

SYSTEMATIC REVIEW

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# Prevalence and associated factors of caring behavior among nurses in Ethiopia: a systematic review and meta-analysis

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## Abstract

**Background** Caring behaviors among nurses have positive and negative impacts on patient care quality and the essence of nursing leadership paradigms. Most studies on caring behavior among nurses in Ethiopia have reported inconsistent findings and are regionally dispersed. It is believed that combining regional evidence to obtain nationally representative information could help program implementers. Therefore, the objective of this review was to estimate the pooled prevalence of caring behaviors and associated factors among nurses working in Ethiopia.

**Methods** PubMed, Scopus, Web of Science, EMBASE, Science Direct and African Journals Online were used to search for relevant studies. Additionally, studies were identified through manual reference searches. Data extraction was performed using Microsoft Excel, and analysis was conducted using STATA software V. 18. Funnel plots, Egger's test, and meta-regression were employed to assess publication bias. Heterogeneity ( $I^2$ ) and the overall estimate were calculated. Subgroup analysis was conducted based on study region and publication year. The pooled odds ratio was calculated for the main factors associated with caregiving behavior.

**Results** A total of 7 studies were included that involved 2,206 nursing professionals. According to the random effects model, the pooled prevalence of good care behavior was 63% (95% CI: 55%, 72%) among nurses. According to the subgroup analysis, the highest prevalence was observed in the Oromia region (80.3%), and studies with a sample size of 300 had a higher prevalence of 52% caring behavior. Higher professional satisfaction (AOR = 1.84; 95% CI 1.41, 2.27), higher job satisfaction (AOR = 3.04; 95% CI 1.13, 4.94), a low workload (OR = 3.14; 95% CI 2.04, 4.25) and good relationships with coworkers (AOR = 4.72; 95% CI 1.57, 7.87) were factors associated with caring behaviors among nurses working in Ethiopia.

**Conclusions** Caring behavior among nurses is moderately good, with professional satisfaction, job satisfaction, low workload, and good relationships with workers that affect the caring behaviors among nurses working in Ethiopia. Strategies must be designed to improve satisfaction packages to improve caring behavior among nurses and ultimately improve the quality of nursing care.

**Trial registration** The PROSPERO registration number is CRD42024570781.

**Keywords** Caring behavior, Nursing care, Nurse professional, Patient care quality, Associated factors, Ethiopia

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## Introduction

Caring behavior in nursing is a critical concept within healthcare, encompassing science, art, and humanism [1, 2]. While its definition is complex, caring behavior serves as an ethical foundation in nursing, guiding actions that support, promote, and prevent the erosion of human virtues [3]. It involves addressing the mental, physical, emotional, psychological, and social needs of clients through actions characterized by respect, love, commitment, responsibility, and altruism [4]. Caring behaviors encompass both instrumental (technical and physical care) and expressive (psychosocial and emotional support) dimensions [3, 5, 6]. Nursing theories, categorized into grand, middle-range, and practical nursing theories, explore this concept by focusing on four essential elements: the person (recipient of care), environment (conditions promoting health), health (wellness), and nursing (the caregiver) [7].

A study found that nurses often focus more on expressive care, like listening to patients, while neglecting tasks such as patient monitoring. Complaints about poor attitudes and impersonal care have risen, especially in overcrowded settings [8]. This heavy patient loads and nursing staff shortage often force nurses to prioritize administrative tasks, leading to fatigue and reduced compassionate care [9]. This results in patient dissatisfaction and poor outcomes, such as pressure ulcers, infection, medication errors, falls, and hospital readmissions [10]. Researches show that 46% of patients report dissatisfaction with their caring behaviour [11], and up to 50% of nurses believe care quality has worsened due to bad caring behaviour [12], highlighting the importance of addressing these issues for better healthcare delivery.

Various studies on nursing care behavior have revealed that overall nursing care behavior in inpatient healthcare services is often suboptimal. In Indonesia, only 41% of nurses demonstrated good nursing behavior [13], and in Ghana, the figure was even lower at 33%, leading to lower patient satisfaction with nursing care [14]. In Ethiopia, however, studies showed higher rates of nurses practicing good caring behavior, with 80.3% in Jimma, 68.2% in Gondar, and 51.6% in Harar [15–18]. Despite these positive behaviors, nearly half of the patients in Ethiopia reported dissatisfaction with the nursing care they received. This highlights that patient satisfaction with nursing care is not only a reliable indicator of positive health outcomes but also a key factor in assessing the overall quality of hospital healthcare services. The positive impacts of caring behaviors can increase the quality of services for clients and the satisfaction and retention of nurse health professionals [17]. On the other hand, caring behaviors have negative impacts on the quality of health services for clients and job dissatisfaction, absenteeism,

burnout, and turnover among nursing health professionals [19].

The factors that are positively associated with good caring behaviors among nurses are spirituality [20], authentic leadership [3], long working experience, high level of education, job satisfaction, good working environments, good teamwork with colleagues, increased age, low workload and professional satisfaction [16–18], lack of time, and lack of self-care [21].

The reason for this systematic review and meta-analysis research was the wide range of prevalence rates of caring behaviors among nurses in Ethiopia which mean inconsistent findings. Therefore, various results may challenge health care managers and planners in the preparation of future health care plans with reliable data. The pooled prevalence data on caring behaviors among nurses in Ethiopia can help them plan scientifically synthesized data by pooling inconsistent magnitudes.

## Methods and materials

### Study design

A systematic review and meta analysis were conducted to assess cross-sectional studies on caring behaviors among nurses working in Ethiopia. Preferred Reporting Items for Systematic Review and meta-analysis protocols (PRISMA-P) statement was used and the identification of articles was based on the flow diagram of the PRISMA [22] (Table S1) and the reports were presented according to PRISMA-2020 statements [23, 24]. This review protocol was registered on PROSPERO with the registration identification number CRD42024570781.

### Data sources

In this review, data were extracted from secondary literature on nursing care behavior and associated factors among nurses working in Ethiopia. Articles were published in peer-reviewed journals and unpublished work from university repositories were used for this review. The published and unpublished articles were retrieved for important data on caring behavior and associated factors among nurses from January 1, 2015, to January 30, 2024. All identified citations were exported and uploaded to Mendeley desk top version 1.19.5, where duplicates were removed, and further screening was conducted for the title and abstracts of potential studies.

### Search strategies

An all-inclusive systematic and meta-analysis search was conducted for important literature in databases and repositories. We searched both published and unpublished articles reporting on caring behavior and its associated factors among nurses working in Ethiopia. A thorough and systematic search was performed in PubMed, Scopus, Web of Science, EMBASE, Science

Direct, and African Journals Online using keyword combinations and MeSH terms.

Several combinations of keywords and MeSH terms were required to become the search lists. The advanced search approach was conducted by region of publication and publication year. Additionally, manual searches of the literature were performed. This search included articles published from May 1, 2024, to June 30, 2024.

The primary approach involves systematic keyword searches using terms such as “cross-sectional,” “cohort,” or “case control”. The Patient/Population, Intervention, Comparison, Outcome (PICO) search algorithm guided the identification of relevant studies.

Specifically, a search was conducted using important keywords and MeSH terms via the Boolean operators “OR” and “AND”. Accordingly, the following keywords were used in the searches: (“Prevalence” OR “Proportion”) AND (“caring behaviour” OR “compassion” OR “empathy” OR “kindness” OR “supportiveness”) AND (“nurse” OR “nursing staff”) AND (“associated factors” OR “determinants” OR “predictors”) AND (“Ethiopia”) (Table S2).

### Eligibility criteria

The eligibility of the retrieved articles was independently assessed by three authors (MBY and TEE). An author (MTA) input sought a consensus on potential inclusion or exclusion criteria.

### Inclusion criteria

In this review, the inclusion criteria were as follows to frame the selection of studies.

1. Study Setting: Ethiopia.
2. Study population: nurses working in Ethiopia.
3. Study design: All observational study designs, such as cross-sectional, longitudinal, cohort, and case-control designs, were considered.
4. Published year: January 1/2015 to January 30/2024.
5. Language of the articles: English.
6. Study type: all studies (published vs. unpublished).
7. Outcome: Caring behavior.

### Exclusion criteria

Articles lacking full text or studies with that were unable to provide information and could not obtain the necessary details on caring behavior among nurses working in Ethiopia were excluded.

### Data extraction and quality assessment

Three authors (MBY, EEE, and TED) individually employed a comprehensive evaluation of the included studies via a predefined Excel spreadsheet. A reviewer (MTA) participated when necessary during the critical

assessment process. The data extracted data elements were: author's last name, publication year, study region, study design, data collection methods, data measurement tools, data analysis model, and prevalence of the outcome, and factors effect size and confidence interval. Further contacts and requests for details from the authors of the primary studies were made for missing information and additional data for clarification, as appropriate. Any differences between the reviewers were settled by conversation or consultation with a third independent party.

The Excel spreadsheet was prepared using standardized Jonna Briggs Institute (JBI) checklists for cross-sectional studies used to assess the methodological quality of the studies [25, 26].

### Outcome measurement

The primary objective of this review was to assess the caring behavior of nurses working in Ethiopia. Caring behaviour was measured using the adopted version of the Caring Behaviours Inventory (CBI) [1]. The tool has four subscales and 24 items, including knowledge and skill (5 items), assurance (8 items), respect (6 items), and connectedness (5 items). The possible score range was 24–144. Then scores above or equal to the mean value on the Caring Behavior Inventory scale of caring behavior were classified as higher/good and lower/bad perceptions of caring behavior based on the mean score. The secondary objective was to identify factors associated with caring behaviour, and their effect sizes (OR) and 95% confidence intervals (CI) were calculated.

### Assessment of the certainty of evidence

The certainty of evidence for the prevalence of caring behavior and its associated factors among nurses was evaluated using the GRADE technique, which is used to classify the certainty of evidence [27]. In cases where more information was needed for clarity, the authors of the primary studies were consulted by email. Any discrepancies among the reviewers (EEE, MBY and TED) were settled through discussion or by consulting a third reviewer (MTA).

### Data synthesis and analysis

The extracted Excel data were exported to STATA version 18 to calculate a pooled prevalence of caring behavior among nurses working in Ethiopia. For factors associated with caring behavior, the values of the two-by-two epidemiological table were extracted and used to calculate the odds ratio as an effect size measure along with the 95% confidence intervals.

To examine possible publication bias and small study effects, both funnel plots and Egger's test were conducted [26, 28]. Funnel plots were used to visually inspect the asymmetry in the distribution of study results, and the

Egger test was used to evaluate the statistical presence of publication bias. Additionally, we employ sensitivity analyzes to assess the reliability of our findings with respect to potential publication bias and other sources of bias.

Heterogeneity was statistically quantified by the  $I^2$  statistic, and potential sources of variability were explored.  $I^2$  values of 0–5%, 5–25%, 25–50%, 50–75%, and 75–100% were interpreted as non-heterogeneity, low, medium, and high heterogeneity, respectively [29].

In random effect mode, a meta-analysis was used to assess caring behaviour among nurses and this method was used to account for observed variability [30]. The prevalence and associated factors findings are presented in a forest plot with 95% confidence intervals.

Subgroup analyzes were performed when sufficient data were available to investigate differences by region and sample size. The results of the pooled prevalence were visually presented in a forest plot format with a 95% confidence interval.

## Results

### Study selection and inclusion criteria

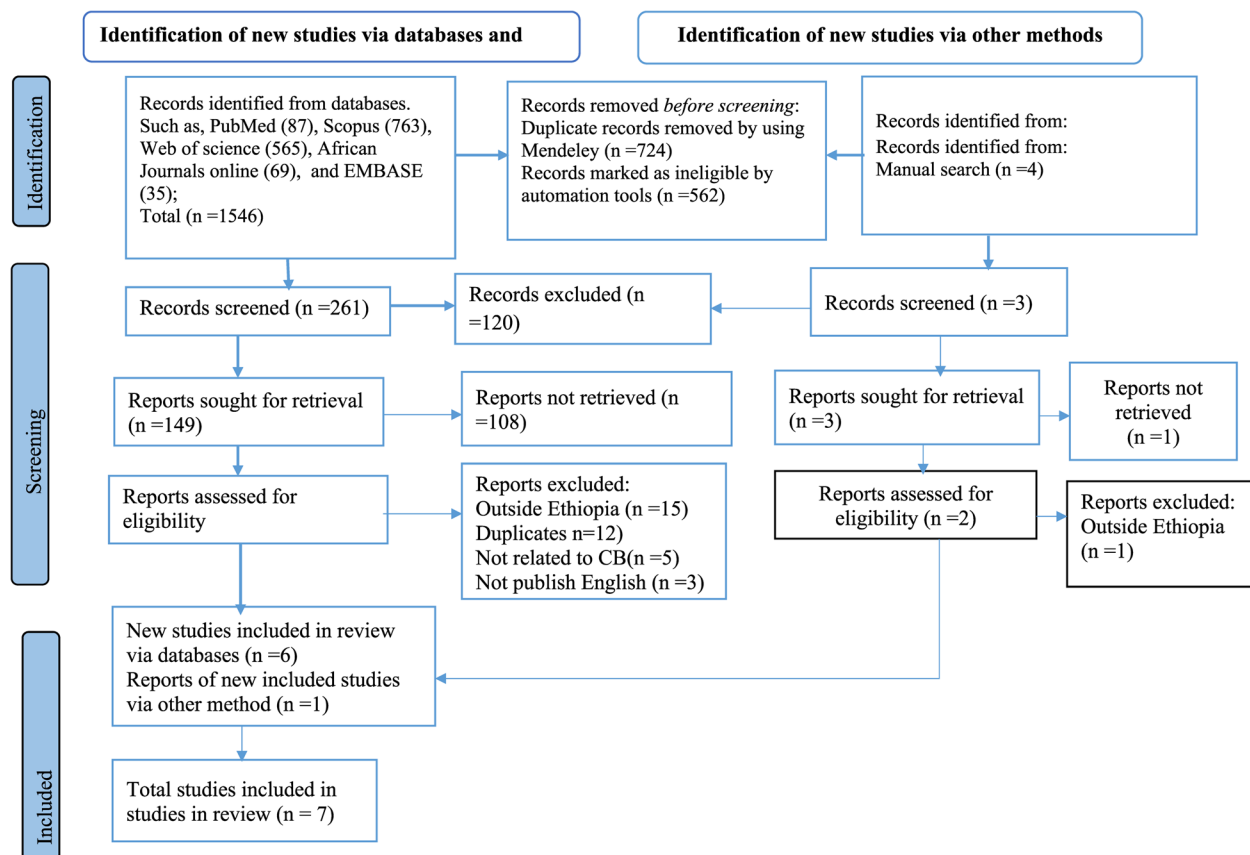
A total of 1546 articles were obtained through database searches, and 4 articles from manual search from

references were obtained through systematic searches. From the search, approximately 1285 articles were excluded, 724 duplicated records were removed via Menedeley reference manager software, the automation tool records were marked as ineligible, and 120 studies were selected for abstracts that were not found in the abstract and excluded. A total of 114 articles that were not found/reported were not recovered, and the remaining articles (61) were excluded because they were published outside Ethiopia ( $n = 20$ ), were duplicates ( $n = 15$ ), were not related to caring behavior ( $n = 10$ ), or were not published in English ( $n = 7$ ). Finally, a total of seven articles were included in the systematic review and meta-analysis used for pooled meta-analysis (Fig. 1).

### Characteristics of the included studies

In this review, seven cross-sectional studies were evaluated to determine the pooled prevalence of caring behavior and its associated factors among nurses working in Ethiopia.

A total of 2206 participants were included in this review. With respect to the study design, all studies had an analytical cross-sectional design. Two articles were not published (university research repositories).



**Fig. 1** PRISMA 2020 flow chart of primary study selection for systematic review and meta-analysis of caring behavior among nurses and associated factors among nurses working in Ethiopia

**Table 1** Characteristics of the included studies determining the pooled prevalence of caring behavior and associated factors among nurses in Ethiopia

Author, Published Year [Reference list]	Study Region	Study design	Data collection method	Measure-ment tool	Data analysis model	Sample size	Prevalence	Quality
Oluma et al., 2020 [17]	Oromia	Cross sectional	Self-administered	CBI	linear regression	224	80.30%	Low-risk
Fikre et al., 2022 [16]	Harar	Cross sectional	Self-administered	CBI	Binary logistic regression	465	63.40%	Low-risk
Kibret et al., 2022 [18]	Harar	Cross sectional	Self-administered	CBI	Binary logistic regression	300	51.67%	Low-risk
Ashagere et al., 2023 [31]	SNNPR	Cross sectional	Self-administered	CBI	Binary logistic regression	360	53.3%	Low-risk
Assefa et al., 2022 [15]	SNNPR	Cross sectional	Self-administered	CBI	Binary logistic regression	269	75.1%	Low-risk
Regassa et al., 2022 [32]	Harar	Cross sectional	Self-administered	CBI	Binary logistic regression	300	52.00%	Low-risk
Ashenafe et al. 2015[33]	Amhara	Cross sectional	Self-administered	CBI	Binary logistic regression	288	68.20%	Low-risk

**Table 2** Quality assessment results of included studies on caring behavior among nurses and associated factors in Ethiopia

Author, Publication Year [Reference list]	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Overall appraisal
Oluma et al., 2020 [17]	Y	Y	Y	Y	Y	Y	Y	Y	8
Fikre et al., 2022 [16]	Y	Y	Y	Y	Y	Y	Y	Y	8
Kibret et al., 2022 [18]	Y	Y	Y	Y	Y	Y	Y	Y	8
Ashagere et al., 2023 [31]	Y	Y	Y	Y	Y	Y	Y	Y	8
Assefa et al., 2022 [15]	Y	Y	Y	Y	Y	Y	Y	Y	8
Regassa et al., 2022 [32]	Y	Y	Y	Y	Y	Y	Y	Y	8
Ashenafe et al. 2015 [33]	Y	Y	Y	Y	Y	Y	Y	Y	8
Amelework et al., 2019 [34]	Y	Y	Y	Y	Y	Y	Y	Y	8

Questions code response: Y = Yes; N = No; U = Unclear; NA = Not Applicable

Q1. Were the criteria for inclusion in the sample clearly defined?, Q2. Were the study subjects and the setting described in detail?, Q3. Was the exposure measured in a valid and reliable way?, Q4. Were objective standard criteria used for measurement of the condition?, Q5. Were confounding factors identified?, Q6. Were strategies to deal with confounding factors stated?, Q7. Were the outcomes measured in a valid and reliable way?, Q8. Was appropriate statistical analysis used?

Regarding the definition of outcomes, all included studies assessed caring behavior using the CBI scale through a self-administered data collection approach.

All 7 included [15–18, 31–33] studies had a cross-sectional design, of which 3 were from the Harar region [16, 18, 32], 2 were from the SNNPR [15, 31], 1 was from the Oromia region [17], and 1 was from the Amhara region [33]. The prevalence of caring behavior among nurses working in Ethiopia ranges from 52.0 to 80.3% (Table 1).

#### Quality of included studies

The JBI tool has eight parameters: yes, no, unclear, and not applicable options. If ‘yes’ was selected, a point was awarded. Studies with seven or more points were considered high quality and included in the review. The quality of the evaluation was independently assessed by two reviewers, and disagreements were treated accordingly. A narrative report and statistics (Table 2) were used to present the results of the critical assessment based on cross-sectional studies for the critical assessment tools to use in JBI systematic reviews. To ensure the credibility of the systematic review and meta-analysis, the risk of bias for each study was independently assessed by two reviews using the JBI tool and the findings were discussed accordingly. To ensure consistency and objectivity, any discrepancies between the reviewers were resolved through a discussion with an independent reviewer. The sum score

of yes for each research questioner was classified as low risk and a quality index score of seven or above was considered (Table 2).

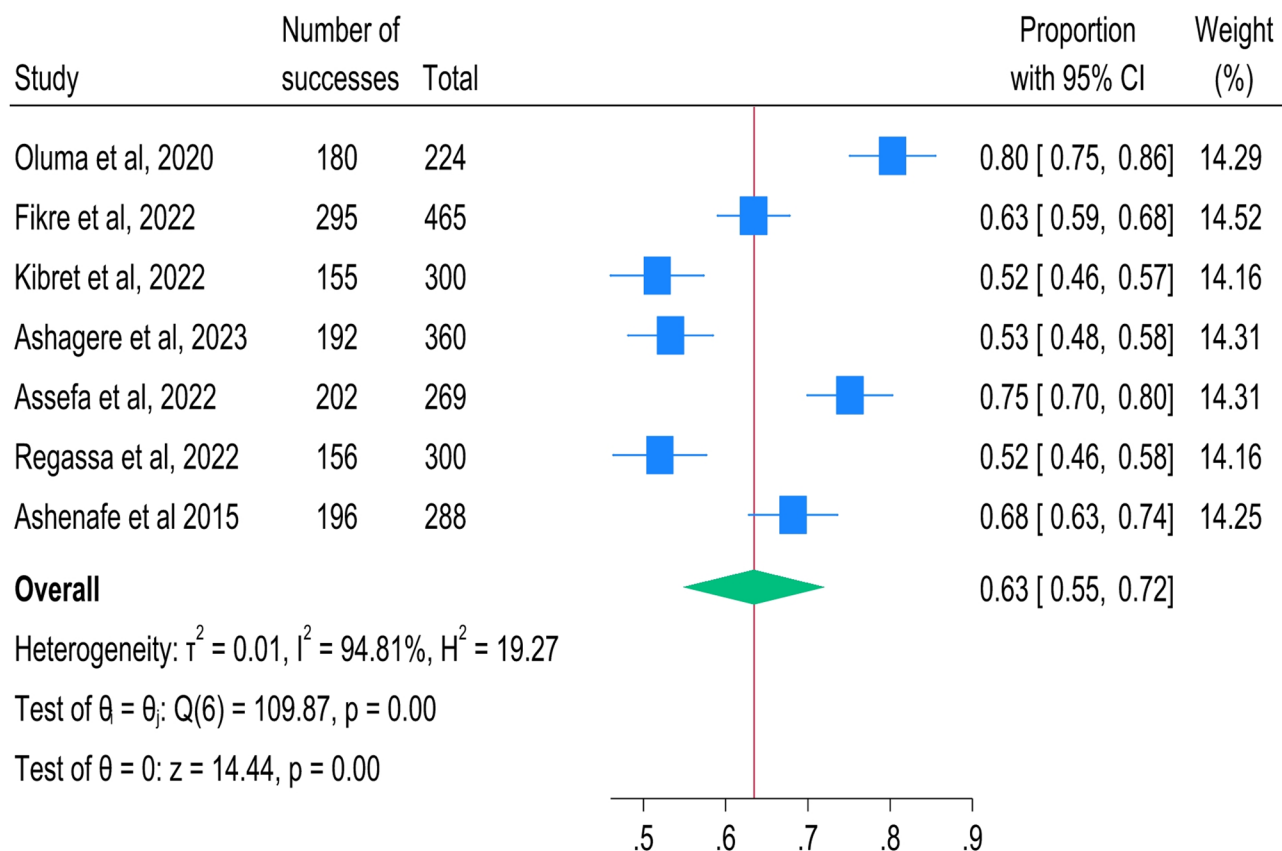
#### Pooled prevalence of caring behavior among nurses in Ethiopia

In this review, the pooled prevalence of caring behavior was 63% (95% CI: 55%, 72%) among nurses working in Ethiopia, with considerable heterogeneity among studies ( $I^2 = 94.81\%$ ,  $P = 0.000$ ), as illustrated in Fig. 2. Looking for its variability, we conducted a random-effects model to examine the data, checking for strong modification of the significant heterogeneity among the included articles.

#### Subgroup analysis of caring behavior among nurses working in Ethiopia

To reduce the considerable heterogeneity, we used a subgroup analysis by region and sample size. The findings of the subgroup analysis showed substantial variations, with the highest level of caring behavior identified in the Oromia region at 80.0% (95% CI: 75%, 86%) and without heterogeneity ( $I^2 = 0.00\%$ ). On the other hand, the Harar region had the lowest level of caring behavior among nurses, at 56% (95% CI: 48%, 64%), complemented by significant heterogeneity ( $I^2 = 84.89\%$ ) (Fig. 3). We also performed a subgroup analysis by sample size, which revealed no heterogeneity ( $I^2 = 0.0\%$ ;  $p = 0.000$ ) (Fig. 4).





## Random-effects REML model

**Fig. 2** Forest plot depicting the pooled prevalence of caring behavior among nurses working in Ethiopia

### Publication bias in caring behavior among nurses working in Ethiopia

Publication bias was checked through the Egger test and funnel plot. Accordingly, Egger's test report ( $p = 0.4967$ ;  $\tau^2 = 0.01436$ ;  $I^2 = 95.13\%$ ) was not statistically significant, which shows that there was no evidence of publication bias in the meta-analysis. Furthermore, the funnel plot showed that there was a symmetrical evenly distribution of the included studies (Fig. 5), this was confirmed with no publication bias among the studies.

Moreover, we employed factors that can cause sources of heterogeneity, and we conducted a meta-regression analysis, including sample size and publication year as covariates. However, this review revealed that none of these variables had a significant effect on observed heterogeneity among studies ( $P > 0.05$ ) (Table 3).

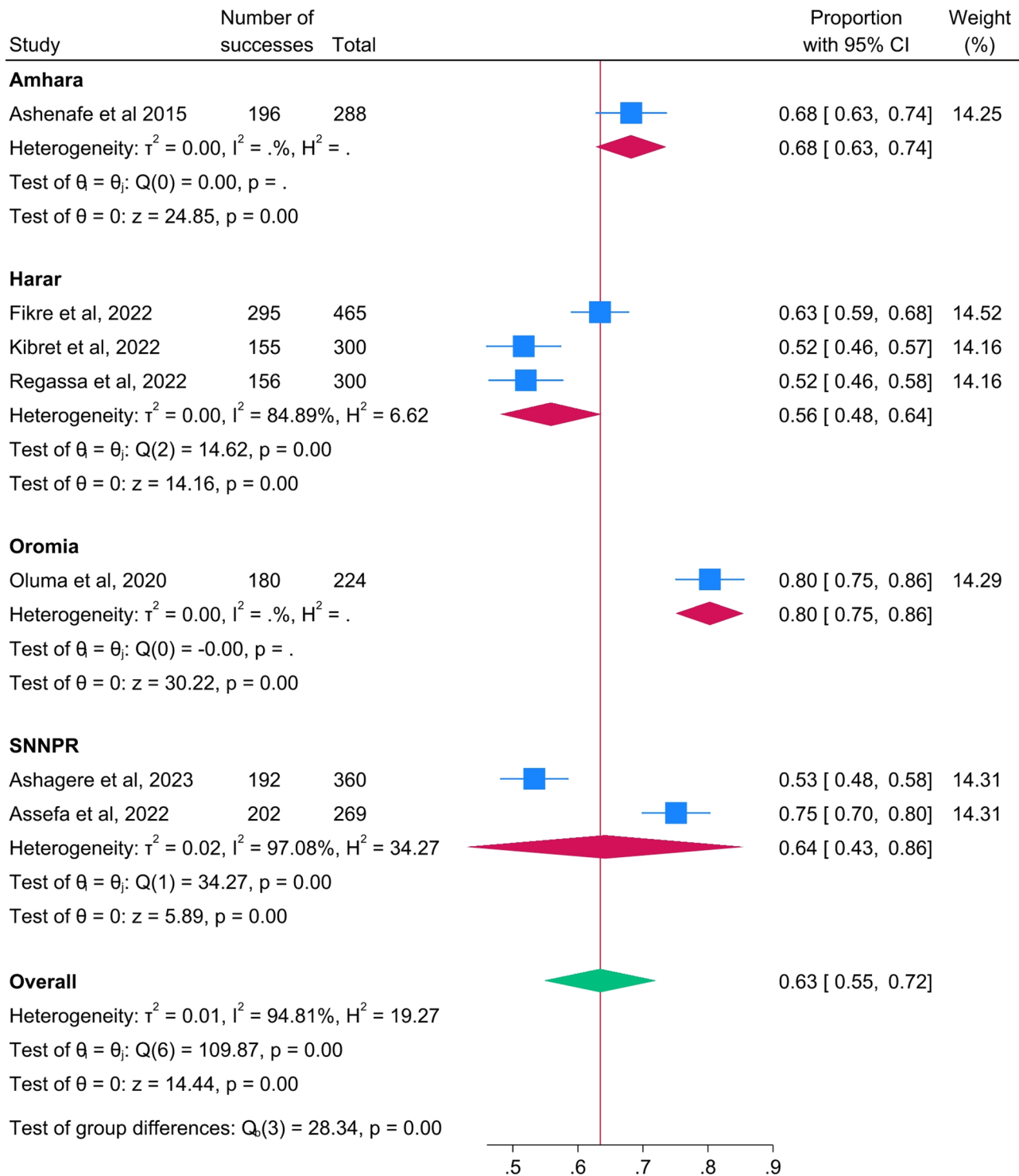
### The Leave-Out sensitivity

A detailed examination of the influence of individual studies on the pooled prevalence of caring behavior within the setting of Ethiopian nurses working in. In this systematic review, data analysis was done by removing each study. The results of this analysis revealed that the

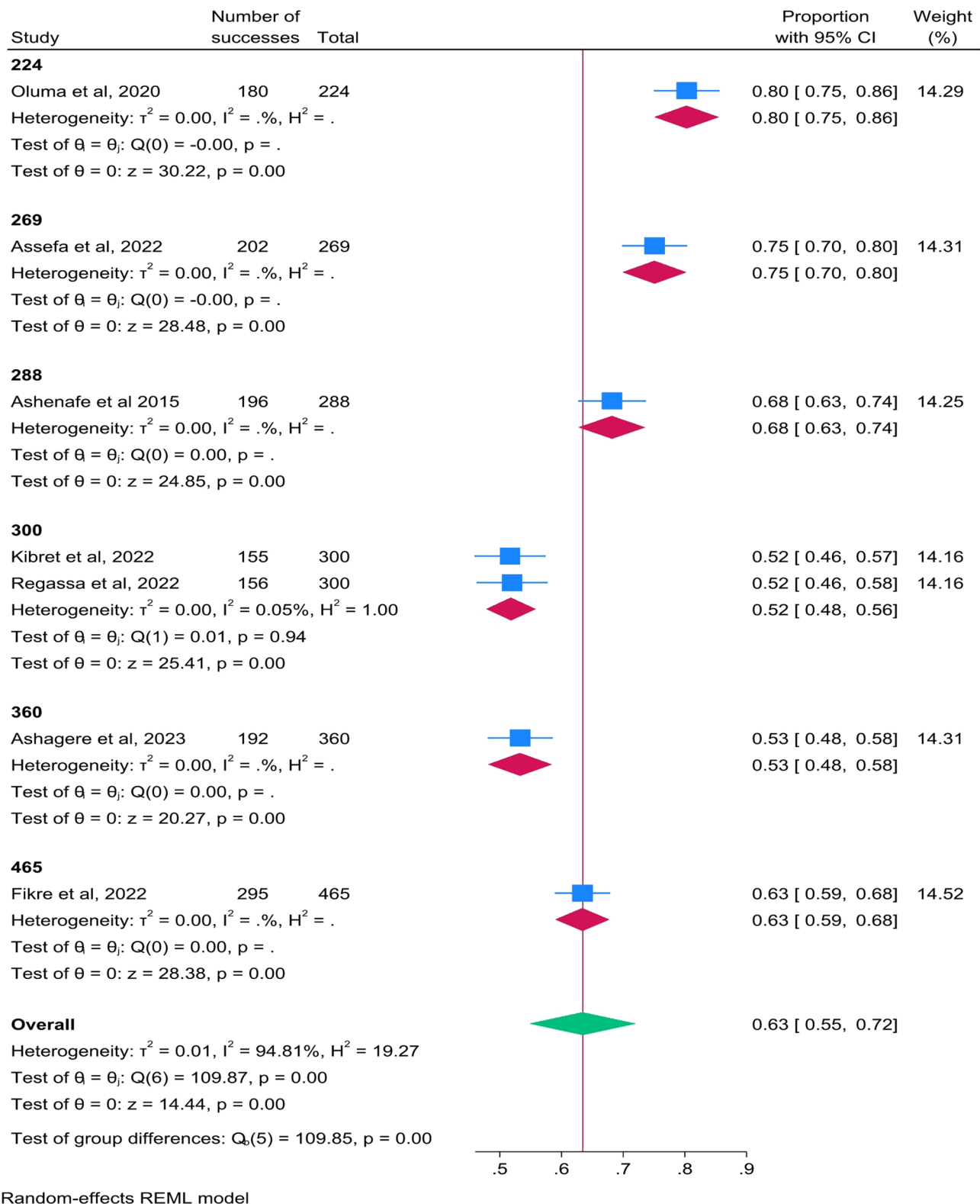
exclusion of one study did not lead to a significant or statistically significant modification in the overall pooled effect of caring behavior among Ethiopian nurses working in. The reports are graphically presented in (Fig. 6) which is showing that the stability and robustness of the overall pooled estimate which was excluded any particular studies from the examination.

### Quality for certainty of evidence

An assessment of the overall strength of evidence was conducted using the GRADE framework, adapted for suitability to an observational epidemiology question, to evaluate the prevalence of nursing care behavior in Ethiopia. The assessment considered risk of bias, consistency of results (heterogeneity), directness (applicability of included studies to the research question), precision (based on confidence intervals of the summary estimate), and publication bias (assessed using a funnel plot). As summarized in Table X, the certainty of the evidence for the prevalence estimate was rated as moderate, primarily due to inconsistency across studies and imprecision. The complete GRADE evidence summaries are available in supplementary file (Table S3).

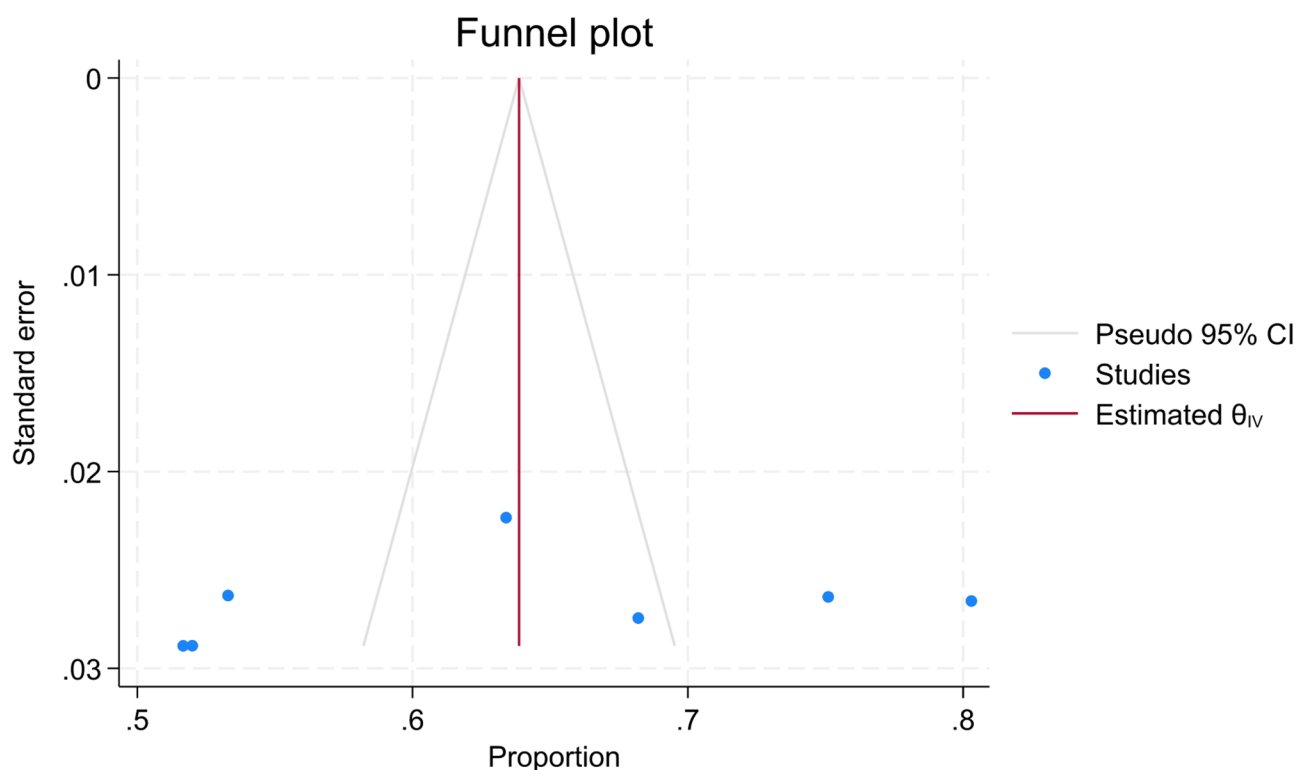


**Fig. 3** Forest plot of the pooled prevalence of caring behavior among Ethiopian nurses with the corresponding 95% CI of the subgroup analysis based on region.



**Fig. 4** Forest plot of the prevalence of caring behaviour with the corresponding 95% CI of the subgroup analysis based on sample size.





**Fig. 5** Funnel plot with 95% confidence limits of the pooled prevalence of caring behavior in Ethiopia

**Table 3** Factors that can affect heterogeneity between studies in meta-regression analysis

Heterogeneity sources	coefficients	Standard errors	<i>p</i> value	95% CI
Sample size	− 0.0126064	0.0194274	0.516	− 0.0506834, 0.0254706
Publication year	− 0.0004911	0.0006811	0.471	− 0.001826, 0.0008439

#### Factors associated with caring behavior among nurses in Ethiopia

This study investigated several types of factors associated with caring behavior among nurses working in Ethiopia. However, one factor has occurred in two or more primary studies that were included for factor analysis. Hence, we selected four variables: professional satisfaction, job satisfaction, workload, and relationships with workers, were associated with caring behaviors among nurses working at in Ethiopia. According to the results of this review, there was a statistically significant association between professional satisfaction and caring behavior among nurses. Nurses who had higher professional satisfaction had a 1.84-fold greater likelihood of having better caring behavior than nurses with lower professional satisfaction (OR = 1.84; 95% CI: 1.41, 2.27) (Fig. 7).

The pooled odds ratio of this meta-analysis revealed that nurses with greater job satisfaction were three times more likely to have higher/good caring behavior than those with lower job satisfaction (OR = 3.04; 95% CI: 1.13, 4.94) (Fig. 8).

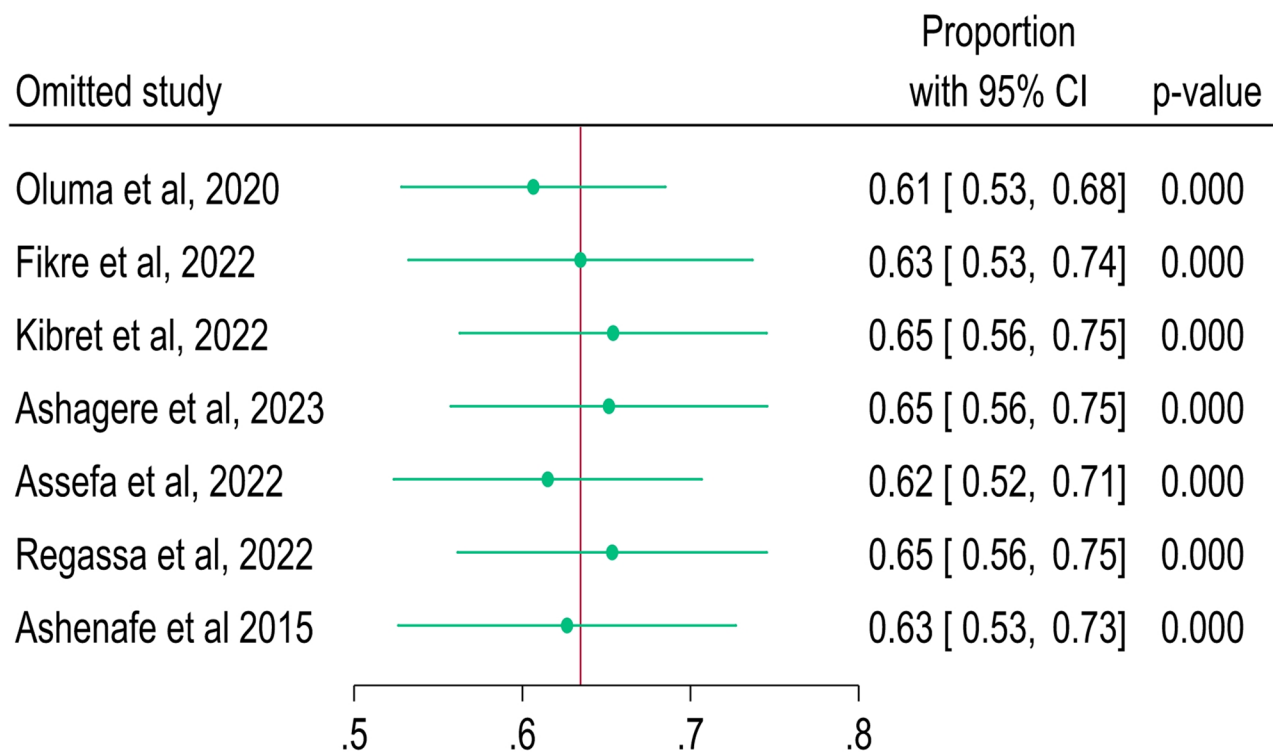
The review findings indicated a significant association between workload and caring behavior. Nurses who had

a low workload were three times more likely to have good caring behavior than those who had a high workload (OR = 3.14; 95% CI 2.04, 4.25), with no heterogeneity ( $I^2 = 0.00\%$ ,  $p = 0.86$ ) (Fig. 9).

In this review, there was a significant association between good relationships with colleagues and caring behavior among nurses in Ethiopia (OR = 4.72; 95% CI 1.57, 7.87), and there was no heterogeneity ( $I^2 = 0.00\%$ ;  $p = 0.88$ ) (Fig. 10).

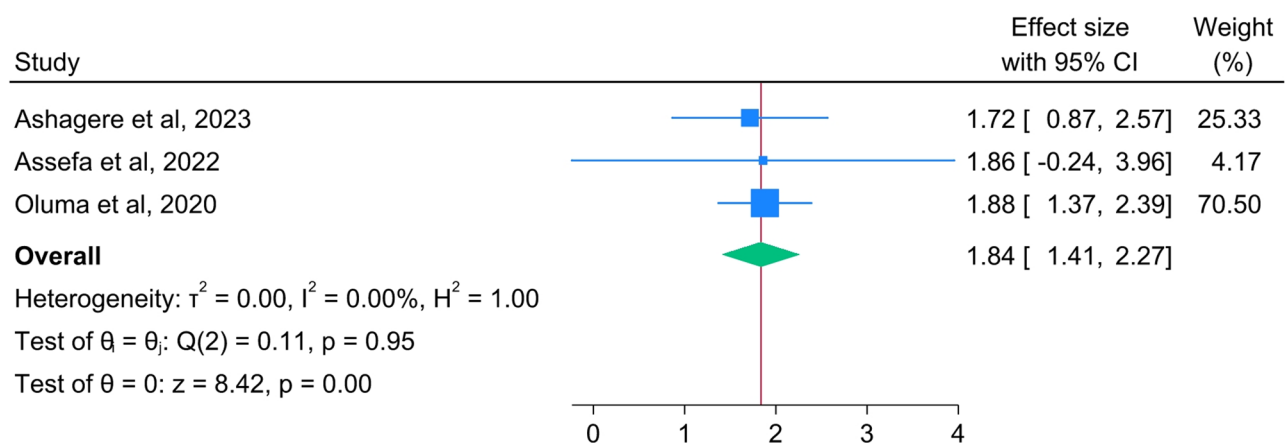
#### Discussion

In this systematic review and meta-analysis, the overall prevalence of nursing care behavior was found to be 63% in Ethiopia. The pooled factors responsible to influencing of nursing care behavior were professional satisfaction, job satisfaction, workload, and relationships with workers in Ethiopia. This finding was consistent with studies conducted in Indonesia [35], in China [36], the Philippines [37], and Switzerland [38]. This is due to all studies conducted by using a similar tool for data collection. The prevalence of caring behavior was higher than that reported in other studies [18, 31]. This might be due to differences in scope, study period, and sample size. The



## Random-effects REML model

**Fig. 6** Forest plot of leave-one-out meta-analysis of study sensitivity analysis of the meta-analysis of CB



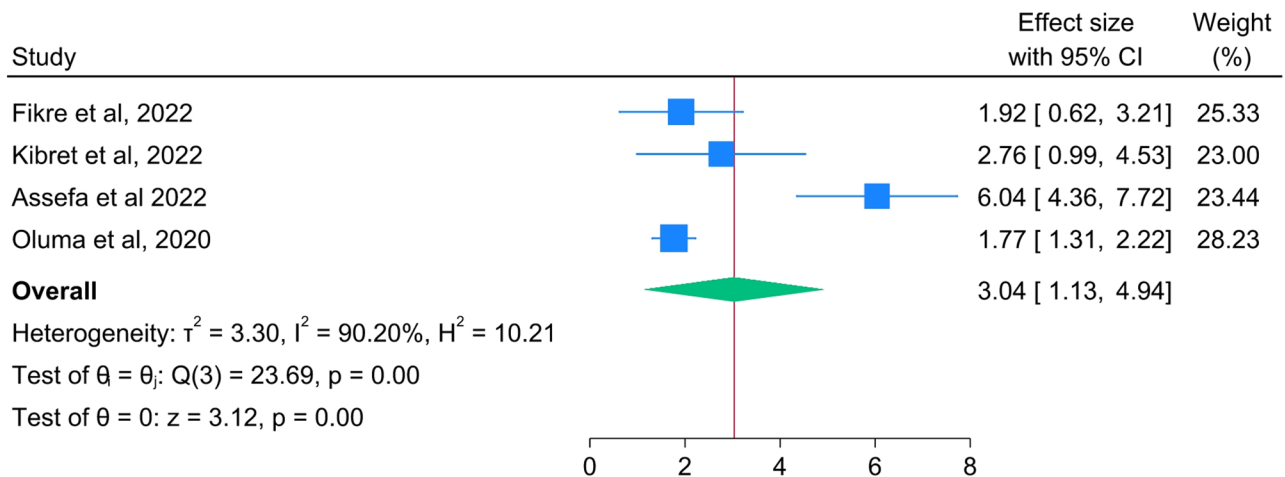
## Random-effects REML model

**Fig. 7** Forest plot of the pooled OR of the association between professional satisfaction and caring behavior among nurses in Ethiopia

prevalence of good perceptions of caring behavior in this review was lower than that reported in a study conducted in the USA [39]. The discrepancy could be related to the data collection collected after the interventional practice model was conducted, that is, a higher income country, and in this review, most nurses provided human health care services and very important key components of the

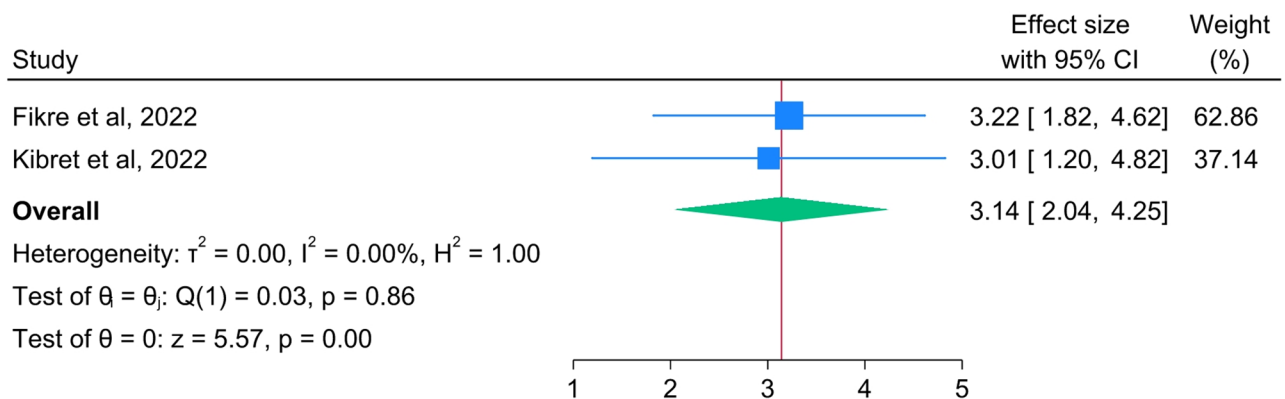
quality of nursing care, subsequently, clinical care, comfort and relational care.

Professional satisfaction of nurses is an important factor that affects the behavior of nursing care. In this study, nurses who had high nursing professional satisfaction were 1.8 times more likely to have good caring behavior than those with low professional satisfaction. Studies from Japan [40] and Jordan [41], in line with



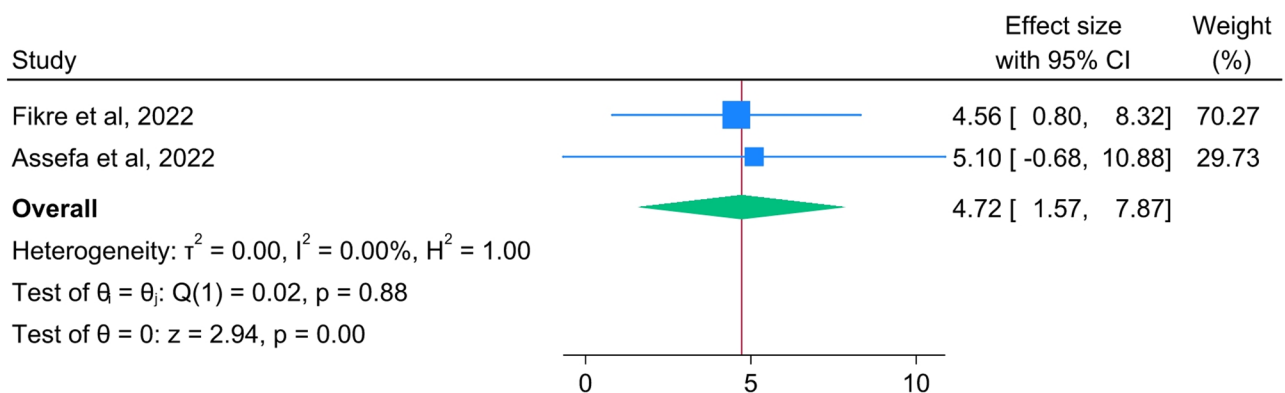
Random-effects REML model

**Fig. 8** Pooled OR of the association of job satisfaction with caring behavior among nurses working in Ethiopia



Random-effects REML model

**Fig. 9** Pooled OR of the association between a low workload and caring behavior among nurses working in Ethiopia



Random-effects REML model

**Fig. 10** Pooled OR of the association between good relationships with colleagues and caring behavior among nurses working in Ethiopia

this study, revealed that a greater prevalence of nurses with professional satisfaction were more likely to have good nursing care behavior than poor professional satisfaction.

In this review, nurses who were satisfied with their job had 3.04 times greater odds of good care behavior than those who were not satisfied with their job. This study was in agreement with studies conducted in Malang, Indonesia [42], Southwest China, USA [43], which revealed that the caring behavior of nurses was positively affected by their job satisfaction, which is significantly associated with caring behavior.

In this review, nurses who had lower workloads were potential predictors of caring behavior among Ethiopian nurses. In this study, nurses with a low workload were 3.14 times more likely to have good caring behavior than nurses who reported having a high workload. These findings are consistent with those of a study conducted in Greece [44].

A good relationship with co-workers was significantly associated with caring behavior, which is one of the characteristics of the workplace, and nurses who had good relationships with co-workers were 4.7 times more likely to have good perceptions of their caring behavior. Another study revealed that in collaborative work relationships with coworkers, such as doctors, midwifery professionals might increase caring behaviors among nurses; thus, a good conducive environment through proper assignment of workload, a reward system, empowerment, and communication dimensions is needed. This finding was also supported by another study conducted in Greece, which revealed that the variation in nurse care was explained by the satisfaction of nurses with social contact [44].

### Strengths and limitations of the study

The pooled findings on caring behavior and associated factors are systematically carried out for the first time and provide valuable information to stakeholders throughout the country. The limitations of the study were the following: All studies were cross-sectional, which may not reveal the exact cause-effect relationships. Additionally, the heterogeneity of the studies was considerable. To overcome this heterogeneity, we conducted subgroup analysis by study region and sample size, meta-analysis by sample size and publication year, and leave out sensitivity analysis; however, further interpretation of the findings is needed.

The study's findings suggest important implications for healthcare professionals, responsible bodies, and future researchers. Healthcare professionals should recognize the impact of job satisfaction, workload, and work relationships on caring behavior to improve patient care. Responsible bodies, including hospital administrators

and policymakers, should focus on reducing workloads, enhancing job satisfaction, and fostering collaboration to support compassionate nursing care. For future researchers, further exploration of targeted interventions addressing these factors is needed to improve nursing behavior and overall healthcare quality.

### Conclusions and recommendations

The pooled prevalence of caring behavior among nurses working in was not satisfactory. The contributing factors for caring behaviour were professional satisfaction, job satisfaction, workload, and work relationships with workers, which are factors associated with caring behaviours among nurses in Ethiopia. Improving professional and job satisfaction through career development, and recognition. Fostering positive work relationships and teamwork through mentorship and communication can create a supportive environment. Additionally, prioritizing work-life balance, providing mental health support, and encouraging continuous professional development will empower nurses and promote compassionate care.

#### Abbreviations

CBI	Caring Behavior Inventory
JB	Joan Briggs Institute
OR	Odds ratio
PECO	population, exposure, comparison, and outcome
PRISMA-P	preferred reporting items for systematic review and Meta-analysis Protocols

### Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s12913-025-12916-1>.

Supplementary Material 1: Table S1. PRISMA 2020 checklist for showing pooled prevalence of caring behavior and associated factors among nurses studied.

Supplementary Material 2: Table S2. Searching strategies of different databases to search articles.

Supplementary Material 3: Table S3. Overall strength of evidence of prevalence of nursing caring behaviour.

#### Acknowledgements

The researchers thank the authors of the primary studies for their concrete contributions to the discipline. In addition, we thank the independent consultants for their time and contribution in the extraction and analysis of each study.

#### Authors' contributions

The initiation of the review, data extraction, and design of the work, analysis, and interpretation of the data was carried out by MBY, TED, and EEE. Data quality assessment and disagreements were solved, the article was drafted, it was critically reviewed for intellectual content and validation, and final approval of the version to be published was provided by MBY, TED, EEE, and MTA. All authors read and approved the final manuscript.

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### Data availability

The author confirms that all the data generated or analysed during this study are included in this published article.

### Declarations

#### Ethics approval and consent to participate

In this study, published articles were used for analysis. Ethical approval and consent were not mandatory.

#### Consent for publication

Not applicable.

#### Competing interests

The authors declare no competing interests.

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