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Application of Safety attitudes questionnaire in Hospitals, SAQ instrument's psychometric testing and translation instrument in Albania

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Abstract

Objective. To establish the reliability and validity of the translated version of the Safety Attitude Questionnaire (SAQ) by evaluating its psychometric properties and find out possible differences among nurses and physicians regarding safety attitudes.

Design. A cross-sectional study, utilizing the Albanian version of the SAQ and a demographic questionnaire.

Setting. Four Regional Hospitals, Albania.

Participants. Three hundred and forty one healthcare providers among which 132 nurses and 209 doctors.

Intervention. None.

Main Outcome Measure(s). Translation, Construct Validity and Internal Validity of SAQ. The SAQ 6 scales and 30 items;

Results. A total of 341 valid questionnaires were returned with a mean response rate of 70%. The CFA and its goodness-of-fit indices (SRMR 0.075, RMSEA 0.044, and CFI 0.97) showed good model fit. The Cronbach's alpha values for each of the scales of the SAQ ranged between 0.64 and 0.82. The percentage of hospital healthcare workers holding positive attitude was 60.3% for teamwork climate, 57.2% for safety climate, 58.4% for job satisfaction, 37.4% for Stress recognition, 59.3% for perception of management, and 49.5% for working conditions. Inter-correlations between the subscales showed *moderate to high correlation with each other*. The factor stress recognition had no significant correlation with teamwork climate, perception of management, or job satisfaction. Nurses were more hesitant to admit and report errors, only 55% of physicians and 44% of nurses endorsed agree (χ^2=, 4.9 p=0.02); moreover nurses received lower scores on team work compared to doctors (N 45.7 vs. D 52.3 **p= 0.01**). Doctors denied effects of stress and fatigue on performance (N 46.7 vs. D 39.5 **<0.01**), neglecting the workload.

Conclusions. In the light of deployment phenomena, informal payments issue and no stress recognition from healthcare provider, establishing patient safety programs similarly to those constituted in the EU, should be a priority among policy decision makers in Albania.

Keywords*: Patient safety, Safety attitudes, Hospital, doctor, nurse, Psychometrics,*

Background

Patient safety is viewed as a crucial component of quality in healthcare service (1). Over the last decade, numerous definitions of patient safety have emerged in the literature. The Institute Of Medicine (2) described it as the prevention of harm, however, the European Agency, Safety Improvement for Patients in Europe,(3) asserted it was about *identifying, analyzing and minimizing* patient risk.

One-fifth of the people in the community in New York are exposed to medical mistakes and adverse events (4), (an adverse event is defined as an injury resulting from a medical intervention (i.e., not due to the underlying medical condition) (11).

European data, mostly from European Union Member States, show that medical errors and health-care related adverse events occur in 8% to 12% of hospitalizations. Infections associated with health care affect an estimated 1 in 20 hospital patients on average every year (estimated at 4.1 million patients). The United Kingdom National Audit Office estimates the cost of such infections at £1 billion per year. (5)

A European Commission report that was released recently and dubbed *Patient Safety in EU: 2014* elucidated an array of happenings (producing healthcare-associated infections) that are directly responsible 37000 deaths/year, they contribute to a further 110,000 deaths/year and they *cost hospitals* over a Euro 5.4 billion/year (6).

In healthcare, a significant percentage of errors are attributed to communication breakdowns and lack of effective teamwork (7). Furthermore, bad communication and not effective teamwork serve as contributing factors in the occurrence of patient safety incidents (7, 8, 9, and 10).

To this ending, Hospitals, need to asses patient safety and promote teamwork principles for creating safe hospital systems (11, 12).

Albania and the missing programs

To broaden the view, predicaments relating to the management have confronted a number of hospitals in Albania. These issues include unreliability in costing, lack of staff capacity building interventions, poor human resource management, the clinical results are not provided in a good and systematic form, problems in streamlining of the supply chain of the hospital supplies, poor non-clinical services which could otherwise be outsourced, lack of an independent body that takes care of the governing of the hospital, and the repair and maintenance of bio-medical equipment is out of date. It is important that patients should be provided with the much needed safety since it is one of the identifiable problems in the hospitals. This would allow provision of patient safety while shunning away blame game, instead diverting the attention to the quality of care. Healthcare organizations often learn from error by the use of local and national reporting systems (14). Patient Safety programs are constituted mostly in the Union, but outside the Union, they are in their latent process i.e. in Albania currently there are no established programs on error records, formal hospital registers though researchers admit that patient safety is an issue in our country. Hereby referred "medical breaches" are directly connected (according to researchers), with the presumed *medical corruption (15, p1).*

There does exist a lack of research on patient safety in Albanian Hospital settings or Primary Care. Therefore, an instrument that measures health care professionals' attitudes regarding safety climate in the hospitals would be helpful in understanding and identifying areas that need improvement and for evaluating improvements in interventions. The purpose of the present study

was to establish the reliability and validity of the translated version of the Safety attitude Questionnaire (Hospital Version) by evaluating its psychometric properties. Moreover we aim to find out if there are differences among nurses and physicians regarding safety attitudes.
Previous research has assessed the psychometric properties of the SAQ across countries (17, 18) and in different contexts and settings. The internal consistency and Cronbach's alpha values are acceptable, and the construct validity measured by CFA generally exhibits satisfactory model fit (17, 18, 19).
No psychometric instruments have been developed to measure patient safety in Albanian hospital settings.

Our Research Hypothesis related to the study aim are:
H1. The data from this study confirm the proposed six-factor model of the original SAQ.
H2. SAQ shows good internal consistency.
H3. Individual items of the SAQ show high correlations within its respective factor.
H4. There is no difference among nurses and physicians related to perceived patient safety attitudes in selected hospital settings

Methods

Setting

This was a quantitative, cross-sectional study and the data collection was administered between May and June 2012 to 4 regional hospitals in Albania. Nurses and doctors answered the SAQ-A voluntarily and anonymously**.** Surveys that were blank or had invariant responses (e.g., all responses were all "neutral" or "agree strongly) were excluded from this analysis, as they did not provide any diagnostic information.

Participants

While we did not utilize a formal sampling scheme, we included nurses and physicians form 4 hospitals from a range geographic setting. The rationale behind purpose of choosing only two types of occupational groups (nurses' vs. doctors) was explicitly compare this two groups with perpetual distinctions in safety behavior in academic healthcare literature (26,27,29,30) Nurses and doctors in Albanian hospitals are closer to teamwork functioning hence affect patient service and quality. Surveys were administered during pre-existing departmental and staff meetings.

Measurements
Safety Attitude Questionnaire (SAQ)

The instrument used for data collection was the Safety Attitudes Questionnaire (SAQ) short adapted 30 item version. The instrument is composed of two parts: the first part contains questions containing the perception of patient safety (see table 6). The second part collects data about the professional: position held, sex, main job, and experience in years.
The instrument measures the perception of the health care professionals in six areas: teamwork climate, safety climate, job satisfaction, perceptions of management, stress recognition and working conditions with the response scale ranging from 1 (disagree strongly) to 5 (agree

strongly).The reason that leaded us to use SAQ as an evaluating tool, was the s**trong correlation** showed on the previous studies between the favorable scores of SAQ and positive patient outcomes (20). Another strong reason was the proved validity and reliability of the SAQ in different countries where it was conducted such as United States (16, 17) United Kingdom's (18), and Norway (19)

Safety Culture versus Safety climate, definition of terms

Safety culture' has a broad definition that defines it as a worldwide issue that incorporates the values, assumptions and drivers that guide an organization. On the flipside, the climate takes a narrower scope since it deals with how employees take certain aspects of the organizational culture to be.

Measuring safety climate is important because the culture of an organization and the attitudes of teams have been found to influence patient safety outcomes and these measures can be used to monitor change over time.

Some suggest that it is easier to measure safety climate because culture is much broader, whereas climate focuses on staffs' current perceptions of safety in relation to management support, supervision, risk taking, safety policies and practices, trust and openness. Safety climate is also thought to be more likely to show change following interventions. (22, 28). In this scan, we are using Safety Climate in our study as a much easier and understandable/manageable concept.

Albanian version of the SAQ

The SAQ was translated from English to Albanian and back again by native speakers. In order to ensure that the version that was translated from English to Albanian was clear and used the right words, a focus group comprising of physicians, nurse experts and the faculty conducted a review. All the components were reviewed for their conformity with the Albanian culture. Linguistic validation of the translation was performed using the back-translation technique. Analytical results demonstrated that all six dimensions had good reliability. The view by the experts determined the authenticity of the content on the basis of its relevance, appropriateness and importance to the Albanian culture. Content validity ratio (CVR), and content validity index (CVI) were calculated for each item. The mean CVR for the total scale was 0.96 and the mean CVI was 0.82 indicating a satisfactory content validity.

Statistical Analysis

Data analyses were conducted by SPSS version 16 (SPSS Inc., Chicago, IL, USA). CFA was conducted by structural equation modeling using AMOS 5.0 software to test the extent to which each SAQ-C dimension was explained by items and the extent to which safety attitude was explained by the six dimensions. Relative chi-squares <5.0, a CFI value ≥ 0.95, a RMSEA value of <0.08 and a SRMR value of <0.09 were considered as acceptable model fit. The internal consistency of the Albanian version of SAQ was assessed by Cronbach's alpha coefficient. Two items were negatively worded and reversed for the statistical analysis. Independent sample *t* test was used to compare the mean score of SAQ subscales between physicians and nurses. The χ^2 test was used to compare the proportions of responses between physicians and nurses. Pearson

correlation coefficient was used to examine the relationship between SAQ subscales. A p –value ≤0.05 was considered statistically significant.

Ethical issues

Approval by Ethical Committee was not necessary because the study had no experimental design and did not involve patients. The study was performed in line with the Helsinki Declaration using survey. The participants were informed about the aims of the study and were given the possibility to opt out without giving any explanation if by any chance they felt uncomfortable with the content of the questions

Results

Survey responses

A total of 341 valid questionnaires were returned from 4 hospitals with a mean response rate of 70%. Missing values' analysis showed no item with more than2% missing values (range 0 - 1.8%). The majority of participants (63.6%) were females compared to males (36.4%). 61.4% were physicians while 38.6% were nurses (table 1).

Table 1.

Characteristics of safety attitude survey respondents

Characteristics	Frequency	%
Gender		
Male	124	36.4
Female	217	63.6
Age groups (years)		
21-30	91	26.7
31-40	63	18.4
41-50	93	27.3
51-60	79	23.2
>60	15	4.4
Job discipline		
Physicians	209	61.4
Nurses	132	38.6

Internal construct validity

The goodness-of-fit values used to evaluate the internal construct validity are displayed in table 3. The SRMR value was 0.075, the RMSEA values were was 0.044, and the CFI value was 0.97, which indicates a good model fit approximation of the translated version of the SAQ.

Table 2 Goodness-of-fit indices for CFA of the SAQ factors

Sample size	341
Standardized root mean square residual (SRMR)	0.075
Root mean square error of approximation (RMSEA)	0.044
Comparative fit index (CFI)	0.97

The CFA indicated a good model fit for each dimension and entire safety construct, namely the GFI, TLI, and CFI were >0.90 and the RMSAE was <0.10.

Internal consistency

The internal consistency of the six factors and 30 items of the translated version of the SAQ had Cronbach's alpha values of 0.62 to 0.82. Safety climate had the highest Cronbach's alpha values, and stress recognition had the lowest values (table 2).

Table 3 Internal consistency for the six factors of SAQ factors Cronbach's alpha

SAQ factors	Cronbach's alpha
Safety Climate (7 items)	0.82
Teamwork Climate (6 items)	0.79
Job Satisfaction (5 items)	0.78
Stress Recognition (4 items)	0.62
Perceptions of Management (4 items)	0.64
Working Conditions (4 items)	0.76

The test of the hypothesized relationships among the factors and items showed that the correlation ranged from 0.02 to 0.89 and that five of the six factor correlations were significant. Teamwork climate was positively correlated with safety climate (r=0.55, <0.01), job satisfaction (r=0.54, <0.01), Perceptions of Management (r=0.68, <0.01), Working Conditions (r=0.68, <0.01) while the Stress Recognition subscale was not significantly related to any of subscales. The intercorrelations between the factors are presented in table 4.

Table 4. Correlation matrix for the SAQ subscales

Subscale	Safety climate	Teamwork climate	Job satisfaction	Stress recognition	Perception of management	Working conditions
Safety Climate						
Teamwork Climate	0.55*					
Job Satisfaction	0.46*	0.54*				
Stress Recognition	0.25	0.08	0.02			
Perceptions of Management	0.54*	0.68*	0.47*	0.15		
Working Conditions	0.68*	0.71*	0.61*	0.25	0.79*	

* Significant on 5% level.

SAQ factors and item descriptive and *overall positive responsiveness per scale*

The SAQ factor definitions and items; missing, mean, median, agree (agree strongly) and disagree (disagree strongly) answers is described in the **table** 5.

Table 5 SAQ Item Descriptive

Teamwork Climate (1-6)	**Is item reverse scored?**	**% Item Missing Data**	**Mean (SD)**	**% Agree (Min Agree-Agree)**	**% Disagree (Min Disagree-Max Disagree)**
1. It is easy for personnel in this Hospital to ask questions when there is something that they do not understand.	**No**	**1.3**	4.13 (.96)	80.45 (41.67-100.00)	7.41 (.00-35.00)
2. I have the support I need from other personnel to care for patients.	**No**	**2.1**	3.95 (.99)	74.28 (33.30-98.05)	9.18 (.00- 42.86)
3. Nurse input is well received in this Hospital.	**No**	**1.9**	3.99 (1.05)	73.42 (23.94-100.00)	10.16 (.00-54.94)
4. In this Hospital, it is difficult to speak up if I perceive a problem with patient care.	**Yes**	**2.2**	2.45 (1.26)	21.69 (.00-51.00)	59.87 (9.09-100.00)

5. Disagreements in this Hospital are resolved appropriately (i.e., not *who* is right, but *what* is best for the patient)	**No**	**1.8**	3.57 (1.10)	56.97 (22.75-85.24)	18.24 (.00-54.09)
6. The physicians and nurses here work together as a well-coordinated team.	**No**	**1.6**	3.75 (1.07)	68.42 (25.72-98.2)	14.24 (.00-53.12)
Safety Climate 7-13					
7. The culture in this Hospital makes it easy to learn from the errors of others.	**No**	**1.5**	3.96 (1.01)	71.45 (33.33-100.00)	9.55 (.00-33.33)
8. Medical errors are handled appropriately in this hospital.	**No**	**2.3**	3.49 (1.06)	51.08 (14.3-92.7)	17.3 (.00-57.14)
9. I know the proper channels to direct questions regarding patient safety in this hospital.	**No**	**1.6**	3.84 (1.01)	64.5 (24.00-100.00)	9.45 (.00-39.10)
10. I am encouraged by my colleagues to report any patient safety concerns I may have	**No**	**1.5**	4.05 (.94)	77.3 (48.60-100.00)	7.15 (.00-26.32)
11. I receive appropriate feedback about my performance.	**No**	**0.7**	3.22 (1.23)	46.48 (4.58-76.5)	31.5 (.00-75.00)
12. I would feel safe being treated here as a patient.	**No**	**1.5**	4.02 (1.04)	74.99 (36.35-100.00)	9.48 (.00-42.67)
13. In this hospital, it is difficult to discuss errors.	Yes	1.7	2.57 (1.13)	20.15 (.00-48.15)	53.87 (20.84-92.7)
Job Satisfaction 14-18					
14. This hospital is a good place to work.	**No**	**0.7**	3.75 (1.08)	63.5 (4.55-100.00)	13.54 (.00-58.09)
15. I am proud to work at this hospital.	**No**	**0.9**	3.72 (1.07)	62.5 (15.00-100.00)	10.8 (.00-50.00)
16. Working in this hospital is like being part of a large family.	**No**	**0.7**	3.12 (1.30)	42.1 (.00-93.55)	33.4 (.00-80.00)
17. Moral in this Hospital area is high.	**No**	**1.5**	2.89 (1.25)	38.72 (4.18-84.33)	36.75 (.00-76.25)
18. I like my job.	**No**	**0.2**	4.38 (.88)	85.6 (62.1-100.00)	4.63 (.00-18.32)

Stress Recognition 19-22					
19. When my workload becomes excessive, my performance is impaired.	**No**	**1.5**	3.79 (1.13)	32.16 (27.57-100.00)	34.9 (.00-52.3)
20. I am more likely to make errors in tense or hostile situations.	**No**	**1.3**	3.77 (1.16)	46.5 (30.00-87.00)	21.84 (.00-50.00)
21. Fatigue impairs my performance during emergency situations (e.g., emergency resuscitation, seizure).	**No**	**3.4**	3.00 (1.28)	29.45 (5.78-79.15)	46.84 (12.30-76.54)
22. I am less effective at work when fatigued.	**No**	**1.4**	3.75 (1.03)	25.69 (38.5-96.4)	41.21 (.00-30.00)
Perceptions of Management 23-26					
23. Hospital management does not knowingly compromise the safety of patients.	**No**	**1.7**	2.54 (1.27)	49.2 (9.11-87.5)	26.5 (4.89-90.45)
24. Hospital administration supports my daily efforts.	**No**	**0.6**	2.48 (1.75)	64.5 (.00-94.2)	29.62 (.00-100.00)
25. I am provided with adequate, timely information about events in the hospital that might affect my work.	**No**	**1.7**	3.21 (1.09)	51.5 (12.00-74.8)	22.1 (.00-66.65)
26. The levels of staffing in this clinical area are sufficient to handle the number of patients	**No**	**1.8**	2.67 (1.33)	53.54 (.00-84.62)	39.47 (4.21-96.45)
Working Conditions 27-30					
27. All the necessary information for diagnostic and therapeutic decisions is routinely available to me.	**No**	**2.2**	3.5 (1.07)	58.64 (16.8-89.5)	18.4 (.00-68.45)
28. This hospital constructively deals with problem physicians and employees.	**No**	**1.9**	2.89 (1.14)	24.85 (.00-82.33)	35.45 (.00-81.00)
29. Trainees in my discipline are adequately supervised.	**No**	**2.4**	3.55 (1.19)	58.64 (10.00-100.00)	21.48 (.00-64.50)
30. This hospital does a good job of training new personnel.	**No**	**1.2**	3.50 (1.19)	57.46 (16.2-96.45)	20.42 (.00-61.4)

The percentage of hospital healthcare providers holding positive attitude was 60.3% for teamwork climate, 57.2% for safety climate, 58.4% for job satisfaction, 37.4% for Stress recognition 59.3% for perception of management, and 49.5% for working conditions.

Group comparisons Nurses' behavior vs. Physicians

Results of the *t* test for independent samples did not indicate any significant difference between the score of physicians compared to nurses with regard to Safety climate (t= -1.5 p=0.1) and Perception of management (t= -1.6 p=0.1) subscales showing the same perception of attitude. A significant difference between the score of physicians and nurses was found for Teamwork (t= -5.4 p<0.01), Stress recognition (t= 6.4 p<0.01) job satisfaction (t= -7.8 p<0.01) and Working conditions subscales (t= -9.7 p<0.01).

Table 6 Comparison of the SAQ score among nurses and physicians

Subscale	Physicians M (SD)	Nurses M (SD)	t	p
Teamwork	52.3 (10.7)	45.7 (11.3)	-5.4	**0.01**
Safety climate	38.7 (11.1)	36.8 (10.3)	-1.5	0.1
Stress recognition	39.5 (9.2)	46.7 (11.4)	6.4	**<0.01**
Job satisfaction	49.7 (9.2)	40.6 (12.2)	-7.8	**<0.01**
Perception of management	46.8 (9.6)	44.8 (13.1)	-1.6	0.1
Working conditions	42.4 (11.4)	29.2 (13.4	-9.7	**<0.01**

For the statement, 'When my workload becomes excessive, my performance is impaired.' a lower proportion of physicians and nurses endorsed the 'agree' option but this only achieved statistical significance (39% physicians vs. 51% nurses; χ^2=5.0, p=0.02).
Meanwhile, for the "I am provided with adequate, timely information about events in the hospital that might affect my work" (59% physicians vs. 34% nurses; χ^2=18.8, p<0.01).

Regarding the item "The culture in this Hospital makes it easy to learn from the errors of others" a high percentage of nurses and physicians agree with the statement (80.2% of nurses and 83% of physicians) (χ^2=0.1, p=0.6). On the other hand nurses and doctors agree as well on "In this hospital, it is difficult to discuss errors" where nurses feel more intimidated into discussing errors (55% of physicians vs 44% of nurses (χ^2=, 4.9 p=0.02)

Discussion

Previous studies in the area of patient safety have investigated safety climate in primary care in Albania (23).The aim of the present study was to investigate the perception of safety climate among nurses and doctors working in Hospital settings, confirming first of all a validated tool (SAQ). According to the results of this study, Construct validity based on the CFA and goodness-of-fit indices including CFI, SRMR, and RMSEA demonstrated a good model that fitted very well. It is imperative that a model should be made more specific and be tested a second time in case a hypothetical model fails to fit appropriately. (24). According to good model fit indices, the Albanian version of the SAQ is a valid measure of safety attitude in hospitals. This finding is also an indication of the internal construct validity of the SAQ. The data from this study confirms our first hypothesis of the proposed six-factor model of the original SAQ

The internal consistency and internal structure of the Albanian translation of the SAQ was assessed; the translation showed satisfactory psychometric properties. The mean CVR for the total scale was 0.96 and the mean CVI was 0.82 indicating a satisfactory content validity. A good model fit was depicted by the construct validity whose goodness-of-fit is used in determining its CFA. The internal consistency for the six factors of the Albanian version of the SAQ based on the values of Cronbach's alpha assumes the values between 0.62 and 0.82. Job satisfaction and perception of management had an alpha value of 0.62 and 0.64 respectively, which is a bit below the recommended acceptable alpha value limit of 0.70 due to missing data that have influenced the result (25). Some items within the factor require revision based on their Cronbach's alpha value. In order to apply SAQ in Albania and ensure reliability, the outcomes of this research work should be put into consideration in future evaluations. Cultural aspects may exist regarding the perception of management in the Albanian setting. Overall, this led to good internal consistency confirming our second hypothesis.

The study confirmed the third hypothesis based on the conclusion that there was interconnectedness between all the factors with the exception of stress recognition. These findings complemented those of psychometric testing for the original SAQ. In tandem with previous studies, stress recognition did not depict any relationship with perceptions of management, teamwork climate, and job satisfaction, factors that showed moderate to high correlation (17). A significant difference among nurses and physicians was found related to perceived patient safety attitudes in selected hospital settings for Teamwork, Stress recognition, job satisfaction and Working conditions subscales, showing variations on perception of attitude across these two occupational groups thus not confirming our fourth hypothesis (*There is no difference among nurses and physicians related to perceived patient safety attitudes in selected hospital settings).*

There are other clinical areas that have categorically stated the broad distinctions between nurses and physicians (26, 27), in addition two studies in the USA that used the SAQ showed that nurses and doctors differed in their perceptions of safety culture (29,30) and may be due primarily to personal characteristics of caregivers

The traditional hierarchy of physicians has often discouraged nurses to speaking up to doctors, and nurses can be hesitant to confront a physician on issues of patient care because they might have less training or experience in dealing with a patient's medical condition. Consistently with this, in our study, nurses scored low mean values in working conditions, safety climate and job satisfaction. Another study dealing with nurse job satisfaction showed that 41% of nurses were dissatisfied with their work in USA (19); in England 38.9% of nurses intended to abandon the profession. Generally salary, professional growth and autonomy are some of the factors that may influence the nursing professional's job satisfaction (31).

Meanwhile national researchers in Albania have pointed out that nurses were less satisfied with *promotion opportunities and co-worker satisfaction* (32), WHO studies stress overall the limited formal opportunities to upgrade knowledge and skills through continuing professional development (33). From the study, it was clear that the international benchmark standards were not met (17). This was depicted through the failure by the mean values as directed towards the five safety dimensions.

Managerial implications

Measuring safety climate in hospitals will help to diagnose the underlying safety culture of the entire organization or work units. This study created a thorough image of the status of nurses and doctors' behavior regarding issues like teamwork, safety climate, and stress at work, job satisfaction, and management support in the selected regional hospitals.

European integration might increase the mobility of HRH to other countries. (As a record, immediately after acceding to the European Union in 2007, Romania reported over 6000 requests for certificates recognizing the Romanian diplomas of doctors, dentists, pharmacists and nurses for use elsewhere in the Union (33).

In the light of hospital decentralization reforms and EU adherence, this study will serve as a starting point in initiating policy changes to address the issues identified above such as improving job satisfaction, working conditions, perceived inadequate information flow among nurses, as well as implementing interventions targeted to reduce their impact on the quality of hospital care.

The prevailing culture influences safety behaviors and outcomes for both healthcare workers and patients. This study has shown that the SAQ-A is a valid and easily administrated instrument. For the first step, hospitals can use this tool to measure their employees' safety attitudes on a regular

basis, moreover healthcare managers should use the resulting data to design effective safety management systems and possible intervention.

The results of the study will serve as baseline information for researchers with a variety of research interests especially related to patient safety and human resources for health.
From a cultural perspective, the results will serve as a basis for comparison between other countries or systems which have their own particularities, although sharing important common features (in terms of health services organization, financing and regulation and the similarity of their evolution throughout history).

Promoting Patient Empowerment and positive safety Culture

When it comes to healthcare, many policy documents, national priorities, as well as guidelines across Europe, North America, Australia, and sections of the Asian continent have been developed with messages on building of positive safety culture over the last two decades (34, 35). This initiatives in Albania are quite scarce and in its latent process. Below, we created a contextualized framework (fig. 1), taking into account Albanian Healthcare system on how to promote a safety culture in an underfinanced, healthcare system, hoping to broaden the perspective similar health systems in Eastern European countries

Fig 1.Gabrani & Petrela, Promoting safety culture frame in Albanian healthcare settings

The voice of patients and careers is also largely absent in the field of patient safety in Albania for example the patients are considered inactive with a concerning apathy toward involvement in decision making process (36) not to neglect the informal payment phenomena in our country which is deterring effects to the Albanian health system. More active involvement of *patients will help patient safety programs in the future diffuse and scale up, programs which are successfully implemented in Western Europe ore outside EU developed countries.*

Further research needed

The topic of patient safety is becoming increasingly prominent on political agendas (37). Reduced revenues and increasing expenditures in times of *financial crisis* are likely to increase pressure on the health systems to further contain costs, and thus affect service quality and patient safety (38); according to recent cost-effectiveness studies on patient safety, interventions show that specific actions on patient safety could be cost-effective (39).
To cope with the EU policy measures and reduce the costs of unsafe care as well as to develop cost-effective patient safety programmes, further research is needed in Albania. Furthermore,

work is needed to better identify and design solutions that fit into existing institutional and organizational frameworks. At the hospital setting level, there is need to understand differences in attitudes among nurses and doctors, better understanding of the low mean values of scales compared to international benchmark (17) especially related to stress and fatigue recognition scale.

Conclusions

It is apparent that the testing of psychometric as well as translation of SAQ depicts a worthwhile construction of validity. Despite this, reliability analysis suggested that some items need further refinement to establish sound internal consistency. As previous research suggests, the SAQ has potential as a useful tool for evaluating safety attitude. Back to our study, there is room for improvement especially in generalizing the findings in larger samples as well as conducting further additional exploratory analysis to identify a better factor model. Moreover, the researchers are committed to adapt a new version of the tool by combining it with in-depth interviews.

Strengths and Limitations

The success of the survey can be attributed to several factors. First of all, the SAQ was easily answered and persistently well explained. Secondly, the group administration fully supported the survey, showing also ongoing commitment to the patient safety topic and safety culture through parallel studies Third, all respondents were anonymous, and thus they might feel more comfortable to fill out the questionnaire, though we cannot hide the first hesitation to participate due to “persecution” fear or “job harm”.

We are aware to several limitations to our study. The tool itself relies strongly on self-reported behavior, rather than on direct observations or registrations. The resulting information may be biased and may not correctly reflect the real situation. The researchers have made substantial efforts to train the data collectors avoid the positive answering tendency. However, this still cannot be excluded. Staff perceptions of communication can vary over time and can be influenced by day to day events within the hospital setting. The external validity of the study findings was limited by the study design and participants. We did not adopt a systematic sampling method. Fourth, we did not examine the variations in perceptions among departments or across hospital settings.

Contributorship Statement

AG designed the study, AH and JCG refined the writing strategy and the analysis elaboration, AS and JC performed the data analysis, and wrote the manuscript. JCG, AH and AS designed (adapted) the questionnaire and lead the data collection process. All the authors assisted with the data collection and the manuscript preparation, modified and approved the final manuscript.

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Competing interests
None declared

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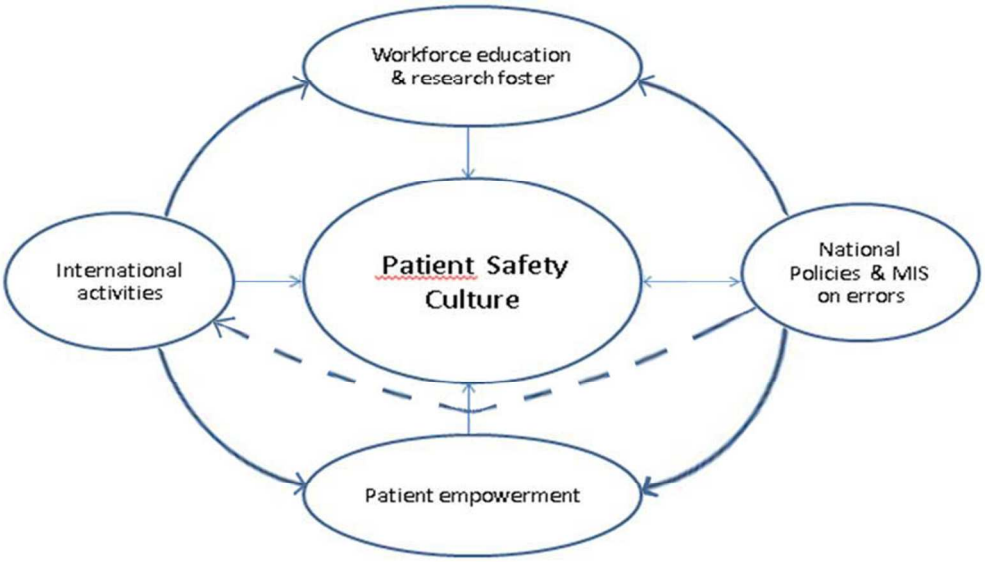

Figure 1. Promoting safety
233x141mm (96 x 96 DPI)

STARD checklist for reporting of studies of diagnostic accuracy

(version January 2003)

Section and Topic	Item #		On page #
TITLE/ABSTRACT/ KEYWORDS	1	Identify the article as a study of diagnostic accuracy (recommend MeSH heading 'sensitivity and specificity').	
INTRODUCTION	2	State the research questions or study aims, such as estimating diagnostic accuracy or comparing accuracy between tests or across participant groups.	
METHODS			
Participants	3	The study population: The inclusion and exclusion criteria, setting and locations where data were collected.	
	4	Participant recruitment: Was recruitment based on presenting symptoms, results from previous tests, or the fact that the participants had received the index tests or the reference standard?	
	5	Participant sampling: Was the study population a consecutive series of participants defined by the selection criteria in item 3 and 4? If not, specify how participants were further selected.	
	6	Data collection: Was data collection planned before the index test and reference standard were performed (prospective study) or after (retrospective study)?	
Test methods	7	The reference standard and its rationale.	
	8	Technical specifications of material and methods involved including how and when measurements were taken, and/or cite references for index tests and reference standard.	
	9	Definition of and rationale for the units, cut-offs and/or categories of the results of the index tests and the reference standard.	
	10	The number, training and expertise of the persons executing and reading the index tests and the reference standard.	
	11	Whether or not the readers of the index tests and reference standard were blind (masked) to the results of the other test and describe any other clinical information available to the readers.	
Statistical methods	12	Methods for calculating or comparing measures of diagnostic accuracy, and the statistical methods used to quantify uncertainty (e.g. 95% confidence intervals).	
	13	Methods for calculating test reproducibility, if done.	
RESULTS			
Participants	14	When study was performed, including beginning and end dates of recruitment.	
	15	Clinical and demographic characteristics of the study population (at least information on age, gender, spectrum of presenting symptoms).	
	16	The number of participants satisfying the criteria for inclusion who did or did not undergo the index tests and/or the reference standard; describe why participants failed to undergo either test (a flow diagram is strongly recommended).	
Test results	17	Time-interval between the index tests and the reference standard, and any treatment administered in between.	
	18	Distribution of severity of disease (define criteria) in those with the target condition; other diagnoses in participants without the target condition.	
	19	A cross tabulation of the results of the index tests (including indeterminate and missing results) by the results of the reference standard; for continuous results, the distribution of the test results by the results of the reference standard.	
	20	Any adverse events from performing the index tests or the reference standard.	
Estimates	21	Estimates of diagnostic accuracy and measures of statistical uncertainty (e.g. 95% confidence intervals).	
	22	How indeterminate results, missing data and outliers of the index tests were handled.	
	23	Estimates of variability of diagnostic accuracy between subgroups of participants, readers or centers, if done.	
	24	Estimates of test reproducibility, if done.	
DISCUSSION	25	Discuss the clinical applicability of the study findings.	

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Application of Safety attitudes questionnaire (SAQ) in hospitals, a cross-sectional study in Albania

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Application of Safety attitudes questionnaire (SAQ) in hospitals, a cross-sectional study in Albania

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Abstract

Objective. To establish the reliability and validity of the translated version of the Safety Attitude Questionnaire (SAQ) by evaluating its psychometric properties and find out possible differences among nurses and physicians regarding safety attitudes.

Design. A cross-sectional study, utilizing the Albanian version of the SAQ and a demographic questionnaire.

Setting. Four Regional Hospitals, Albania.

Participants. Three hundred and forty one healthcare providers among which 132 nurses and 209 doctors.

Intervention. None.

Main Outcome Measure(s). Translation, Construct Validity and Internal Validity of SAQ. The SAQ 6 scales and 30 items;

Results. A total of 341 valid questionnaires were returned with a response rate of 70%. The CFA and its goodness-of-fit indices (SRMR 0.075, RMSEA 0.044, and CFI 0.97) showed good model fit. The Cronbach's alpha values for each of the scales of the SAQ ranged between 0.64 and 0.82. The percentage of hospital healthcare workers holding positive attitude was 60.3% for teamwork climate, 57.2% for safety climate, 58.4% for job satisfaction, 37.4% for Stress recognition, 59.3% for perception of management, and 49.5% for working conditions. Inter-correlations between the subscales showed *moderate to high correlation with each other*. The factor stress recognition had no significant correlation with teamwork climate, perception of management, or job satisfaction. Nurses were more hesitant to admit and report errors, only 55% of physicians and 44% of nurses endorsed agree (χ^2=, 4.9 p=0.02); moreover nurses received lower scores on team work compared to doctors (N 45.7 vs. D 52.3 **p= 0.01**). Doctors denied effects of stress and fatigue on performance (N 46.7 vs. D 39.5 **<0.01**), neglecting the workload.

Conclusions. The SAQ is a useful tool for evaluating safety attitude in Albanian hospitals. In the light of poor stress recognition from health workforce, establishing patient safety programs similarly to those in the EU, should be a priority among policy makers in Albania.

Keywords*: Patient safety, Safety attitudes, Hospital, doctor, nurse, Psychometrics,*

Strengths and Limitations

- The success of the survey can be attributed to several factors. First of all, the SAQ was easily answered and persistently well explained. Secondly, the group administration fully supported the survey, showing also ongoing commitment to the patient safety topic and safety culture through parallel studies Third, all respondents were anonymous, and thus they might feel more comfortable to fill out the questionnaire, though we cannot hide the first hesitation to participate due to "persecution" fear or "job harm".
- We are aware to several limitations to our study. The tool itself relies strongly on self-reported behavior, rather than on direct observations or registrations. The resulting information may be biased and may not correctly reflect the real situation. The researchers have made substantial efforts to train the data collectors avoid the positive answering tendency. However, this still cannot be excluded. Staff perceptions of communication can vary over time and can be influenced by day to day events within the hospital setting. The external validity of the study findings was limited by the study design and participants. We did not adopt a systematic sampling method. Fourth, we did not examine the variations in perceptions among departments or across hospital settings.

Background

Patient safety is viewed as a crucial component of quality in healthcare service (1). Over the last decade, numerous definitions of patient safety have emerged in the literature. The Institute Of Medicine (2) described it as the prevention of harm, however, the European Agency, Safety Improvement for Patients in Europe, asserted it was about *identifying, analyzing and minimizing* patient risk (3).

Several studies have pointed out patient safety issues in different contexts, i.e. study results from a research in the United States of America revealed that one-fifth of the people in the community in New York are exposed to medical mistakes and adverse events (4), (an adverse event is defined as an injury resulting from a medical intervention i.e., not due to the underlying medical condition) (5).

European data, mostly from European Union Member States, show that medical errors and health-care related adverse events occur in 8% to 12% of hospitalizations. Infections associated with health care affect an estimated 1 in 20 hospital patients on average every year (estimated at 4.1 million patients). The United Kingdom National Audit Office estimates the cost of such infections at £1 billion per year. (6)

A European Commission report that was released recently and dubbed *Patient Safety in EU: 2014* elucidated an array of happenings (producing healthcare-associated infections) that are directly responsible 37000 deaths/year, they contribute to a further 110,000 deaths/year and they *cost hospitals* over a Euro 5.4 billion/year (7).

In healthcare, a significant percentage of errors are attributed to communication breakdowns and lack of effective teamwork (8). Furthermore, bad communication and not effective teamwork serve as contributing factors in the occurrence of patient safety incidents (8, 9, 10, and 11). Meantime, effective teamwork and communication are considered critical for ensuring high reliability and the safe delivery of care. Teamwork and communication techniques can improve quality and safety, decrease patient harm, promote cross-professional collaboration and the development of common goals, decrease workload issues, and improve staff and patient satisfaction (8).
To this ending, Hospitals, need to asses patient safety and promote teamwork principles for creating safe hospital systems (12, 13, and 14).

Transitional Albanian Health System

Albanian health system
After different reforms started in 1995 and speeded up during the last years, Albanian Health Care System, from a typically Semashko model has moved to a Bismarck model. Decentralization of primary care management, complete privatization of pharmaceutical sector, dentistry and founding of the Health Insurance Institute (HII) were the main milestones of these reforms. The Health system is funded through a mix of general tax revenues, payroll tax revenues for compulsory Health Insurance Institute (HII), voluntary prepayment for Voluntary Health Insurance (offered by HII), out-of-pocket at the time of service use and by different international donors (15).
Healthcare in Albania remains mainly public/state and only partly private. It is divided into three levels, primary healthcare services, secondary and tertiary healthcare services. Healthcare services cover the whole country and are directed by the Ministry of Health (16). The Ministry of Health has been rapidly changing its traditional role as "Health directorate" toward the function of leadership in health policy development and health strategy implementation. However, it still remains the major financing body of healthcare with two-thirds of the total healthcare budget. Ministry of Health is at the same time policy maker, decision maker and manager, controlling also the human resources and trainings (15, 17). There are 4.577 physicians overall. Albania has 709 inhabitants per physician (18).

Albanian hospital decentralization process
Albania is engaged in health reform initiatives aimed at introducing primary health care (PHC) centered on family medicine both to enhance performance of the health system as well as to cope with a broader political agenda (19). On the other hand, there is also a focus on hospital decentralization reforms, part of overall institutional decentralization process (17, 20). Since the beginning of 2009, HII has contracts with 39 hospitals in Albania: 1 tertiary Hospital (in Tirana), 3 University Hospitals (in Tirana), 11 regional hospitals and 24 District Hospitals. Hospitals are financed according to historical budget. During 2010 there are introduced in the contract between HII and Hospital also elements related to quality and performance indicators, but monitoring these indicators it seems to be very difficult, if not impossible, because clinical protocols and medical hospital standards are not yet prepared. Hospitals in Albania are not yet entirely accredited (15). Management functions require urgent attention, and Albania does not

have any professional management consultants. Managerial performance is judged more by political commitment than by effectiveness. Most funding is determined centrally by comprehensive budgets that are allocated at the start of each financial year. District administrators and health care managers have little flexibility and limited technical capacity to manage effectively. There is also an urgent need to establish management information systems, which would provide useful and accurate programme and budgeting information (17). The healthcare sector remains substantially underfunded, understaffed, and lacks adequate healthcare management (20)

To broaden the view, predicaments relating to the management have confronted a number of hospitals in Albania. These issues include unreliability in costing, lack of staff capacity building interventions, poor human resource management, the clinical results are not provided in a good and systematic form, problems in streamlining of the supply chain of the hospital supplies, poor non-clinical services which could otherwise be outsourced, lack of an independent body that takes care of the governing of the hospital, and the repair and maintenance of bio-medical equipment is out of date. It is important that patients should be provided with the much needed safety since it is one of the identifiable problems in the hospitals. This would allow provision of patient safety while shunning away blame game, instead diverting the attention to the quality of care. Healthcare organizations often learn from error by the use of local and national reporting systems **(21).** Patient Safety programs are constituted mostly in the European Union, but outside the European Union, they are in their latent process i.e. in Albania currently there are no established programs on error records, formal hospital registers though researchers admit that patient safety is an issue in our country. Hereby referred "medical breaches" are directly connected (according to researchers), with the presumed *medical* ***corruption (22, p1).***

Like other public sectors in Albania, the health care sector is also affected from corruption. The way how corruption comes out and which segment of the health care system affect, depends in part on the health financing system. Most of corruption occurring in the health system is a reflection of general problems of governance and ***public sector accountability.*** In the Albanian health sector, there seems to be three main manifestations of corruption: i) informal payments to doctors and nurses; ii) doctors' and nurses' misuse of power and iii) corruption in the procurement of drugs and equipment (15). There are good opportunities for corruption in the process of procurement of drugs and equipment in Albania. This includes bribing of the evaluation committee/tender board in case of pharmaceutical contracts or by undue influence on the drafting of the call for proposals in a certain bidder's favor. Another corrupt practice is the use of bribes to politicians or public officials to get a drug approved or, in particular, get in on the national list of essential drugs, which are eligible for substantial subsidies, thereby boosting sales. It is a frequent practice for doctors to intentionally avoid using facilities and equipment available within the public provider (e.g. hospital) for patient examinations, instead referring patients to private providers of the same services, with which the doctor has links (or is even the same person). Patients in hospitals are often obliged to buy medicines which are supposed to be free. In addition, doctors overprescribe and suggest to patients the pharmacy where they can buy the prescribed medicament/s, in return receiving payments from the pharmacy (23). Another concerning phenomena in Albanian healthcare system is the doctors 'dual practice' or so called deployment phenomena. Dual practice may encourage doctors to skimp on their public health efforts, to pilfer supplies, and to induce demand for their private services. Such activities will ultimately increase the workload as well as generate more hostile situations, more stress and will

lead to errors. This phenomena is not an isolated one, it is rather a typical one in the low and middle income countries (24). According European Union progress report in 2014, corruption remained widespread in the healthcare system and the public hospital sector was underdeveloped (20).

There does exist a lack of research on patient safety in Albanian Hospital settings or Primary Care. Therefore, an instrument that measures health care professionals' attitudes regarding safety climate in the hospitals would be helpful in understanding and identifying areas that need improvement and for evaluating improvements in interventions. The purpose of the present study was to establish the reliability and validity of the translated version of the Safety attitude Questionnaire (Hospital Version) by evaluating its psychometric properties. Moreover we aim to find out if there are differences among nurses and physicians regarding safety attitudes.

Previous research has assessed the psychometric properties of the SAQ across countries (25, 26) and in different contexts and settings. The internal consistency and Cronbach's alpha values are acceptable, and the construct validity measured by CFA generally exhibits satisfactory model fit (25, 26, 27).

No psychometric instruments have been developed to measure patient safety in Albanian hospital settings.

Our Research Hypothesis related to the study aim are:

H1. The data from this study confirm the proposed six-factor model of the original SAQ.

H2. SAQ shows good internal consistency.

H3. Individual items of the SAQ show high correlations within its respective factor.

H4. There is no difference among nurses and physicians related to perceived patient safety attitudes in selected hospital settings

Methods

Setting

This was a quantitative, cross-sectional study and the data collection was administered between May and June 2012 to 4 regional hospitals in Albania. Nurses and doctors answered the SAQ-A voluntarily and anonymously**.** Surveys that were blank or had invariant responses (e.g., all responses were all "neutral" or "agree strongly) were excluded from this analysis, as they did not provide any diagnostic information.

Participants

One stage clusters sampling was used for this study. Four hospitals were randomly selected from a list of 11 regional hospitals to ensure geographic representativeness. In each of the hospital selected, nurses and doctors were included in the survey.

The rationale behind purpose of choosing only two types of occupational groups (nurses' vs. doctors) was explicitly compare this two groups with perpetual distinctions in safety behavior in academic healthcare literature **(**28, 29, 30, 31). Nurses and doctors in Albanian hospitals are closer to teamwork functioning hence affect patient service and quality. Surveys were administered during pre-existing departmental and staff meetings.

Measurements

Safety Attitude Questionnaire (SAQ)

The instrument used for data collection was the Safety Attitudes Questionnaire (SAQ) short adapted 30 item version (32). The instrument is composed of two parts: the first part contains questions containing the perception of patient safety **(see table 6).** The second part collects data about the professional: position held, sex, main job, and experience in years.

The instrument measures the perception of the health care professionals in six areas: teamwork climate, safety climate, job satisfaction, perceptions of management, stress recognition and working conditions with the response scale ranging from 1 (disagree strongly) to 5 (agree strongly). The reason that leaded us to use SAQ as an evaluating tool, was the strong correlation showed on the previous studies between the favorable scores of SAQ and positive patient outcomes (32). Another strong reason was the proved validity and reliability of the SAQ in different countries where it was conducted such as United States, United Kingdom's, Turkey and Norway (25, 27, and 33).

There are other tools evaluating patient safety culture or patient safety climate, e.g. Patient Safety Culture in Healthcare Organizations (34), Manchester Patient Safety Assessment Framework (35), and Patient Safety Behavioral Intent (PSBI) (36). These various tools have been used in practice highlighting the potential strengths and weaknesses as outlined in published research evidence. Yet, SAQ is one of the most commonly used and rigorously validated tools for measuring safety climate in healthcare. A distinguishing feature is that higher scores on this survey have been associated with positive patient and staff outcome data. This contrasts with other tools where there is less likely to be a direct association with patient outcomes (37).

Safety Culture versus Safety climate, definition of terms

Safety culture' has a broad definition that defines it as a worldwide issue that incorporates the values, assumptions and drivers that guide an organization. On the flipside, the climate takes a narrower scope since it deals with how employees take certain aspects of the organizational culture to be.

Measuring safety climate is important because the culture of an organization and the attitudes of teams have been found to influence patient safety outcomes and these measures can be used to monitor change over time (37, 38).

Some suggest that it is easier to measure safety climate because culture is much broader, whereas climate focuses on staffs' current perceptions of safety in relation to management support, supervision, risk taking, safety policies and practices, trust and openness. Safety climate is also thought to be more likely to show change following interventions (39, 40). In this scan, we are using Safety Climate in our study as a much easier and understandable/manageable concept.

Albanian version of the SAQ

The SAQ was translated from English to Albanian and back again by native speakers. In order to ensure that the version that was translated from English to Albanian was clear and used the right words, a focus group comprising of physicians, nurse experts and the faculty conducted a review. All the components were reviewed for their conformity with the Albanian culture. Linguistic validation of the translation was performed using the back-translation technique. Analytical results demonstrated that all six dimensions had good reliability (see table 2 and table 3). The

view by the experts determined the authenticity of the content on the basis of its relevance, appropriateness and importance to the Albanian culture. Content validity ratio (CVR), and content validity index (CVI) were calculated for each item. The mean CVR for the total scale was 0.96 and the mean CVI was 0.82 indicating a satisfactory content validity.

Statistical Analysis

Data analyses were conducted by SPSS version 16 (SPSS Inc., Chicago, IL, USA). Confirmatory analysis (CFA) was conducted by structural equation modeling using AMOS 5.0 software to test the extent to which each SAQ-A dimension was explained by items and the extent to which safety attitude was explained by the six dimensions. Relative chi-squares <5.0, a CFI value ≥ 0.95, a RMSEA value of <0.08 and a SRMR value of <0.09 were considered as acceptable model fit. The internal consistency of the Albanian version of SAQ was assessed by Cronbach's alpha coefficient. Two items were negatively worded and reversed for the statistical analysis. Independent sample *t* test was used to compare the mean score of SAQ subscales between physicians and nurses. The χ^2 test was used to compare the proportions of responses between physicians and nurses. Pearson correlation coefficient was used to examine the relationship between SAQ subscales. A p –value ≤0.05 was considered statistically significant.

Ethical issues

Approval by Ethical Committee was not necessary because the study had no experimental design and did not involve patients, moreover we were informed that it was not a mandatory requirement for ethics approval by the hospital ethics committee. The study was performed in line with the Helsinki Declaration using survey. The participants were informed about the aims of the study. Responding to the questionnaire was voluntary and anonymous and the participants were given the possibility to opt out without giving any explanation if by any chance they felt uncomfortable with the content of the questions

Results

Survey responses

A total of 341 valid questionnaires were returned from 4 hospitals with a response rate of 70%. Missing values' analysis showed no item with more than 2% missing values (range 0 - 1.8%). The majority of participants (63.6%) were females compared to males (36.4%). 61.4% were physicians while 38.6% were nurses (table 1).

Table 1.

Characteristics of safety attitude survey respondents

Variables	Physicians (n=209)	Nurses (n=132)
Gender, n (%)		
Female	136 (65.0)	114 (86.0)
Male	73 (35.0)	18 (14.0)
Age group (years) n (%)		
21-30	53 (58.2)	38 (41.8)

31-40	42 (66.7)	21 (33.3)
41-50	55 (59.1)	38 (40.9)
51-60	55 (69.6)	24 (30.4)
>60	5 (33.3)	10 (66.7)

Internal construct validity

The goodness-of-fit values used to evaluate the internal construct validity are displayed in table 3. The SRMR value was 0.075, the RMSEA values were was 0.044, and the CFI value was 0.97, which indicates a good model fit approximation of the translated version of the SAQ.

Table 2 Goodness-of-fit indices for CFA of the SAQ factors

Sample size	341
Standardized root mean square residual (SRMR)	0.075
Root mean square error of approximation (RMSEA)	0.044
Comparative fit index (CFI)	0.97

The CFA indicated a good model fit for each dimension and entire safety construct, namely the GFI, TLI, and CFI were >0.90 and the RMSAE was <0.10.

Internal consistency

The internal consistency of the six factors and 30 items of the translated version of the SAQ had Cronbach's alpha values of 0.62 to 0.82. Safety climate had the highest Cronbach's alpha values, and stress recognition had the lowest values (table 2).

Table 3 Internal consistency for the six factors of SAQ factors Cronbach's alpha

SAQ factors	Cronbach's alpha
Safety Climate (7 items)	0.82
Teamwork Climate (6 items)	0.79
Job Satisfaction (5 items)	0.78
Stress Recognition (4 items)	0.62
Perceptions of Management (4 items)	0.64
Working Conditions (4 items)	0.76

The test of the hypothesized relationships among the factors and items showed that the correlation ranged from 0.02 to 0.89 and that five of the six factor correlations were significant. Teamwork climate was positively correlated with safety climate (r=0.55, <0.01), job satisfaction (r=0.54, <0.01), Perceptions of Management (r=0.68, <0.01), Working Conditions (r=0.68, <0.01) while the Stress Recognition subscale was not significantly related to any of subscales. The intercorrelations between the factors are presented in table 4.

Table 4. Correlation matrix for the SAQ subscales

Subscale	Safety climate	Teamwork climate	Job satisfaction	Stress recognition	Perception of management	Working conditions
Safety Climate						
Teamwork Climate	0.55*					
Job Satisfaction	0.46*	0.54*				
Stress Recognition	0.25	0.08	0.02			
Perceptions of Management	0.54*	0.68*	0.47*	0.15		
Working Conditions	0.68*	0.71*	0.61*	0.25	0.79*	

* Significant on 5% level.

SAQ factors and item descriptive and *overall positive responsiveness per scale*

The SAQ factor definitions and items; missing, mean (SD), agree (agree strongly) and disagree (disagree strongly) answers is described in the **table 5.**

Table 5. SAQ Item Descriptive

Teamwork Climate (1-6)	**Is item reverse scored (41)**	**% Item Missing Data**	**Mean (SD)**	**% Agree (Min Agree-Agree)**	**% Disagree (Min Disagree-Max Disagree)**
1. It is easy for personnel in this Hospital to ask questions when there is something that they do not understand.	**No**	**1.3**	4.13 (.96)	80.45 (41.67-100.00)	7.41 (.00-35.00)
2. I have the support I need from other personnel to care for patients.	**No**	**2.1**	3.95 (.99)	74.28 (33.30-98.05)	9.18 (.00- 42.86)

3. Nurse input is well received in this Hospital.	**No**	**1.9**	3.99 (1.05)	73.42 (23.94-100.00)	10.16 (.00-54.94)
4. In this Hospital, it is difficult to speak up if I perceive a problem with patient care.	**Yes**	**2.2**	2.45 (1.26)	21.69 (.00-51.00)	59.87 (9.09-100.00)
5. Disagreements in this Hospital are resolved appropriately (i.e., not *who* is right, but *what* is best for the patient)	**No**	**1.8**	3.57 (1.10)	56.97 (22.75-85.24)	18.24 (.00-54.09)
6. The physicians and nurses here work together as a well-coordinated team.	**No**	**1.6**	3.75 (1.07)	68.42 (25.72-98.2)	14.24 (.00-53.12)
Safety Climate 7-13					
7. The culture in this Hospital makes it easy to learn from the errors of others.	**No**	**1.5**	3.96 (1.01)	71.45 (33.33-100.00)	9.55 (.00-33.33)
8. Medical errors are handled appropriately in this hospital.	**No**	**2.3**	3.49 (1.06)	51.08 (14.3-92.7)	17.3 (.00-57.14)
9. I know the proper channels to direct questions regarding patient safety in this hospital.	**No**	**1.6**	3.84 (1.01)	64.5 (24.00-100.00)	9.45 (.00-39.10)
10. I am encouraged by my colleagues to report any patient safety concerns I may have	**No**	**1.5**	4.05 (.94)	77.3 (48.60-100.00)	7.15 (.00-26.32)
11. I receive appropriate feedback about my performance.	**No**	**0.7**	3.22 (1.23)	46.48 (4.58-76.5)	31.5 (.00-75.00)
12. I would feel safe being treated here as a patient.	**No**	**1.5**	4.02 (1.04)	74.99 (36.35-100.00)	9.48 (.00-42.67)
13. In this hospital, it is difficult to discuss errors.	Yes	1.7	2.57 (1.13)	20.15 (.00-48.15)	53.87 (20.84-92.7)
Job Satisfaction 14-18					
14. This hospital is a good place to work.	**No**	**0.7**	3.75 (1.08)	63.5 (4.55-100.00)	13.54 (.00-58.09)
15. I am proud to work at this hospital.	**No**	**0.9**	3.72 (1.07)	62.5 (15.00-100.00)	10.8 (.00-50.00)
16. Working in this hospital is like being part of a large family.	**No**	**0.7**	3.12 (1.30)	42.1 (.00-93.55)	33.4 (.00-80.00)
17. Moral in this Hospital area is high.	**No**	**1.5**	2.89 (1.25)	38.72 (4.18-84.33)	36.75 (.00-76.25)

18. I like my job.	**No**	**0.2**	4.38 (.88)	85.6 (62.1-100.00)	4.63 (.00-18.32)
Stress Recognition 19-22					
19. When my workload becomes excessive, my performance is impaired.	**No**	**1.5**	3.79 (1.13)	32.16 (27.57-100.00)	34.9 (.00-52.3)
20. I am more likely to make errors in tense or hostile situations.	**No**	**1.3**	3.77 (1.16)	46.5 (30.00-87.00)	21.84 (.00-50.00)
21. Fatigue impairs my performance during emergency situations (e.g., emergency resuscitation, seizure).	**No**	**3.4**	3.00 (1.28)	29.45 (5.78-79.15)	46.84 (12.30-76.54)
22. I am less effective at work when fatigued.	**No**	**1.4**	3.75 (1.03)	25.69 (38.5-96.4)	41.21 (.00-30.00)
Perceptions of Management 23-26					
23. Hospital management does not knowingly compromise the safety of patients.	**No**	**1.7**	2.54 (1.27)	49.2 (9.11-87.5)	26.5 (4.89-90.45)
24. Hospital administration supports my daily efforts.	**No**	**0.6**	2.48 (1.75)	64.5 (.00-94.2)	29.62 (.00-100.00)
25. I am provided with adequate, timely information about events in the hospital that might affect my work.	**No**	**1.7**	3.21 (1.09)	51.5 (12.00-74.8)	22.1 (.00-66.65)
26. The levels of staffing in this clinical area are sufficient to handle the number of patients	**No**	**1.8**	2.67 (1.33)	53.54 (.00-84.62)	39.47 (4.21-96.45)
Working Conditions 27-30					
27. All the necessary information for diagnostic and therapeutic decisions is routinely available to me.	**No**	**2.2**	3.5 (1.07)	58.64 (16.8-89.5)	18.4 (.00-68.45)
28. This hospital constructively deals with problem physicians and employees.	**No**	**1.9**	2.89 (1.14)	24.85 (.00-82.33)	35.45 (.00-81.00)
29. Trainees in my discipline are adequately supervised.	**No**	**2.4**	3.55 (1.19)	58.64 (10.00-100.00)	21.48 (.00-64.50)

30. This hospital does a good job of training new personnel.	**No**	**1.2**	3.50 (1.19)	57.46 (16.2-96.45)	20.42 (.00-61.4)

The percentage of hospital healthcare providers holding positive attitude was 60.3% for teamwork climate, 57.2% for safety climate, 58.4% for job satisfaction, 37.4% for Stress recognition 59.3% for perception of management, and 49.5% for working conditions.

Group comparisons Nurses' behavior vs. Physicians

Results of the *t* test for independent samples did not indicate any significant difference between the score of physicians compared to nurses with regard to Safety climate (t= -1.5 p=0.1) and Perception of management (t= -1.6 p=0.1) subscales showing the same perception of attitude. A significant difference between the score of physicians and nurses was found for Teamwork (t= -5.4 p<0.01), Stress recognition (t= 6.4 p<0.01) job satisfaction (t= -7.8 p<0.01) and Working conditions subscales (t= -9.7 p<0.01).

Table 6. Comparison of the SAQ score among nurses and physicians

Subscale	Physicians M (SD)	Nurses M (SD)	t	p
Teamwork	52.3 (10.7)	45.7 (11.3)	-5.4	**0.01**
Safety climate	38.7 (11.1)	36.8 (10.3)	-1.5	0.1
Stress recognition	39.5 (9.2)	46.7 (11.4)	6.4	**<0.01**
Job satisfaction	49.7 (9.2)	40.6 (12.2)	-7.8	**<0.01**
Perception of management	46.8 (9.6)	44.8 (13.1)	-1.6	0.1
Working conditions	42.4 (11.4)	29.2 (13.4	-9.7	**<0.01**

For the statement, 'When my workload becomes excessive, my performance is impaired.' a lower proportion of physicians and nurses endorsed the 'agree' option but this only achieved statistical significance (39% physicians vs. 51% nurses; χ^2=5.0, p=0.02).
Meanwhile, for the "I am provided with adequate, timely information about events in the hospital that might affect my work" (59% physicians vs. 34% nurses; χ^2=18.8, p<0.01).

Regarding the item "The culture in this Hospital makes it easy to learn from the errors of others" a high percentage of nurses and physicians agree with the statement (80.2% of nurses and 83% of physicians) (χ^2=0.1, p=0.6). On the other hand nurses and doctors agree as well on "In this hospital, it is difficult to discuss errors" where nurses feel more intimidated into discussing errors (55% of physicians vs 44% of nurses (χ^2=, 4.9 p=0.02)

Discussion

Previous studies in the area of patient safety have investigated safety climate in primary care in Albania (42). The aim of the present study was to investigate the perception of safety climate among nurses and doctors working in hospital settings, confirming first of all a validated tool (SAQ). According to the results of this study, construct validity based on the CFA and goodness-of-fit indices including CFI, SRMR, and RMSEA demonstrated a good model that fitted very well. It is imperative that a model should be made more specific and be tested a second time in case a hypothetical model fails to fit appropriately (43, 44). According to good model fit indices, the Albanian version of the SAQ is a valid measure of safety attitude in hospitals. This finding is also an indication of the internal construct validity of the SAQ. The data from this study confirms our first hypothesis of the proposed six-factor model of the original SAQ, (H1. The data from this study confirm the proposed six-factor model of the original SAQ).

The internal consistency and internal structure of the Albanian translation of the SAQ was assessed; the translation showed satisfactory psychometric properties. The mean CVR for the total scale was 0.96 and the mean CVI was 0.82 indicating a satisfactory content validity. A good model fit was depicted by the construct validity whose goodness-of-fit is used in determining its CFA. The internal consistency for the six factors of the Albanian version of the SAQ based on the values of Cronbach's alpha assumes the values between 0.62 and 0.82. Job satisfaction and perception of management had an alpha value of 0.62 and 0.64 respectively, which is a bit below the recommended acceptable alpha value limit of 0.70 due to missing data that have influenced the result (44). The study results showed a good internal consistency confirming our second hypothesis, *(H2. SAQ shows good internal consistency).* In order to apply SAQ in Albania and ensure reliability, the outcomes of this research work should be put into consideration in future evaluations. Cultural aspects may exist regarding the perception of management in the Albanian setting i.e. Hospital directors are quasi-political appointees, most physicians have inappropriate

training of any kind in healthcare management, thus lacking competencies in evaluating properly overall management issues.

The study confirmed the third hypothesis based on the conclusion that there was interconnectedness between all the factors with the exception of stress recognition (H3. Individual items of the SAQ show high correlations within its respective factor). According to the study results (see table 4), teamwork climate was more positively correlated with perception of management subscale and working conditions subscale. Stress recognition was not correlated to any of subscales. These findings complemented those of psychometric testing for the original SAQ. In tandem with previous studies, stress recognition did not depict any relationship with perceptions of management, teamwork climate, and job satisfaction, factors that showed moderate to high correlation (25). A significant difference among nurses and physicians was found related to perceived patient safety attitudes for the subscales of teamwork, safety climate, job satisfaction and working conditions where nurses scored lower mean values (see table 6). Overall, nurses perceived a lower job satisfaction, worse working conditions, and lower level of teamwork and bad perception of management compared to doctors, thus not confirming our fourth hypothesis. (*H4. There is no difference among nurses and physicians related to perceived patient safety attitudes in selected hospital settings).*

There are other clinical areas that have categorically stated the broad distinctions between nurses and physicians (28, 29), in addition two studies in the USA that used the SAQ showed that nurses and doctors differed in their perceptions of safety culture (30, 31) and may be due primarily to personal characteristics of caregivers such as level of education, socioeconomic status, gender etc.

The traditional hierarchy of physicians has often discouraged nurses to speaking up to doctors, and nurses can be hesitant to confront a physician on issues of patient care because they might have less training or experience in dealing with a patient's medical condition (31). Consistently with this, in our study, nurses scored low mean values in working conditions, safety climate and job satisfaction. Another study dealing with nurse job satisfaction showed that 41% of nurses were dissatisfied with their work in USA; in England 38.9% of nurses intended to abandon the profession. Generally salary, professional growth and autonomy are some of the factors that may influence the nursing professional's job satisfaction (45).

Meanwhile national researchers in Albania have pointed out that nurses were less satisfied with *promotion opportunities and co-worker satisfaction* (46), WHO studies stress overall the limited formal opportunities to upgrade knowledge and skills through continuing professional development (47). From the study results, it was clear that the international benchmark standards were not met (25). This was depicted through the failure by the mean values as directed towards the five safety dimensions.

Managerial implications

Measuring safety climate dimensions such as perceived teamwork climate, job satisfaction, and perception of management in hospitals will help to diagnose the underlying safety culture of the entire organization or work units. This study created a thorough image of the status of nurses and doctors' behavior regarding issues like teamwork, safety climate, and stress at work, job satisfaction, and management support in the selected regional hospitals.

European integration might increase the mobility of human resources for health to other countries. (e.g., immediately after acceding to the European Union in 2007, Romania reported over 6000 requests for certificates recognizing the Romanian diplomas of doctors, dentists, pharmacists and nurses for use elsewhere in the Union (47).

In the light of hospital decentralization reforms and EU adherence (17, 20), this study will serve as a starting point in initiating policy changes to address the issues identified above such as improving job satisfaction, working conditions, perceived inadequate information flow among nurses, as well as implementing interventions targeted to reduce their impact on the quality of hospital care.

The prevailing culture influences safety behaviors and outcomes for both healthcare workers and patients. This study has shown that the SAQ-A is a valid and easily administrated instrument. For the first step, hospitals can use this tool to measure their employees' safety attitudes on a regular basis, moreover healthcare managers should use the resulting data to design effective safety management systems and possible intervention e.g. promoting teamwork or stress recognition among doctors and nurses.

The results of the study will serve as baseline information for researchers with a variety of research interests especially related to patient safety and human resources for health.

From a cultural perspective, the results will serve as a basis for comparison between other countries or systems which have their own particularities, although sharing important common features (in terms of health services organization, financing and regulation and the similarity of their evolution throughout history).

Promoting Patient Empowerment and positive safety Culture

When it comes to healthcare, many policy documents, national priorities, as well as guidelines across Europe, North America, Australia, and sections of the Asian continent have been developed with messages on building of positive safety culture over the last two decades (48, 49). This initiatives in Albania are quite scarce and in its latent process. Below, we created a contextualized framework (fig. 1), taking into account Albanian Healthcare system on how to promote a safety culture in an underfinanced healthcare system, hoping to broaden the perspective similar health systems in Eastern European countries. Our main goal was to develop and test a framework for making the concept of safety culture meaningful and accessible to

policy makers, healthcare managers and frontline staff, helping thus facilitating debate of ways to improve safety culture in Albanian healthcare settings. We used a comprehensive review of the literature and national policy documents to identify the key dimensions of safety culture in healthcare settings.

Fig 1.Gabrani & Petrela, Promoting safety culture frame in Albanian healthcare settings

The voice of patients and careers is also largely absent in the field of patient safety in Albania for example the patients are considered inactive with a concerning apathy toward involvement in decision making process (50) not to neglect the informal payment phenomena in our country which is deterring effects to the Albanian health system. More active involvement of *patients will help patient safety programs in the future diffuse and scale up, programs which are successfully implemented in Western Europe ore outside EU developed countries.*

Further research needed

The topic of patient safety is becoming increasingly prominent on political agendas (51). Reduced revenues and increasing expenditures in times of *financial crisis* are likely to increase pressure on the health systems to further contain costs, and thus affect service quality and patient safety (52); according to recent cost-effectiveness studies on patient safety, interventions show that specific actions on patient safety could be cost-effective (53).

To cope with the EU policy measures and reduce the costs of unsafe care as well as to develop cost-effective patient safety programmes, further research is needed in Albania. Furthermore, work is needed to better identify and design solutions that fit into existing institutional and organizational frameworks. At the hospital setting level, there is need to understand differences in attitudes among nurses and doctors, better understanding of the low mean values of scales compared to international benchmark (25) especially related to stress and fatigue recognition scale.

Conclusions

It is apparent that the testing of psychometric as well as translation of SAQ depicts a worthwhile construction of validity. Despite this, reliability analysis suggested that some items need further refinement to establish sound internal consistency. The SAQ is a useful tool for evaluating safety attitude in Albanian hospital settings. This is clear as it confirms our main hypothesis; H1. The data from this study confirmed the proposed six-factor model of the original SAQ, H2. SAQ showed good internal consistency and H3. Individual items of the SAQ show high correlations within its respective factor.

As previous research suggests, the SAQ has potential as a useful tool for evaluating safety attitude. Back to our study, there is room for improvement especially in generalizing the findings in larger samples as well as conducting further additional exploratory analysis to identify a better factor model. Moreover, the researchers are committed to adapt a new version of the tool by combining it with in-depth interviews in order to find out more about nurses and doctors differences in safety attitudes.

Contributor ship Statement

AG designed the study, AH and JCG refined the writing strategy and the analysis elaboration, AS and JC performed the data analysis, and wrote the manuscript. JCG, AH and AS designed (adapted) the questionnaire and lead the data collection process. All the authors assisted with the data collection and the manuscript preparation, modified and approved the final manuscript.

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Competing interests

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Application of Safety attitudes questionnaire (SAQ) in hospitals, a cross-sectional study in Albania

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Abstract

Objective. To establish the reliability and validity of the translated version of the Safety Attitude Questionnaire (SAQ) by evaluating its psychometric properties and find out possible differences among nurses and physicians regarding safety attitudes.

Design. A cross-sectional study, utilizing the Albanian version of the SAQ and a demographic questionnaire.

Setting. Four Regional Hospitals, Albania.

Participants. Three hundred and forty one healthcare providers among which 132 nurses and 209 doctors.

Intervention. None.

Main Outcome Measure(s). Translation, Construct Validity and Internal Validity of SAQ. The SAQ 6 scales and 30 items;

Results. A total of 341 valid questionnaires were returned with a response rate of 70%. The CFA and its goodness-of-fit indices (SRMR 0.075, RMSEA 0.044, and CFI 0.97) showed good model fit. The Cronbach's alpha values for each of the scales of the SAQ ranged between 0.64 and 0.82. The percentage of hospital healthcare workers holding positive attitude was 60.3% for teamwork climate, 57.2% for safety climate, 58.4% for job satisfaction, 37.4% for Stress recognition, 59.3% for perception of management, and 49.5% for working conditions. Inter-correlations between the subscales showed *moderate to high correlation with each other*. The factor stress recognition had no significant correlation with teamwork climate, perception of management, or job satisfaction. Nurses were more hesitant to admit and report errors, only 55% of physicians and 44% of nurses endorsed agree (χ^2=, 4.9 p=0.02); moreover nurses received lower scores on team work compared to doctors (N 45.7 vs. D 52.3 **p= 0.01**). Doctors denied effects of stress and fatigue on performance (N 46.7 vs. D 39.5 **<0.01**), neglecting the workload.

Conclusions. The SAQ is a useful tool for evaluating safety attitude in Albanian hospitals. In the light of poor stress recognition from health workforce, establishing patient safety programs similarly to those in the EU, should be a priority among policy makers in Albania.

Keywords*: Patient safety, Safety attitudes, Hospital, doctor, nurse, Psychometrics,*

Strengths and Limitations

- The success of the survey can be attributed to several factors. First of all, the SAQ was easily answered and persistently well explained. Secondly, the group administration fully supported the survey, showing also ongoing commitment to the patient safety topic and safety culture through parallel studies Third, all respondents were anonymous, and thus they might feel more comfortable to fill out the questionnaire, though we cannot hide the first hesitation to participate due to "persecution" fear or "job harm".
- We are aware to several limitations to our study. The tool itself relies strongly on self-reported behavior, rather than on direct observations or registrations. The resulting information may be biased and may not correctly reflect the real situation. The researchers have made substantial efforts to train the data collectors avoid the positive answering tendency. However, this still cannot be excluded. Staff perceptions of communication can vary over time and can be influenced by day to day events within the hospital setting. The external validity of the study findings was limited by the study design and participants. We did not adopt a systematic sampling method. Fourth, we did not examine the variations in perceptions among departments or across hospital settings.

Background

Patient safety is viewed as a crucial component of quality in healthcare service (1). Over the last decade, numerous definitions of patient safety have emerged in the literature. The Institute Of Medicine (2) described it as the prevention of harm, however, the European Agency, Safety Improvement for Patients in Europe, asserted it was about *identifying, analyzing and minimizing* patient risk (3).

Several studies have pointed out patient safety issues in different contexts, i.e. study results from a research in the United States of America revealed that one-fifth of the people in the community in New York are exposed to medical mistakes and adverse events (4), (an adverse event is defined as an injury resulting from a medical intervention i.e., not due to the underlying medical condition) (5).

European data, mostly from European Union Member States, show that medical errors and health-care related adverse events occur in 8% to 12% of hospitalizations. Infections associated with health care affect an estimated 1 in 20 hospital patients on average every year (estimated at 4.1 million patients). The United Kingdom National Audit Office estimates the cost of such infections at £1 billion per year. (6)

A European Commission report that was released recently and dubbed *Patient Safety in EU: 2014* elucidated an array of happenings (producing healthcare-associated infections) that are directly responsible 37000 deaths/year, they contribute to a further 110,000 deaths/year and they *cost hospitals* over a Euro 5.4 billion/year (7).

In healthcare, a significant percentage of errors are attributed to communication breakdowns and lack of effective teamwork (8). Furthermore, bad communication and not effective teamwork serve as contributing factors in the occurrence of patient safety incidents (8, 9, 10, and 11). Meantime, effective teamwork and communication are considered critical for ensuring high reliability and the safe delivery of care. Teamwork and communication techniques can improve quality and safety, decrease patient harm, promote cross-professional collaboration and the development of common goals, decrease workload issues, and improve staff and patient satisfaction (8)

To this ending, Hospitals, need to asses patient safety and promote teamwork principles for creating safe hospital systems (12, 13, and 14).

Transitional Albanian Health System

Albanian health system

After different reforms started in 1995 and speeded up during the last years, Albanian Health Care System, from a typically Semashko model has moved to a Bismarck model. Decentralization of primary care management, complete privatization of pharmaceutical sector, dentistry and founding of the Health Insurance Institute (HII) were the main milestones of these reforms. The Health system is funded through a mix of general tax revenues, payroll tax revenues for compulsory Health Insurance Institute (HII), voluntary prepayment for Voluntary Health Insurance (offered by HII), out-of-pocket at the time of service use and by different international donors (15).

Healthcare in Albania remains mainly public/state and only partly private. It is divided into three levels, primary healthcare services, secondary and tertiary healthcare services. Healthcare services cover the whole country and are directed by the Ministry of Health (16). The Ministry of Health has been rapidly changing its traditional role as "Health directorate" toward the function of leadership in health policy development and health strategy implementation. However, it still remains the major financing body of healthcare with two-thirds of the total healthcare budget. Ministry of Health is at the same time policy maker, decision maker and manager, controlling also the human resources and trainings (15, 17). There are 4.577 physicians overall. Albania has 709 inhabitants per physician (18).

Albanian hospital decentralization process

Albania is engaged in health reform initiatives aimed at introducing primary health care (PHC) centered on family medicine both to enhance performance of the health system as well as to cope with a broader political agenda (19). On the other hand, there is also a focus on hospital decentralization reforms, part of overall institutional decentralization process (17, 20). Since the beginning of 2009, HII has contracts with 39 hospitals in Albania: 1 tertiary Hospital (in Tirana), 3 University Hospitals (in Tirana), 11 regional hospitals and 24 District Hospitals. Hospitals are financed according to historical budget. During 2010 there are introduced in the contract between HII and Hospital also elements related to quality and performance indicators, but monitoring these indicators it seems to be very difficult, if not impossible, because clinical protocols and medical hospital standards are not yet prepared. Hospitals in Albania are not yet entirely accredited (15). Management functions require urgent attention, and Albania does not

have any professional management consultants. Managerial performance is judged more by political commitment than by effectiveness. Most funding is determined centrally by comprehensive budgets that are allocated at the start of each financial year. District administrators and health care managers have little flexibility and limited technical capacity to manage effectively. There is also an urgent need to establish management information systems, which would provide useful and accurate programme and budgeting information (17). The healthcare sector remains substantially underfunded, understaffed, and lacks adequate healthcare management (20)

To broaden the view, predicaments relating to the management have confronted a number of hospitals in Albania. These issues include unreliability in costing, lack of staff capacity building interventions, poor human resource management, the clinical results are not provided in a good and systematic form, problems in streamlining of the supply chain of the hospital supplies, poor non-clinical services which could otherwise be outsourced, lack of an independent body that takes care of the governing of the hospital, and the repair and maintenance of bio-medical equipment is out of date. It is important that patients should be provided with the much needed safety since it is one of the identifiable problems in the hospitals. This would allow provision of patient safety while shunning away blame game, instead diverting the attention to the quality of care. Healthcare organizations often learn from error by the use of local and national reporting systems **(21).** Patient Safety programs are constituted mostly in the European Union, but outside the European Union, they are in their latent process i.e. in Albania currently there are no established programs on error records, formal hospital registers though researchers admit that patient safety is an issue in our country. Hereby referred "medical breaches" are directly connected (according to researchers), with the presumed *medical* ***corruption (22, p1).***

Like other public sectors in Albania, the health care sector is also affected from corruption. The way how corruption comes out and which segment of the health care system affect, depends in part on the health financing system. Most of corruption occurring in the health system is a reflection of general problems of governance and ***public sector accountability.*** In the Albanian health sector, there seems to be three main manifestations of corruption: i) informal payments to doctors and nurses; ii) doctors' and nurses' misuse of power and iii) corruption in the procurement of drugs and equipment (15). There are good opportunities for corruption in the process of procurement of drugs and equipment in Albania. This includes bribing of the evaluation committee/tender board in case of pharmaceutical contracts or by undue influence on the drafting of the call for proposals in a certain bidder's favor. Another corrupt practice is the use of bribes to politicians or public officials to get a drug approved or, in particular, get in on the national list of essential drugs, which are eligible for substantial subsidies, thereby boosting sales. It is a frequent practice for doctors to intentionally avoid using facilities and equipment available within the public provider (e.g. hospital) for patient examinations, instead referring patients to private providers of the same services, with which the doctor has links (or is even the same person). Patients in hospitals are often obliged to buy medicines which are supposed to be free. In addition, doctors overprescribe and suggest to patients the pharmacy where they can buy the prescribed medicament/s, in return receiving payments from the pharmacy (23). Another concerning phenomena in Albanian healthcare system is the doctors 'dual practice or so called deployment phenomena. Dual practice may encourage doctors to skimp on their public health efforts, to pilfer supplies, and to induce demand for their private services. Such activities will ultimately increase the workload as well as generate more hostile situations, more stress and will

lead to errors. This phenomena is not an isolated one, it is rather a typical one in the middle and income countries (24). According European Union progress report in 2014, corruption remained widespread in the healthcare system and the public hospital sector was underdeveloped (20).
There does exist a lack of research on patient safety in Albanian Hospital settings or Primary Care. Therefore, an instrument that measures health care professionals' attitudes regarding safety climate in the hospitals would be helpful in understanding and identifying areas that need improvement and for evaluating improvements in interventions. The purpose of the present study was to establish the reliability and validity of the translated version of the Safety attitude Questionnaire (Hospital Version) by evaluating its psychometric properties. Moreover we aim to find out if there are differences among nurses and physicians regarding safety attitudes.
Previous research has assessed the psychometric properties of the SAQ across countries (25, 26) and in different contexts and settings. The internal consistency and Cronbach's alpha values are acceptable, and the construct validity measured by CFA generally exhibits satisfactory model fit (25, 26, 27).
No psychometric instruments have been developed to measure patient safety in Albanian hospital settings.

Our Research Hypothesis related to the study aim are:
H1. The data from this study confirm the proposed six-factor model of the original SAQ.
H2. SAQ shows good internal consistency.
H3. Individual items of the SAQ show high correlations within its respective factor.
H4. There is no difference among nurses and physicians related to perceived patient safety attitudes in selected hospital settings

Methods

Setting

This was a quantitative, cross-sectional study and the data collection was administered between May and June 2012 to 4 regional hospitals in Albania. Nurses and doctors answered the SAQ-A voluntarily and anonymously**.** Surveys that were blank or had invariant responses (e.g., all responses were all "neutral" or "agree strongly) were excluded from this analysis, as they did not provide any diagnostic information.

Participants

One stage clusters sampling was used for this study. Four hospitals were randomly selected from a list of 11 regional hospitals to ensure geographic representativeness. In each of the hospital selected, nurses and doctors were included in the survey.
The rationale behind purpose of choosing only two types of occupational groups (nurses' vs. doctors) was explicitly compare this two groups with perpetual distinctions in safety behavior in academic healthcare literature **(**28, 29, 30, 31). Nurses and doctors in Albanian hospitals are closer to teamwork functioning hence affect patient service and quality. Surveys were administered during pre-existing departmental and staff meetings.

Measurements

Safety Attitude Questionnaire (SAQ)

The instrument used for data collection was the Safety Attitudes Questionnaire (SAQ) short adapted 30 item version (32). The instrument is composed of two parts: the first part contains questions containing the perception of patient safety **(see table 6).** The second part collects data about the professional: position held, sex, main job, and experience in years.
The instrument measures the perception of the health care professionals in six areas: teamwork climate, safety climate, job satisfaction, perceptions of management, stress recognition and working conditions with the response scale ranging from 1 (disagree strongly) to 5 (agree strongly). The reason that leaded us to use SAQ as an evaluating tool, was the strong correlation showed on the previous studies between the favorable scores of SAQ and positive patient outcomes (32). Another strong reason was the proved validity and reliability of the SAQ in different countries where it was conducted such as United States, United Kingdom's, Turkey and Norway (25, 27, and 33).
There are other tools evaluating patient safety culture or patient safety climate, e.g. Patient Safety Culture in Healthcare Organizations (34), Manchester Patient Safety Assessment Framework (35), and Patient Safety Behavioral Intent (PSBI) (36). These various tools have been used in practice highlighting the potential strengths and weaknesses as outlined in published research evidence. Yet, SAQ is one of the most commonly used and rigorously validated tools for measuring safety climate in healthcare. A distinguishing feature is that higher scores on this survey have been associated with positive patient and staff outcome data. This contrasts with other tools where there is less likely to be a direct association with patient outcomes (37).

Safety Culture versus Safety climate, definition of terms

Safety culture' has a broad definition that defines it as a worldwide issue that incorporates the values, assumptions and drivers that guide an organization. On the flipside, the climate takes a narrower scope since it deals with how employees take certain aspects of the organizational culture to be.

Measuring safety climate is important because the culture of an organization and the attitudes of teams have been found to influence patient safety outcomes and these measures can be used to monitor change over time (37, 38).
Some suggest that it is easier to measure safety climate because culture is much broader, whereas climate focuses on staffs' current perceptions of safety in relation to management support, supervision, risk taking, safety policies and practices, trust and openness. Safety climate is also thought to be more likely to show change following interventions (39, 40). In this scan, we are using Safety Climate in our study as a much easier and understandable/manageable concept.

Albanian version of the SAQ

The SAQ was translated from English to Albanian and back again by native speakers. In order to ensure that the version that was translated from English to Albanian was clear and used the right words, a focus group comprising of physicians, nurse experts and the faculty conducted a review. All the components were reviewed for their conformity with the Albanian culture. Linguistic validation of the translation was performed using the back-translation technique. Analytical results demonstrated that all six dimensions had good reliability (see table 2 and table 3). The view by the experts determined the authenticity of the content on the basis of its relevance,

appropriateness and importance to the Albanian culture. Content validity ratio (CVR), and content validity index (CVI) were calculated for each item. The mean CVR for the total scale was 0.96 and the mean CVI was 0.82 indicating a satisfactory content validity.

Statistical Analysis

Data analyses were conducted by SPSS version 16 (SPSS Inc., Chicago, IL, USA). Confirmatory factor analysis (CFA) was conducted by structural equation modeling using AMOS 5.0 software to test the extent to which each SAQ-A dimension was explained by items and the extent to which safety attitude was explained by the six dimensions. Relative chi-squares <5.0, a CFI value ≥ 0.95, a RMSEA value of <0.08 and a SRMR value of <0.09 were considered as acceptable model fit. The internal consistency of the Albanian version of SAQ was assessed by Cronbach's alpha coefficient. Two items were negatively worded and reversed for the statistical analysis. Independent sample *t* test was used to compare the mean score of SAQ subscales between physicians and nurses. The χ^2 test was used to compare the proportions of responses between physicians and nurses. Pearson correlation coefficient was used to examine the relationship between SAQ subscales. A p –value ≤0.05 was considered statistically significant.

Ethical issues

Approval by Ethical Committee was not necessary because the study had no experimental design and did not involve patients, moreover we were informed that it was not a mandatory requirement for ethics approval by the hospital ethics committee. The study was performed in line with the Helsinki Declaration using survey. The participants were informed about the aims of the study. Responding to the questionnaire was voluntary and anonymous and the participants were given the possibility to opt out without giving any explanation if by any chance they felt uncomfortable with the content of the questions

Results

Survey responses

A total of 341 valid questionnaires were returned from 4 hospitals with a response rate of 70%. Missing values' analysis showed no item with more than 2% missing values (range 0 - 1.8%). The majority of participants (63.6%) were females compared to males (36.4%). 61.4% were physicians while 38.6% were nurses (table 1).

Table 1.
Characteristics of safety attitude survey respondents

Variables	Physicians (n=209)	Nurses (n=132)
Gender, n (%)		
Female	136 (65.0)	114 (86.0)
Male	73 (35.0)	18 (14.0)

Age group (years) n (%)		
21-30	53 (58.2)	38 (41.8)
31-40	42 (66.7)	21 (33.3)
41-50	55 (59.1)	38 (40.9)
51-60	55 (69.6)	24 (30.4)
>60	5 (33.3)	10 (66.7)

Internal construct validity

The goodness-of-fit values used to evaluate the internal construct validity are displayed in table 3. The SRMR value was 0.075, the RMSEA values were was 0.044, and the CFI value was 0.97, which indicates a good model fit approximation of the translated version of the SAQ.

Table 2 Goodness-of-fit indices for CFA of the SAQ factors

Sample size	341
Standardized root mean square residual (SRMR)	0.075
Root mean square error of approximation (RMSEA)	0.044
Comparative fit index (CFI)	0.97

The CFA indicated a good model fit for each dimension and entire safety construct, namely the GFI, TLI, and CFI were >0.90 and the RMSAE was <0.10.

Internal consistency

The internal consistency of the six factors and 30 items of the translated version of the SAQ had Cronbach's alpha values of 0.62 to 0.82. Safety climate had the highest Cronbach's alpha values, and stress recognition had the lowest values (table 2).

Table 3 Internal consistency for the six factors of SAQ factors Cronbach's alpha

SAQ factors	Cronbach's alpha
Safety Climate (7 items)	0.82
Teamwork Climate (6 items)	0.79
Job Satisfaction (5 items)	0.78
Stress Recognition (4 items)	0.62
Perceptions of Management (4 items)	0.64
Working Conditions (4 items)	0.76

The test of the hypothesized relationships among the factors and items showed that the correlation ranged from 0.02 to 0.89 and that five of the six factor correlations were significant. Teamwork climate was positively correlated with safety climate (r=0.55, <0.01), job satisfaction (r=0.54, <0.01), Perceptions of Management (r=0.68, <0.01), Working Conditions (r=0.68, <0.01) while the Stress Recognition subscale was not significantly related to any of subscales. The intercorrelations between the factors are presented in table 4.

Table 4. Correlation matrix for the SAQ subscales

Subscale	Safety climate	Teamwork climate	Job satisfaction	Stress recognition	Perception of management	Working conditions
Safety Climate						
Teamwork Climate	0.55*					
Job Satisfaction	0.46*	0.54*				
Stress Recognition	0.25	0.08	0.02			
Perceptions of Management	0.54*	0.68*	0.47*	0.15		
Working Conditions	0.68*	0.71*	0.61*	0.25	0.79*	

* Significant on 5% level.

SAQ factors and item descriptive and *overall positive responsiveness per scale*

The SAQ factor definitions and items; missing, mean (SD), agree (agree strongly) and disagree (disagree strongly) answers is described in the **table** 5.

Table 5. SAQ Item Descriptive

Teamwork Climate (1-6)	Is item reverse scored (41)	% Item Missing Data	Mean (SD)	% Agree (Min Agree-Agree)	% Disagree (Min Disagree-Max Disagree)
1. It is easy for personnel in this Hospital to ask questions when there is something that they do not understand.	**No**	**1.3**	4.13 (.96)	80.45 (41.67-100.00)	7.41 (.00-35.00)
2. I have the support I need from other personnel to care for patients.	**No**	**2.1**	3.95 (.99)	74.28 (33.30-98.05)	9.18 (.00- 42.86)

3. Nurse input is well received in this Hospital.	**No**	**1.9**	3.99 (1.05)	73.42 (23.94-100.00)	10.16 (.00-54.94)
4. In this Hospital, it is difficult to speak up if I perceive a problem with patient care.	**Yes**	**2.2**	2.45 (1.26)	21.69 (.00-51.00)	59.87 (9.09-100.00)
5. Disagreements in this Hospital are resolved appropriately (i.e., not *who* is right, but *what* is best for the patient)	**No**	**1.8**	3.57 (1.10)	56.97 (22.75-85.24)	18.24 (.00-54.09)
6. The physicians and nurses here work together as a well-coordinated team.	**No**	**1.6**	3.75 (1.07)	68.42 (25.72-98.2)	14.24 (.00-53.12)
Safety Climate 7-13					
7. The culture in this Hospital makes it easy to learn from the errors of others.	**No**	**1.5**	3.96 (1.01)	71.45 (33.33-100.00)	9.55 (.00-33.33)
8. Medical errors are handled appropriately in this hospital.	**No**	**2.3**	3.49 (1.06)	51.08 (14.3-92.7)	17.3 (.00-57.14)
9. I know the proper channels to direct questions regarding patient safety in this hospital.	**No**	**1.6**	3.84 (1.01)	64.5 (24.00-100.00)	9.45 (.00-39.10)
10. I am encouraged by my colleagues to report any patient safety concerns I may have	**No**	**1.5**	4.05 (.94)	77.3 (48.60-100.00)	7.15 (.00-26.32)
11. I receive appropriate feedback about my performance.	**No**	**0.7**	3.22 (1.23)	46.48 (4.58-76.5)	31.5 (.00-75.00)
12. I would feel safe being treated here as a patient.	**No**	**1.5**	4.02 (1.04)	74.99 (36.35-100.00)	9.48 (.00-42.67)
13. In this hospital, it is difficult to discuss errors.	Yes	1.7	2.57 (1.13)	20.15 (.00-48.15)	53.87 (20.84-92.7)
Job Satisfaction 14-18					
14. This hospital is a good place to work.	**No**	**0.7**	3.75 (1.08)	63.5 (4.55-100.00)	13.54 (.00-58.09)
15. I am proud to work at this hospital.	**No**	**0.9**	3.72 (1.07)	62.5 (15.00-100.00)	10.8 (.00-50.00)
16. Working in this hospital is like being part of a large family.	**No**	**0.7**	3.12 (1.30)	42.1 (.00-93.55)	33.4 (.00-80.00)
17. Moral in this Hospital area is high.	**No**	**1.5**	2.89 (1.25)	38.72 (4.18-84.33)	36.75 (.00-76.25)

18. I like my job.	**No**	**0.2**	4.38 (.88)	85.6 (62.1-100.00)	4.63 (.00-18.32)
Stress Recognition 19-22					
19. When my workload becomes excessive, my performance is impaired.	**No**	**1.5**	3.79 (1.13)	32.16 (27.57-100.00)	34.9 (.00-52.3)
20. I am more likely to make errors in tense or hostile situations.	**No**	**1.3**	3.77 (1.16)	46.5 (30.00-87.00)	21.84 (.00-50.00)
21. Fatigue impairs my performance during emergency situations (e.g., emergency resuscitation, seizure).	**No**	**3.4**	3.00 (1.28)	29.45 (5.78-79.15)	46.84 (12.30-76.54)
22. I am less effective at work when fatigued.	**No**	**1.4**	3.75 (1.03)	25.69 (38.5-96.4)	41.21 (.00-30.00)
Perceptions of Management 23-26					
23. Hospital management does not knowingly compromise the safety of patients.	**No**	**1.7**	2.54 (1.27)	49.2 (9.11-87.5)	26.5 (4.89-90.45)
24. Hospital administration supports my daily efforts.	**No**	**0.6**	2.48 (1.75)	64.5 (.00-94.2)	29.62 (.00-100.00)
25. I am provided with adequate, timely information about events in the hospital that might affect my work.	**No**	**1.7**	3.21 (1.09)	51.5 (12.00-74.8)	22.1 (.00-66.65)
26. The levels of staffing in this clinical area are sufficient to handle the number of patients	**No**	**1.8**	2.67 (1.33)	53.54 (.00-84.62)	39.47 (4.21-96.45)
Working Conditions 27-30					
27. All the necessary information for diagnostic and therapeutic decisions is routinely available to me.	**No**	**2.2**	3.5 (1.07)	58.64 (16.8-89.5)	18.4 (.00-68.45)
28. This hospital constructively deals with problem physicians and employees.	**No**	**1.9**	2.89 (1.14)	24.85 (.00-82.33)	35.45 (.00-81.00)
29. Trainees in my discipline are adequately supervised.	**No**	**2.4**	3.55 (1.19)	58.64 (10.00-100.00)	21.48 (.00-64.50)

30. This hospital does a good job of training new personnel.	**No**	**1.2**	3.50 (1.19)	57.46 (16.2-96.45)	20.42 (.00-61.4)

The percentage of hospital healthcare providers holding positive attitude was 60.3% for teamwork climate, 57.2% for safety climate, 58.4% for job satisfaction, 37.4% for Stress recognition 59.3% for perception of management, and 49.5% for working conditions.

Group comparisons Nurses' behavior vs. Physicians

Results of the *t* test for independent samples did not indicate any significant difference between the score of physicians compared to nurses with regard to Safety climate (t= -1.5 p=0.1) and Perception of management (t= -1.6 p=0.1) subscales showing the same perception of attitude. A significant difference between the score of physicians and nurses was found for Teamwork (t= -5.4 p<0.01), Stress recognition (t= 6.4 p<0.01) job satisfaction (t= -7.8 p<0.01) and Working conditions subscales (t= -9.7 p<0.01).

Table 6. Comparison of the SAQ score among nurses and physicians

Subscale	Physicians M (SD)	Nurses M (SD)	t	p
Teamwork	52.3 (10.7)	45.7 (11.3)	-5.4	**0.01**
Safety climate	38.7 (11.1)	36.8 (10.3)	-1.5	0.1
Stress recognition	39.5 (9.2)	46.7 (11.4)	6.4	**<0.01**
Job satisfaction	49.7 (9.2)	40.6 (12.2)	-7.8	**<0.01**
Perception of management	46.8 (9.6)	44.8 (13.1)	-1.6	0.1
Working conditions	42.4 (11.4)	29.2 (13.4	-9.7	**<0.01**

For the statement, 'When my workload becomes excessive, my performance is impaired.' a lower proportion of physicians and nurses endorsed the 'agree' option but this only achieved statistical significance (39% physicians vs. 51% nurses; χ^2=5.0, p=0.02).
Meanwhile, for the "I am provided with adequate, timely information about events in the hospital that might affect my work" (59% physicians vs. 34% nurses; χ^2=18.8, p<0.01).

Regarding the item "The culture in this Hospital makes it easy to learn from the errors of others" a high percentage of nurses and physicians agree with the statement (80.2% of nurses and 83% of physicians) (χ^2=0.1, p=0.6). On the other hand nurses and doctors agree as well on "In this hospital, it is difficult to discuss errors" where nurses feel more intimidated into discussing errors (55% of physicians vs 44% of nurses (χ^2=, 4.9 p=0.02)

Discussion

Previous studies in the area of patient safety have investigated safety climate in primary care in Albania (42). The aim of the present study was to investigate the perception of safety climate among nurses and doctors working in hospital settings, confirming first of all a validated tool (SAQ). According to the results of this study, construct validity based on the CFA and goodness-of-fit indices including CFI, SRMR, and RMSEA demonstrated a good model that fitted very well. It is imperative that a model should be made more specific and be tested a second time in case a hypothetical model fails to fit appropriately (43, 44). According to good model fit indices, the Albanian version of the SAQ is a valid measure of safety attitude in hospitals. This finding is also an indication of the internal construct validity of the SAQ. The data from this study confirms our first hypothesis of the proposed six-factor model of the original SAQ, (H1. The data from this study confirm the proposed six-factor model of the original SAQ).

The internal consistency and internal structure of the Albanian translation of the SAQ was assessed; the translation showed satisfactory psychometric properties. The mean CVR for the total scale was 0.96 and the mean CVI was 0.82 indicating a satisfactory content validity. A good model fit was depicted by the construct validity whose goodness-of-fit is used in determining its CFA. The internal consistency for the six factors of the Albanian version of the SAQ based on the values of Cronbach's alpha assumes the values between 0.62 and 0.82. Job satisfaction and perception of management had an alpha value of 0.62 and 0.64 respectively, which is a bit below the recommended acceptable alpha value limit of 0.70 due to missing data that have influenced the result (44). The study results showed a good internal consistency confirming our second hypothesis, *(H2. SAQ shows good internal consistency)*. In order to apply SAQ in Albania and ensure reliability, the outcomes of this research work should be put into consideration in future evaluations. Cultural aspects may exist regarding the perception of management in the Albanian setting i.e. Hospital directors are quasi-political appointees, most physicians have inappropriate

training of any kind in healthcare management, thus lacking competencies in evaluating properly overall management issues.

The study confirmed the third hypothesis based on the conclusion that there was interconnectedness between all the factors with the exception of stress recognition (H3. Individual items of the SAQ show high correlations within its respective factor). According to the study results (see table 4), teamwork climate was more positively correlated with perception of management subscale and working conditions subscale. Stress recognition was not correlated to any of subscales. These findings complemented those of psychometric testing for the original SAQ. In tandem with previous studies, stress recognition did not depict any relationship with perceptions of management, teamwork climate, and job satisfaction, factors that showed moderate to high correlation (25). A significant difference among nurses and physicians was found related to perceived patient safety attitudes for the subscales of teamwork, safety climate, job satisfaction and working conditions where nurses scored lower mean values (see table 6). Overall, nurses perceived a lower job satisfaction, worse working conditions, and lower level of teamwork and bad perception of management compared to doctors, thus not confirming our fourth hypothesis. (*H4. There is no difference among nurses and physicians related to perceived patient safety attitudes in selected hospital settings).*

There are other clinical areas that have categorically stated the broad distinctions between nurses and physicians (28, 29), in addition two studies in the USA that used the SAQ showed that nurses and doctors differed in their perceptions of safety culture (30, 31) and may be due primarily to personal characteristics of caregivers such as level of education, socioeconomic status, gender etc.

The traditional hierarchy of physicians has often discouraged nurses to speaking up to doctors, and nurses can be hesitant to confront a physician on issues of patient care because they might have less training or experience in dealing with a patient's medical condition (31). Consistently with this, in our study, nurses scored low mean values in working conditions, safety climate and job satisfaction. Another study dealing with nurse job satisfaction showed that 41% of nurses were dissatisfied with their work in USA; in England 38.9% of nurses intended to abandon the profession. Generally salary, professional growth and autonomy are some of the factors that may influence the nursing professional's job satisfaction (45).

Meanwhile national researchers in Albania have pointed out that nurses were less satisfied with *promotion opportunities and co-worker satisfaction* (46), WHO studies stress overall the limited formal opportunities to upgrade knowledge and skills through continuing professional development (47). From the study results, it was clear that the international benchmark standards were not met (25). This was depicted through the failure by the mean values as directed towards the five safety dimensions.

Managerial implications

Measuring safety climate dimensions such as perceived teamwork climate, job satisfaction, and perception of management in hospitals will help to diagnose the underlying safety culture of the entire organization or work units. This study created a thorough image of the status of nurses and doctors' behavior regarding issues like teamwork, safety climate, and stress at work, job satisfaction, and management support in the selected regional hospitals.

European integration might increase the mobility of human resources for health to other countries. (e.g., immediately after acceding to the European Union in 2007, Romania reported over 6000 requests for certificates recognizing the Romanian diplomas of doctors, dentists, pharmacists and nurses for use elsewhere in the Union (47).
In the light of hospital decentralization reforms and EU adherence (17, 20), this study will serve as a starting point in initiating policy changes to address the issues identified above such as improving job satisfaction, working conditions, perceived inadequate information flow among nurses, as well as implementing interventions targeted to reduce their impact on the quality of hospital care.
The prevailing culture influences safety behaviors and outcomes for both healthcare workers and patients. This study has shown that the SAQ-A is a valid and easily administrated instrument. For the first step, hospitals can use this tool to measure their employees' safety attitudes on a regular basis, moreover healthcare managers should use the resulting data to design effective safety management systems and possible intervention e.g. promoting teamwork or stress recognition among doctors and nurses.

The results of the study will serve as baseline information for researchers with a variety of research interests especially related to patient safety and human resources for health.
From a cultural perspective, the results will serve as a basis for comparison between other countries or systems which have their own particularities, although sharing important common features (in terms of health services organization, financing and regulation and the similarity of their evolution throughout history).

Promoting Patient Empowerment and positive safety Culture

When it comes to healthcare, many policy documents, national priorities, as well as guidelines across Europe, North America, Australia, and sections of the Asian continent have been developed with messages on building of positive safety culture over the last two decades (48, 49). This initiatives in Albania are quite scarce and in its latent process. Below, we created a contextualized framework (fig. 1), taking into account Albanian Healthcare system on how to promote a safety culture in an underfinanced healthcare system, hoping to broaden the perspective similar health systems in Eastern European countries. Our main goal was to develop and test a framework for making the concept of safety culture meaningful and accessible to

policy makers, healthcare managers and frontline staff, helping thus facilitating debate of ways to improve safety culture in Albanian healthcare settings. We used a comprehensive review of the literature and national policy documents to identify the key dimensions of safety culture in healthcare settings.

Fig 1.Gabrani & Petrela, Promoting safety culture frame in Albanian healthcare settings

The voice of patients and careers is also largely absent in the field of patient safety in Albania for example the patients are considered inactive with a concerning apathy toward involvement in decision making process (50) not to neglect the informal payment phenomena in our country which is deterring effects to the Albanian health system. More active involvement of *patients will help patient safety programs in the future diffuse and scale up, programs which are successfully implemented in Western Europe ore outside EU developed countries.*

Further research needed

The topic of patient safety is becoming increasingly prominent on political agendas (51). Reduced revenues and increasing expenditures in times of *financial crisis* are likely to increase pressure on the health systems to further contain costs, and thus affect service quality and patient safety (52); according to recent cost-effectiveness studies on patient safety, interventions show that specific actions on patient safety could be cost-effective (53).

To cope with the EU policy measures and reduce the costs of unsafe care as well as to develop cost-effective patient safety programmes, further research is needed in Albania. Furthermore, work is needed to better identify and design solutions that fit into existing institutional and organizational frameworks. At the hospital setting level, there is need to understand differences in attitudes among nurses and doctors, better understanding of the low mean values of scales compared to international benchmark (25) especially related to stress and fatigue recognition scale.

Conclusions

It is apparent that the testing of psychometric as well as translation of SAQ depicts a worthwhile construction of validity. Despite this, reliability analysis suggested that some items need further refinement to establish sound internal consistency. The SAQ is a useful tool for evaluating safety attitude in Albanian hospital settings. This is clear as it confirms our main hypothesis; H1. The data from this study confirmed the proposed six-factor model of the original SAQ, H2. SAQ showed good internal consistency and H3. Individual items of the SAQ show high correlations within its respective factor.

As previous research suggests, the SAQ has potential as a useful tool for evaluating safety attitude. Back to our study, there is room for improvement especially in generalizing the findings in larger samples as well as conducting further additional exploratory analysis to identify a better factor model. Moreover, the researchers are committed to adapt a new version of the tool by combining it with in-depth interviews in order to find out more about nurses and doctors differences in safety attitudes.

Contributor ship Statement

AG designed the study, AH and JCG refined the writing strategy and the analysis elaboration, AS and JC performed the data analysis, and wrote the manuscript. JCG, AH and AS designed (adapted) the questionnaire and lead the data collection process. All the authors assisted with the data collection and the manuscript preparation, modified and approved the final manuscript.

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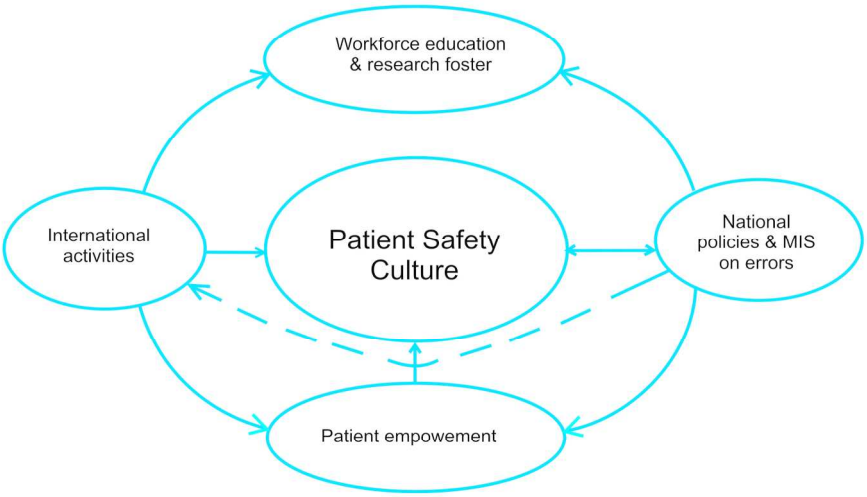

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STARD checklist for reporting of studies of diagnostic accuracy

(version January 2003)

Section and Topic	Item #		On page #
TITLE/ABSTRACT/ KEYWORDS	1	Identify the article as a study of diagnostic accuracy (recommend MeSH heading 'sensitivity and specificity').	
INTRODUCTION	2	State the research questions or study aims, such as estimating diagnostic accuracy or comparing accuracy between tests or across participant groups.	
METHODS			
Participants	3	The study population: The inclusion and exclusion criteria, setting and locations where data were collected.	
	4	Participant recruitment: Was recruitment based on presenting symptoms, results from previous tests, or the fact that the participants had received the index tests or the reference standard?	
	5	Participant sampling: Was the study population a consecutive series of participants defined by the selection criteria in item 3 and 4? If not, specify how participants were further selected.	
	6	Data collection: Was data collection planned before the index test and reference standard were performed (prospective study) or after (retrospective study)?	
Test methods	7	The reference standard and its rationale.	
	8	Technical specifications of material and methods involved including how and when measurements were taken, and/or cite references for index tests and reference standard.	
	9	Definition of and rationale for the units, cut-offs and/or categories of the results of the index tests and the reference standard.	
	10	The number, training and expertise of the persons executing and reading the index tests and the reference standard.	
	11	Whether or not the readers of the index tests and reference standard were blind (masked) to the results of the other test and describe any other clinical information available to the readers.	
Statistical methods	12	Methods for calculating or comparing measures of diagnostic accuracy, and the statistical methods used to quantify uncertainty (e.g. 95% confidence intervals).	
	13	Methods for calculating test reproducibility, if done.	
RESULTS			
Participants	14	When study was performed, including beginning and end dates of recruitment.	
	15	Clinical and demographic characteristics of the study population (at least information on age, gender, spectrum of presenting symptoms).	
	16	The number of participants satisfying the criteria for inclusion who did or did not undergo the index tests and/or the reference standard; describe why participants failed to undergo either test (a flow diagram is strongly recommended).	
Test results	17	Time-interval between the index tests and the reference standard, and any treatment administered in between.	
	18	Distribution of severity of disease (define criteria) in those with the target condition; other diagnoses in participants without the target condition.	
	19	A cross tabulation of the results of the index tests (including indeterminate and missing results) by the results of the reference standard; for continuous results, the distribution of the test results by the results of the reference standard.	
	20	Any adverse events from performing the index tests or the reference standard.	
Estimates	21	Estimates of diagnostic accuracy and measures of statistical uncertainty (e.g. 95% confidence intervals).	
	22	How indeterminate results, missing data and outliers of the index tests were handled.	
	23	Estimates of variability of diagnostic accuracy between subgroups of participants, readers or centers, if done.	
	24	Estimates of test reproducibility, if done.	
DISCUSSION	25	Discuss the clinical applicability of the study findings.	

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Application of Safety attitudes questionnaire (SAQ) in hospitals, a cross-sectional study in Albania

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Application of Safety attitudes questionnaire (SAQ) in hospitals, a cross-sectional study in Albania

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Abstract

Objective. To establish the reliability and validity of the translated version of the Safety Attitude Questionnaire (SAQ) by evaluating its psychometric properties and find out possible differences among nurses and physicians regarding safety attitudes.

Design. A cross-sectional study, utilizing the Albanian version of the SAQ and a demographic questionnaire.

Setting. Four Regional Hospitals, Albania.

Participants. Three hundred and forty one healthcare providers among which 132 nurses and 209 doctors.

Intervention. None.

Main Outcome Measure(s). Translation, Construct Validity and Internal Validity of SAQ. The SAQ 6 scales and 30 items;

Results. A total of 341 valid questionnaires were returned with a response rate of 70%. The CFA and its goodness-of-fit indices (SRMR 0.075, RMSEA 0.044, and CFI 0.97) showed good model fit. The Cronbach's alpha values for each of the scales of the SAQ ranged between 0.64 and 0.82. The percentage of hospital healthcare workers holding positive attitude was 60.3% for teamwork climate, 57.2% for safety climate, 58.4% for job satisfaction, 37.4% for Stress recognition, 59.3% for perception of management, and 49.5% for working conditions. Inter-correlations between the subscales showed *moderate to high correlation with each other*. The factor stress recognition had no significant correlation with teamwork climate, perception of management, or job satisfaction. Nurses were more hesitant to admit and report errors, only 55% of physicians and 44% of nurses endorsed agree (χ^2=, 4.9 p=0.02); moreover nurses received lower scores on team work compared to doctors (N 45.7 vs. D 52.3 **p= 0.01**). Doctors denied effects of stress and fatigue on performance (N 46.7 vs. D 39.5 **<0.01**), neglecting the workload.

Conclusions. The SAQ is a useful tool for evaluating safety attitude in Albanian hospitals. In the light of poor stress recognition from health workforce, establishing patient safety programs similarly to those in the EU, should be a priority among policy makers in Albania.

Keywords*: Patient safety, Safety attitudes, Hospital, doctor, nurse, Psychometrics,*

Strengths and Limitations

- The success of the survey can be attributed to several factors. First of all, the SAQ was easily answered and persistently well explained. Secondly, the group administration fully supported the survey, showing also ongoing commitment to the patient safety topic and safety culture through parallel studies Third, all respondents were anonymous, and thus they might feel more comfortable to fill out the questionnaire, though we cannot hide the first hesitation to participate due to "persecution" fear or "job harm".
- We are aware to several limitations to our study. The tool itself relies strongly on self-reported behavior, rather than on direct observations or registrations. The resulting information may be biased and may not correctly reflect the real situation. The researchers have made substantial efforts to train the data collectors avoid the positive answering tendency. However, this still cannot be excluded. Staff perceptions of communication can vary over time and can be influenced by day to day events within the hospital setting. The external validity of the study findings was limited by the study design and participants. Fourth, we did not examine the variations in perceptions among departments or across hospital settings.

Background

Patient safety is viewed as a crucial component of quality in healthcare service (1). Over the last decade, numerous definitions of patient safety have emerged in the literature. The Institute Of Medicine (2) described it as the prevention of harm, however, the European Agency, Safety Improvement for Patients in Europe, asserted it was about *identifying, analyzing and minimizing* patient risk (3).

Several studies have pointed out patient safety issues in different contexts, i.e. study results from a research in the United States of America revealed that one-fifth of the people in the community in New York are exposed to medical mistakes and adverse events (4), (an adverse event is defined as an injury resulting from a medical intervention i.e., not due to the underlying medical condition) (5).

European data, mostly from European Union Member States, show that medical errors and health-care related adverse events occur in 8% to 12% of hospitalizations. Infections associated with health care affect an estimated 1 in 20 hospital patients on average every year (estimated at 4.1 million patients). The United Kingdom National Audit Office estimates the cost of such infections at £1 billion per year. (6)

A European Commission report that was released recently and dubbed *Patient Safety in EU: 2014* elucidated an array of happenings (producing healthcare-associated infections) that are directly responsible 37000 deaths/year, they contribute to a further 110,000 deaths/year and they *cost hospitals* over a Euro 5.4 billion/year (7).

In healthcare, a significant percentage of errors are attributed to communication breakdowns and lack of effective teamwork (8). Furthermore, bad communication and not effective teamwork serve as contributing factors in the occurrence of patient safety incidents (8, 9, 10, and 11). Meantime, effective teamwork and communication are considered critical for ensuring high reliability and the safe delivery of care. Teamwork and communication techniques can improve quality and safety, decrease patient harm, promote cross-professional collaboration and the development of common goals, decrease workload issues, and improve staff and patient satisfaction (8).
To this ending, Hospitals, need to asses patient safety and promote teamwork principles for creating safe hospital systems (12, 13, and 14).

Transitional Albanian Health System

Albanian health system
After different reforms started in 1995 and speeded up during the last years, Albanian Health Care System, from a typically Semashko model has moved to a Bismarck model. Decentralization of primary care management, complete privatization of pharmaceutical sector, dentistry and founding of the Health Insurance Institute (HII) were the main milestones of these reforms. The Health system is funded through a mix of general tax revenues, payroll tax revenues for compulsory Health Insurance Institute (HII), voluntary prepayment for Voluntary Health Insurance (offered by HII), out-of-pocket at the time of service use and by different international donors (15).
Healthcare in Albania remains mainly public/state and only partly private. It is divided into three levels, primary healthcare services, secondary and tertiary healthcare services. Healthcare services cover the whole country and are directed by the Ministry of Health (16). The Ministry of Health has been rapidly changing its traditional role as "Health directorate" toward the function of leadership in health policy development and health strategy implementation. However, it still remains the major financing body of healthcare with two-thirds of the total healthcare budget. Ministry of Health is at the same time policy maker, decision maker and manager, controlling also the human resources and trainings (15, 17). There are 4.577 physicians overall. Albania has 709 inhabitants per physician (18).

Albanian hospital decentralization process
Albania is engaged in health reform initiatives aimed at introducing primary health care (PHC) centered on family medicine both to enhance performance of the health system as well as to cope with a broader political agenda (19). On the other hand, there is also a focus on hospital decentralization reforms, part of overall institutional decentralization process (17, 20). Since the beginning of 2009, HII has contracts with 39 hospitals in Albania: 1 tertiary Hospital (in Tirana), 3 University Hospitals (in Tirana), 11 regional hospitals and 24 District Hospitals. Hospitals are financed according to historical budget. During 2010 there are introduced in the contract between HII and Hospital also elements related to quality and performance indicators, but monitoring these indicators it seems to be very difficult, if not impossible, because clinical protocols and medical hospital standards are not yet prepared. Hospitals in Albania are not yet entirely accredited (15). Management functions require urgent attention, and Albania does not

have any professional management consultants. Managerial performance is judged more by political commitment than by effectiveness. Most funding is determined centrally by comprehensive budgets that are allocated at the start of each financial year. District administrators and health care managers have little flexibility and limited technical capacity to manage effectively. There is also an urgent need to establish management information systems, which would provide useful and accurate programme and budgeting information (17). The healthcare sector remains substantially underfunded, understaffed, and lacks adequate healthcare management (20)

To broaden the view, predicaments relating to the management have confronted a number of hospitals in Albania. These issues include unreliability in costing, lack of staff capacity building interventions, poor human resource management, the clinical results are not provided in a good and systematic form, problems in streamlining of the supply chain of the hospital supplies, poor non-clinical services which could otherwise be outsourced, lack of an independent body that takes care of the governing of the hospital, and the repair and maintenance of bio-medical equipment is out of date. It is important that patients should be provided with the much needed safety since it is one of the identifiable problems in the hospitals. This would allow provision of patient safety while shunning away blame game, instead diverting the attention to the quality of care. Healthcare organizations often learn from error by the use of local and national reporting systems **(21).** Patient Safety programs are constituted mostly in the European Union, but outside the European Union, they are in their latent process i.e. in Albania currently there are no established programs on error records, formal hospital registers though researchers admit that patient safety is an issue in our country. Hereby referred "medical breaches" are directly connected (according to researchers), with the presumed medical corruption (15, 20, 22, p1, 23, 24).

There does exist a lack of research on patient safety in Albanian Hospital settings or Primary Care. Therefore, an instrument that measures health care professionals' attitudes regarding safety climate in the hospitals would be helpful in understanding and identifying areas that need improvement and for evaluating improvements in interventions. The purpose of the present study was to establish the reliability and validity of the translated version of the Safety attitude Questionnaire (Hospital Version) by evaluating its psychometric properties. Moreover we aim to find out if there are differences among nurses and physicians regarding safety attitudes.

Previous research has assessed the psychometric properties of the SAQ across countries (25, 26) and in different contexts and settings. The internal consistency and Cronbach's alpha values are acceptable, and the construct validity measured by CFA generally exhibits satisfactory model fit (25, 26, 27).

No psychometric instruments have been developed to measure patient safety in Albanian hospital settings.

Our Research Hypothesis related to the study aim are:

H1. The data from this study confirm the proposed six-factor model of the original SAQ.

H2. SAQ shows good internal consistency.

H3. Individual items of the SAQ show high correlations within its respective factor.

H4. There is no difference among nurses and physicians related to perceived patient safety attitudes in selected hospital settings

Methods

Setting

This was a quantitative, cross-sectional study and the data collection was administered between May and June 2012 to 4 regional hospitals in Albania. Nurses and doctors answered the SAQ-A voluntarily and anonymously**.** Surveys that were blank or had invariant responses (e.g., all responses were all "neutral" or "agree strongly) were excluded from this analysis, as they did not provide any diagnostic information.

Participants

One stage clusters sampling was used for this study. Four hospitals were randomly selected from a list of 11 regional hospitals to ensure geographic representativeness. In each of the hospital selected, nurses and doctors were included in the survey.
The rationale behind purpose of choosing only two types of occupational groups (nurses' vs. doctors) was explicitly compare this two groups with perpetual distinctions in safety behavior in academic healthcare literature (28, 29, 30, 31). Nurses and doctors in Albanian hospitals are closer to teamwork functioning hence affect patient service and quality. Surveys were administered during pre-existing departmental and staff meetings.

Measurements
Safety Attitude Questionnaire (SAQ)

The instrument used for data collection was the Safety Attitudes Questionnaire (SAQ) short adapted 30 item version (32). The instrument is composed of two parts: the first part contains questions containing the perception of patient safety **(see table 6).** The second part collects data about the professional: position held, sex, main job, and experience in years.
The instrument measures the perception of the health care professionals in six areas: teamwork climate, safety climate, job satisfaction, perceptions of management, stress recognition and working conditions with the response scale ranging from 1 (disagree strongly) to 5 (agree strongly). The reason that leaded us to use SAQ as an evaluating tool, was the strong correlation showed on the previous studies between the favorable scores of SAQ and positive patient outcomes (32). Another strong reason was the proved validity and reliability of the SAQ in different countries where it was conducted such as United States, United Kingdom's, Turkey and Norway (25, 27, and 33).
There are other tools evaluating patient safety culture or patient safety climate, e.g. Patient Safety Culture in Healthcare Organizations (34), Manchester Patient Safety Assessment Framework (35), and Patient Safety Behavioral Intent (PSBI) (36). These various tools have been used in practice highlighting the potential strengths and weaknesses as outlined in published research evidence. Yet, SAQ is one of the most commonly used and rigorously validated tools for measuring safety climate in healthcare. A distinguishing feature is that higher scores on this survey have been associated with positive patient and staff outcome data. This contrasts with other tools where there is less likely to be a direct association with patient outcomes (37).

Safety Culture versus Safety climate, definition of terms

Safety culture' has a broad definition that defines it as a worldwide issue that incorporates the values, assumptions and drivers that guide an organization. On the flipside, the climate takes a narrower scope since it deals with how employees take certain aspects of the organizational culture to be.

Measuring safety climate is important because the culture of an organization and the attitudes of teams have been found to influence patient safety outcomes and these measures can be used to monitor change over time (37, 38).
Some suggest that it is easier to measure safety climate because culture is much broader, whereas climate focuses on staffs' current perceptions of safety in relation to management support, supervision, risk taking, safety policies and practices, trust and openness. Safety climate is also thought to be more likely to show change following interventions (39, 40). In this scan, we are using Safety Climate in our study as a much easier and understandable/manageable concept.

Albanian version of the SAQ

The SAQ was translated from English to Albanian and back again by native speakers. In order to ensure that the version that was translated from English to Albanian was clear and used the right words, a focus group comprising of physicians, nurse experts and the faculty conducted a review. All the components were reviewed for their conformity with the Albanian culture. Linguistic validation of the translation was performed using the back-translation technique. Analytical results demonstrated that all six dimensions had good reliability (see table 2 and table 3). The view by the experts determined the authenticity of the content on the basis of its relevance, appropriateness and importance to the Albanian culture. Content validity ratio (CVR), and content validity index (CVI) were calculated for each item. The mean CVR for the total scale was 0.96 and the mean CVI was 0.82 indicating a satisfactory content validity.

Statistical Analysis
Data analyses were conducted by SPSS version 16 (SPSS Inc., Chicago, IL, USA). Confirmatory analysis (CFA) was conducted by structural equation modeling using AMOS 5.0 software to test the extent to which each SAQ-A dimension was explained by items and the extent to which safety attitude was explained by the six dimensions. Relative chi-squares <5.0, a CFI value ≥ 0.95, a RMSEA value of <0.08 and a SRMR value of <0.09 were considered as acceptable model fit. The internal consistency of the Albanian version of SAQ was assessed by Cronbach's alpha coefficient. Two items were negatively worded and reversed for the statistical analysis. Independent sample *t* test was used to compare the mean score of SAQ subscales between physicians and nurses. The χ^2 test was used to compare the proportions of responses between physicians and nurses. Pearson correlation coefficient was used to examine the relationship between SAQ subscales. A p –value ≤0.05 was considered statistically significant.

Ethical issues
Approval by Ethical Committee was not necessary because the study had no experimental design and did not involve patients, moreover we were informed that it was not a mandatory requirement for ethics approval by the hospital ethics committee. The study was performed in line with the Helsinki Declaration using survey. The participants were informed about the aims

of the study. Responding to the questionnaire was voluntary and anonymous and the participants were given the possibility to opt out without giving any explanation if by any chance they felt uncomfortable with the content of the questions

Results

Survey responses

A total of 341 valid questionnaires were returned from 4 hospitals with a response rate of 70%. Missing values' analysis showed no item with more than 2% missing values (range 0 - 1.8%). The majority of participants (63.6%) were females compared to males (36.4%). 61.4% were physicians while 38.6% were nurses (table 1).

Table 1.
Characteristics of safety attitude survey respondents

Variables	Physicians (n=209)	Nurses (n=132)
Gender, n (%)		
Female	136 (65.0)	114 (86.0)
Male	73 (35.0)	18 (14.0)
Age group (years) n (%)		
21-30	53 (58.2)	38 (41.8)
31-40	42 (66.7)	21 (33.3)
41-50	55 (59.1)	38 (40.9)
51-60	55 (69.6)	24 (30.4)
>60	5 (33.3)	10 (66.7)

Internal construct validity

The goodness-of-fit values used to evaluate the internal construct validity are displayed in table 3. The SRMR value was 0.075, the RMSEA values were was 0.044, and the CFI value was 0.97, which indicates a good model fit approximation of the translated version of the SAQ.

Table 2 Goodness-of-fit indices for CFA of the SAQ factors

Sample size	341
Standardized root mean square residual (SRMR)	0.075
Root mean square error of approximation (RMSEA)	0.044
Comparative fit index (CFI)	0.97

The CFA indicated a good model fit for each dimension and entire safety construct, namely the GFI, TLI, and CFI were >0.90 and the RMSAE was <0.10.

Internal consistency

The internal consistency of the six factors and 30 items of the translated version of the SAQ had Cronbach's alpha values of 0.62 to 0.82. Safety climate had the highest Cronbach's alpha values, and stress recognition had the lowest values (table 3).

Table 3 Internal consistency for the six factors of SAQ factors Cronbach's alpha

SAQ factors	Cronbach's alpha
Safety Climate (7 items)	0.82
Teamwork Climate (6 items)	0.79
Job Satisfaction (5 items)	0.78
Stress Recognition (4 items)	0.62
Perceptions of Management (4 items)	0.64
Working Conditions (4 items)	0.76

The test of the hypothesized relationships among the factors and items showed that the correlation ranged from 0.02 to 0.89 and that five of the six factor correlations were significant. Teamwork climate was positively correlated with safety climate (r=0.55, <0.01), job satisfaction (r=0.54, <0.01), Perceptions of Management (r=0.68, <0.01), Working Conditions (r=0.68, <0.01) while the Stress Recognition subscale was not significantly related to any of subscales. The intercorrelations between the factors are presented in table 4.

Table 4. Correlation matrix for the SAQ subscales

Subscale	Safety climate	Teamwork climate	Job satisfaction	Stress recognition	Perception of management	Working conditions
Safety Climate						
Teamwork Climate	0.55*					
Job Satisfaction	0.46*	0.54*				
Stress Recognition	0.25	0.08	0.02			
Perceptions of Management	0.54*	0.68*	0.47*	0.15		
Working Conditions	0.68*	0.71*	0.61*	0.25	0.79*	

* Significant on 5% level.

SAQ factors and item descriptive and *overall positive responsiveness per scale*

The SAQ factor definitions and items; missing, mean (SD), agree (agree strongly) and disagree (disagree strongly) answers is described in the **table 5.**

Table 5. SAQ Item Descriptive

Teamwork Climate (1-6)	Is item reverse scored (41)	% Item Missing Data	Mean (SD)	% Agree (Min Agree-Agree)	% Disagree (Min Disagree-Max Disagree)
1. It is easy for personnel in this Hospital to ask questions when there is something that they do not understand.	**No**	**1.3**	4.13 (.96)	80.45 (41.67-100.00)	7.41 (.00-35.00)
2. I have the support I need from other personnel to care for patients.	**No**	**2.1**	3.95 (.99)	74.28 (33.30-98.05)	9.18 (.00- 42.86)
3. Nurse input is well received in this Hospital.	**No**	**1.9**	3.99 (1.05)	73.42 (23.94-100.00)	10.16 (.00-54.94)
4. In this Hospital, it is difficult to speak up if I perceive a problem with patient care.	**Yes**	**2.2**	2.45 (1.26)	21.69 (.00-51.00)	59.87 (9.09-100.00)
5. Disagreements in this Hospital are resolved appropriately (i.e., not *who* is right, but *what* is best for the patient)	**No**	**1.8**	3.57 (1.10)	56.97 (22.75-85.24)	18.24 (.00-54.09)
6. The physicians and nurses here work together as a well-coordinated team.	**No**	**1.6**	3.75 (1.07)	68.42 (25.72-98.2)	14.24 (.00-53.12)
Safety Climate 7-13					
7. The culture in this Hospital makes it easy to learn from the errors of others.	**No**	**1.5**	3.96 (1.01)	71.45 (33.33-100.00)	9.55 (.00-33.33)
8. Medical errors are handled appropriately in this hospital.	**No**	**2.3**	3.49 (1.06)	51.08 (14.3-92.7)	17.3 (.00-57.14)
9. I know the proper channels to direct questions regarding patient safety in this hospital.	**No**	**1.6**	3.84 (1.01)	64.5 (24.00-100.00)	9.45 (.00-39.10)
10. I am encouraged by my colleagues to report any patient safety concerns I may have	**No**	**1.5**	4.05 (.94)	77.3 (48.60-100.00)	7.15 (.00-26.32)

11. I receive appropriate feedback about my performance.	**No**	**0.7**	3.22 (1.23)	46.48 (4.58-76.5)	31.5 (.00-75.00)
12. I would feel safe being treated here as a patient.	**No**	**1.5**	4.02 (1.04)	74.99 (36.35-100.00)	9.48 (.00-42.67)
13. In this hospital, it is difficult to discuss errors.	Yes	1.7	2.57 (1.13)	20.15 (.00-48.15)	53.87 (20.84-92.7)
Job Satisfaction 14-18					
14. This hospital is a good place to work.	**No**	**0.7**	3.75 (1.08)	63.5 (4.55-100.00)	13.54 (.00-58.09)
15. I am proud to work at this hospital.	**No**	**0.9**	3.72 (1.07)	62.5 (15.00-100.00)	10.8 (.00-50.00)
16. Working in this hospital is like being part of a large family.	**No**	**0.7**	3.12 (1.30)	42.1 (.00-93.55)	33.4 (.00-80.00)
17. Moral in this Hospital area is high.	**No**	**1.5**	2.89 (1.25)	38.72 (4.18-84.33)	36.75 (.00-76.25)
18. I like my job.	**No**	**0.2**	4.38 (.88)	85.6 (62.1-100.00)	4.63 (.00-18.32)
Stress Recognition 19-22					
19. When my workload becomes excessive, my performance is impaired.	**No**	**1.5**	3.79 (1.13)	32.16 (27.57-100.00)	34.9 (.00-52.3)
20. I am more likely to make errors in tense or hostile situations.	**No**	**1.3**	3.77 (1.16)	46.5 (30.00-87.00)	21.84 (.00-50.00)
21. Fatigue impairs my performance during emergency situations (e.g., emergency resuscitation, seizure).	**No**	**3.4**	3.00 (1.28)	29.45 (5.78-79.15)	46.84 (12.30-76.54)
22. I am less effective at work when fatigued.	**No**	**1.4**	3.75 (1.03)	25.69 (38.5-96.4)	41.21 (.00-30.00)
Perceptions of Management 23-26					
23. Hospital management does not knowingly compromise the safety of patients.	**No**	**1.7**	2.54 (1.27)	49.2 (9.11-87.5)	26.5 (4.89-90.45)
24. Hospital administration supports my daily efforts.	**No**	**0.6**	2.48 (1.75)	64.5 (.00-94.2)	29.62 (.00-100.00)

25. I am provided with adequate, timely information about events in the hospital that might affect my work.	**No**	**1.7**	3.21 (1.09)	51.5 (12.00-74.8)	22.1 (.00-66.65)
26. The levels of staffing in this clinical area are sufficient to handle the number of patients	**No**	**1.8**	2.67 (1.33)	53.54 (.00-84.62)	39.47 (4.21-96.45)
Working Conditions 27-30					
27. All the necessary information for diagnostic and therapeutic decisions is routinely available to me.	**No**	**2.2**	3.5 (1.07)	58.64 (16.8-89.5)	18.4 (.00-68.45)
28. This hospital constructively deals with problem physicians and employees.	**No**	**1.9**	2.89 (1.14)	24.85 (.00-82.33)	35.45 (.00-81.00)
29. Trainees in my discipline are adequately supervised.	**No**	**2.4**	3.55 (1.19)	58.64 (10.00-100.00)	21.48 (.00-64.50)
30. This hospital does a good job of training new personnel.	**No**	**1.2**	3.50 (1.19)	57.46 (16.2-96.45)	20.42 (.00-61.4)

The percentage of hospital healthcare providers holding positive attitude was 60.3% for teamwork climate, 57.2% for safety climate, 58.4% for job satisfaction, 37.4% for Stress recognition 59.3% for perception of management, and 49.5% for working conditions.

Group comparisons Nurses' behavior vs. Physicians

Results of the *t* test for independent samples did not indicate any significant difference between the score of physicians compared to nurses with regard to Safety climate (t= -1.5 p=0.1) and Perception of management (t= -1.6 p=0.1) subscales showing the same perception of attitude. A significant difference between the score of physicians and nurses was found for Teamwork (t= -5.4 p<0.01), Stress recognition (t= 6.4 p<0.01) job satisfaction (t= -7.8 p<0.01) and Working conditions subscales (t= -9.7 p<0.01).

Table 6. Comparison of the SAQ score among nurses and physicians

Subscale	Physicians M (SD)	Nurses M (SD)	t	p
Teamwork	52.3 (10.7)	45.7 (11.3)	-5.4	**0.01**
Safety climate	38.7 (11.1)	36.8 (10.3)	-1.5	0.1

Stress recognition	39.5 (9.2)	46.7 (11.4)	6.4	**<0.01**
Job satisfaction	49.7 (9.2)	40.6 (12.2)	-7.8	**<0.01**
Perception of management	46.8 (9.6)	44.8 (13.1)	-1.6	0.1
Working conditions	42.4 (11.4)	29.2 (13.4	-9.7	**<0.01**

For the statement, 'When my workload becomes excessive, my performance is impaired.' a lower proportion of physicians and nurses endorsed the 'agree' option but this only achieved statistical significance (39% physicians vs. 51% nurses; χ^2=5.0, p=0.02).
Meanwhile, for the "I am provided with adequate, timely information about events in the hospital that might affect my work" (59% physicians vs. 34% nurses; χ^2=18.8, p<0.01).

Regarding the item "The culture in this Hospital makes it easy to learn from the errors of others" a high percentage of nurses and physicians agree with the statement (80.2% of nurses and 83% of physicians) (χ^2=0.1, p=0.6). On the other hand nurses and doctors agree as well on "In this hospital, it is difficult to discuss errors" where nurses feel more intimidated into discussing errors (55% of physicians vs 44% of nurses (χ^2=, 4.9 p=0.02)

Discussion

Previous studies in the area of patient safety have investigated safety climate in primary care in Albania (42). The aim of the present study was to investigate the perception of safety climate among nurses and doctors working in hospital settings, confirming first of all a validated tool (SAQ). According to the results of this study, construct validity based on the CFA and goodness-of-fit indices including CFI, SRMR, and RMSEA demonstrated a good model that fitted very well. It is imperative that a model should be made more specific and be tested a second time in case a hypothetical model fails to fit appropriately (43, 44). According to good model fit indices, the Albanian version of the SAQ is a valid measure of safety attitude in hospitals. This finding is also an indication of the internal construct validity of the SAQ. The data from this study confirms our first hypothesis of the proposed six-factor model of the original SAQ, (H1. The data from this study confirm the proposed six-factor model of the original SAQ).

The internal consistency and internal structure of the Albanian translation of the SAQ was assessed; the translation showed satisfactory psychometric properties. The mean CVR for the total scale was 0.96 and the mean CVI was 0.82 indicating a satisfactory content validity. A good model fit was depicted by the construct validity whose goodness-of-fit is used in determining its CFA. The internal consistency for the six factors of the Albanian version of the SAQ based on the values of Cronbach's alpha assumes the values between 0.62 and 0.82. Job satisfaction and

perception of management had an alpha value of 0.62 and 0.64 respectively, which is a bit below the recommended acceptable alpha value limit of 0.70 due to missing data that have influenced the result (44). The study results showed a good internal consistency confirming our second hypothesis, *(H2. SAQ shows good internal consistency).* In order to apply SAQ in Albania and ensure reliability, the outcomes of this research work should be put into consideration in future evaluations. Cultural aspects may exist regarding the perception of management in the Albanian setting i.e. Hospital directors are quasi-political appointees, sometimes physicians have little training in healthcare management (17), thus lacking competencies in evaluating properly overall management issues.

The study confirmed the third hypothesis based on the conclusion that there was interconnectedness between all the factors with the exception of stress recognition (H3. Individual items of the SAQ show high correlations within its respective factor). According to the study results (see table 4), teamwork climate was more positively correlated with perception of management subscale and working conditions subscale. Stress recognition was not correlated to any of subscales. These findings complemented those of psychometric testing for the original SAQ. In tandem with previous studies, stress recognition did not depict any relationship with perceptions of management, teamwork climate, and job satisfaction, factors that showed moderate to high correlation (25). A significant difference among nurses and physicians was found related to perceived patient safety attitudes for the subscales of teamwork, safety climate, job satisfaction and working conditions where nurses scored lower mean values (see table 6). Overall, nurses perceived a lower job satisfaction, worse working conditions, and lower level of teamwork and bad perception of management compared to doctors, thus not confirming our fourth hypothesis. (*H4. There is no difference among nurses and physicians related to perceived patient safety attitudes in selected hospital settings).*

There are other clinical areas that have categorically stated the broad distinctions between nurses and physicians (28, 29), in addition two studies in the USA that used the SAQ showed that nurses and doctors differed in their perceptions of safety culture (30, 31) and may be due primarily to personal characteristics of caregivers such as level of education, socioeconomic status, gender etc.

The traditional hierarchy of physicians has often discouraged nurses to speaking up to doctors, and nurses can be hesitant to confront a physician on issues of patient care because they might have less training or experience in dealing with a patient's medical condition (31). Consistently with this, in our study, nurses scored low mean values in working conditions, safety climate and job satisfaction. Another study dealing with nurse job satisfaction showed that 41% of nurses were dissatisfied with their work in USA; in England 38.9% of nurses intended to abandon the profession. Generally salary, professional growth and autonomy are some of the factors that may influence the nursing professional's job satisfaction (45).

Meanwhile national researchers in Albania have pointed out that nurses were less satisfied with *promotion opportunities and co-worker satisfaction* (46), WHO studies stress overall the limited formal opportunities to upgrade knowledge and skills through continuing professional

development (47). From the study results, it was clear that the international benchmark standards were not met (25). This was depicted through the failure by the mean values as directed towards the five safety dimensions.

Managerial implications

Measuring safety climate dimensions such as perceived teamwork climate, job satisfaction, and perception of management in hospitals will help to diagnose the underlying safety culture of the entire organization or work units. This study created a thorough image of the status of nurses and doctors' behavior regarding issues like teamwork, safety climate, and stress at work, job satisfaction, and management support in the selected regional hospitals.

European integration might increase the mobility of human resources for health to other countries. (e.g., immediately after acceding to the European Union in 2007, Romania reported over 6000 requests for certificates recognizing the Romanian diplomas of doctors, dentists, pharmacists and nurses for use elsewhere in the Union (47).
In the light of hospital decentralization reforms and EU adherence (17, 20), this study will serve as a starting point in initiating policy changes to address the issues identified above such as improving job satisfaction, working conditions, perceived inadequate information flow among nurses, as well as implementing interventions targeted to reduce their impact on the quality of hospital care.
The prevailing culture influences safety behaviors and outcomes for both healthcare workers and patients. This study has shown that the SAQ-A is a valid and easily administrated instrument. For the first step, hospitals can use this tool to measure their employees' safety attitudes on a regular basis, moreover healthcare managers should use the resulting data to design effective safety management systems and possible intervention e.g. promoting teamwork or stress recognition among doctors and nurses.

The results of the study will serve as baseline information for researchers with a variety of research interests especially related to patient safety and human resources for health.
From a cultural perspective, the results will serve as a basis for comparison between other countries or systems which have their own particularities, although sharing important common features (in terms of health services organization, financing and regulation and the similarity of their evolution throughout history).

Promoting Patient Empowerment and positive safety Culture

When it comes to healthcare, many policy documents, national priorities, as well as guidelines across Europe, North America, Australia, and sections of the Asian continent have been developed with messages on building of positive safety culture over the last two decades (48, 49). This initiatives in Albania are quite scarce and in its latent process. Below, we created a contextualized framework (fig. 1), taking into account Albanian Healthcare system on how to promote a safety culture in an underfinanced healthcare system, hoping to broaden the perspective similar health systems in Eastern European countries. Our main goal was to develop and test a framework for making the concept of safety culture meaningful and accessible to policy makers, healthcare managers and frontline staff, helping thus facilitating debate of ways to improve safety culture in Albanian healthcare settings. We used a comprehensive review of the literature and national policy documents to identify the key dimensions of safety culture in healthcare settings.

Fig 1.Gabrani & Petrela, Promoting safety culture frame in Albanian healthcare settings

The voice of patients and careers is also largely absent in the field of patient safety in Albania for example the patients are considered inactive with a concerning apathy toward involvement in decision making process (50) not to neglect the informal payment phenomena in our country which is deterring effects to the Albanian health system. More active involvement of *patients will help patient safety programs in the future diffuse and scale up, programs which are successfully implemented in Western Europe ore outside EU developed countries.*

Further research needed

The topic of patient safety is becoming increasingly prominent on political agendas (51). Reduced revenues and increasing expenditures in times of *financial crisis* are likely to increase pressure on the health systems to further contain costs, and thus affect service quality and patient safety (52); according to recent cost-effectiveness studies on patient safety, interventions show that specific actions on patient safety could be cost-effective (53).

To cope with the EU policy measures and reduce the costs of unsafe care as well as to develop cost-effective patient safety programmes, further research is needed in Albania. Furthermore, work is needed to better identify and design solutions that fit into existing institutional and organizational frameworks. At the hospital setting level, there is need to understand differences in attitudes among nurses and doctors, better understanding of the low mean values of scales compared to international benchmark (25) especially related to stress and fatigue recognition scale.

Conclusions

It is apparent that the testing of psychometric as well as translation of SAQ depicts a worthwhile construction of validity. Despite this, reliability analysis suggested that some items need further refinement to establish sound internal consistency. The SAQ is a useful tool for evaluating safety attitude in Albanian hospital settings. This is clear as it confirms our main hypothesis; H1. The data from this study confirmed the proposed six-factor model of the original SAQ, H2. SAQ showed good internal consistency and H3. Individual items of the SAQ show high correlations within its respective factor.

As previous research suggests, the SAQ has potential as a useful tool for evaluating safety attitude. Back to our study, there is room for improvement especially in generalizing the findings in larger samples as well as conducting further additional exploratory analysis to identify a better factor model. Moreover, the researchers are committed to adapt a new version of the tool by combining it with in-depth interviews in order to find out more about nurses and doctors differences in safety attitudes.

Contributor ship Statement

AG designed the study, AH and JCG refined the writing strategy and the analysis elaboration, AS and JC performed the data analysis, and JC wrote the manuscript. JCG, AH and AS designed (adapted) the questionnaire and lead the data collection process. All the authors assisted with the data collection and the manuscript preparation, modified and approved the final manuscript. AG and AH share the same prime contribution in the article.

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Competing interests
None declared

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Fig 1.Gabrani & Petrela, Promoting safety culture frame in Albanian healthcare settings

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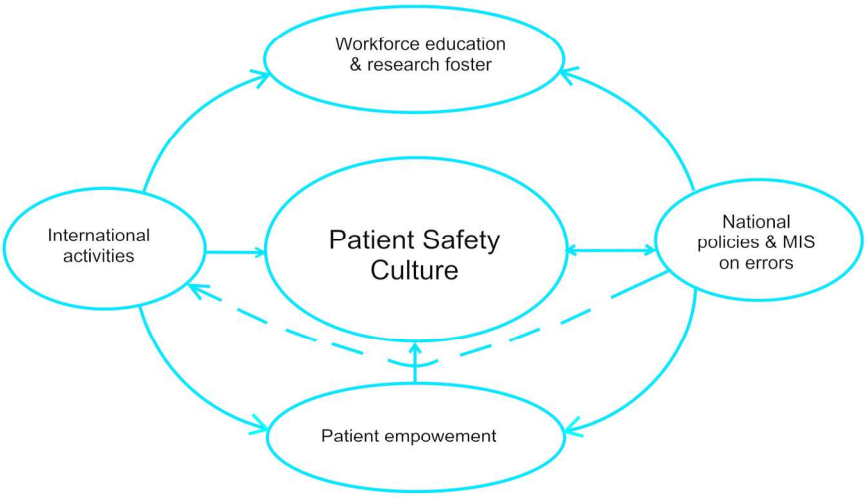

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STARD checklist for reporting of studies of diagnostic accuracy

(version January 2003)

Section and Topic	Item #		On page #
TITLE/ABSTRACT/ KEYWORDS	1	Identify the article as a study of diagnostic accuracy (recommend MeSH heading 'sensitivity and specificity').	
INTRODUCTION	2	State the research questions or study aims, such as estimating diagnostic accuracy or comparing accuracy between tests or across participant groups.	
METHODS			
Participants	3	The study population: The inclusion and exclusion criteria, setting and locations where data were collected.	
	4	Participant recruitment: Was recruitment based on presenting symptoms, results from previous tests, or the fact that the participants had received the index tests or the reference standard?	
	5	Participant sampling: Was the study population a consecutive series of participants defined by the selection criteria in item 3 and 4? If not, specify how participants were further selected.	
	6	Data collection: Was data collection planned before the index test and reference standard were performed (prospective study) or after (retrospective study)?	
Test methods	7	The reference standard and its rationale.	
	8	Technical specifications of material and methods involved including how and when measurements were taken, and/or cite references for index tests and reference standard.	
	9	Definition of and rationale for the units, cut-offs and/or categories of the results of the index tests and the reference standard.	
	10	The number, training and expertise of the persons executing and reading the index tests and the reference standard.	
	11	Whether or not the readers of the index tests and reference standard were blind (masked) to the results of the other test and describe any other clinical information available to the readers.	
Statistical methods	12	Methods for calculating or comparing measures of diagnostic accuracy, and the statistical methods used to quantify uncertainty (e.g. 95% confidence intervals).	
	13	Methods for calculating test reproducibility, if done.	
RESULTS			
Participants	14	When study was performed, including beginning and end dates of recruitment.	
	15	Clinical and demographic characteristics of the study population (at least information on age, gender, spectrum of presenting symptoms).	
	16	The number of participants satisfying the criteria for inclusion who did or did not undergo the index tests and/or the reference standard; describe why participants failed to undergo either test (a flow diagram is strongly recommended).	
Test results	17	Time-interval between the index tests and the reference standard, and any treatment administered in between.	
	18	Distribution of severity of disease (define criteria) in those with the target condition; other diagnoses in participants without the target condition.	
	19	A cross tabulation of the results of the index tests (including indeterminate and missing results) by the results of the reference standard; for continuous results, the distribution of the test results by the results of the reference standard.	
	20	Any adverse events from performing the index tests or the reference standard.	
Estimates	21	Estimates of diagnostic accuracy and measures of statistical uncertainty (e.g. 95% confidence intervals).	
	22	How indeterminate results, missing data and outliers of the index tests were handled.	
	23	Estimates of variability of diagnostic accuracy between subgroups of participants, readers or centers, if done.	
	24	Estimates of test reproducibility, if done.	
DISCUSSION	25	Discuss the clinical applicability of the study findings.	

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Application of the Safety Attitudes Questionnaire (SAQ) in Albanian hospitals: A Cross-Sectional Study

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Abstract

Objective. To establish the reliability and validity of the translated version of the Safety Attitudes Questionnaire (SAQ) by evaluating its psychometric properties and to determine possible differences among nurses and physicians regarding safety attitudes.

Design. A cross-sectional study utilizing the Albanian version of the SAQ and a demographic questionnaire.

Setting. Four regional hospitals in Albania.

Participants. Three hundred forty-one health care providers, including 132 nurses and 209 doctors.

Main Outcome Measure(s). The translation, construct validity and internal validity of the SAQ. The SAQ includes 6 scales and 30 items.

Results. A total of 341 valid questionnaires were returned, for a response rate of 70%. The CFA and its goodness-of-fit indices (SRMR 0.075, RMSEA 0.044, and CFI 0.97) showed good model fit. The Cronbach's alpha values for each of the scales of the SAQ ranged from 0.64 to 0.82. The percentage of hospital health care workers who had a positive attitude was 60.3% for the teamwork climate, 57.2% for the safety climate, 58.4% for job satisfaction, 37.4% for stress recognition, 59.3% for the perception of management, and 49.5% for working conditions. Inter-correlations showed that the subscales had moderate to high correlations with one another. Nurses were more hesitant to admit and report errors; only 55% of physicians and 44% of nurses endorsed this statement (χ^2=4.9, p=0.02). Moreover, nurses received lower scores on team work compared with doctors (N 45.7 vs. D 52.3, **p=0.01**). Doctors denied the effects of stress and fatigue on their performance (N 46.7 vs. D 39.5, p**<0.01**), neglecting the workload.

Conclusions. The SAQ is a useful tool for evaluating safety attitudes in Albanian hospitals. In light of the health workforce's poor recognition of stress, establishing patient safety programmes should be a priority among policy makers in Albania.

Keywords*: Patient safety, Safety attitudes, Hospital, Doctor, Nurse, Psychometrics*

Strengths and Limitations

- The SAQ was easily answered and consistently well explained. Second, the group administration fully supported the survey, and parallel studies showed an ongoing commitment to patient safety and maintaining a safety culture. Third, all of the respondents were anonymous. Although anonymity may have allowed the participants to feel more comfortable about completing the questionnaire, we cannot rule out the possibility that some potential participants hesitated to participate for fear of persecution or job harm.
- We are aware of several limitations of our study. The SAQ tool relies strongly on self-reported behaviour. The resulting information may be biased and not correctly reflect the actual situation. A positive-answering tendency cannot be excluded. Staff perceptions of communication can vary over time and can be influenced by day-to-day events within the hospital setting. The external validity of the study findings was limited by the study design and participants. Finally, we did not examine variations in perceptions among departments or across hospital settings.

Background

Patient safety is viewed as a crucial component of quality in health care service (1). Over the last decade, numerous definitions of patient safety have emerged in the literature. The Institute Of Medicine (2) described patient safety as the prevention of harm. However, the European agency Safety Improvement for Patients in Europe asserted that patient safety focuses on *identifying, analysing and minimizing* patient risk (3).

Several studies have noted patient safety issues in different contexts. For example, study results from the United States revealed that one-fifth of the people in a community in New York reported that either they or someone in their household had experienced a medical error (4), (an adverse event is defined as an injury resulting from a medical intervention and not caused by an underlying medical condition) (5).

European data, mostly from European Union Member States, show that medical errors and health care-related adverse events occur in 8% to 12% of hospitalizations. Infections associated with health care affect an estimated 1 in 20 hospital patients on average every year (an estimated 4.1 million patients). The United Kingdom National Audit Office estimates the cost of such infections at £1 billion per year (6).

A recently released European Commission report titled *Patient Safety in EU: 2014* elucidated an array of occurrences related to health care-associated infections that are directly responsible for 37,000 deaths/year, contribute to a further 110,000 deaths/year and *cost hospitals* more than 5.4 billion Euros/year (7).

In health care, a significant percentage of errors are attributed to communication breakdowns and a lack of effective teamwork (8). Furthermore, poor communication and ineffective teamwork are factors that contribute to the occurrence of patient safety incidents (8, 9, 10, and 11). Effective teamwork and communication are considered critical for ensuring high reliability and

the safe delivery of care. Teamwork and communication techniques can improve quality and safety, decrease patient harm, promote cross-professional collaboration and the development of common goals, decrease workload issues, and improve staff and patient satisfaction (8). To this end, hospitals need to assess patient safety and promote teamwork principles to create safe hospital systems (12, 13, and 14).

The Transitional Albanian Health System

The Albanian health system

Following various reforms that began in 1995 and have gained pace in recent years, the Albanian Health Care System moved from a typical Semashko model to a Bismarck model (15). The decentralization of primary care management, the complete privatization of the pharmaceutical sector and dentistry and the founding of the Health Insurance Institute (HII) were the main milestones of these reforms. The health system is funded through a mix of general tax revenues, payroll tax revenues for the compulsory HII, voluntary prepayment for Voluntary Health Insurance (offered by HII), out-of-pocket payments made at the time of service use and various international donors (15).

Health care in Albania remains mainly public/state provided and is only partly privately provided. It is divided into three levels: primary, secondary and tertiary health care services. Health care services cover the entire country and are directed by the Ministry of Health (16). The Ministry of Health has been rapidly changing from its traditional role as a "health directorate" to a leadership role in health policy development and health strategy implementation. However, the Ministry of Health remains the major health care financing body, providing two-thirds of the total health care budget. The Ministry of Health is also a policy maker, decision maker and manager, and it leads human resources and training (15, 16, and 17). There are 4,577 physicians in Albania and 709 inhabitants per physician (18).

The Albanian hospital decentralization process

Albania is engaged in health reform initiatives that aim to introduce primary health care (PHC) centred on family medicine to both enhance the performance of the health system and to cope with a broader political agenda (19). There is also a focus on hospital decentralization reforms as part of an overall institutional decentralization process (20). Since the beginning of 2009, HII has had contracts with 39 hospitals in Albania: 1 tertiary hospital (in Tirana), 3 university hospitals (in Tirana), 11 regional hospitals and 24 district hospitals. The hospitals are financed according to a historical budget. In 2010, the contract between the HII and the hospitals also included elements related to quality and performance indicators; however, monitoring these indicators seems very difficult, if not impossible, because clinical protocols and medical hospital standards are not yet available. The hospitals in Albania are not yet entirely accredited (15). The health care sector remains substantially underfunded and understaffed, and it lacks adequate health care management (20)

It is important to provide patients with much-needed safety because patient safety is an identifiable problem in hospitals. This approach would allow the provision of patient safety while avoiding blame games that divert attention away from the quality of care. Health care organizations often learn from errors in the use of local and national reporting systems (21).

Patient safety programmes exist primarily in the European Union. Outside the European Union, they are in a latent position (as in Albania at present). There are no established programmes on error records. Formal hospital registers show that patient safety is an issue in this country. According to some findings, "medical breaches" are directly connected to presumed medical corruption (22–24).

There is a lack of research on patient safety in Albanian hospitals and primary care settings. Therefore, an instrument to measure health care professionals' attitudes about the safety climate in their hospitals would be helpful for understanding and identifying areas that need improvement and for evaluating improvements in interventions. The purpose of the present study was to establish the reliability and validity of the translated version of the Safety Attitudes Questionnaire (Hospital Version) by evaluating its psychometric properties. Moreover, we aimed to determine whether there are differences among nurses and physicians regarding safety attitudes.

Previous research has assessed the psychometric properties of the SAQ across countries (25, 26) and in different contexts and settings. The internal consistency and Cronbach's alpha values are acceptable, and the construct validity measured by confirmatory factor analysis (CFA) generally exhibits satisfactory model fit (25, 26, 27). However, no psychometric instruments have been developed to measure patient safety in Albanian hospital settings.

Our research hypotheses related to the study aim were as follows:

H1. The data from this study confirm the proposed six-factor model of the original SAQ.

H2. The SAQ shows good internal consistency.

H3. The individual items of the SAQ show high correlations within their respective factors.

H4. There are no differences among nurses and physicians in terms of perceived patient safety attitudes in selected hospital settings.

Methods

Setting

This was a quantitative, cross-sectional study. The data were collected between May and June 2012 at 4 regional hospitals in Albania. Nurses and doctors answered the SAQ-A voluntarily and anonymously**.** Surveys that were blank or had unvarying responses (e.g., all of the responses were "neutral" or "agree strongly) were excluded from this analysis because they did not provide any diagnostic information.

Participants

One-stage cluster sampling was used in this study. Four hospitals were randomly selected from a list of 11 regional hospitals to ensure geographic representativeness. In each of the hospitals selected, both nurses and doctors were included in the survey.

The rationale behind choosing only two occupational groups (nurses vs. doctors) was to explicitly compare these two groups with the distinctions regarding safety behaviour reported in the academic health care literature (28, 29, 30, 31). Nurses and doctors in Albanian hospitals

function in a manner similar to that of a team; hence, their attitudes affect patient service and quality. The surveys were administered during pre-determined departmental and staff meetings.

Measurements

Safety Attitudes Questionnaire (SAQ)

The instrument used for data collection was the Safety Attitudes Questionnaire (SAQ) short adapted 30-item version (32). The instrument comprises two parts. The first part contains questions that address perceptions of patient safety **(see table 6).** The second part collects data about the professional respondent, including position held, sex, main job, and years of experience.

The instrument measures health care professionals' perceptions in six areas, the teamwork climate, the safety climate, job satisfaction, perceptions of management, stress recognition and working conditions, with a response scale ranging from 1 (disagree strongly) to 5 (agree strongly). We chose the SAQ as an evaluation tool because of the strong correlation shown by previous studies between favourable SAQ scores and positive patient outcomes (32). Another reason was the proven validity and reliability of the SAQ in the countries in which it has been tested, including the United States, the United Kingdom, Turkey and Norway (25, 27, and 33).

There are other tools for evaluating the patient safety culture or the patient safety climate, such as Patient Safety Culture in Health care Organizations (34), the Manchester Patient Safety Assessment Framework (35), and the Patient Safety Behavioural Intent (PSBI) (36). These tools have been used in practice to highlight their potential strengths and weaknesses, as outlined in published research reports. However, the SAQ is one of the most commonly used and rigorously validated tools for measuring the safety climate in health care. A distinguishing feature of the SAQ is that higher scores on this survey have been associated with positive patient and staff outcome data. This feature contrasts with other tools that are less likely to have a direct association with patient outcomes (37).

Safety Culture vs. Safety Climate: Definition of Terms

Safety culture has a broad definition. It has been defined as a worldwide issue that incorporates the values, assumptions and drivers that guide an organization. Alternately, the safety climate may involve a narrower scope by addressing the way employees perceive certain aspects of the organizational culture.

Measuring the safety climate is important because the culture of an organization and the attitudes of teams have been found to influence patient safety outcomes, and measures of the safety climate can be used to monitor change over time (37, 38).

Some studies suggest that it is easier to measure the safety climate because culture is very broad, whereas the climate focuses on staff members' current perceptions of safety in relation to management support, supervision, risk taking, safety policies and practices, trust and openness. The safety climate is also thought to be more likely than culture to show change following interventions (39, 40). Consequently, we chose to examine the safety climate in our study as an easily researched and manageable concept.

Statistical Analysis

The data analyses were conducted using SPSS version 16 (SPSS Inc., Chicago, IL, USA). CFA was conducted by structural equation modelling using AMOS 5.0 software to test the extent to which each SAQ-A dimension was explained by the items and the extent to which safety attitude was explained by the six dimensions. Relative chi-squares <5.0, a CFI value ≥ 0.95, an RMSEA value of <0.08 and an SRMR value of <0.09 were considered to demonstrate acceptable model fit. The internal consistency of the Albanian version of the SAQ was assessed using Cronbach's alpha coefficient. Two items were negatively worded and were reversed for the statistical analysis. An independent-sample *t* test was used to compare the mean score of the SAQ subscales between physicians and nurses. The χ^2 test was used to compare the proportions of the responses between physicians and nurses. Pearson's correlation coefficient was used to examine the relationship between the SAQ subscales. A p-value ≤ 0.05 was considered statistically significant.

Ethical Issues

Approval by an ethical committee was not necessary because the study had no experimental design and did not involve patients. Moreover, we were informed that it was not mandatory to receive ethical approval from the hospital ethics committee. The study was conducted in line with the Helsinki Declaration using a survey. The participants were informed about the aims of the study. Responding to the questionnaire was voluntary and anonymous, and the participants were given the opportunity to opt out without giving any explanation if they felt uncomfortable with the content of the questions.

Results

Albanian Version of the SAQ

The SAQ was translated from English to Albanian and back again by native speakers. To ensure that the version that was translated from English to Albanian was clear and used the correct words, a focus group comprising physicians, nurse experts and faculty members conducted a review. All of the components were reviewed for their conformity with Albanian culture. Linguistic validation of the translation was performed using the back-translation technique. The analytical results demonstrated that all six dimensions had good reliability (see table 2 and table 3). The experts' view determined the authenticity of the content on the basis of its relevance, appropriateness and importance to Albanian culture. A content validity ratio (CVR) and a content validity index (CVI) were calculated for each item. The mean CVR for the total scale was 0.96, and the mean CVI was 0.82, indicating satisfactory content validity. (The adapted version of the questionnaire is available from the authors on request.)

Survey Responses

A total of 341 valid questionnaires were returned from 4 hospitals for a response rate of 70%. An analysis of the missing data showed that no item had more than 2% missing values (range 0 - 1.8%). The majority of the participants (63.6%) were females (36.4% were males); 61.4% were physicians, and 38.6% were nurses (table 1).

Table 1. Characteristics of the survey respondents

Variables	Physicians (n=209)	Nurses (n=132)
Gender, n (%)		
Female	136 (65.0)	114 (86.0)
Male	73 (35.0)	18 (14.0)
Age group (years) n (%)		
21-30	53 (58.2)	38 (41.8)
31-40	42 (66.7)	21 (33.3)
41-50	55 (59.1)	38 (40.9)
51-60	55 (69.6)	24 (30.4)
>60	5 (33.3)	10 (66.7)

Internal Construct Validity

The goodness-of-fit values used to evaluate the internal construct validity are displayed in table 3. The SRMR value was 0.075, the RMSEA value was 0.044, and the CFI value was 0.97. These values indicate a good model fit approximation of the translated version of the SAQ.

Table 2 Goodness-of-fit indices for the CFA of the SAQ factors

Sample size	341
Standardized root mean square residual (SRMR)	0.075
Root mean square error of approximation (RMSEA)	0.044
Comparative fit index (CFI)	0.97

The CFA indicated a good model fit for each dimension and for the entire safety construct: the GFI, TLI, and CFI were >0.90, and the RMSEA was <0.10.

Internal Consistency

The internal consistency of the six factors and the 30 items of the translated version of the SAQ had Cronbach's alpha values of 0.62 to 0.82. Safety climate had the highest Cronbach's alpha values, and stress recognition had the lowest value (table 3).

Table 3 Internal consistency for the six SAQ factors: Cronbach's alpha

SAQ factors	Cronbach's alpha
Safety Climate (7 items)	0.82
Teamwork Climate (6 items)	0.79
Job Satisfaction (5 items)	0.78

Stress Recognition (4 items)	0.62
Perceptions of Management (4 items)	0.64
Working Conditions (4 items)	0.76

The test of the hypothesized relationships among the factors and items showed that the correlation ranged from 0.02 to 0.89 and that five of the six factor correlations were significant. The teamwork climate was positively correlated with the safety climate (r=0.55, p<0.01), job satisfaction (r=0.54, p<0.01), perceptions of management (r=0.68, p<0.01), and working conditions (r=0.68, p<0.01), whereas the Stress Recognition subscale was not significantly related to any subscales.
The intercorrelations among the factors are presented in table 4.

Table 4. Correlation matrix for the SAQ subscales

Subscale	Safety climate	Teamwork climate	Job satisfaction	Stress recognition	Perception of management	Working conditions
Safety Climate						
Teamwork Climate	0.55*					
Job Satisfaction	0.46*	0.54*				
Stress Recognition	0.25	0.08	0.02			
Perceptions of Management	0.54*	0.68*	0.47*	0.15		
Working Conditions	0.68*	0.71*	0.61*	0.25	0.79*	

* Significant at the 5% level.

SAQ Factors and Item Descriptions and Overall Positive Responsiveness per Scale

The SAQ factor definitions and items, the missing answers, the mean (SD), and agreement (agree strongly) and disagreement (disagree strongly) responses are described in table 5.

Table 5. SAQ item descriptions

Teamwork Climate (1-6)	Item is reverse scored (41)	% items missing data	Mean (SD)	% agree (min agree-agree)	% disagree (min disagree-max disagree)
1. It is easy for personnel in this hospital to ask questions when there is something that they do not understand.	**No**	**1.3**	4.13 (.96)	80.45 (41.67-100.00)	7.41 (.00-35.00)
2. I have the support I need from other personnel to care for patients.	**No**	**2.1**	3.95 (.99)	74.28 (33.30-98.05)	9.18 (.00- 42.86)
3. Nurse input is well received in this hospital.	**No**	**1.9**	3.99 (1.05)	73.42 (23.94-100.00)	10.16 (.00-54.94)
4. In this hospital, it is difficult to speak up if I perceive a problem with patient care.	**Yes**	**2.2**	2.45 (1.26)	21.69 (.00-51.00)	59.87 (9.09-100.00)
5. Disagreements in this hospital are resolved appropriately (i.e., not by *who* is right but by *what* is best for the patient).	**No**	**1.8**	3.57 (1.10)	56.97 (22.75-85.24)	18.24 (.00-54.09)
6. The physicians and nurses here work together as a well-coordinated team.	**No**	**1.6**	3.75 (1.07)	68.42 (25.72-98.2)	14.24 (.00-53.12)
Safety Climate 7-13					
7. The culture in this hospital makes it easy to learn from the errors of others.	**No**	**1.5**	3.96 (1.01)	71.45 (33.33-100.00)	9.55 (.00-33.33)
8. Medical errors are handled appropriately in this hospital.	**No**	**2.3**	3.49 (1.06)	51.08 (14.3-92.7)	17.3 (.00-57.14)
9. I know the proper channels to direct questions regarding patient safety in this hospital.	**No**	**1.6**	3.84 (1.01)	64.5 (24.00-100.00)	9.45 (.00-39.10)
10. I am encouraged by my colleagues to report any patient safety concerns I may have	**No**	**1.5**	4.05 (.94)	77.3 (48.60-100.00)	7.15 (.00-26.32)
11. I receive appropriate feedback about my performance.	**No**	**0.7**	3.22 (1.23)	46.48 (4.58-76.5)	31.5 (.00-75.00)
12. I would feel safe being treated here as a patient.	**No**	**1.5**	4.02 (1.04)	74.99 (36.35-100.00)	9.48 (.00-42.67)
13. In this hospital, it is difficult to discuss errors.	Yes	1.7	2.57 (1.13)	20.15 (.00-48.15)	53.87 (20.84-92.7)

Job Satisfaction 14-18					
14. This hospital is a good place to work.	**No**	**0.7**	3.75 (1.08)	63.5 (4.55-100.00)	13.54 (.00-58.09)
15. I am proud to work at this hospital.	**No**	**0.9**	3.72 (1.07)	62.5 (15.00-100.00)	10.8 (.00-50.00)
16. Working in this hospital is like being part of a large family.	**No**	**0.7**	3.12 (1.30)	42.1 (.00-93.55)	33.4 (.00-80.00)
17. Morale in this hospital area is high.	**No**	**1.5**	2.89 (1.25)	38.72 (4.18-84.33)	36.75 (.00-76.25)
18. I like my job.	**No**	**0.2**	4.38 (.88)	85.6 (62.1-100.00)	4.63 (.00-18.32)
Stress Recognition 19-22					
19. When my workload becomes excessive, my performance is impaired.	**No**	**1.5**	3.79 (1.13)	32.16 (27.57-100.00)	34.9 (.00-52.3)
20. I am more likely to make errors in tense or hostile situations.	**No**	**1.3**	3.77 (1.16)	46.5 (30.00-87.00)	21.84 (.00-50.00)
21. Fatigue impairs my performance during emergency situations (e.g., emergency resuscitation, seizure).	**No**	**3.4**	3.00 (1.28)	29.45 (5.78-79.15)	46.84 (12.30-76.54)
22. I am less effective at work when fatigued.	**No**	**1.4**	3.75 (1.03)	25.69 (38.5-96.4)	41.21 (.00-30.00)
Perceptions of Management 23-26					
23. The hospital management does not knowingly compromise the safety of patients.	**No**	**1.7**	2.54 (1.27)	49.2 (9.11-87.5)	26.5 (4.89-90.45)
24. The hospital administration supports my daily efforts.	**No**	**0.6**	2.48 (1.75)	64.5 (.00-94.2)	29.62 (.00-100.00)
25. I receive adequate, timely information about events in the hospital that might affect my work.	**No**	**1.7**	3.21 (1.09)	51.5 (12.00-74.8)	22.1 (.00-66.65)
26. The levels of staffing in this clinical area are sufficient to handle the number of patients	**No**	**1.8**	2.67 (1.33)	53.54 (.00-84.62)	39.47 (4.21-96.45)

Working Conditions 27-30					
27. All of the necessary information for diagnostic and therapeutic decisions is routinely available to me.	**No**	**2.2**	3.5 (1.07)	58.64 (16.8-89.5)	18.4 (.00-68.45)
28. This hospital constructively addresses problem physicians and employees.	**No**	**1.9**	2.89 (1.14)	24.85 (.00-82.33)	35.45 (.00-81.00)
29. Trainees in my discipline are adequately supervised.	**No**	**2.4**	3.55 (1.19)	58.64 (10.00-100.00)	21.48 (.00-64.50)
30. This hospital does a good job of training new personnel.	**No**	**1.2**	3.50 (1.19)	57.46 (16.2-96.45)	20.42 (.00-61.4)

The percentage of hospital health care providers who reported having a positive attitude was 60.3% for the teamwork climate, 57.2% for the safety climate, 58.4% for job satisfaction, 37.4% for stress recognition, 59.3% for the perception of management, and 49.5% for working conditions.

Group comparisons: Nurses' Behaviours vs. Physicians' Behaviours

The results of the *t* test for independent samples did not indicate any significant difference between the scores of physicians and the scores of nurses with regard to the safety climate (t=-1.5 p=0.1) and the perception of management (t=-1.6 p=0.1) subscales, showing the same perceptions of attitude. A significant difference was found between the scores of the physicians and nurses for the teamwork (t=-5.4 p<0.01), stress recognition (t=6.4 p<0.01), job satisfaction (t=-7.8 p<0.01) and working conditions subscales (t=-9.7 p<0.01).

Table 6. Comparison of the SAQ scores among nurses and physicians

Subscale	Physicians M (SD)	Nurses M (SD)	t	p
Teamwork	52.3 (10.7)	45.7 (11.3)	-5.4	**0.01**
Safety climate	38.7 (11.1)	36.8 (10.3)	-1.5	0.1
Stress recognition	39.5 (9.2)	46.7 (11.4)	6.4	**<0.01**
Job satisfaction	49.7 (9.2)	40.6 (12.2)	-7.8	**<0.01**
Perception of management	46.8 (9.6)	44.8 (13.1)	-1.6	0.1

Working conditions	42.4 (11.4)	29.2 (13.4	-9.7	**<0.01**

For the statement, "When my workload becomes excessive, my performance is impaired", a lower proportion of physicians and nurses endorsed the "agree" option; this result achieved statistical significance (39% physicians vs. 51% nurses; χ^2=5.0, p=0.02).
For the statement "I am provided with adequate, timely information about events in the hospital that might affect my work", 59% of the physicians responded positively compared with 34% of the nurses (χ^2=18.8, p<0.01).

Regarding the item "The culture in this hospital makes it easy to learn from the errors of others", a high percentage of the nurses and physicians agreed with the statement (80.2% of the nurses and 83% of the physicians; χ^2=0.1, p=0.6). The nurses and doctors also agreed with the statement, "In this hospital, it is difficult to discuss errors"; the nurses felt more intimidated by discussing errors (55% of the physicians vs. 44% of the nurses; χ^2=, 4.9 p=0.02)

Discussion

Previous studies in the area of patient safety have investigated the safety climate in primary care in Albania (42). The aim of the present study was to investigate perceptions of the safety climate among nurses and doctors working in hospital settings to confirm a validated tool (SAQ). According to the results of this study, construct validity based on the CFA and goodness-of-fit indices including CFI, SRMR, and RMSEA demonstrated a good model that fit very well. It is imperative that a model should be made more specific and tested a second time in case a hypothetical model fails to fit appropriately (43, 44). According to good model fit indices, the Albanian version of the SAQ is a valid measure of the safety attitude in hospitals. This finding is also an indication of the internal construct validity of the SAQ. The data from this study confirm our first hypothesis regarding the proposed six-factor model of the original SAQ (H1: The data from this study confirm the proposed six-factor model of the original SAQ).

The internal consistency and internal structure of the Albanian translation of the SAQ were assessed, and the translation showed satisfactory psychometric properties. The mean CVR for the total scale was 0.96 and the mean CVI was 0.82, indicating satisfactory content validity. A good model fit was indicated by the construct validity, and its goodness-of-fit was used to determine the CFA. Based on the Cronbach's alpha values, the internal consistency of the six factors of the Albanian version of the SAQ showed values between 0.62 and 0.82. Job satisfaction and the perception of management had alpha values of 0.62 and 0.64, respectively, which are slightly below the recommended acceptable alpha value limit of 0.70 because of missing data that may have influenced the result (44). The study results showed good internal consistency, confirming our second hypothesis (H2: The SAQ shows good internal consistency). To apply the SAQ in

Albania and ensure its reliability, the outcomes of this research should be considered in future evaluations. Cultural aspects may exist regarding the perception of management in the Albanian setting. For example, hospital directors are quasi-political appointees, and physicians may have little training in health care management (17) and thus may lack the competency to properly evaluate overall management issues.

The study confirmed the third hypothesis based on the conclusion that all of the factors, with the exception of stress recognition, were interconnected (H3: Individual items of the SAQ show high correlations within their respective factors). According to the study results (see table 4), the teamwork climate was more positively correlated with the perceptions reported for the management and working conditions subscales. Stress recognition was not correlated with any of the subscales. These findings complement those of the psychometric testing for the original SAQ. In accordance with previous studies, stress recognition did not show a relationship with the perceptions of management, the teamwork climate, and job satisfaction, factors with moderate to high correlations (25). A significant difference in the perceived patient safety attitudes for the subscales of teamwork, safety climate, job satisfaction and working conditions was found between the nurses and physicians, with the nurses scoring lower mean values (see table 6). Overall, the nurses perceived lower job satisfaction, worse working conditions, a lower level of teamwork and poorer perceptions of management compared with doctors. Thus, our fourth hypothesis was not confirmed (H4: There is no difference among nurses and physicians in terms of perceived patient safety attitudes in selected hospital settings).

Other clinical areas have categorically shown broad distinctions between nurses and physicians (28, 29). Two studies in the United States that used the SAQ showed that nurses and doctors differed in their perceptions of safety culture (30, 31), possibly because of the personal characteristics of the caregivers, such as their level of education, socioeconomic status, and gender.

The traditional hierarchy of physicians has often discouraged nurses from speaking up to doctors. Nurses may be hesitant to confront physicians on issues of patient care because they might have less training in or experience with dealing with patients' medical conditions (31). In our study, the nurses consistently showed low mean scores for working conditions, safety climate and job satisfaction. Another study that examined nurses' job satisfaction showed that 41% of nurses were dissatisfied with their work in the United States; in England, 38.9% of nurses intended to abandon the profession. Generally, salary, professional growth and autonomy are some of the factors that influence the nursing professional's job satisfaction (45). National researchers in Albania have noted that nurses were less satisfied with their *promotion opportunities and co-worker satisfaction* (46). WHO studies stress the limited formal opportunities to upgrade knowledge and skills through continuing professional development (47). From the study results, it is clear that the international benchmark standards were not met (25), as evidenced by the failure of the mean values in relation to the five safety dimensions.

Managerial Implications

Measuring safety climate dimensions such as perceived teamwork climate, job satisfaction, and the perception of management in hospitals can help to diagnose the underlying safety culture of an entire organization or work unit. This study created a thorough image of nurses and doctors' behaviour regarding issues such as teamwork, the safety climate, stress at work, job satisfaction, and management support in the selected regional hospitals.

European integration could increase the mobilization of human resources for health to other countries (e.g., immediately after acceding to the European Union in 2007, Romania reported more than 6000 requests for certificates recognizing the Romanian diplomas of doctors, dentists, pharmacists and nurses for use elsewhere in the Union (47)).
In light of hospital decentralization reforms and European Union adherence (17, 20), this study serves as a starting point for initiating policy changes to address the issues identified above, such as improving job satisfaction, working conditions, and the perceived inadequate information flow among nurses, and to implement interventions targeted to reduce the impact of these factors on the quality of hospital care.
The prevailing culture influences safety behaviours and outcomes for both health care workers and patients. This study has shown that the SAQ-A is a valid and easily administered instrument. As a first step, hospitals can use this tool to measure their employees' safety attitudes on a regular basis. Moreover, healthcare managers can use the resulting data to design effective safety management systems and possible interventions, such as promoting teamwork or stress recognition among doctors and nurses.

The results of this study can serve as baseline information for researchers with a variety of research interests, especially those related to patient safety and human resources for health.
From a cultural perspective, the results serve as a basis for comparison with other countries or systems that have their own particularities but share important common features with Albania (in terms of health services organization, financing and regulation and similar evolutions of these systems).

Promoting Patient Empowerment and a Positive Safety Culture

Over the last two decades, many policy documents, national priorities, and guidelines across Europe, North America, Australia, and sections of the Asian continent have been developed with messages about developing a positive safety culture with regard to health care (48, 49). These types of initiatives are quite scarce and latent in Albania. Below, we present a contextualized

framework (fig. 1) that takes into account the Albanian health care system when considering how to promote a safety culture in an underfinanced health care system. The authors hope to broaden this perspective to similar health systems in Eastern European countries. Our main goal was to develop and test a framework for making the concept of safety culture meaningful and accessible to policy makers, health care managers and frontline staff, thus helping to facilitate a debate about ways to improve the safety culture in Albanian health care settings. We used a comprehensive review of the literature and national policy documents to identify the key dimensions of safety culture in health care settings.

Fig 1. Gabrani & Petrela, Promoting a safety culture framework in Albanian health care settings

The voices of patients and professionals are largely absent in the field of patient safety in Albania. For example, patients are considered to be passive and to maintain a troublesome apathy toward involvement in the health care decision-making process (50) with regard to the country's informal payment phenomenon, which has deleterious effects on the Albanian health system. More active involvement of patients will help to diffuse and scale up patient safety programmes that have been successfully implemented in Western Europe and outside EU-developed countries.

Further Research Needed

The topic of patient safety is becoming increasingly prominent in political agendas (51). Reduced revenues and increasing expenditures in times of *financial crisis* are likely to increase pressure on health systems to further contain costs, thus affecting service quality and patient safety (52). According to one recent cost-effectiveness study on patient safety, interventions show that specific actions related to patient safety can be cost effective (53).

To cope with the EU policy measures and reduce the costs of unsafe care and to develop cost-effective patient safety programmes in Albania, further research is needed. Furthermore, work is needed to better identify and design solutions that fit into existing institutional and organizational frameworks. At the hospital level, there is a need to understand the differences in attitudes among nurses and doctors and to better understand their low mean values on the scales compared with international benchmarks (25), especially in terms of the stress and fatigue recognition scale.

Conclusions

It is apparent that the psychometric aspects and the translation of the SAQ indicate good construct validity. Nonetheless, the reliability analysis suggested that some items need further

refinement to establish sound internal consistency. The SAQ is clearly a useful tool for evaluating safety attitudes in Albanian hospital settings, and it confirmed our main hypothesis, H1. The data from this study also confirmed the proposed six-factor model of the original SAQ, H2. The SAQ showed good internal consistency, H3. Individual items of the SAQ showed high correlations within their respective factors.

As previous research suggests, the SAQ has potential as a useful tool for evaluating safety attitudes. Regarding our study, there is room for improvement, especially in terms of generalizing the findings to larger samples and conducting additional exploratory analyses to identify a better factor model. Moreover, the researchers are committed to adapting a new version of the tool by combining it with in-depth interviews to learn more about the differences in nurses' and doctors' safety attitudes.

Contributor Statement

AG designed the study, AH and JCG refined the writing strategy and the analysis elaboration, AS and JC performed the data analysis, and JC wrote the manuscript. JCG, AH and AS designed (adapted) the questionnaire and led the data collection process. All of the authors assisted with the data collection and the manuscript preparation and modified and approved the final manuscript. AG and AH share the primary contribution to the article.

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Fig 1. Gabrani & Petrela, Promoting safety culture frame in Albanian health care settings

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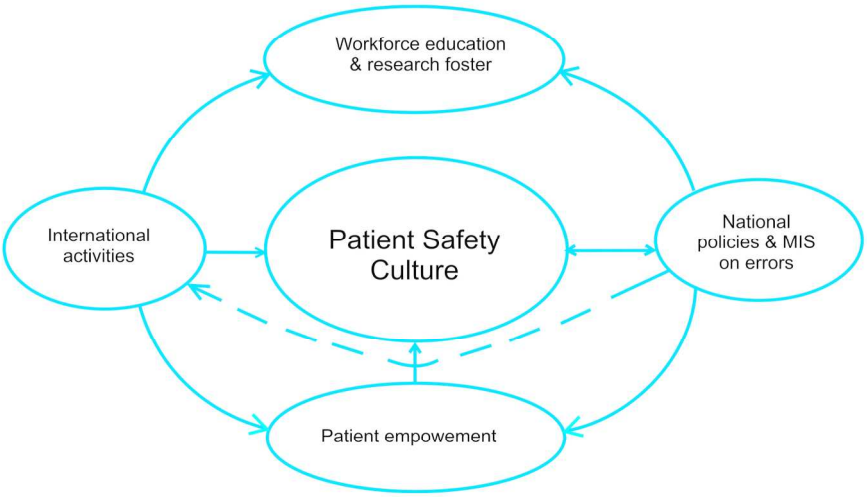

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STARD checklist for reporting of studies of diagnostic accuracy

(version January 2003)

Section and Topic	Item #		On page #
TITLE/ABSTRACT/ KEYWORDS	1	Identify the article as a study of diagnostic accuracy (recommend MeSH heading 'sensitivity and specificity').	
INTRODUCTION	2	State the research questions or study aims, such as estimating diagnostic accuracy or comparing accuracy between tests or across participant groups.	
METHODS			
Participants	3	The study population: The inclusion and exclusion criteria, setting and locations where data were collected.	
	4	Participant recruitment: Was recruitment based on presenting symptoms, results from previous tests, or the fact that the participants had received the index tests or the reference standard?	
	5	Participant sampling: Was the study population a consecutive series of participants defined by the selection criteria in item 3 and 4? If not, specify how participants were further selected.	
	6	Data collection: Was data collection planned before the index test and reference standard were performed (prospective study) or after (retrospective study)?	
Test methods	7	The reference standard and its rationale.	
	8	Technical specifications of material and methods involved including how and when measurements were taken, and/or cite references for index tests and reference standard.	
	9	Definition of and rationale for the units, cut-offs and/or categories of the results of the index tests and the reference standard.	
	10	The number, training and expertise of the persons executing and reading the index tests and the reference standard.	
	11	Whether or not the readers of the index tests and reference standard were blind (masked) to the results of the other test and describe any other clinical information available to the readers.	
Statistical methods	12	Methods for calculating or comparing measures of diagnostic accuracy, and the statistical methods used to quantify uncertainty (e.g. 95% confidence intervals).	
	13	Methods for calculating test reproducibility, if done.	
RESULTS			
Participants	14	When study was performed, including beginning and end dates of recruitment.	
	15	Clinical and demographic characteristics of the study population (at least information on age, gender, spectrum of presenting symptoms).	
	16	The number of participants satisfying the criteria for inclusion who did or did not undergo the index tests and/or the reference standard; describe why participants failed to undergo either test (a flow diagram is strongly recommended).	
Test results	17	Time-interval between the index tests and the reference standard, and any treatment administered in between.	
	18	Distribution of severity of disease (define criteria) in those with the target condition; other diagnoses in participants without the target condition.	
	19	A cross tabulation of the results of the index tests (including indeterminate and missing results) by the results of the reference standard; for continuous results, the distribution of the test results by the results of the reference standard.	
	20	Any adverse events from performing the index tests or the reference standard.	
Estimates	21	Estimates of diagnostic accuracy and measures of statistical uncertainty (e.g. 95% confidence intervals).	
	22	How indeterminate results, missing data and outliers of the index tests were handled.	
	23	Estimates of variability of diagnostic accuracy between subgroups of participants, readers or centers, if done.	
	24	Estimates of test reproducibility, if done.	
DISCUSSION	25	Discuss the clinical applicability of the study findings.	