Safety climate in healthcare:

An approach for improved error management

Extended Abstract

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Introduction

Errors in the provision of medical care are among the leading causes of death in developed countries. An extrapolation of two large US studies showed that at least 44,000 US patients die each year as a result of medical errors [1-2]. These findings suggest that deaths due to medical errors exceed the number attributable to the 8th-leading cause of death in the United States. In other words, in a given year more people die as a result of medical errors than from breast cancer (42,297) or AIDS (16, 516)[1]. Similar studies conducted in Australia, New Zealand, Denmark, Canada and Sweden demonstrated that medical errors in hospitals are a major problem not only in the US but in many developed health care systems [3-6].

In search of means to decrease medical errors, researchers have identified several factors that influence the incidence of medical errors. These factors include new technologies, human behavior, system engineering as well as safety climate [7-8]. Recently, several studies demonstrated a relationship between levels of safety climate and medical errors [8-11] and suggested that safety climate assessments could be a viable approach to assess the quality of health care delivery.

The aim of this study is to test whether there is a similar relationship between safety climate and medical errors in intensive care units. For this purpose we monitor medical errors in a 48 h survey and surface perception of safety climate in intensive care units.

Objectives

There is a significant research gap concerning the relationship of safety culture and medical errors. Furthermore, research in this area has not been optimal from a methodological point of view, as (secondary) archival data from medical records has been used in most studies. This is problematic as archival data is not as robust as primary data generated in the course of a dedicated study. Generally, research on safety climate is scarce in German-speaking countries and there are almost no studies that focus on high risk specialties. The proposed study aims at addressing these gaps. Therefore, the study pursues the following research objectives:

- To assess the frequency, characteristics and contributing factors of medical errors in intensive care units
- To assess eight distinct dimensions of safety climate in German-speaking intensive care units
- To demonstrate a relationship between safety climate and medical errors in intensive care units

Methods

The study will involve a target of 50 intensive care units in Germany, Austria, and Switzerland. Participating units will notify medical errors within a 48h registration period. Health care professionals on call will be asked to fill in an online safety climate questionnaire.

The study will generate three data sources: (1) the safety climate questionnaire, (2) a patient specific record of medical errors, (3) an ICU related questionnaire.

The safety climate questionnaire has been tested against validity, reliability, discrimination power and is applicable for both physicians and nurses [12]. The questionnaire depicts eight dimensions of safety climate. Respondents are asked to opt for one option on a 4 point Likert Scale with response categories ranging from strongly agree to strongly disagree. The survey will be made accessible to all physicians and nurses via a password protected online portal. Respondents will be provided with an internet link and password specific to their intensive care unit. Individual passwords will not be distributed to ensure anonymity.

Data on medical errors will be derived from a patient specific questionnaire filled in by physicians and nurses on call. The questionnaire will be made available at the bedside of each patient. This ensures that health care professionals see previous entries and, therefore, decreases the risk of double counting [13]. It covers the risk

exposure (e.g. number of medications received) as well as actual medical errors (e.g. medication error: wrong dose, wrong medication, wrong application, wrong time, missed medication). In addition, the questionnaire records items for the nine equivalents of nursing manpower use score (NEMS) as a surrogate marker for the amount of nursing workload and consequently the level of care provided to each patient [13-14].

The third data source is an intensive care unit related questionnaire. This questionnaire provides organizational characteristics such as ICU size (number of beds), occupancy, type (e.g. internist, operative, pediatric) and staff (e.g. nr. of physicians, nr. of nurses) of the intensive care unit.

Expected results

The proposed study aspires to better understand the relationship of safety climate and medical errors. We expect robust results on the frequency, characteristics and contributing factors of medical errors in intensive care units as well as on the perceived safety climate in intensive care units. The empirical data will enable us to investigate the hypothesis that higher levels of perceived safety climate will relate to lower rates of medical errors. Based on the literature published so far [8-9, 11, 15], we believe that this hypothesis will be verified.

The study will be the first safety culture survey with particular focus on intensive care. Given the fact that intensive care is one of the most complex and risk susceptible medical specialties [13, 16] the study could help to better understand associated factors and – in the long run – improve safety outcomes.

The study contributes as well from a methodological point of view. It applies the first safety climate questionnaire written in German and helps to further validate the survey against externals variables. This will help to refine and optimize the questionnaire for use in healthcare organizations. Ultimately, the survey could be applied as a predictive measurement for the susceptibility to medical errors.

Literature

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