Meta-Analysis: The Effects of Workload and Social Support on Burnout in Health Workers

Hanifah[1], Sumardiyono[2], Bhisma Murti[1]

[1]Masters Program in Public Health, Universitas Sebelas Maret
[2]Faculty of Medicine, Universitas Sebelas Maret

ABSTRACT

Background: Burnout is a psychological syndrome of exhaustion, cynicism and ineffectiveness at work. Some factors causing burnout are workload and family support. The existence of a high workload can increase the incidence of burnout and high social support can prevent burnout in health workers. This study aims to estimate the effect of workload and social support on burnout in health workers.

Subjects and Method: A systematic review and meta-analysis was carried out using the PRISMA guidelines and the PICO model covering Population = health workers; Intervention = high workload and high social support; Comparison = low workload and low social support; Outcome = burnout. Articles were collected from databases such as PubMed, Science Direct, and Google Schoolar. The keywords used in the database search were workload AND "social support" AND burnout OR fatigue AND "health workers" AND "cross sectional".A total of 12 articles met the inclusion criteria for the meta-analysis and were assessed using RevMan 5.3.

Results: Meta-analysis from France, Afghanistan, Canada, Uganda, Ghana, Ethiopia, Malawi, Brazil, Malaysia and China showed that high workloads can increase burnout in health workers (aOR= 2.37; 95% CI= 1.10 to 5.10; p = 0.003), high social support can reduce the risk of burnout in health workers (aOR= 0.54; 95% CI= 0.42 to 0.71; p= 0.001), and these results were statistically significant.

Conclusion: High workload can increase burnout among health workers and high social support can reduce the risk of burnout in health workers.

Keywords: workload, social support, burnout, health workers

Correspondence:
Hanifah. Masters Program in Public Health, Universitas Sebelas Maret. Jl. Ir. Sutami 36A, Surakarta 57126, Central Java, Indonesia. Email: hanifah1611@gmail.com. Mobile: 081226829788.

BACKGROUND

A health worker is any person who is dedicated to the health sector and has knowledge and/or skills through education in the health sector for certain types (Law of the Republic of Indonesia Number 36 of 2014). To provide the best service, the welfare of health workers is needed. The welfare of health workers is important for the effective functioning of the health system. High levels of work-related stress can negatively affect the well-being of healthcare workers, leading to mental health problems and experiences of burnout (Dagget et al., 2016).

Burnout is a psychological syndrome of exhaustion, cynicism and ineffectiveness at

work. It is considered as an individual's experience of stress that is embedded in the context of complex social relationships, and involves one's conception of oneself and others in the workplace (Maslach and Leiter, 2016).

Workload that is heavy or not paid attention to and rewards that are not appropriate will cause nurses to feel dissatisfied so they can leave their jobs. The workload itself is closely related to the productivity of health workers, studies conducted found that only 53% of the time that is truly productive is used for direct health services and the remaining 39.9% is used for supporting activities. The productivity of health workers is affected by excessive workload, while the workload is caused by the inadequate number of health workers and the ever-increasing number of patients (Priantoro, 2018).

According to Xiaoming et al. (2014) work fatigue will occur when the workload gets worse, in previous studies it has been shown that excess is a job requirement among medical staff i.e. working hours are more than normal working hours. In addition, nursing staff will also face high levels of stress and workload so that in the end they will experience work burnout (Padilha et al., 2017).

Several studies focusing on the health care sector have shown that healthcare professionals are faced with a variety of severe job stressors, such as time pressure, low social support at work, high workload, uncertainty about patient care, and tendencies to respond emotionally due to exposure to suffering and dying patients (Ruotsalainen et al., 2021).

Another factor that influences burnout is social support (Hamzah, 2019; Indra, 2018; Woodhead et al., 2014). The social support that health workers get can affect health, alleviate problems they face, increase self-confidence and a sense of optimism at work, have a sense of security and comfort,

lower levels of depression, better sleep quality, and can overcome feelings of isolation from the outside world. Iswanto and Agustina, 2016; Liu et al., 2020; Putri, 2016; Santoso and Setiawan, 2018; Xiao et al., 2020; Zhang and Ma, 2020). In line with Rizky and Suhariadi's research (2021) that social support also affects burnout in health workers.

These conditions indicate that a high workload can increase the incidence of burnout and high social support can prevent burnout in health workers. Therefore, there is a need for more thorough research from the results of various previous primary studies. Various primary research results were combined in a meta-analytic research design using the RevMan 5.3 application to measure the influence so that a quantitative summary of the results was obtained (Murti, 2018). Based on this background, this study aim to estimate the effect of workload and social support on burnout in health workers.

SUBJECTS AND METHOD

1. Study Design

This was a systematic review and meta-analysis method which is a way of analyzing data derived from primary studies from databases based on PRISMA diagrams. The search for articles in this study used electronic databases such as PubMed, Science Direct, and Google Schoolar. The keywords used in the database search were workload AND "social support" AND burnout OR fatigue AND "health workers" AND "cross sectional".

2. Meta-analysis Steps

a. Formulate research questions using the PICO model including P = health worker; I = high workload and high social support; C = low workload and low social support; O = burnout

b. Search primary study articles from electronic databases such as PubMed, Science Direct, and Google Schoolar

c. Screening and conducting critical appraisal of primary studies.

d. Perform data extraction and enter effect estimates from each primary study into the RevMan 5.3 application. The results of the article analysis are presented in the form of an overall aOR, describing the 95% confidence interval (CI) using effect models and data heterogeneity (I2).

e. Interpret the results and draw conclusions.

3. Inclusion Criteria

The research article is a full-text paper using a cross-sectional study design, the size of the relationship used is OR, multivariate analysis with adjusted odds ratio (aOR), the research subjects were health workers, interventions were in the form of workload and social support and the outcome was burnout.

4. Exclusion Criteria

Research articles published before 2013 and after 2023, and research articles published other than in English.

5. Definition of Operational Variable

Workload is a condition of work or a number of demands from health service providers with job descriptions that must be completed by health workers within a certain period of time.

Social Support is a form of attention, appreciation, encouragement, acceptance, or other forms of help that comes from people who have close social relationships, including parents, siblings, children, friends, or other people with the aim of helping someone when experiencing problems. Social support consists of instrumental support, informational support, emotional support, self-esteem support, and social integrity support.

Burnout is a condition where individuals experience a condition of emotional exhaustion that occurs in a prolonged manner and causes changes in negative attitudes and behavior. The three aspects of burnout are emotional saturation, depersonalization and personal achievement.

6. Instrument of the Study

This study used the PRISMA flowchart guidelines and quality assessment in this study uses the 2018 Critical Appraisal Skills Program (CASP).
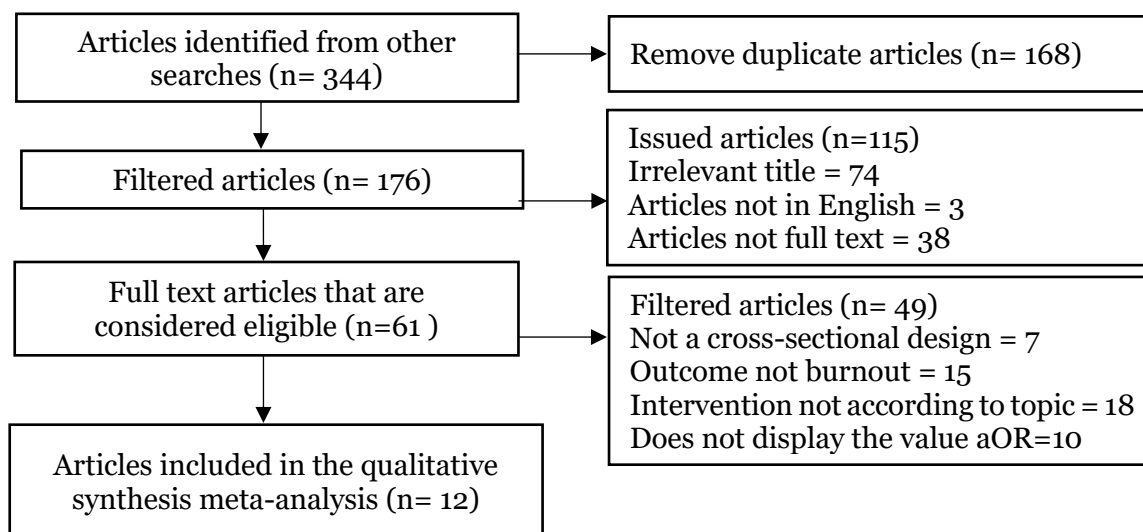
7. Data Analysis

Processing data using the RevMan 5.3 application) by calculating effect size and heterogeneity to determine the combined research model and form the final results of the meta-analysis.

RESULTS

The process of searching for articles in this meta-analysis was done by searching through journal databases, namely PubMed, Science Direct, and Google Scholar with a time span between 2013-2022. The keywords used in the database search include workload AND "social support" AND burnout OR fatigue AND "health workers" AND "cross sectional" AND aOR. The process of searching for articles according to the PRISMA flow diagram can be seen as follows.

Figure 1 showed the initial search process which displays a total of 344 articles, after the process of deleting articles that were duplicated in more than one journal, 176 articles were obtained with 61 of them fulfilling the requirements for further full text review. Furthermore, there were 12 articles that met the requirements for a full text review.

Figure 2 showed an overview of the research areas used in this meta-analysis which are spread over 4 continents, namely Europe, Africa, America and Asia. There were 12 articles at the end of the review process that met the quantitative requirements. All articles used cross sectional studies.

Articles identified from other searches (n= 344) → Remove duplicate articles (n= 168)

Filtered articles (n= 176) → Issued articles (n=115)
Irrelevant title = 74
Articles not in English = 3
Articles not full text = 38

Full text articles that are considered eligible (n=61) → Filtered articles (n= 49)
Not a cross-sectional design = 7
Outcome not burnout = 15
Intervention not according to topic = 18
Does not display the value aOR=10

Articles included in the qualitative synthesis meta-analysis (n= 12)

Figure 1. PRISMA Flow diagram

2 articles in America

3 articles in Asia

6 articles in Africa

Figure 2. The research area of a cross-sectional study of the effect of workload and social support on burnout in health workers

Table 1. Critical Appraisal Checklist for Cross-sectional Study of the effect of workload and social support on burnout in health workers

Author (Year)	Critical Appraisal Question								Total
	1	2	3	4	5	6	7	8	
Jones et al (2014)	2	2	2	2	2	2	2	2	16
Saeed (2021)	2	2	2	2	1	2	2	2	15
Feleke et al. (2022)	2	2	1	2	2	2	2	2	16
Cyr et al. (2021)	2	2	2	2	1	2	2	2	15
Kabunga et al. (2021)	2	2	2	2	2	2	2	2	16
Udho et al. (2021)	2	2	2	2	2	2	2	2	16
Kim et al. (2019)	2	2	2	2	1	2	2	2	15
Silva et al. (2021)	2	2	2	2	2	2	2	2	16
Belay et al. (2021)	2	2	2	2	2	1	2	2	15
Roslan et al. (2021)	2	2	2	2	2	2	2	2	16
Pan et al. (2022)	2	2	2	2	1	2	2	2	15
Konlan et al. (2022)	2	2	2	2	2	2	2	2	16

Description: 2= Yes, 1= Uncertain, 0= No

Question criteria descriptions:
1. Can the research problem be clearly defined in the acronym PICO?
2. Is the research subject described in detail?
3. Is exposure measured accurately and reliably to prevent/minimize bias?
4. What are the standard criteria used for measurement of objective conditions?
5. Are confounding factors in the study identified?
6. Are strategies for dealing with confounding factors described?
7. Are the results measured in a valid and reliable way?
8. Has proper statistical analysis been used?

1. The Effect of workload on burnout

Table 2 showed seven articles with cross-sectional studies related to the effect of workload on burnout in health workers with a total sample of 4,191. This study was conducted in six countries including France, Afghanistan, Canada, Uganda, Ghana, and Ethiopia.

Based on Table 3, it can be seen that of the seven articles that display aOR values related to the effect of workload on burnout in health workers, high aOR values were found in the study of Feleke et al. (2022) (aOR= 6.01; 95% CI= 3.02 to 11.99) and the lowest aOR value was found in a study done by Saeed (2021) (aOR= 0.51; 95% CI= 0.30 to 0.88).
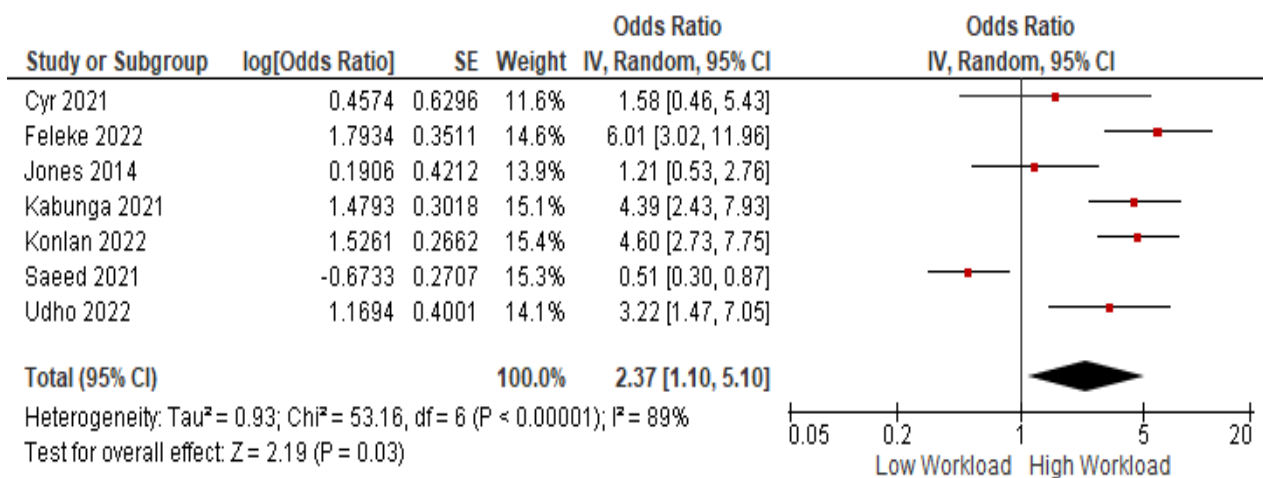
Table 2. Description of the primary study with a cross-sectional study design of the effect of workload on burnout in health workers, total sample (n= 4,191)

Author (Year)	Country	Sample	P	I	C	O
Jones et al. (2020)	French	682	Health care worker	High workload, social support	Low workload	Burnout
Saeed (2021)	Afghanistan	623	Health care worker	High workload	Low workload	Burnout
Cyr et al. (2021)	Canada	467	Health care worker	High workload, social support	Low workload	Burnout
Kabunga et al. (2021)	Uganda	395	Nurse	High workload, social support	Low workload	Burnout
Udho et al. (2022)	Uganda	375	Nurse	High workload, social support	Low workload	Burnout
Konlan et al. (2022)	Ghana	1,264	Health care worker	High workload	Low workload	Burnout
Feleke et al. (2022)	Ethiopia	385	Nurse	High workload, social support	Low workload	Burnout

**Table 3. Adjusted Odds Ratio (aOR) of the effect of workload on burnout in health workers**

Author (Year)	aOR	95%CI	
		Lower limit	Upper limit
Jones et al. (2020)	1.21	0.53	2.75
Saeed (2021)	0.51	0.30	0.88
Cyr et al. (2021)	1.58	0.46	5.50
Kabunga et al. (2021)	4.39	2.43	7.93
Udho et al. (2022)	3.22	1.47	7.14
Konlan et al. (2022)	4.60	2.73	7.77
Feleke et al. (2022)	6.01	3.02	11.99

a. Forest plot of workload on burnout

Study or Subgroup	log[Odds Ratio]	SE	Weight	Odds Ratio IV, Random, 95% CI
Cyr 2021	0.4574	0.6296	11.6%	1.58 [0.46, 5.43]
Feleke 2022	1.7934	0.3511	14.6%	6.01 [3.02, 11.96]
Jones 2014	0.1906	0.4212	13.9%	1.21 [0.53, 2.76]
Kabunga 2021	1.4793	0.3018	15.1%	4.39 [2.43, 7.93]
Konlan 2022	1.5261	0.2662	15.4%	4.60 [2.73, 7.75]
Saeed 2021	-0.6733	0.2707	15.3%	0.51 [0.30, 0.87]
Udho 2022	1.1694	0.4001	14.1%	3.22 [1.47, 7.05]
Total (95% CI)			**100.0%**	**2.37 [1.10, 5.10]**

Heterogeneity: Tau² = 0.93; Chi² = 53.16, df = 6 (P < 0.00001); I² = 89%
Test for overall effect: Z = 2.19 (P = 0.03)

Figure 3. Forest plot of the effect of workload on burnout in health workers

b. Funnel plot of workload on burnout
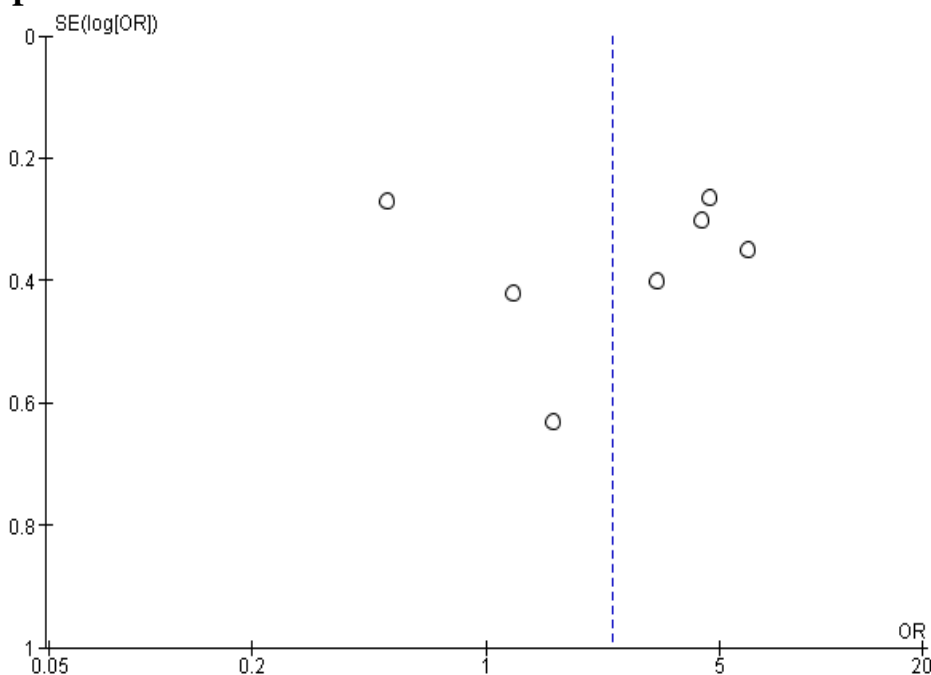
Figure 4. Funnel plot of the effect of workload on burnout in health workers

The forest plot in Figure 3 showed that high workload has an effect on burnout among health workers. Health workers with a high workload have a risk of experiencing burnout by 2.37 times higher compared to workers with a low workload, and this result was statistically significant (aOR= 2.37; 95% CI= 1.10 to 5.10; p= 0.003). The forest plot also showed high heterogeneity of effect estimates between primary studies I² = 89%; p = 0.001. Thus, the calculation of the average effect estimate was carried out using the random effect model approach.

The funnel plot in Figure 4 showed that the distribution of effect estimates from the primary study meta-analysis was more or less symmetrical to the right and left of the vertical mean estimate line. Thus the funnel plot did not indicate publication bias.

2. The effect of social support on burnout

Table 4 showed that there were 10 articles with cross-sectional studies on the effect of social support on burnout in health workers consisting of seven countries including Malawi, Brazil, Canada, Ethiopia, Uganda, Malaysia and China. The entire article obtained a total sample of 4,742 consisting of health workers as a source of meta-analysis.

Table 5 displayed 10 articles related to the effect of social support on burnout with high AOR values found in the study of Pan et al. (2022) (aOR = 0.94; 95% CI = 0.91 to 0.98) and the lowest aOR value found in the study by Belay et al. (2021) (aOR= 0.07; 95% CI= 0.02 to 0.25).

Table 4. Description of the primary study with a cross-sectional study design of the effect of social support on burnout in health workers, total sample (n=4,742)

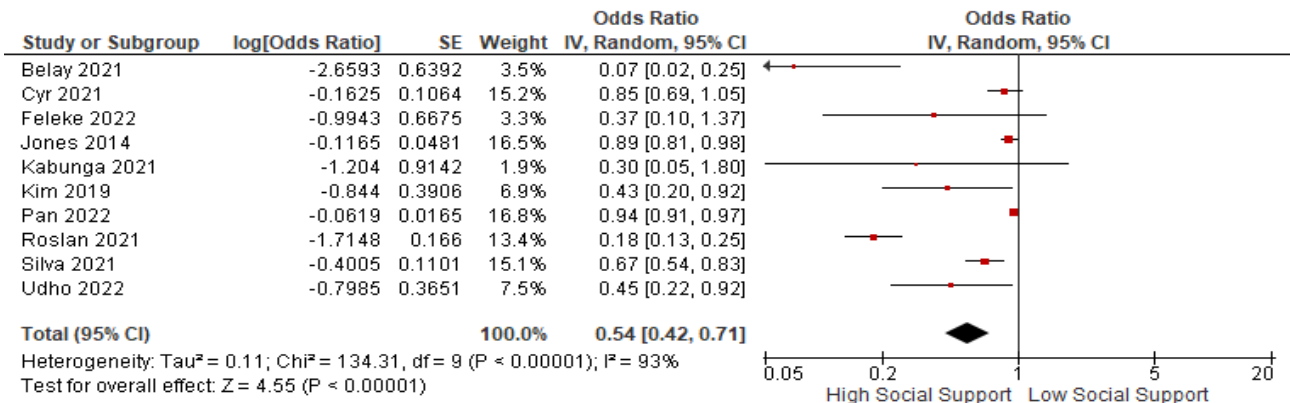| Author (Year)	Country	Sample	P	I	C	O
Jones et al. (2020)	France	682	Health care worker	High social support Workload	Low social support	Burnout
Kim et al. (2019)	Malawi	535	Health care worker	High social support	Low social support	Burnout
Silva et al. (2021)	Brazil	2,940	Health care worker	High social support	Low social support	Burnout
Cyr et al. (2021)	Canada	467	Health care worker	High social support Workload	Low social support	Burnout
Belay et al. (2021)	Ethiopia	282	Nurse	High social support	Low social support	Burnout
Kabunga et al. (2021)	Uganda	395	Nurse	High social support Workload	Low social support	Burnout
Roslan et al. (2021)	Malaysia	893	Health care worker	High social support	Low social support	Burnout
Pan et al. (2022)	China	434	Health care worker	High social support	Low social support	Burnout
Udho et al. (2022)	Uganda	375	Nurse	High workload Social support	Low social support	Burnout
Feleke et al. (2022)	Ethiopia	385	Nurse	High social support Workload	Low social support	Burnout

Table 5. Adjusted Odds Ratio (aOR) of the effect of social support on burnout in health workers

Author (Year)	aOR	95%CI	
		Lower limit	Upper limit
Jones et al. (2020)	0.89	0.81	0.98
Kim et al. (2019)	0.43	0.20	0.92
Silva et al. (2021)	0.67	0.54	0.83
Cyr et al. (2021)	0.85	0.69	1.06
Belay et al. (2021)	0.07	0.02	0.25
Kabunga et al. (2021)	0.30	0.05	1.66
Roslan et al. (2021)	0.18	0.13	0.26
Pan et al. (2022)	0.94	0.91	0.98
Udho et al. (2022)	0.45	0.22	0.94
Feleke et al. (2022)	0.37	0.10	1.41

a. Forest plot of the effect of social support on burnout

The forest plot in Figure 5 showed that high social support has an effect on burnout in health workers. Health workers with high social support can reduce their risk of experiencing burnout by 0.54 times higher compared to workers with low social support, and this result was statistically significant (aOR= 0.54; 95% CI= 0.42 to 0.71; p= 0.001). The forest plot also showed high heterogeneity of effect estimates between primary studies I^2= 93%; p= 0.001. Thus, the calculation of the average effect estimate was carried out using the random effect model approach.

Study or Subgroup	log[Odds Ratio]	SE	Weight	Odds Ratio IV, Random, 95% CI
Belay 2021	-2.6593	0.6392	3.5%	0.07 [0.02, 0.25]
Cyr 2021	-0.1625	0.1064	15.2%	0.85 [0.69, 1.05]
Feleke 2022	-0.9943	0.6675	3.3%	0.37 [0.10, 1.37]
Jones 2014	-0.1165	0.0481	16.5%	0.89 [0.81, 0.98]
Kabunga 2021	-1.204	0.9142	1.9%	0.30 [0.05, 1.80]
Kim 2019	-0.844	0.3906	6.9%	0.43 [0.20, 0.92]
Pan 2022	-0.0619	0.0165	16.8%	0.94 [0.91, 0.97]
Roslan 2021	-1.7148	0.166	13.4%	0.18 [0.13, 0.25]
Silva 2021	-0.4005	0.1101	15.1%	0.67 [0.54, 0.83]
Udho 2022	-0.7985	0.3651	7.5%	0.45 [0.22, 0.92]
Total (95% CI)			**100.0%**	**0.54 [0.42, 0.71]**

Heterogeneity: Tau²= 0.11; Chi²= 134.31, df= 9 (P < 0.00001); I²= 93%
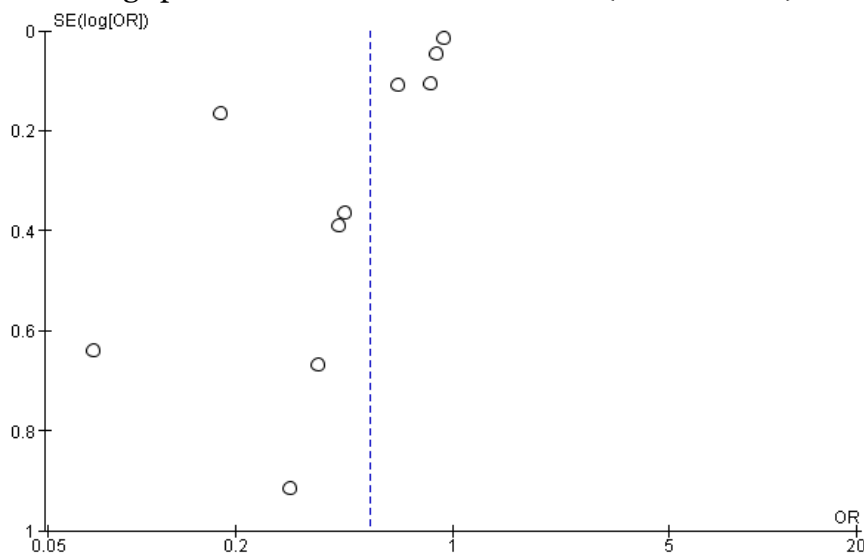Test for overall effect: Z= 4.55 (P < 0.00001)

Figure 5. Forest plot of the effect of social support on burnout in health workers

b. Funnel plot of the effect of social support on burnout

The funnel plot in Figure 6 showed that the distribution of effect estimates from the primary study meta-analysis placed more to the left of the estimated mean vertical line than to the right, indicating publication bias. Because the publication bias tend to be to the left of the average vertical line in the same direction as the location of the diamond shape in the forest plot, the publication bias tend to add to the effect of actual high employment support on burnout in health workers (overestimate).

Figure 6. Funnel plot of the effect of social support on burnout in health workers

DISCUSSION

Systematic review research and meta-analysis in this study discussed about the effect of workload and social support on burnout in health workers. The intervention in this study is high workload and high social support. Workload has a positive effect on burnout, which is high workload can lead to high burnout, and social support has a negative effect on burnout which is high social support can decrease the burnout (Saputra, 2021).

1. The effect of workload on burnout

Workload is an individual's perception of the time used to complete a job. High workload is one of the triggers for burnout experienced by health workers. Several previous studies have stated that workload significantly affects burnout (Hamzah, 2019; Indra, 2018; Prijayanti, 2015)

Primary research related to the effect of workload on burnout of health workers included in this synthetic meta-analysis of seven articles was then analyzed using Revman 5.3. Based on the results of the synthesis of the seven primary studies, there was high heterogeneity between experiments (I^2= 89%; p = 0.001), so the analysis used a random effect model. High heterogeneity is based on sample sizes that vary between studies.

High workload can increase the burnout of health workers, this result is in accordance with the hypothesis. A meta-analysis of seven cross-sectional articles related to the effect of workload on burnout with a population of health workers shows that health workers with a high workload are 2.37 times more likely to experience burnout than health workers with a low workload (aOR= 2.37; 95% CI= 1.10 to 5.10; p= 0.003). This meta-analysis uses studies that have controlled for confounding factors, as stated in the inclusion criteria, namely the adjusted odds ratio (aOR).

Sari (2015) explained that there was a relationship between workload and burnout

syndrome (r= 0.38; p= 0.006). This research is similar to a study conducted by Hardi (2021) which showed that there was a significant relationship between workload and burnout (OR = 3.25; 95% CI = 1.06 to 10.02; p = 0.040). This is supported by Partyani et al. (2019) who stated that there is a relationship between workload and nurse burnout (aOR= 27.10; 95% CI= 1.52 to 484.11; p= 0.025).

The greater the workload, the shorter the time a person can work without experiencing fatigue or distraction. Workload determines how long a person can work according to his work capacity. Someone who works with a workload that is too heavy which is not proportional to his work capacity can cause fatigue. The more energy needed, the longer the muscles contract against the load they are getting (Ezdha and Hamid, 2020).

The disproportionate recovery energy during relaxation causes fatigue. A high workload will cause nurses to experience burnout, hospitals must be able to adjust the number of nurses needed to the workload they face, high amount of responsibilities and demands of work can potentially become stressors for nurses. Stressors that occur continuously and cannot be adapted by individuals will cause several symptoms called burnout (Ezdha and Hamid, 2020).

2. The effect of social support on burnout

One of the burnout factors is the lack of social support from people around in doing work such as emotional support (empathy, caring and attention), informative support (giving advice, advice, instructions or feedback, problem solving), instrumental support (providing loans of money or providing work when experiencing stress), and appreciation support (encouragement to progress, self-esteem, building self-confidence) (Hamzah,

2019). Perceived social support is significantly associated with the occurrence of fatigue (Ruiz-Fernandez et al., 2021).

The social support that health workers get can affect health, alleviate problems they face, increase self-confidence and a sense of optimism at work, have a sense of security and comfort, lower levels of depression, better sleep quality, and can overcome feelings of isolation from the outside world. (Liu et al., 2020; Xiao et al., 2020; Zhang and Ma, 2020). Social support can come from parents, siblings, children, relatives, spouse, friends, colleagues, organizations and neighbors.

Primary research related to the effect of social support on burnout of health workers included in this synthetic meta-analysis of 10 articles was then analyzed using Revman 5.3. Based on the results of the synthesis of 10 primary studies, there was high heterogeneity between experiments (I^2 = 93%; p = 0.001) so that the analysis used the Random Effect Model (REM). High heterogeneity is based on sample sizes that vary between studies.

High social support can reduce the burnout of health workers, this result is in accordance with the hypothesis. A meta-analysis of 10 cross-sectional articles related to the effect of social support on burnout in a population of health workers shows that high social support can reduce the occurrence of burnout by 0.54 times compared to low social support in health workers (aOR= 0.54; 95% CI= 0.42 to 0.71; p= 0.001). This meta-analysis uses studies that have controlled for cofounding factors, as stated in the inclusion criteria, namely the adjusted odds ratio (aOR).

Roslan et al. (2021) showed that social support had a significant relationship with the incidence of burnout among health workers during the COVID-19 pandemic (aOR= 0.18; 95% CI= 0.13 to 0.26; p= 0.001). This is supported by Hardi (2021) who stated that

health workers with low social support experience more burnout than health workers with high social support (OR= 9.57; 95% CI= 1.93 to 47.43; p= 0.006).

Social support from the environment greatly affects burnout. Social support refers to comfort, care, tolerance, or any other form of assistance received from other people or groups, superiors to subordinates, colleagues, or colleagues from other professions. Health workers with specific professions often gather only with colleagues. They are rarely communicate, socialize and mingle with other workers (Astuti et al., 2022).

Schaufeli and Buunk (2003) stated that burnout can have an impact on individuals such as looking gloomy, sad, having feelings of depression, having low spirits. In addition, there is a feeling of helplessness, hopelessness and powerlessness. Workers in this case are health workers who experience burnout and feel no self-esteem from superiors or co-workers, therefore, they feel that they have lost attention from the organization, do not trust management, co-workers and superiors.

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