The Culture in Safety Culture: Exploration of Patient Safety Culture in Saudi Arabian Operating Theatres

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Submitted for the degree of Doctor of Philosophy

The University of Adelaide

2015
To my parents; Dhafer and Moneera

You made me who I am
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Abstract

Surgical patients are highly susceptible to preventable harm in health systems that tolerate inadequate patient safety: the World Health Organization recognises that half of preventable adverse events happen in surgical care. Each year, seven million surgical patients are estimated to suffer serious complications from adverse events and up to one million die. Improving safety culture and non-technical skills can reduce adverse events and improve patient safety. This study explores safety culture in operating theatres in Saudi Arabia, where many employees work in an environment that is radically different from their own, in a language that they know imperfectly. It targets cultural differences and their relevance to safety culture dimensions, including teamwork, communication, job satisfaction, stress recognition, working conditions, and perceptions of management.

The concept of safety culture is complex, and to achieve sufficient breadth and depth this study employs a sequential explanatory mixed methods design. All health care professionals working in operating theatres in the Saudi Arabian Ministry of Health hospitals in Riyadh City were surveyed using the internationally validated Safety Attitudes Questionnaire, administered in both English and Arabic. Items pertaining to local culture were added to assist in measuring cultural factors related to patient safety. Furthermore, twenty semi-structured interviews with non-Arabic-speaking female nurses were also conducted.

Returned surveys (n = 649; 60.8 % response rate) were subjected to reliability and validity tests. Cronbach’s alpha values for each dimension ranged between 0.71 and 0.82, except for the perception of management dimension (0.44). Confirmatory factor analysis showed that all dimensions except perception of management had good psychometric properties, indicating the tool’s applicability to Saudi Arabian context. Respondents’ mean
perceptions ranged between 3.5 and 4 out of 5 for each dimension, which is comparable to similar studies in different international settings. Along with revealing significant differences between sites, analysis indicates that nurses, younger professionals, females and non-Arabic speaking professionals have significantly lower favourable perceptions of the dimensions under investigation, and that nurses rate their quality of communication with other professionals significantly lower than the ratings they received from them. Cultural background, including language, influences perceptions of the safety culture.

Communication, cultural background, and gender are found to comprise a new patient safety dimension, *multicultural workplace*. This dimension ($\alpha = 0.79$; $\bar{X} = 3.6$; SD = 0.96) has strong, positive correlations with other valid dimensions except stress recognition. Site, profession, and gender are significant predictors of this new dimension.

Both the open-ended questions and the semi-structured interviews reveal culture as an important factor, influencing several aspects of safety culture. Many issues were related to the concept of a multicultural workplace, and the strong correlation of this with other dimensions of safety climate indicates its relevance and importance to the safety culture. Nurses, of whom the majority were female and non-Arabic speaking, had significantly lower perceptions of safety culture than other respondents. The influence of context, gender, cultural background and language on safety culture is evident.

Cultural integration, initiated in classes about local culture and language, is recommended to bridge gaps between local and multinational workforces. Recommendations of enhancement to teamwork, communication, equity of team members and conflict resolution should provide a better, safer environment for hospital staff and patients if implemented.
Declaration

I certify that this work contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text. In addition, I certify that no part of this work will, in the future, be used in a submission for any other degree or diploma in any university or other tertiary institution without the prior approval of the University of Adelaide and where applicable, any partner institution responsible for the joint-award of this degree.

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Sign

Date
Acknowledgements

The work in this thesis is a summary of the journey I undertook a few years ago, and from which I have learnt so much. I would not have been able to reach my destination without the contribution of significant people in my life.

I would like to acknowledge the continuous support I received from my parents; your words and actions inspired me before and throughout this journey. I also acknowledge the support and toleration of my busyness from my wife Mashael; your support, understanding and belief in me got me through this journey and more. The patience of my sons, Bader and Talal, meant so much: daddy is free now to pay for previous days. My brothers and sisters: your help and support eased so many difficulties. I also acknowledge the contribution of my friend and colleague Mr. Mohammad Alboliteeh for his support; the long regular discussions were worth publishing. I also would like to acknowledge family, friends and colleagues who had helped in various ways to keep me going.

Professionally, I would like to acknowledge and appreciate the guidance and support from my main supervisor, Professor Alison Kitson, and my co-supervisor Dr Tim Schultz. Your contribution has been invaluable. You were generous with your time, effort, knowledge and support, and made this journey a blessing. You had me longing for our next meeting as soon as I walk out of the last one. This journey was an apprenticeship of which I experienced first-hand professionalism, effective teamwork, proper communication and invaluable guidance and training.

I would like to extend my acknowledgement for the statistical help I received from Dr Nancy Briggs: you made numbers meaningful; and to my copy editors Dr Margaret Johnson and Ms Valerie Williams whose eyes picked what I could not see. The contribution of the men and women working in operating theatres who spent time filling
out survey forms and talking to me in the interviews, is highly appreciated; I hope this study benefits you and your patients. Those people who facilitated data collection from different sites, thank you. Experts who helped in the development of the tool, your comments were sincerely appreciated.
### Glossary

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<tr>
<td>ACSNI</td>
<td>Advisory Committee on Safety of Nuclear Installations</td>
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<td>ACSQHC</td>
<td>Australian Commission on Safety and Quality in Health Care</td>
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<td>AHRQ</td>
<td>Agency for Healthcare Research and Quality (US)</td>
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<td>ANOVA</td>
<td>Analysis of variance</td>
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<td>CFI</td>
<td>Comparative fit index</td>
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<td>CDSI</td>
<td>Central Department of Statistics and Information (Saudi Arabia)</td>
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<tr>
<td>DON</td>
<td>Director of nursing</td>
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<tr>
<td>FMAQ</td>
<td>Flight Management Attitudes Questionnaire</td>
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<td>HSC</td>
<td>Hospital Safety Climate (survey)</td>
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<td>HSD</td>
<td>Honest significant difference (Tukey’s HSD test)</td>
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<td>Hospital Survey on Patient Safety Culture</td>
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<td>IAEA</td>
<td>International Atomic Energy Agency</td>
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<td>ICPS</td>
<td>International Classification of Patient Safety</td>
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<tr>
<td>ICU</td>
<td>Intensive care unit</td>
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<tr>
<td>IOM</td>
<td>Institute of Medicine (US)</td>
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<tr>
<td>KMO</td>
<td>Kaiser–Meyer–Olkin (measure)</td>
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<tr>
<td>Makkah</td>
<td>also known as Mecca</td>
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<tr>
<td>MOH</td>
<td>Ministry of Health (Saudi Arabia)</td>
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<tr>
<td>MSI</td>
<td>Modified Stanford Patient Safety Culture Survey Instrument</td>
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<tr>
<td>OPEC</td>
<td>Organization of Petroleum Exporting Countries</td>
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<tr>
<td>OR</td>
<td>Operating room</td>
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<tr>
<td>PCA</td>
<td>Principal Component Analysis</td>
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<td>PIS</td>
<td>participant information sheet</td>
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<td>PSCHO</td>
<td>Patient Safety Culture in Health Organisations (survey)</td>
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<tr>
<td>RMSEA</td>
<td>root mean square error of approximation</td>
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<td>SAQ</td>
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<td>SD</td>
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<td>standardised root mean square residual</td>
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<td>Tucker–Lewis index</td>
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