

# The patient safety climate in Danish hospital units

Solvejg Kristensen<sup>1,2</sup>, Jens Henrik Badsberg<sup>3</sup>, Vibeke Rischel<sup>4</sup>, Jacob Anhøj<sup>5</sup>, Jan Mainz<sup>6,7</sup> & Paul Bartels<sup>1</sup>

## ABSTRACT

**INTRODUCTION:** This study aimed to describe and analyse the patient safety climate in 15 Danish hospital units.

**METHODS:** A cross-sectional study design was applied. Patient safety culture was measured by the Danish version of the Safety Attitude Questionnaire comprising six cultural subscales. Subscale results were calculated as the percentage responders with an individual scale score of 75 point or more (range: 0-100), equivalent to %-positive, and as mean scale scores.

**RESULTS:** Out of 867 invited employees, 544 (63%) participated. No differences in %-positive were found between nurses and doctors, across age, gender or work experience ( $p > 0.05$ ), but the difference between leaders and frontline staff was evident ( $p < 0.05$ ). Perceptions varied more among individuals within the unit than between units within the hospital, and between hospitals.

**CONCLUSIONS:** The results provide a snapshot of *how* staff perceives the culture. The level of %-positives per dimension is comparable with most international findings. The higher levels of leaders who perceive the culture as positive should be further investigated in larger samples. Generally, patient safety culture should be assessed at unit level; dimensional strengths and weaknesses as well as subgroup differences should be identified, and dialogue-based methods should be applied to uncover why the culture is perceived as it is.

**FUNDING:** The TrygFonden provided financial support to the Danish Safer Hospital Programme, which funded this study.

**TRIAL REGISTRATION:** not relevant.

Systematic patient safety work has emerged throughout the Danish healthcare system since the Act on Patient Safety came into force in 2004; and small as well as large improvement initiatives have been implemented, but the effect on patient safety has only been monitored to a limited degree. International research has documented that a reduction in specific patient safety problems such as ventilator-associated pneumonia, blood stream infections, patient falls, medication errors and mortality is associated with an improved safety climate [1, 2]. Furthermore, it was proposed that a safety climate is a core mechanism of the organisational context underlying safe, effective and timely patient care [3]. Despite early attempts to focus on the role of the safety climate, it has been an overlooked topic within patient safety work in Denmark [4].

Safety climate represents the employees' shared perceptions on what happens in terms of provision of safe care. It describes staff attitudes as to how patient safety is structured and implemented through procedures, practices and behaviour [5]. Patient safety culture reflects the healthcare workers' shared assumptions, values and beliefs, which characterise the safety of patients in a healthcare setting [6] and help establish why things happen in the organisation [3]. The terms climate and culture are often used interchangeably without distinctions, although they refer to two distinct layers of the same phenomena, culture being deeper-rooted [5].

Safety climate is a multilevel construct, and surveys can be used to capture a snapshot of the different dimensions of the climate, e.g., teamwork climate, safety climate, job satisfaction, stress recognition, perceptions of unit management and working conditions [7].

Perceptions of the different dimensions of safety climate vary according to sex, profession, seniority and organisational role [8-10].

Significant variation in mean subscale scores has been found at the unit level indicating that climate is a local phenomenon, and climate measurement and follow-up improvement activities should be tailored specifically to the strengths and weaknesses at unit level to ensure the highest possible adaptation of the activities [7, 11].

This study aimed to describe and analyse the patient safety climate in 15 Danish hospital units.

## METHODS

### Design and setting

A cross-sectional study design was applied, and the Danish version of Safety Attitude Questionnaire (SAQ-DK) was employed to survey the perceptions of the patient safety culture [7].

The study of the safety climate formed part of the evaluation of the Danish Safer Hospital Programme. The programme ran from 2010 to 2013 in hospitals in Hilleroed, Horsens, Kolding, Naestved and Thisted. The programme was based on collaborative efforts including the Danish foundation TrygFonden, the Danish Regions and the Danish Society for Patient Safety; the last-mentioned organisation was responsible for the implementation of the project [12].

The Danish Data Protection Agency approved the study.

## ORIGINAL ARTICLE

- 1) The Danish Clinical Registries
- 2) Clinical Institute, Aalborg University
- 3) Research Centre for Prevention and Health, Capital Region of Denmark
- 4) Danish Society for Patient Safety
- 5) Diagnostics Centre, Rigshospitalet
- 6) Clinical Institute, Aalborg University
- 7) Psychiatry, North Denmark Region, Aalborg University Hospital, Denmark

Dan Med J  
2015;62(11):A5153

### Material

One acute care, regional, somatic, teaching hospital from each of the five Danish regions participated. Across the hospitals, 15 inpatient bed units were selected; one operating room and one intensive care unit participated in each hospital. Furthermore, one unit of internal medicine, oncology, neurology, surgery and cardiology participated across the five hospitals.

Employees spending more than half of their working time in the unit were eligible for participation. In total, 867 employees, i.e. doctors, nurses, nursing assistants/ similar, physiotherapists, occupational therapists, administrative staff and hospital porters were invited.

### The Danish version of the Safety Attitude Questionnaire

The Safety Attitude Questionnaire (SAQ) was developed for hospitals in the US by B Sexton and colleagues [13]. The Danish version of the SAQ is an explorative questionnaire, which can be used to assess employee's safety attitudes at the unit level in hospitals. The SAQ-DK has shown good construct validity and internal consistency reliability. The SAQ-DK has been recommended as a useful tool for evaluating perceptions of patient safety culture in Danish hospitals [7].

The SAQ-DK comprises six subscales: teamwork climate (six items), safety climate (seven items), job satisfaction (five items), stress recognition (four items), working conditions (four items) and perceptions of unit/hospital management (five items) [14].

SAQ-DK respondents answer on a five-point Likert scale where: 1 = disagree strongly, 2 = disagree slightly, 3 = neutral, 4 = agree slightly and 5 = agree strongly. Item no. 2 and 11 are negatively worded.

### Data collection

Data were collected during January and February in 2013. A local project manager was appointed at each

hospital to cooperate with the research team and to ensure a uniform data collection through adherence to study guidelines. The SAQ-DK was distributed at unit-specific staff meetings led by one of the researchers and/or the hospital project manager. Meeting administration was supplemented by hand-delivery and in-house mailing to include staff not participating in the meetings. Invitees were given four weeks to answer the questionnaire, and reminders were posted after two weeks. Invitees were informed that participation was voluntary and anonymous, that all answers would be treated with confidentiality and that no individual responses would be available to local management.

### Data analysis

Respondent demographics are expressed as frequencies.

The internal consistency of the SAQ-DK scales was investigated using Cronbach's alpha.

Results are presented per dimension as the percentage of respondents with a positive attitude (%-positive) and as scale mean scores and standard deviation for the entire sample and for subgroups. For this purpose, the SAQ-DK item scores were converted into a 0-100 point scale, where 1 = 0, 2 = 25, 3 = 50, 4 = 75 and 5 = 100. Items no. 2 and 11 were scored reversely so that their valence matched the positively worded items.

Individual scale mean scores were calculated by the average score of the scaled items (range: 0-100). The %-positive was calculated as the proportion of respondents with an individual mean scale scores of 75 or above according to recommendations in the literature [15]. For each subscale, %-positive was compared using the chi-squared test.

The proportion of respondents with positive attitudes (%-positive) gives an explicit picture of the homogeneity of the attitudes of the staff within a specific SAQ dimension. Moreover, the %-positive is easy to interpret and assess in terms of need for improvement. Less than 60% of staff reporting positive attitudes in any SAQ dimension would indicate a need for improvement, and a difference in culture, e.g., between subgroups or over time  $\geq 10\%$  is deemed clinically relevant [16].

The SAQ-DK mean scale scores were calculated by the average score of the scaled items (range: 0-100). Mean scale scores for subgroups were compared using the independent t-test. Mean scale scores for each dimension and for each respondent were investigated in a random effects model with hospital, unit within hospital and respondents as effects.

Statistical significance was defined as  $p \leq 0.05$ .

All analyses were performed using SAS software for Windows version 9.4, and IBM-SPSS version 21.0.

*Trial registration:* not relevant.

TABLE 1

Proportion of respondents with a positive attitude (%-positive), and means for the sub-dimensions of the climate.

Dimension	n	Cronbach's alpha	%-positive (min.-max. <sup>a</sup> )	Mean scale score ( $\pm$ SD)
Teamwork climate	543	0.73	58.6 (43.3-77.3)	74.6 ( $\pm$ 13.4)
Safety climate	542	0.79	33.1 (11.1-55.6)	66.9 ( $\pm$ 14.9)
Job satisfaction	542	0.83	54.6 (31.6-68.2)	73.4 ( $\pm$ 15.5)
Stress recognition	542	0.80	35.7 (16.7-73.7)	61.4 ( $\pm$ 21.4)
Working conditions	541	0.73	53.9 (0.0-90.2)	69.3 ( $\pm$ 18.7)
Perceptions of unit management	542	0.80	28.7 (13.0-50.0)	63.1 ( $\pm$ 18.6)
Perceptions of hospital management	542	0.78	8.5 (0.0-27.0)	48.5 ( $\pm$ 17.4)

SD = standard deviation.

a) Min./max. proportion of respondents with a positive attitude at unit level across the 15 units.

## RESULTS

Of 867 invitees, 544 (63%) participated; 405 (74%) were nurses, 55 (10%) doctors and 84 (16%) from other professions. Most were female ( $n = 467$ ; 86%), and 77 (14%) had less than two years of working experience, ten (2%) were clinical leaders. In total, 516 (95%) had contact with patients (PT-contact), and 122 (22%) reported that they had a special responsibility/task within the patient safety organisation of the unit or hospital (PS-functions).

The proportion of missing answers was 0-4% across all items.

Cronbach's alpha was between 0.73 and 0.83 for all dimensions.

### Scale statistics

**Table 1** presents the scale statistics reporting %-positive and mean scale statistics, whereas the proportion of respondents with a positive attitude to the climate (%-positive) per unit is displayed in **Figure 1**.

According to **Table 1**, 58.6% of all participants reported positive attitudes towards teamwork climate; the unit with the least %-positive had 43.3% and the unit with the highest level of %-positive reached 77.3%. According to **Figure 1**, seven units have %-positive below the recommended 60% threshold. Across all dimensions, teamwork climate is the dimension with the least need for improvement at unit level. In comparison with all other scales, perceptions of the hospitals management was rated positive by the lowest share of participants (viz. only 8.5%). Across all dimensions, this dimension was the one with the greatest need for improvement at unit level, but also the dimension with the least difference in %-positive between the lowest and the highest scoring unit, amounting to 27.0 percentage points.

The findings reported in **Figure 1** illustrate strengths and weaknesses at unit level, as well as how each unit is positioned among the other units across dimensions; e.g., of all units, unit 14 has the highest %-positive for safety climate, but the lowest %-positive for stress recognition.

For all scales except job satisfaction and perception of hospital management, there is a statistically significant difference in %-positive across the 15 units,  $p < 0.05$ . For all dimensions, statistically significant differences in mean scale scores were found across units,  $p < 0.01$ .

### Subgroup differences

The %-positive according to subgroups and dimensions are displayed in **Table 2**. For the subgroups  $\pm$  clinical leader,  $\pm$  PT-contact, and  $\pm$  PS-functions, differences in %-positive were found for safety climate, perceptions of the unit management and perceptions of the hospital



Hospital site visit by the Danish Society for Patient Safety in the Safer Hospital Programme.

management. For the clinical leaders versus frontline clinicians, there was also a significant difference in perceptions of working conditions,  $p < 0.05$ . For all these statistically significant differences, the within-subgroup difference in %-positive was  $\geq 10\%$ . For  $\pm$  clinical leader the within-subgroup difference in %-positive was  $\geq 20\%$  for teamwork climate and job satisfaction. For respondents with no patient contact, %-positive exceeded the 60% threshold for four dimensions and working conditions were rated positively by the highest proportion with 76.9% positive respondents.

### Variability in the safety attitude dimensions (at hospital, unit and respondent level)

Estimates of the mean variance between the five hospitals, between the 15 units within the five hospitals and between respondents within the unit are presented for each of the dimensions in **Table 3**.

For all dimensions, the variance in means was larger between respondents within the unit (range: 0.017-0.042) than between units within the hospital (range: 0.001-0.007).

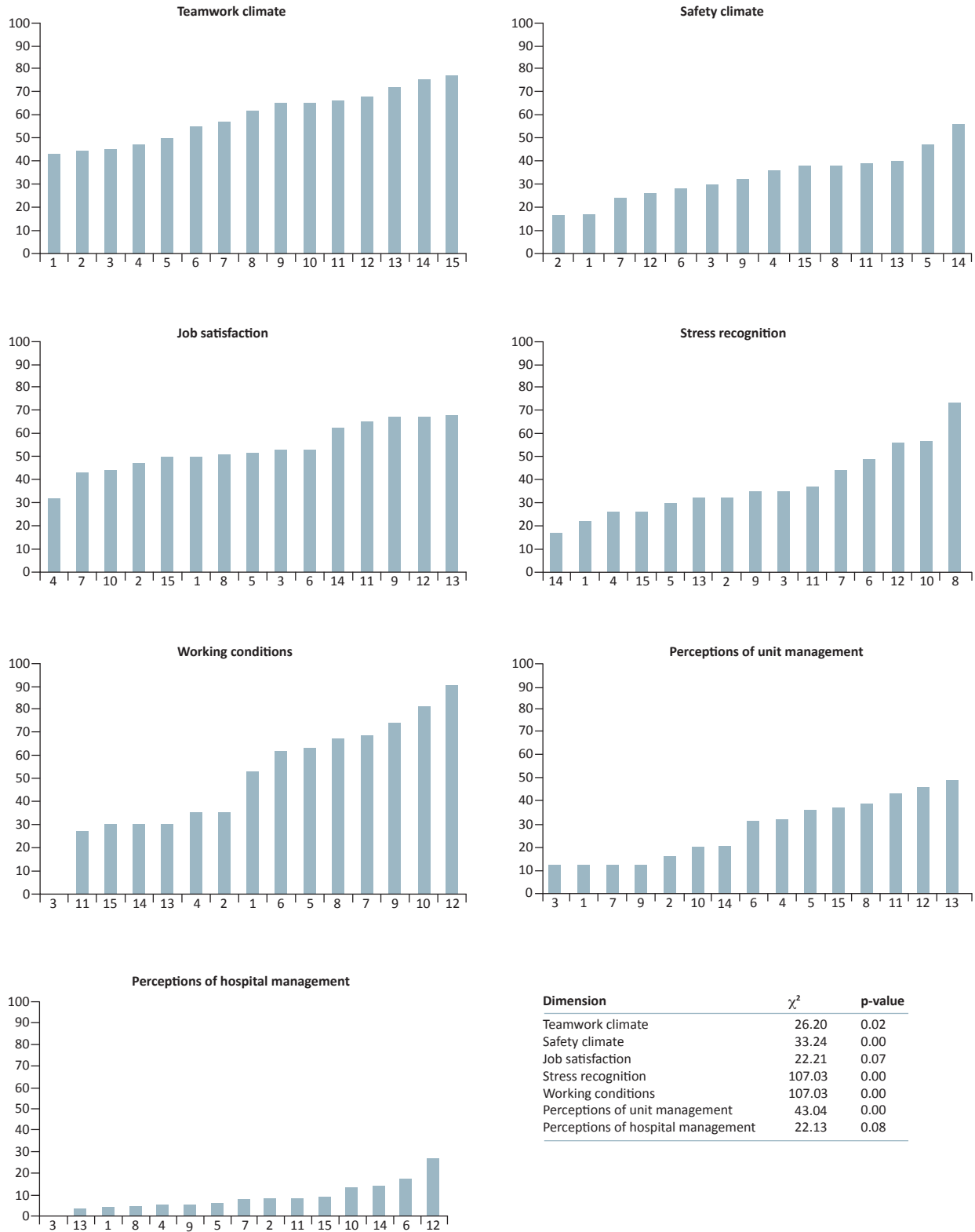
## DISCUSSION

The aim of this article was to describe perceived patient safety culture among Danish healthcare employees, investigate within-subgroup differences in positive perceptions of sub dimensions of the climate and to investigate variance in the perceived safety climate at the hospital, unit and respondent level.

All dimensional results for %-positive point towards a need for improvement according to the 60% threshold value indicated in the literature [16]. For the full population, the dimensional results for %-positive is generally lower than among the somatic units in the Danish SAQ

**FIGURE 1**

Distribution of %-positive scores per dimension for the 15 units<sup>a</sup>.



a) All units are ranked in ascending order according to %-positive for each dimension, and each unit was allocated a number, and this number was used in the graphical display for all dimensions, signaling the position of each unit with each dimension.



TABLE 2

Proportion of respondents with a positive attitude (%-positive) for subgroups (N = 544).

	Profession		Sex		Age, yrs			Seniority, yrs		Leader		PS-function		PT-contact	
	doctor	nurse	female	male	< 36	36-45	≥ 46	< 2	≥ 2	yes	no	yes	no	yes	no
n	55	405	467	54	107	158	257	65	454	10	534	122	397	516	13
% of total	10.1	74.4	85.8	9.9	19.7	29.0	47.2	11.9	83.5	1.8	98.2	22.4	73.0	94.9	2.4
<i>Dimension, %</i>															
Teamwork climate	49.1	58.5	58.7	59.3	54.2	66.5	56.4 <sup>a</sup>	52.3	59.7	80.0	58.2 <sup>a</sup>	60.7	58.2	58.1	69.2 <sup>a</sup>
Safety climate	20.0	32.6 <sup>a</sup>	34.0	25.9	26.2	35.4	33.9	32.3	33.0	90.0	32.0 <sup>*a</sup>	41.0	30.7 <sup>*a</sup>	32.0	69.2 <sup>*a</sup>
Job satisfaction	49.1	54.6	55.7	53.7	60.7	58.2	51.4	66.2	54.8	80.0	54.1 <sup>a</sup>	54.9	54.9	54.5	61.5
Stress recognition	41.8	34.8	35.1	38.9	33.6	37.3	35.4	38.8	34.8	30.0	35.8	32.8	37.0	35.3	38.5
Working conditions	49.1	55.8	55.2	48.1	43.9	53.2	59.5 <sup>a</sup>	52.3	55.7	100.0	53.0 <sup>*a</sup>	53.3	53.9	53.3	76.9 <sup>a</sup>
Perceptions of unit management	27.3	26.9	28.7	35.2	25.2	32.3	28.0	33.8	28.6	60.0	28.1 <sup>*a</sup>	37.7	26.7 <sup>*a</sup>	28.1	53.8 <sup>*a</sup>
Perceptions of hospital management	7.3	7.7	8.6	7.4	5.6	11.4	7.4	7.7	8.6	30.0	8.1 <sup>*a</sup>	16.4	6.0 <sup>*a</sup>	7.8	30.8 <sup>*a</sup>

PS = patient safety; PT = patient.

<sup>\*</sup>)  $p < 0.05$  for within subgroup difference in %-positive.

<sup>a</sup>) Within subgroup difference in %-positive  $\geq 10\%$ .

validation study [7], but the findings compare relatively well to Australian findings with the exception of working conditions, where the Danish level of %-positive was two times that reported in the Australian study [17]. Teamwork climate was perceived positively most frequently; and support given by the hospital management to patient safety was perceived positively least frequently; this pattern was also found in Turkey and Australia; the Danish teamwork score is the highest among the three countries, and the Danish score for perception of unit management the lowest [17, 18].

In general, healthcare staff spending more time at the sharp end of care, who have more extensive knowledge about the safety of patients, tend to be more critical of the patient safety culture than staff with less bedside time, e.g. nurses are less positive than physicians, and frontline clinicians less positive than leaders [8, 10]. Furthermore, females tend to be less positive than males, and inexperienced staff less positive than experienced [10]. In line herewith we found that leaders more often had positive attitudes than frontline clinicians except for stress recognition. However, these differences were only statistically significant for safety climate, working conditions; and for the two management dimensions, they are generally substantial and may have practical implications. Thus, they should be investigated further, especially as the number of leaders is too small for firm conclusions. Nevertheless, it is the leaders who provide the environment where safe care can be given by creating structures, processes and practices that allow a culture of safety to flourish [19]. A gap in perception between leaders and frontline staff might be solved when leadership relate patient safety culture survey results to clinical processes, direct their attention to safety and promote transparency and open communication

[19]. These actions may also be a lever for improving the low ratings of the perceptions of unit and hospital management.

Although no statistically significant differences in %-positive were found between doctors and nurses, ( $p < 0.05$ ), the %-positive is lower for doctors than for nurses, except for stress recognition and perception of unit management. These findings are not in line with those typically recorded in the literature [8, 10]. The reason why the Danish results differ from the literature remains open; further studies including larger samples and in-depth qualitative analysis are recommended to investigate this finding. Across age groups, sexes and the two groups of seniority, the within-group difference in %-positive was not statistically significant, but it exceeded ten percentage points. Consistent with literature findings, staff with no patient contact had higher ratings of %-positive than bedside staff did [8-10]. No specific



TABLE 3

Estimates of variance (95% CI) for the means between hospitals, units and respondents.

Dimension	Hospitals (n = 5)	Units <sup>a</sup> (n = 15)	Respondents <sup>b</sup> (n = 544)
Teamwork climate	0	0.001 (0.000-0.005)	0.017 (0.015-0.019)
Safety climate	0	0.002 (0.001-0.007)	0.021 (0.019-0.024)
Job satisfaction	0	0.001 (0.001-0.007)	0.023 (0.020-0.026)
Stress recognition	0.003 (0.001-0.111)	0.002 (0.001-0.014)	0.042 (0.037-0.047)
Working conditions	0.002 (0.000-1,386.331)	0.007 (0.003-0.027)	0.027 (0.024-0.031)
Perceptions of unit management	0	0.004 (0.002-0.019)	0.031 (0.028-0.035)
Perceptions of hospital management	0.001 (0.000-0.106)	0.001 (0.000-0.017)	0.028 (0.025-0.032)

CI = confidence interval.

<sup>a</sup>) Variance between units within hospitals.

<sup>b</sup>) Variance between respondents within units.

pattern was observed when comparing staff with and without tasks within the patient safety organisation of the unit or hospital. Awareness of variations and clinically relevant differences between subgroups, dimensional strengths and weaknesses may aid leaders and clinicians safeguard the patients better and plan improvement strategies. All differences should therefore be investigated, e.g. using dialogue-based methods when following up on survey results and planning improvement activities.

The findings related to differences in scale mean scores between the units are comparable to previous findings, as are results for variability in proportions of positive responders across units [7, 16, 17]. For all dimensions, the variance in means was larger between respondents within the unit than between units within the hospital; it was lowest between hospitals. This is consistent with findings from Norway, and since the units are characterised by individual climate strengths and weaknesses, the unit level seems the appropriate level for measuring perceptions of climate and target improvement activities [11, 16].

The proportion of missing answers across items was small (0-4%) in comparison with other SAQ studies [7, 11], and the rate of participation was satisfactory [20] which shows good acceptability of the SAQ-DK statements. Participation in this study was limited to a limited number of specialties from acute care regional hospitals. No university hospitals or ambulatories were included. Even though the study is strengthened by inclusion from multiple sites, it cannot be dismissed that the attrition can be associated with a specific attitude that may have affected our findings.

Selection as well as information bias, and bias resulting from small subgroups cannot be ruled out either, and extrapolation of the findings to other hospitals and health settings should be done with caution.

## CONCLUSIONS

The results provide a snapshot of *how* staff in the 15 units perceived the culture. The level of %-positive per dimension is generally comparable with international findings; only working conditions were more frequently perceived as positive by the Danish staff than in the literature. The leaders more frequently had positive attitudes than frontline clinicians did. Generally, patient safety culture should be assessed at the unit level; dimensional strengths and weaknesses as well as subgroup differences should be identified, and dialogue-based methods should be applied to uncover *why* the culture is perceived as it is. Based upon the results, unit specific improvement initiatives can be tailored to the local strengths and weaknesses [8, 10].

More research on specific aspects of understanding,

measuring and developing patient safety culture is recommended along with research investigating the role of leadership in shaping patient safety culture on a daily bases. Finally, yet importantly, it must be verified if a positive culture reflects good patient safety.

**CORRESPONDENCE:** Solvejg Kristensen. E-mail: solkri@rm.dk

**ACCEPTED:** 3 September 2015

**CONFLICTS OF INTEREST:** Disclosure forms provided by the authors are available with the full text of this article at [www.danmedj.dk](http://www.danmedj.dk)

**ACKNOWLEDGEMENTS:** The involved local project managers, clinical leaders and healthcare workers are acknowledged for support and kind participation in the survey. TrygFonden is acknowledged for financial support to the Danish Safer Hospital Programme. For a complete list of references, please contact corresponding author.

## LITERATURE

- Morello RT, Lowthian JA, Barker AL et al. Strategies for improving patient safety culture in hospitals: a systematic review. *BMJ Qual Saf* 2013;22:11-18.
- Weaver SJ, Lubomski LH, Wilson RF et al. Promoting a culture of safety as a patient safety strategy: a systematic review. *Ann Intern Med* 2013;158 (5 Pt 2):369-74.
- Ostroff C, Kinicki AJ, Muhammad RS. Organizational culture and climate. In: Weiner I, ed. *Handbook of psychology*. 2 ed. New York: John Wiley & Sons, 2013:643-76.
- Madsen MD, Østergaard D. Udvikling af metode og værktøj til at måle sikkerhedskultur på sygehusafdelinger. Afrapportering af projekt om sikkerhedskultur og patientsikkerhed i Københavns Amt. Forskningscenter Risoe, 2004.
- Zohar D, Hofmann DA. Organizational culture and climate. In: Kozlowski S, ed. *Oxford handbook of industrial and organizational psychology*. New York: Oxford University Press, 2012.
- Schneider B, Ehrhart MG, Macey WH. Organizational climate and culture. *Annu Rev Psychol* 2013;64:361-88.
- Kristensen S, Sabroe S, Bartels P et al. Adaption and Validation of the Safety Attitude Questionnaire for the Danish hospital setting. *Clin Epidemiol* 2015;7:149-60.
- Singer SJ, Gaba DM, Falwell A et al. Patient safety climate in 92 US hospitals: differences by work area and discipline. *Med Care* 2009;47:23-31.
- Hartmann CW, Rosen AK, Meterko M et al. An overview of patient safety climate in the VA. *Health Serv Res* 2008;43:1263-84.
- Gallego B, Westbrook MT, Dunn AG et al. Investigating patient safety culture across a health system: multilevel modelling of differences associated with service types and staff demographics. *Int J Qual Health Care* 2012;24:311-20.
- Deilkas E. Patient safety culture – opportunities for health care management. The Safety Attitudes Questionnaire – short form 2006, Norwegian version. Lørenskog, Norway: Akershus University Hospital, Health Services Research Unit, 2010.
- Danish Society for Patient Safety, Danish Safer Hospital Programme. [www.patientsikkerhed.dk/in-english/projects/safer-hospitals-programme.aspx](http://www.patientsikkerhed.dk/in-english/projects/safer-hospitals-programme.aspx) (1 May 2014).
- Sexton JB, Helmreich RL, Neilands TB et al. The Safety Attitudes Questionnaire: psychometric properties, benchmarking data, and emerging research. *BMC Health Serv Res* 2006;6:44.
- Rose JS, Thomas CS, Tersigni A et al. A leadership framework for culture change in health care. *Jt Comm J Qual Patient Saf* 2006;32:433-42.
- The University of Texas at Houston, Memorial Hermann Center for Healthcare Quality and Safety. Scale Computation Instructions. [https://med.uth.edu/chqs/files/2012/05/SAQ-Short-Form-Scale-Items\\_000.pdf](https://med.uth.edu/chqs/files/2012/05/SAQ-Short-Form-Scale-Items_000.pdf) (1 May 2014).
- Schwendimann R, Zimmermann N, Kung K et al. Variation in safety culture dimensions within and between US and Swiss Hospital Units: an exploratory study. *BMJ Qual Saf* 2013;22:32-41.
- Chaboyer W, Chamberlain D, Hewson-Conroy K et al. CNE Article: safety culture in Australian intensive care units: establishing a baseline for quality improvement. *Am J Crit Care* 2013;22:93-102.
- Kaya S, Barsbay S, Karabulut E. The Turkish version of the safety attitudes questionnaire: psychometric properties and baseline data. *Qual Saf Health Care* 2010;19:572-7.
- Vogus TJ, Weick KE, Sutcliffe KM. Doing no harm: enabling, enacting, and elaborating a culture of safety in health care. *Acad Manag Perspect* 2010; 24:60-77.
- Pronovost P, Sexton B. Assessing safety culture: guidelines and recommendations. *Qual Saf Health Care* 2005;14:231-3.