Review Article

Survey of Critical Standards of Patient Safety in Hospitals of Iran: A Systematic Review and Meta-Analysis

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Abstract

Background: Patient safety is an important and mandatory component of quality health services. Insecure health services, in addition to inflicting pain and suffering to patients, impose a high financial burden on the health system of every society. The present study was conducted to evaluate the critical standards of patient safety based on the Patient Safety Friendly Hospital Initiative (PSFHI) checklist in Iran. **Methods:** The present systematic review and meta-analysis were performed based on the PRISMA guideline. For this purpose, articles related to the critical standards of patient safety based on the PSFHI checklist were obtained by searching valid Persian and English keywords in SID, Magiran, PubMed, Scopus, Web of Science, and Google scholar data resource through the end of 2019. The studies were analyzed using the STATA (version 14) software. **Results:** In the initial search, 533 articles were extracted among which 7 were eligible and entered into the meta-analysis process. Overall, 55 hospitals were surveyed, and the results of the meta-analysis showed that the average critical standards of patient safety were 69.52% (95%, CI = 57.09–81.95, I^2 = 69%, P = 0.004). **Conclusions:** The results showed that a moderate level of critical standards of patient safety in hospitals in Iran. Since meta-regression analysis revealed a decreasing trend in compliance rate, hospital managers should implement principals designated by the World Health Organization to achieve the required standards that are the basis and pillar of a patient-friendly hospital. With proper management, hospitals should set goals and take steps based on a strategic plan toward achieving these goals.

Keywords: *Friendly hospital, hospitals, patients, safety*

Introduction

According to the World Health Organization (WHO), patient safety is defined as preventing errors and treatment side effects during providing health services to avoid harm to patients.[1] Patient safety is a vital component and indicator of the quality of health care services.[2] According to the WHO, tens of millions of people die or become disabled each year due to medical errors and unsafe treatments.[3] In the United States, as the third leading cause of death in the country, medical errors are responsible for more than 250,000 deaths annually.[4] Unsafe health and medical services, in addition to inflicting pain, also incur heavy economic costs on patients. It is estimated that between 5% and 10% of health-related expenses root in unsafe clinical services.[5] Patient safety standards include a set of requirements that are vital for implementing a patient safety program in hospitals. These standards offer a practical framework that enables hospitals to evaluate patient safety, empower staff, and engage patients in augmenting the safety of therapeutic services.[6,7] The East Mediterranean Center of the WHO, in order to extend patient safety programs, launched a Patient Safety Friendly Hospital Initiative (PSFHI) Program. This program organizes safety standards in five main groups including leadership and management, patient and public involvement, safe evidence-based clinical practice, safe environment, lifelong learning. Under these 5 main groups, there are 24 subgroups comprising of a set of critical (20 items), core (90 items), and developmental (30 items) standards. It should be noted that critical standards are those that must be met by 100% to consider a hospital as a patient-friendly organization.[8,9] Patient safety is one of the most important components of quality health care, and all the elements of a health care system must be coordinated and integrated to achieve safe and effective care. On the

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contrary, educating communication skills and teamwork to personnel seems essential to upgrade patient safety.[10,11] The aim of this study was to investigate the level of the critical standards of patient safety according to the PSHFI checklist in hospitals in Iran by systematic review and meta-analysis. The results of this study can be used by health policymakers to implement these standards in health sectors in the future.

Methods

In this systematic review and meta-analysis, we used the preferred reporting items for systematic reviews and meta-analyzes (PRISMA) in order to evaluate critical standards of patient safety in hospitals of Iran.

Search strategy

Valid English keywords and their Persian equivalents were searched in Google Scholar, SID, Magiran, Scopus, PubMed, and Web of Science data resources. The keywords included "patient safety", hospital, Iran. First, using the keywords, Boolean operators, and search fields, a primary syntax search was compiled in the PubMed database. Then based on the initial syntax search, a similar search was compiled and conducted in the other databases. The searches were conducted in both Persian and English without any time limit until the end of 2019.

Search strategy in PubMed including: "Patient Safety"[tiab] AND hospital AND Iran.

Eligibility criteria

In this study, we included all the studies that reported (either in Persian or English) the critical standards of patient safety based on the PSFHI checklist (published by the WHO) in hospitals of Iran. The minimum and maximum scores obtained by this checklist were 0 and 100, respectively. The average scores of 0–50%, 50–70%, and >70% indicated poor, moderate, and good performances, respectively.[12] Exclusion criteria were not reporting the mean and standard deviation of critical standards of patient safety based on the PSFHI criteria, using a checklist other than the PSFH, assessing the patient safety culture, and full-text unavailability. Also, interventional studies, letters to editors, systematic reviews, and brief reports were excluded.

Selection of studies

In the primary search, 533 articles were inserted into the EndNote software. After removing duplicates, the titles and abstracts of 365 articles were reviewed, and then 26 possibly related studies were identified. In the next step, two of the researchers independently studied in detail the full texts of the 26 related articles, which resulted in the selection of 7 eligible studies. A group decision was used to resolve disagreements between the two researchers.

Qualification and data extraction

Initially, two researchers independently used the STROBE standard checklist[13] to qualify the eligible studies. The least and highest scores obtained in this checklist were 0 and 44, respectively. The studies that obtained a minimum score of 16 entered into the meta-analysis process.[14] Also, to extract the required data, the two researchers independently used a pre-prepared checklist for recording information such as the first author's name, study place, number of studied hospitals, study year, and the mean and standard deviation of critical standards of patient safety.

Statistical analysis

The mean and standard deviation of critical standards of patient safety was extracted from each study. The I^2 index was used to check the heterogeneity between the studies considering that I^2 values of <25, 25–75, and >75 would indicate low, medium, and high heterogeneities, respectively.[15] A random-effects model was utilized for meta-analysis. The relationship between the year of study and the average of critical standards of patient safety was determined by meta-regression. The Egger test was used to determine the publication bias in the studies. The data were analyzed using the STATA (version 14) software.

Results

Systematic review

Initially, 533 articles were obtained from the mentioned data resources. From these, 168 duplicate articles were eliminated, and then the titles and abstracts of 365 articles were reviewed based on the inclusion criteria. In the next phase, the full texts of 26 possibly related articles were reviewed, of which only 7 studies were selected to enter the meta-analysis process. The flowchart of study selection has been shown in Figure 1. All the finally included studies had cross-sectional designs. Overall, 55 Iranian hospitals were reviewed in this study. The characteristics of the studies have been shown in Table 1.

Meta-analyses

The results showed that the average critical standards of patient safety were 69.52% (95% CI = 57.09–81.95, I^2 = 69%, P = 0.004) which indicated a performance at

Table 1: The characteristics of the selected studies in meta-analysis

First author	Place	Year of study	Number of hospitals	Mean±SD
Janghorbani[16]	Isfahan	2013	1	71±36
Jabbari[17]	Isfahan	2015	4	55.30±20.05
Asefzade[12]	Rasht	2013	7	64±15
Babamohamadi[18]	Semnan	2016	5	83.6±3.6
Gazerani[19]	Bojnurd	2015	4	70±15
Habibzadeh[20]	Urmia	2019	4	61.42±3.75
Torka Beydokhti[21]	Gilan	2018	30	69.08±13.19

a moderate level in the hospitals [Figure 2]. Also, in this review, the heterogeneity among the studies was obtained 69% indicating moderate heterogeneity. The result of meta-regression based on the year of study and the average critical standards of patient safety revealed a decreasing trend [Figure 3]. Finally, the results of the Egger test showed that publication bias had no significant effect on the results of the studies (P = 0.654). [Figure 4].

Discussion

The results of the present study showed that the average critical standards of patient safety based on the PSFHI checklist in 55 hospitals in Iran were 69.52%, which indicated a performance at a moderate level. In two studies by Mazhari *et al*.[22] and Bairami *et al*.,[23] these critical rates were reported as 76.69% and 75%, respectively, indicating good performance in the studied hospitals. Factors, such as the presence of a patient safety committee in hospitals, periodic internal and external visits, and ranking hospitals and medical centers (by the Ministry of Health) can encourage them toward observing the required standards and upgrade their performance in terms of patient safety standards.[24] The results of Arab *et al*. showed that based on patients' perspectives, the level of patient safety in hospitals of Iran was 60%, suggesting that this level can be improved by holding educational workshops.[25] In the studies of Jabbari *et al*.,[17] Asefzade *et al*.,[12] Habibzadeh *et al*.,[20] and Torka Beydokhti *et al*.,[21] the performance of hospitals of Iran regarding implementing patient safety standards has been reported to be at moderate level. This may be due to not setting goals in the field and the lack of strategic and operational planning to achieve the required standards at the five main patient safety dimensions.[22]

The first step in improving patient safety is to understand and address the patient safety culture in an organization, so the first strategy to improve the quality of health care is

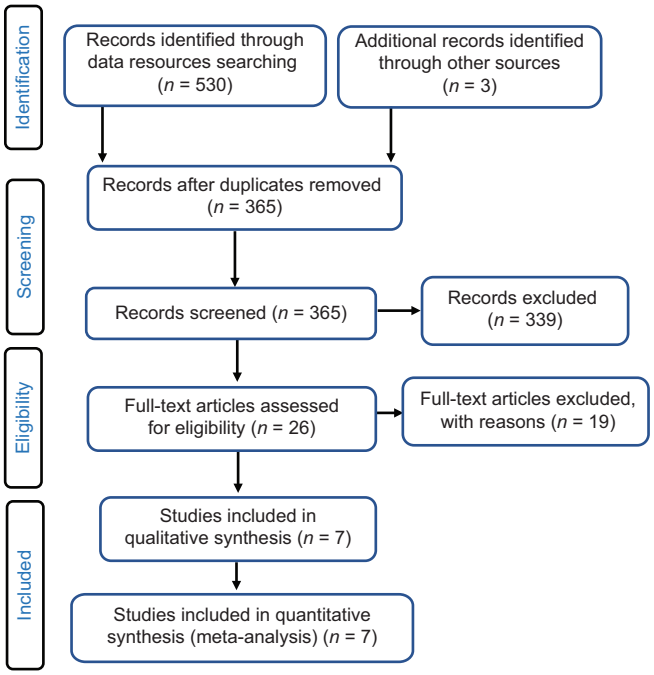

Figure 1: PRISMA flow diagram study

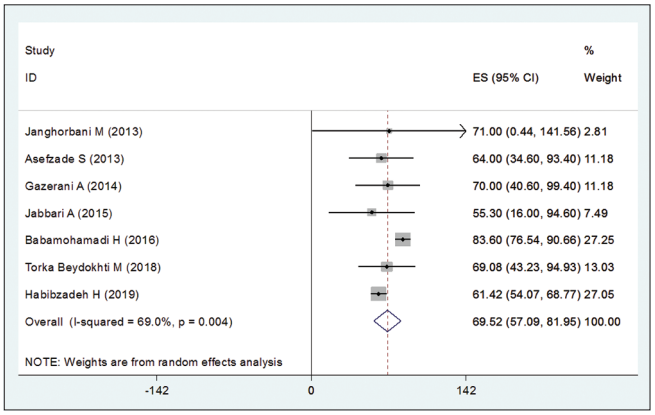

Figure 2: The forest plot of average compliance with critical standards of patient safety in each study and overall

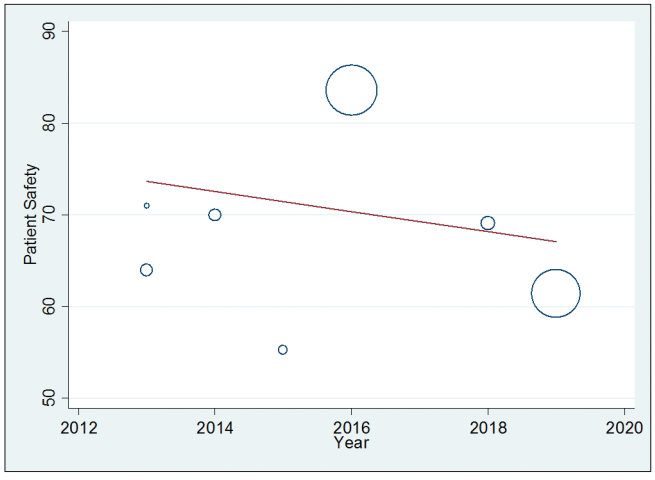

Figure 3: The relationship between the year of study and the observance of Critical standards of patient safety

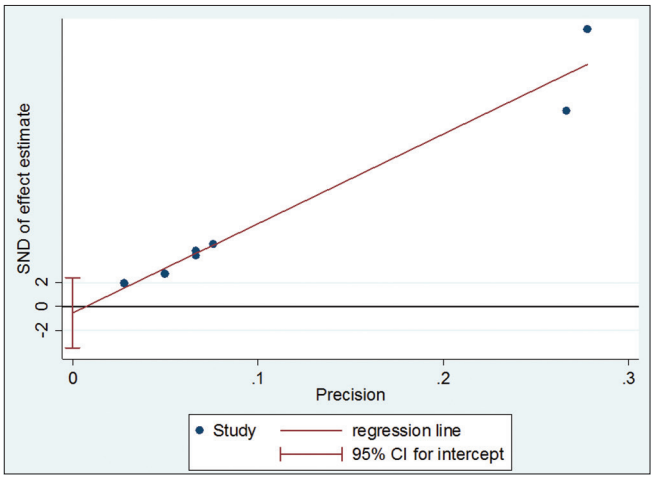

Figure 4: Publication bias based on the Egger diagram

to create a safety culture in health care centers.[1] In fact, patient safety culture is important to develop appropriate attitude, behavior, perception, and commitment in health care staff and boost the effectiveness and quality of patient safety interventions.[26] Therefore, in order to improve patient safety, health care managers must first assess its current status in hospitals. Studies have shown that patient safety culture in Iranian hospitals is poor and requires special attention of managers.[27,28] Regular educational programs to familiarize staff with patient safety parameters can be important in successful implementing of patient safety standards in hospitals.[29] In the present study and based on meta-regression analysis, the performance of hospitals in critical standards of patient safety showed a decreasing trend over time after implementing patient safety plans. Therefore, a strategic and practical planning must be implemented to completely obtain patient safety standards in hospitals. Furthermore, appropriate implementation of these programs in medical centers can be guaranteed through periodic visits and considering incentives and punishments. The most important limitation of the present review was that some studies had not separately reported critical standards of patient safety in the five domains of leadership and management, patient and public involvement, safe evidence-based clinical practice, safe environment, and lifelong learning. Therefore, it was not possible to report the compliance in each of these groups. Also, some studies have not reported the mean and standard deviation of the critical rate, and we had to exclude them from the study.

Conclusions

The results of the present study showed that the performance of Iranian hospitals regarding critical standards of patient safety was at a moderate level, which showed a decreasing trend over time. In order to become a patient-safety friendly organization, it is recommended that hospital managers use the valuable experiences of WHO in the case of PSFHI program and implement the provided guides in order to achieve the required standards. On the contrary, compliance with the standards ensures that patient safety is accorded the necessary priority that facilities and staff implement best practice. So, hospitals should set goals and follow proper management along with a strategic plan to achieve them.

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Conflicts of interest

There are no conflicts of interest.

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