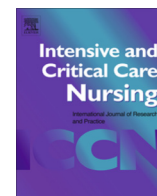




Contents lists available at ScienceDirect

## Intensive &amp; Critical Care Nursing

journal homepage: [www.elsevier.com/icc](http://www.elsevier.com/icc)

## The effect of provision of information on serum cortisol in patients transferred from the coronary care unit to the general ward: A randomised controlled trial

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## ARTICLE INFO

## Article history:

Accepted 13 February 2018

Available online xxx

## Keywords:

Educational pamphlet  
Patient transfer  
Transfer anxiety  
Serum level of cortisol  
Coronary care unit  
General ward

## ABSTRACT

**Background and aim:** Patients' transfer from coronary care units to general wards is a main source of anxiety for patients. Transfer anxiety is due to either lack of patients' knowledge or inadequacy of transfer-related information to patients. This study aimed to evaluate the effect of provision of information on the serum cortisol level, as an indicator of anxiety, in patients transferred from the coronary care unit to the general ward.

**Methods:** This pretest-posttest randomised clinical trial was conducted on fifty patients transferred from coronary care units to general wards. Patients were selected using a purposeful sampling method and randomly were allocated to control and intervention groups. After taking blood samples for a baseline cortisol measurement, the patients in the control group received routine verbal transfer-related information. The patients in the intervention group were provided with an educational pamphlet consisting of textual and visual data about patients' transfer, continuity of care and the target general ward. The second and the third blood samples were taken for a cortisol measurement half an hour after informing the patients about the transfer order and half an hour after entrance to the general ward, respectively. Descriptive and inferential statistics via the SPSS software v. 21 was used for data analysis.

**Results:** No statistically significant differences were reported between the groups in terms of demographic characteristics ( $p > 0.05$ ). The serum levels of cortisol in the intervention group decreased from 40.16 (microgram per decilitre) at the baseline to 36.52 and 34.34 at the second and the third measurement time points, respectively. Conversely, the serum levels of cortisol in the control group increased from 37.48 at the baseline to 40.52 and 41.52 at the second- and the third-time points, respectively. While no statistically significant difference was reported between the groups in the baseline serum level of cortisol, between-group differences were statistically significant at the second- and the third-time points ( $p < 0.05$ ).

**Conclusion:** Provision of transfer-related information can reduce transfer anxiety among patients, that should be transferred from coronary care units to general wards.

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### Implications for Clinical Practice

- Provision of Information decreases blood cortisol level as stress hormone.
- Provision of Information is a valuable intervention to decrease the stress of patients who were to be transferred from coronary care units to general hospital wards.
- Provision of Information provides an effective and non-pharmacological method for reducing transfer anxiety in patients.

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## Introduction

Hospitalised patients in coronary care units may be transferred to general wards or other hospitals to receive appropriate care (Meleis et al., 2000). By definition, transfer is the process of transition from one step to another, which is associated with some changes (Chaboyer, 2005). After the acute phase of the disease, patients in intensive and coronary care units usually experience several courses of transfer. One of the most important transfer courses happens from the coronary care unit to general ward (Chaboyer, 2005; Tel and Tel, 2006).

While patients' transfer from the coronary care unit to general ward is a routine task for healthcare providers, it may create different feelings in patients. For instance, some patients may consider it a positive step in their recovery, but others may have negative attitudes towards it and consider it a state of reduced monitoring and care (Barbetti, 2003; Chaboyer, 2005). Consequently, transfer without adequate preparation can cause "transfer anxiety" in patients (Kinney, 2002). As a particular type of separation anxiety, transfer anxiety is developed due to transfer from a safe and familiar environment to an unfamiliar one (Brodsky-Israeli, 2011).

Anxiety is associated with different negative outcomes such the development of physical symptoms, prolonged hospital stay, the need for re-hospitalisation in coronary care units and increased workloads of nurses (Cutler, 1995; Griffiths, 1999). It can also stimulate the sympathetic nervous system and adrenal glands, release epinephrine and norepinephrine, which subsequently increases heart rate, blood pressure and respiratory rate. Also, it can activate the hypothalamus-pituitary-adrenal axis and thereby, increases the serum level of cortisol (Comer, 2012). Moreover, patients who have passed the acute phase of their illnesses in coronary care units may experience high levels of transfer anxiety and develop post-intensive care syndrome (Davidson, 2012). This syndrome is characterised by the serious deterioration of patients' physical, mental and cognitive conditions, which may last for long periods of time after hospital discharge (Needham et al., 2012; Davidson, 2012).

Given the complexity of health conditions in critically-ill patients, decisions about patients' transfer to the general hospital ward are difficult and risky (Stelfox et al., 2013). Making the decision without specialised consultations and necessary preparations can hinder recovery and result in re-hospitalisation in the coronary care unit (Bunn, 2007; Whittaker and Ball, 2000). Consequently, to maintain the continuity and integrity of care and prevent stress and anxiety, patients' transfer from the coronary care unit to other hospital wards need to be made in a supportive condition and after making necessary preparations (Endacott, 2010).

One of the main causes of transfer anxiety is the lack or inadequacy of transfer-related information in patients (Leith, 1998). According to Bench and Day (2010), direct relationships between the fear of unknowns and anxiety, patients' lack of knowledge about care and communication in the general ward causes great transfer anxiety (Bench and Day, 2010). Therefore, nurses need to adopt appropriate strategies to provide adequate information to patients and reduce their transfer anxiety (Bunn, 2007). Such strategies can improve nursing care and contact between nurses, patients and their family members, as well as facilitate patients' transfer in the presence of family members (Brooke et al., 2012).

However, there is a lack of knowledge on the effectiveness of such strategies (Tel and Tel, 2006). One of the common problems in both intensive care and coronary care units is anxiety in patients who should be transferred to general wards. While there are some studies on transfer anxiety and the role of nurses for reducing it in intensive care units, a few investigations have explained this type of anxiety in coronary care units. Therefore, the present study aimed to evaluate the effect of provision of information on the

serum cortisol level, as an indicator of anxiety, in patients transferred from the coronary care unit to the general ward (see Fig. 1).

## Methods

This pretest-posttest randomised clinical trial was conducted in patients transferred from the coronary care unit to the general ward of a large teaching hospital in an urban area of Iran.

Given a confidence level of 95% and a power of 80%, 50 eligible patients were recruited using a convenience method and randomly allocated to control and intervention groups. For random allocation, a computer programme was used to generate a table of fifty random numbers. Next, the first 25 numbers were allocated to the control group, and later 25 numbers were for the intervention group. To control the potential bias caused by the researcher's knowledge of the sampling process, the head nurse of the coronary care unit were provided with 50 opaque envelopes containing the name of the patients. The researcher implemented the intervention for eligible patients chosen by the head nurse from the opaque envelopes.

Eligibility criteria were: transfer from the coronary care unit to a general ward, ability to understand and speak in Farsi, age more than eighteen years and at least a 24-hour stay in the coronary care unit. Exclusion criteria were changes in health conditions during the study including recovery or aggravation in health conditions diagnosed by the physician, undergoing invasive therapeutic procedures after transfer, willingness to participate in the study, and receiving medications that increased the serum level of cortisol such as corticosteroids, anticonvulsants, contraceptives and insulin.

## Data collection

A demographic questionnaire and a cortisol profile form were used for data collection. The demographic questionnaire was comprised of questions such as age, gender, level of income, education level, employment and marital status, underlying illness, length of hospital stay, and length of stay in the coronary care unit at the time of taking blood samples for cortisol measurements. The cortisol profile form included three items on the serum levels of cortisol measured as microgram per decilitre before the intervention (T1), half an hour after informing the patients about the transfer order (T2), and half an hour after the patients' entrance to the general hospital ward (T3) (Rasmuson et al., 1996). There were different methods for assessing patients' anxiety and the most common method was questionnaires (Gustad et al., 2008). However, patients who were to be transferred from a coronary care unit to a general ward may be too anxious to correctly answer questionnaires. Therefore, the level of patients' anxiety through measuring the serum level of cortisol was assessed in this study.

## Intervention

An educational pamphlet consisting of textual and visual material about transfer to the general ward was developed. Visual material provided information about the entrance door, nursing station, patient rooms, toilets and different parts of the target ward. Textual material included explanations about the process of patients' transfer, continuity of care and nurse-patient ratio in the general ward, equipment and geographical location, the general ward policies for healthcare visits, nutrition, blood samples for laboratory tests, family visits and discharge from the hospital.

Initially, a three-millilitre blood sample was obtained from each patient through a venepuncture. This sampling was conducted at 08:00–09:00 hrs, i.e. when the serum level of cortisol was at its highest level (20 microgram per decilitre) (Guyton and Hall, 2016). The concentration of cortisol in the blood was 20 microgram

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