

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

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Abstract

Objective: This review is aimed to estimate the pooled prevalence of mothers' health care-seeking behavior and associated factors in Ethiopia.

Methods: International databases were systematically searched for studies that were published between 2008 and 2019. Data were extracted in Microsoft Excel 2019 and then exported to STATA version 14 for further analysis. Publication bias was determined by funnel plot, Begg's test, and Egger's test. Heterogeneity between the studies was checked by I^2 statistic. The pooled proportion was estimated using random-effects meta-analysis model.

Results: This review and meta-analysis included 14 studies from a total of 581 papers that were screened. The pooled proportion of mothers' health care-seeking behavior in Ethiopia was 50.24% (95% CI: 37.13%, 63.35%). Health facility distance (OR=2.07), awareness about common childhood illnesses (OR=2.06), educational levels (OR=1.82), and income (OR=2.07) were significantly associated variables.

Conclusion: The overall health care-seeking behavior of mothers for common childhood illnesses in Ethiopia is low. Accordingly, educating mothers/caregivers about the importance of health care-seeking behavior and increasing the proximity of health facilities were recommended to improve health care-seeking behavior.

Keywords

Health care-seeking behavior, caregivers, Ethiopia

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Introduction

Children represent the most vulnerable age group in the community. As a result, the under-five mortality rate is a widely used demographic measure that serves as an essential indicator of a country's degree of development in many countries.¹ The rate of under-five mortality has declined nearly by half in the world between 1990 and 2015 and by 60% in Ethiopia between 2000 and 2016.² Despite this achievement, about 500,000 annual deaths are being encountered from easily preventable diseases.³

Simple and affordable interventions could be sufficient to prevent or treat early childhood complications and deaths which account for more than half of all global deaths in children under the age of 5 years.² The under-five mortality rate in sub-Saharan Africa and Ethiopia is 1 in 12 and 1 in 11

children, respectively.⁴ Infectious diseases are the leading causes of morbidity and mortality among children in

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developing countries including Ethiopia. Among infectious diseases, diarrhea (20%), pneumonia (19%), acute respiratory infections (15%), and acute febrile illnesses (7%) are the top four most common causes of morbidity among under-five children in Ethiopia.³

Even though significant progress has been made in the last few decades in reducing child mortality worldwide, child mortality remains a major issue. Around 5.6 million under-five children had died in 2016 only.⁵ Furthermore, there is a significant disparity in child mortality rates between high- and low-income countries. In 2016, the under-five mortality rate in low-income countries was roughly about 14 times higher than in high-income countries.⁶ In 2016, Ethiopia's under-five mortality rate was 67 deaths per 1000 live births.⁷

Child mortality reduction is a top priority health agenda in the world which is among the global sustainable development goals. It has been anticipated that by 2030 deaths of newborns and children under the age of 5 years would be reduced, with under-five mortality falling to as low as 25/1000 live births. This goal is also adopted by Ethiopia.⁸

Access to health care providing facilities and other sources of health care are not the only factors that affect health care-seeking behavior (HCSB).⁹ Several factors, hence, can influence caregivers' HCSB for their sick children. The most commonly mentioned factors affecting HCSB were parents' low educational status, large family size, poor socioeconomic status, attitude toward modern treatment, previous experience of child illness and death, and perceived severity of illness.²

Appropriate HCSB of mothers and improving access to competent health professionals are important to decrease the severity of childhood illnesses which may even result in death.^{10,11} Maternal and child care utilization remains low in Ethiopia, although there is a substantial investment in health.¹² Only a few percentage of Ethiopian children suffering from common childhood ailments received adequate medical care. This problem is worse, particularly among rural caregivers.^{3,13} According to the 2016 Ethiopian Demographic Health Survey (EDHS) report, only 44%, 35%, and 30% of children who had diarrhea, fever, and symptoms of acute respiratory infection had received treatment, respectively.¹⁴ Moreover, the HCSB of caregivers for common childhood ailments may not be the same in all regions of Ethiopia.

Although several fragmented studies on health-seeking behaviors have been conducted in Ethiopia so far, a study that represents the national and regional status of caregivers' HCSB for common childhood illnesses is lacking. In addition, the reports of these studies were inconsistent and inconclusive across the country to serve as inputs for policymakers to plan evidence-based interventions. The above-mentioned causes prompted us to conduct this comprehensive analysis to summarize the evidence available on the pooled prevalence of HCSB of mothers or guardians for common childhood illnesses and associated factors in Ethiopia. This

systematic review and meta-analysis were, thus, aimed to estimate the pooled prevalence of HCSB of mothers or guardians for common childhood illnesses and 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

This systematic review and meta-analysis were conducted to assess mothers' HCSB and associated factors for common childhood illnesses in Ethiopia. Ethiopia is found in the horn of Africa surrounded by Eritrea to the North, Kenya to the South, Somalia and Djibouti to the East, and Sudan and South Sudan to the West.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, articles were searched from major databases (i.e. PubMed/MEDLINE, Web of Science, EMBASE, CINAHL, Google Scholar, Science Direct, and Cochrane Library) to find potentially relevant articles without limit to the date of publication. Both gray literature and official websites of universities, and international and local organizations have also been searched. Reference lists for studies that were eligible were also reviewed for more articles using the snowball approach. The search was performed independently by two of the authors. EndNote (version X7) reference management software was used to download, organize, review, and cite the articles. All papers published in peer-reviewed journals and gray literature which were written in English language were included in this review, provided that the findings of systematic analyses and meta-analysis were not affected by any language restrictions.¹⁷ Medical Subject Headings (terms and keywords, and Boolean operators) were used to search relevant articles from official websites and electronic databases mentioned above. The specific searching detail used in PubMed included the following keywords: "health care-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 conducted from 1 October to 1 November 2020. All articles published up to 1 November 2020 have been considered.

Study selection

Inclusion criteria

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

Study setting: Only studies conducted in Ethiopia were included.

Population: Mothers or caregivers.

Publication status: All published and unpublished articles were considered.

Language: Articles written in English.

Publication date: All studies that were published from 2008 to 2019 and unpublished studies from the official university repositories were accessed from 1 March 2020 to 29 April 2020 to assess the eligibility for inclusion in this review and critical appraisal

Exclusion criteria. Unpublished papers which are not fully accessed from the principal investigator after at least two email contacts were excluded. These articles were excluded from our study because we were unable to evaluate the quality of each article where their full texts were not accessed. All articles that did not report the outcome variable of our interest were also excluded after reviewing their full contents.

Outcomes of interest. The pooled prevalence of mothers'/caregivers' HCSB during child illness was the primary outcome of interest. The secondary outcome was factors associated with mothers'/caregivers' HCSB for their children's illnesses.

Data extraction and quality assessment. The data abstraction format was developed with Microsoft Excel 2019 which was exported to STATA version 14 for further analysis. Name of author/s, publication year, study region, study design, sample size, and the prevalence of mothers'/caregivers' HCSB during child illness were included in the data abstraction format. The data extraction was conducted by two authors, independently. To assess the quality of studies included, Joanna Briggs Institute's (JBI's) critical appraisal checklist for prevalence studies was used.¹⁸ In addition, a modified version of the Newcastle–Ottawa Scale (NOS) for cross-sectional studies was used to assess the methodological quality of the studies.¹⁹ NOS criteria include representativeness of the sample, response rate, measurement tool used, comparability of the subject, and appropriateness of the statistical test used to analyze the data. Based on the NOS criteria, the quality of each article was assessed by two authors, independently. Any discrepancy was resolved by discussion and agreement arranged by the third reviewer.

Statistical analysis

The data were imported to STATA version 14 statistical software for further analysis after it was extracted using the format developed with Microsoft Excel. The p-values, Cochran's Q statistics (chi-square), and inverse variance (I^2) were used to determine the heterogeneity between the studies.²⁰ I^2 test statistics were used to investigate the heterogeneity across the included studies. The I^2 , Cochran's Q statistics (chi-square), and p-values were used to identify heterogeneity between the studies.²⁰ Low, moderate, and high heterogeneity declared as respective I^2 test statistics values of 25%, 50%, and 75% was found. Significant heterogeneity was declared if a p-value less than 0.05 was encountered.²⁰ The DerSimonian and Laird's pooled effect was estimated through a random-effects meta-analysis model as the test statistic indicated the presence of significant heterogeneity among the studies. Arcsine-transformed proportions were used in the current meta-analysis. The back-transform of the weighted mean of the transformed proportions was used to estimate pooled proportion, using arcsine variance weights and DerSimonian–Laird weights for the fixed-effects model and random-effects model, respectively.²¹ The presence of publication bias was evaluated by Egger's and Begg's tests at a p-value of less than 5%.²² The pooled estimate of the meta-analysis was presented using a Forest plot with a 95% confidence interval (CI). In the Forest plot, the size of the box indicates the weight of the study, while 95% CI showed by each crossed line. Studies were categorized by year of publication, regions, and sample size for subgroup analysis. A meta-regression model was also conducted based on the year of publication and sample size to identify the sources of random variations among studies included. A random-effects model was used to undertake a sensitivity analysis to evaluate the impact of each study on the overall pooled estimate. Results were then presented with tables and forest plots. However, the effect of selected associated factors for the second outcome was presented with forest plot and odds ratio (OR) at 95% CI.

Results

Search results and study selection

Out of a total of 581 studies accessed through the electronic search, 367 articles were excluded owing to duplication, and 196 were found irrelevant and excluded based on the exclusion criteria. Moreover, 4 studies were excluded because they did not report the variable of interest.^{23–26} Finally, 14 cross-sectional studies were deemed to be eligible for the current systematic review and meta-analysis, and they were included (Figure 1).

Characteristics of reviewed studies

In this systematic review and meta-analysis, 14 studies meet the requirements for inclusion criteria (Table 1). All included

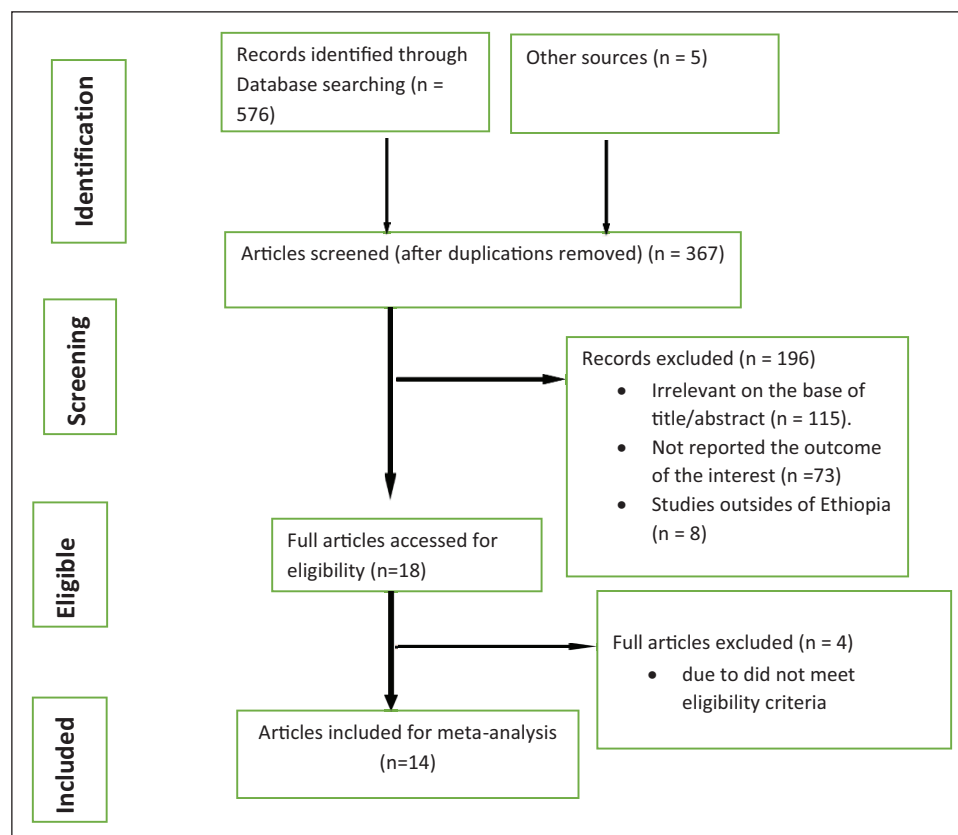


Figure I. PRISMA flow diagram which shows the selection of included studies for mothers'/caregivers' HCSB for their children's illnesses, 2021.

Table I. Summary of the included studies which were done on the proportion of mothers' HCSB in Ethiopia, 2008–2019 (n = 14).

S. no.	Author	Year	Region	Design	Sample	Prevalence with 95% CI	Quality score
1	Kebede et al. ²⁷	2016	Amhara	Cross-sectional	2158	22.70 (20.93, 24.47)	9
2	Molla et al. ²⁸	2017	Amhara	Cross-sectional	527	41.31 (37.10, 45.50)	8
3	Simineh et al. ²⁹	2019	Amhara	Cross-sectional	410	48.80 (43.96, 53.64)	8
4	Gelaw et al. ³⁰	2014	Amhara	Cross-sectional	827	79.30 (76.54, 82.06)	8
5	Nega et al. ³¹	2019	Amhara	Cross-sectional	624	77.70 (74.43, 80.97)	9
6	Assefa et al. ³	2008	Oromia	Cross-sectional	563	15.80 (12.79, 18.81)	8
7	Demelash et al. ³²	2019	Amhara	Cross-sectional	662	60.27 (56.54, 64.10)	9
8	Fetensa et al. ³³	2019	Oromia	Cross-sectional	243	19.30 (14.34, 24.26)	6
9	Abegaz et al. ³⁴	2019	Addis Ababa	Cross-sectional	422	26.50 (22.29, 30.71)	6
10	Awoke ⁹	2013	Amhara	Cross-sectional	415	72.70 (68.41, 77.10)	5
11	Weldesamuel et al. ³⁵	2018	Tigray	Cross-sectional	504	76.20 (72.48, 79.92)	7
12	Begashaw et al. ³⁶	2016	SNNP	Cross-sectional	377	58.40 (53.43, 63.34)	5
13	Kolola et al. ³⁷	2016	Oromia	Cross-sectional	422	74.60 (70.45, 78.75)	7
14	Gebretsadik et al. ³⁸	2015	EDHS	Cross-sectional	2842	29.87 (28.19, 31.55)	9

CI: confidence interval; EDHS: Ethiopian Demographic Health Survey; SNNP: Southern Nations, Nationalities, and Peoples'.

papers were cross-sectional and consist of a total of 11,418 participants. All the included studies were published between 2008 and November 2019. All studies (100%) were cross-sectional concerning study design. The studies were done in Oromia Region, and the EDHS had the smallest (n=243) and

largest (n=2842) sample sizes, respectively.^{33,38} Likewise, the lowest (15.8%) and the highest (79.3%) prevalence of mothers' health-seeking behaviors was reported from Oromia and Amhara Regions^{3,30} respectively. Geographically, seven studies were undertaken from Amhara Region, whereas three

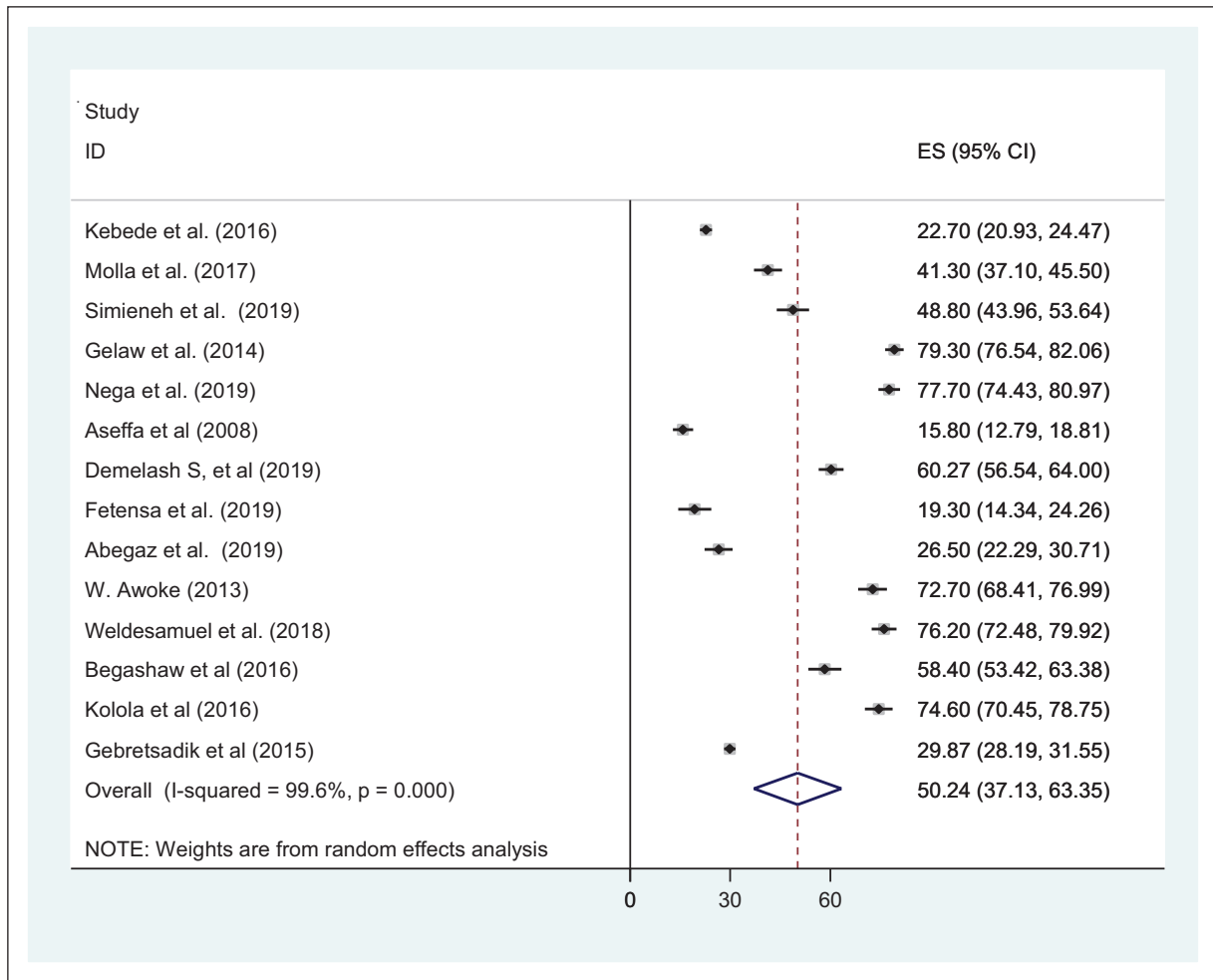


Figure 2. Forest plot of the 14 included studies that assessed the proportion of mothers' HCSB for common childhood illnesses in Ethiopia, 2008–2019.

studies were from Oromia Region. There was one study from each of the other regions; Addis Ababa, Tigray Region, Southern Nations, Nationalities, and Peoples' Region (SNNP), and EDHS. However, we did not get studies from the rest regions of Ethiopia, such as 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 7 to 9. A quality score of ≥ 5 was considered to declare high quality for all studies. Finally, all the included 14 included articles were found to be high-quality studies³⁹ (Table 1).

Pooled proportion of mothers' HCSB

The pooled proportion of mothers' HCSB 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 (Figure 2).

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

Meta-regression

To detect the sources of heterogeneity, a random effect meta-regression was run by year of publication, region, residence sample size, and quality score. However, none of these factors were statistically significant in clarifying a potential source of heterogeneity. To identify causes of heterogeneity, univariate and categorical meta-regression analysis was carried out in addition to subgroup analysis and publication bias. Publication year, sample size, and study regions of each

study were considered in the meta-regression analysis. The analysis indicated that there was no heterogeneity by sample size ($p=0.372$), publication year ($p=0.667$), and region (0.768). This showed that there was no statistically significant value from the meta-regression analysis.

Publication bias and sensitivity analysis

The presence of publishing bias was tested by funnel plot and then by statistical tests (Eggers and Beggs) at a 5% significant level because substantial variability was observed in this analysis. Asymmetrical distribution was observed with the

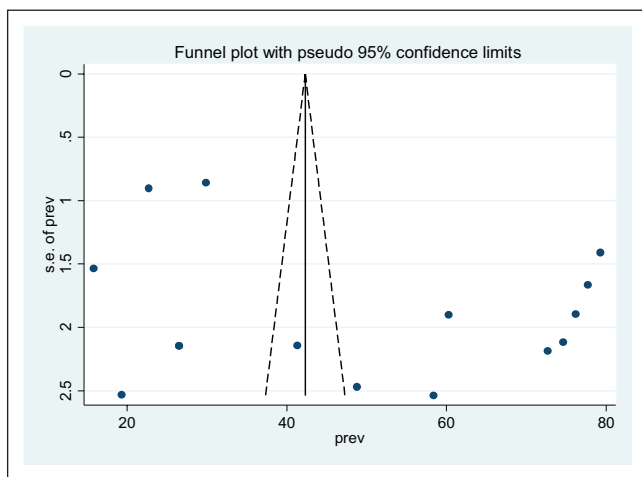


Figure 3. Funnel plot to test publication bias of the included studies that assessed the proportion of mothers' HCSB for common childhood illnesses in Ethiopia, 2008–2019.

funnel plot as it is subjectively described (Figure 3). However, no significant publication bias was encountered by the Beggs' ($p=0.805$) and Egger's ($p=0.297$) tests. Publication bias is, hence, not found to be a problem in this study.

A sensitivity analysis was conducted to detect the influence of each study on the overall meta-analysis. Nonetheless, no single study had a strong impact on the outcome of interest during sensitivity analysis (Figure 4).

Factors associated with mothers'/caregivers' HCSB for their children's illnesses

Mothers'/caregivers' awareness of childhood illnesses and perceived illness severity, income, educational status, and distance from health institutions were variables associated with the mother's HCSB. Mothers who live within 5 km distance from a health facility were 2.07 times (OR=2.07; 95% CI: 1.50, 2.87) more likely to seek health care than those who live more than 5 km (Figure 5(a)). Mothers who had awareness about common childhood illnesses were 2.06 times (OR=2.06; 95% CI: 1.45, 2.91) more likely to seek appropriate health care than those who have no awareness (Figure 5(b)). Educational status of mothers'/caregivers had also a statistically significant association with HCSB, where mothers'/caregivers who had a primary school and above educational levels had about 1.82 times higher HCSB for childhood illness than those who were unable to read and write (OR=1.82; 95% CI: 1.36, 2.43) (Figure 5(c)). Moreover, mothers'/caregivers with a higher monthly income are more likely to seek health care for common childhood illnesses (OR=2.07; 95% CI: 1.33, 3.24) (Figure 5(d)).

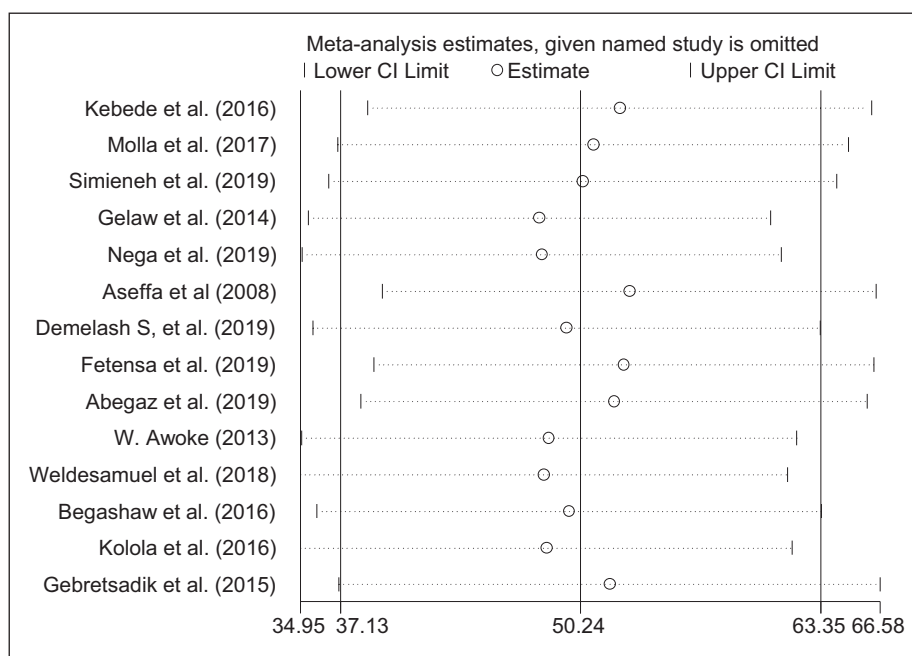


Figure 4. Result of sensitivity analysis of the included studies that assessed the proportion of mothers' HCSB for common childhood illnesses in Ethiopia, 2008–2019.

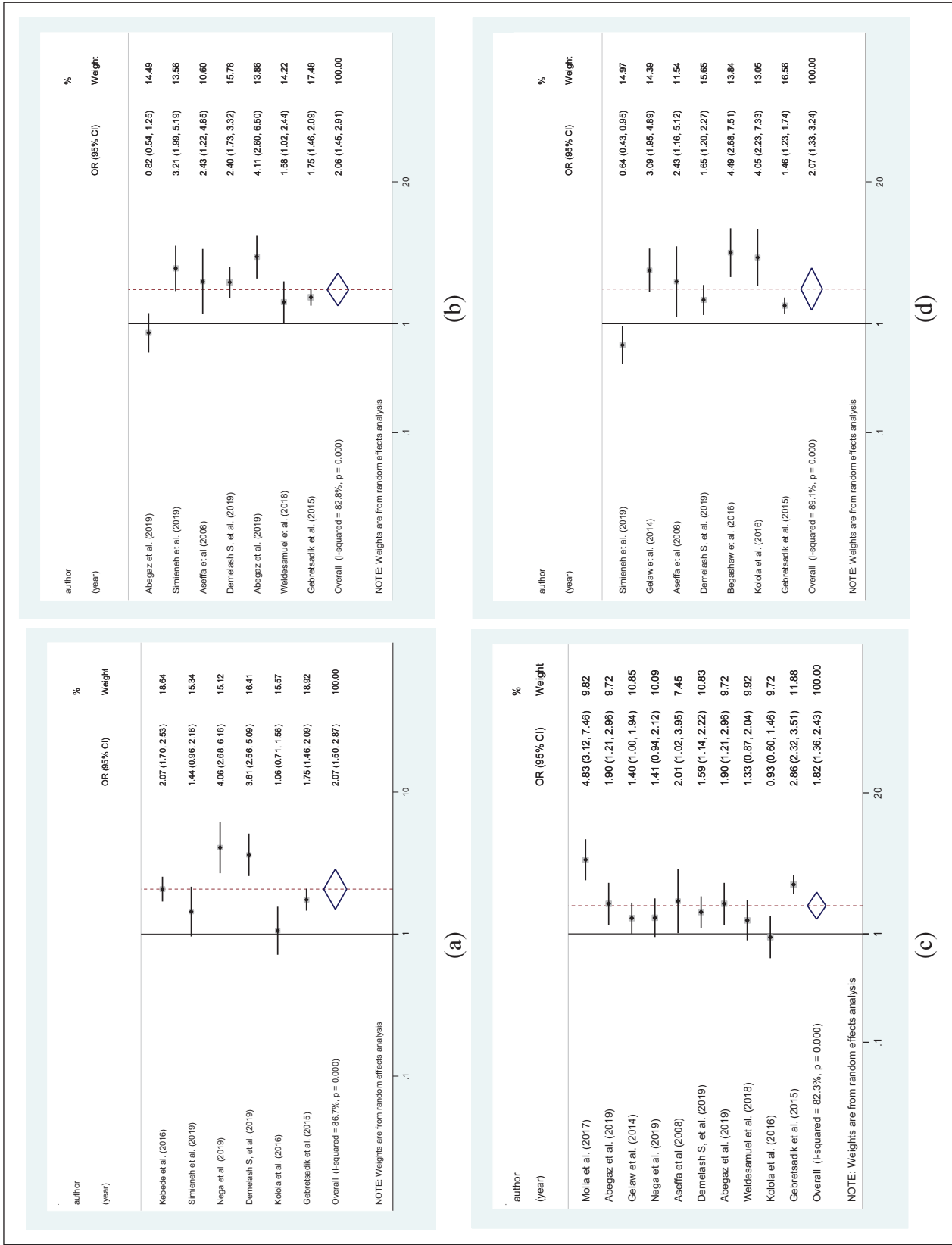


Figure 5. Associated factors for mother's HCBSB for common childhood illnesses in Ethiopia, 2008–2019. (a) Distance from health institutions. (b) Awareness about common childhood illnesses. (c) Educational status. (d) Income.

Discussion

To substantially reduce under-five morbidity and mortality, timely HCSB of the families in developing countries is suggested by many scholars.³⁴ On the contrary, a large number of sick children do not visit health facilities as reported by other scholars. Hence, delays in seeking health care can result in the death of many children without ever reaching a health facility.⁹

The overall pooled estimate prevalence from 14 studies of mothers'/caregivers' HCSB for their children's illnesses was 50.24% (95% CI: 37.13%, 63.35%). The finding is low as compared to the studies done in Nigeria,⁴⁰ India,⁴¹ Kenya, and Nepal.^{42,43} The possible reason for the inconsistencies can be due to cultural, geographical, and socioeconomic differences. The methodological differences, residency, and educational status may also be another potential reason for the disparity. In addition, accessibility of health facilities and the strength of health policy implemented in the country may be the difference.

Undoubtedly, caregivers living in urban areas and those with secondary- and tertiary-level education seek urgent assistance for sick child as compared to those from rural areas. The increased awareness due to proximity to the well-informed neighborhood and easy access to mass media (namely, television, radio, and newspaper) for dissemination of health information⁴² can be possible reasons for the enhanced health-seeking behavior of urban residents and those with secondary and tertiary education background.⁴⁰ Mothers with higher educational levels also have higher social-economic status and can read and access information and expert opinion. The findings are in agreement with the reports that appropriate health-seeking behavior is manifested by caregivers who have attained formal education as they are more knowledgeable on common health conditions/problems and how to deal with the challenges.^{1,40} Due to similar reasons, educated caregivers seek health care for their children without delay as they are better to understand the shared health information.^{42,44} According to other reports, educated mothers are more likely to have better access to health service information and an improved perception of the danger signs, and hence decide to seek health care services immediately.⁴⁵

Distance from home to the health facility adversely affects the health-seeking behavior of families. Immediate help for the sick infant was more likely common with caregivers who lived less than 5 km from the health care facility. Lack of interaction with the health care facility by the community members and added transport costs are common reasons for poor health-seeking behavior.⁴⁶ Consistent with these findings, studies reported that increased distance from a health facility resulted in a significant reduction in the utilization of health care services. The findings of our study are also supported by a study conducted in Tanzania which showed that children whose caregivers lived near the health

facility were more likely to receive treatment for their illnesses as compared to those caregivers who live far from the health facility.^{46,47}

The action which the caregivers take was largely determined by the severity of the illness. When caregivers perceived that the illness is severe, they are more likely to seek health care; they are less likely to seek health care when their child's illness is mild or if they believe the illness does not need medical attention.¹ Delays in health care seeking were observed for most caregivers when they perceive symptoms as mild. This delay results in complications and mortality. This is in close agreement with other studies where the majority of the caregivers believed diarrhea is a mild illness that does not require a visit to a health care provider outside the home.⁴⁸

An association was found between socioeconomic characteristics and health-seeking behavior. The respondents' health-seeking behavior was influenced by poor economic status. Lack of finance was the main hindrance to seek health care outside their home for many families as evidenced by delayed seeking of medical assistance for their sick infant of those who earned less. This is consistent with the findings that reported low socioeconomic status is associated with poor health-seeking behaviors and underuse of health care facilities.^{40,49} It was difficult for people with low socioeconomic status to afford the high cost of health services. As the socioeconomic status of the urban poor community is improved, they may immediately and readily seek health care for a child with illness because there are no financial constraints.⁴³

Limitations of the study

The findings of this meta-analysis should be interpreted considering the following limitations. First, a cross-sectional study design was used in all studies of this meta-analysis. Therefore, cause-effect relationships cannot be established in this study. Second, 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.

Conclusion and recommendations

Overall, the HCSB of mothers'/caregivers for common childhood illnesses in Ethiopia is low. Awareness about common childhood illnesses, perceived illness severity, the distance of home from a health care facility, and mothers'/caregivers' level of education were predictors of mothers' HCSB. Accordingly, providing regular health education for mothers'/caregivers about the importance of HCSB to decrease child morbidity and mortality, and increasing access to health facilities to the possible proximity of the community are recommended to improve HCSB. Moreover, it should be understood that improving the economic status of mothers'/caregivers will enhance their health-seeking behavior.

Author contributions

All authors made substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data; took part in drafting the article or revising it critically for important intellectual content; gave final approval of the version to be published; and agreed to be accountable for all aspects of the work.

Availability of data and material

The datasets analyzed during the current study are available from the corresponding author upon reasonable request.

Declaration of conflicting interests


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