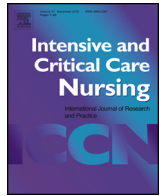




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Fulfilling the psychological and information need of the family members of critically ill patients using interactive mobile technology: A randomised controlled trial

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ABSTRACT

Background: Intensive care nurses may have an important role in empowering families by providing psychological support and fulfilling the family's pivotal need for information.

Aim: To determine whether 'education of families by tab' about the patient's condition was more associated with improved anxiety, stress, and depression levels than the 'education of families by routine'.

Research design: A randomized control trial of 74 main family caregivers (intervention: 39; control: 35).

Setting: An adult intensive care unit.

Main outcome measures: Depression Anxiety Stress Scale, and Communication and Physical Comfort Scale.

Results: Although information need satisfaction was not significantly different between intervention and control groups, the former reported significantly better depression score on Depression Anxiety Stress Scale comparing to the control group ($p < 0.01$; $\eta^2 = 0.09$) with a medium effect size. Reduction of anxiety in the intervention group were clinically significant.

Conclusion: The results suggest that use of 'education of family by tab' is promising for intensive care nurses to provide psychological support for family members. More studies are needed to investigate this aspect of family care for better psychological support and information need satisfaction that contributes to the evidence-based practice of intensive care nursing.

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Implications for clinical practice:

- This study highlights the potential for the use of interactive mobile technology for family education of the critically ill patients.
- Results generated from this study shed light on how ICU nurses may provide psychologically support to family members of critically ill patients through information provision and education with the interactive mobile technology (tabs).
- This study highlighted the potential of such technology in the ICU to enhance satisfaction of information/education for family members.

Introduction

There have been numerous studies that identify needs of family members in the intensive care unit (ICU). Literature has revealed that information is one of the top needs as rated by family members (Noor et al., 2012; Jacob et al., 2016; Chien et al., 2006; Kinrade et al., 2009; Lee et al., 2000; Wong, 1995). This information should include, for example, the patient's condition, medical procedures, as well as understanding why things are being done. A study by

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Damghi et al. (2008) found that ICU staff do not explain enough about the medical equipment used on patients, or about the medical procedures. It can be difficult for ICU nurses to explain technical and medical procedures to family members who do not have a medical background. Not knowing however, may lead to family members feeling helpless; as well as other psychological effects such as anxiety and pressure, especially when they are required to make critical decisions on behalf of the patient. This is demanded on top of other strong emotions including shock, denial, anger, despair, guilt and the fear of the loss of a family member (Verhaeghe et al., 2005). Rukholm et al. (1991) found that the need for information is strongly related to the levels of state anxiety (anxiety experienced in face of threatening demands or dangers). Their study showed that anxiety decreased when information was provided and this was consistent with the study by Chien et al. (2006) about the relationship of needs-based education and anxiety of the ICU patient's families. As information is very important for the relatives of patients in ICU, Bijttebier et al. (2000) found that such a need was even independent from demographic influences between different relatives. A literature review of 46 studies concluded that information appeared to be the greatest need of family members of critically ill patients (Verhaeghe et al., 2005). Providing adequate, accurate and comprehensible information is very important to the psychological well-being of family members of ICU patients.

When it comes to receiving information, Damghi et al. (2008) found that families with high levels of education may be more demanding. This was especially valid when they were confronted with unfamiliar medical and technical terms. Ward (2001) observed that inappropriate responses to the needs of family member might lead to heightened levels of anxiety, fear and misunderstanding. Although families with higher education may be more demanding for information, it is also important for families with lower education to receive accurate information, and that it is provided in an understandable manner (Davis-Martin, 1993; Freichels, 1991; Molter, 1978). Otherwise, there may be detrimental consequences; for example, loss of family trust and impairment of the family's ability to make appropriate decisions for the patient (Damghi et al., 2008). Family members seek control by searching for more information in different ways. It is believed that ICU nurses can have an important role in empowering families by providing psychological support and fulfilling the family's pivotal need for information (Jamerson et al., 1996; Plowfield, 1999).

Information technology

Utilisation of advanced technology has always been an essential component of care for the patients in the ICU. Lu et al. (2005) found that mobile computing is becoming an important tool in healthcare and its popularity has risen in the past five years. Many, if not all, healthcare workers are likely to be familiar with the latest mobile tablet computers (tabs). They now play an important part in our social lives. Tabs have a potential to aid improvement of health-care delivery; in particular the educational aspect of family members in ICU in order to fulfill their information need. Tabs may act as a form of teaching aid for more effective technical explanations of the medical and nursing procedures and prognosis, etc., to the family members of ICU patients.

Lu et al. (2005) consistently found from a literature review that mobile computing added value to clinical practice. For example, it allowed clinicians to access clinical information promptly when and where it was needed; it also improved the exchange in information and hence reduced medical errors; and it provided feedback to clinicians for clinical decision making at the point of care. Overall, hand held computers like tabs were found to enhance and promote communication. Doctors perceived that handheld computer applications like those performed through a tab improved the pro-

ductivity and interactions with patients (McAlearney et al., 2004). They also felt that the quality of patient care and services were promoted. Nurses also reported that information technologies as such are a positive contribution to patient care and the nurse-patient relationship (Lupianez-Villanueva et al., 2011). However, there are limited empirical studies available that investigate and evaluate effects of the use of tabs, in particular its potential ability to be used as an aid to psychological support and satisfy information need of the ICU patient's main family members (MFC).

In summary, technology is a tool that supports knowledge building (Jonassen et al., 2008), it acts as an information vehicle and social medium for exploring knowledge that enhances learning and communication. It is an intellectual partner to promote learning by reflecting. The use of technology, in this case the tabs, is believed to be able to establish the knowledge base about condition and current care of critically ill patients for the MFC; to allow them a means to accessing their needed information; to engage their dialogue with nurses; and to help them articulate what they have known and learnt through the technology. Satisfaction of such information need of the family members is a factor that could contribute to reduction of their anxiety and stress (Shorofi et al., 2016). Based on this understanding, outcomes of the present study were psychological well-being in terms of stress, anxiety, and depressive symptoms; and satisfaction of MFC to the information need and education.

Study aim and objectives

The purpose of this study was to determine whether *education of families by tab* (EF-T) about the patient's condition was associated with improved anxiety, stress and depression levels compared to the *education of families by routine* (EF-R). The null hypothesis of the study was that there would be no improved psychological status of MFC, after communication and education by nurses with the aid of a Tab

The objectives of the study were to,

1. evaluate the stress, anxiety and depression levels of MFC after EF-T or the EF-R (control)
2. evaluate the satisfaction of MFC after EF-T or the EF-R (control).

Methods

Study design and setting

The study was a randomised control trial (RCT) conducted in an adult ICU of a public district hospital, in which participants from the intervention and control group were required to complete a set of questionnaires before and after EF-T or EF-R. No existing similar study that compared the use of tabs versus routine family education by psychological responses in the context of critical care nursing could be located from literature. A similar study that investigated a key outcome as family information need satisfaction by comparing the effect of needs-based education versus the routine care found a mean difference of 5.08 (standard deviations = 7.13 and 6.78 respectively) in the information need domain of CCFNI (Critical Care Family Needs Intervention) between the two groups (Chien et al., 2006). With a power of 80% and an alpha of 0.05, the calculated sample size was 30 in the EF-T group and EF-R group respectively (Lenth, 2009). With an estimated attrition rate of 25%, we anticipated to recruit 40 participants for each group.

Participants, recruitment and data collection procedure

Main family caregivers of critically ill patients were recruited for the study. A main family caregiver is defined as the person who lives with the critically ill patient, and/or will be the main person

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