



## Safety Culture in Neonatal Intensive Care Units in the Gaza Strip, Palestine: A Need for Policy Change



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### ABSTRACT

**Introduction:** Assessment of the prevailing safety culture within the Gazan health care system can be used to identify problem areas. Specifically, the need for improvements, raising awareness about patient safety, the identification and evaluation of existing safety programs and interventions for improving the safety culture. This study aims to assess the safety culture in the neonatal intensive care units (NICUs) in Gaza Strip hospitals and to assess the safety culture in regards to caregivers' characteristics.

**Methods:** In a cross-sectional study using a census sample, we surveyed all nurses and physicians working in at all the NICUs in the Gaza Strip, Palestine. The Safety Attitudes Questionnaire (SAQ) which includes six scales was used to assess participants' attitudes towards safety culture.

**Results:** The overall score for SAQ was 63.9. Domains' scores ranged between 55.5 (perception of management) and 71.8 (stress recognition). The scores reported by our participants fell below the 75 out of a possible score of 100, which was considered as a cut-off point for a positive score. Moreover, our results revealed substantial variation in safety culture domain scores among participating NICUs.

**Conclusion:** These results should be an indicator to our health care policy makers to modify current or adopt new health care policies to improve safety culture. It should also be a call to design customized programs for improving the safety culture in NICUs in the Gaza Strip.

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### Introduction

In spite of modern medical technology, continuing research, and advanced training facilities, safety issues are still one of the major problems in many health care systems (Haerkens, Jenkins, & van der Hoeven, 2012). Several international reports and studies (Baker et al., 2004; Haerkens et al., 2012; Kohn, Corrigan, & Donaldson, 2000; Levinson & General, 2010; Rothschild et al., 2005; Vincent, Neale, & Woloshynowych, 2001) showed that a high percentage of patients admitted to hospitals suffered from unintentional harm or adverse events that could be prevented in most cases. These adverse events do not only affect patients, but they also lead to an increased number of hospitalization days and increased hospital costs (Haerkens et al., 2012; Hoonhout et al., 2009; Miller, Elixhauser, & Zhan, 2003).

As a result, awareness about patient safety and the importance of safety culture has been gaining greater attention (Kohn et al., 2000; van der Starre, 2011). More efforts have been made to improve safety

measures (Haerkens et al., 2012) and more strict procedural guidelines, checklists, and safety programs have been implemented by several health care systems to provide safer care to patients (de Vries et al., 2010). Therefore, adopting an improved safety culture within hospital departments is now considered as one of the main features contributing to a better quality of care (Sexton et al., 2011).

Safety culture was defined by the Health and Safety Commission as "the product of individual and group values, attitudes, perceptions, competencies, and patterns of behavior that determine the commitment to, and the style and proficiency of, an organization's health and safety management" (Health and Safety Commission, 1993, p. 23). A strong safety culture in health care organizations contributes to the promotion of an environment that enables the provision of safe care (Hamdan, 2013) and therefore, reduces the number of errors. It is important to recognize that the potential for errors always exists and that teamwork and communication are the basis to guarantee change towards safer care (American Academy of Pediatrics, 2001). Assessment of prevailing safety culture within the health care system can be used to identify areas that need improvements, to raise awareness about patient safety, and to identify and evaluate safety programs and interventions to improve safety culture (Nieva & Sorra, 2003; Peter Pronovost et al., 2005) and reduce the number of errors.

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In Neonatal Intensive Care Units (NICU's), newborns are a vulnerable group (Snijders, van Lingen, Molendijk, & Fetter, 2007). The severity of their illness, multiple treatment interventions, and the high technology environment that require continuous monitoring make them more vulnerable and at a higher risk for potential errors compared to other groups of patients admitted to different departments in the hospital (Cauduro, Sarquis, Sarquis, & Drehmer, 2015). Evidence from literature shows that neonates admitted to NICUs are at a significantly higher risk for medication errors and adverse events compared to other patients (Kaushal et al., 2001). Moreover, medical errors have a greater impact on these vulnerable patients (Haerkens et al., 2012). The evidence about NICUs in the Palestine is still inadequate to inform safety programs. The issue of safety culture in Palestinian NICUs was investigated by Hamdan (2013) in the West Bank hospitals. Hamdan's study showed that SAQ mean domains scores ranged from 71.22 for job satisfaction to 37.02 for stress recognition on a 100-point scale and the scores varied significantly among NICUs in the West Bank ( $P < 0.05$ ). This study complements an earlier work and aims to assess the safety culture in NICU's in Gaza Strip hospitals. It also assesses the associations between safety culture and caregivers' characteristics. In addition; this study was designed to answer the following two questions: (a) what is the level of safety culture at NICU's in Gaza Strip? And (b) is there a relationship between reported safety culture and caregivers' characteristics?

## Methods

### Study Design

The study used a cross-sectional design. Data were collected between March and April 2015.

### Setting and Sample

The study was conducted in all of the six NICUs in the Gaza Strip. These are located exclusively in government run hospitals. During the study period, the number of NICU beds ranged between 7 and 36. Regardless of the variation of the number of beds, these NICU's provide similar care and there are no differences in acuity of cases admitted to them.

The target population for the study consisted of all the nurses and physicians working in these NICUs. The eligibility criteria involved having a work experience of at least three months in the NICU at the time of the data collection. A census survey was conducted due to the small size of the study population. A total of 185 surveys were distributed by hand to all the physicians (49) and nurses (136) working in the six NICUs in the Gaza Strip.

### Survey Instrument

The Safety Attitudes Questionnaire (SAQ) ICU short form (Sexton, Helmreich et al., 2006) was used to assess health care providers' attitudes towards their safety cultures in the NICUs. The instrument used consisted of 33 items grouped in six domains: teamwork climate, safety climate, job satisfaction, perceptions of management, working conditions, and stress recognition. Each item was answered using a 5-points Likert scale (1 = disagree strongly, 2 = disagree slightly, 3 = neutral, 4 = agree slightly, 5 = agree strongly). These scores were later converted to a 100-points scale during analysis to facilitate interpretation of the results (1 = 0, 2 = 25, 3 = 50, 4 = 75 and 5 = 100). Each domain score equals the mean score of its component survey items. A positive score is defined as 75 or more on 100-points scale (Huang et al., 2010). An Arabic version of the tool that was previously used by Hamdan (2013) in the West Bank was also used in this study. The survey included two additional questions to participants: "how do you rate patient safety level at your department (excellent, very good, acceptable, weak, failure)" and "what was the number of events reported

in the past 12 months?." These two questions were added to have a proxy measure of the overall safety level at the NICUs as perceived by healthcare providers and to assess their incident reporting behavior since an earlier study in the West Bank (Hamdan, 2013) showed that there was a serious weakness in incident reporting at Palestinian hospitals.

The SAQ demonstrated good psychometric properties to help assess safety culture in health care (Sexton, Helmreich et al., 2006; Sexton, Holzmueller et al., 2006; Sexton, Holzmueller et al., 2006; Colla, Bracken, Kinney, & Weeks, 2005). The original SAQ instrument was translated into the Arabic language in a previous study (Hamdan, 2013). This was to remove any language barriers. Reliabilities of the Arabic version of the SAQ were assessed using Cronbach  $\alpha$ , which ranged from 0.59 (for teamwork climate) and 0.75 (for job satisfaction) (Hamdan, 2013). In spite of the lower Cronbach  $\alpha$  with the original instrument, the Cronbach  $\alpha$  values for this study ranged between 0.61 and 0.84 which fall within the acceptable range (George & Mallery, 2003).

### Data Collection

The survey was distributed to all nurses and physicians who met the inclusion criteria for all targeted NICUs. Questionnaires were handed by a member of the research team to all potential participants. Responses were returned by sealed envelopes to ensure the anonymity and confidentiality of all participants and to minimize bias. Each participant was provided with an informed consent regarding the voluntary nature of participation and the confidentiality of the information gathered. Ethical approval was obtained from the Helsinki Committee (a research ethics committee) in the Gaza Strip. Besides that, the Ministry of Health provided a permission to conduct the study at governmental hospitals.

### Data Analysis

Data were entered and analyzed using SPSS version 18 (SPSS, 2009). The scores of the two negatively worded survey items were reversed. Response scores were converted from a 5-Likert scale to a 100-point scale using the SAQ computation instructions (Sexton, Helmreich et al., 2006; Sexton, Holzmueller et al., 2006; Sexton, Holzmueller et al., 2006). A composite scale score was calculated by summing the scores of the items with the scale. Then mean average for the scale was calculated by dividing the composite score by the number of items. Finally, the percentages of positive responses for the survey scales and items were calculated. Positive responses in positively worded survey items were 'agree/strongly agree' and in negatively worded items were 'disagree/strongly disagree'.

Descriptive statistics including percentages, means and standard deviations were used for all survey items and domains. ANOVA and paired sample *t*-tests were used to compare means. In the univariate analysis, analysis of variance was used to test associations between composite patient safety scores and the different characteristics of respondents. These analyses used a 95% confidence interval and a significance level of 0.05.

## Results

A total of 163 questionnaires were returned with a response rate of 88.1%. Three of them were excluded because they contained several missing data. Table 1 summarizes the characteristics of the participants. The majority of participants were nurses (84.5%), males (54.2%), 30 years or younger (62.8%), and with a bachelor's degree or higher level of education (69.9%).

Table 2 shows the respondents' ratings of the SAQ items and scales as well as the percentages of positive responses for each item. The 'Stress recognition' domain received the highest score (71.8) followed by job 'satisfaction domain' with a mean score of 66.7. The 'safety climate domain' came third with a mean score of 61.9 followed by the

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