

Patient safety culture among health care providers in a Tunisian university hospital

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Abstract

Patient safety is considered a major priority in health care systems. In Tunisia, few attempts have been made since 2011 to evaluate PS culture. The purpose of this study was to measure the patient safety culture level at Ibn El Jazzar hospital in Kairouan, Tunisia.

This cross-sectional study was conducted over three months in 2015 in a Tunisian University hospital. The French model of the Hospital Survey On Patient Safety Culture "HSOPSC" was used to explore 10 dimensions of patient safety culture. The survey was distributed to 446 health care providers (physicians and nurses). A score per composite has been calculated. Then the results were compared according to professional categories and work units.

The overall average positive response rate for the 10 PS culture composites of the HSOPSC survey was 61.65%. Areas with potential for improvement were overall perception of security (40.73%), leadership (30.9%), organizational learning (41.9%), communication openness (38.3%) and frequency of events reported (33.2%). The area of strength was teamwork within units (58.1%). Non-punitive response to error had the lowest score (29.6%). The comparison of the scores according to professional category showed a significant difference for one composite score, which was the non-punitive answer to the errors particular to nurses (16.3% vs 32.7%; $p = 0.020$). In contrast, no significant difference between work units was found for all composites scores in our study.

Our results demonstrate that patient safety culture remains undeveloped and should be improved at Ibn El Jazzar hospital. Therefore, further studies should be conducted in the context of continuous assessment quality of care.

Keywords: Patient safety, culture, health personnel, hospitals, Tunisia

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Introduction

The concept of “safety culture”, used in the nuclear industry for 30 years, has made its appearance in health sector since early 2000s. There are several definitions of this concept. According to the “European Society for Quality in Health Care”, safety culture refers to “a coherent and integrated set of individual and organizational behaviours, based on shared beliefs and values, that continually seek to reduce patient harm, which may be related to care”.¹

Today the real challenge is to improve the quality and safety of care provided in complex environments, a complexity generated by the enormous therapeutic and technological progress.²

The incidence of medical errors in health care procedures is estimated at 7.5%, and most adverse events (AEs) are identified as preventable.^{3,4} In Tunisia, the incidence of AEs is between 10% and 11.3% depending on the institution, but very little research has been done on this issue.⁵

In response to the rising problem of medical errors and increasing media attention and public pressure, national strategies have been implemented in many countries to reduce the incidence of adverse events. One of the fundamental axes of these strategies is the development of the culture of care security.^{6,7}

However, to establish a culture of safety in a healthcare organization, the first step is to evaluate the current culture.^{8,9} This step is necessary to identify the most problematic areas and the need for improvement.

Although international studies are large, in Tunisia few attempts have been made to evaluate the level of safety culture and are limited to a few hospitals, which have revealed an average level of safety culture.¹⁰⁻¹² This is the first study conducted in the region. It is aimed at measuring the level of safety culture within staff (physician, nurses, etc.) and work units at Ibn Al Jazzar’s Hospital and to identify the areas of weakness and suggest targeted intervention.

Methods

Design

A descriptive, cross-sectional study using self-report questionnaires was used. They were distributed to

participants over three months from October to December 2015.

Setting

The study was carried out in the Ibn El Jazzar university-hospital. It contains 23 units (16 medical and 7 surgical). It also includes a technical aspect with a laboratory, a radiology department and a hospital hygiene service. It had a hospital capacity of 525 beds in 2015.

The hospital has 1398 health professionals including: 128 physicians, dentists and pharmacists, 912 nursing staff, 45 technical and administrative staff, and 313 other workers.

Sample

All physicians and nursing staff that provide patient care and work in inpatient services of Ibn Al Jazzar hospital were included: senior physicians, assistant physicians, residents, and nursing staff. We opted to collect information exhaustively from all eligible healthcare providers. There were 446 healthcare providers working in 16 units (9 medical and 7 surgical) that were eligible and were invited to participate.

The following were excluded:

- Residents practicing for less than six months in the same hospital, and interns.
- Dentists and professionals intervening occasionally and not regularly in the units of work surveyed.
- Professionals not involved in direct care provision (example administrative staff, pharmacists, medical secretaries and technical staff).

Survey instrument

Several instruments are available to assess hospital safety culture. Among them is the Hospital Survey on Patient Safety Culture (HSOPSC), which was developed by the Agency for Healthcare Research and Quality (AHRQ) in 2004.^{13,14} This was employed in our study. The questionnaire was chosen because it is being used increasingly in many countries and is considered valid, reliable and the most efficient tool used for patient safety culture.¹⁵⁻¹⁹ It was designed to assess hospital staff opinions about patient safety issues, medical errors, and incident reporting.

The French version of this survey was validated psychometrically by the Coordination and Clinical

Quality Assessment Committee in Aquitaine (CCECQA, France), and it allows exploration about how professionals perceive the security of care in their unit and in their establishment.²⁰

The HSOPSC is composed of 43 items that measure 10 composites of patient safety culture in a work area/unit and hospital levels: overall perceptions of safety (4 items), supervisor/manager expectations and actions promoting safety (4 items), organizational continuous learning improvement (6 items), management support for patient safety (4 items), teamwork within units (5 items), communication openness (3 items), feedback and communication about error (3 items), non-punitive response to error (3 items), teamwork across units (7 items), and staffing (4 items). In addition, two outcome variables were evaluated: frequency of incident reporting (3 items) and patient safety grade relative to the hospital unit (1 item). Our survey also contained six items of socio-demographic and filling time-information.

Statistical analysis

Items were scored using a five-point scale reflecting the agreement rate. The percentage of positive responses for each item was calculated. Then a score per dimension of the safety culture was calculated which corresponded to the average of the proportions of positive responses per item. If the score was >75% , the dimension was considered as

developed; 50% - 75%, the dimension needs to be improved; and <50%, the dimension was considered as undeveloped.

All data were analyzed using IBM SPSS Statistics for Windows, Version 20.0 (Armonk, NY: IBM Corp.)

We compared the level of safety by occupational category and work units of respondents. While comparing the positive responses for each dimension, we used we used the chi-squared test to compare qualitative variables and Student t-test to compare of the quantitative variables. The level of significance was chosen to be 5%.

Ethics

This study was approved by the Ethics Committee of Ibn Al Jazzar hospital. Verbal consent of the participants was obtained before administering the questionnaire.

Results

The overall response rate was 61.65% (275/446). The average age of respondents was 41 ± 10.6 years with extremes of 25 to 60 years. The sex ratio was 0.63. Professional experience was over 11 years for 47% of respondents (Table I).

Overall, the scores for the ten dimensions of the safety culture calculated were less than 50% except

Table I. Characteristics of respondents to the HSOPSC in Ibn El Jazzar hospital centre (Kairouan, Tunisia)

Characteristics	Category	n	%
Profession	Physicians	51	18.5
	Nursing staff	224	81.5
Work Unit	Medical	157	57.1
	Surgical	118	42.9
Age	Minimum 25 years Maximum 60 years	Median age : 40 +/-10.61 ans	
Sex	Male	107	39
	Female	168	61
Years in profession at hospital	< 1 year	21	7.6
	1 - 2 years	31	11.2
	3 - 5 years	67	24.3
	6 years or more	148	53.8

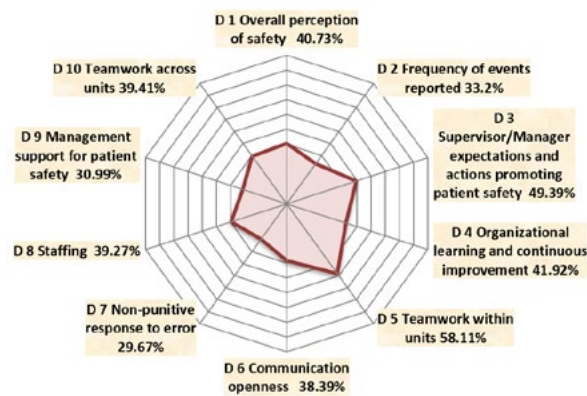


Figure 1. Average positive perceptions of healthcare workers towards HSOPSC dimensions at Ibn El Jazzar Hospital, Tunisia

for the “teamwork in the service” dimension which had the highest score of 58.1%. In fact, 79.2% of respondents combine their team efforts when a large workload needs to be done quickly. The three safety culture dimensions with the lowest positive scores

were the dimensions of “non-punitive response to error” (29.6%), “support and management for safety of care” (30.9%) and “reporting adverse incidents” (33.2%) (Figure 1).

Table II. Comparison of average positive perceptions towards HSOPSC's patient safety culture dimensions between physicians and nurses in Ibn El Jazzar hospital, Kairouan, Tunisia

Composites	Score		p-value
	Physicians (n=50*)	Nursing Staff (n=221*)	
1. Overall perception of safety	34.7	42.1	0.293
2. Frequency of events reported	29.3	34.2	0.552
3. Supervisor/Manager expectations and actions promoting patient safety	43.4	50.7	0.393
4. Organizational learning and continuous improvement	34.2	43.7	0.200
5. Teamwork within units	55	60	0.187
6. Communication openness	32.9	39.6	0.304
7. Non-punitive response to error	16.3	32.7	0.020
8. Staffing	32.2	41.0	0.230
9. Management support for patient safety	20.4	33.4	0.062
10. Teamwork across units	30.4	41.5	0.128

* We have defined as validated survey all papers received, except those with answers to less than half of questions or the same answers to all questions

According to the mean patient safety culture status (excellent, very good, acceptable, poor and failing) in HSOPSC questionnaire, “acceptable” grade had the highest mean (47.5%).

The comparison of scores by category showed a significant difference for one dimension, “non-punitive response to error” regarding nursing staff (Table II). There were, however, no differences regarding all dimensions of the patient safety culture explored according to their units of work (Table III).

Discussion

The overall safety perception score was 40.73%. Our results were comparable to those obtained during the first survey conducted in Tunisia by Garci *et al.* in Fattouma Bourguiba University Hospital in 2011 (44.5%).¹¹ However, the perception of this dimension was lower than that noted in the subsequent studies

conducted at others Tunisian university hospitals, whose scores were between 63.5% and 57.8%.^{10,12}

“Overall perception of patient safety” has also been identified as one of the problematic dimensions in several studies that report a low level of patient safety culture.²¹ Our score, however, remains lower than the scores reported by most studies (Table IV). This could be explained by the lack of a program and tools to promote safe care, and cultural differences (thus, in the hospital there must be a single culture that brings together all the actors²²). The hospital size and accreditation status were also identified as factors influencing the culture of safety in hospitals.⁹

In our study, the score of the dimension “reporting adverse events” was estimated at 33.2% while it varies at the national studies from 29.5% to 68.8% (Table IV). About 50% of our respondents noted that when

Table III. Comparison of average positive perceptions towards HSOPSC's patient safety culture dimensions between work Units in Ibn El Jazzar hospital Kairouan

Composites	Scores			P-value
	Medical Units N= 115	Surgical Units N=116	Acute Units N= 40	
Overall perception of safety	44.32%	40.57%	30.95%	0.281
Frequency of events reported	32.13%	36.73%	26.10%	0.358
Supervisor/Manager expectations and actions promoting patient safety	52.97%	47.97%	43.27%	0.488
Organizational learning and continuous improvement	43.41%	42.73%	35.15%	0.617
Teamwork within units	63.28%	50.66%	48.36%	0.081
Communication openness	40.00%	37.06%	36.66%	0.893
Non-punitive response to error	28.20%	30.23%	32.50%	0.838
Staffing	37.70%	41.97%	35.65 %	0.636
Management support for patient safety	26.75%	38.10%	22.35%	0.089
Teamwork across units	35.51%	40.14%	33.80%	0.697

Table IV. Cross-countries of average positive perceptions towards HSOPSC's patient safety culture dimensions

Study	Author- Country-Year	Score /Composite										Response Rate %	
		D1	D2	D3	D4	D5	D6	D7	D8	D9	D10		N
	Al-Mandhari-Oman-2014 ³⁶	53	65	60	84	83	54	25	30	67	64	395	58
	El-Jardali-Lebanon-2010 ²¹	72.5	68.2	66.4	78.3	82.3	57.3	24.3	36.8	78.4	56	6807	-
	Bodur-Turkey-2010 ¹⁵	62	15	44	41	70	38	24	44	40	54	309	56*
International	Vlayen-Belgium-2013 ³³	45.1	59.8	61.8	62.7	63.3	54.4	29.3	44.2	35.4	35.5	47136	55
	El-Jardali -Riyadh-2014 ⁹	65.3	59.4	60.6	79.6	78.5	42.9	26.8	35.1	70.4	51.5	2572	85.7
	Danielsson -Sweden-2017 ²⁷	58	54.4	66.7	61.5	57.1	64.8	67.2	51.9	47.9	73.5	23781	-
	CHU Bourguiba-Monastir- 2011 ¹¹	44.5	29.5	48.5	65	61.5	45	21	34	27	29	630	-
	CHU Hached -Sousse- 2012 ¹²	61.12	68.8	68.1	67.9	58.3	64.8	65.2	54.9	32.7	48.6	289	74.1
National	CHU Sahloul -Sousse-2013 ¹⁷	57.8	59.4	48.2	56.1	57	55.3	48.1	45.3	46.1	43.3	344	73
	Our study-Kairouan- 2015	40.73	33.2	49.3	41.9	58.1	38.3	29.6	39.2	30.9	394	275	61.65

*response rate for university hospital

D1: Overall perception of safety, D2: Frequency of events reported, D3: Supervisor/Manager expectations and actions promoting patient safety, D4: Organizational learning and continuous improvement, D5: Teamwork within units, D6: Communication openness, D7: Non-punitive response to error, D8: Staffing, D9: Management support for patient safety, D10: Teamwork across units.

an error is made but corrected before the patient is affected, it is often not reported.

The reasons for not reporting errors described in the literature include fear, humiliation and the presence of a punitive response to error.⁷ This may be related to fear by staff that they will be punished for their mistakes if they report the incident. In our institution, there is no real reporting system. The items that compose this dimension could be misunderstood by professionals, and the answers in this dimension could reveal their wishes instead of their actual practices. In addition, health professionals can report incidents through other procedures different from a formal reporting system. The creation of a reporting system has become one of the most recommended ways to learn from and prevent errors since the publication of the Institutes of Medicine report, "To Err is Human".²³

Declarations based on volunteering and the legal protection of registrants are very strongly recommended. The declaration has become even obligatory in some countries, particularly in France.²⁴ Weingart *et al.* and Ocelli *et al.* concluded, after comparing the scores obtained with indicators such as the number of adverse events reported, that the hospital with the highest score on the questionnaire had the highest number of adverse events reported, which is consistent with a strong safety culture.²⁵⁻²⁷

The dimension "non-punitive response" had the lowest percentage of positive responses among the ten dimensions, at around 29.67%. This reveals that care providers are not comfortable in reporting errors. When an employee makes a mistake, he is investigated as an individual rather than a member of a medical team. Our results are consistent with the results of previous studies where this dimension scored the lowest.^{9,27,28} On the other hand, this dimension was more developed in the HSOPSC conducted at the Swedish Hospitals (2012-2014)²⁹ and university hospital Hached (2012)¹² with scores of 67.2% and 65.2% respectively.

The challenge is to provide healthcare professionals with maximum protection against errors, it will be a question of organizational care system in a way that minimizes the risk of making mistakes.²⁸ In practice,

it is a culture that accepts institutions and providers to make mistakes; a culture that is sufficiently open and transparent to enable the organization and the individuals who work in it to learn from their mistakes so that they are not repeated in the future.³⁰ This is in accordance with the Model of Reason,³¹ which describes four properties as essential and characteristics of a safety culture: "Just", "Flexible", "Learning" and "Reporting".

The score relative to the "Communication openness" dimension was one of the lowest scores reported in almost every study published around the world, in the order of 38.3% (Table IV). More than half of our respondents (53.1%) expressed that they don't feel free when it comes to discuss the decisions of their superiors.

Health professionals should talk about their concerns before a critical event occurs, to provide a chance to correct it. However, this subject is influenced by many factors summarized into the Morrison model:³² 1) motivation to speak to help the patient; 2) contextual factors, such as hospital, administrative support, teamwork, and the attitude of senior leaders; 3) individual factors, such as job satisfaction, responsibility as a professional, communication skills and educational context; 4) the perceived effectiveness of speaking up, such as lack of change; 5) tactics and targets such as showing positive intent and selecting the person to be spoken to.

The "teamwork within the service" dimension obtained the highest score in our study, with 58.1%. However, the dimension relating to "teamwork between the various services of the establishment" seems undeveloped with a score of 39.4%. These results are consistent with those of the previous national studies and those reported in the literature (Table IV). This dimension reflects the extent to which the hospital provides a work climate that promotes patient safety by referring to aspects such as the loss of information when patients are transferred from one unit to another or during team changes. A Belgian study conducted in 89 hospitals in 2013 observed that this dimension had the second lowest score and was identified as one of the major problems for several services.³³

More than 25% of the adverse events associated with care are related to the functioning of the Haute Autorité de Santé (HAS) care team (French Survey ENEIS, 2009).³⁴ Often, it is a communication problem that is involved, according to the Joint Commission (2013).³⁵ Lack of communication can seriously compromise patient safety as patients are usually treated by a multidisciplinary team of health professionals and in a variety of clinical settings within the hospital.³⁶ Communication and teamwork within hospital units are essential to provide effective and safe care.³⁷

With this in mind, the goal of the 'Program for Continuous Improvement of Teamwork' (PACTE), announced in June 2013 by HAS, is precisely to help health professionals improve the way they practice collectively and become aware of the importance of the human factor and non-technical skills in the management of patients.³⁸ It should be noted that several initiatives have been developed and the effectiveness of which has been proven in this area including the 'Checklist'. This approach has demonstrated its effectiveness in improving teamwork, inter-professional communication and reducing perioperative morbidity and mortality.³⁹ Moreover, in France, this approach is particularly relevant to the HAS missions. The certification of health care institutions and the accreditation of doctors as well as the HAS checklist "Patient Safety in the Operating Room" was explicitly introduced in the V2010 manual and related tools.⁴⁰

The "Staffing" dimension has been identified as a major problem in most published studies (Table IV). This should be a signal for authorities to invest in staffing levels. More than 60% of the surveyed staff reported that they suffer from shortage to cope with the workload. An important finding focused on the link between nurse staffing and patient outcomes has been published highlighting a positive correlation between the higher percentage of hours of care provided by nursing staff and a lower rate of death at 30 days.⁴¹ In our study, the item concerning the impact of working hours on the quality of care (A5) obtained a score of 74.8%. This item revealed a doubt about its interpretation by our participants which seems to be correlated to the work load.

Psychologists and other researchers who have studied workplaces confirm that adverse events occur when people are jostled, under pressure, overworked, emotionally disturbed or working in difficult situations.⁴² However, human resources management continues to consider it from the economic and financial angle (budget restrictions) and not in relation to the quality of care and the organization of work.⁴³

"Leadership" dimension had the second lowest score of 30.9%. Our study showed that doctors and nursing staff consider management support to be inadequate for patient safety with respective scores of 20.4% and 33.4%. However, this score was significantly higher in the study conducted by Tlili *et al.* in 2013 (46.1%)¹⁰ as well as in other surveys where management support was found to be adequate.⁴⁴ This shows that the hospital hierarchy must now give a higher priority to patient safety, since 49.4% reported that management is interested in the 'safety care' only after the occurrence of an adverse incident. Good leadership models are available, including the Institute of Healthcare Improvement (IHI) High Impact Leadership Model.⁴⁵ Accordingly, oriented and safe care can be developed and implemented. When leadership is engaged in a culture, the entire organization will follow it and reveal the adverse incidents. Thus, finding the root causes will become an organizational process. This was the subject of an interesting observation conducted in Lebanon by El Jarldi *et al.* which revealed the positive impact of hospital management support on the frequency of reported incidents.²¹

The results of the national patient safety culture measurement carried out at Belgian hospitals (from the benchmark in 2016) are very encouraging, especially since the strong increase concerning the leaders' support in terms of patient safety, whose score changed by 15.2% compared to the base measurement in 2008.³³ In our context, to achieve such progress, leaders must work harder to build and maintain trust by removing the hierarchical barriers and taking explicit steps to achieve the goals in order to address topics related to the adoption of safe behaviour.⁴⁶ This is especially important in emergency rooms and intensive care units where, this dimension

seems to be poorly perceived in our study (around 22.3%) as in most published studies.⁴⁷

The “expectations and actions of superiors” score was poorly developed in our study (49.3%), like most of the scores found in the literature (Table IV). This dimension has been defined as one of the potential predictors of patient safety perception.⁴⁸ Indeed, many studies have also pointed out that managers are the main force capable of applying behavioural expectations to maintain mutual satisfaction in terms of patient safety culture among nurses.⁴⁹

The four studies conducted at the national level had some points in common such as: an acceptable score for the dimension “teamwork in the service” (about 60%), comparable scores for the managerial aspect “expectations and actions of supervisors concerning the safety of care” (50%) and “management support for care security” (35 to 40%). The Sousse Hospital centres had better scores on “reporting frequency of adverse events” (Figure 2).

Thus, it remains necessary to implement some action for improvement considering our results.

These include: 1) patient safety needs to become a higher priority in basic and continuing medical and paramedical training programs; 2) promotion of good communication between different health professionals; 3) involvement of the patient as a partner in the care process; 4) participation in an accreditation and benchmarking process.

Finally, working on patient safety in the Tunisian health sector can only be conceived as a global and multidisciplinary action. National efforts must be concentrated on developing a reliable and valid Arabic language measurement tool to overcome the language barrier.

This study had a few limitations in its design. The questionnaire is a bit long; in this case, the respondent risks losing interest and not answering questions. The tool used is a common tool in different countries and thus, it is necessary to use a tool adapted to the Tunisian context in our health system. When using a 5-point Likert scale staff tend to answer with the “neutral” response in case of ambiguity. The percentage varies from 9.2% to 29.3% in our study. Another limitation was the language problem.

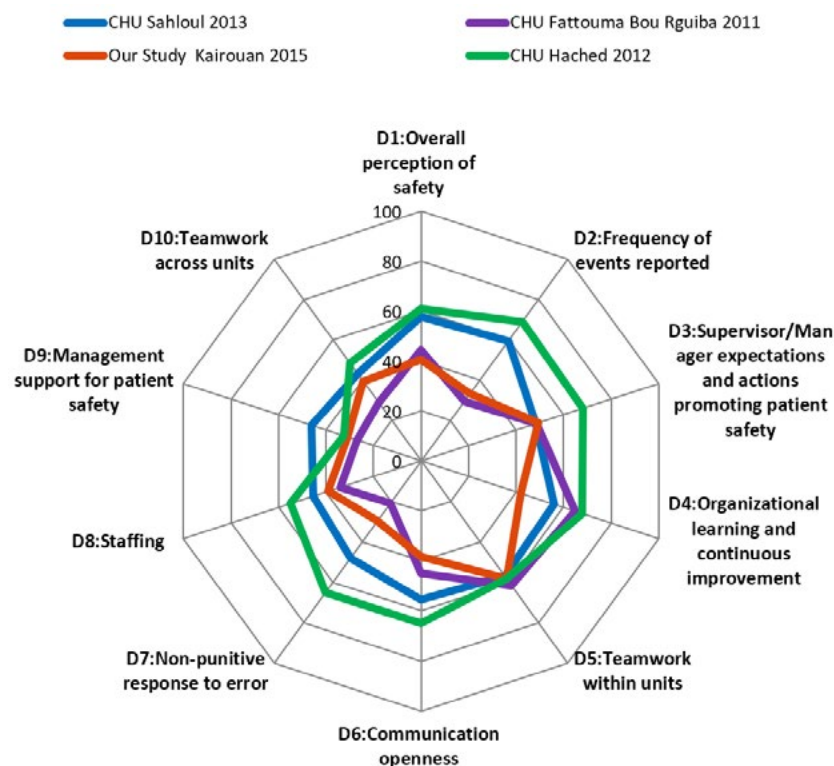


Figure 2. Composite-Level average « average positive response » for our study compared to the different Tunisian University hospitals centres

Although most respondents should use French fluently, Arabic remains the native language that most of them feel most comfortable with. Thus, providing an Arabic version for health professionals could improve response to specific questions. This fact has been validated in some Arab countries such as Lebanon and Saudi Arabia.^{9,46} It follows that language is a factor that significantly influences the results of such studies. Despite its limitations and the lack of research in the region, our study provides important information and sheds light on several critical patient safety issues.

In conclusion, measuring patient safety culture in healthcare organizations is being increasingly welcomed. The results of this study suggest that patient safety culture should be developed in Ibn El Jazzar hospital. A strong safety culture should allow health care professionals to adhere better to care safety. Thus, it remains necessary to implement some improvement actions while considering the structures and specific resources in the Tunisian health system and the local context measures. Further studies should be conducted to achieve a continuous quality assessment.

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