

# Meta-Analysis the Effects of Working Duration and Working Condition on Job Satisfaction in Health Workers in Hospital

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Received: 25 July 2023; Accepted: 06 September 2023; Available online: 16 January 2024

## ABSTRACT

**Background:** Job satisfaction of health workers in hospitals is one of the important points for motivation and increasing work effectiveness, high job satisfaction can improve the performance of health workers and patient satisfaction. However, low job satisfaction results in fatigue and a tendency to increase the turnover of health personnel which will exacerbate the condition of health facilities, especially in hospitals. This study aimed to examine the effects of working time and working conditions on job satisfaction in of health personnel.

**Subjects and Method:** This study is a meta-analysis with PICO. Population: health personnel. Intervention: long working time and good working conditions. Comparison: Working time is short and working conditions are bad. Outcome: job satisfaction. The articles used in this study were obtained from four databases, namely PubMed, Google Scholar, Science Direct, SpringerLink, BMJ, Garuda, SINTA, and the National Library of Indonesia. Keywords used to search for articles “Working Hours” OR “Working Hours Long” AND “Working Conditions” OR “Working Conditions Good” AND “Job Satisfaction” AND “Health Workers” AND “Multivariate”. The articles used were those which are full text in English from 2014 to 2023. Articles were selected using the PRISMA flowchart and analyzed using the application (RevMan) 5.3.

**Results:** Meta analysis included 17 cross-sectional studies from Belgium, Canada, China, Denmark, Ethiopia, Israel, and Switzerland. Long working hours reduced job satisfaction (aOR= 0.47; 95% CI= 0.12 to 0.92; p= 0.030). Safe working conditions increased job satisfaction (aOR=2.75; 95% CI=1.59 to 4.78; p=0.003).

**Conclusion:** Long working hours reduces the job satisfaction. Safe working conditions increases job satisfaction.

**Keywords:** working time, working conditions, job satisfaction, health personnels

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### Cite this as:

Kurniawan A, Tamtomo D, Murti B (2024). Meta-Analysis the Effects of Working Duration and Working Condition on Job Satisfaction in Health Workers in Hospital. J Health Policy Manage. 09(01): 78-93. <https://doi.org/10.26911/thejhpm.2024.09.01.08>.



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## BACKGROUND

Health personnels have an important role to play in improving the maximum quality of health services to the community so that

they are able to increase awareness, willingness and ability to live healthily so that good health status will be realized. A health worker in carrying out his work

certainly has the desire to achieve satisfaction at work. Job satisfaction is one of the important points to motivate and increase work effectiveness, where high job satisfaction can improve the performance of health workers and patient satisfaction in hospitals. Meanwhile, low job satisfaction results in fatigue and a tendency to increase the turnover of health personnels which will then exacerbate conditions in various health facilities. Job satisfaction is defined as a pleasant or unpleasant emotional state felt by health personnels in viewing a job. Job satisfaction reflects a person's feelings of satisfaction with his work. This is raised through a positive attitude at work and everything that is encountered in his working conditions (Apriyanto and Haryono, 2020).

The unbalanced number of health personnels and patients often causes an increase in working time. In addition, health workers who work continuously and are not supported by good working conditions will have a negative impact on the job satisfaction of health workers. Health personnels working time is the amount of work that must be completed by professional health workers in one year and one health service facility. Working time also considers the standard number of workers according to the profession, qualification standards and job evaluation standards (Li et al., 2017). Based on research conducted by Bogaert et al., (2018) on the satisfaction of health workers in Belgium which showed that long working hours reduced the job satisfaction of health workers 0.54 times compared to short working hours (OR= 0.54; 95% CI=0.35 to 0.86; p = 0.032). This is in line with Schwendimann et al., (2016) on factors related to job satisfaction among care workers in Swiss nursing homes which showed that long working hours reduced nurse job satisfaction 0.86 times compared

to short working hours ( OR=0.86; 95% CI=0.73 to 1.01; p=0.068).

Job satisfaction of a health personnels is influenced by factors of working conditions. According to Taiwo (2010) working conditions are everything, events, people and others that affect the way people work. Working conditions are a collection of factors that are both physical and non-physical, both of which affect the way health workers work. Situations in the workplace are non-physical working conditions, while people or equipment are physical working conditions. According to Ishak and Tanjung (2009) good working conditions will have an impact on job satisfaction, so that productivity and work performance increase. Meanwhile, the benefits derived from working with motivated people are that work can be completed properly. Which means the work is completed according to the correct standard and within the specified time scale. Good working conditions are conducive working conditions. Conducive working conditions in the workplace are one of the conditions for creating better company performance.

In a study conducted by Tam et al. (2017), 70% of respondents experienced excessive working time and 84% experienced stress due to work. This has a negative impact on the job satisfaction of health workers. A meta-analysis study by Singh and Khan (2020) found that around 50-70% of respondents felt working hours were too hard, lack of social support, and lack of desired career development. This also has a negative impact on the job satisfaction of health workers. Another study by Mukhtar and Shaukat (2018) shows that around 60% of respondents feel support from colleagues and managers, as well as flexibility in working time. Based on research conducted by Geta et al., (2021) on job satisfaction and related factors among

professional health workers working in public and private hospitals in the city of Bahir Dar, Northwest Ethiopia shows that good working conditions increase job satisfaction health workers 1.06 times compared to bad working conditions. Gedif et al. (2018) shows that good working conditions increase the job satisfaction of health workers.

This study aimed to examine the effects of working time and working conditions on job satisfaction in of health workers in hospital.

## SUBJECTS AND METHOD

### 1. Study Design

This study is a meta-analysis with PICO. Population: health workers. Intervention: long working time and good working conditions. Comparison: Working time is short and working conditions are bad. Outcome: job satisfaction. The articles used in this study were obtained from four databases, namely PubMed, Google Scholar, Science Direct, SpringerLink, BMJ, Garuda, SINTA, and the National Library of Indonesia. Keywords used to search for articles “Working Hours” OR “Working Hours Long” AND “Working Conditions” OR “Working Conditions Good” AND “Job Satisfaction” AND “Health Workers” AND “Multivariate”. The articles used were full text in English from 2014 to 2023. Articles were selected using the PRISMA flowchart and analyzed using the application (RevMan) 5.3.

### 2. Inclusion Criteria

The primary articles involved in the analysis are primary studies with a cross-sectional study design, full text available in English, published between 2014-2023, reporting research results tested multivariately and reported in adjusted odds ratio (aOR) values, research subjects are health workers.

### 3. Exclusion Criteria

- a. Articles published
- b. Articles published before 2014

### 4. Operational Definitions

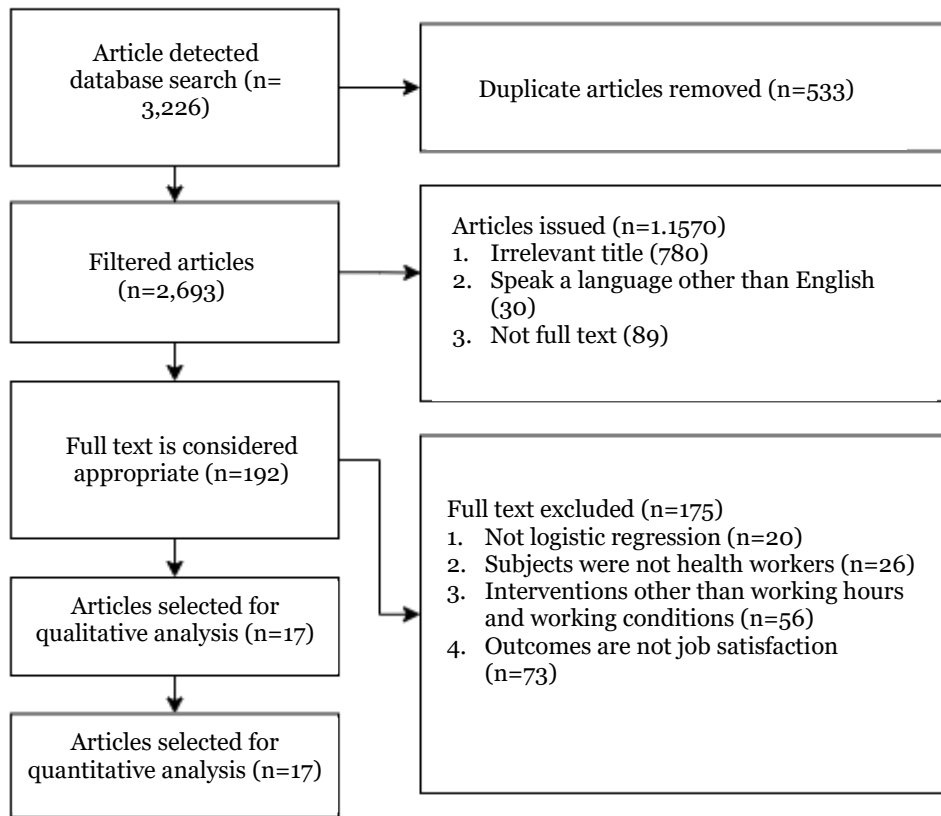
- a. Working time is the effective working time used for work. Effective working time consists of: Effective working days are the number of days in the calendar minus Sundays, national holidays and leave fiber areas. Effective working hours is the number of hours worked minus the lost work time due to not working (allowance). Allowance is estimated at an average of 30% of the total formal working hours. The number of formal working hours in 1 week is calculated as 37.5 hours.
- b. Working conditions cover all aspects of the work environment, both physical and non-physical, which affect employee welfare and productivity.
- c. Job satisfaction is the subjective evaluation, psychologically and physically, on the job and the working environment.

### 5. Instrument

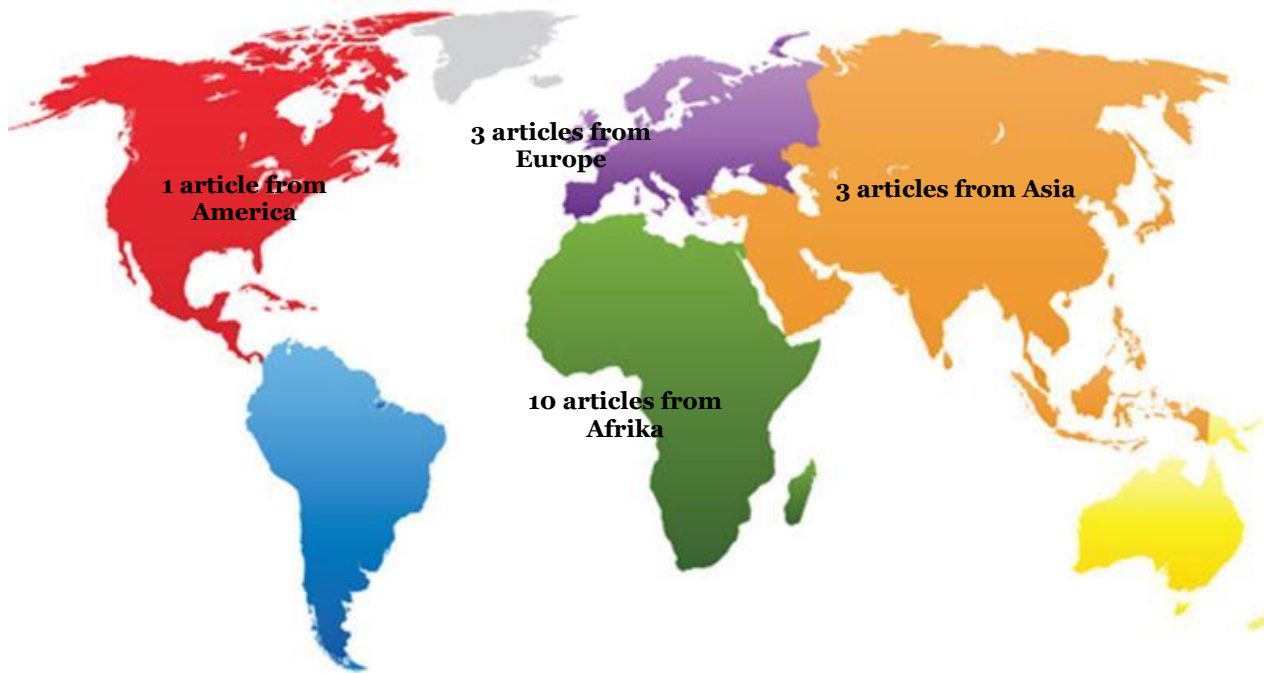
Research quality assessment uses the Critical Appraisal Checklist for Cross-sectional Study from the Center for Evidence Based Management.

### 6. Data Analysis

Article search results are collected with the help of the PRISMA diagram. Primary articles that match the determination of inclusion criteria and CASP assessment were analyzed using the Review Manager (RevMan) 5.4 application. The magnitude of the effect size and confidence interval (CI 95%) is obtained from calculating the aggregate aOR value. The calculation of the estimated amount of heterogeneity ( $I^2$ ) was carried out by choosing a random effect model approach because the estimated amount of heterogeneity was  $>50\%$ .



**Figure 1. PRISMA flowchart**



**Figure 2 map of the study area**

**RESULTS**

Search results on the electronic database obtained as many as 3,226 articles. Duplication removal was performed on 533 articles. After the initial screening, 2,693 articles were issued. Full text article reviews were conducted on 192 primary articles. A total of 175 articles were again excluded because they did not meet the inclusion criteria. The final results obtained were 17 cross-sectional articles that were subjected to quantitative synthesis and meta-analysis. The search

review process can be seen in PRISMA Flawchart Figure 1. Figure 2 summarizes the distribution of studies included in the meta-analysis following are the CASP critical appraisal results for the cross-sectional study.

**1. Effect of working time on work satisfaction of health personnel**

There are eight cross-sectional study articles included in the meta-analysis of the effect of working time on the job satisfaction of health workers.

**Table 1. Results of the Critical Appraisal Checklist for a Cross-sectional Study from the Center for Evidence Based Management**

Author(s)	1	2	3	4	5	6	7	8	9	10	11	12	Total
Asegid et al., (2014)	1	1	1	1	1	1	1	1	1	1	1	1	12
Geleto et al., (2015)	1	1	1	1	1	1	1	1	1	1	1	1	12
Schwedimann et al., (2016)	1	1	1	1	1	1	1	1	1	1	1	1	12
Semachew et al., (2017)	1	1	1	1	1	1	1	1	1	1	1	1	12
Bekru et al., (2017)	1	1	1	1	1	1	1	1	1	1	1	1	12
MacPhee et al., (2017)	1	1	1	1	1	1	1	1	1	1	1	1	12
Li et al., (2017)	1	1	1	1	1	1	1	1	1	1	1	1	12
Riisgaard et al., (2017)	1	1	1	1	1	1	1	1	1	1	1	1	12
Manyazewal et al., (2017)	1	1	1	1	1	1	1	1	1	1	1	1	12
Bogaert et al., (2018)	1	1	1	1	1	1	1	1	1	1	1	1	12
Kalkidan et al., (2018)	1	1	1	1	1	1	1	1	1	1	1	1	12
Gedif et al., (2018)	1	1	1	1	1	1	1	1	1	1	1	1	12
Ayalew et al., (2019)	1	1	1	1	1	1	1	1	1	1	1	1	12
Gebaba et al., (2020)	1	1	1	1	1	1	1	1	1	1	1	1	12
Li et al., (2020)	1	1	1	1	1	1	1	1	1	1	1	1	12
Kagan et al., (2021)	1	1	1	1	1	1	1	1	1	1	1	1	12
Geta et al., (2021)	1	1	1	1	1	1	1	1	1	1	1	1	12

**Question description**

1. Does this research address questions or problems regarding the effect of working time and working conditions on the job satisfaction of health workers?
2. Is the cross-sectional study design appropriate to answer the research problem?
3. Was the subject selection method clearly explained?
4. Can the method of sampling cause bias (selection)?
5. Does the subject sample represent the population to which the findings will refer?
6. Was the sample size based on pre-study considerations of statistical power?
7. Was a satisfactory response achieved?
8. Are the research instruments valid and reliable?
9. Was statistical significance assessed?
10. Are confidence intervals given for the main outcome?
11. Are there any confounding factors that have not been taken into account?
12. Are the results applicable to your research?

**Answer score description**

- 0= No
- 1= Yes



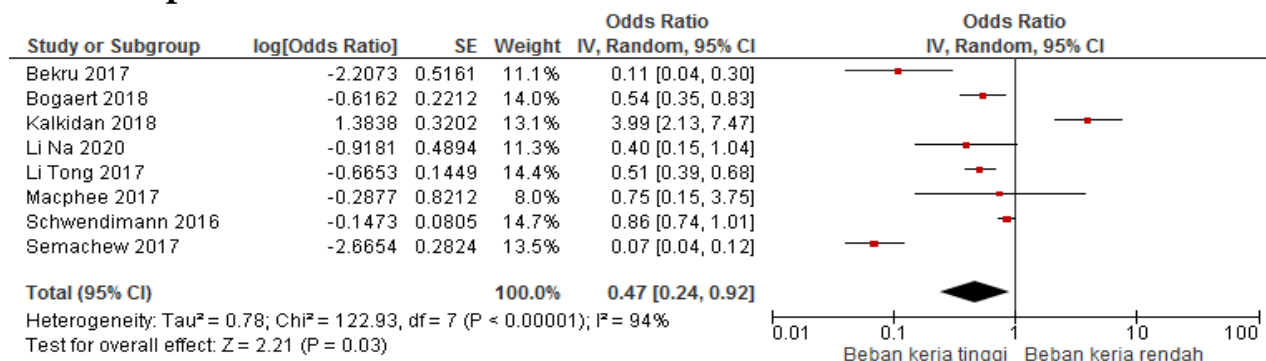
**Table 3. Summary source of the effect of working time on job satisfaction of health workers with a cross-sectional study (n= 8,455)**

Author (Year)	Country	Sample	Population	Intervention	Comparison	Outcome
Bekru et al. (2017)	Ethiopia	234	Midwives	Long working time	Short working time	Job satisfaction
Bogaert et al. (2018)	Belgium	1,236	Health personnel	Long working time	Short working time	Job satisfaction
Kalki et al. (2018)	Ethiopia	575	Professional health personnel	Excessive work time	No excess working time	Job satisfaction
Li et al. (2020)	China	256	Health personnel	Long working time	Short working time	Job satisfaction
Li et al. (2017)	China	1,221	Doctors	Long working time	Short working time	Job satisfaction
Schwendimann et al. (2016)	Swiss	4,145	Nurses	Long working time	Short working time	Job satisfaction
Semachew et al. (2017)	Ethiopia	316	Nurses	Long working time	Short working time	Job satisfaction
Macphee et al. (2017)	Canada	472	Nurses	Long working time	Short working time	Job satisfaction

**Table 4. Pooled aOR and 95% CI of studies examining the effect of working hours on job satisfaction in health personnel**

Author	aOR	CI 95%	
		Lower Limit	Upper Limit
Bekru et al., (2017)	0.11	0.04	0.42
Bogaert et al., (2018)	0.54	0.35	0.86
Kalkidan et al., (2018)	3.99	2.13	7.45
Li et al., (2020)	0.40	0.15	1.04
Li et al., (2017)	0.51	0.39	0.68
Macphee et al.,(2017)	0.75	0.15	3.75
Schwendimann et al., (2016)	0.86	0.74	1.01
Semachew et al., (2017)	0.07	0.04	0.12

**a. Forest plot**

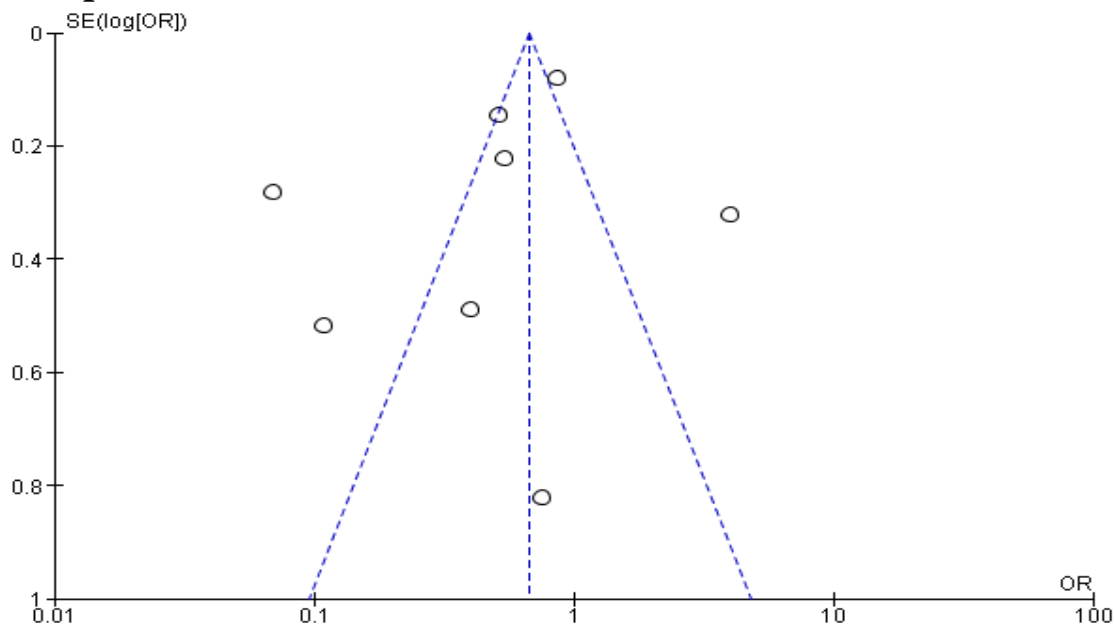


**Figure 3 Forest plot of the effect of working time on the job satisfaction in health Personnels**

The forest plot in Figure 3 shows that there is an effect of working time on the job satisfaction of health personnels, and this effect is statistically significant. Health workers with long working hours reduced job satisfaction 0.47 times compared to health workers with short working hours

(aOR=0.47; 95% CI=0.12 to 0.92; p=0.030). The forest plot in Figure 4.3 also shows heterogeneous variations in effect estimates ( $I^2= 94\%$ ;  $p<0.001$ ). Thus the calculation of the average effect estimate is carried out using the random effect model approach.

**b. Funnel plot**



**Figure 4 Funnel plot of the effect of working time on the job satisfaction in health personnel**

Figure 4 of the funnel plot shows an asymmetric distribution of estimated effects. The distribution of effect estimates is mostly located to the left of the estimated average vertical line, thus indicating publication bias. Because the distribution of effect estimates lies more to the left of the vertical line of the average estimate in the funnel plot which is the same as the average effect estimate in the forest plot which is located on the left, the publication bias tends to overestimate the

true effect). Publication bias occurs due to the non-uniformity of the sample size from each study obtained and the data entered uses published data that shows significant.

**1. The effect of working conditions on job satisfaction of health workers**

There are six cross-sectional study articles included in the meta-analysis of the effect of working conditions on the job satisfaction of health workers.

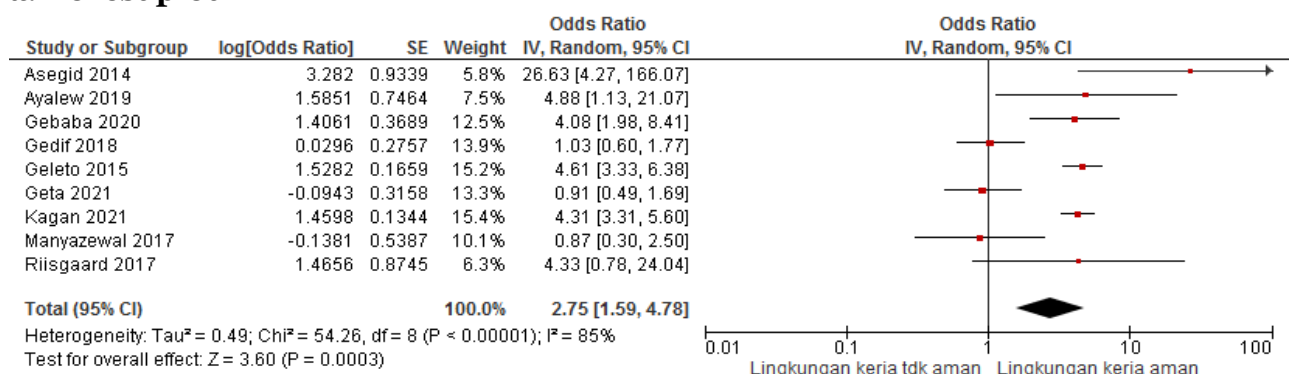
**Table 5. Summary of the article on the effect of working conditions on job satisfaction of health personnel with a cross-sectional study (n= 8,455)**

Author (Year)	Country	Sample	Population	Intervention	Comparison	Outcome
Asegid et al., (2014)	Ethiopia	278	Nurses	Good working condition	Poor working conditions	Job satisfaction
Ayalew et al., (2019)	Ethiopia	441	Nurses	Good working condition	Poor working conditions	Job satisfaction
Gebaba et al., (2020)	Ethiopia	389	Health personnel	Good working condition	Poor working conditions	Job satisfaction
Gedif et al., (2018)	Ethiopia	383	Health personnel	Good working condition	Poor working conditions	Job satisfaction
Geleto et al., (2015)	Ethiopia	405	Health personnel	Good working condition	Poor working conditions	Job satisfaction
Geta et al., (2021)	Ethiopia	520	Health personnel	Good working condition	Poor working conditions	Job satisfaction
Kagan et al.,(2021)	Israel	1.040	Nurses	Good working condition	Poor working conditions	Job satisfaction
Manyazewal et al. (2017)	Ethiopia	410	Health personnel	Good working condition	Poor working conditions	Job satisfaction
Riisgaard et al.(2017)	Denmark	631	Health personnel	Good working condition	Poor working conditions	Job satisfaction

**Table 6. Data of adjusted odds ratio (aOR) and 95% confidence interval (95% CI) the effect of working conditions on job satisfaction of health personnel**

Author	aOR	95% CI	
		Lower Limit	Upper Limit
Asegid et al., (2014)	26.63	4.27	166.07
Ayalew et al., (2019)	4.88	1.13	21.07
Gebaba <i>et al.</i> , (2020)	4.08	1.98	8.41
Gedif et al.,( 2018)	1.03	0.60	1.77
Geleto <i>et al.</i> , (2015)	4.61	3.33	6.38
Geta et al., (2021)	0.91	0.49	1.69
Kagan et al., (2021)	4.31	3.31	5.60
Manyazewal et al., (2017)	0.87	0.30	2.50
Riisgaard et al., (2017)	4.33	0.78	24.04

**a. Forest plot**



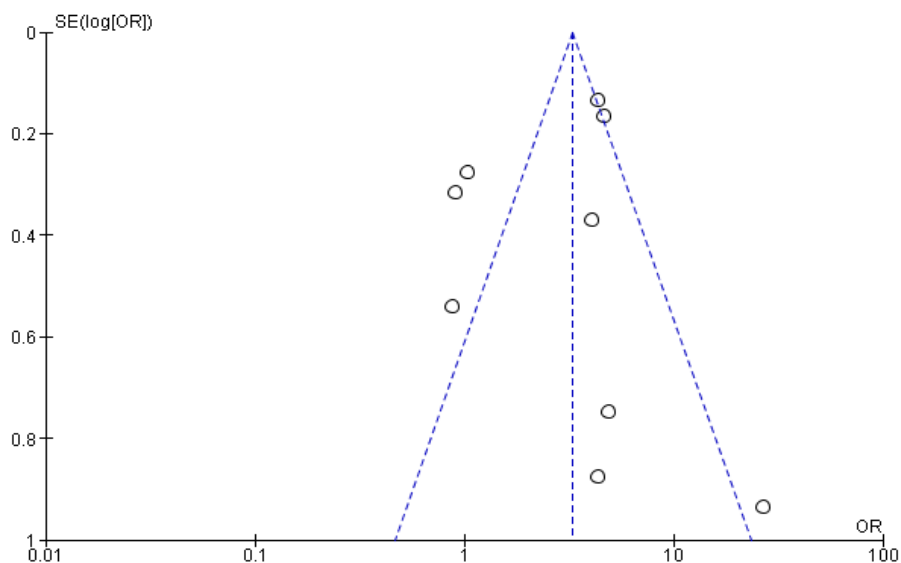
**Figure 5. Forest plot of the relationship between age at pregnancy and preterm birth**



The forest plot in Figure 5 shows the effect of working conditions on the job satisfaction of health workers, and this effect is statistically significant. Health workers with good working conditions increased job satisfaction 2.75 times compared to health workers with bad working conditions (aOR=

2.75; 95% CI= 1.59 to 4.78; p=0.003). The forest plot in Figure 5 shows heterogeneous variations in effect estimates ( $I^2= 85\%$ ;  $p<0.001$ ). Thus the calculation of the average effect estimate is carried out using the random effect model approach.

**b. Funnel plot**



**Figure 6 Funnel plot of the influence of working conditions on the job satisfaction of health personnel**

Figure 6 of the funnel plot above shows the distribution of effect estimates that are not symmetrical. The distribution of effect estimates is mostly located to the right of the estimated average vertical line, thus indicating publication bias.

**DISCUSSION**

**1. The effect of working time on job satisfaction of health workers**

Based on the analysis of eight primary studies with a cross-sectional study design which was carried out by meta-analysis of the effect of working time on job satisfaction of health workers, the results obtained based on the forest plot showed heterogeneity between studies ( $I^2 = 94\%$ ;  $p < 0.001$ ). Thus the calculation of the average Effect

estimation is done by using random effect model approach. Health workers with long working hours reduced job satisfaction 0.47 times compared to health workers with low working hours (aOR=0.47; 95% CI=0.12 to 0.92; p=0.030). The funnel plot shows that the distribution of effect estimates is located to the left of the average vertical line of estimates, thus indicating publication bias. Publication bias occurs because the articles used in the meta-analysis only include published studies and do not describe the actual situation. Published data tends to be significant while those that are not significant are not reported. In addition, the samples used from each study varied and researchers did not limit the size of the sample in the study (Retnawati et al., 2018).

This study is in line with Schafer et al., (2020) health workers who examined the relationship of working time and work commitment to job satisfaction and the desire to move from a company with 531 research subjects as nurse health workers. The results showed that health workers who had long working hours reduced job satisfaction by 0.54 times compared to health workers who had low working hours. A study by Safitri and Astutik (2019) reported that nurse health workers in Indonesia who examined the effect of working time on job satisfaction through work stress in nurses at Lavette Hospital Malang, Indonesia with 170 nurses. The results showed that long working hours reduced job satisfaction 0.82 times compared to health workers who had low working hours. The same research by Said and El-Shafei (2021) on factors related to job satisfaction in nurses during the Covid-19 pandemic showed that nurse health workers with long working hours reduced job satisfaction 0.83 times compared to nurse health workers with low working hours and significantly statistically significant (aOR=0.83; 95% CI=0.12 to 1.88; p= 0.04). The funnel plot shows that the distribution of effect estimates is located to the left of the average vertical line of estimates, thus indicating publication bias. Publication bias occurs because the articles used in the meta-analysis only include published studies and do not describe the actual situation. Published data tends to be significant while those that are not significant are not reported. In addition, the samples used from each study varied and the researchers did not limit the size of the sample in the study. This is in line with the opinion of Retnawati (2018), who argues that bias occurs in sampling caused by non-uniformity in each study and publication bias caused because the data used is published data which is

usually significant data, while insignificant data is not published. Working time is the volume of work results or a record of the work results of a health worker which can show the capacity produced by a number of health workers in a particular section (Munyewende et al., 2014). The perception of the long working time of health workers can be seen in the short task completion time, the high level of difficulty obtained, the high risk of work and the lack of expectations of the health workers who work. The impact of working time on the demands of tasks given by health workers that are not in accordance with standards will have impacts such as the emergence of errors in reporting, physical and emotional work fatigue, disruption of workflow, dissatisfaction of health workers with their work and the desire to move or leave their jobs. In addition, decreased job satisfaction is also due to the fact that the work time assigned is not in accordance with the wages given (Sandra and Sondari, 2017).

## **2. The effect of working conditions on job satisfaction of health workers**

This meta-analysis found that health workers with good working conditions increased job satisfaction 2.75 times compared to those with poor working condition (aOR=2.75; 95% CI=1.59 to 4.78; p=0.003).

Ntopi et al. (2020) reported that health workers in Malawi who had good working conditions increase job satisfaction 1.24 times compared to health workers with poor working conditions and are statistically significant (aOR=1.24; CI 95 %=0.72 to 2.14; p=<0.05). Another study by Azagew (2020) showed that nursing health workers with good working conditions increased job satisfaction 6.56 times compared to nursing health workers with poor working conditions and was statistically significant (aOR= 6.56; 95% CI=2.37 to 18.13; p <0.001). Safe working conditions are assessed from good

physical working conditions which include cleanliness of the workplace, good lighting, appropriate room temperature, conducive working conditions, away from noise which can disrupt the concentration of health workers in carrying out their work.

The funnel plot shows that there is a publication bias because the distribution of effect estimates is mostly located to the left of the estimated average vertical line. Publication bias occurs because the articles used in the meta-analysis only include published studies and do not describe the actual situation. Published data tends to be significant while those that are not significant are not reported. In addition, the samples used from each study varied and the researchers did not limit the size of the sample in the study. This is in line with the opinion of Retnawati (2018), who argues that bias occurs in sampling caused by non-uniformity in each study and publication bias caused because the data used is published data which is usually significant data, while insignificant data is not published. Meanwhile, according to Ishak and Tanjung (2016) good working conditions are conducive working conditions. Conducive working conditions in the workplace are one of the conditions for creating better company performance. Conducive working conditions themselves can be created if there is good communication between superiors and subordinates and between the subordinates themselves. Good working conditions will have an impact on job satisfaction, so that productivity and performance will increase. Working conditions are everything that exists around the workplace of health workers that can influence them in carrying out their duties. Good working conditions are assessed from the cleanliness of the workplace, good lighting, appropriate room temperature, away from noise which can disturb the

concentration of health workers in carrying out their work. World Health Organization (WHO) has recommended the implementation of resource management policies to improve the performance and job satisfaction of health workers which can help the health system to achieve good performance and effective coverage of health services. Recommended policies include safe working conditions and manageable working time (Ayalew et al., 2019).

Similar result was found in a study by Jayanti (2018) which stated that motivation, leadership style, working conditions, incentives, skills, and training affect work performance.

#### **AUTHOR CONTRIBUTION**

Aditya Kurniawan as the main researcher chose the theme, conducted a primary article search, processed the results and compiled provisional results. Didik Tamtomo and Bhisma Murti provided a review of the results of the analysis, selected articles, gave directions in preparing the results of the analysis and discussion.

#### **CONFLICT OF INTEREST**

There was no conflict of interest in the study.

#### **FUNDING AND SPONSORSHIP**

This study is self-funded.

#### **ACKNOWLEDGEMENT**

The author thanks the database of electronic journals, especially PubMed, Google Scholar, Science Direct, SpringerLink, BMJ, Garuda, SINTA, and the National Library of Indonesia.

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