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Challenging patient safety culture: survey results

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Abstract

Purpose – The purpose of this paper is to measure patient safety culture in five Belgian general hospitals. Safety culture plays an important role in the approach towards greater patient safety in hospitals.

Design/methodology/approach – The Patient Safety Culture Hospital questionnaire was distributed hospital-wide in five general hospitals. It evaluates ten patient safety culture dimensions and two outcomes. The scores were expressed as the percentage of positive answers towards patient safety for each dimension. The survey was conducted from March through November 2005. In total, 3,940 individuals responded (overall response rate = 77 per cent), including 2,813 nurses and assistants, 462 physicians, 397 physiotherapists, laboratory and radiology assistants, social workers and 64 pharmacists and pharmacy assistants.

Findings – The dimensional positive scores were found to be low to average in all the hospitals. The lowest scores were "hospital management support for patient safety" (35 per cent), "non-punitive response to error" (36 per cent), "hospital transfers and transitions" (36 per cent), "staffing" (38 per cent), and "teamwork across hospital units" (40 per cent). The dimension "teamwork within hospital units" generated the highest score (70 per cent). Although the same dimensions were considered problematic in the different hospitals, important variations between the five hospitals were observed.

Practical implications – A comprehensive and tailor-made plan to improve patient safety culture in these hospitals can now be developed.

Originality/value – Results indicate that important aspects of the patient safety culture in these hospitals need improvement. This is an important challenge to all stakeholders wishing to improve patient safety.

Keywords Patient care, Safety, Health and safety, Belgium

Paper type Research paper

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Introduction

Complexity on the road towards patient safety is well known. The Institute of Medicine's report "To err is human" catalysed the modern patient safety movement while Reason taught us about the error mechanisms, the importance of a system's approach and system barriers (Reason, 1990, 1997; Amalberti *et al.*, 2005). Practices that will most improve patient safety were described by Leape *et al.* (2002) and Shojania *et al.* (2002). Although progress has been made in the highly complex context of healthcare, there is a sense of disappointment about patient safety movement results (Brennan *et al.*, 2005). There is no doubt about system-based approaches; it must be accepted that people make errors and that processes and equipment will sometimes fail, but it seems that there is are important missing connections between professionals, systems, procedures and tools. Conviction is growing that hospital staffs' ability to avoid harm will be better realised when a safety culture can be created. The importance of a safety culture in healthcare is underlined in World Health Organization (2006), European Commission (2005) and the Council of Europe (2006) reports. Looking at a safety culture, a distinction can be made between professional and organisational culture, although they also have important interactions. Leape (1994) said that practitioners have a great deal of difficulty dealing with human error when it occurs as a result of clinical practice. It seems that physicians and nurses are trained and work in a sort of professional "perfectibility model". Freidson (2001) wrote a systematic account of professionalism as a method of organising work. The combination of complexity, professional fragmentation and a tradition of individualism forms, according to Leape and Berwick (2005), a daunting barrier to developing a safety culture. Beside professional culture, there is also an important role for organisational culture with safety as an important aspect. Westrum (2004) described a typology of organisational cultures, while according to Kizer (in: Aspden *et al.*, 2004, p. 174) safety culture can be defined as:

> An integrated pattern of individual and organisational behaviour based upon shared beliefs and values that continuously seek to minimise patient harm that may occur from the process of care delivery.

There are four critical components of a safety culture:

(1) Justice or fairness.

(2) Flexibility.

(3) Learning.

(4) Systematic reporting (Reason, 1997).

Creating such a culture in a professional context, is an important challenge for hospital managers. It necessitates a clear view of aspects that need improvement and a great commitment at the top level of the organisation. Physician involvement in such processes is necessary. Following a Council of Europe (2006) recommendation, the first safety culture development stage is to define the organisation's existing safety culture. Consequently, this study reports the results of a patient safety culture study in five Belgian general hospitals.

Methods

Hospital selection

Five hospitals were selected based on their institutional status (three private and two public hospitals), volume and managers' willingness to cooperate in a research project expected to last two years. The study was been approved by two ethics committees in 2005. The total number of beds included in our study was 1,256 public and 1,414 private, ranging from 422 to 822 beds per hospital.

Questionnaire

Several instruments are available to assess hospital safety culture. In 2005, Colla *et al.* (2005) reviewed nine patient safety climate surveys. The quantity and quality of psychometric testing varied considerably. Recently, Flin *et al.* (2006) published the results of their systematic literature review and statistical analysis in the field of measuring safety climate in health care. They felt that more consideration should be given to psychometric factors in the instrument design. The Hospital Survey on Patient Safety Culture (HSOPSC) met more of our psychometric criteria owing to more systematic testing of internal structure than the other instruments we reviewed, although the initial 29 per cent response rate was low (1,437 staff in 21 US Hospitals) (www.ahrq.gov/qual/hospculture). Nevertheless, we chose the HSOPSC questionnaire for our survey. A task group translated it into Dutch using local terminology. A (re)validation of the translation was done with data from the first hospital (March to August) survey using the original questionnaire's validation strategy (www.ahrq.gov/qual/hospculture, Wenqi, 2005). This included:

- item analysis;
- exploratory factor analysis;
- confirmatory factor analysis using structural equation models;
- reliability analysis;
- analysis of composite scores; and
- inter-correlations.

Only test-retest reliability was not re-checked because of practical reasons. The translation validation report showed results comparable to the original questionnaire, confirming ten patient safety culture dimensions and two outcome measures (Wenqi, 2005). Validation suggested an improvement to the "teamwork within hospital units" dimension by removing item a11. In this report, the dimension scores was therefore calculated on three instead of four items. The complete validation report can be obtained from the author (www.zol.be/patientveiligheid).

Distribution

The questionnaire was distributed to all individuals working in direct or indirect clinical contact with patients following the original survey procedure. This included:

- notifying by letter (from the hospital manager) one week prior to distribution; and
- two reminders after the distribution separated by two weeks.

A second copy of the questionnaire was submitted with the last reminder. Each questionnaire included an identifier code that allowed the researchers to send reminders selectively. There was a strict separation between distribution (from the human resources department that gave the identifier code) and collection and analysis of the questionnaires (by a member of the hospital quality staff who had no access to the link between the identifier codes and the identification of the participants). All physicians were included, also those working only a few hours per week in the hospital. For physicians, the questionnaire did not include an identifier code (see later). Therefore, physicians were sent an additional copy of the questionnaire along with the first and second reminder. As result of the strict separation between distribution and analyses, all questionnaires were analysed anonymously.

Analysis

The same exclusion criteria used in the original questionnaire were applied. Incomplete surveys were removed prior to analysis. Each dimension included three or four items with an answer scale from 1 to 5. The exclusion criteria were:

- no entire section completed;
- fewer than half the items answered; and
- all items answered the same.

Percentages were calculated on the number of respondents for the specific question or dimension. Answers 1 and 2 were considered negative towards patient safety, 3 was considered neutral and answer 4 and 5 were considered positive towards patient safety. A number of questions were negatively worded to avoid response set. These answers were reversed prior to recoding into positive, neutral or negative. The dimensional scores were expressed as the percentage of positive answers towards patient safety within each dimension. An exploratory factor analysis including Varimax rotation was conducted using all five hospital datasets. All analyses were done using SPSS 10.0. A detailed report (written and oral) with all the results was made to each hospital, including its positioning for each dimension among the other hospitals.

Results

A total of 3,940 individuals (77 per cent) met our response criteria. Overall, 42 questionnaires were excluded according to predefined exclusion criteria (see above). The response rate in the five participating hospitals ranged from 74 to 83 per cent. The number of respondents per hospital varied from 528 to 1,300. Among physicians, the response rate was 55 per cent (range: 51 to 59 per cent), compared to 82 per cent (range: 77 to 90 per cent) for non-physicians. The population characteristics are shown in Table I. Overall, 3,552 (92 per cent) had direct interaction or contact with patients. At the time of the survey, 2,752 (70 per cent) respondents had been working in that specific hospital for more than five years, 933 (24 per cent) between one and five years and 230 (6 per cent) were working there for less than one year. At unit level, 2,223 (57 per cent) had been working for more than five years, 1,258 (32 per cent) between one and five years, and 437 (11 per cent) for less than one year.

The dimensional scores are shown in Figure 1. For all five participating hospitals, the dimensional positive scores were considered low to average. The lowest scores (those viewed negatively) were found on the dimensions:

	n	%
Primary work area/unit		
Medical units	490	13.2
Surgical units	492	13.3
Operating theatre	308	8.3
Obstetrics/gynaecology	241	6.5
Paediatrics	107	2.9
Intensive care	243	6.6
Emergency department	146	3.9
Rehabilitation	94	2.5
Geriatrics	273	7.4
Psychiatrics	62	1.7
Diagnostics (laboratory, radiology)	506	13.6
Pharmacy	66	1.8
Many different/no specific unit	287	7.7
Other	393	10.6
Staff position		
Nurse	2,373	60.9
Head nurse	154	4.0
Nurse assistant	286	7.3
Physician	356	9.1
Physician – head of department	72	1.8
Physician in training	34	0.9
Pharmacist	20	0.5
Pharmacy technician	44	1.1
Middle management	23	0.6
Technician diagnostics	188	4.8
Dietitian, therapist, psychologist	209	5.4
Other	135	3.5
Professional experience		
Less than 1 year	160	4.1
1 to 5 years	805	20.8
6 to 10 years	671	17.3
11 to 15 years	643	16.6
16 to 20 years	584	15.1
21 years or more	1,014	26.2
Working time in hospital		
Less than 20 hours per week	418	10.7
20 to 39 hours per week	2,380	61.0
40 to 59 hours per week	957	24.5
60 to 79 hours per week	113	2.9
80 hours per week or more	33	0.8

Table I. Population characteristics

- "Hospital management support for patient safety" (overall score: 35 per cent, range between hospitals: 22-48 per cent).
- "Non-punitive response to error" (36 per cent, range: 31-46 per cent).
- "Hospital transfers and transitions" (36 per cent, range: 31-39 per cent).

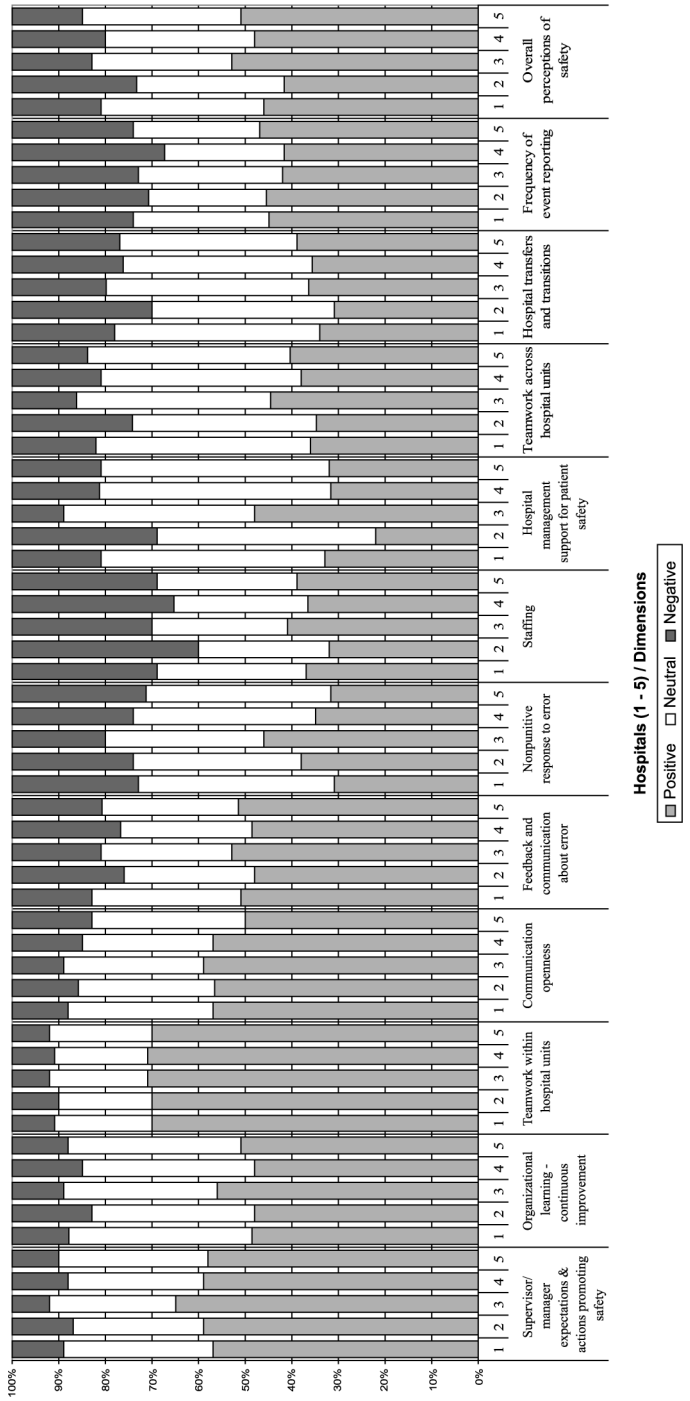

Figure 1.
Dimensional scores towards patient safety

- "Staffing" (38 per cent, range: 32-41 per cent).
- "Teamwork across hospital units" (40 per cent, range: 35-45 per cent).

The dimension "teamwork within hospital units", on the other hand, received the highest score (70 per cent, range: 70-71 per cent). Items receiving the lowest positive scores were:

- "Hospital units do not coordinate well with each other" (overall score 17 per cent, range between hospitals: 12-24 per cent).
- "Things fall between the cracks when transferring patients from one unit to another" (24 per cent, range: 20-27 per cent).
- "Staff worry that mistakes they make are kept in their personnel file" (26 per cent, range: 21-35 per cent).
- "We work in crisis mode, trying to do too much, too quickly" (28 per cent, range: 22-31 per cent).
- "Hospital managers seem interested in patient safety only after an adverse event happens" (28 per cent, range: 20-39 per cent).

The item receiving the highest positive score was "when much work needs to be done quickly, we work together as a team to get the work done" (74 per cent, range: 72-76 per cent). An exploratory factor analysis was conducted. The rotated component matrix is shown in Table II. The total variance explained by 12 factors was 59 per cent. A total of 11 factors had an eigenvalue higher than 1, the 12th was 0.95.

Discussion

Our survey response was higher than expected, which confirms hospital staffs' patient safety concerns. Our systematic approach and the growing attention to patient safety in these hospitals probably also contributed to the higher response. Belgian hospitals do not employ physicians; they are independent practitioners remunerated on a fee-for-service basis, which allows a substantial amount of freedom for both patient and practitioner and creates a specific relationship between medical staff and the hospital board. Consequently, we omitted the physician survey identifier codes because we wanted to be sure that confidentiality was not an issue for them. With this approach we realised a physician-response rate of 55 per cent (462 physicians). Nevertheless, our results show urgent and imperative attention to:

- more supportive management towards patient safety;
- developing a non-punitive culture;
- stimulating organisational learning; and
- focusing on hospital transfers and transitions through the different units in the hospital.

These are important challenges for all hospital stakeholders. When we compared our results with HSOPC pilot survey data from 382 US hospitals (108,621 respondents), our dimensional scores were lower (i.e. our respondents' scores were more negative). Our "management support for patient safety" dimension data were the most divergent, so this will be an important challenge for Belgian hospital managers. Improving hospital

Table II. Exploratory survey items factor analysis: rotated component matrix

Item	Original scale	Factor 1	2	3	4	5	6	7	8	9	10	11	12
C3	Feedback and communication about error	0.75	0.02	0.18	0.07	0.03	0.11	−0.01	0.10	0.05	0.14	0.07	0.02
C5	Feedback and communication about error	0.68	0.09	0.18	0.23	0.15	0.06	0.08	0.06	0.11	0.20	0.04	0.01
C1	Feedback and communication about error	0.63	0.03	0.16	0.09	0.00	0.14	−0.03	0.12	0.03	0.28	0.17	−0.11
C2	Communication openness	0.60	0.12	0.06	0.17	0.25	0.03	0.17	0.04	0.07	0.05	−0.07	0.19
C4	Communication openness	0.56	0.16	0.07	0.18	0.16	0.13	0.25	−0.15	0.02	−0.04	0.05	−0.03
C6R	Communication openness	0.45	0.08	0.02	0.16	0.15	0.01	0.27	0.15	0.17	−0.08	−0.18	0.18
F4	Teamwork across hospital units	0.07	0.74	0.00	0.07	0.10	0.04	−0.03	0.01	0.04	0.10	0.00	0.07
F10	Teamwork across hospital units	0.09	0.68	0.07	0.09	0.12	0.19	−0.01	0.10	0.17	0.09	0.01	0.02
F2R	Teamwork across hospital units	0.10	0.63	0.08	0.01	0.00	0.21	0.13	0.14	0.08	0.00	0.14	−0.02
F6R	Teamwork across hospital units	0.01	0.53	−0.01	0.11	0.08	0.05	0.12	0.25	−0.03	0.04	0.00	0.16
F7R	Hospital transfers and transitions	0.08	0.53	0.03	0.05	0.02	0.04	0.14	0.54	0.04	−0.03	0.08	−0.04
F3R	Hospital transfers and transitions	0.11	0.41	0.06	0.00	−0.06	0.08	0.12	0.51	0.10	−0.08	0.13	−0.15
D2	Frequency of event reporting	0.13	0.04	0.88	0.07	0.06	0.05	0.05	0.05	0.06	0.06	0.01	0.00
D1	Frequency of event reporting	0.15	0.04	0.84	0.06	0.02	0.07	0.05	0.02	0.02	0.04	0.02	−0.02
D3	Frequency of event reporting	0.17	0.05	0.80	0.12	0.08	0.03	0.03	0.07	0.03	0.09	−0.04	0.09
B2	Supervisor/manager expectations and actions promoting safety	0.23	0.09	0.09	0.74	0.16	0.09	0.06	0.02	−0.04	0.21	0.06	−0.01
B1	Supervisor/manager expectations and actions promoting safety	0.18	0.08	0.10	0.72	0.17	0.12	0.02	0.02	−0.02	0.21	0.07	−0.10
B4R	Supervisor/manager expectations and actions promoting safety	0.16	0.10	0.07	0.70	0.03	0.13	0.08	0.08	0.22	0.05	0.00	0.15
B3R	Supervisor/manager expectations and actions promoting safety	0.12	0.05	0.06	0.56	−0.05	0.05	0.17	0.10	0.29	−0.06	0.06	0.16
A1	Teamwork within hospital units	0.14	0.09	0.04	0.07	0.80	0.07	0.11	0.03	0.07	0.06	0.03	0.03
A4	Teamwork within hospital units	0.14	0.10	0.03	0.09	0.77	0.05	0.15	0.02	0.11	0.03	0.01	0.00

(*continued*)

Table II.

Item	Original scale	Factor 1	2	3	4	5	6	7	8	9	10	11	12
A3	Teamwork within hospital units	0.11	0.05	0.09	0.07	0.68	0.02	0.03	0.15	0.03	0.14	0.12	0.06
F8	Hospital management support for patient safety	0.12	0.14	0.05	0.08	0.04	0.79	−0.02	0.04	0.15	0.12	0.03	−0.01
F9R	Hospital management support for patient safety	0.12	0.16	0.05	0.12	0.01	0.71	0.20	0.12	0.03	0.01	0.01	0.09
F1	Hospital management support for patient safety	0.11	0.17	0.07	0.15	0.12	0.69	0.07	0.04	0.14	0.14	0.14	0.09
A16R	Non-punitive response to error	0.08	0.01	0.06	−0.01	0.02	0.07	0.73	0.05	0.04	0.02	0.07	0.02
A8R	Non-punitive response to error	0.07	0.09	0.02	0.11	0.21	0.08	0.70	0.05	0.08	0.01	0.09	0.10
A12R	Non-punitive response to error	0.16	0.12	0.05	0.15	0.09	0.06	0.65	0.03	0.02	0.24	0.08	0.10
F5R	Hospital transfers and transitions	0.11	0.18	0.09	0.07	0.10	0.03	0.05	0.73	0.10	0.04	0.04	0.02
F11R	Hospital transfers and transitions	0.01	0.09	0.02	0.08	0.12	0.11	−0.03	0.67	0.03	0.11	−0.09	0.22
A15	Overall perceptions of safety	0.09	0.07	0.03	0.10	0.10	0.12	0.00	0.04	0.74	−0.01	0.07	−0.02
A17R	Overall perceptions of safety	0.10	0.09	0.04	0.09	0.08	0.11	0.13	0.12	0.62	0.06	0.19	0.18
A18	Overall perceptions of safety	0.10	0.17	0.09	0.19	0.07	0.19	0.05	0.07	0.45	0.30	0.21	0.02
A9	Organisational learning – continuous improvement	0.20	0.11	0.03	0.09	0.10	0.05	0.13	−0.09	−0.11	0.69	0.02	0.11
A6	Organisational learning – continuous improvement	0.09	0.01	0.08	0.12	0.10	0.14	0.09	0.11	0.16	0.67	−0.06	−0.01
A13	Organisational learning – continuous improvement	0.30	0.06	0.14	0.24	0.06	0.11	−0.03	0.13	0.22	0.45	0.10	−0.09
A2	Staffing	0.07	0.12	−0.03	0.05	0.13	0.08	0.02	−0.06	0.14	0.02	0.76	0.16
A14R	Staffing	0.03	0.06	0.04	0.07	0.05	0.04	0.23	0.06	0.23	0.03	0.68	0.10
A5R	Staffing	0.02	−0.02	−0.07	0.08	−0.03	0.07	0.02	0.15	−0.09	−0.09	0.41	0.52
A7R	Staffing	0.04	0.05	0.03	0.04	0.04	0.08	0.11	0.04	0.02	−0.02	0.12	0.66
A10R	Overall perceptions of safety	0.04	0.14	0.09	0.02	0.08	−0.01	0.07	−0.01	0.35	0.20	0.02	0.56

safety culture is necessary and hospital managers are now fully aware. We should benchmark cautiously, however, because Belgian hospitals differ from US hospitals where the instrument was developed.

Safety culture assessment has a corollary effect. Intended or not it raises awareness about the role of culture in promoting a safer patient environment (Nieva and Sorra, 2003). Pronovost and Sexton (2005) underline the importance of feedback about the results of the assessment to staff as well as senior managers. For each hospital, the dimensional scores that were found problematic were analysed and discussed in more depth. Every hospital received its results in an electronic data file that could be interrogated in detail. The different dimension scores vary between hospitals – providing an opportunity to learn from each other. Armed with results, hospital staff can embark on a comprehensive patient safety plan. Involving senior managers and physicians is crucial, and there is a great need for "organisational trust", defined as:

> The extent to which one is willing to ascribe good intentions to, and have confidence in, the words and actions of other people (Firth-Cozens, 2004, p. 56).

When there is fear in the hospital, staff will do everything possible to hide errors and filter data (Van Camp, 1997). The creation of the hospital as a trustworthy organisation, described by Firth-Cozens (2004) as those with a "just culture", needs a supportive, fair and consistent leadership.

The Belgian HSPOC instrument version seems robust. An exploratory factor analysis confirms the existence of multiple underlying dimensions and shows that most items group into the intended dimensions. "Feedback and communication about error" and "communication openness" group into the same factor, unsurprising since both deal with communication. "Teamwork across hospital units" and "hospital transfers and transitions" also share the same factor, although the latter also groups into a distinct factor. Since both are strongly related this does not surprise us either.

Different instruments for measuring safety culture are available. In 2001, researchers used the "safety climate survey" at the Johns Hopkins Hospital (395 completed questionnaires) (Pronovost *et al.*, 2003; Sexton and Thomas, 2006). Reliability in a multi-centre ICU study, using the safety climate survey, was investigated by Kho *et al.* (2005), while Singer *et al.* (2003) used the Stanford-PSCI Culture Survey, adapted from five existing surveys, in a sample of 6312 employees from 15 California hospitals; achieving a 47 per cent response rate. Pronovost and Sexton (2005) wrote guidelines and recommendations for assessing safety culture. Their safety climate survey analysis showed a test-retest reliability of 0.85-0.90 and Cronbach's alpha values of 0.75-0.88. These psychometrics are sound, but it is not clear which culture domains are most appropriate. So they advise that the "safety attitudes questionnaire" (SAQ) is used because the 30 items measure six domains:

(1) Safety climate.

(2) Teamwork climate.

(3) Management perceptions.

(4) Stress recognition.

(5) Job satisfaction.

(6) Working conditions (Sexton *et al.*, 2006).

Recently, Sexton *et al.* (2006) published the results from six cross-sectional surveys of health care providers ($n = 10,843$). The SAQ was used in 203 clinical areas in three countries (USA, UK and New Zealand), demonstrating good psychometric properties. While patient safety climate or culture surveys may detect hospital staff's patient safety concerns, there is only limited evidence that survey scores are related to patient safety outcomes. Only the SAQ has been used to explore the relationship between safety climate scores and patient outcomes. Positive scores were associated with shorter lengths of stay, lesser medication errors, lower ventilator associated pneumonia rates and lower bloodstream infection rates (Colla *et al.*, 2005). Therefore, it is a pity that the SAQ was not included in the Flin *et al.* (2006) review. To be effective as a tool for patient safety improvement, data require the development of a shared organisational understanding of underlying meanings and causes. Case reports, like the hospital-wide patient safety program for cultural change in the Missouri Baptist Medical Centre and the Sentara Norfolk General Hospital, show what can be achieved (Cohen *et al.*, 2004; Yates *et al.*, 2004). There are likely to be many ways of achieving a positive safety culture, but further research in this field is necessary, especially within the broader and specific system in which health care is organised. Four safety climate dimensions were analysed in 47 medical units in three Israeli hospitals (Katz-Navon *et al.*, 2005):

(1) Safety procedures.

(2) Safety information flow.

(3) Perceived management safety practices.

(4) Priority of safety and the interactions among them.

Results demonstrated dimension complexity. When safety priority was low, there were more treatment errors when managerial safety practices where high than when managerial safety practices were low. When safety was a high priority, there was no significant difference between the numbers of treatment errors for high and low managerial safety practices. So adding formal procedures is not enough to reduce the number of treatment errors. Safety priority seems to be crucial – managers should be aware that the level of priority they give enables or disables the effects of safety assurance interventions. Research from Leiden University in The Netherlands, using the Leiden Operating Theatre and Intensive Care Safety (LOTICS) scale for assessing system failures in operating rooms and intensive care units, found significant and positive correlations between safety culture and subscale "training" (0.4) and between safety culture and subscale "planning and coordination" (0.43).

Despite the widely disseminated message from the Institute of Medicine and the better understanding of Reasons' (1990) "Human error", that system failures cause most injuries, the majority individuals still believe that the major cause of bad care is poor clinical practice and that if weak practitioners were removed then everything would be all right (Blendon *et al.*, 2002; Amalberti *et al.*, 2005; Reason, 1990). According to Arah and Klazinga (2004), the medical practice environment remains prohibitively litigious. The "perfectibility model", still a dominant aspect of the medical culture and the strong commitment to individual, professional autonomy can create a barrier to achieving ultra-safe health care (Amalberti *et al.*, 2005). The focus on systems as the problem does not mean that individuals do not have to maintain competence and practice ethically or be called to account when they act unprofessionally. We agree

with other authors who believe there is a need to clarify where and how professional responsibility fits into the "no blame culture", because sometimes it is not a system problem. Finding the right balance in a just culture is a real challenge (Dracup and Bryan-Brown, 2005). The actual attention given to patient safety should not imply that we focus on safety as a culture in itself, separate from quality and the organisational culture as a whole (Firth-Cozens, 2003). Rather, we should remember to balance the "doing no harm" (safety) with "doing good" (effectiveness or quality health care) at both the individual patient and the health system levels (Arah and Klazinga, 2004). Hospitals in Belgium are only beginning to work with patient safety culture assessments. Although hospital managers did not participate, our results indicate that hospitals can and must focus on safety culture dimensions that need improvement. But this is an important challenge for all hospital stakeholders.

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