procedures has, for the most part, drawn attention in pediatric literature, it is also discussed in literature on other departments involving the provision of health services to individuals at various life stages (Boudreaux et al., 2002).

The ill individual experiences anxiety due to the effects of the disease and the environmental change caused by hospitalization. Some of the factors that cause anxiety among hospitalized individuals are exposure to painful processes, being away from one's family, losing one's job, being in a foreign environment, and exposure to unknown tools and processes (Çetinkaya and Karabulut, 2010). Anxiety generally increases pain perception and, in turn, pain results in feelings of anxiety (Ashkenazy and DeKeyser-Ganz, 2011).

Pain is an important sensation in humans and is the most commonly encountered complaint during routine clinical practice (Mangurten et al., 2006). The presence of family during invasive nursing procedures could serve as a pain-reducing strategy for adult patients. When anxiety develops due to hospital admission, the individual finds it difficult to employ normal coping skills and, instead, prefers the presence of family (Kayahan and Sertbaş, 2007).

Previously, effects of family presence on pain and anxiety were mostly examined during resuscitation or in pediatrics clinics. (Baumhover and Hughes, 2009; Benjamin et al., 2004; Boie and Moore, 1999; Boudreaux et al., 2002; Çelik, 2013a; Çolak and Aslan-Eti, 2009; Dougal et al., 2011; Duran et al., 2007; Holzhauser et al., 2006; Madden and Condon, 2007; Mangurten et al., 2006; McGahey-Oakland et al., 2007; Meyers et al., 2000; Mortelmans et al., 2009; Tüfekçi and Erci, 2007). No experimental studies could be found about invasive nursing procedures. The current study about the effect of family presence on pain and anxiety during invasive nursing procedures in an emergency department is intended to fill this gap in the literature.

3. Method

3.1. Study purpose and design

A randomized controlled experimental design was used to determine the effects of family presence on pain and anxiety levels during invasive nursing procedures.

3.2. Research hypotheses

H_{1A}. Family presence during invasive nursing procedures reduces the pain perceived by the patient. Family presence during invasive nursing procedures, in other words family support, helps lessen the pain patients feel.

H_{1B}. Family presence during invasive nursing procedures reduces patient anxiety. Family presence decreases patients' anxiety during invasive nursing procedures and patient can handle the current situation better with support from family members.

3.3. Study variables

The independent variables were family presence and type of invasive nursing procedure undergone (peripheral catheterization, intravenous (IV) and/or intramuscular (IM) administration of medicine, and bloodletting) and the dependent variables were perceived pain and anxiety.

3.4. Study population and sampling

This study was conducted from February 2012 to February 2013, in the observation unit of the internal medicine section located in the emergency department of a university hospital in Istanbul. Sampling for the research was calculated based upon data from the emergency department from 2011. According to the 2011 data, the emergency department admitted a total of 380 patients. A sampling calculation pilot study was carried out with a total of 20 cases (10 experimental and 10 control), and a power analysis was performed with the collected data. The mean and the standard deviation for state anxiety were calculated, using data obtained from the pilot study. A 2-point difference in relation to the mean (with a point increase of approximately 20%) indicated a reduction in state anxiety. The Type I error rate indicating significance at an estimated standard deviation level of ±5 was 0.05. When power was 0.80 ($\alpha = 0.05$, $1 - \beta = 0.20$), the minimum sample size required was 100. Twenty more were added to each group, to compensate for the risk of data and case loss. Thus, a total sample size of 140 was decided upon. However, the study was conducted on only 138 individuals (experimental group = 69, control group = 69), because a patient in the control group decided to withdraw from the study, and a patient in the experimental group developed a complication during the intervention. Cases were assigned to the experimental and control groups through a manual method of drawing lots. The following inclusion criteria were used:

- Being 18–75 years old,
- Being open to communication and cooperation,
- Undergoing an invasive nursing procedure during hospitalization in the emergency unit, and
- Having given informed consent for participation in the study.

Those who developed complications during the intervention or were unaccompanied were excluded.

3.5. Data collection instruments

3.5.1. The patient information form

It was developed in accordance with available literature (Benjamin et al., 2004; Çelik, 2013a; Mortelmans et al., 2009; Tüfekçi and Erci, 2007) and captured information on socio-demographic variables such as gender, age, marital status, living arrangements, educational status, occupation, and medical diagnosis.

3.5.2. The Barthel activities of daily living index

An individual's ability to perform daily activities without help is assessed through the Barthel Index. This index was developed in 1965 by Mahoney and Barthel, and is often used in Turkey to assess activities of daily living. Individuals' dependency–independency status has been shown to influence pain and anxiety (Şimşek et al., 2011). Therefore, patients' activities of daily living status was assessed using the Barthel index since it is a potential confounder.

3.5.3. The observation form related to the invasive nursing procedure

This form was used to collect information on the type of intervention, details of previous administration of the intervention, and companion's relationship with the patient (spouse, sibling, etc.).

3.5.4. The pain scale

The participants were asked to indicate the severity of the pain felt after the invasive nursing procedure on the Numeric Rating Scale (NRS). The NRS is a practical rating scale used on conscious patients who can independently express their pain levels. Pain is rated on a scale of 0 to 10 (0 = no pain; 10 = unbearable pain) (Yee et al., 2006). The NRS was adopted as it is practical and suitable for the assessment of the pain related to invasive nursing procedures.

3.5.5. The state-trait anxiety inventory

This scale was developed by Spielberger et al. (1970) to measure the anxiety levels of individuals aged 14 years and older; it was