Prevalence of burnout among nurses in Iran: a systematic review and meta-analysis

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Aim: This study aimed to summarize the available information in the literature to make an accurate estimate of the prevalence of burnout among Iranian nurses.

Background and introduction: Burnout is a work-related stress syndrome that has negative impact on healthcare providers, patients and healthcare delivery systems.

Method: A comprehensive search of literature using international [PubMed, Scopus and the Institute for Scientific Information (ISI)] and Iranian scientific data bases [Scientific Information Database (SID), IranMedex and Magiran] was conducted to identify English and Persian language studies, published between 2000 and 2016, that examined the prevalence of burnout among nurses in Iran. The *I*-squared test and Chi-squared-based *Q*-test suggested heterogeneity of reported prevalence among the qualified studies; thus, a random-effects model was applied to estimate the overall prevalence of burnout among nurses in Iran.

Results: Based on 21 selected articles with 4180 participants, the overall prevalence of burnout among Iranian nurses was estimated to be 36% [95% confidence interval (CI), 20–53%] in Iran. Meta-regression indicated that sample size and year of data collection, mean age of samples, female to male ratio and geographic regions were not statistically significantly associated with the prevalence of burnout. Also, based on Egger's test and funnel plot, there is no publication bias among studies included in the analysis.

Conclusion: Professional burnout affects more than one-third of nursing staff in Iran; thus, effective interventions and strategies are required to reduce and prevent burnout among nurses.

Implication for nursing and health policy: Due to the negative consequences of burnout on patients, nurses and organizations, nursing and healthcare managers should intervene to prevent and reduce burnout among nurses in Iran. Policy attention should focus on developing effective interventions to prevent and minimize the burden of burnout among nurses in Iran. Nurses' involvement in the policy-making process is

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Conflict of interest

No conflict of interest has been declared by the authors.

crucial in the implementation of effective programs and initiatives tailored to address the higher prevalence of burnout among Iranian nurses.

Introduction

Burnout is one of the main outcomes of job stress among healthcare workers. It contributes to several negative outcomes for patients and healthcare organizations, including negative impact on the quantity and quality of healthcare services, increased in healthcare expenditures due to higher turnover rates, absenteeism and shortage of human resources as well as an increase in family problems among healthcare workers (Adriaenssens et al. 2015; Cicchitti et al. 2014; Dehghan Nayeri et al. 2009). As a result, the issue of burnout among healthcare workers has received considerable policy and research attention in both developed and developing countries over the past decades (Adriaenssens et al. 2015; Al-Turki et al. 2010; Argentero et al. 2008; Karakoc et al. 2016; Lasebikan & Oyetunde 2012; Sahebazzamani et al. 2009).

Professional burnout, introduced by Freudenberg Herbert in 1970 (Freudenberger 1974) and developed by Christina Maslach in 1981 (Maslach & Jackson 1982), is defined as a work-related stress syndrome. It includes three dimensions *viz.* depersonalization, emotional exhaustion and lack of personal accomplishment. Individual traits, type of job and its threats, inadequate nursing staff, place of working, types of ward, interpersonal relationship, conflict between doctor and nurse and working shift were identified as main factors associated with professional burnout among nurses (Karakoc et al. 2016; Khodadadizadeh et al. 2012; Lahana et al. 2017; Lasebikan & Oyetunde 2012; Mohammadpoorasl et al. 2013; Yousefy & Ghassemi 2006).

Healthcare workers are more prone to burnout than those working in other sectors. Nurses have the higher prevalence of professional burnout as compared to other healthcare staff (Adriaenssens et al. 2015; Lasebikan & Oyetunde 2012). The existing literature has already documented burnout among nurses in different countries. For example, a study by Poncet et al. (2007) in France showed that about 33% of critical care nurses experienced burnout. Another study by Verdon et al. (2008) in Switzerland found that 28% of nurses experienced a high level of professional burnout. In addition, Aiken et al. (2002) evaluated the incidence of burnout among 10 319 nurses in five countries (the USA, Canada, England, Scotland and New Zealand) and reported an incidence of burnout ranging from 32% (Scotland) to 54% (the USA).

Several studies examined the prevalence of professional burnout in nurses in different regions of Iran, however, there is no study that estimated the overall prevalence of burnout among nurses in that country. Thus, the main objective of this study was to summarize the available information in the literature to make an accurate estimate of the overall prevalence of burnout among nursing staff in Iran. Further, we evaluated the general trend in burnout among nurse in the country. The results of our study help us to understand the extent of professional burnout among nurses in Iran, which, in turn, may lead to greater awareness among nursing managers and health policymakers about the issue of burnout.

Material and methods

Search strategy and selection criteria

A systematic search of literature in December 2016 using both international [PubMed, Scopus and the Institute for Scientific Information (ISI)] and Iranian scientific data bases [Scientific Information Database (SID), IranMedex and Magiran] was conducted to identify English and Persian language studies, published between January 2000 and December 2016, that examined the prevalence of burnout among nurses in Iran. We searched a combination of Persian and English keywords of 'prevalence' or 'frequency', 'burnout', 'nurse' or 'nurses', 'hospital staff', 'healthcare workers', 'medical staff' and 'Iran'. Additionally, we manually checked the reference lists of the studies to obtain further studies not identified in the initial search of major databases.

Study selection

The inclusion criteria for our review were as follows: studies that reported prevalence rate of professional burnout among nurses in Iran, and that employed the most widely used burnout instrument, the Maslach Burnout Inventory (MBI); original article written either in Persian or English, articles with available full-text, and published between January 2000 and December 2016. The exclusion criteria were as follows: studies which published as review articles, qualitative studies, brief reports, letter to the editor or editorial comments, working papers and studies having duplicate data with other studies. The literature search was conducted based on the PRISMA (preferred reporting items for systematic reviews and meta-analyses) guideline (Moher et al. 2009). All articles were independently reviewed by two researchers against inclusion and exclusion criteria. Any initial disagreement was resolved

through discussion, and a third researcher was consulted if required.

Maslach burnout inventory (MBI)

The MBI instrument, which was developed by Maslach and Jackson (1982), contains 22 items. These items divided into three subscales to assess each aspect of professional burnout *viz.* emotional exhaustion (EE, nine items), depersonalization (DP, eight items) and personal accomplishment (PA, five items). Each item is ranked from zero (never) to six (every day). In the EE dimension, the overall scores of greater than 26 suggest high EE. The overall scores of 17–26 and lower than 17 in this dimension indicate the moderate and low degree of EE, respectively. In the DP dimension, the overall scores of lower than 12 reveal high DP and the overall scores of 7–12 and lower than 7 indicate the moderate and low degree of DP, correspondingly. In the PA dimension, the overall scores of lower than 39 suggest high PA, while the overall scores of 32–38 and lower than 32 demonstrate the moderate and low degree of PA, respectively. Higher score values on EE and DP dimensions and lower score values on PA dimension suggested higher levels of burnout (Karami Matin et al. 2014; Li et al. 2014).

Data extraction

A self-constructed checklist was used to extract relevant information from each article. The following data were gathered through the checklist: the first author name, year of data collection, study location, mean age of study samples, female to male ratio, the language of publication, study design, sample size, number and type of hospitals included in the study, study wards and prevalence of burnout. Similar to other studies (Haghdoost & Moosazadeh 2013; Moosazadeh et al. 2014; Rezaei et al. 2017), a checklist was used to assess the quality of articles. The quality checklist contained 12 questions, including the aim of the study, research questions, research method, sampling and data collection method, sample size, the status of variables evaluation, target population and method of the analysis. We assigned one score for each question if the study met criteria for the question. Based on these questions, the maximum and minimum acceptable scores are 12 and 8, respectively. Any studies with the overall scores between 8 and 12 were retained in the final analysis.

Statistical analysis

Standard errors of the reported prevalence of burnout among nurses in the studies were computed based on the binomial distribution formula. We used I-squared statistics and the Chi-squared-based Q-test to examine the heterogeneity of reported prevalence among studies. If P-value of Chi-square-based $Q < 0.05$ or $I^2 > 50\%$ or P-value of $\tau^2 < 0.05$, a random-effect model should be used to estimate the pooled prevalence of burnout among nursing staff in Iran. In other words, in the presence of heterogeneity, a random-effects model should be used to account for the observed variability. Point estimation of prevalence of burnout was estimated by a forest plot with 95% CI (95% confidence interval). Meta-regression analysis was applied to investigate the potential sources of between-study heterogeneity among included studies in the analysis. The Egger's test was used to examine publication bias. The null hypothesis, H_0, for this test indicates that there is no small-study effect; thus, based on this test, the P-value of less than 0.05 suggests the publication bias among selected studies in the analysis. A P-value of less than 0.05 was used to determine statistical significance. Stata Statistical software (Version 12; Stata Corporation, College Station, TX, USA) was used for the data analysis.

Ethical considerations

The study protocol was reviewed and approved by the research ethics committee of the Deputy of Research, Kurdistan University of Medical Sciences (MUK.REC.1395).

Study findings

Based on the exclusion and inclusion criteria, 21 studies (Dehghan Nayeri et al. 2009; Ghaedi et al. 2015; Gholami et al. 2016; Habibi et al. 2015; Hosseininejad et al. 2016; Jamali Moghadam & Soleimani 2013; Karami Matin et al. 2014; Khodabakhshi et al. 2016; Khodadadizadeh et al. 2012; Mahmoudi Rad & Naeim Hassani 2014; Mohammadpoorasl et al. 2013; Momeni et al. 2010; Payami 2000; Payami Boosari 2002; Pourkiani et al. 2013; Pourreza et al. 2012; Rahmani et al. 2010; Roohi et al. 2013; Sahebazzamani et al. 2009; Sahraian et al. 2008; Soleimani et al. 2016) were included in the final analysis (see Fig. 1 and Table 1). Total number of participants in the selected 21 studies was 4180 nurses. One study (Karami Matin et al. 2014) examined burnout in female nurses only, and the remaining 20 studies investigated burnout in males and females nurses. All the 21 studies were cross-sectional. The majority of respondents in the studies (79.3% of total respondents) were female, and four studies (Ghaedi et al. 2015; Jamali Moghadam & Soleimani 2013; Payami Boosari 2002; Pourkiani et al. 2013) did not report the gender of respondents in their studies. The sample size of the studies ranged between 59 and 712. Three studies conducted in both private and public hospitals (Ghaedi et al. 2015; Mohammadpoorasl et al. 2013; Pourkiani et al. 2013). Two studies (Mohammadpoorasl et al. 2013; Pourkiani
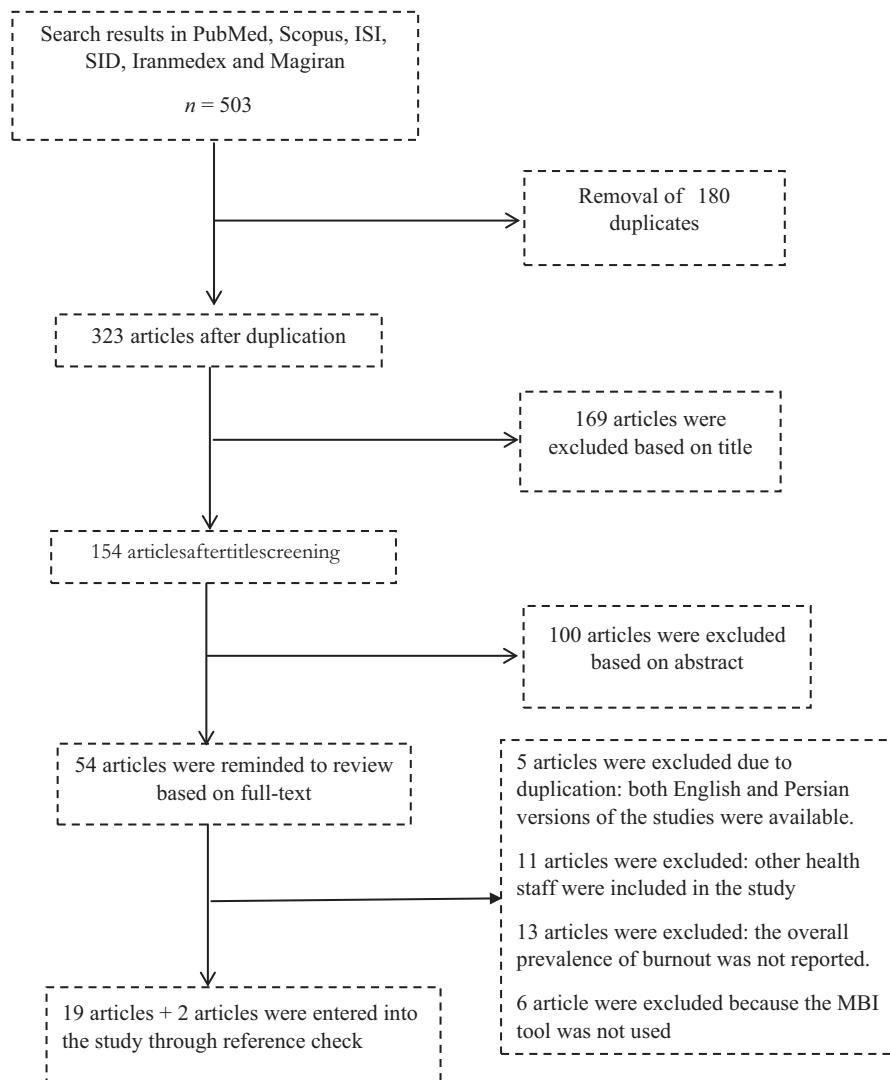
Fig. 1 Flow chart of systematic search and studies selection.

et al. 2013) reported burnout prevalence among nurses working in social security hospitals.

Based on the results from Chi-squared-based Q-test (6692.90, df = 20; $P < 0.0001$), I-squared statistics (99.7%; $P < 0.0001$) and Tau-squared (0.1483), there was statistically significant heterogeneity among 21 articles included in the study. A study by Khodadadizadeh et al. (2012) reported the highest prevalence of burnout among nurses (98.5%) was reported. The latter study assessed the prevalence of burnout among 134 nurses working in coronary care unit (CCU), intensive care unit (ICU) and neurology unit in Ali-ebn Abi-taleb hospital in Rafsanjan. The lowest prevalence of burnout (2.1%) was reported in a study conducted by Pourkiani et al. (2013) which measured the prevalence among 252 nurses working in public (university), private and social security hospitals in Kerman. Based on the random-effects model, the pooled prevalence of burnout in Iran was estimated to be 36% [95% confidence level (CI), 20–53%, see Fig. 2]. Further, the Egger's test and funnel plot did not indicate publication bias among the studies included in the review (P-value for bias = 0.465).

The results of univariate meta-regression analysis did not identify the year of data collection, sample size, mean age, female to male ratio and geographic regions (north, centre, west, east and south) as the source of heterogeneity in the reported period prevalence of burnout among nurses within the reviewed studies. However, they were not statistically significant (P-value > 0.05).

Table 1 Characteristics of articles included in the systematic review

The first author	Year of data collection	Language	Location of study	Sample size	Female/male ratio	Mean age	Study wards	Hospitals Type	n	Prevalence of burnout (%)
Payami	2000	Persian	Tehran	155	6	31.8	ICU and CCU	EH	–	33.3
Payami Boosari	2002	Persian	Zanjan	151	4	28.3	Multi-ward	EH	3	25.9
Roohi	2005	Persian	Golestan	272	1.9	–	Multi-ward	EH	–	43.8
Dehghan Nayeri	2007	English	Tehran	200	8.1	–	Multi-ward	EH	–	21.66
Sahraian	2008	English	Shiraz	180	1.6	34.8	Multi-ward	PH	5	25
Momeni	2008	Persian	Arak	99	–	33.1	Multi-ward	EH	–	40.79
Sahebazzamani	2008	Persian	Tehran	93	1.3	34.8	Psychiatric	EH	–	69.9
Rahmani	2009	Persian	Tabriz	59	2.7	28.3	ICU	EH	–	39
Pourreza	2010	Persian	Qom	200	2.1	33.8	Multi-ward	EH	3	2.5
Khodadadizadeh	2010	English	Rafsanjan	134	1.7	33.8	Multi-ward	EH	1	98
Mohammadpoorasl	2010	English	Tabriz	712	5.8	34.4	Multi-ward	PPSH	25	21.9
Jamali Moghadam	2010	Persian	Shiraz	114	–	29	Multi-ward	EH	1	67.5
Mahmoudi Rad	2011	Persian	Birjand	146	3.6	31.8	Multi-ward	EH	1	24.7
Ghaedi	2011	Persian	Rasht	120	–	–	Multi-ward	PPH	9	35.29
Pourkiani	2011	Persian	Kerman	252	–	–	Multi-ward	PPSH	–	2.1
Habibi	2013	Persian	Isfahan	77	11.8	34	Multi-ward	PH	1	29.4
Gholami	2013	English	Hamadan	415	4.8	31.9	Multi-ward	EH	5	8.67
Karami Matin	2014	English	Kermanshah	385	–	30.3	Multi-ward	EH	7	40.2
Hosseininejad	2014	Persian	Mazandaran	93	2.6	32.4	Emergency	EHa	3	14.96
Soleimani	2014	Persian	Rasht	183	8.2	33.4	Multi-ward	EH	2	25
Khodabakhshi	2015	Persian	Semnan	140	1.2	–	Multi-ward	EH	2	95.7

ICU, Intensive Care Unit; CCU, Coronary Care Unit; EH, Educational Hospital; PH, Public Hospital; PPH, Public and Private Hospitals; PPSH, Public, Private and Social Security Hospitals.
All studies were cross-sectional design.

Discussion

We used international and Iranian databases to identify studies that examined the prevalence of burnout among nurses in Iran over the period between January 2000 and December 2016. Based on the criteria set for the systematic review of the current literature, we selected 21 studies that used the most widely used instrument, the MBI, to measure the prevalence of professional burnout among nurses in Iran. National and international studies often use different instruments to identify burnout among nurses. This may have resulted in differences in professional burnout among nurses within and between countries. In previous studies conducted in different regions in Iran, six different instruments [i.e. Maslach Burnout Inventory (MBI), Copenhagen Burnout Inventory (CBI), Geldard Burnout Inventory (GBI), Tedium Burnout Questionnaire (TBQ), Professional Quality of Life Scale (ProQOL) and Self-constructed Checklist (SCChL)] were used to identify burnout among nursing staff in Iran (Ariapooran 2014; Aziz Nejad & Hosseini 2006; Fakhri & Adeleh 2013;

Kooranian et al. 2008; Shakerinia 2012). A systematic review of studies published between 1989 and 2014 also showed that different instruments have been used to measure burnout in the literature (Adriaenssens et al. 2015). Thus, in this study to reduce disparity among studies and higher comparable results, we only included studies that used MBI to measure the prevalence of professional in our analysis.

The results of the meta-analysis of professional burnout among nurses from the qualified studies suggested that the overall prevalence of burnout among nurses in Iran was 36%, which is lower than the prevalence of burnout among general population of nurses in England (Ball et al. 2012), hospital nurses in the United States (40%; Vahey et al. 2004) and primary care nurses in Japan (51.5%; Imai et al. 2004). In contrast, this figure was higher than that reported prevalence among critical care nurses in France (33%; Poncet et al. 2007), chronic haemodialysis nurses in the United States (31%; Flynn et al. 2009) and hospital nurses in Scotland (29.1%) and Germany (15.2%; Aiken et al. 2002). The overall
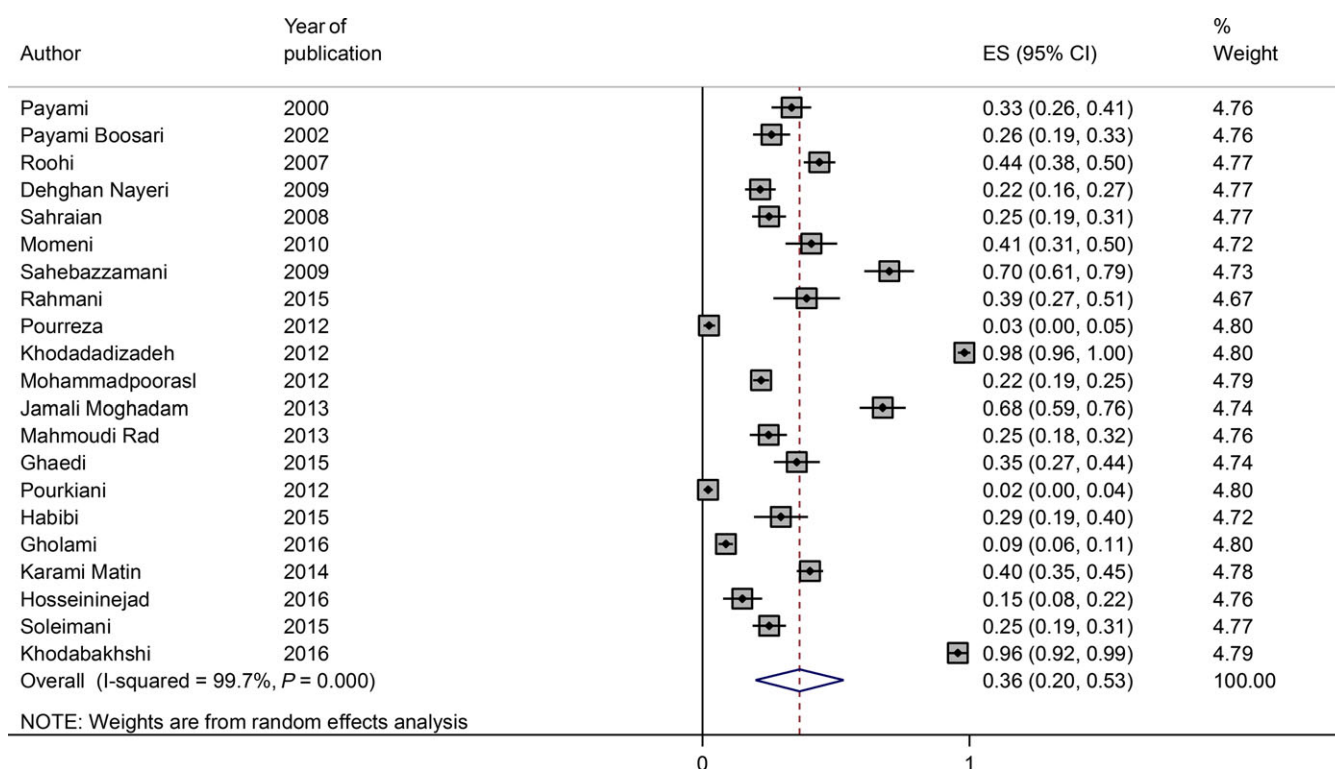
Fig. 2 Forest plot of prevalence of burnout among nurses in Iran.

prevalence was similar to that of reported for hospital nurses in Canada (36%) and England (36.2%; Aiken et al. 2002). It should be mentioned that our findings should be interpreted with caution when compared with the results of the previous studies because the reported prevalence rates of the burnout in the other countries were based on one or two studies, whereas our findings were based on the systematic review and meta-analysis of 21 studies.

There is a high disparity in the prevalence rates of the burnout among nurses between and within countries worldwide. This difference can be explained by several factors. *First*, differences in the working condition of nurses and their professional role in the healthcare system may partially explain the differences in the prevalence of burnout between countries. For example, the difference in nursing workload (nurse–patient ratios) across healthcare systems may lead to differences in professional burnout among nurses. A study by Flynn et al. (2009) in the United States showed that high workload was the most important factors determining burnout among nurses after controlling for other explanatory factors. They concluded that reducing nurses' workload might be one way to prevent and reduce the burnout in nurses. Another study in Canada also showed a positive association between workload

and emotional exhaustion among nurses (Greenglass et al. 2001). *Second*, national and international studies often use different instruments to identify burnout among nurses. This may have resulted in differences in the reported prevalence rate of professional burnout among nurses within and between countries. For example, based on the finding from our review study, six different instruments (MBI, TBQ, GBI, ProQOL, SCChL and CBI) were used to identify burnout among nurses Iran. A systematic review of studies published between 1989 and 2014 (Adriaenssens et al. 2015) also showed that different instruments have been used to measure burnout in the literature. *Third*, factors affecting the prevalence of burnout among nurses (e.g. sample size, types of hospital, type of ward, sociodemographic characteristics of sample population such as age, gender and educational attainment) may vary among the target populations of the studies that reported burnout within and between countries. This may also explain why different national and international studies reported a different level of burnout among nurses.

One of the main factors contributing to the increased prevalence of burnout among nurses is the imbalance between salary and workload of nurses. Previous studies have shown that the imbalance between salary and workload could

considerably increase the chance of burnout (Bakker et al. 2000; Hasselhorn et al. 2004; Moghaddasi et al. 2013). Addressing this inequality by reducing nurses' workload or increasing their salary may be an effective policy to decrease professional burnout among nurses. Given to the widespread shortages of nurses in Iran's health system, healthcare managers and health policymakers should pay more attention to the higher prevalence of burnout among this profession as it significantly affects the quality of health services, patient safety and patient outcomes (Aiken et al. 2001).

Our systematic review is subject to several limitations. *First,* we focused on the study that conducted in Iran. Thus, the findings of our study cannot be generalized to other countries. *Second*, there is considerable heterogeneity (in terms of, for example, sample size, gender ratio) among studies included in our study which may affect the accuracy of the results. *Third*, as there is no study about the prevalence of burnout in some of the provinces in Iran, the results of our review study should be interpreted with caution.

Implications for nursing policy and health policy

Considering the negative impacts of burnout among healthcare professionals on quality of health care, patient safety, absence from work, job turnover and healthcare expenditure, effective programs and interventions to prevent and reduce burnout among healthcare workers are required. Special attention should be devoted to preventing burnout among nurses because they represent the highest percentage of healthcare workers in all healthcare setting (Falter 2005) and have the higher level of burnout compared with other healthcare workers (Aiken et al. 2002). Nursing staff are healthcare professionals that patients mainly encounter when they receive health services (Yousefy & Ghassemi 2006); thus, the issue of burnout among nurses can directly affect the quality of care provided. In addition, patients who receive health care from nurses facing burnout may also feel dissatisfied because they may perceive health care was not provided with empathy and proper respect (Bridgeman 2013). Burnout can also increase the likelihood of turnover rates among nurses which leads to the shortage of nurses and increased recruitment efforts (Lasebikan & Oyetunde 2012). The shortage of nurses can potentially affect access and quality of health care in the society.

Conclusion

This systematic review and meta-analysis of the current literature indicated that professional burnout affects more than one-third of nursing staff in Iran. Due to the negative consequences of burnout on nurses, patients and organizations, healthcare organization and nursing managers should intervene to prevent and minimize the burnout among nursing staff in Iran. Health policymakers in Iran should focus on developing effective strategies to reduce the burden of burnout among nurses. Nurses' involvement in policy development is vital to the implementation of effective evidence-based interventions aiming to address burnout among nurses.

Author contributions
Study design: SR, BN
Data collection: SR, BN, BKM
Data analysis: MH, SR
Study supervision: AS, BKM
Manuscript writing: SR, BN, MH
Critical revisions for important intellectual content: AS, SR, MH

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