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Meta-Analysis

Meta-Analysis of Correlations between Work Stress and Burnout with Work Satisfaction in Nurses

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ABSTRACT

Background: Nurses are one of the human resources in the field of health services. Human resources who work in the service sector mostly have high levels of stress and burnout. The level of stress and burnout affect the work satisfaction of nurses. This study aims to determine the relationship between work stress and burnout with nurses' work satisfaction.
Subjects and Method: This study is a systematic review and meta-analysis by searching for articles published by the online database including PubMed, ResearchGate, Science Direct, Google Schoolar and EBSCO in 2007 to 2022. PICO variable work stress (Population: nurses, Intervention: heavy stress, Comparation: heavy stress, Outcome: work satisfaction). PICO variable burnout (Population: nurses, Intervention: heavy burnout, Comparation: heavy burnout, Outcome: work satisfaction). Data analysis was using RevMan software version 5.3.
Results: Nurses who experience heavy or severe stress have a risk of lowering work satisfaction by 0.97 times compared to mild work stress, but it is not statistically significant (aOR= 0.97; 95% CI 0.78 to 1.20; p=0.750). Nurses who experience heavy burnout have a risk of reducing job satisfaction 0.87 times compared to mild job burnout, but it is not statistically significant (aOR= 0.87; CI 95% 0.58 to 1.30; p= 0.490).
Conclusion: High stress levels can reduce nurses' work satisfaction. A high level of burnout can reduce nurses' work satisfaction.

Keywords: burnout, nurse, work satisfaction, work stress.

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BACKGROUND

Nursing services are one of the determinants of hospital image. Nursing services are influenced by various things, one of which is work stress. Conflict in the workplace, giving nurses an excessive workload can cause prolonged stress, namely unpleasant conditions or circumstances faced by nurses both physically and mentally (Thorsteinsson et al., 2014).

Stress is a condition of tension that affects a person's emotions, thoughts and physical condition. Stress that is not handled properly will usually result in a person's inability to interact positively with

his environment, both the work environment and outside (Almazan et al, 2019).

The prevalence of work stress in health workers, especially nurses, varies in each country in the world. In South Korea 85.2% in 2017 (Yim et al., 2017), India 50% in 2018 (Sailaxmi and Lalitha, 2018) and Australia 44.82% in 2016 (Khamisa et al., 2016).

The prevalence of nurse work stress in Indonesia can be seen from the following studies. The results of research by Sulistyawati et al. (2019) showed that there were 87.1% of respondents experiencing moderate level of work stress, mild work stress 9.7% and heavy work stress 3.2%. The results of research by Sugiri et al. (2015) showed that there was a negative relationship with moderate strength between job stress and nurse job satisfaction. This shows that the higher the work stress, the lower the nurse's job satisfaction and vice versa.

According to research in Indonesia, nurse's work satisfaction is only 24% (Manullang, 2018), in Sulinami nurse's work satisfaction is only 18% (Ameen and Faraj, 2019), in Argentina nurse's work satisfaction is only 20% (Yari et al., 2018). Measurement of nurse work satisfaction is very important to determine future management strategies.

Work satisfaction is not only influenced by work stress but also burnout. Based on the results of research by Riyanto (2014) that Burnout and have a negative and significant effect on nurse job satisfaction. This is in line with research by Myhren et al. (2013) in Norway. The higher the level of burnout, the lower the level of work satisfaction.

Burnout is a condition in which feelings of anxiety, tension, irritability, fatigue and frustration and psychosomatic complaints result in actions that can harm the organization. Burnout symptoms will have a negative effect on job satisfaction of a nurse, the consequences will cause individuals to lose orientation in carrying out work.

Research conducted in Europe in 2011 showed that about 30% of nurses reported being bored or tired from work. In addition, research in England found that around 42% of nurses reported experiencing burnout, nurses in Southern Brazil showed that the prevalence of nurses experiencing burnout was 35.7% (Triwijayanti, 2016).

According to Soemarko (2020), 83% of health workers in Indonesia have experienced moderate and severe burnout syndrome which is psychologically at risk of disrupting quality of life and work productivity in health services.

The level of work stress and the level of burnout of nurses in different countries is different so that it affects the job satisfaction of nurses differently. Therefore, this study aims to identify the relationship between work stress and burnout with work satisfaction.

SUBJECTS AND METHOD

1. Study Design

The design of this study was a systematic review and meta-analysis. The articles search was using the online databases PubMed, ResearchGate, Science Direct, Google Schoolar and EBSCO. The articles used in this review were articles published in 2002 to 2022. In the process of searching for articles, researchers used the following keywords: ("work stress" OR "job stress" OR "occupational stress") AND ("job satisfaction" OR "work satisfaction" OR "occupational satisfaction") AND ("adjusted odds ratio" OR "multivariate analysis") AND "nurse" ("job burnout" OR "work burnout").

2. Inclusion Criteria

The inclusion criteria of this study were: 1) articles that explain the relationship between work stress and burnout with work satisfaction; 2) original research papers; 3) there is relationship data indicated by the effect size odd ratio.

3. Exclusion Criteria

The exclusion criteria for this study were: 1) articles in languages other than English and Indonesian; 2) review papers; 3) research data is incomplete or not available.

4. Operational Definition of Variables

PICO variable stress (Population: nurses, Intervention: heavy stress, Comparation: mild stress, Outcome: work satisfaction). PICO variable burnout (Population: nurses, Intervention: heavy burnout, Comparation: mild burnout, Outcome: work satisfaction). The dependent variable was work stress and burnout. The independent variable was work satisfaction.

Stress is a negative emotional condition in the form of tension that affects the emergence of physiological, psychological and behavioral reactions caused by work stressors.

Burnout is a condition in which individuals experience a state of emotional exhaustion or boredom towards work, causing negative attitudes and behavior changes.

Work satisfaction is a positive attitude and feeling towards a work, in the form of evaluation results from various aspects of work.

Study Instruments

Articles included in this study must fulfill the inclusion criteria and have been reviewed using a critical appraisal with the 2014 CEBM for cross-sectional study in accordance with the article research design used.

6. Data Analysis

The software used to perform the meta-analysis is Review Manager 5.3 (RevMan 5.3). Data processing was carried out by calculating effect sizes and heterogeneity values to determine the combined research model and form the final meta-analysis in the form of forest plots and funnel plots.

RESULTS

There were a total of 7529 job stress articles and 5721 burnout articles searched from the online databases PubMed, Research Gate, Science Direct, Google Schoolar and EBSCO using keywords ("work stress" OR "job stress" OR "occupational stress") AND (“job satisfaction” OR “work satisfaction” OR “occupational satisfaction”) AND (“adjusted odds ratio” OR “multivariate analysis”) AND “nurse” (“job burnout” OR “work burnout”). by choosing the year of publication between 2002-2022. There were a total of 11 work stress articles and 9 burnout articles that met the inclusion criteria and were processed in qualitative and quantitative synthesis. Articles included in this systematic review and meta-analysis study were study articles using cross-sectional study methods.

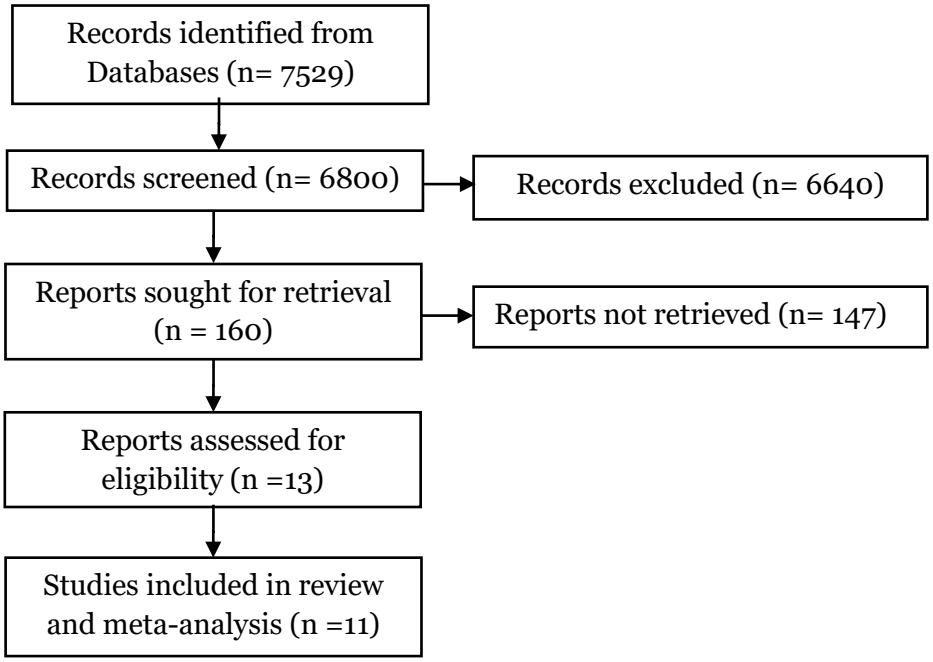

Figure 1. PRISMA Flowchart of the Relationship between Work Stress and Work Satisfaction

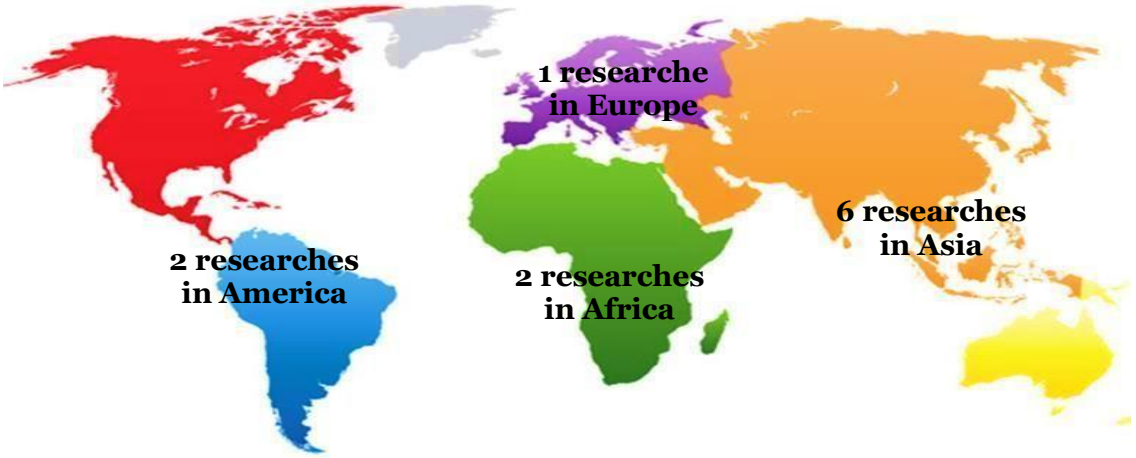

Figure 2. Map of study area of the Relationship between Work Stress and Work Satisfaction

Table 1. Journal of Quality Assessment of the Relationship between Work Stress and Work Satisfaction

No	Questions	Babalola et al. (2015)	Dougherty et al. (2009)	Filha et al. (2013)	Ghawadra et al. (2019)	Khamisa et al. (2016)	Matsumoto et al. (2019)
1	Do these objectives clearly address the research focus/problem?	1	1	1	1	1	1
2	Is the research method (research design) suitable for answering the research question?	1	1	1	1	1	1
3	Is the research subject selection method clearly written?	1	1	1	1	1	1
4	Does the sampling method give rise to bias (selection)?	1	1	1	1	1	1
5	Does the research sample taken represent the designated population?	1	1	1	1	1	1
6	Is the sample size based on pre-study considerations?	0	0	1	1	0	1
7	Is a satisfactory response achieved?	1	1	1	1	1	1
8	Are the research instruments valid and reliable?	1	1	1	1	1	1
9	Is statistical significance assessed?	1	1	1	1	1	1
10	Is a confidence interval given for the main outcome?	1	1	1	1	1	1
11	Are there any confounding factors that haven't been taken into account?	1	1	1	1	1	1
12	Are the results applicable to your study?	1	1	1	1	1	1
	Total Score	**11**	**11**	**12**	**12**	**11**	**12**

Note: 1: Yes; 0: No

Table 1. Cont.

No	Questions	Rahman et al. (2017)	Salma et al. (2020)	Sapkota et al. (2019)	Schwendimann et al. (2016)	Zhou et al. (2017)
1	Do these objectives clearly address the research focus/problem?	1	1	1	1	1
2	Is the research method (research design) suitable for answering the research question?	1	1	1	1	1
3	Is the research subject selection method clearly written?	1	1	1	1	1
4	Does the sampling method give rise to bias (selection)?	1	1	1	1	1
5	Does the research sample taken represent the designated population?	1	1	1	1	1
6	Is the sample size based on pre-study considerations?	1	1	0	1	1
7	Is a satisfactory response achieved?	1	1	1	1	1
8	Are the research instruments valid and reliable?	1	1	1	1	1
9	Is statistical significance assessed?	1	1	1	1	1
10	Is a confidence interval given for the main outcome?	1	1	1	1	1
11	Are there any confounding factors that haven't been taken into account?	1	1	1	1	1
12	Are the results applicable to your study?	1	1	1	1	1
	Total Score	**12**	**12**	**11**	**12**	**11**

Note: 1: Yes; 0: No

Table 2. Description of the Study of the Relationship between Work Stress and Work Satisfaction

Author	Country	Study Design	Population	Intervention	Comparison	Outcome	aOR (95% CI)
Babolola et al. (2015)	Nigeria	Cross sectional	114 nurses	Heavy work stress	Mild work stress	Work satisfaction	0.28 (0.06 to 1.33)
Dougherty et al. (2009)	Canada	Cross sectional	60 nurses	Heavy work stress	Mild work stress	Work satisfaction	4.18 (0.83 to 21.05)
Filha et al. (2013)	Brazil	Cross sectional	134 nurses	Heavy work stress	Mild work stress	Work satisfaction	5.30 (1.03 to 27.29)
Ghawadra et al. (2019)	Malaysia	Cross sectional	932 nurses	Heavy work stress	Mild work stress	Work satisfaction	0.20 (0.10 to 0.40)
Khamisa et al. (2016)	South Africa	Cross sectional	277 nurses	Heavy work stress	Mild work stress	Work satisfaction	1.20 (1.06 to 1.36)
Matsumoto et al. (2019)	Japan	Cross sectional	577 nurses	Heavy work stress	Mild work stress	Work satisfaction	0.75 (0.70 to 0.81)
Rahman et al. (2017)	Brunei darussalam	Cross sectional	201 nurses	Heavy work stress	Mild work stress	Work satisfaction	1.24 (0.58 to 2.65)
Salma et al. (2020)	Bangladesh	Cross sectional	310 nurses	Heavy work stress	Mild work stress	Work satisfaction	0.98 (0.37 to 2.60)
Sapkota et al. (2019)	Nepal	Cross sectional	171 nurses	Heavy work stress	Mild work stress	Work satisfaction	1.70 (0.33 to 8.80)
Schwendimann et al. (2016)	Switzerland	Cross sectional	4145 nurses	Heavy work stress	Mild work stress	Work satisfaction	0.91 (0.87 to 0.96)
Zhou et al. (2017)	China	Cross sectional	646 nurses and doctors	Heavy work stress	Mild work stress	Work satisfaction	1.42 (1.21 to 1.67)

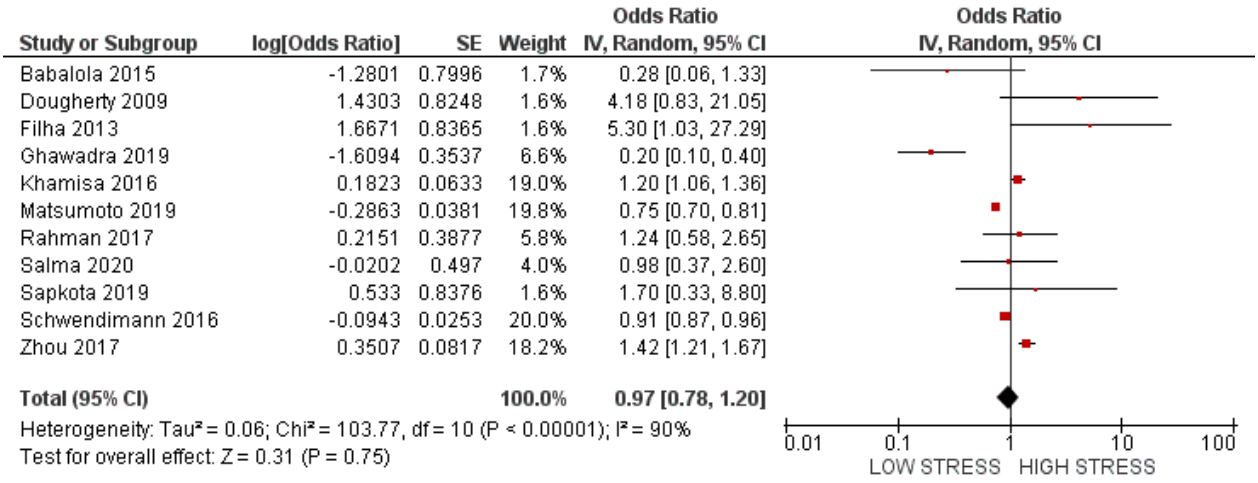

Figure 3. Forest Plot of the Relationship between Work Stress and Work Satisfaction

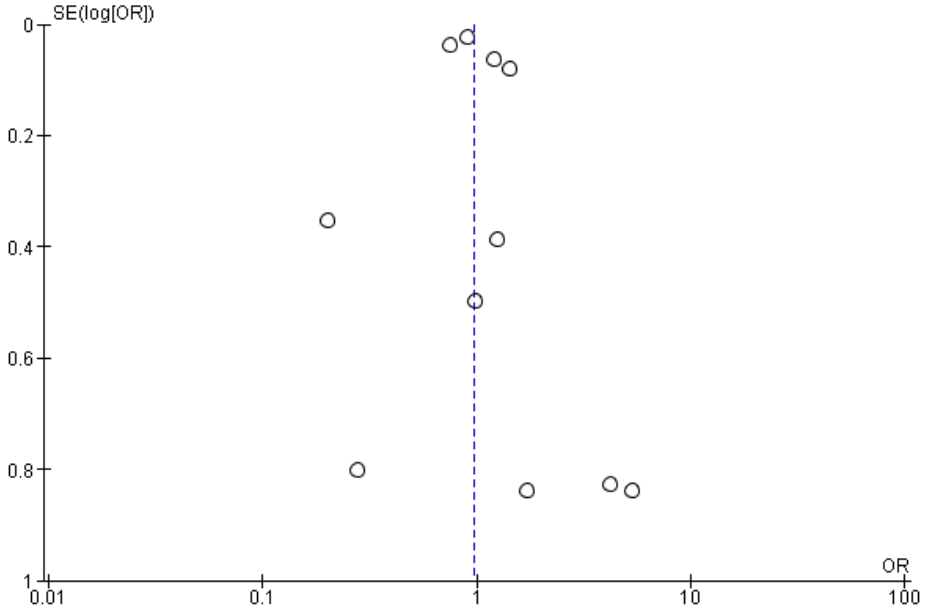

Figure 4. Funnel Plot of the Relationship between Work Stress and Work Satisfaction

The Relationship between Work Stress and Work Satisfaction

The forest plot in Figure 3 shows that there was a relationship between work stress and work satisfaction. Nurses who experience heavy work stress have 0.97 times higher probability of work satisfaction compared to mild work stress, but the relationship was not statistically significant (aOR= 0.97; 95% CI= 0.78 to 1.20; p= 0.750). The forest plot in Figure 3 also shows a high heterogeneity of effect estimates between the primary studies in this meta-analysis (I^2= 90%). Thus, the calculation of the average effect estimate is carried out using the Random Effect Model approach.

The funnel plot in Figure 4 shows the asymmetric distribution of the estimated effects on the right and left of the average vertical line of the estimated effects. Because the estimated effect of the primary study is located to the right of the vertical

line, there is a tendency for publication bias. Because the distribution of the estimated effect lies to the right of the vertical line opposite the diamond in the forest plot, the publication bias tends to reduce the effect of job stress on actual job satisfaction (under estimate).

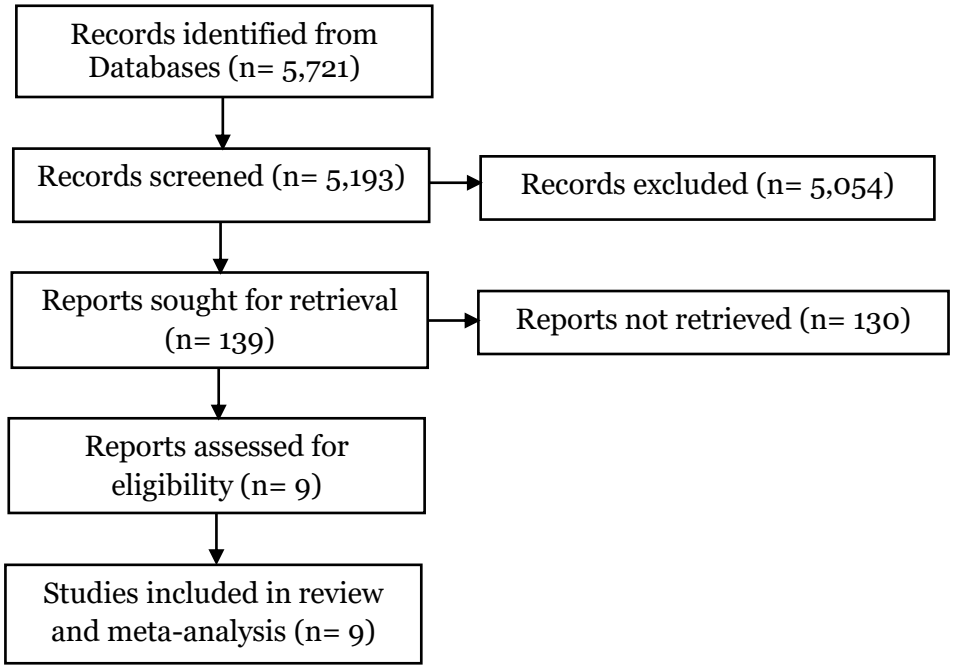

Figure 5. PRISMA Flowchart of the Relationship between Burnout and Work Satisfaction

Figure 6. Map of study area of the Relationship between Burnout and Work Satisfaction

Table 3. Assessment of the Quality of Research Articles on the Relationship between Burnout and Work Satisfaction

No	Questions	Friganovic et al. (2021)	Guveli et al. (2015)	Katz et al. (2020)	Khamisa et al. (2016)	Mulia et al. (2016)
1	Do these objectives clearly address the research focus/problem?	1	1	1	1	1
2	Is the research method (research design) suitable for answering the research question?	1	1	1	1	1
3	Is the research subject selection method clearly written?	1	1	1	1	1
4	Does the sampling method give rise to bias (selection)?	1	1	1	1	1
5	Does the research sample taken represent the designated population?	1	1	1	1	1
6	Is the sample size based on pre-study considerations?	1	0	1	0	1
7	Is a satisfactory response achieved?	1	1	1	1	1
8	Are the research instruments valid and reliable?	1	1	1	1	1
9	Is statistical significance assessed?	1	1	1	1	1
10	Is a confidence interval given for the main outcome?	1	1	1	1	1
11	Are there any confounding factors that haven't been taken into account?	1	1	1	1	1
12	Are the results applicable to your research?	1	1	1	1	1
	Total Score	**12**	**11**	**12**	**11**	**12**

Note: 1: Yes; 0: No

Table 3. Cont.

No	Questions	Ntantana et al. (2017)	Schwendimann et al. (2016)	Visser et al. (2003)	Zhou et al. (2017)
1	Do these objectives clearly address the research focus/problem?	1	1	1	1
2	Is the research method (research design) suitable for answering the research question?	1	1	1	1
3	Is the research subject selection method clearly written?	1	1	1	1
4	Does the sampling method give rise to bias (selection)?	1	1	1	1
5	Does the research sample taken represent the designated population?	1	1	1	1
6	Is the sample size based on pre-study considerations?	0	1	1	1
7	Is a satisfactory response achieved?	1	1	1	1
8	Are the research instruments valid and reliable?	1	1	1	1
9	Is statistical significance assessed?	1	1	1	1
10	Is a confidence interval given for the main outcome?	1	1	1	1
11	Are there any confounding factors that haven't been taken into account?	1	1	1	1
12	Are the results applicable to your research?	1	1	1	1
	Total Score	**11**	**12**	**12**	**12**

Note: 1: Yes; 0: No

Table 4. Description of the Primary Study of the Relationship between Burnout and Work Satisfaction

Author	Country	Study Design	Population	Intervention	Comparison	Outcome	aOR (95% CI)
Friganovic et al. (2021)	Croatia	Cross sectional	620 nurses	Heavy Burnout	Mild Burnout	Work satisfaction	0.01 (0.00 to 0.00)
Guveli et al. (2015)	Turkey	Cross sectional	159 nurses, doctors, other health workers, supporting staff	Heavy Burnout	Mild Burnout	Work satisfaction	1.00 (0.90 to 1.11)
Katz et al. (2020)	Europe	Cross sectional	121 nurses and doctors	Heavy Burnout	Mild Burnout	Work satisfaction	0.70 (0.58 to 0.84)
Khamisa et al. (2016)	South Africa	Cross sectional	277 nurses	Heavy Burnout	Mild Burnout	Work satisfaction	2.37 (2.13 to 2.64)
Mulia et al. (2016)	Indonesia	Cross sectional	54 nurses	Heavy Burnout	Mild Burnout	Work satisfaction	0.77 (0.31 to 1.93)
Ntantana et al. (2017)	Greece	Cross sectional	320 nurses and doctors	Heavy Burnout	Mild Burnout	Work satisfaction	0.26 (0.14 to 0.48)
Schwendimann et al. (2016)	Switzerland	Cross sectional	4145 nurses	Heavy Burnout	Mild Burnout	Work satisfaction	0.88 (0.83 to 0.93)
Visser et al. (2003)	Holland	Cross sectional	1027 nurses and doctors	Heavy Burnout	Mild Burnout	Work satisfaction	0.26 (0.14 to 0.48)
Zhou et al. (2017)	China	Cross sectional	646 nurses and doctors	Heavy Burnout	Mild Burnout	Work satisfaction	2.28 (1.93 to 2.69)

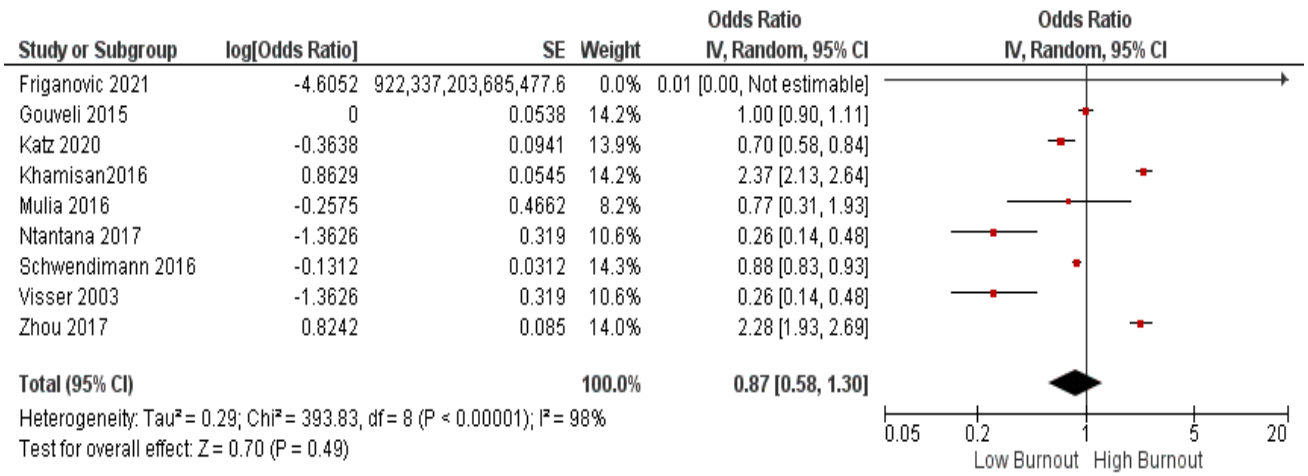

Figure 7. Forest Plot of the Relationship between Burnout and Work Satisfaction

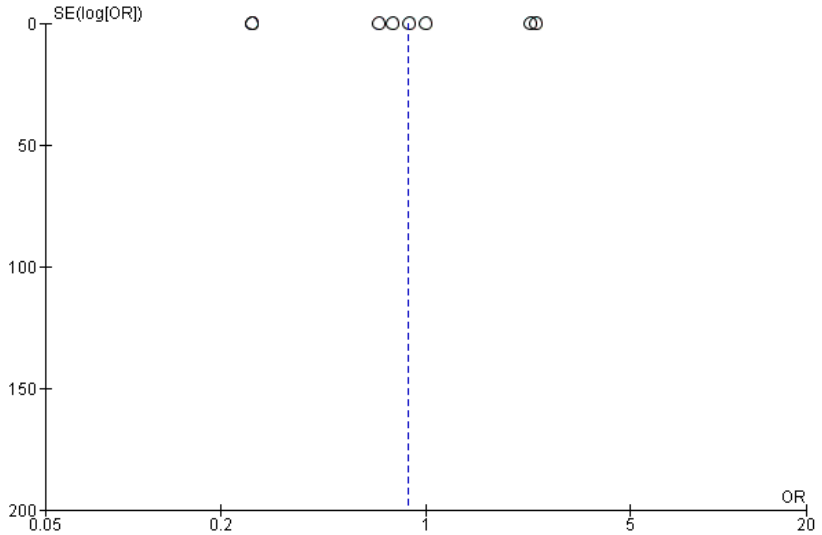

Figure 8. Funnel Plot of the Relationship between Burnout and Work Satisfaction

The Relationship of Burnout and Work Satisfaction

The forest plot shows that there was a relationship between burnout and job satisfaction for nurses. Nurses who experience burnout have a probability of work satisfaction by 0.87 times compared to those who do not experience burnout, but the relationship was not statistically significant (aOR= 0.87; 95% CI= 0.58 to 1.30; p= 0.490).

The forest plot meta-analysis also showed a high heterogeneity of the inter-study effect estimates (I^2= 98%). Thus, the calculation of the average estimated effect between studies in this meta-analysis was carried out using a random effects model approach.

The funnel plot in Figure 6 shows a more or less symmetric distribution of the estimated effects of the primary study in this meta-analysis. To the right and to the

left of the vertical line is the average of the estimated effects, which indicates that there was no publication bias.

DISCUSSION

The Relationship of Work Stress and Work Satisfaction

Work stress is stress related to work (Ekawarna, 2018). This causes discomfort between the individual and his job. Stress can affect health conditions directly through physiological symptoms that appear or indirectly through behavioral changes that have an impact on health (Mulia, 2016).

Stress can happen to every individual. Stress experienced by an individual can be different from other individuals. This is because stress is an individual perception. The individual's perspective in viewing the work situation will determine the amount of stress experienced by the individual (Guveli et al., 2015). Individuals who experience stress may experience physical, mental and emotional exhaustion in the work environment. Things that happen inside and outside the work environment can be one of the triggers for stress in individuals (Olatunde and Odusnya, 2015).

According to Salma and Hasan (2020), work stress experienced by individuals is a reciprocal relationship between something that is inside the individual and something that is outside the individual. Various work situations and conditions can be a potential source of stress because every aspect of the work environment can be perceived as stressful by workers (Matsumoto and Yoshioka, 2019).

Nursing is a profession that is prone to work stress. This is because physical, mental, work duration, high workload causes nurses to be vulnerable to work stress (Salma and Hasan, 2020). In addition, nurses are faced with various potential stressors and situations, so nurses are at risk of suffering from severe psychological problems such as anxiety and depression. These psychological problems and work pressure have a negative impact on work satisfaction (Rahman et al., 2017).

Nurse work stress is influenced by various things, especially the place and level of difficulty of the case that must be faced. Research by Rahman et al. (2017) proved that emergency nurses were 4 times more likely to experience work stress than other nurses. While the results of research by Ghawadra et al. (2019) found that the stress level of pediatric nurses was 3-5 times higher than nurses in other departments.

Research by Khamisa et al. (2016) stated that prolonged exposure to stress causes an imbalance in homeostasis, which results in damage to biological systems. This results in compensatory and anticipatory changes that aid in coping, resulting in poor health outcomes (Olatunde and Odusnya, 2015).

Job stress affects various things such as performance, job satisfaction, job performance and work quality. Job satisfaction is a general attitude of an individual towards his work where in that job a person is required to interact with co-workers and superiors, follow organizational rules and policies, meet performance standards (Schwendirmann et al., 2016).

According to the results of research from Ahsan et al., (2015), nurse work stress has a significant relationship with nurse job

satisfaction with a negative correlation direction. A negative correlation means that the higher the job stress, the lower the job satisfaction, and vice versa (Sapkota et al., 2019). This is supported by the results of research by Matsumoto and Yoshioka (2019) that psychiatric nurses in Japan who experience heavy work stress and negative emotions have been shown to decrease work satisfaction levels.

A study conducted by Dougherty et al. (2009) in Canada also stated that heavy work stress has a risk of low job satisfaction, this study proves that nurses with heavy work stress experience 4 times higher risk of low work satisfaction. This is supported by research by Filha et al. (2013) on nurses in Brazil stated that high stress has a 5 times greater risk of experiencing low job satisfaction.

The results of a meta-analysis of 11 articles regarding the relationship between work stress and work satisfaction of nurses showed high heterogeneity between studies (I^2=90%; p<0.001), so the Random Effects Model (REM) was used. High work stress has the risk of reducing work satisfaction 0.97 times lower than low work stress, and it was statistically very significant (aOR= 0.97; CI 95%= 0.78 to 1.20; p<0.001).

The Relationship between Burnout and Work Satisfaction

Burnout syndrome was an experience he had with volunteers working in a clinic (Zhou et al., 2017). The Canadian Nurses Association states that work burnout is a subjective feeling of burnout experienced by nurses physically and mentally, burnout can interfere with the individual's physical and cognitive abilities (ACN, 2010).

Friganovic et al. (2021) stated that nurses' work routines can cause boredom in nurses doing their jobs. In addition, a high workload can cause nurses to feel tired in their work. This is what causes nurses to be prone to burnout at work.

Research by Khamisa et al. (2016) found that burnout experienced by nurses was higher than other health workers due to the monotonous work of nurses. Burnout for nurses is almost twice as high as burnout for doctors and medical technicians. This is supported by the results of research from Katz et al. (2019) that nurses experience burnout 68% higher than other health workers.

According to research by Nagai et al. (2010) proved that high burnout in nurses can reduce immune function, thereby increasing the risk of developing health problems. High burnout also reduces the quality of work safety thereby increasing medical errors and injuries to nurses (Rahman et al., 2017).

Burnout affects various things in work such as decreased quality of performance, job performance and work satisfaction (Schwendirmann et al., 2016). The results of research by Katz et al. (2019) states that burnout has a significant relationship with nurse's work satisfaction with a negative correlation direction. A negative correlation means that the higher the burnout, the lower the work satisfaction, and vice versa.

A study conducted by Khamisa et al. (2016) on nurses in South Africa stated that high burnout had a 2.3 times greater risk of experiencing low work satisfaction. Research by Zhou et al. (2017) in China also stated that high burnout risks experiencing low work satisfaction.

The results of the meta-analysis of 9 articles regarding the relationship between burnout and nurse's work satisfaction showed high heterogeneity between studies (I^2=98%; p<0.001), therefore, the Random Effects Model (REM) was used. Heavy burnout has a risk of lowering job satisfaction 0.87 times lower than mild burnout, statistically very significant (aOR= 0.87; CI 95%= 0.58 to 1.30; p<0.001).

Research on the level of work satisfaction of psychological well-being among nurses is needed to help formulate policies and intervention strategies that will make the work environment and conditions more conducive and satisfying for nurses (Babalola, 2015). From this study, it was found that high work stress and burnout can reduce work satisfaction even though the statistical results were not significant.

AUTHORS CONTRIBUTION

Arista Gunawati is the main researcher who chose the research topic, searched for and collected the data. Agus Kristiyanto and Hanung Prasetya analyzed the data and reviewed the research manuscript.

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None.

CONFLICT OF INTEREST

There was no conflict of interest in this study.

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