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Patient satisfaction and associated factors with inpatient health services at public hospitals in Ethiopia: a systematic review and meta-analysis

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Abstract

Background The way the healthcare delivery system is reflected by patient satisfaction. Establishing a health system with better results depends on it. It has been assumed that higher patient satisfaction levels correlate with quality healthcare outcomes. There is little national data to support patient satisfaction with inpatient health services in Ethiopia. In order to estimate the pooled proportion of patient satisfaction and determine the associated factors with inpatient health services at public hospitals, a systematic review and meta-analysis were conducted.

Methods The Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) guidelines were followed in the extraction of the data. To get the included studies, the following electronic databases were searched: PubMed, Google Scholar, Med-Line, Web of Science, Scopus and Repositories. Software called STATA version 17 was used to analyze statistical data using the random effects model. Forest plots were used to display the pooled results.

Results Of the 1583 records resulted in electronic databases searching, 11 studies with 3,958 participants were included in this systematic review and meta-analysis. The estimated pooled proportion of patient satisfaction with inpatient health services was found to be 57.4% (95% CI: 50.88–64.59, $I^2 = 95.25\%$). Assuring privacy for patients (OR = 7.44, 95% CI: 3.63–15.25, $I^2 = 0.0\%$), availability of direction signs (2.96, 95% CI: 1.91–4.57, $I^2 = 0.0\%$), providing adequate information (OR = 3.27, 95% CI: 1.63–6.58, $I^2 = 65.60\%$), history of previous admission (OR = 0.29, 0.18–0.46, $I^2 = 86.36\%$) and providing on time treatment (OR = 1.63, 95% CI: 1.21–2.20, $I^2 = 86.36\%$) were statistically significant factors associated with patient satisfaction with inpatient health services.

Conclusion The estimated pooled level of patient satisfaction with inpatient health services is low in Ethiopia. A higher level of patient satisfaction with inpatient health treatments was predicted by factors such as privacy assurance, fast services, availability of direction signs, provision of services with adequate information transfer, and no history of previous admission. To improve patient satisfaction, the Ministry of Health and hospital administration must place a strong emphasis on ensuring the provision of high-quality, standard-based inpatient healthcare.

Keywords Patient satisfaction, Inpatient health service, Systematic review, Meta-analysis, Ethiopia

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Introduction

Establishing a health system with better results and long-lasting treatment is essential [1]. Quality, patient-centered treatment is becoming more prevalent in healthcare these days [2]. The effectiveness of healthcare delivery and the quality of treatment provided have been assessed through the measurement of patient satisfaction [3–6]. The term "patient satisfaction with health services" describes how people feel about the setting, procedure, and overall state of health delivery system. Satisfaction compares the experiences of patients with their pre-conceived expectations [7–9]. Assessing the opinions of patients on healthcare services is a crucial part of the global healthcare delivery system [6, 10, 11]. It has been assumed that higher patient satisfaction levels correlate with quality healthcare outcomes [12–15]. Patients perceive health care to be up to date, unless they experience dissatisfaction [8, 16–18]. Dissatisfaction arises when individuals' expectations and the health treatments provided to them differ [12].

A moderate degree of patient satisfaction with inpatient health treatment was found in a study that analyzed 19 studies that were only published in Iran and Persia [19]. According to a Chinese study by Chen, H. et al., 89.75% of patients were satisfied with inpatient medical services [20]. Another study conducted in a different part of China by Shan L et al. revealed that 24% of the reason was patient dissatisfaction with inpatient care [21]. According to a survey of 52 Iranian studies, the total patient satisfaction rate with hospital treatments was found to be 14.1%, with a range of 0.2% to 65.1% [22]. Overall patient satisfaction in Iran was 84.3% with inpatient care provided by a hospital affiliated to Tehran University of Medical Sciences [23]. According to a Saudi Arabian study, patient satisfaction with primary healthcare overall was examined in 25 papers, ranging from 78–96% [24].

The level of patient satisfaction could be influenced by multifaceted factors including cultural, behavioral, and socio-demographic features [25]. Patients' age, sex, residence, previous admission, educational status, occupational status, quality of care, hospital accreditation, length of hospital stays, and insurance ownership were determinants of inpatient satisfaction [1, 14, 19]. Higher educational levels, longer waiting times, and diagnosis type were identified as predicting patient satisfaction [2, 7]. Lack of essential resources like drugs, poor communication, long waiting times, uncleanliness of wards, violating patients' privacy, and minimal time of visiting were identified as reasons for patients' dissatisfaction regarding the health services offered to them [26]. Healthcare providers' attitudes, costs of services, the nature of the working environment, and patient trust are related to

inpatient satisfaction [20, 21, 27]. It has been evidenced that health status and provider-to-patient relationships are the most important determinants of satisfaction with medical care [6]. It was also evidenced that patients' income is significantly related to their satisfaction with health services [28].

The combination of information from primary studies synthesized through meta-analysis can provide more relevant and credible pieces of evidence than primary studies that may be used for health policy and decision-making purposes. More powerful, generalizable, and precise findings can be estimated, and possibly new research questions could be generated [29, 30]. Although patient perspectives are imperative in evaluating health service standards in developing nations, their views have not been adequately considered [31]. Many primary studies were conducted in different regions of Ethiopia with inconsistent results regarding inpatient satisfaction status and its determinants. However, the evidence in country level is still scant. Therefore, this systematic review and meta-analysis was conducted to determine the national level of inpatient satisfaction status and its determinants at public hospitals in Ethiopia.

Methods and material

Study design, setting, and search strategy

A systematic review and meta-analysis were employed to determine the pooled patient satisfaction and identify associated factors with inpatient health services in Ethiopia. All primary studies that investigated the level of patient satisfaction and associated factors with inpatient health services of public hospitals in Ethiopia were used to conduct this meta-analysis. It was checked whether the systematic and meta-analysis were conducted or not on this title using a trial registration number. We registered for a meta-analysis study on this title on the PROSPERO database with the registration number CRD42024498195. We followed the Preferred Reporting Items for Systematic Review and Meta-analysis (PRISMA) guidelines in the procedure of conducting this study [29, 32]. Electronic databases including Google Scholar, Pub-Med, Med-Line, Web of Science and Scopus were searched for identifying studies reporting the level of patient satisfaction and associated factors with inpatient health services that were published from any time in Ethiopia. The articles were downloaded, screened, and cited using EndNote 20 reference management software for Windows. Additional literatures were retrieved by extending our search to cross-references. Ethiopian Universities' online database repositories were accessed to retrieve unpublished papers.

Research questions to this systematic review and meta-analysis were organized, framed, and answered using the

population, exposure, comparator, and outcome (PECO) approach [29]. Population refers to admitted patients or caregivers or parents (of childhood patients), exposure refers to associated factors with inpatient satisfaction, comparator refers to the reference group reported in the included studies, and outcome refers to the level of patient satisfaction with inpatient health services.

A literature search was held from January 20 to February 20, 2024. To search the articles, we used the combination of key search terms as follows: ('satisfaction' OR 'patient satisfaction') AND ('in-patient' OR 'in-patient health services' OR 'admitted patients') AND ('associated factors' OR 'determinants') AND ('Ethiopia').

Eligibility criteria

Both published and unpublished studies reporting the level of satisfaction with inpatient health services among admitted patients in the English language regardless of study years were eligible. All studies reporting the level of satisfaction in the context of inpatient departments at public hospitals in Ethiopia irrespective of methodological measurements were included. Studies that assessed the associated factors with patient satisfaction with inpatient services were also included. However, we excluded studies that were methodologically error, not conducted in the context of inpatient units, without full-text access, reviews, and studies conducted outside of Ethiopia. Studies that reported inpatient satisfaction with specific segments of services like nursing, laboratory, and pharmacy services were also excluded. Evaluation of eligibility criteria for all retrieved studies was carried out by two authors (A.T & M.A) independently, and any inconsistencies and disagreements were resolved by thorough discussion and consensus.

Outcome variables and operational definitions

The first outcome variable in this meta-analysis was patient satisfaction with inpatient health services expressed in percentage. It was estimated by performing meta-analysis for pooled effect size using random effects model. The second outcome variable was predictors of patient satisfaction level with inpatient health services. The odds ratios were used to identify predictors based on the binary results from primary studies included in the meta-analysis.

Quality assessment and data extraction

Two authors (A.T & A.M) conducted a full-text review of the included articles independently using a quality appraisal tool. The third author (M.A) facilitated and arranged discussions to resolve any disagreements and differences. The quality appraisal tool adapted from the Joanna Briggs Institute (JBI) critical appraisal checklist

for cross-sectional studies consisting of eight-item checklists [33]. We also assessed the methodological quality of included studies using a modified version of the Newcastle–Ottawa Scale (NOS) for cross-sectional studies which includes key criteria like sample size, sample representativeness, response rates, controlling confounders, outcome determination, and appropriateness of statistical tests [34].

Data Extraction was conducted by two authors (A.T & M.A) independently using a pre-piloted data extraction format developed in Excel spreadsheet Microsoft for Windows. The relevant information to be collected regards the author's name, publication year, study hospital, region, study design, sample size, sampling technique, outcome measuring instrument, proportion of patient satisfaction with inpatient health services, and determinants of inpatient satisfaction.

Data processing and analysis

Meta-analysis was computed after importing the extracted data into STATA 17 software. Forest plots was done using a Q-test and inverse-variance (I^2) statistical test to measure the degree of heterogeneity across included studies at a p -value less than 0.05 level of significance. The I^2 statistical test measures the percentage of total variation among studies influencing effect size. The range is always from 0–100% reflecting no-to-high degrees of heterogeneity. A random effects meta-analysis model was used to estimate the pooled values of the patient satisfaction with inpatient health services by generating the pooled 95% confidence interval [30, 35]. To identify possible sources of heterogeneity, a Univariate meta-regression was computed. Publication bias was checked using a Funnel plot and Egger's test at p -values less than 0.05 significant levels [36, 37].

Results

After searching an electronic database, 1583 records were found. Of these, 58 duplicate studies, 1452 studies that were irrelevant, 33 studies that did not involve hospital services were removed. After the full texts of the remaining 40 papers were evaluated for eligibility, 29 of them were deemed ineligible due to not meeting the inclusion criteria. Finally, 11 studies: two studies [38, 39] in Addis Ababa, one study [40] in Amhara, two studies [41, 42] in Oromia, three studies [43–45] in Southern Nations, Nationalities and people, one study [46] in Tigray, one study [47] in Beninshangul Gumuz, and one study [48] in Gambella regions were included in systematic review and meta-analysis based on inclusion criteria (Fig. 1). Nine of the eleven included studies were published, while two of the studies Girma et al. [39] and Melese et al. [43] were gray studies. Nine studies were undertaken in general

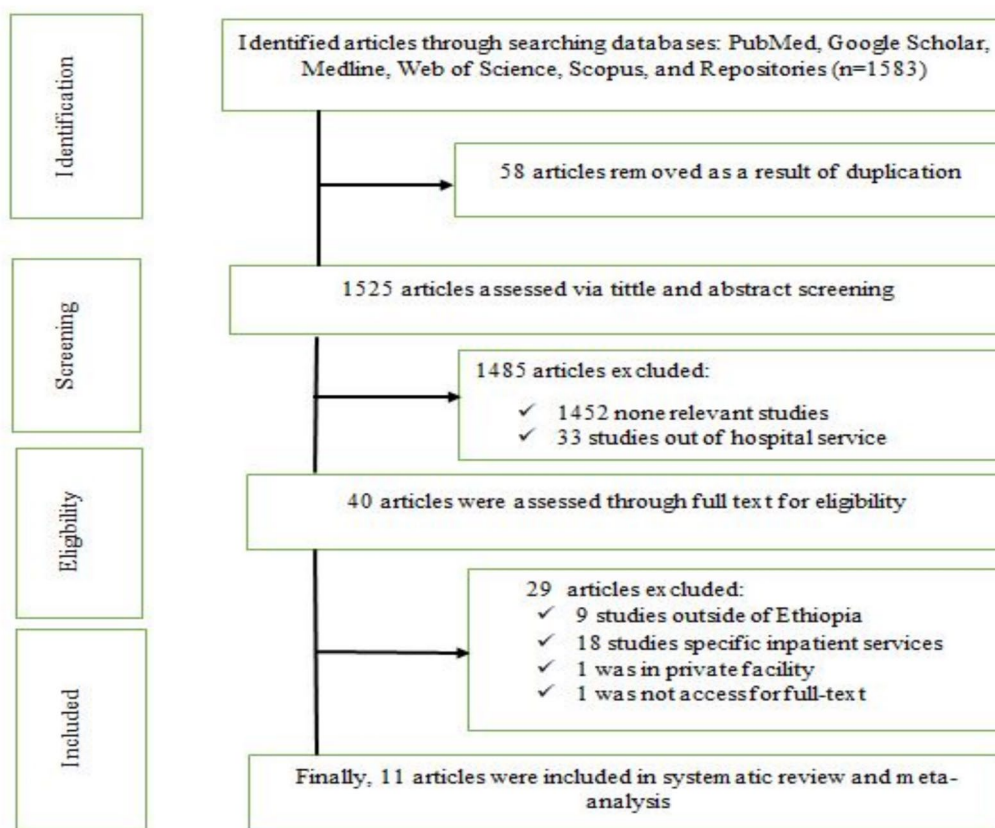


Fig. 1 PRISMA flow chart for selecting study articles

inpatient settings, and two studies Marama et al. [46] and Sileshi et al. [45] were conducted in inpatient settings related to obstetrics/gynecology and neonatal intensive care units, respectively. About 3,958 patients in all participated in the primary studies, which were conducted from 2013 to 2023. The 10 studies had cross-sectional study designs, with the exception of one mixed study by Sabo et al. [44], all of which employed random sampling to choose their study participants. A four-point Likert scale (very dissatisfied to very satisfied) was employed by Animut et al. [48] to measure the state of patient satisfaction, while 10 primary studies used a five-point Likert scale (strongly dissatisfied to strongly satisfied). Participants were given the option to score their perception of the inpatient health services they received on a scale of 1 to 5 points (Table 1).

Patient satisfaction with inpatient health services

Since there was a significant heterogeneity across studies when computing the fixed effects model ($p=0.00$), we used the random effects model to do the analysis for the pooled effect size of patient satisfaction with inpatient health services. As a result, 57.4% (95% CI: 50.88–64.59,

$I^2=95.25%$) was estimated pooled national level of patient satisfaction with inpatient health services (Fig. 2). An extremely high amount of heterogeneity is present, as shown by the high I^2 value. We used sample size and publication year as factors in a meta-regression analysis to determine the potential cause of heterogeneity. The results of a meta-regression analysis showed that sample size and publication year had no statistically significant impact on the existence of heterogeneity between studies (Table 2).

Subgroup analysis

The included studies fell into two categories: "year of publication from 2013 to 2018" and "year of publication from 2019 to 2023." We performed subgroup analysis using this category to evaluate the possible heterogeneity across studies. Consequently, research conducted between 2013 and 2018 showed the greatest pooled proportion of patient satisfaction with inpatient health services among the 11 studies included in this systematic review and meta-analysis (65.01%, 95% CI: 53.28–76.75, $I^2=95.99%$)(Fig. 3).

Table 1 Characteristics of studies included in the systematic review and meta-analysis of patient satisfaction with inpatient health care in Ethiopian public hospitals, 2024

Code	First author	Region	Publication Year	Sample Size	Study Design	Patient satisfaction
1	Woldearegay et al	Amhara	2020	418	CS	59.1
2	Asamirew et al	Addis Ababa	2020	398	CS	46.2
3	Woldeyohanse et al	Oromia	2015	189	CS	61.9
4	Aga et al	Beninshangul	2021	334	CS	60.8
5	Animut et al	Gambella	2022	271	CS	40.2
6	Girma et al	Addis Ababa	2015	382	CS	52.7
7	Marama et al	Tigray	2018	413	CS	79.7
8	Melese et al	SNNP	2018	380	CS	68.9
9	Sabo et al	SNNP	2023	462	Mixed	43.7
10	Tesfaye et al	Oromia	2013	310	CS	58.4
11	Sileshi et al	SNNP	2023	401	CS	63

SNNP Sothern Nations Nationalities and People, CS Cross-Sectional

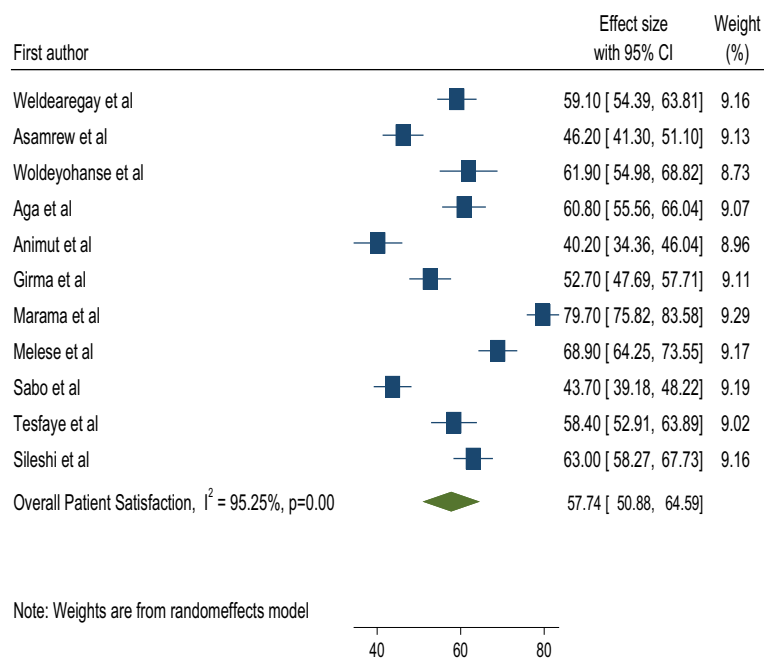


Fig. 2 Forest plot for pooled proportion of patient satisfaction with inpatient health services, Ethiopia, 2024

Table 2 Meta-regression analysis of factors influencing heterogeneity between studies, 2024

Source of heterogeneity	Coefficients	Std.Err	P-value
Publication year	-1.420848	1.22861	0.281
Sample size	.0349354	.0541441	0.537

We computed the Eggers' test and examined the funnel plot to see whether publication bias was present. Symmetrical distribution of study effects size against standard error is visible upon inspection of the funnel plot, providing proof that there is no publication bias (Fig. 4). Additionally, the Egger's test result ($p=0.35$) revealed no

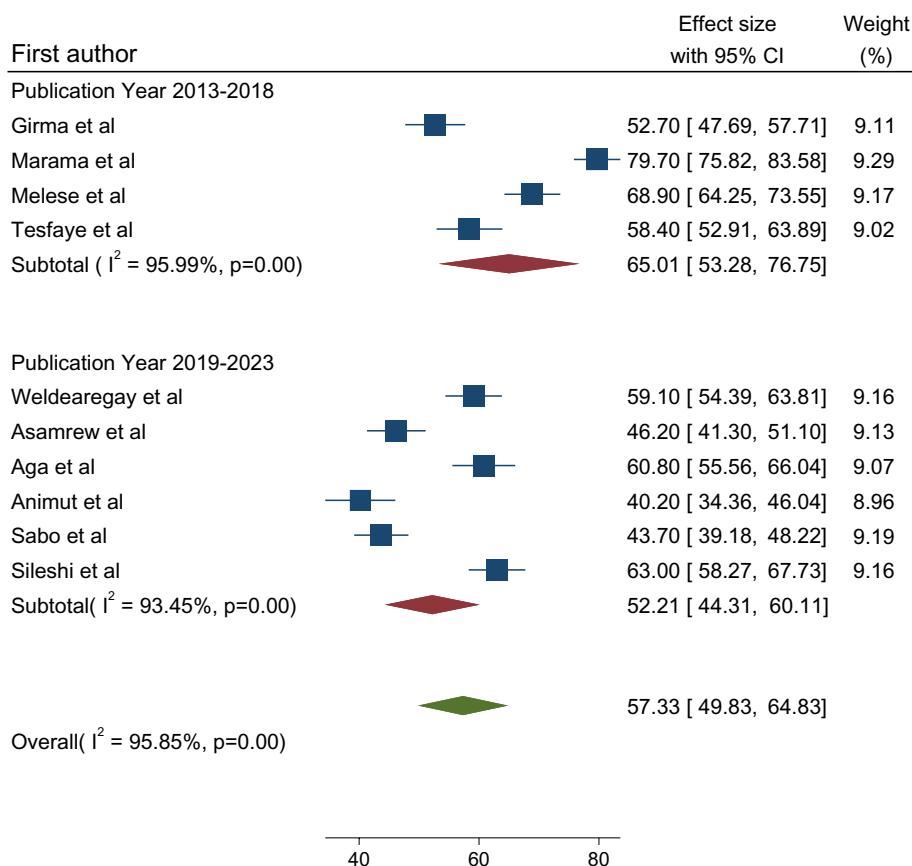


Fig. 3 Subgroup analysis for inpatient satisfaction by publication year category, Ethiopia, 2024

conclusive evidence of publication bias. Furthermore, we performed a sensitivity analysis using a random effects model for the included studies, and the results indicated that not a single study had an impact on the overall estimated level of patient satisfaction with inpatient health services (Fig. 5).

Factors associated with patient satisfaction with inpatient health services

Educational status

Compared to their counterparts, patients with no formal education had a 76% higher likelihood of being satisfied with inpatient health services, however this difference was not statistically significant (OR=1.76, 95% CI: (0.50, 6.23), $I^2=95.2\%$). The heterogeneity test revealed a substantial variation between studies ($p=0.00$).

Place of residence

Although not statistically significant, patients who live in urban areas were 28% more likely than those who live in rural areas to be dissatisfied with inpatient health services (OR=1.28, 95% CI: (0.45, 3.61), $I^2=94.33$). The results of Egger’s test showed no publication bias ($p=0.068$).

Patient privacy assurance

Patients who felt that their privacy was protected were 7.44 times more likely to be satisfied than those who felt that their privacy had been violated (OR=7.44, 95%CI: 3.63–15.25, $I^2=0.0\%$). In regression analysis, no publication bias was found using Egger’s test for small study effects ($p=0.43$).

Availability of direction indicators

Patients in hospitals with direction indicators demonstrated a 2.96-fold higher likelihood of satisfaction compared to those in hospitals without it. (OR=2.96, 95% CI: 1.91–4.57, $I^2=0.0\%$). No discernible variance was seen between studies according to the heterogeneity test ($p=0.69$).

Adequacy of information received

When compared to patients who did not have access to sufficient information about the treatments they received, those who felt that they received adequate information from healthcare providers were 3.27 times more likely to

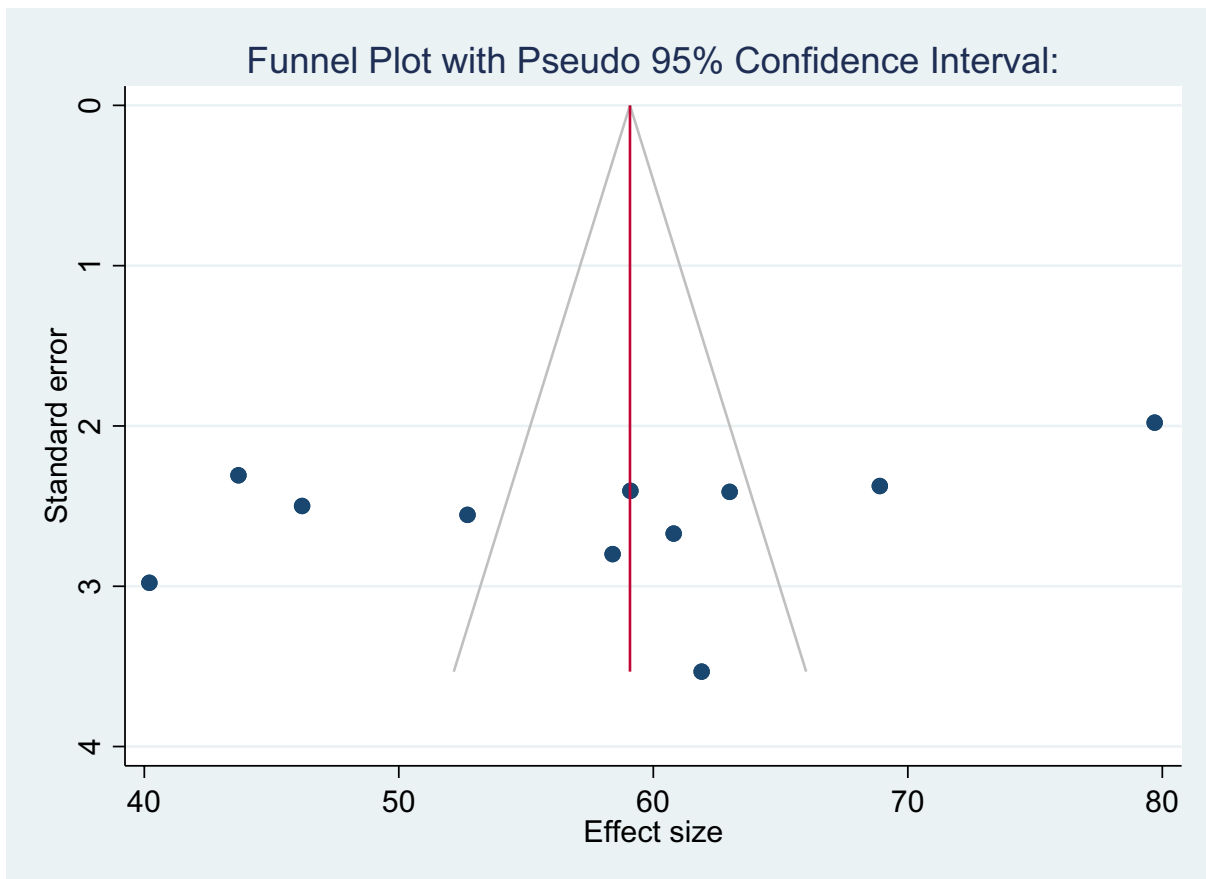


Fig. 4 Funnel plot of testing publication bias for 11 studies, 2024

First author (Omitted study)	Effect size with 95% CI	p-value
Weldearegay et al	57.59 [50.02, 65.17]	0.000
Asamrew et al	58.90 [51.74, 66.05]	0.000
Woldeyohanse et al	57.33 [49.83, 64.83]	0.000
Aga et al	57.43 [49.88, 64.97]	0.000
Animut et al	59.47 [52.87, 66.06]	0.000
Girma et al	58.24 [50.74, 65.73]	0.000
Marama et al	55.48 [49.66, 61.31]	0.000
Melese et al	56.61 [49.42, 63.80]	0.000
Sabo et al	59.16 [52.23, 66.10]	0.000
Tesfaye et al	57.67 [50.10, 65.23]	0.000
Sileshi et al	57.20 [49.71, 64.70]	0.000

Fig. 5 Result of sensitivity analysis of 11 studies, 2024

be satisfied with inpatient health services (OR = 3.27, 95% CI: 1.63–6.58, $I^2 = 65.60\%$). Egger's test showed no publication bias ($p = 0.088$).

History of admission

Compared to patients without a previous admission history, individuals with a prior history of admission had a 71% higher likelihood of not being satisfied with inpatient health services (OR = 0.29, 95% CI: 0.18–0.46, $I^2 = 86.36\%$). Significant variation between studies was found using the heterogeneity test ($p = 0.01$). Significant publication bias was found using the Egger's test ($p = 0.0068$).

Provision of on-time treatment

Compared to patients who did not receive treatment on time, those who felt that they received it in accordance with correct timeliness were 1.63 times more likely to be satisfied (OR = 1.63, 95% CI: 1.21–2.20, $I^2 = 52.74\%$). Heterogeneity test showed non-significant variation across studies ($p = 0.15$).

Discussion

When determining whether or not the healthcare services provided to patients meet their expectations, patient satisfaction is a crucial concept [8]. Patient satisfaction, particularly that of inpatients, is increasingly being used globally as an indicator for the provision of high quality, desired healthcare [1, 49]. By calculating the overall pooled effect size of patient satisfaction with inpatient health services and identifying associated characteristics, this systematic review and meta-analysis was conducted to generate national evidence on inpatient health services.

After reviewing studies including 3,958 participants, the overall pooled proportion of satisfied patients with inpatient health services was found to be 57.4% (95% CI: 50.88–64.59). This result is less than other studies conducted in China [20], Saudi Arabia [24], and a hospital affiliated to Tehran University of Medical Sciences (Iran) [23] which found that patient satisfaction rates were, respectively, 89.75%, 78–96%, and 84.3%. The differences could be attributed to national policies and socioeconomic conditions. Our result, however, is higher than that of other study carried out in hospitals of Iran [22], where the examined percentage of patient satisfaction accounted for 14.1%. The observed disparity could perhaps stem from variations in the level of anticipation across research participants, which may be attributed to variations in their national, cultural, and socioeconomic backgrounds. On the other hand, our result is nearly comparable to the finding of a systematic review and meta-analysis that assessed patient satisfaction with

Ethiopian general healthcare system, estimating the overall pooled effect size of patient satisfaction accounting for 63.7% [50]. This consistent result indicates that Ethiopian healthcare providers are still not addressing the basics to patients' concerns.

Our meta-analysis's subgroup analysis showed that studies conducted between 2013 and 2018 (the early five years) had a greater pooled proportion of patient satisfaction with inpatient health services than studies conducted between 2019 and 2023 (the late five years). This outcome is reflecting the patient satisfaction trend of decline. It may be related to patients' rising expectations as their knowledge of the quality and standard of healthcare gradually increases. Patients today have high expectations for high-quality healthcare.

The results of our meta-analysis showed that the following factors were statistically significant predictors of patient satisfaction with inpatient health services: the assurance of patients' privacy, the availability of direction indicators in hospitals, the provision of services with adequate information, the provision of on-time treatment, and the history of previous admission. The finding is consistent with other studies [6, 19, 26]. This consistent finding may suggest that the variables are the global predictors of patient satisfaction with health care. Moreover, it might be due to limited number of studies included in our meta-analysis; increasing the sample size may change the result. While not statistically significant, the educational background and residential location of patients were also found to be associated with the degree of patient satisfaction with inpatient health treatments. The small number of studies that were utilized to assess the pooled effect size may be the cause of the non-significant association.

Study limitations

The findings of this systematic review and meta-analysis offered evidence and insight at the national level about Ethiopian public hospitals' inpatient satisfaction rates. It was not, however, done without limitations. First, primary studies included were small in number as we didn't consider studies conducted in particular areas of inpatient services, such as the nursing, laboratory, and pharmacy units. Second, despite performing subgroup and meta-regression analysis, it was not possible to identify the potential source of the notable heterogeneity in the estimates of the overall pooled effect size across studies. It might be related to high sensitiveness of Cochran's Q-test to the limited number of studies included. Third, while there are many variables influencing patient satisfaction, only a small number of them were the subject of a meta-analysis because there were insufficient studies with consistent results.

Conclusion and recommendations

The overall pooled effect size of patient satisfaction with inpatient health services is low in Ethiopia. Patient satisfaction with inpatient health services decreased over time, according to our meta-analysis. A higher level of patient satisfaction with inpatient health services was predicted by factors such as privacy assurance, timely service, availability of direction indicators, services with adequate information transfer, and no history of previous admission. To increase inpatient satisfaction, the Ministry of Health and hospital administration must place a strong emphasis on ensuring the provision of high-quality, standard-based inpatient healthcare. It is advised that healthcare providers act without hesitation when it comes to invading patient privacy, withholding pertinent information, and delaying patient care. One key strategy to increase patient satisfaction is to take into account the hospital's infrastructure, which includes clearly marked directional signs for every unit and evidence-based decisions on patient admission to reduce needless patient admission. Additional investigation is required to examine several aspects in order to improve the delivery of standard-based inpatient healthcare.

Abbreviations

CI	Confidence Interval
CS	Cross Sectional
JB	Joanna Briggs Institute
NOS	Newcastle-Ottawa Scale
OR	Odds Ratio
PRISMA	Preferred Reporting Items for Systematic Review and Meta-Analysis
SNNP	Southern Nations, Nationalities, and Peoples

Acknowledgements

We authors would like to thank all authors of the primary studies included in our research.

Authors' contributions

Ayeneu Takele Alemu and Mahider Awoke Belay worked on the protocol development, selection of studies, data extraction, analysis, and interpretation, as well as the initial draft of the manuscript. Eyob Ketema Bogale, Solomon Ketema Bogale, Eyob Getachew Desalew, and Getnet Alemu Andargie involved in the data quality assessment, data extraction, and document revision. Kedir Seid, Gebeyehu Lakew, Amlaku Nigusie Yirsaw, Mitiku Tefera, and Amare Mebrat worked on data analysis, interpretation and revision. The final draft of this work was prepared by Ayeneu Takele Alemu, Amare Mebrat Delie, and Mahider Awoke Belay. After reading the work, all authors provided their final approval.

Funding

Have no financial and non-financial support.

Availability of data and materials

All data included in the Systematic review and Meta-analyses are available in the main manuscript.

Declarations

Ethics approval and consent to participate

This section is not applicable as the study is systematic review and meta-analysis.

Consent for publication

Non-applicable.

Competing interests

The authors declare no competing interests.

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Received: 11 April 2024 Accepted: 6 September 2024

Published online: 09 September 2024

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