

Meta-Analysis: Exploring the Impact of Marital Status, Work Environment Conditions, Education, Gender, and Age on Job Satisfaction among Healthcare Professionals

**Alifia Ayu Romadhona¹⁾, Annes Rindy Permana¹⁾,
Bhisma Murti¹⁾, Anggun Fitri Handayani²⁾**

¹⁾Master's Program in Public Health, Universitas Sebelas Maret, Indonesia

²⁾Universitas Muhammadiyah Kudus, Central Java, Indonesia

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ABSTRACT

Background: Health is a very complex field because it focuses on healthcare providers. The quality of healthcare can be determined through the job satisfaction of healthcare workers. Factors that can affect the job satisfaction of healthcare workers can be assessed based on marital status, working conditions, education, gender, and age. The purpose of this study was to estimate the effect of marital status, working conditions, education, gender, and age on job satisfaction among healthcare workers.

Subjects and Method: A meta-analysis study was conducted in accordance with the PRISMA flow chart and PICO model. Population: healthcare workers. Intervention: female, >30 years old, bachelor's degree, single, and good working environment. Comparison: male, <30 years old, diploma, married, and poor working environment. Outcome: job satisfaction. Data were obtained from the Google Scholar, PubMed, BMC, ScienceDirect, Elsevier, and Springer Link databases. The keywords used were "gender" AND "age" AND "education" AND "marital status" AND "work environment" AND "job satisfaction" AND "health workers" AND "cross-sectional" AND "aOR". Data analysis was performed using Review Manager 5.3 software.

Results: This meta-analysis included 12 cross-sectional studies from Myanmar and Ethiopia. The sample size was 3,962 health workers. Marital status (aOR= 1.43; 95% CI= 1.03 to 2.00; p= 0.003) and good working conditions (aOR= 1.55; 95%CI= 1.18 to 2.04; p= 0.002) significantly increased job satisfaction among health workers. Bachelor's degree (aOR= 1.51; 95% CI= 0.53 to 4.83; p= 0.400), female gender (aOR= 1.34; 95% CI= 0.87 to 2.05; p= 0.180), and age >30 years (aOR= 1.81; 95% CI= 0.81 to 4.09; p= 0.150) increased job satisfaction among healthcare workers but were not statistically significant.

Conclusion: Marital status, work environment conditions, education level, gender, and age affect job satisfaction in health workers.

Keywords: marital status, work environment, education level, gender, job satisfaction

Correspondence:

Alifia Ayu Romadhona. Master's Program in Public Health, Universitas Sebelas Maret. Jl. Ir. Sutami 36A, Surakarta 57126, Central Java, Indonesia. Email: aliviazahra442@gmail.com. Mobile: +6281236277467.

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BACKGROUND

Job satisfaction is a complex phenomenon with many components that influence it, producing different findings in different settings and work cultures (Lu et al., 2019). Job satisfaction is a comprehensive concept that measures practitioners' self-assessed well-being in the workplace. It stems from what they do in a job or work setting. Workers who consider themselves happier with their jobs are said to be more satisfied. Job satisfaction affects labor market outcomes. It has been positively associated with motivation, performance, productivity, organizational commitment, patient safety and satisfaction, and negatively associated with absenteeism, tardiness, complaints about management, criminal acts, and job turnover (Carvajal & Popovici, 2018). Job satisfaction among healthcare workers has significant implications not only for the individuals working but also for the quality of healthcare services provided to patients. Several factors that can increase job satisfaction among healthcare workers include marital status, working conditions, education, gender, and age.

Research conducted by Asegid et al. (2014) state that job turnover tends to be higher among single people ($AOR = 2.56 CI = 1.27-5.13$). Single healthcare workers are more likely to leave their jobs than married ones because they have no family responsibilities to worry about. Similarly, job satisfaction reaches 59% among those aged 31-40 years, compared to those under 30 years of age. As age increases, job satisfaction also increases ($AOR = 3.51 CI = 1.05-11.73$).

Research by Gebaba et al. (2020) also states that working conditions affect job satisfaction ($aOR = 4.08 CI = 1.98-8.41$). Good relationships with coworkers are created through communication and good working conditions. This makes work feel comfortable and increases job satisfaction (Gebaba et al., 2020).

Gender also affects the job satisfaction of health workers. Women are more satisfied with their work than men ($aOR= 4.70 CI: 1.36$ to 12.37). This difference may stem from perceptions about the nature of the work, particularly in the health sector, and the belief that certain professions, such as midwifery, are female professions. Educational status ($aOR= 5.74 CI= 1.48$ to 40.47).

Providing opportunities for continuing education and training, both short-term and long-term, is important to strengthen motivation, improve knowledge and skills, and increase job satisfaction. Additionally, recognition for work done, acknowledgment of extraordinary efforts and good performance, as well as appropriate balance and fairness in scheduling can boost morale and improve the quality of healthcare services (Bekru et al., 2017). The purpose of this study is to estimate the influence of marital status, working conditions, education, gender, and age on job satisfaction among healthcare workers.

SUBJECTS AND METHOD

1. Study Design

This study is a systematic review and meta-analysis guided by the PRISMA flow chart and PICO model. Population: health workers. Intervention: women, >30 years old, bachelor's degree, single, and good working environment. Comparison: men, <30 years old, diploma, married, and poor working environment. Outcome: job satisfaction. The databases used were Google Scholar, PubMed, BMC, ScienceDirect, Elsevier, and Springer Link. The keywords used were "gender" AND "age" AND 'education' AND "marital status" AND "work environment" AND "job satisfaction" AND "health workers" AND "cross sectional" AND "AOR". A total of 12 articles met the inclusion criteria for meta-analysis and were further analyzed using RevMan 5.3.

2. Meta-Analysis Steps

The meta-analysis was conducted through the following 5 steps:

Formulating the research question using the PICO model.

- a. Searching for primary review articles from electronic databases such as Google Scholar, PubMed, and Science Direct.
- b. Screening and critically assessing the primary studies.
- c. Performing data extraction and entering the estimated effects from each primary study into RevMan 5.3. The results of the article analysis were presented in the form of aOR, with a 95% confidence interval (CI) using the effect model and data heterogeneity (I²).
- d. Interpreting the results and drawing conclusions.

3. Inclusion Criteria

The inclusion criteria in this study were English-language articles with cross-sectional studies and case-control studies published between 2014 and 2023. The analysis used was multivariate analysis with adjusted odds ratio (aOR). The research subjects were health workers and the results analyzed were job satisfaction. The exclusion criteria in this study were cohort studies, RCT (Randomized Controlled Trials) studies, quasi-experiments, research protocols, preliminary studies, and non-full text articles.

4. Exclusion Criteria

The exclusion criteria in this study were cohort studies, randomized controlled trials (RCTs), quasi-experiments, research protocols, preliminary studies, and non-full-text articles.

5. Operational Definition of Variables

Gender is the anatomical and biological difference between individuals in determining roles and continuing the lineage.

Age is the time from when an individual is born into the world until the data is collected, measured in years.

Marital status is the status of an individual, whether male or female, in terms of whether they are married or unmarried.

Education is a planned effort by individuals to actively develop their potential.

The work environment is everything around workers that they interact with directly.

6. Study Instruments

The primary studies that have been screened will undergo critical appraisal or study review to determine their feasibility. The appraisal instrument used is the Critical Appraisal Cross-sectional Study for Meta-analysis Research published by the Master of Public Health, Sebelas Maret University Surakarta (2024).

7. Data Analysis

The results of the article search were collected using the PRISMA diagram. The main articles that met the inclusion criteria were analyzed using the RevMan 5.3 application to calculate the effect size and study heterogeneity. The data processing results were represented as (aOR, 95% confidence interval, and p-value) using the Mantel-Haenszel method for meta-analysis and presented in the form of forest plots and funnel plots

RESULTS

The keyword search yielded 8,969 potentially relevant articles. The PRISMA flow diagram of the literature search and its results are reported in Figure 1 based on the selection criteria, with 2,374 articles identified for further full-text assessment. In this study, data collection was conducted using six online databases, and the results obtained were 17 articles, as shown in the PRISMA diagram.

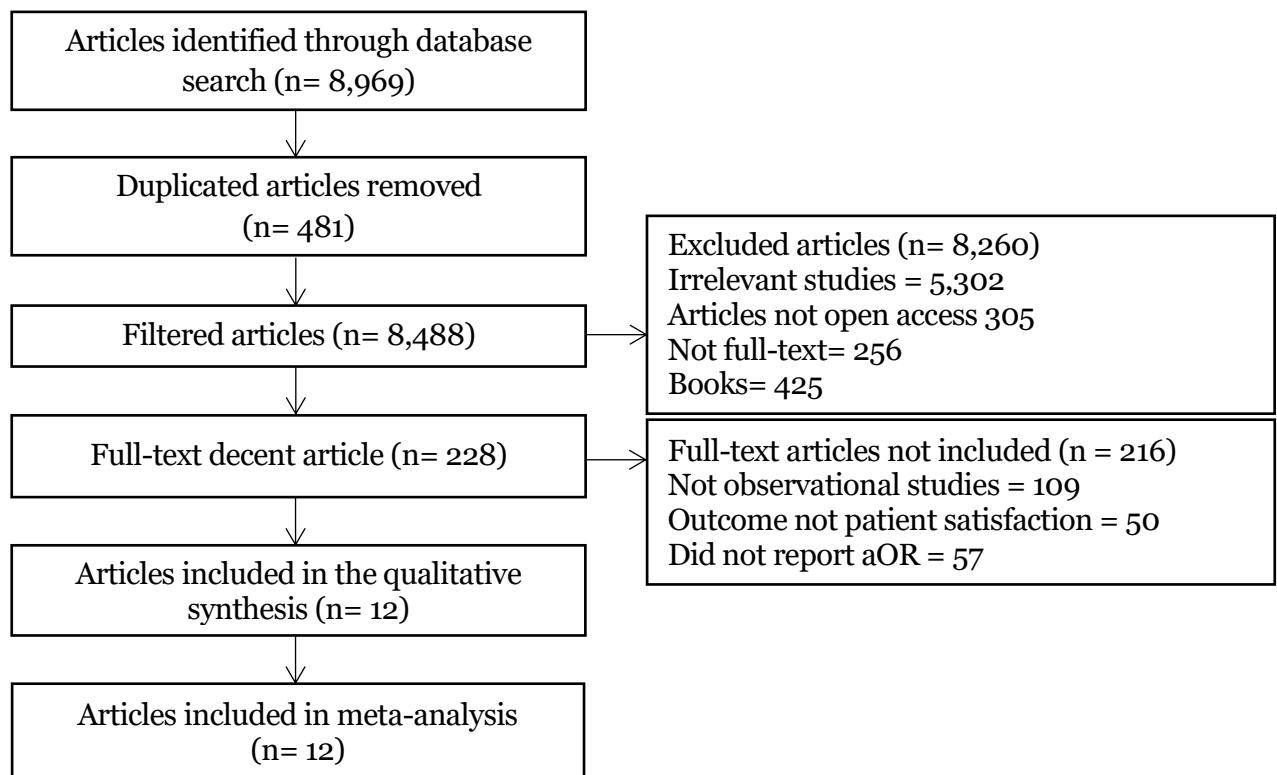


Figure 1. PRISMA flow diagram of the influence of age, education, marital status, and work environment conditions on job satisfaction



Figure 2. Research area map showing the influence of age, education, marital status, and work environment conditions on job satisfaction

Table 1. Critical Appraisal for a cross-sectional study on the influence of age, education, marital status, and work environment conditions on job satisfaction

Primary Study	Criteria												Total	
	1a	1b	1c	1d	2a	2b	3a	3b	4	5	6a	6b	7	
Asegid et al. (2014)	2	2	2	2	1	2	2	2	2	2	2	2	2	25
Mengistu (2015)	2	2	2	2	2	1	2	2	1	2	2	2	2	24
Ayalew et al. (2019)	2	2	2	2	2	1	2	2	2	1	2	2	1	23
Muluneh et al. (2021)	2	2	2	2	1	2	2	2	2	1	2	2	2	24
Soe et al. (2023)	2	2	2	2	1	2	2	2	1	2	2	2	2	24
Bekru et al. (2017)	2	2	2	2	2	1	2	2	1	1	2	2	2	22
Temesgen et al. (2018)	2	2	2	2	1	2	2	2	1	2	1	2	2	23
Gebaba et al. (2020)	2	2	2	2	1	2	2	2	2	2	1	2	1	23
Geta et al. (2021)	2	2	2	2	2	1	2	2	2	2	2	2	2	25
Kibwana et al. (2017)	2	2	2	2	1	2	2	2	2	2	2	2	1	24
Gedif et al. (2018)	2	2	2	2	1	2	2	2	2	1	2	2	2	24
Fentie et al. (2017)	2	2	2	2	1	2	2	2	2	1	2	2	2	24

Question Criteria:**1. Formulation of research questions in PICO acronyms**

- Is the population in the primary study the same as the population in the PICO meta-analysis?
- Is the operational definition of the intervention, namely exposed status in the primary study, the same as the definition intended in the meta-analysis?
- Is the comparison, namely the unexposed status used in the primary study, the same as the definition intended in the meta-analysis?
- Is the outcome variable studied in the primary study the same as the definition intended in the meta-analysis?

2. Methods for selecting research subjects

- In analytical cross-sectional studies, did the researchers select samples from the population randomly (random sampling)?
- Alternatively, if in analytical cross-sectional studies the samples were not selected randomly, did the researchers select samples based on outcome status or based on intervention status?

3. Methods for measuring exposure (intervention) and outcome variables

- Are exposure and outcome variables measured with the same instrument (measuring tool) in all primary studies?
- If variables are measured on a categorical scale, are the cutoff points or categories used the same across primary studies?

4. Design-related bias

If the sample was not selected randomly, did the researchers make efforts to prevent bias in selecting research subjects? For example, in selecting subjects based on outcome status, were they not influenced by exposure status (intervention), or in selecting subjects based on exposure status (intervention), were they not influenced by outcome status?

5. Methods for controlling confounding

Did the researchers of the primary study make efforts to control for confounding (e.g., performing multivariate analysis to control for the influence of multiple confounding factors)?

6. Statistical analysis methods

- Did the researchers analyze the data in this primary study using a multivariate analysis model (e.g., multiple linear regression analysis, multiple logistic regression analysis)?

b. Does the primary study report the effect size or relationship of the multivariate analysis results (e.g., adjusted OR, adjusted regression coefficient)?.

7. Conflict of interest

Is there no possibility of a conflict of interest with the research sponsor that could cause bias in the conclusions of the study?

Question Score

0= No 1= Unsure 2=Yes

Table 2. PICO of a cross-sectional article on the influence of age, education, marital status, and work environment on job satisfaction

Author (years)	Country	Sample	P	I	C	O
Asegid et al. (2014)	South Ethiopia	278	Nurses	Female	Male	Job Satisfaction
Mengistu (2015)	Ethiopia	166	Healthcare Workers	1. Female 2. Bachelor 3. >30 age 4. Married	1. Male 2. Diploma 3. <30 age 4. Single	Job Satisfaction
Ayalew et al. (2019)	Ethiopia	424	Nurses	1. Female 2. Bachelor 3. >30 age 4. Good	1. Male 2. Diploma 3. <30 age 4. Not Good	Job Satisfaction
				Work Cond.	Working Cond.	
Muluneh et al. (2021)	Ethiopia	107	Midwives	1. Female 2. >30 age 3. Married	1. Male 2. <30 age 3. Single	Job Satisfaction
Soe et al. (2023)	Myanmar	536	Healthcare Workers	Female >30 age	Male <30 age	Job Satisfaction
Bekru et al. (2017)	Ethiopia	234	Midwives	Bachelor Married	Diploma Single	Job Satisfaction
Temesgen et al. (2018)	Ethiopia	575	Health Professionals	Bachelor	Diploma	Job Satisfaction
Gebaba et al. (2020)	Ethiopia	389	Healthcare Workers	1. Bachelor 2. Good	1. Diplom 2. Not Good	Job Satisfaction
				Work Cond.	Working Cond.	
Geta et al. (2021)	Northwest Ethiopia	520	Health Professional	1. >30 age 2. Good	1. <30 age 2. Not Good	Job Satisfaction
				Work Cond.	Working Cond.	
Kibwana et al. (2017)	Ethiopia	252	Anesthetist	Good Work Cond.	Not Good Working Cond.	Job Satisfaction
Gedif et al. (2018)	Northwest Ethiopia	383	Care Proffesionals	1. Good Work Cond. 2. Married	1. Not Good Working Cond. 2. Single	Job Satisfaction
Fentie et al. (2017)	Northwest Ethiopia	98	Anesthetist	Married	Single	Job Satisfaction

Table 3. Adjusted odds ratio (OR) and 95% confidence interval (95%CI) data on the effect of marital status on job satisfaction

Author (Year)	aOR	95% CI	
		Lower limit	Upper limit
Mengistu (2015)	0.68	0.10	4.62
Bekru et al. (2017)	3.48	1.01	11.99
Fentie et al. (2017)	1.23	0.55	2.75
Gedif et al. (2018)	1.79	1.14	2.81
Muluneh et al. (2021)	0.69	0.32	1.49

Table 3 explains that there are 5 articles with cross-sectional studies on the effect of marital status on job satisfaction with the

highest aOR in the study of Bekru et al. (2017) which is 3.48 and the lowest aOR in the study of Mengistu et al. (2015) which is 0.68.

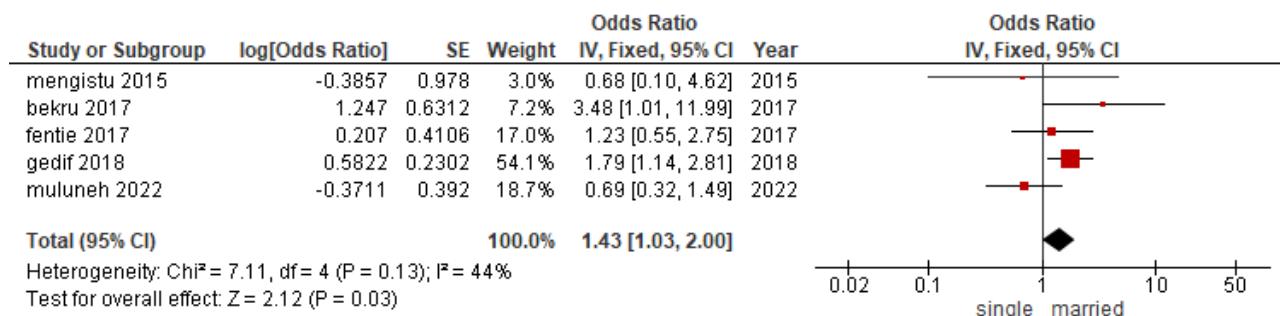
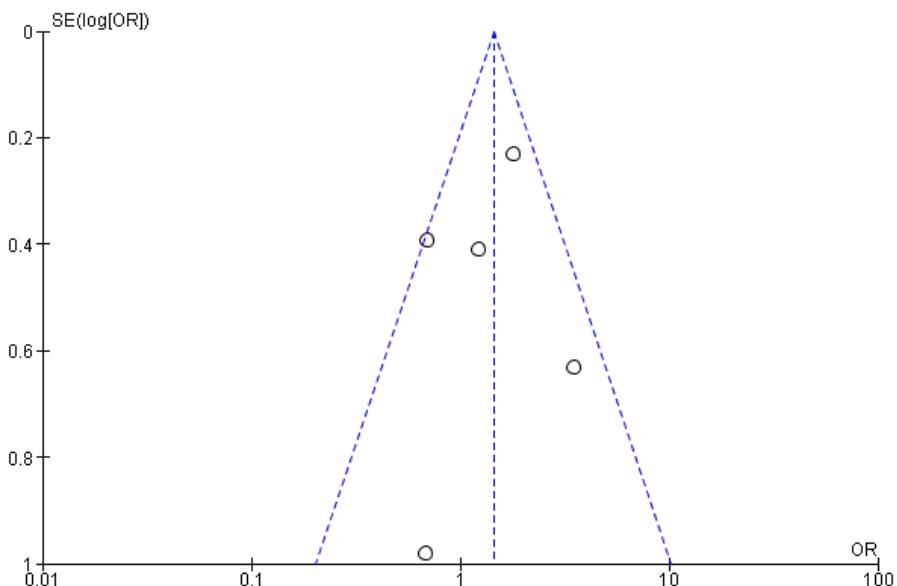
**Figure 3. Forest plot of the influence of status marriage status on job satisfaction****Figure 4. Funnel plot of the effect of status marital status on job satisfaction**

Figure 3 shows the forest plot of the effect of marital status on job satisfaction

among health workers. Married health workers were 1.43 times more likely to be

satisfied in their job compared to unmarried health workers and the association was statistically significant ($aOR = 1.43$; $CI = 1.03$ to 2.00 ; $p = 0.003$). The forest plot also showed low heterogeneity between studies ($I^2 = 44\%$). Thus, the calculation of the average effect estimate was carried out using the Fixed Effect Model approach.

Table 4. Data on adjusted odds ratio (aOR) and 95% confidence interval (95%CI) of the effect of working conditions on job satisfaction

Author (Year)	aOR	95% CI	
		Lower limit	Upper limit
Kibwana et al. (2017)	1.87	1.06	3.30
Gedif et al. (2018)	1.03	0.60	1.77
Ayalew et al. (2019)	1.24	0.72	2.14
Gebaba., 2020	4.08	1.98	8.41
Geta et al. (2021)	1.25	0.52	3.30

Table 4 explains that there are 5 articles with cross-sectional studies on the effect of working conditions on job satisfaction with

Figure 4 shows the results of the funnel plot on the effect of marital status on job satisfaction in health workers, indicating that the distribution of the estimated effect is spread equally to the right and left of the average vertical line. Thus, the funnel plot does not indicate any publication bias.

the highest aOR in the study of Gebaba et al. (2020), namely 4.08 and the lowest aOR in the study of Gedif et al. (2018) which is 1.03.

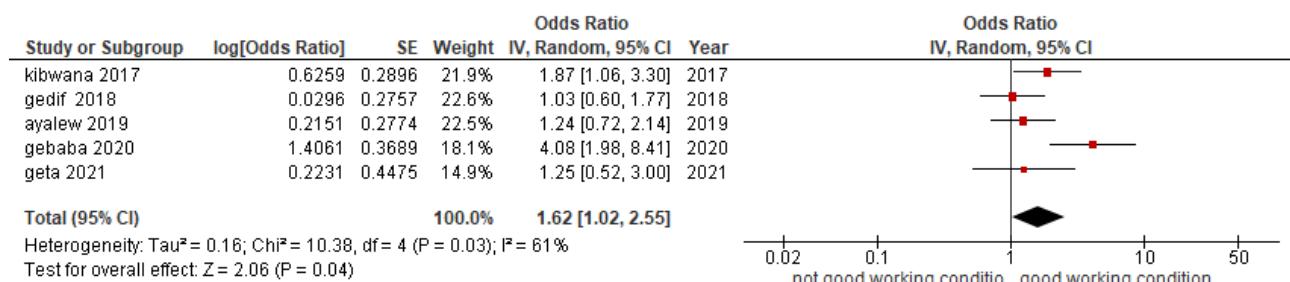
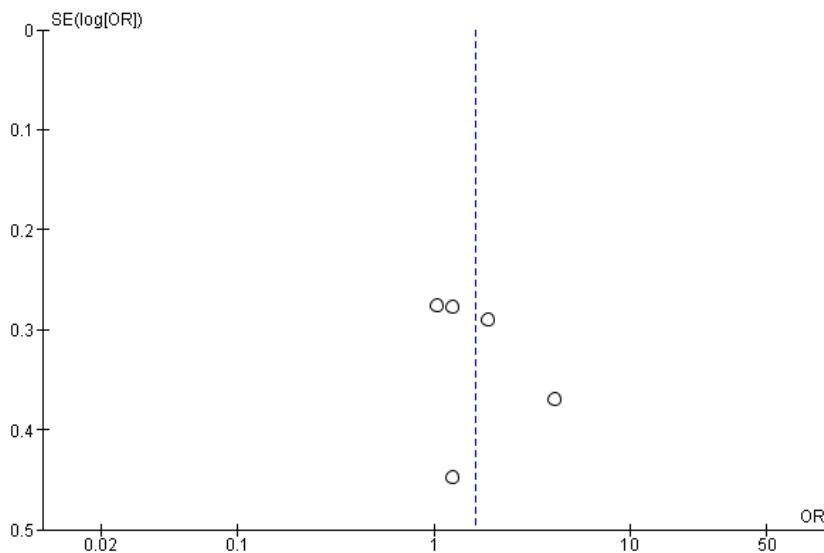


Figure 5. Forest plot of the effect of working conditions on job satisfaction

Figure 5 shows the forest plot of the effect of working conditions on job satisfaction in health workers. Health workers who have good working conditions are 1.55 times more likely to be satisfied at work than those with poor working conditions and the relationship is statistically significant ($aOR = 1.62$; $CI = 1.02$ to 2.55 ; $p = 0.040$). The forest plot also showed high inter-study heterogeneity ($I^2 = 61\%$). Thus, the calculation of the average

effect estimate was conducted using the Random Effect Model approach.

Figure 6 shows the results of the funnel plot on the effect of working conditions on job satisfaction in health workers, indicating that the distribution of effect estimates is spread equally to the right-left of the mean vertical line. Thus, the funnel plot does not indicate any publication bias.

**Figure 6. Funnel Plot of the Effect of Working Conditions on Job Satisfaction****Table 5. Data on Adjusted Odds Ratio (aOR) and 95% Confidence Interval (95%CI) of the Effect of Education on Job Satisfaction**

Author (Year)	aOR	95% CI	
		Lower limit	Upper limit
Mengistu (2015)	0.45	0.16	1.29
Bekru et al. (2017)	5.74	1.48	22.26
Temesgen et al. (2018)	5.64	2.44	13.04
Ayalew et al. (2019)	1.58	0.69	3.62
Gebaba et al. (2020)	0.31	0.05	1.92

Table 5 explains that there are 5 articles with cross-sectional studies on the effect of education on job satisfaction with the highest

aOR in the study of Bekru et al. (2017) which is 5.74 and the lowest aOR in the study of Mengistu et al. (2015) which is 0.45.

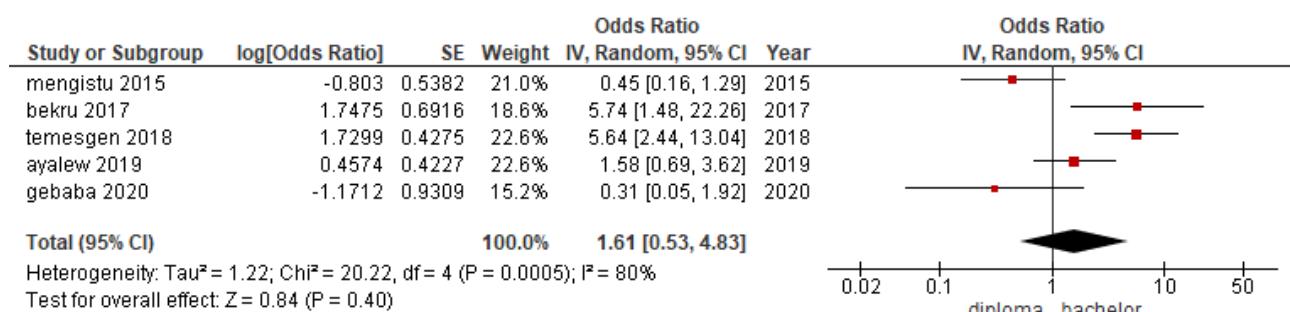
**Figure 7. Forest Plot of the Effect of Education on Job Satisfaction**

Figure 7 shows the forest plot of the effect of education on job satisfaction among health workers. Health workers with a university degree were 1.92 times more likely

to be satisfied in their job than those with a diploma, but the association was not statistically significant ($aOR = 1.51$; $CI = 0.53$ to 4.83 ; $p = 0.400$). The forest plot also showed

high heterogeneity between studies ($I^2=80\%$). Therefore, the calculation of the average effect

estimate was conducted using the Random Effect Model approach.

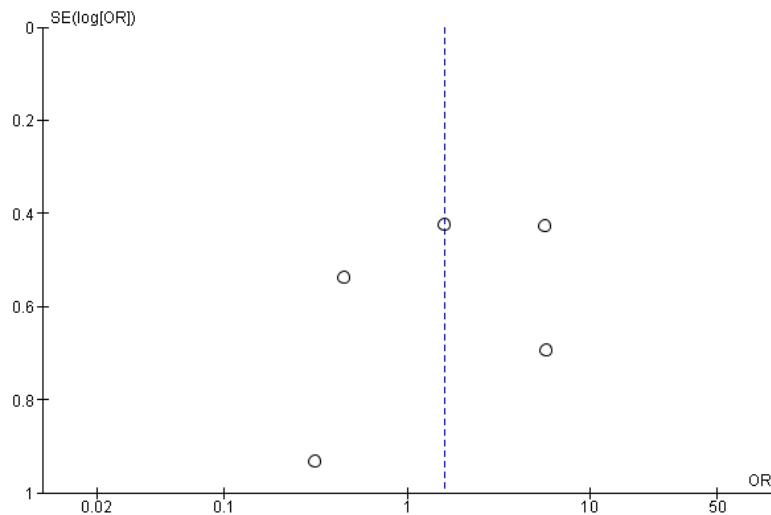


Figure 8. Funnel Plot of The Effect of Education on Job Satisfaction

Figure 8 shows the results of the funnel plot on the effect of education on job satisfaction in health workers, indicating that the distribution of effect estimates is not balanced between the right and left of the mean vertical line. Thus the funnel plot indicates the presence of publication bias. Since the publication bias is located to the left of the mean vertical line which is opposite to

the direction of the diamond in the forest plot, the publication bias underestimates the effect of education on job satisfaction.

Table 6 explains that there are 5 articles with cross-sectional studies on the effect of the effect of gender on job satisfaction with the highest aOR in the study of Mengistu et al. (2015) which is 2.01 and the lowest aOR in the study of Asegid et al. (2014) which is 0.53.

Table 6. Data on aOR and 95% Confidence Interval (95%CI) of The Effect of Gender on Job Satisfaction

Author (Year)	aOR	95% CI	
		Lower limit	Upper limit
Asegid et al. (2014)	0.53	0.28	1.00
Mengistu (2015)	2.01	1.53	2.64
Ayalew et al. (2019)	1.39	0.79	2.45
Muluneh et al. (2021)	1.59	0.70	3.60
Soe et al. (2023)	1.51	0.97	2.35

Figure 9 shows the forest plot of the effect of gender on job satisfaction among health workers. Female health workers were 1.58 times more likely to be satisfied in their job than male health workers and the association was not statistically significant

(aOR= 1.34; CI= 0.87 to 2.05; $p= 0.180$). The forest plot also showed high heterogeneity between studies ($I^2=72\%$). Thus, the calculation of the average effect estimate was conducted using the Random Effect Model approach.

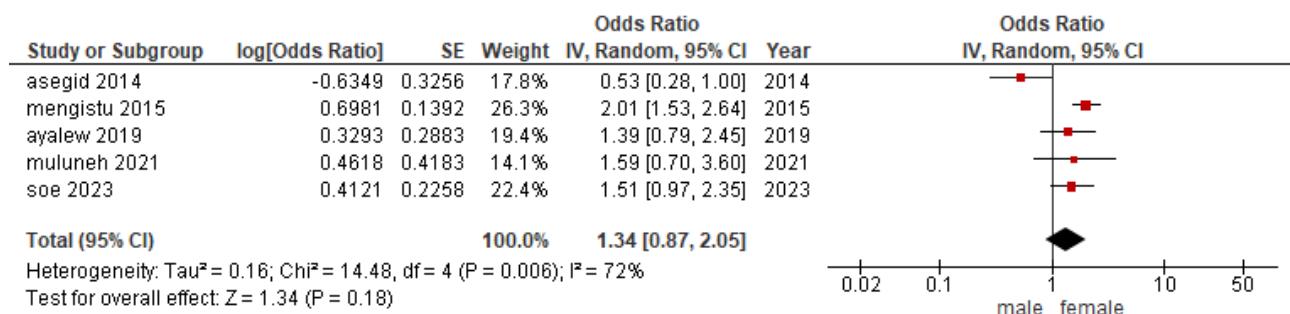
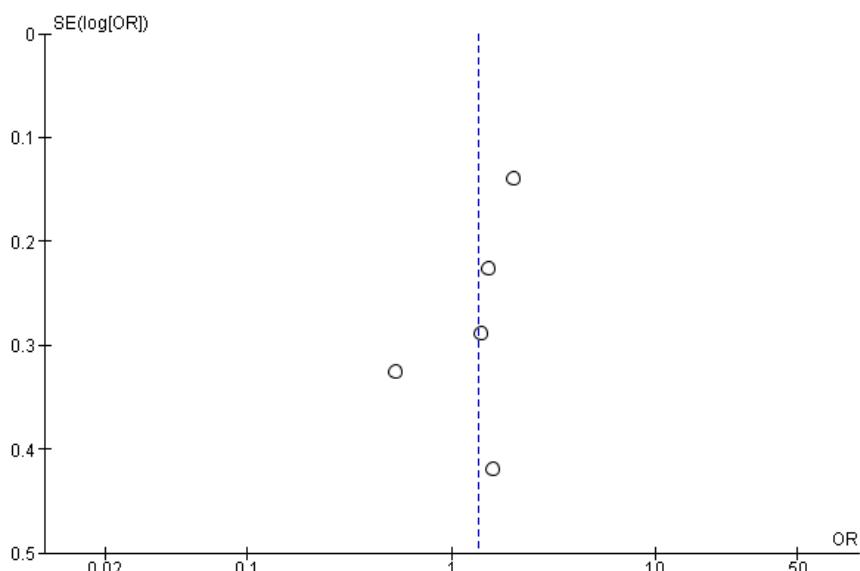
**Figure 9. Forest Plot of The Effect of Gender on Job Satisfaction****Figure 10. Funnel Plot of the Effect of Gender on Job Satisfaction**

Figure 10 shows the funnel plot of the effect of gender on job satisfaction in health workers, indicating that the distribution of effect estimates is evenly distributed to the

right-left of the mean vertical line. Thus, the funnel plot does not indicate any publication bias.

Table 7. Data on aOR and 95% Confidence Interval (95%CI) of the Effect of Age on Job Satisfaction

Author (Year)	aOR	95% CI	
		Lower limit	Upper limit
Mengistu (2015)	0.62	0.12	3.20
Ayalew et al. (2019)	1.39	0.79	2.45
Geta et al. (2021)	13.06	4.83	35.31
Muluneh et al. (2021)	1.41	0.64	3.11
Soe et al. (2023)	1.08	0.61	1.91

Table 7 explains that there are 5 articles with cross-sectional studies on the effect of age on job satisfaction with the highest aOR in

research by Geta et al. (2021), namely 13.06 and the lowest aOR in the study of Mengistu et al. (2015) which is 0.62.

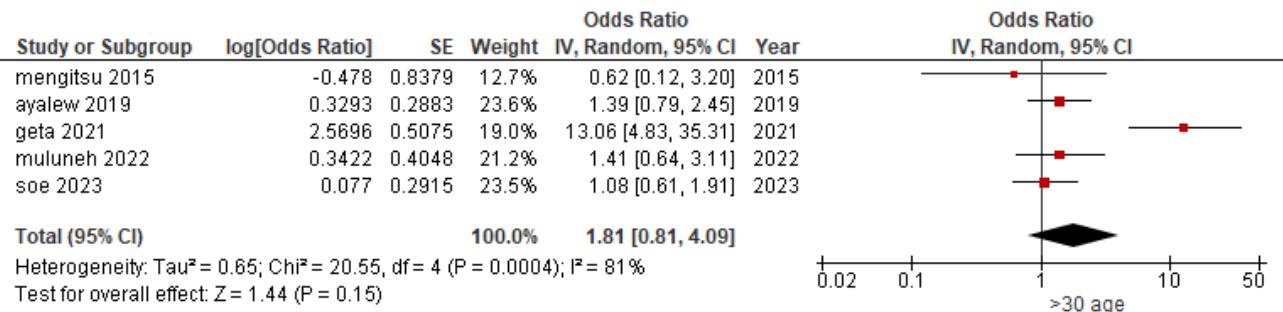


Figure 11. Forest Plot of the Effect of Age on Job Satisfaction

Figure 11 shows the results of the forest plot on the effect of age on job satisfaction among health workers. Health workers above 30 years old were 1.59 times more likely to be satisfied in their job compared to health workers below 30 years old, but the relationship was not statistically significant

(aOR= 1.81; CI= 0.81 to 4.09; p= 0.150). The forest plot also showed high heterogeneity between studies ($I^2= 81\%$). Thus, the calculation of the average effect estimate was conducted using the Random Effect Model approach.

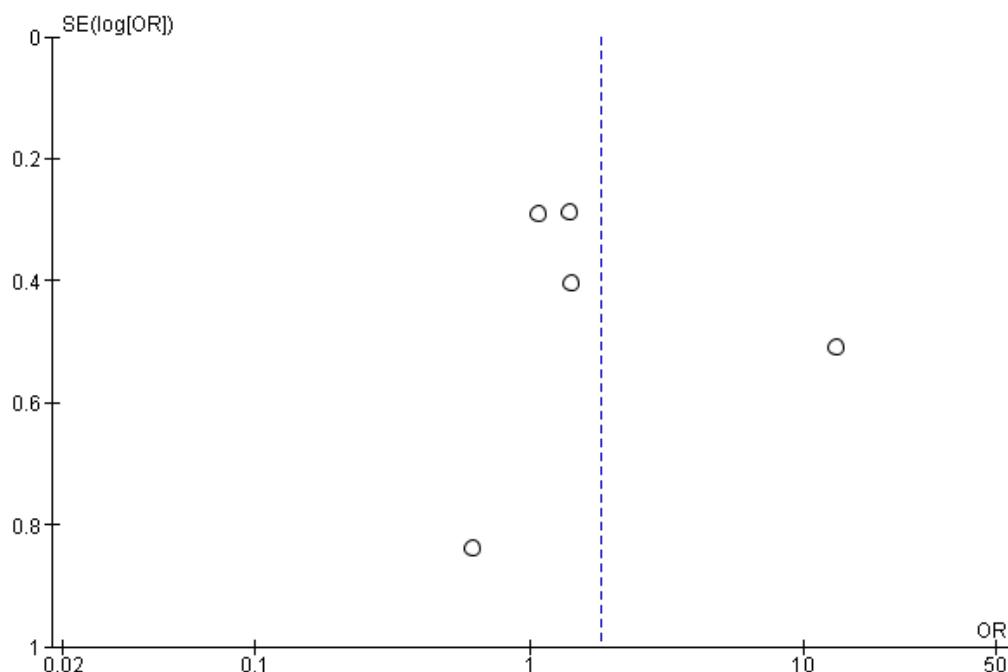


Figure 12. Funnel Plot of the Effect of Age on Job Satisfaction

Figure 12 shows the results of the funnel plot on the effect of age on job satisfaction in health workers, indicating that the distribution of

effect estimates is evenly distributed right-left of the mean vertical line. Thus, the funnel plot does not indicate any publication bias.

DISCUSSION

1. Effect of Marital Status on Job Satisfaction of Health Workers

There are 5 articles from several countries used to measure health status on job satisfaction. The articles consisted of 1 study design, which was a cross-sectional study. Studies have shown that there is a significant relationship between marital status and job satisfaction of health workers.

Marriage provides a sense of affection, protection, togetherness, status, responsibility and satisfaction. Married employees are forced to be more responsible for their work because they consider work important and increase job satisfaction so that the relationship between marital status and job satisfaction shows that there is an influence between job satisfaction and marital status in research conducted by (Reinaldi et al, 2019).

2. Effect of Working Conditions on Job Satisfaction of Health Workers

There are 5 articles from several countries used to measure working conditions on job satisfaction. The articles consist of 1 study design, which is a cross-sectional study. Studies have shown that there is a significant relationship between working conditions and job satisfaction of health workers.

Important factors that can lead to increased job satisfaction of healthcare workers are working conditions and the work environment. Specifically, these factors include the presence of a comfortable workplace, worker facilities, an appropriate amount of equipment and consumables, and relationships among workers and between workers and management. This includes communication that must be reciprocal, teamwork, and the existence of good relations and mutual respect within the health unit. This can increase the job satisfaction of health workers. (Schopman et al., 2017).

3. Effect of Education on Job Satisfaction of Health Workers

There are 5 articles from several countries used to measure education on job satisfaction. The articles consisted of 1 study design, which was a cross-sectional study. Research has shown that there is a significant relationship between education and job satisfaction of health workers.

A high level of education can help employees understand the work they do. Intelligence levels that are too high and too low can cause boredom and dissatisfaction at work due to incompatibility of intelligence with the job. Based on research conducted by Zein & Rahmiana (2016) it is proven that there is an effect of education on employee job satisfaction.

4. Effect of Gender on Job Satisfaction of Health Workers

There are 5 articles from several countries used to measure gender on job satisfaction. The articles consisted of 1 study design, which was a cross-sectional study. Studies have shown that there is a significant relationship between gender and job satisfaction of health workers.

The gender mismatch known as the female worker paradox is consistent with the conceptualization of job satisfaction. Although women generally have less interesting jobs, earn less, and are promoted less frequently than their male counterparts, they report higher levels of job satisfaction. A plausible explanation is that because women are responsible for household chores and child-care, they feel less pressure to succeed at work than men, who are generally seen as responsible for the financial well-being of the household.

Women who are dissatisfied with their jobs leave more easily than men to change leaders, work fewer hours, or leave coworkers to devote more time to their families. (Carvajal & Popovici, 2018)

5. Effect of Age on Job Satisfaction of Health Workers

There are 5 articles from several countries used to measure age on job satisfaction. The articles consisted of 1 study design, which was a cross-sectional study. Studies have shown that there is a significant relationship between age and job satisfaction of health workers.

Increasing age is followed by physical, psychological, and intellectual development. Maturity in these factors makes a person have a better ability to judge things. Younger age tends to criticize health services more about how their health develops so that understanding of health will be more easily fulfilled (Budiman, 2014).

AUTHOR CONTRIBUTION

All authors have made significant contributions to the data analysis as well as preparing the final manuscript.

CONFLICT OF INTEREST

The author states that there was no conflict of interest.

FUNDING AND SPONSORSHIP

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