Review Article

The Prevalence of Job Stress among Nurses in Iran: A Meta-Analysis Study

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Abstract

Background: Many nurses experience job stress in their workplace. Given the wide range of differences in the statistics about job stress among nurses, the question that arises is what is the general prevalence of job stress among Iranian nurses? **Objective:** The present study aimed to evaluate the prevalence of job stress among Iranian nurses through meta-analysis. Persian and English databases including SID, MagIran, IranMedex, Google Scholar, Sciencedirect, and PubMed were searched by using the keywords such as "job stress, occupational stress, work-related stress, job related stress" and their combinations and 30 articles were finally selected. All the observational research articles that had information regarding the prevalence of job-related stress, sample size, and job stress instruments were entered into the meta-analysis. The form used to extract information included variables such as the first author's name, publication year, the place where the study had been carried out, type of the study, sample size, data collection instruments, and the most important findings. **Results:** The general prevalence of job stress was estimated to be 69% (confidence interval [CI] 95%: 0.58–0.79) based on the report of 30 papers with sample size of 4630. By region, type of hospital and the type of study, the highest prevalence of nurses' job stress was 90% (CI 95%: 0.85–0.96) in region one (Provinces of Alborz, Tehran, Qazvin, Mazandaran, Semnan, Golestan, and Qom), 70% (CI 95%: 0.60–0.80) in public and private hospitals, and 79% (CI 95%: 0.58–1.01) in studies where the type of study had not been mentioned. **Conclusion:** Given the high prevalence of job stress among nurses, developing programs to reduce nurses' job-related stress seems to be essential.

Keywords: *Iran, Job stress, Meta-analysis, Nurse, Prevalence*

Introduction

Stress is defined as being under psychological pressure.[1] Stress, as the third cause of diseases, is commonly felt in the workplace so that all jobs are somewhat stressful.[2] Job stress is a mental and physical arousal caused by job-related physical and psychological conditions.[3-5] Studies showed that job stress occurs as a destructive physical and emotional response when one's skills, resources, and demands do not fit the requirements of a job.[6-8] According to job demands-control theory, jobs with high mental demands and limited power to make decisions would create considerable job stress.[9]

Although job stress appears in all professions, jobs dealing with people are associated with serious stress. Nursing is one of these jobs and nurses suffer from high

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levels of job stress.[10,11] As recommended by the previous studies, job stress is related to decreased creativity and job satisfaction, lower rate of timely decision making, decreased quality of care, increased errors, decreased motivation, depression, detachment, decreased mental and physical well-being, sleep disorders, depression, burnout, absenteeism, lower job satisfaction, and physical problems.[12-14]

Although several studies have been published on the causes and the prevalence of job stress among nurses working in different areas of Iran,[9,10,14-16] the question of what the general prevalence of stress among Iranian nurses is, still remains unanswered.

Objective

This study aimed to estimate the general prevalence of job stress among Iranian nurses.

Methods

Data source

This meta-analysis was conducted on articles collected from national and international databases of SID, MagIran, Google Scholar, IranMedex, Science Direct, PubMed, and Scopus between 2000 and 2016. PRISMA guidelines were used to direct the reporting process. The following keywords were searched: (Job stress) OR (occupational stress) OR (work related stress) OR (job-related stress) and combinations of these terms. Farsi equivalent keywords were also searched in Iranian databases. Moreover, references of the articles were reviewed to find other related research papers.

Study selection

The exclusion criteria were unrelated interventional and review articles; gray literature; unavailability of the full-text articles; focus on other groups such as physicians, midwives, and students, and failure to report frequency or prevalence of job stress. Full-text observational studies were entered in the analysis. Fifty-nine articles were discovered initially. The researchers reviewed a summary of the articles to determine relevant studies. In the case of disagreement between the researchers, an experienced researcher (K. Sayehmiri) with sufficient knowledge regarding meta-analysis studies made the final decision. Eventually, 30 research papers out of the primary 126 articles were selected.

Data extraction

Data were extracted using a form including variables such as publication year, study location, sample size, sampling method, job stress status, the type of hospital (public, private, or military) and the type of study. In studies that job stress was reported in the form of ratings (mild, moderate, and severe), moderate, and severe stress were considered as job stress.

Statistical analysis

Since prevalence has a binomial distribution, the variance of every article was calculated through the binomial distribution variance. The weight was allocated to each study using the inverse variance method. I^2 index was used to assess the heterogeneity of the data. The heterogeneity was divided into three categories of <25% (low heterogeneity), 25%–75% (moderate heterogeneity), and >75% (high heterogeneity). The random effects model was used due to the heterogeneity of the data. Data were analyzed using STATA software version 12 (Stata Corp, College Station, TX).

Results

In total, 30 articles that were published between 2000 and 2016 were reviewed based on four steps of PRISMA statement[17] [Figure 1].

The total sample size of the reviewed studies was 4630 individuals with an average sample size of 154 people for each study. The highest stress levels were reported by Shahraki Vahed (97.4%), Mortaghi Ghasemi (97.4%), and Rahimi (98.2%);[18-20] and the lowest stress levels were reported by Bahrami (4.7%) and Khaghanizadeh (10%).[21,22] Further details of the articles are listed in Table 1.

The prevalence of job stress among Iranian nurses with sample size of 4630 was estimated to be 69% (confidence interval [CI] 95%: 0.58–0.79) by using random effect model. Heterogeneity was 99.4%, which is considerable compared to similar studies. Further, surveys were carried out using random effect model; the model assumed that differences between studies are due to differences in sampling and the frequency of job stresses. The studies

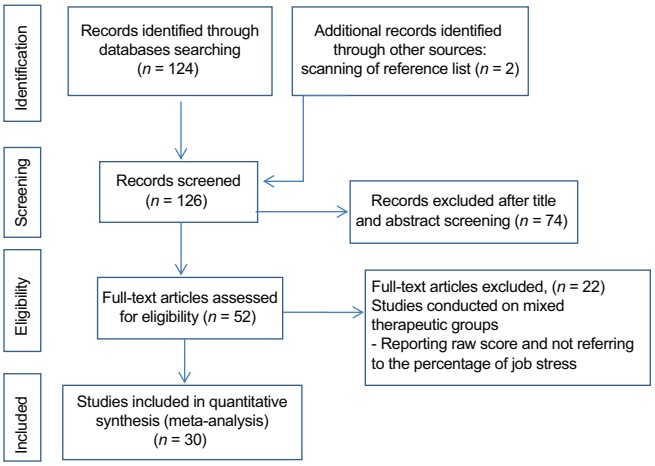

Figure 1: Flowchart of selecting and reviewing of articles based on PRISMA statement

were categorized based on the zoning of the provinces. Accordingly, 6 studies had been conducted in region 1, 7 studies in region 2, 6 studies in region 3, 4 studies in region 4 and 3 studies in region 5. Region of the study had not been mentioned in 4 studies. The highest prevalence rate of job stress was in region 1 (prevalence of 90%, CI 95%: 85%–96%) and the lowest prevalence rate was observed in region 4 (46%; CI 95%: 37%–56%).

Table 1: Characteristic of the included studies

First author (year)	Sample size	Type	Scale	Place	Stress prevalence (%)	CI
Esfahani (2016)[23]	200	Cross sectional	Occupational Stress Questionnaire	Isfahan	78	0.72-0.84
Masoumy (2016)[24]	140	Cross sectional	HSS-35	Bushehr	67.8	0.60-0.76
Moallemi (2016)[25]	103	Cross sectional	Gray Taft Nursing Stress Scale	Zahedan	75	0.67-0.83
Mohebbifar (2015)[26]	112	Cross sectional	Harris Job Stress Scale	Qazvin	65.4	0.57-0.74
Komeili (2015)[27]	80	Cross sectional	Osipow	Ahvaz	35.1	0.25-0.46
Karchani (2015)[28]	250	Cross sectional	Osipow	-	68	0.62-0.74
Karimyar Jahromi (2014)[29]	212	Cross sectional	Cohen's Perceived Stress Scale	Jahrom	76.4	0.71-0.82
Karchani (2012)[30]	100	Cross sectional	Cooper's Job Stress	-	56	0.46-0.66
Mehrabi (2007)[31]	170	Correlative	Gray Taft Nursing Stress Scale	Isfahan	83.6	0.78-0.89
Farhadi (2014)[9]	60	Cross sectional	Gray Taft Nursing Stress Scale	Urmia	91.6	0.85-0.99
Donyavi (2013)[15]	51	Cross sectional	Krishna	Tehran	82.3	0.72-0.93
Samadi (2013)[32]	126	Cross sectional	Gray Taft Nursing Stress Scale	-	72.3	0.64-0.80
Faraji (2012)[33]	297	Cross sectional	Stimer	Kurdistan	71.7	0.67-0.77
Hossini (2012)[34]	101	Other	Steinmetz	Bandar Abbas	44.7	0.35-0.54
Hazavehei (2012)[35]	237	Cross sectional	Gray Taft Nursing Stress Scale	Hamedan	57.4	0.51-0.64
Bahrami (2011)[21]	190	Cross sectional	Osipow	Kashan	4.7	0.02-0.08
Zeighami Mohammadi (2011)[36]	90	Correlational	Occupational Stress	Karaj	95.6	0.91-1
Mortaghi Ghasemi (2011)[18]	155	Cross sectional	Gray Taft Nursing Stress Scale	Zanjan	97.4	0.95-1
Rahmani (2010)[37]	59	Cross sectional	Occupational Stress	Tabriz	49.2	0.36-0.62
Noorian (2010)[38]	170	Correlational	Gray Taft Nursing Stress Scale	Isfahan	83.5	0.83-0.89
Shahraki Vahedi (2010)[20]	150	Correlational	Altheimer	Zabol	97.4	0.95-1
Khaghanizadeh (2008)[22]	200	Correlational	Osipow	-	10	0.06-0.14
Sherbafinezhad (2008)[39]	240	Other	Gray Taft Nursing Stress Scale	Tabriz	97	0.95-0.99
Pourghane (2006)[40]	39	Cross sectional	Karasak	Lorestan	35.9	0.21-0.51
Rhezaii (2006)[8]	373	Correlational	Gray Taft Nursing Stress Scale	Tehran	96	0.94-0.98
Kohestani (2006)[41]	80	Other	Gray Taft Nursing Stress Scale	Tehran	93.7	0.88-0.99
Khalilzadeh (2005)[42]	200	Cross sectional	Nursing Stress Scale	Urmia	92	0.88-0.96
Khodaveisi (2005)[43]	310	Cross sectional	Hinshaw and Atwood	Hamedan	51.3	0.46-0.57
Rahimi (2004)[19]	111	Cross sectional	-	Tehran	98.2	0.96-1.01
Abdi (2001)[44]	24	Cross sectional	Osipow	Yazd	25	0.08-0.42

CI: Confidence interval, HSS: Hospital Stress Scale

Table 2: The prevalence of job stress in all the studied subgroups

Variables assessed	Number of studies	Participants	Prevalence (%)	Confidence interval (95%)	Heterogeneity	
					Percentage	*P*
Study tool						
Osipow	6	825	38	0.13-0.63	99.2	<0.0001
Gray Taft Nursing Stress Scale	11	1904	85	0.79-0.91	96	<0.0001
Other	13	1901	78	0.72-0.84	98.2	<0.0001
Type of the study						
Cross-sectional	21	3056	65	0.50-0.79	99.4	<0.0001
Correlational	6	1153	78	0.53-1.02	99.7	<0.0001
Other	3	421	79	0.58-1.01	98.1	<0.0001
Hospital						
Public and private	27	4253	70	0.60-0.80	99.3	<0.0001
Military	3	377	55	0.04-1.05	99.3	<0.0001
Total prevalence	30	4630	69	0.58-0.79	99.4	<0.0001

The prevalence of job stress based on geographical region and the CIs is illustrated in Figure 2.

Gray-Taft nursing stress scale and Osipow's Job Stress tool were used in 11 and 6 studies, respectively. The estimated prevalence of job stress was calculated to be 85% (CI 95%: 0.79–0.91) and 38% (CI 95%: 13%–63%) by the first and the second tool. Table 2 lists the studies based on the type of study and hospital.

Figures 3 and 4 indicate that there is no relationship between the prevalence of nurses' job stress and sample size (P = 0.921) and also date of publishing (P = 0.720).

As shown in Figure 5, Egger regression test showed that publication bias was not statistically significant (P = 0.06).

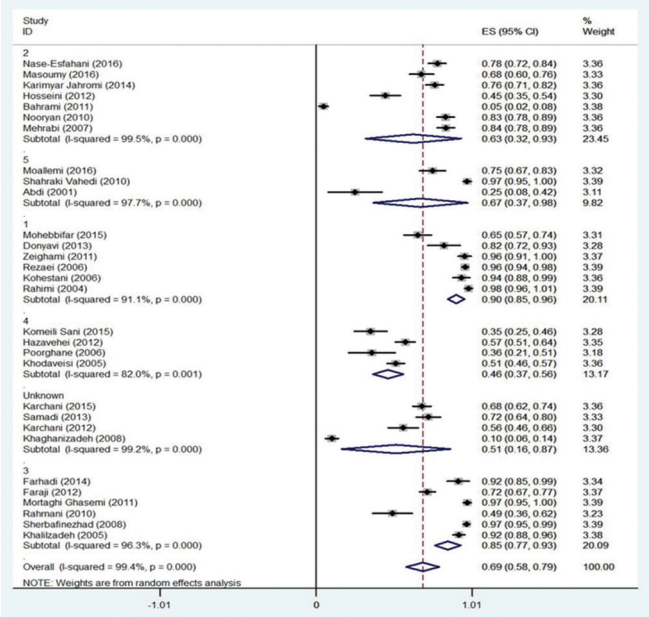

Figure 2: Job stress prevalence based on geographical region. [1]Horizontal lines around the main mean indicate the confidence interval of 95% for each study. The dotted line in the middle shows the estimated total prevalence, and the lozenge shows the confidence interval of the total prevalence. [2]Region 1: Alborz, Tehran, Qazvin, Mazandaran, Semnan, Golestan, and Gom. Region 2: Esfahan, Fars, Bushehr, Hormozgan, Kohgiluyeh and Boyer-Ahmad, and Chaharmahal and Bakhtiari Region 3: West Azerbaijan, East Azerbaijan, Ardabil, Zanjan, Gilan, and Kurdistan. Region 4: Kermanshah, Ilam, Lorestan, Hadaman, Markazi, and Khuzestan. Region 5: Razavi Khorasan, North Khorasan, South Khorasan, Kerman, Yazd, and Sistan and Baluchestan

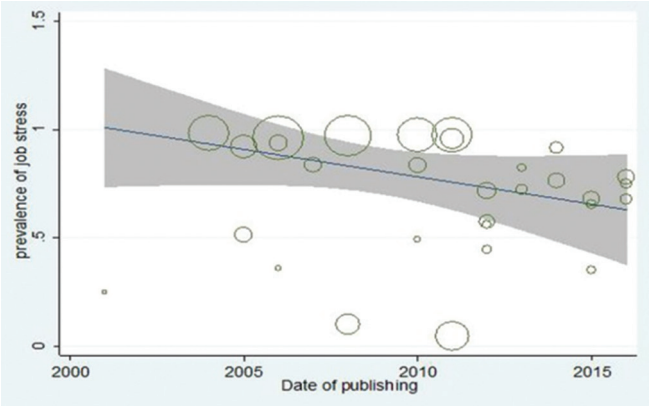

Figure 4: Meta-regression of prevalence of job stress based on date of publishing

Discussion

By using the random effects model, the general prevalence of job stress among Iranian nurses was estimated to be 69% (CI 95%: 0.58–0.79). The results indicated a high prevalence of job stress among Iranian nurses. Mwinga and Mugala reported that job stress among Zambian nurses was about 93%,[45] which is consistent with our findings. Given the stressful nature of the nursing profession, high level of job stress among nurses is not surprising. Al Hosis *et al*. studied 152 nurses working in Saudi Arabia and concluded that 34.2% of them suffered from moderate to severe job stress.[46] This result is not consistent with our finding. This inconsistency could be because of the organizational structure and management

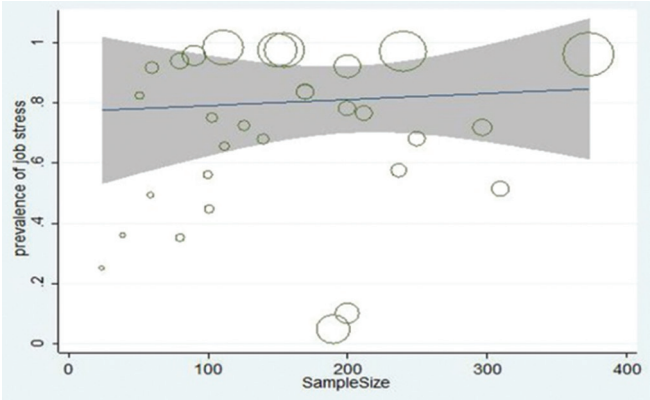

Figure 3: Meta-regression of the prevalence of job stress based on the sample size

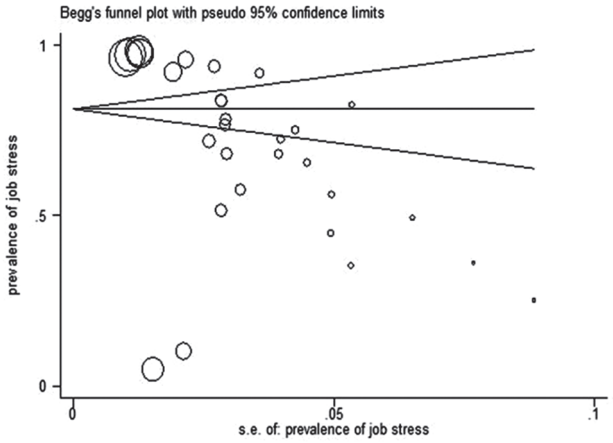

Figure 5: Publication bias of prevalence of job stress

system of hospitals in different countries. The optimum level of stress is required to improve mental readiness and the performance of the staff for dealing with the workplace challenges. However, higher stress levels would lead to extreme expectations and decreased performance.[47]

A survey showed that patient's death[8,9,35,39] and conflict with physicians[30,31,38] was among the top stressors. Because the nature of the nurses' job required them to build a close relationship with patients and their families. Thus, watching patients on their death bed has always been stressful for nurses.[9] Regarding conflicts between physicians and nurses, it is notable that nurses and physicians seek the same medical goal; however, because of their professional role, they tend to have different perceptions of the patient's needs so that they adopt different health care approaches.

No meta-analysis studies were discovered regarding the prevalence of job stress in national and international databases. Based on Gray-Taft nursing stress scale, the highest level of job stress was reported 85% (CI 95%: 0.79–0.91) among the studies. The highest stress level among nurses was reported 90% (CI 95%: 0.85–0.96) according to the studies conducted in region 1 of the country. According to Rahimi's findings, the highest level of stress was 98%.[19] Shahraki Vahed and Mortaghi Ghasemi both reported that the highest stress level among nurses was 97.4%.[18,20]

Estimating the general prevalence of job stress among Iranian nurses is a distinguishing feature of the present study. Some limitations of this study were failure to appraise the methodological quality of the articles, unavailability of the full text of some articles, and lack of a conventional report system for domestic articles. Despite different reports about the prevalence of job stress among nurses in different studies, the general prevalence of job stress among Iranian nurses is considerably high so that three-fourths of nurses complain about job stress. Therefore, it is vital to take effective measures to reduce job stress among nurses.

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Conflicts of interest

There are no conflicts of interest.

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