

Mothers' health care seeking behavior and associated factors for common childhood illnesses in Ethiopia: a systematic review and meta-analysis

Bickes Wube Sume (✉ bkswbe123@gmail.com)

Debre Markos University

Yoseph Merkeb Alamneh

Debre Markos University

Fentahun Adane

Debre Markos University

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Abstract

Background: Even though healthcare-seeking interventions potentially reduce child mortality from easily treatable diseases, significant numbers of children die without ever reaching a health facility or due to delays in seeking care in Ethiopia. Though there was fragmented evidence on the proportion of mothers' healthcare-seeking behavior and associated factors for common childhood illnesses in Ethiopia, the national level is unknown. Therefore, this systematic review and meta-analysis estimated the pooled proportion of mothers' healthcare-seeking behavior and associated factors in Ethiopia from 2008–2019.

Methods: We systematically searched the databases: PubMed/MEDLINE, Google Scholar, and Science Direct for studies conducted in Ethiopia on mothers' health care seeking behavior since 2008. We have included observational studies, which were published between 2008 and 2019. The report was compiled according to the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines. The quality of included studies was scored based on the Newcastle Ottawa quality assessment scale adapted for cross-sectional studies. The data were extracted in Microsoft excel and analyzed using Stata version 14.1 software. We employed a random-effects model to estimate the pooled proportion of mothers' healthcare-seeking behavior in Ethiopia. The presence of statistical heterogeneity within the included studies was evaluated using the I-squared statistic. We used Egger's regression test to identify evidence of publication bias. The pooled proportion with a 95% confidence interval (CI) was presented using tables and forest plots.

Result: We screened a total of 581 articles. Of these, 14 studies were included in the final systematic review and meta-analysis. In Ethiopia, the pooled proportion of mothers' health care seeking behavior was 50.24% (95% CI: 37.13, 63.35%). Less than 5 kilometers from a health facility (OR, 2.07; 95% CI: 1.50, 2.87), mothers who were aware of common childhood illnesses (OR =2.06; 95% CI: 1.45, 2.91, mothers who had educational levels of primary school and above (OR = 1.82;95% CI: 1.36, 2.43), caregivers at a higher wealth index category (OR = 2.01; 95% CI: 1.33. 3.24) were significantly associated with health care seeking behavior of mothers/caregivers.

Conclusion: Overall, in Ethiopia healthcare-seeking behavior of mothers/caregivers for common childhood illnesses is low. Awareness, perceived illness severity, distance from a health care facility, and mothers/caregivers' level of education were predictors of mothers' healthcare-seeking behavior. Accordingly, increasing the proximity of health facilities and educate mothers/caregivers about the importance of healthcare-seeking behavior were recommended to improve healthcare-seeking behavior.

Background

Children are the most vulnerable age group in any community; hence, the under-five mortality rate (U5MR) is a widely used demographic measure and an important indicator of the level of welfare in countries [1]. In this regard, considerable achievement has been made towards decreasing U5MR, where it has declined nearly by 50% globally between 1990 and 2015 and by 60% in Ethiopia between 2000 and 2016 [2]. In the face of these gains, however, half a million children are dying each year from easily preventable diseases [3].

Globally, more than half of early childhood complications and deaths are due to ill health that can be prevented or treated with simple and affordable interventions [2]. In sub-Saharan Africa, 1 in 12 children dies before celebrating the fifth birthday and 1 in 11 Ethiopian children dies before the fifth birthday [4]. Infectious diseases turn out to be the most common causes of child morbidity and mortality in most developing countries; Ethiopia being the forefront. The top five leading causes of morbidity in Ethiopia for children under-five years are infectious diseases; diarrhea (20%), pneumonia (19%), acute respiratory infections (ARI) (15%), and acute febrile illnesses (AFI) (7%) [3].

There has been substantial progress in reducing child mortality globally in the last decades. However, the magnitude of child mortality is high yet. Globally, around 5.6 million children under five died in 2016 [5]. There is a huge gap in child mortality rates between high-income and low-income countries. In 2016, the under-five mortality rate in low-income and high-income countries was 73.1 and 5.3 deaths per 1000 live births respectively. This represents about 14 times higher in low-income countries [6]. In 2016, the under-five mortality rate in Ethiopia was 67 deaths per 1000 live births [7].

Reducing child mortality is a worldwide health priority and one of the global sustainable development goals. By 2030, it has been planned to end preventable deaths of newborns and children under 5 years of age and to reduce under-five mortality to as low as 25/1000 live births, Ethiopia is one country that has adopted this goal [8].

Healthcare-seeking behavior is not only because of the availability of health facilities and other sources of healthcare but also the motivation and ability of individuals to seek medical care. Seeking healthcare in children is unique as parents decide upon the type and frequency of healthcare service accessed [9]. Accordingly, several factors can influence mother's HCSB for their sick children. Poor socio-economic status, attitude to modern treatment, the low literacy level of the parents, large family size, previous experience of child illness and death, and perceived severity of illness were the most commonly mentioned factors affecting HCSB [2].

To decrease the severity of childhood illnesses and their subsequent death, improving access to skilled health professionals and appropriate healthcare-seeking behavior of mothers are critically important [10, 11]. Despite there is a substantial investment in health in Ethiopia, utilization of maternal and child care remains low [12]. In Ethiopia, only a small proportion of children with common childhood illnesses receive appropriate health care. This problem is particularly pronounced in rural mothers [3, 13]. The 2016 EDHS report showed that only 30, 35, and 44% of children with symptoms of acute respiratory infection (ARI), fever, and diarrhea sought treatment respectively [14]. The healthcare-seeking behavior of mothers or guardians for common childhood illnesses may not be the same across the regions and districts in Ethiopia.

In Ethiopia, despite many fragmented studies that have been reported so far, a study representing the national and regional level of health care seeking behavior of mothers or guardians for common childhood illnesses is lacking and their reports were inconsistent and inconclusive across the country for policymakers for evidence-based interventions. As far as our knowledge, no pooled prevalence studies on

a nationally representative population have been carried out on the healthcare-seeking behavior of mothers or guardians for common childhood illnesses. Herein, the reasons mentioned above triggered us to conduct this comprehensive review to summarize the available evidence on the pooled prevalence of health care seeking behavior of mothers or guardians for common childhood illnesses and its associated factors in Ethiopia. Thus, this systematic review and meta-analysis were aimed to estimate the pooled prevalence of health care seeking behavior of mothers or guardians for common childhood illnesses and its associated factors in Ethiopia. The results obtained from this review will help public health decision-makers, the ministry of health, non-governmental organizations, and other stakeholders to design evidence-based public health responses.

Methods

Study design and setting

To assess mothers' healthcare-seeking behavior and associated factors for common childhood illnesses in Ethiopia, this systematic review and meta-analysis were carried out. Ethiopia is located in the horn of Africa. It is bounded by Eritrea to the North, Djibouti, and Somalia to the East, Sudan and South Sudan to the West, and Kenya to the South [15].

Data source and searches

This systemic review was prepared following the PRISMA (preferred reporting items for systematic review and meta-analysis) guidelines [16]. In this review, to find potentially relevant articles we searched major databases (i.e., PubMed/MEDLINE, Web of Science, EMBASE, CINAHL, Google Scholar, Science Direct, and Cochrane Library) without limit to the date of publication. Gray literature and official websites of international and local organizations and universities have also been searched. Also, the reference lists of eligible studies were reviewed for more articles using the snowball approach. The search was performed independently by two authors (YMA and FA). To download, organize, review and cite the articles, EndNote (version X7) reference management software was used. This review included all papers published in peer-reviewed journals that were written in English, provided that the findings of systematic analyses and meta-analysis were not affected by any language restrictions [17]. The search was carried out using Medical Subject Headings (MeSH) terms and keywords, and Boolean operators from the above-mentioned electronic databases. The specific searching detail in PubMed the following keywords were used: "healthcare-seeking behavior "[All Fields] AND "mothers"[All Fields] OR "women"[All Fields] AND "children"[All Fields] OR "childhood"[All Fields] AND "prevalence"[All Fields] OR "proportion"[All Fields] OR "epidemiology"[All Fields] OR "magnitude"[All Fields] AND "factors"[All Fields] OR "associated factors"[All Fields] OR "risk factors"[All Fields] OR "determinants"[All Fields] OR "predictors"[All Fields] AND "Ethiopia" [All Fields]. The literature search was carried out from October 1 to November 1, 2020. All articles published up to November 1, 2020, have been considered.

Study selection

Inclusion Criteria

Design: All observational studies that contain original data reporting mothers' healthcare-seeking behavior and associated factors for common childhood illnesses in Ethiopia were considered.

Study setting: Only studies conducted in Ethiopia.

Population: Mothers or caregivers.

Publication status: All published and unpublished articles.

Language: articles written in English.

Publication date: All studies those were published from 2008 to 2019 and unpublished study from the national university repositories were retrieved to assess for the eligibility of inclusion in this review and critical appraisal.

Exclusion criteria

Papers not fully accessed after at least two email contacts of the principal investigator were excluded. The reason for the exclusion of these articles is that we were unable to assess the quality of each article in the absence of their full texts. Moreover, studies that did not report our outcome of interest were excluded after reviewing their full texts.

Outcome of interests

The primary outcome was the pooled prevalence of mothers'/caregivers' healthcare-seeking behavior during child illness. The secondary outcome was factors associated with mothers'/caregivers' healthcare-seeking behavior for their children's illnesses.

Data extraction and quality assessment

Data were extracted in Microsoft Excel and then exported to STATA version 14 for further analysis. The data abstraction format includes author/s name, year of publication, study region, study design, sample size, the prevalence of mothers'/caregivers' health care seeking behavior during child illness. The data were extracted by two independent authors (YMA and FA). Joanna Briggs Institute (JBI's) critical appraisal checklist for prevalence studies was used to assess the quality of included studies [18]. Additionally, a modified version of the Newcastle-Ottawa Scale (NOS) was used to assess the methodological quality of studies for cross-sectional studies [19]. Newcastle–Ottawa scale criteria include representativeness of the sample, response rate, measurement tool used, comparability of the subject, appropriateness of the statistical test used to analyze the data. Based on the Newcastle-Ottawa scale criteria, two authors independently assessed the quality of each article. Any discrepancy was resolved by discussion and agreement.

Publication bias, and statistical analysis

For further analysis, we imported the data to STATA version 14 statistical software after extracting the data using Microsoft Excel format. We identify the heterogeneity between the studies using Cochran's Q statistics (Chi-square), inverse variance (I^2), and p-values [20]. I^2 test statistics were used to investigate the heterogeneity across the included studies. The I^2 test statistics of 25, 50, and 75% were declared as low, moderate, and high heterogeneity respectively and a p-value less than 0.05 was used to declare significant heterogeneity [20]. As the test statistic showed there is significant heterogeneity among the studies as a result a random-effects meta-analysis model was used to estimate the DerSimonian and Laird's pooled effect. In the current meta-analysis, arcsine-transformed proportions were used. The pooled proportion was estimated by using the back-transform of the weighted mean of the transformed proportions, using arcsine variance weights for the fixed-effects model and DerSimonian-Laird weights for the random-effects model [21]. Egger's and Begg's tests, with the p-value, less than 5% was used to declare the presence of publication bias [22]. Forest plot was used to present the combined estimate with a 95% confidence interval (CI) of the meta-analysis. In this plot, the size of each box indicated the weight of the study, while each crossed line refers to a 95% confidence interval. Subgroup analysis was conducted by regions, sample size, and publication year. Besides, a meta-regression model was done based on sample size and year of publication to identify the sources of random variations among included studies. Furthermore, a sensitivity analysis using a random-effects model was performed to assess the influence of a single study on the overall pooled estimate. At last, results were presented in tables and forest plots. For the second outcome, the effect of selected associated factors was presented using forest plot and Odds Ratio (OR) with its 95% CI.

Results

Search results and study selection

A total of 581 studies were identified by the electronic search in PubMed, Google Scholar, and Science direct. Of which, 367 articles were excluded due to duplication, 196 were excluded based on the exclusion criteria, 4 study was excluded since they did not report the outcome of interest [23–26]. Finally, 14 cross-sectional studies were found to be eligible and included in the current systematic review and meta-analysis (Fig. 1).

Characteristics of reviewed studies

As presented in Table 1, 14 studies meet the requirements for inclusion criteria. All included papers were cross-sectional and consist of a total of 11418 participants. All included studies were published between 2008 and November 2019. All studies (100%) were cross-sectional concerning study design. The smallest ($n = 243$) and largest ($n = 2842$) sample sizes were reported from studies done in Oromia Region and the Ethiopian Demographic Health Survey (EDHS) [27, 28]. Likewise, the lowest (15.8%) and the highest (79.3%) prevalence of mothers' health-seeking behaviors was reported from Oromia and Amhara Region [3, 29] respectively. Geographically, seven studies were undertaken from Amhara Region, three from Oromia Region, one from Addis Ababa, Tigray Region, SNNP, and EDHS. However, we did get studies from

Benishangul Gumuz Region, Dire-Dawa City Administration, Afar Region, Ethio-Somali Region, and Gambella Region. This showed that most of the studies were conducted in the Amhara region. The quality score of the included studies ranged from seven to nine. All studies with a quality score of \geq five were considered as high quality. Finally, all 9 included articles were categorized as high-quality studies [30].

Pooled proportion of mothers' health care seeking behavior

As is shown in the forest plot, Fig. 2, the pooled proportion of mothers' health care seeking behavior was 50.24% (95% CI: 37.13, 63.35%). However, from the analysis, this observed effect size differs considerably and the results show high heterogeneity in test statistics ($I^2 = 99.6\%$; $p \leq 0.001$). Thus, Random effect analysis was carried out by considering this fact.

The subgroup analyses, based on 14 included studies, the proportion of mothers' healthcare-seeking behavior for common childhood illnesses by regions showed that the highest proportion was found in the Amhara region (57.53%; 95% CI: 36.74, 78.33 %) and the lowest was found in Oromia region (36.56%; 95% CI: 14, 22%). Also, the subgroup analysis of mothers' health care seeking behavior was done by the year of publication. The finding revealed that the proportion of mothers' health care seeking behavior was decreased during 2016–2019 (48%) as compared with 2008–2015 (49%).

Meta-regression

We run a random effect meta-regression by year of publication, region, residence sample size, and quality score to detect the source of heterogeneity. None of these factors, however, is statistically significant in clarifying heterogeneity. To identify causes of heterogeneity, univariate and categorical meta-regression analysis was carried out in addition to subgroup analysis and publication bias. For each study, sample size, publication year, and study regions were considered in the meta-regression analysis. The analysis indicated that heterogeneity was not explained by sample size ($p = 0.372$), publication year ($p = 0.667$), and region. This showed that there was no statistical significance value from the meta-regression analysis.

Publication bias and sensitivity analysis

Funnel plot and Egger regression test methods were used to check publication bias. As this analysis had a substantial variability, the presence of publishing bias was tested by funnel plot and statistical tests by Eggers and Beggs at a 5% significant level. The funnel plot showed asymmetrical distribution as subjectively described. However, the Beggs' ($p = 0.805$) and Egger ($p = 0.297$) tests showed no significant publication bias; therefore, publication bias is not a problem in this study. A sensitivity analysis was conducted to detect the influence of one study on the overall meta-analysis. However, sensitivity analysis did not show strong evidence on the effect of a single study on the outcome.

Factors associated with mothers'/caregivers' healthcare-seeking behavior for their children's illnesses

Mothers/caregiver's awareness of childhood illnesses and perceived illness severity, wealth quintiles, and distance from health institutions were variables associated with seeking formal care. Households located within 5 KM distance from a health facility were 2.07 times (OR, 2.07; 95% CI: 1.50, 2.87) more than likely to seek healthcare than those located more than 5 KM. Mothers who were aware of common childhood illnesses were 2.06 times (OR =2.06; 95% CI: 1.45, 2.91) more likely to seek appropriate health care. The study also showed that there is a statistically significant association of educational status of mothers/caregivers and HCSB, where mothers/caregivers who had the educational levels of primary school and above were 1.82 times higher than those who were illiterate to have healthcare-seeking behavior for childhood illness (OR = 1.82;95% CI: 1.36, 2.43). Moreover, caregivers at a higher wealth index category are more likely to seek formal care for their child with common childhood illness (OR = 2.01; 95% CI: 1.33. 3.24).

Table 1

Summary of the included studies which were done on the proportion of mothers' health care seeking behavior in Ethiopia, 2008- 2019 (n= 14).

S. No	Author	Year	Region	Design	Sample	Prevalence with 95% CI	Quality Score
1	Zemene et al.	2016	Amhara	cross-sectional	2158	22.70 (20.93, 24.47)	9
2	Molla et al.	2017	Amhara	cross-sectional	527	41.31 (37.10, 45.50)	8
3	Simien et al.	2019	Amhara	cross-sectional	410	48.80 (43.96, 53.64)	8
4	Gelaw et al.	2014	Amhara	cross-sectional	827	79.30 (76.54, 82.06)	8
5	Nega et al.	2019	Amhara	cross-sectional	624	77.70 (74.43, 80.97)	9
6	Tsion A. et al	2008	Oromia	cross-sectional	563	15.80 (12.79, 18.81)	8
7	Demelash S, et al	2019	Amhara	cross-sectional	662	60.27 (56.54, 64.10)	9
8	Fetensa et al.	2019	Oromia	cross-sectional	243	19.30 (14.34, 24.26)	6
9	Abegaz et al.	2019	Addis Ababa	cross-sectional	422	26.50 (22.29, 30.71)	6
10	W. Awoke	2013	Amhara	cross-sectional	415	72.70 (68.41, 77.10)	5
11	Girmay T	2018	Tigray	cross-sectional	504	76.20 (72.48, 79.92)	7
12	Begashaw et al	2016	SNNP	cross-sectional	377	58.40 (53.43, 63.34)	5
13	Kolola et al	2016	Oromia	cross-sectional	422	74.60 (70.45, 78.75)	7
14	Gebretsadik et al	2015	EDHS	cross-sectional	2842	29.87 (28.19, 31.55)	9

Discussion

Studies suggest that common causes of under-five morbidity and mortality in developing countries could substantially be reduced with timely healthcare-seeking behavior (HCSB) of their families [31]. On the contrary, studies substantiate that a large number of sick children do not visit health facilities. This

means that most children die without ever reaching a health facility and due to delays in seeking healthcare [9].

The purpose of this systematic review and meta-analysis was to assess the pooled prevalence of mothers'/caregivers' healthcare-seeking behavior for their children's illnesses and its associated factors in Ethiopia. In this meta-analysis, we extensively analyzed the studies that reported the prevalence of mothers'/caregivers' healthcare-seeking behavior for their children's illnesses and associated factors in Ethiopia. To our knowledge, this systematic review and meta-analysis are the first of their kind to estimate the pooled prevalence of mothers'/caregivers' healthcare-seeking behavior for their children's illnesses and its associated factors in Ethiopia. Overall pooled estimate from 14 studies of mothers' /caregivers' healthcare-seeking behavior for their children's illnesses was 50.24% (95% CI: 37.13, 63.35%).

In Ethiopia, the pooled estimate of prevalence of mothers'/caregivers' healthcare-seeking behavior for their children's illnesses is low as compared to the studies done in Nigeria [32], India [33], Kenya, and Nepal [34, 35]. The possible reason for the inconsistencies can be due to cultural, geographical, socioeconomic differences. The methodological differences, residency, and educational status may be another potential reason for the disparity.

Importantly, caregivers residing in urban settings as well as those with secondary and/or tertiary level education sought immediate help for the sick child compared to those from rural areas. This is attributed to increased awareness via easily available media for dissemination of health information, namely, television, radio, newspaper, and proximity to the well-informed neighborhood. Similarly, a high educational level is a maker of social-economic status enabling them to read, access information, and expert opinion. The findings are consistent with reports that caregivers who have attained secondary education are more knowledgeable on, common health conditions/problems and how to deal with the challenges, thus increasing the chance to seek appropriate health behavior [1]. Similarly, highly educated caregivers are better at understanding the shared health information thus making them seek care for their children without delay [36]. Other reports have adduced that mothers who are educated are more likely to decide to seek quality health care services, have better access to health service information, and have an improved perception of the danger signs[37].

Health-seeking behavior is inversely related to the distance to the health facility. The caregivers who stayed less than 5 kilometers from the health care facility were more likely to seek immediate help for their sick infant. The distance is attributed to the added cost of transport as well as lack of interaction with the facility by the community members. These findings are consistent with reports of a significant reduction in the utilization of health care services because the distance from a health facility increased. Furthermore, the findings concur with those of Kante and colleagues who found children of caregivers who lived near the health facility were likely to receive treatment for the illnesses compared to those from far [38].

The severity of the illness determines the action to be taken by the caregivers. Caregivers seek health care when they perceived that the illness is severe and they do not see the reason for seeking health care if the

illness is mild or the illness is not for medical attention [1]. Most caregivers may delay seeking health care when they perceive symptoms as mild, which causes delays in seeking medical care risking complications and mortality. This closely agrees with other studies where the majority of the caretakers considered diarrhea to be a mild illness that does not warrant a visit to a care provider outside the home [39].

There was an association between socioeconomic characteristics and health-seeking behavior. Lack of finance as the main hindrance in seeking health care outside their home, those who earned less delayed seeking medical assistance for their sick infant. Poor economic status influences the respondents' health-seeking behavior. This is consistent with findings that low social-economic status has been associated with poor health-seeking behaviors and poor utilization of health care facilities [40]. People with low socioeconomic status are often unable to afford health services due to the high cost. Once the socioeconomic status of the urban poor improves, they may overcome financial constraints thus seeking care immediately and promptly for a child with childhood illness [35].

Conclusion

Overall, in Ethiopia healthcare-seeking behavior of mothers/caregivers for common childhood illnesses is low. Awareness, perceived illness severity, distance from a health care facility, and mothers/caregivers' level of education were predictors of mothers' healthcare-seeking behavior. Accordingly, increasing the proximity of health facilities and educate mothers/caregivers about the importance of healthcare-seeking behavior were recommended to improve healthcare-seeking behavior.

LIMITATIONS OF THE STUDY

The findings of this meta-analysis should be interpreted considering the following limitations: Firstly, a cross-sectional study design was used in all studies of this meta-analysis. Therefore, cause-effect relationships cannot be established in this study. Secondly, studies from the Benishangul Gumuz Region, the Ethio-Somali Region, the Afar Region, and the Gambella Region could not be obtained and this influences generalizability.

Declarations

Authors' Contributions

BWS, YMA and FA equally involved in the design, selection of articles, data extraction, and statistical analysis protocol reviewing, tools analysis, manuscript drafting, reviewing and editing. All the authors read and approved the final draft of the manuscript.

Ethical Considerations

Not applicable.

Funding

Not applicable.

Competing Interests

The authors declare that they have no competing interests.

Availability of Data and Materials

The raw data used for analysis were available from the corresponding author upon reasonable request.

Consent for publication

Not applicable

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Figures

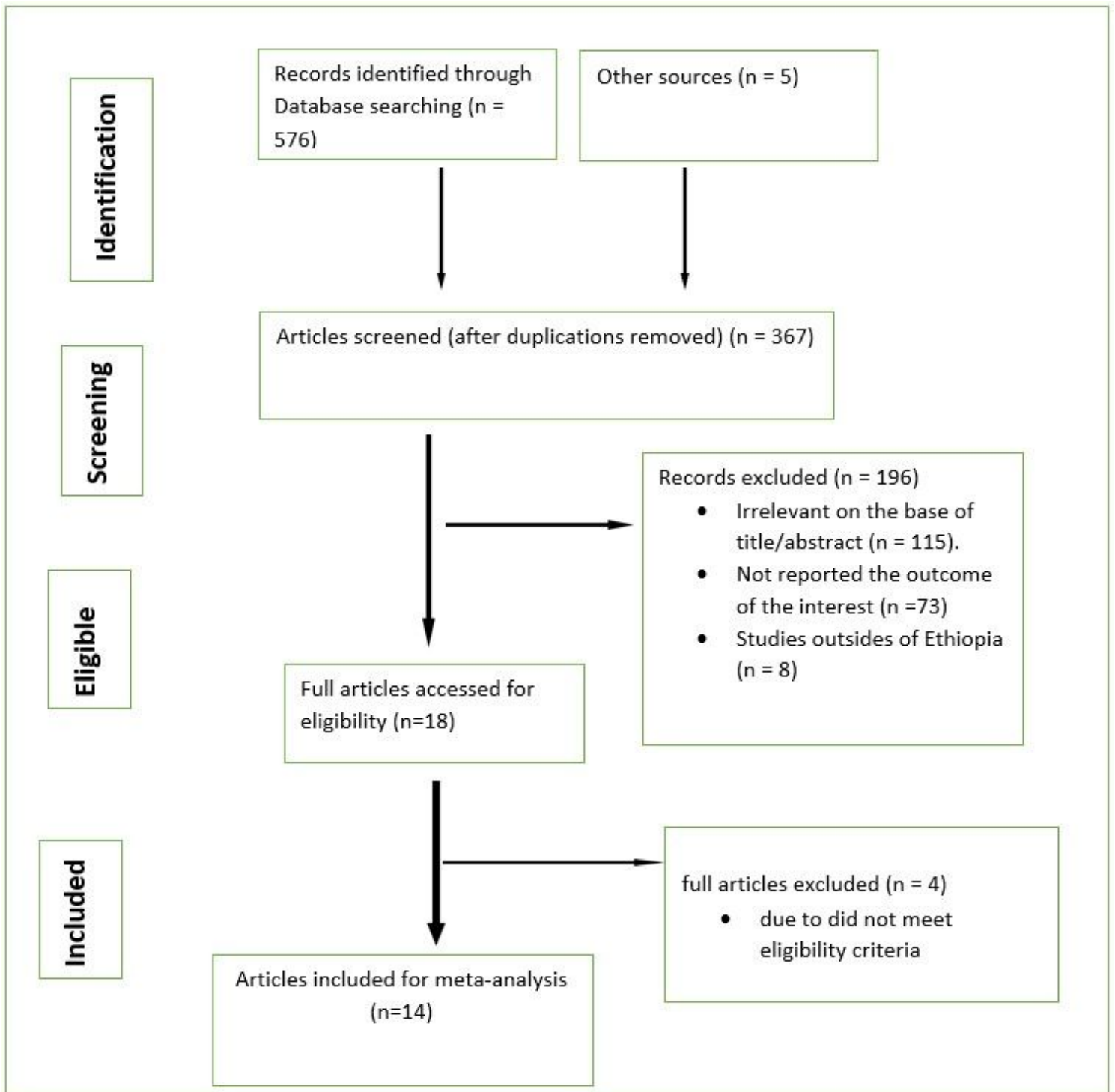


Figure 1

PRISMA flow diagram which shows the selection of included studies for mothers'/caregivers' healthcare-seeking behavior for their children's illnesses, 2021.

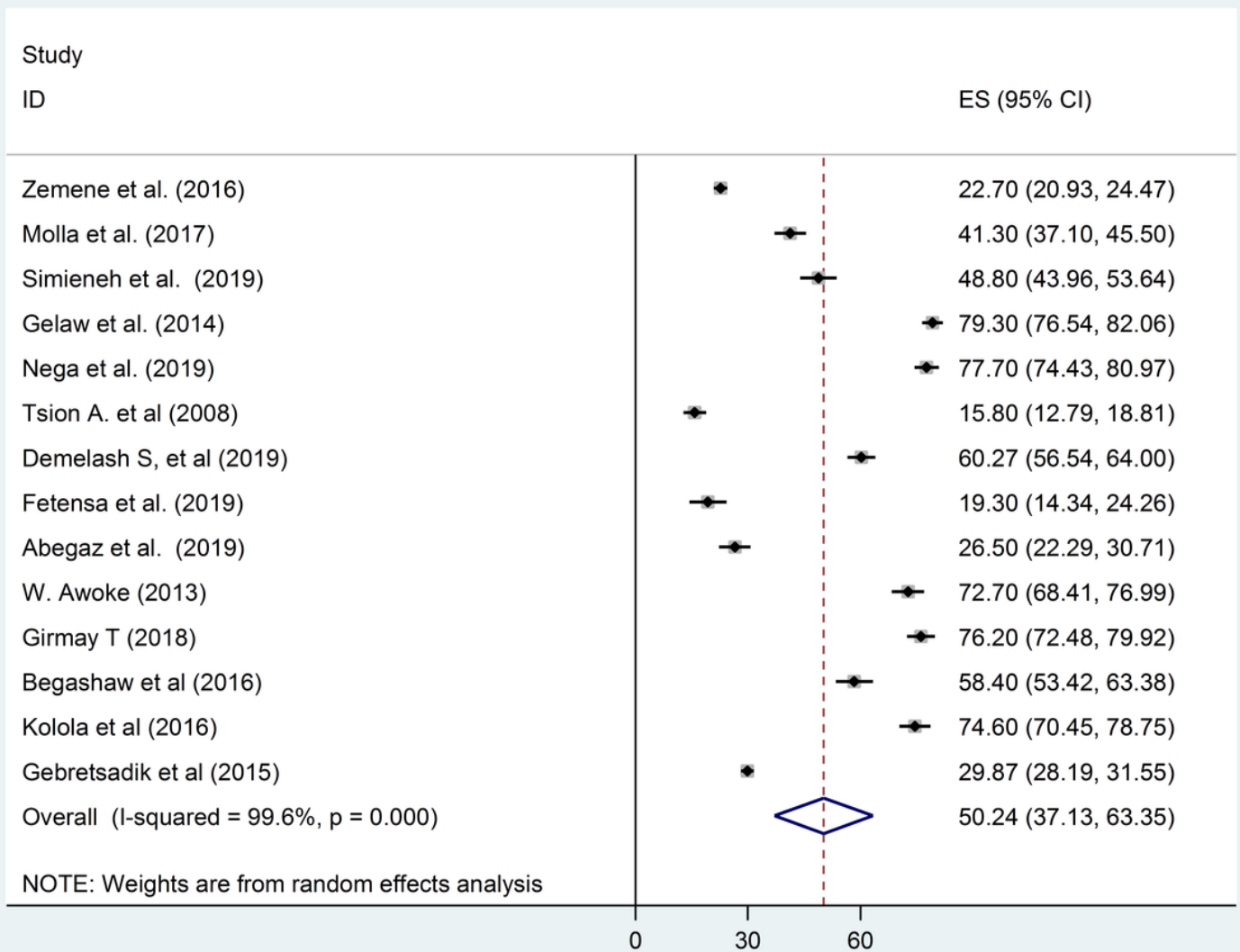


Figure 2

Forest plot of the 14 included studies that assessed the proportion of mothers' health care seeking behavior for common childhood illnesses in Ethiopia, 2008–2019.