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Hygienic practices and factors of complementary food preparation among mothers of children aged 6–24 months in Ethiopia: a systematic review and meta-analysis

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Background: A child's transition to complementary food (CF) feeding is important, and it should be ensured that CF is prepared, stored, and fed in a hygienic manner using clean hands, dishes, and utensils to prevent infections. However, there are no comprehensive review statistics available at the national level. Hence, the aim of this study is to determine the hygienic practices of complementary food preparation and its factors among Ethiopian women with children between the ages of 6 and 24 months.

Methods: On the nationwide prevalence of hygienic practices during the preparation of complementary foods and their determinants among mothers of children aged 6–24 months in Ethiopia, a systematic review and meta-analysis were performed. We searched in PubMed, ScienceDirect, Scopus, African Journal Online (AJOL), Google Scholar, and the websites to identify studies that were published until March 2023. We performed this review following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. A random-effects meta-analysis was done using StatsDirect statistical software and Open Meta Analyst to estimate the prevalence of hygienic practices, and the results were reported in a forest plot. Simple charts and tables were used to summarize the evidence on complementary food preparation and determinates.

Results: Nine studies involving 4,403 mothers were included in this Ethiopian study. The overall prevalence of good hygienic practices during complementary food preparation among mothers who have children aged 6–24 months was 46.53% (95% CI: 28.13–64.94) ($p < 0.0001$). Having a separate kitchen (AOR = 6.78; 95% CI: 1.04–44.20), having a three-bowl washing facility in their houses (AOR = 10.61; 95% CI: 7.31–15.41), mothers' access to media (AOR = 4.81; 95% CI: 1.23–18.82), and urban residence (AOR = 4.78; 95% CI: 2.73–8.38) were the predictors of good hygienic practice during complementary food preparation.

Conclusion: Regarding the prevalence of hygienic procedures among the mothers of children aged 6–24 months nationwide when preparing complementary foods, there is a significant lack of hygienic behavior among Ethiopian mothers. Hence, the Ethiopian ministries of health focus on designing

complementary food guidelines for the prenatal healthcare system. Furthermore, health extension workers are also better advised to maintain food hygiene during prenatal care visits, which is recommended to improve good hygienic practices during complementary food preparation in Ethiopia.

KEYWORDS

hygienic practice, complementary food preparation, predictors, mothers, Ethiopia

Background

The circumstances and procedures required to assure the safety of food from manufacturing to consumption are referred to as food hygiene. During preparation, storage, distribution, and transportation, food can become contaminated at any time (Obande, 2023). In addition to breast milk, complementary food or child food formula is provided for children and kids between the ages of 6 and 24 months (Ejje et al., 2021). Complementary food (CF) is required when breast milk is insufficient to meet a child's nutritional demands in terms of food or liquid (Organization, 2003; Gautam, 2015). It has been discovered that preparing, storing, and feeding food in a hygienic manner using clean hands and utensils rather than utilizing bottles and teats reduces the risk of diarrhea in children under 2 years of age (Tam et al., 2020). The use of clean utensils, adequate hand washing at all crucial times, and storing food at preferable temperatures to prevent bacterial growth, however, are the most important household complementary food hygienic practices used by mothers in developing country settings, but they often face challenges (Jones et al., 2014; Samady et al., 2020).

From exclusive breastfeeding to the introduction of complementary foods, the transition period lasts between 6 and 24 months. Additionally, it is a critical period when poor cleanliness standards are frequently used when preparing CF for many young children, which significantly increases the risk of respiratory and gastrointestinal illnesses in young children (Das et al., 2020). Children under the age of two who suffer from gastrointestinal illnesses linked to avoidable food-borne germs continue to be a global health challenge (Gizaw et al., 2017). The prevalence of pediatric diarrheal illnesses is significantly influenced by poor hygienic techniques used during CF preparation for children (Shati et al., 2020). Due to the potential for diarrheal infections to be present in unsanitary food preparation and handling, studies have indicated that the incidence of diarrhea increases at the age when complementary foods are often introduced (Ehiri et al., 2001; Oluwafemi and Ibeh, 2011; Mattioli et al., 2013). Diarrhea is unquestionably linked to considerable nutrient malabsorption, fluid losses, and decreased appetite (Ahmed et al., 1999), all of which contribute to serious childhood nutritional issues like wasting and stunting (Derso et al., 2017). Although physical factors such as readily available water and sanitary facilities make it easier to practice hygiene, it makes a significant impact on health, particularly in preventing children from infection caused by the feeding of contaminated foods (Curtis et al., 2011). Increasing cleanliness during complementary feeding is a specific focus of the Sustainable Undernutrition Reduction in Ethiopia (SURE) program, and multisectoral actions are being carried out to this end (Cami Moss et al., 2018). Today, it has proven difficult to lower child morbidity and mortality. These child morbidity and death

impacts are significant, particularly in Ethiopia, where there are few resources available for recognizing the issue and creating clinical and community interventions that are based on unmet needs (Zelege et al., 2022).

Every year, 1.7 billion cases of various infectious diseases, such as pediatric diarrhea, claim the lives of over 525,000 children worldwide, with South Asia and sub-Saharan Africa having the greatest mortality rates among children under 2 years old (Arikpo et al., 2018). Furthermore, diarrheal illnesses linked to complementary food poisoning cause 230,000 pediatric deaths annually worldwide (Jones et al., 2014). Data in African nations reported that contaminated food had a greater role in diarrheal illness transmission than water, and it is predicted that 30%–40% of children under the age of 5 years have one or more microbial pathogen diseases (Byrd et al., 2017; Das et al., 2020). This is consistent with studies that indicate contaminated supplemental foods are the source of at least 70% of diarrhea-related infections in children (Agustina TPS et al., 2013). According to scientific data reports, improper feeding methods and poor hygiene can have a significant impact on a child's growth, development, and survival (Byrd et al., 2017; Abdurahman et al., 2019). Based on a study done in Malawi, 27% of 6–24-month-old children were reported to have experienced diarrhea in the 2 weeks following the start of CF, which caused 80% of the kids to experience stunted growth and reduced height, with the remaining 20% of children experiencing underweight (Ntaji et al., 2014).

According to Ethiopia's 2019 Mini Demographic and Health Survey (EDHS), 13% of people currently eat complementary foods in addition to breast milk. However, 43% of child fatalities were caused by bacterial pathogens that may be managed. One of the main causes of diarrhea is assumed to be poor food hygiene (Rockville, 2019). When producing complementary foods at the household level, every person must apply sufficient nutritional knowledge and follow proper hygienic practices (Zongrone and Menon, 2012). The main issue in preventing and controlling food-borne infections that affect children in Ethiopia between the ages of 6 and 24 months is a lack of concise awareness of the risk of sanitary practices in CF preparation (Mohammed and Tamiru, 2014; Mitchodigni et al., 2017; Semira Manaseki-Holland et al., 2021). By improving food hygiene practices, the morbidity and mortality of children can be significantly decreased (Meierhofer et al., 2023).

Despite the fact that there are some primary studies on Ethiopia's complementary food preparation hygienic standards, it is difficult to generalize these accounts to Ethiopia (Teshome et al., 2022), and there is no public health policy on hygiene for complementary food preparation in the country (Demmelash et al., 2019; Dugassa, 2019). Because of this gap in the literature, we have very inconclusive data on Ethiopia's hygienic practices during complementary food preparation. As a result, our goal is to

TABLE 1 Summary of included studies to assess hygienic practices during complementary food preparation among mothers who have children aged 6–24 months in Ethiopia.

Author	Pub year	Region	Study design	Sampling technique	Sample size	Participant	Outcome	Prevalence (%)	Overall quality
Desta DF et al.	2020	Hareri	CSS	SRS	422	422	167	39.6	9
Agerie MZ et al.	2022	Amhara	CSS	SRS	423	423	190	44.9	9
Alelign AD et al.	2022	Amhara	CSS	MSS	604	604	235	38.9	9
Habtam AT et al.	2022	Amhara	CSS	SRS	576	572	192	33.6	9
Rabira TB et al.	2023	Oromia	CSS	SRS	539	536	186	34.7	8
Gebre Y et al.	2015	Hareri	CSS	SRS	198	198	174	89.9	7
Shumi B et al.	2021	Oromia	CSS	SST	517	508	279	55.0	7
Derejaw A et al.	2022	Amhara	CSS	MSS	634	634	372	58.6	8
Gashaw T. et al.	2017	Amhara	CSS	MSS	506	506	98	19.4	8

Notes: SRS, simple random sampling; SST, systematic technique; MSS, multistage sampling technique; CSS, cross-sectional study.

map the data on the nationwide prevalence of household mothers' usage of complementary food preparation methods, overall cleanliness habits, and factors influencing complementary food preparation among mothers of children aged 6–24 months in Ethiopia. In order to improve child health outcomes in Ethiopia and manage poor food hygienic practices, local policies and changes must be informed based on national-wide evidence.

Methods

Systematic reviews and meta-analyses present results by combining and analyzing data from different studies conducted on similar research topics. In recent years, systematic reviews and meta-analyses have been actively performed in various fields. These research methods are powerful tools that can overcome the difficulties of performing large-scale randomized controlled trials. Although systematic reviews and meta-analyses are powerful tools, they have their own limitations, like non-linear regressions, multivariate effects, restricted coverage, the inclusion of bad studies, and a lack of homogeneity in the data summarized (Ahn and Kang, 2018). Bibliometric review analysis is a quantitative method of measuring the research impact, so it is seen as objective and uses data from a citation source such as Scopus or the Web of Science. Pros of the bibliometric review include its ability to offer a subjective view of research impact, ensuring transparency in the procedure and reproducibility of results using the same method. Moreover, it is relatively easy to produce and scalable. However, there are limitations, like self-citations, citation farms, cartels or circles, honorary citations, disciplinary differences, and citation databases. The attributes of citation databases (e.g., Scopus, Web of Science, Dimensions, Google Scholar, and Crossref) impact

the number of citations a publication will accrue (Akin et al., 2023). For this reason, we searched through systematic reviews and meta-analyses. The present study reviews prevalence studies on the hygienic practice of complementary food preparation among the mothers of children aged 6–24 months in Ethiopia. The systematic review and meta-analysis were guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Subirana et al., 2005).

Search strategy

Search strategy and review process

The authors (AMZ, WCT, and YAF) conducted a comprehensive search using electronic databases (PubMed/Medline, Web of Science, ScienceDirect, African Journal Online, and Embase) from 1 January to 2 March 2023. Additionally, a manual search (Google Scholar) was used to perform a confirmatory search to ensure that no primary studies were missed. To identify the gray literature, we searched the digital collections of the Ethiopian University of Science and Technology. The strategies for the search are presented in Table 1.

The authors used the following keywords during the search: [(Practice) AND (Hygienic Complementary food preparation)] OR ((Complementary food hygienic practice preparation) AND (associated factors) OR (determinants) OR (predictors)) AND (household mothers who have children aged 6–24 months) OR (caregivers who have children aged 6–24 months) AND (Ethiopia). Then, this systematic review and meta-analysis was performed in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses checklist for reporting a systematic review or meta-analysis protocol (Supplementary Table

TABLE 2 Framework for determining the eligibility of studies (PICOT).

Criteria	Description
Population	Mothers of children aged 6–24 months or caregiver of children aged 6–24 months
Intervention	Hygienic practice
Comparison	Not applicable in this review
Outcome	Hygienic practice during complementary food preparation and prevalence of the hygienic practice during complementary food, determinants, and predictors associated factors with complementary food hygienic practice
Study area/context	Ethiopia

S1). The search focused on studies examining poor sleep quality and its associated factors among pregnant women in Ethiopia.

Inclusion criteria

The qualifying standards for this review were established using the modified Population, Intervention, Comparison, Outcome, and Type of study/context (PICOT) framework (Table 2). The studies met the criteria for inclusion if they described hygienic practices used by Ethiopian mothers of infants between the ages of 6 and 24 months when preparing complementary foods and provided first-hand proof of any of the following: prevalence of hygienic practices during complementary food preparation, complementary food hygienic practice preparation, knowledge and attitude, and hygienic practices during complementary food and determinants. Studies were disqualified if they failed to list their principal conclusions, were carried out on mothers of infants between the ages of 6 and 24 months, or listed careers as parents of children between the ages of 6 and 24 months.

Data processing and analysis

Standardized data were extracted using standard Microsoft Excel format by two reviewers (AMZ and WCT) and then exported into STATA version 14 software for analysis. The data extraction format for the included articles includes the following information: name of authors, publication year, region, study area, sample size, study population, sampling technique, design, prevalence, and risk factors from the included studies. The second reviewer (YAF) revised the extracted data and the discussion between the data extractors. To combine the outcome data from accepted research, the authors employed the random-effects model. The pooled prevalence of the outcome variable was reported with a 95% confidence interval. The I-squared test was used to examine heterogeneity. We employed the subjective funnel plot observation method, Begg's test, and Egger's test to evaluate the publication bias. In terms of statistics, publication bias was identified at a p -value below 0.05. Assuming that there are no differences between the groups, a sensitivity analysis (leave-one-out) was conducted to examine the impact of a single study on the pooled prevalence. By region, the sub-group analysis was carried out.

Quality assessment

The Newcastle–Ottawa quality assessment scale (NOS) criteria were used to rate the effectiveness of the studies. High-quality

articles scored seven or more on the NOS, medium-quality articles scored five to six, and low-quality articles scored four or less. The NOS has a maximum score of 10 (Table 1).

Results

We found 18,700 papers after conducting a thorough search on different databases (PubMed/Medline, Web of Science, ScienceDirect, African Journal Online, and Embase) for the literature. All articles found during the search were exported to EndNote, 17,283 papers were removed due to duplication, and 1,267 articles were excluded due to the absence of abstracts. A total of 150 studies were screened for eligibility, relevance, accessibility, and outcome of interest. Finally, nine (Gizaw et al., 2017) were found to be acceptable for inclusion in this systematic review and meta-analysis review (Figure 1).

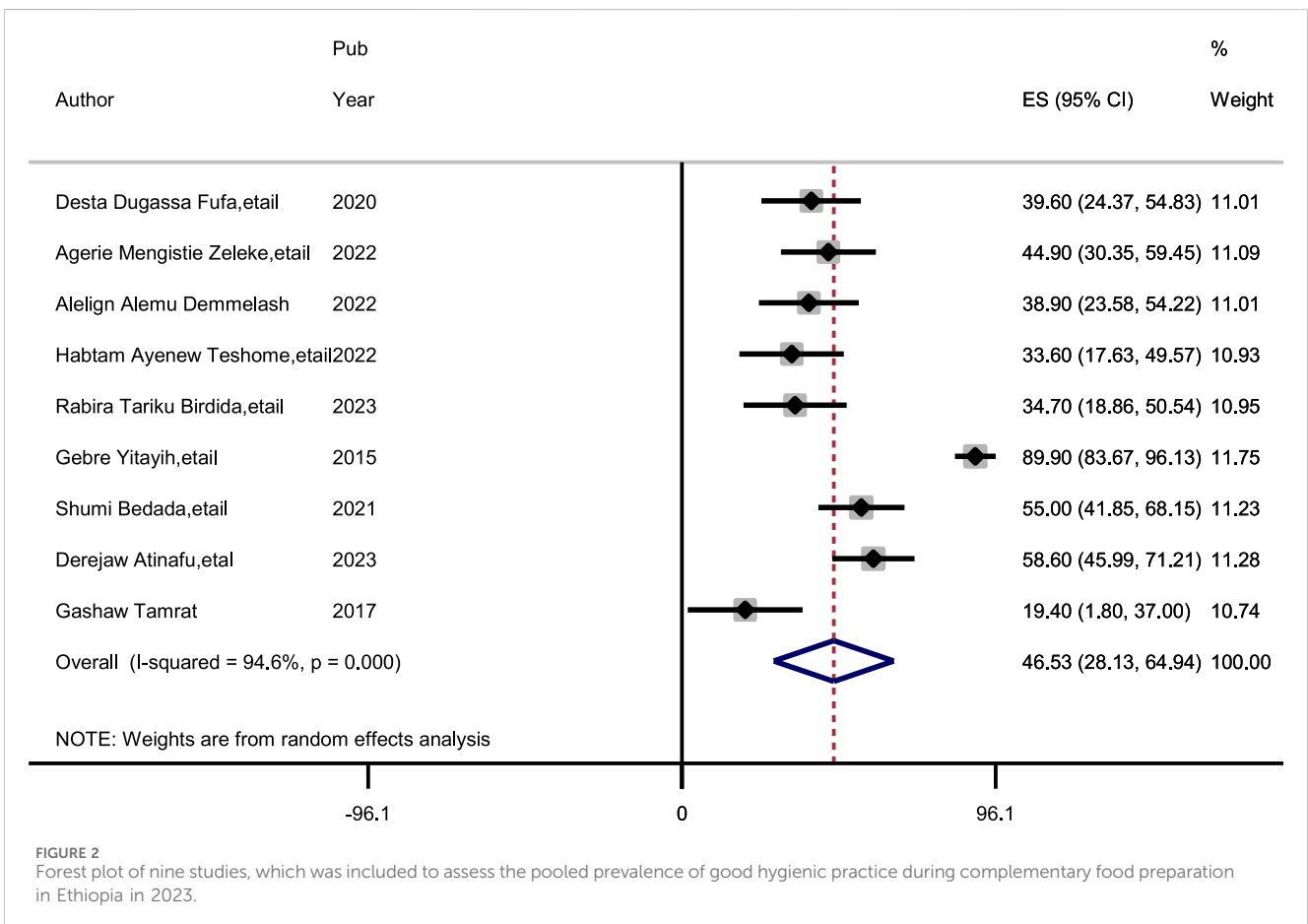
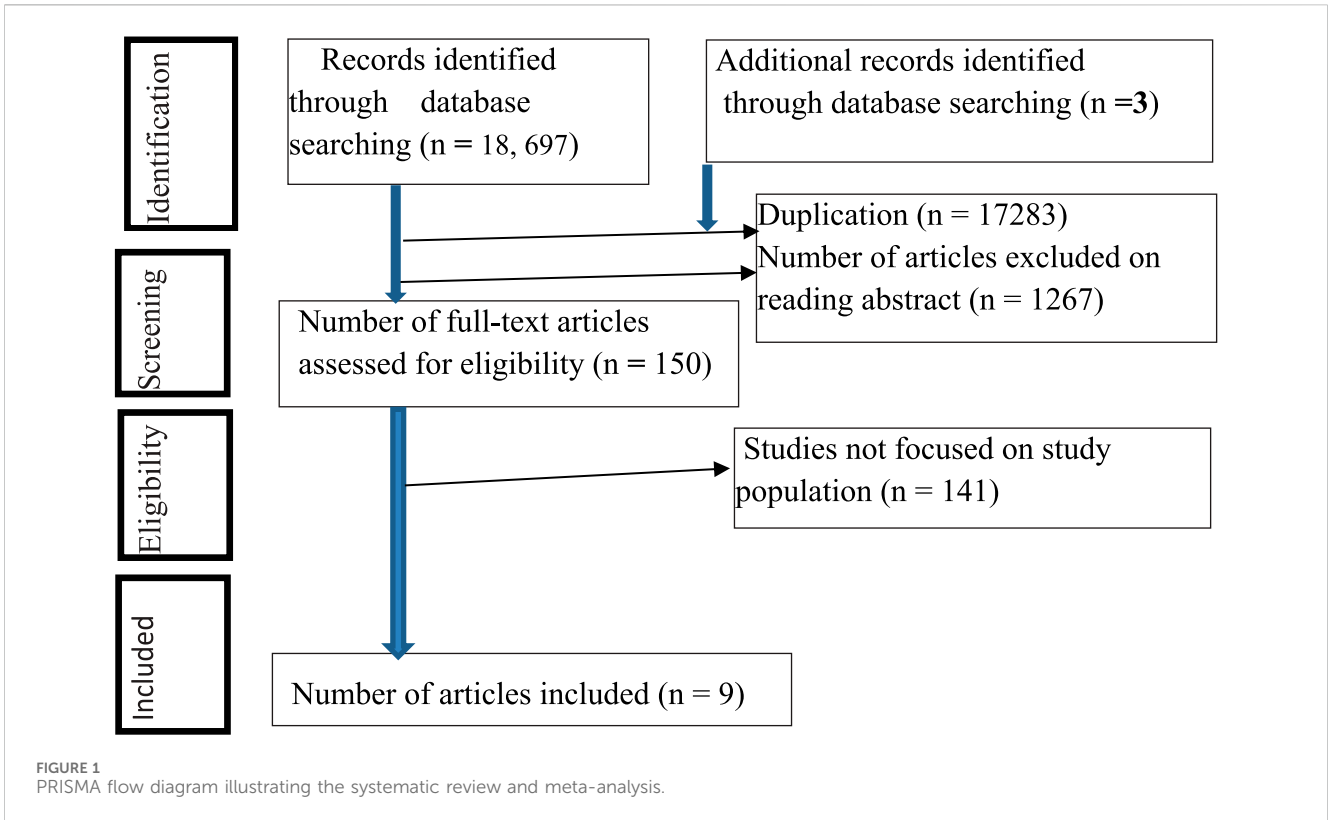
General characteristics of studies

Table 1 details the traits of the papers that were included. The nine studies were conducted in Ethiopia (i.e., in the Hareri, Oromia, and Amhara regions). The investigations were evenly dispersed across Ethiopia's three geographic regions. Seven (Samady et al., 2020) of the included studies (77.7%) were peer-reviewed journal articles, and the remaining two (22.3%) were unpublished master's theses. The qualifying standards for this review were established using the modified PICOT framework (Table 2).

Overall, the pooled prevalence of hygienic practices during complementary food preparation among mothers who have children aged 6–24 months in Ethiopia was 46.53% (95% CI: 28.13–64.94). There was considerable heterogeneity across the included studies ($I^2 = 94.6%$; $p = 0.000$) in estimating the pooled good hygienic practices during complementary food preparation among mothers who have children aged 6–24 months. Hence, to decrease heterogeneity across studies, we estimated the pooled prevalence of good hygienic practices during complementary food preparation among mothers who have children aged 6–24 months; a random-effects model was used during meta-analysis (Figure 2).

Subgroup analysis

Based on the areas where the original studies were done, a subgroup analysis was conducted. Accordingly, the lowest rate of



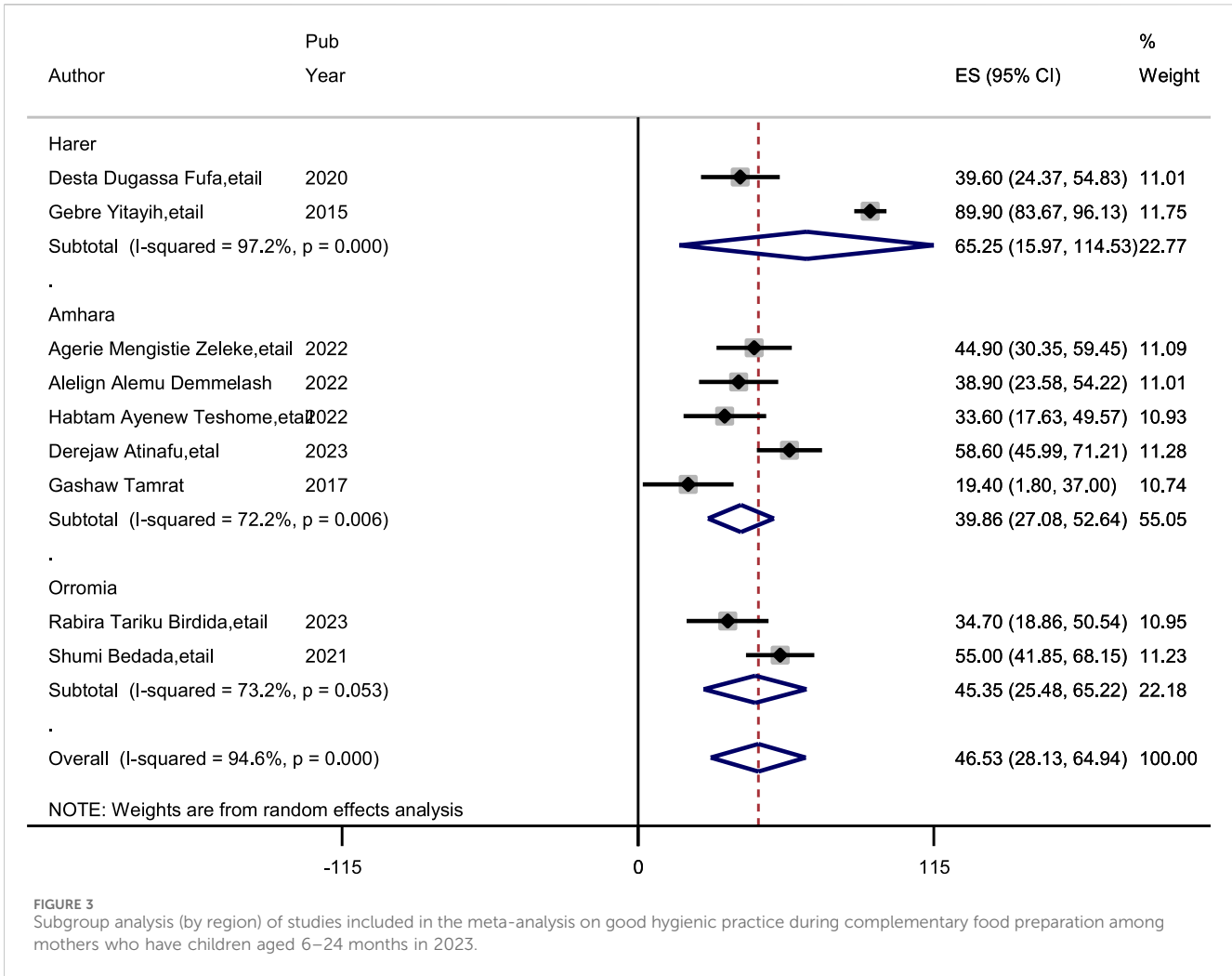


FIGURE 3 Subgroup analysis (by region) of studies included in the meta-analysis on good hygienic practice during complementary food preparation among mothers who have children aged 6–24 months in 2023.

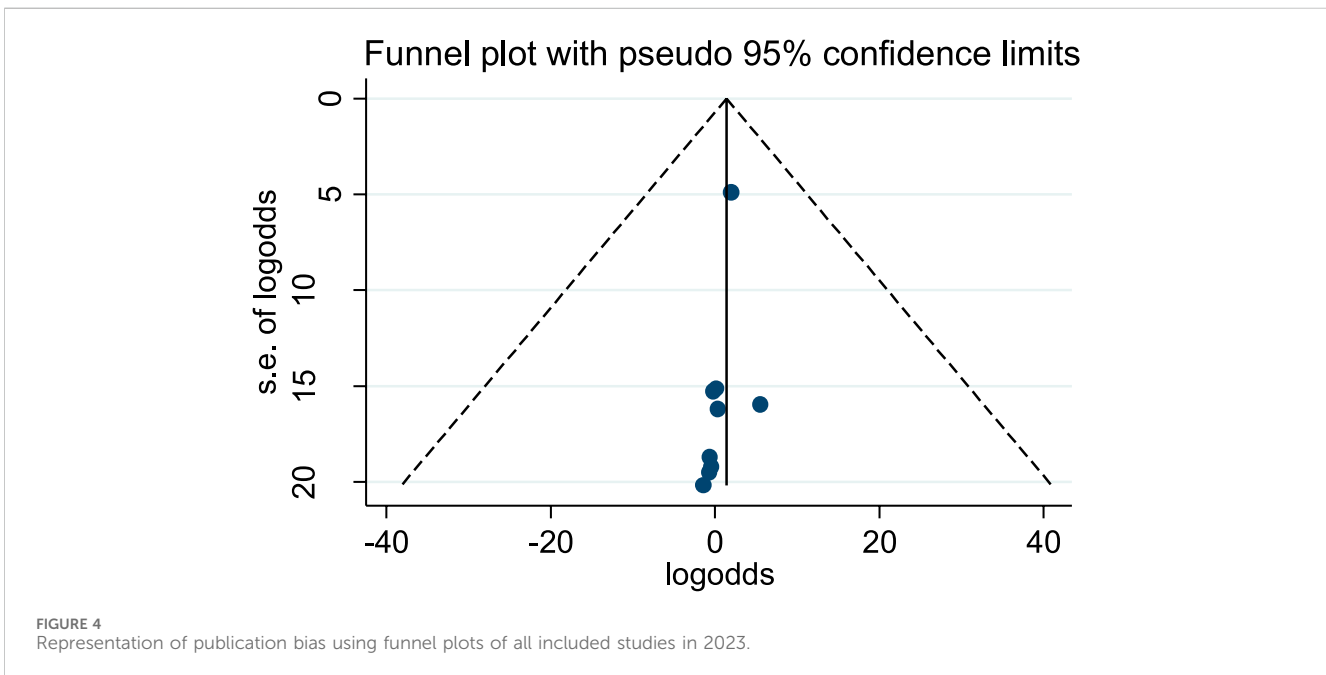
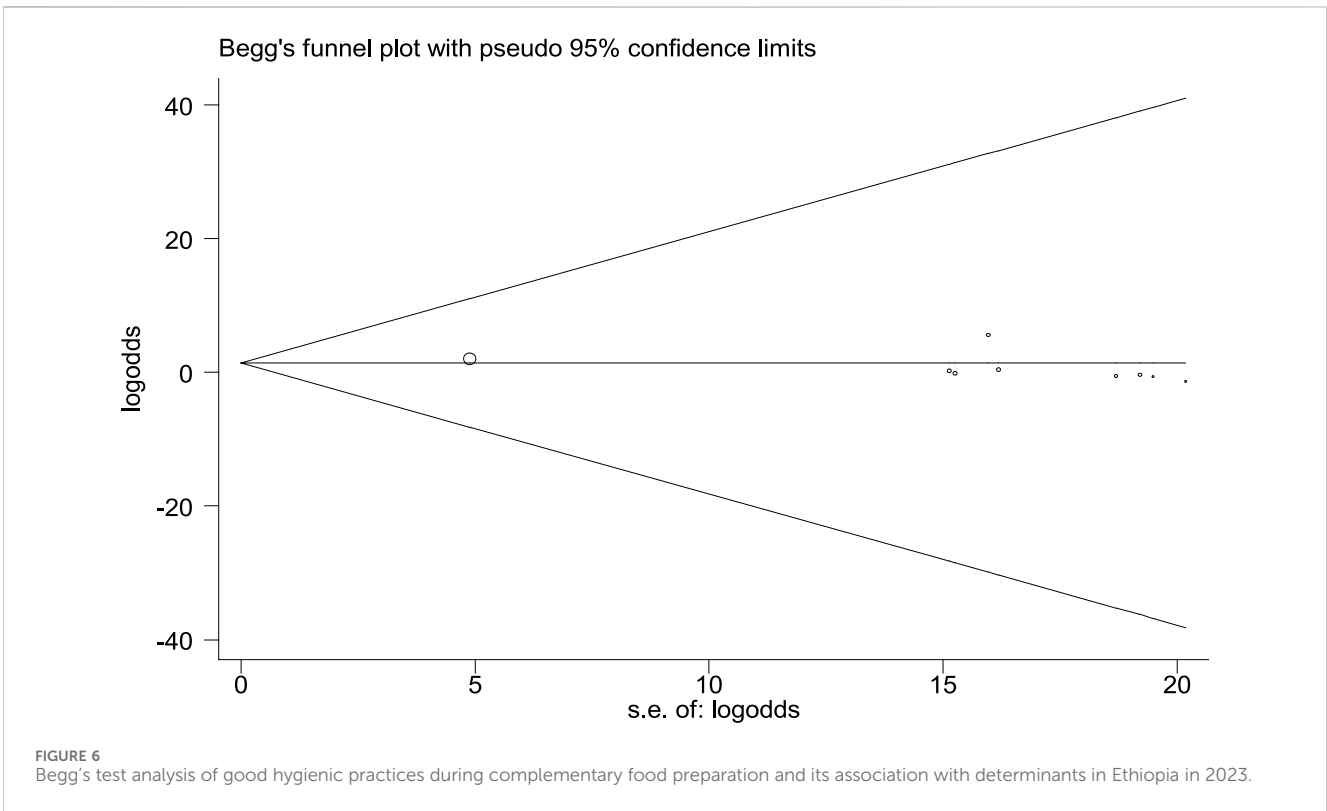
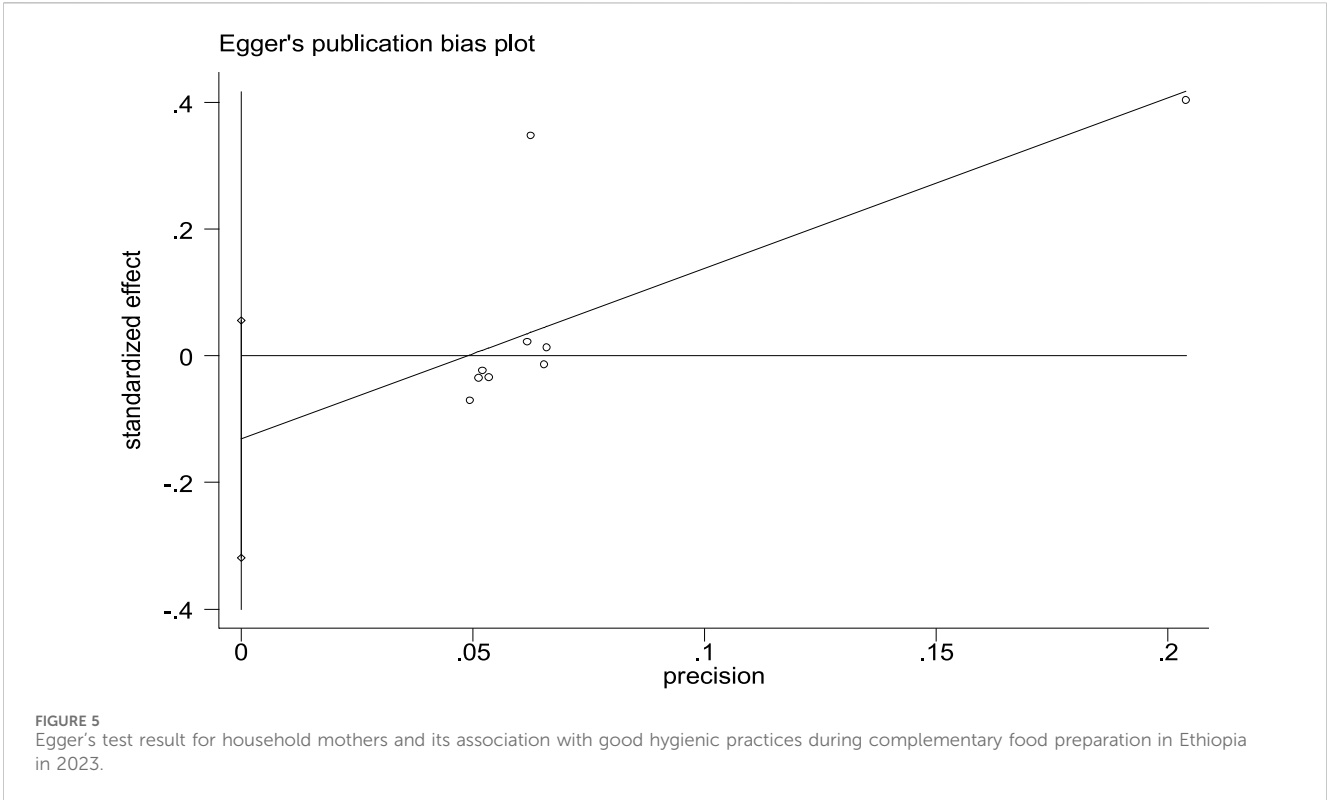


FIGURE 4 Representation of publication bias using funnel plots of all included studies in 2023.



good hygienic practices during complementary food preparation was observed in the Amhara region with a prevalence of 39.86% (95% CI: 27.08), and the highest rate of good hygienic practices

during complementary food preparation was observed in the Hareri region with a prevalence of 65.25% (95% CI: 15.97–114.53) (Figure 3).

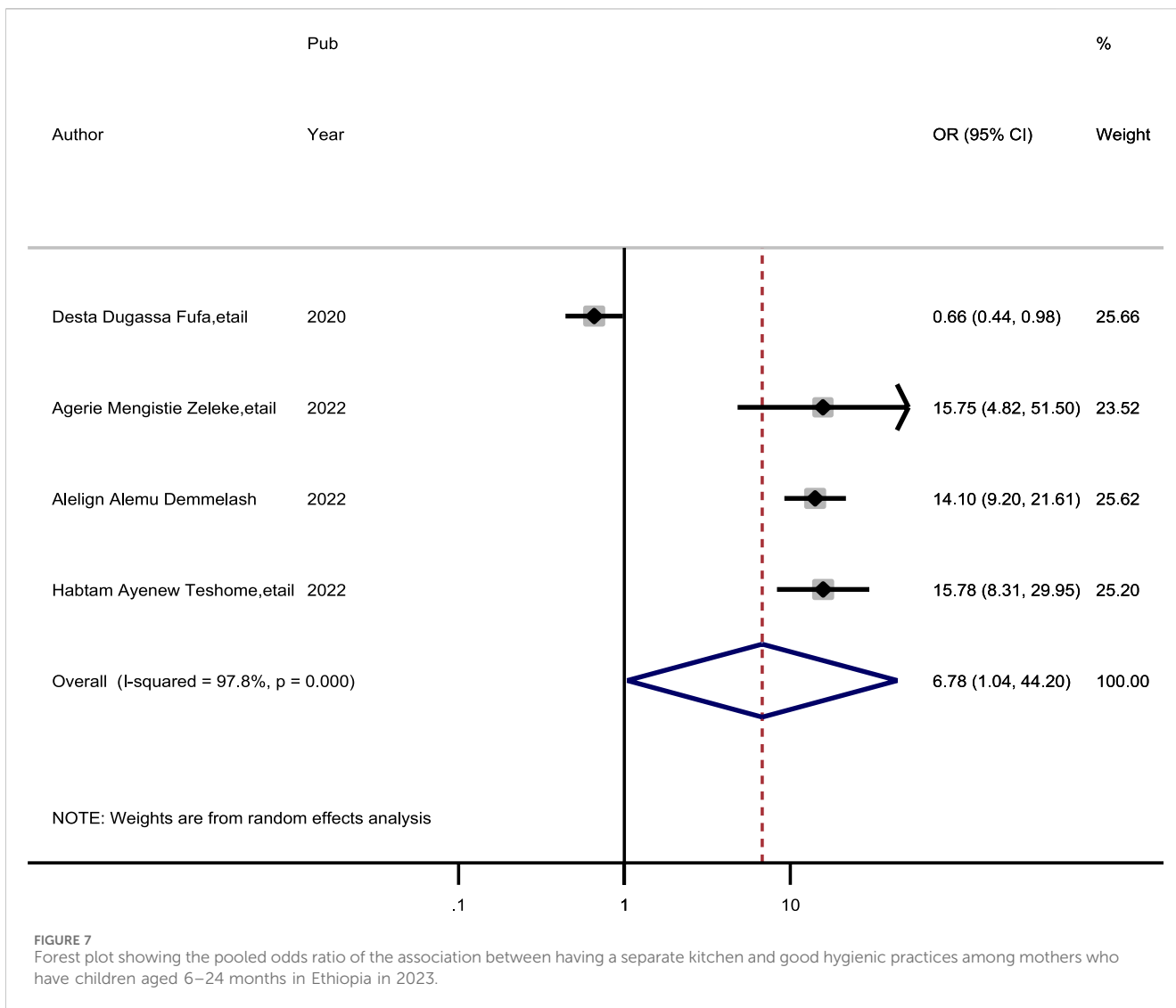


FIGURE 7 Forest plot showing the pooled odds ratio of the association between having a separate kitchen and good hygienic practices among mothers who have children aged 6–24 months in Ethiopia in 2023.

Risk of bias in included studies

A funnel plot and the Egger’s test were both used to objectively assess publication bias. The strong asymmetric funnel plot (Figure 4) and statistically significant results from Egger’s test ($p = 0.140$) (Figure 5) and Begg’s test ($p = 0.216$) (Figure 6) show that we did not discover publication bias in this study.

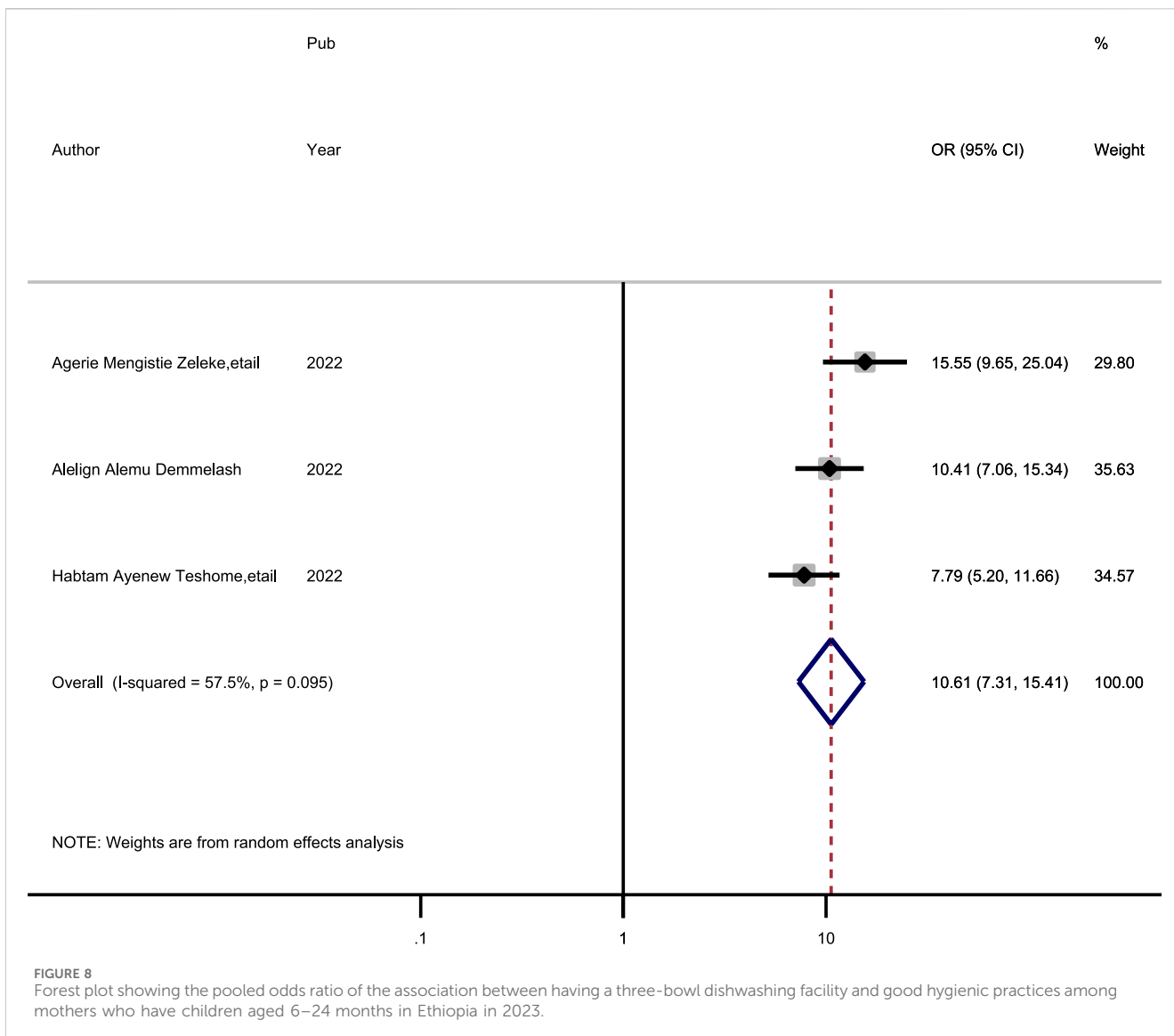
Association of good hygienic practices with complementary food preparation

The association between good hygienic practices and complementary food preparation among mothers who have children aged 6–24 months was computed from nine studies (Yitayih et al., 2016; Kang et al., 2017; Demmelash et al., 2019; Fufa et al., 2020; Teshome et al., 2022; Zelege et al., 2022; Birdida et al., 2023; Derejaw Atnafu et al., 2023; Gebretsadik et al., 2023). The prevalence of good hygienic practices during complementary food preparation was 6.78 times higher among those mothers who have children aged 6–24 months and have a separate kitchen than

among their counterparts (AOR = 6.78; 95% CI: 1.04–44.20) (Figure 7).

Three studies indicated that those household mothers who have three-bowl dishwashing facilities have a significant association with good hygienic practices and complementary food preparation among mothers who have children aged 6–24 months. The odds of good hygienic practices were 10.61 times higher (AOR = 10.61; 95% CI: 7.31 and 15.41) among mothers who have children aged 6–24 months on complementary food preparation compared to those who do not have three bowls of dishwashing facilities in their houses. In this meta-analysis, the included studies were characterized by the absence of heterogeneity ($I^2 = 57.5%$; $p = 0.095$). Thus, a fixed-effect model analysis was used (Figure 8).

Three studies indicated that those mothers who accessed the media about the importance of hygienic ways of complementary food preparation in practice had an association with good hygienic practices in complementary food preparation. The odds of good hygienic practices were approximately 4.81 times higher (AOR = 4.81; 95% CI: 1.23 and 18.82) among mothers compared to their counterparts. A random-effects model was used in this meta-analysis to account for the low existence of heterogeneity ($I^2 = 96.3%$; $p = 0.000$) (Figure 9).

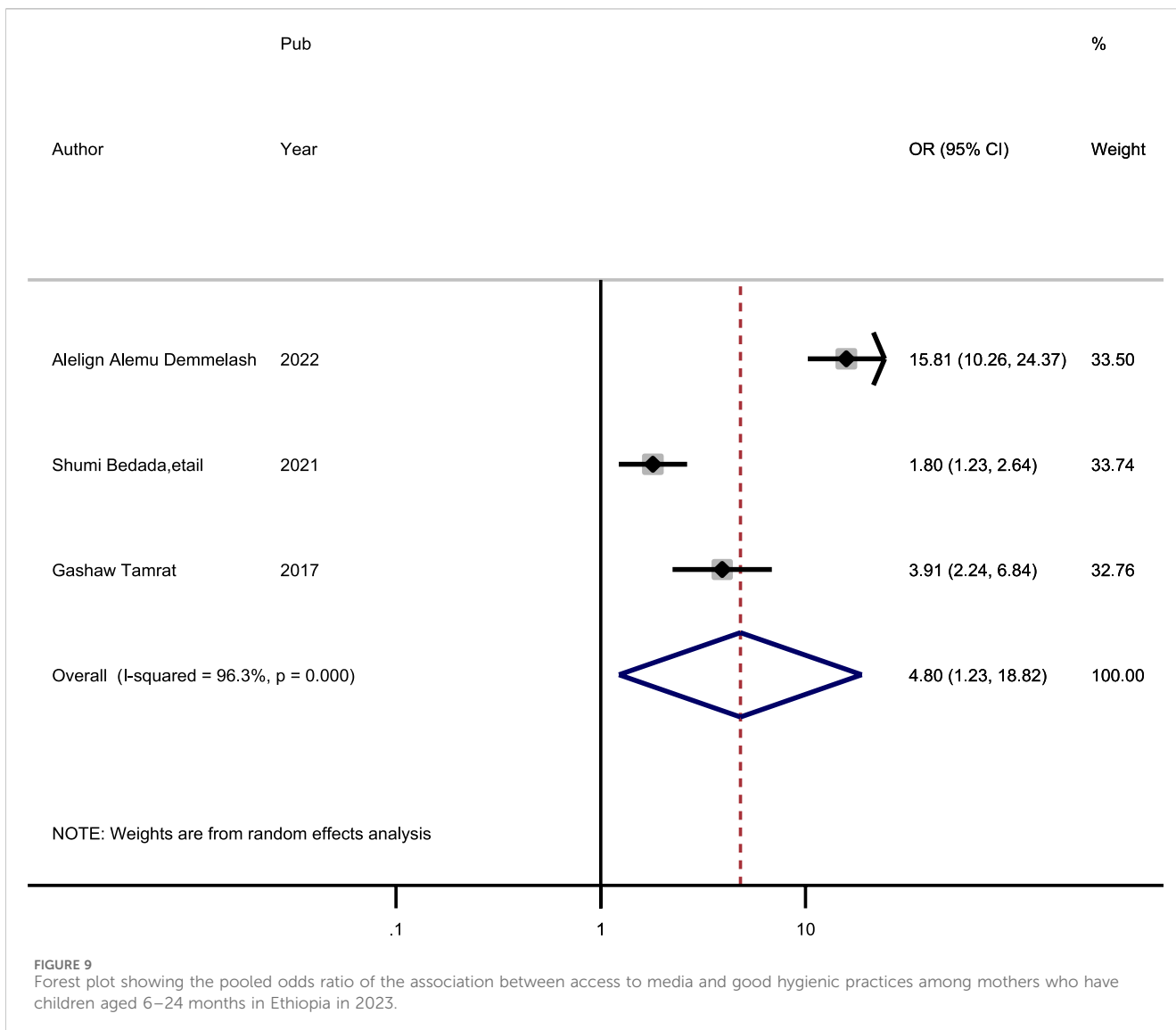


Overall, three studies indicated that the study participants who live in urban areas have access to health information about complementary food preparation and good hygienic practices in their complementary food preparation. The odds of good hygienic practices in complementary food preparation were approximately 4.78 times higher (AOR = 4.78; 95% CI: 2.73–8.38) among urban dwellers compared to those who were rural dwellers. In this meta-analysis, a random-effects model was also used, as the included studies were characterized by the existence of low heterogeneity ($I^2 = 82.6\%$; $p = 0.003$) (Figure 10).

Discussion

In this systematic review and meta-analysis, a total of 4,403 study participants were included from nine eligible studies (Yitayih et al., 2016; Hail, 2017; Demmelash et al., 2019; Dugassa, 2019; Teshome et al., 2022; Zelege et al., 2022; Birdida et al., 2023; Derejaw Atnafu et al., 2023; Gebretsadik et al., 2023). It continues to

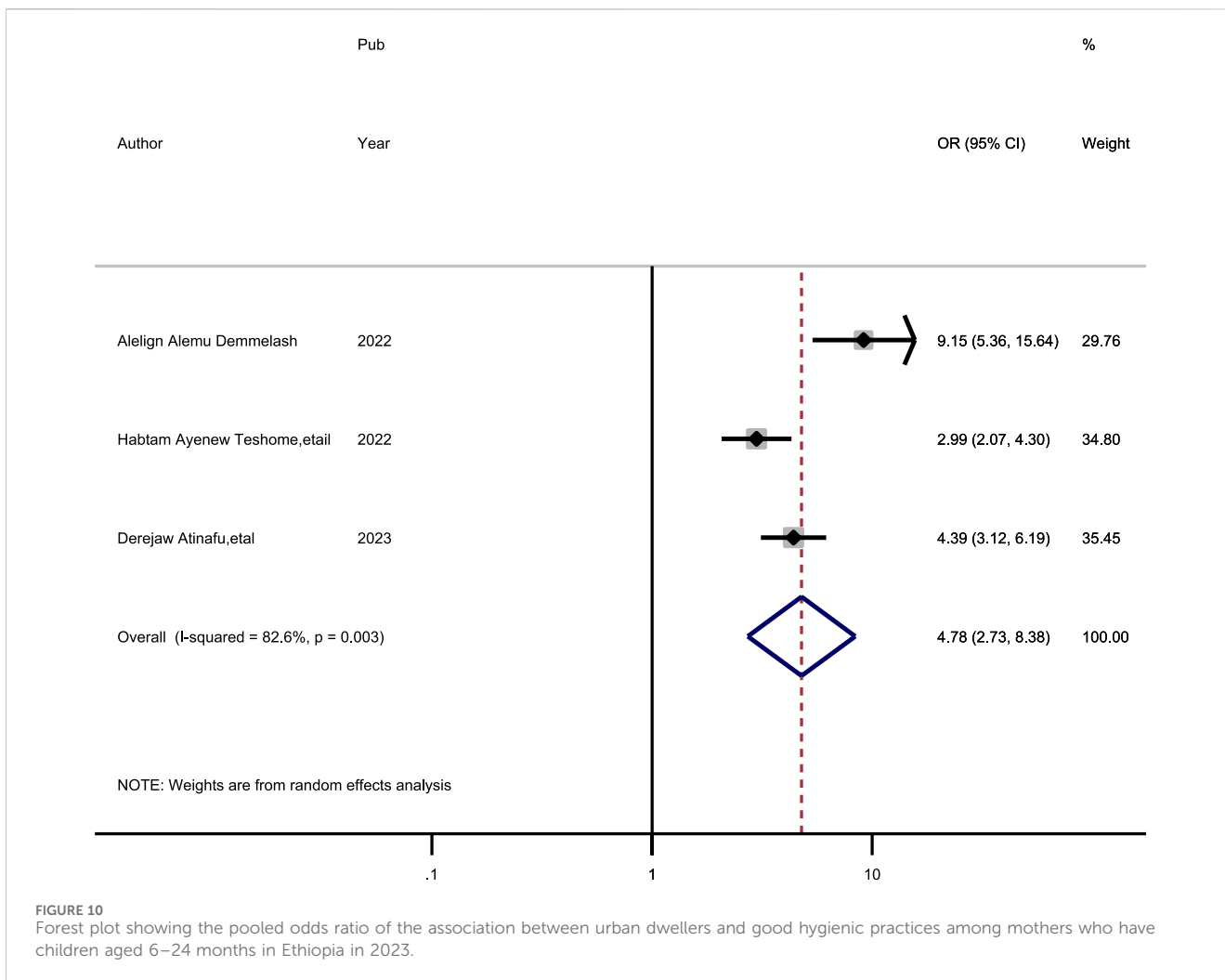
show a widespread prevalence of unhygienic complementary food preparation practices among mothers who have children aged 6–24 months. By 2030, all countries have plans to significantly reduce child fatalities, according to Sustainable Development Goal III (Behavior). The effects of maintaining sanitary practices during the production of complementary foods on Ethiopia’s commitment to accomplishing this global objective of improving child health outcomes have been examined in previous research studies (Stewart et al., 2013). In order to guide decisions on public health policies aimed at addressing these phenomena and to improve child health outcomes, we set out to map the evidence that is currently available in Ethiopia. Hence, we incorporated nine pertinent studies carried out in all three of Ethiopia’s geographic belts and nine of the country’s 12 regions. We estimated 46.53% (95% CI: 28.13%–64.94%; $p < 0.001$) as the pooled prevalence of good hygienic practices during complementary food preparation among women with children between the ages of 6 and 24 months. Good hygienic practices during complementary food preparation can address a full range of children’s health concerns. According to



these meta-analysis results, the pooled prevalence of a hygienic practice during complementary food preparation (46.53%) was lower than the survey studies carried out in Jordan (89.43%) (Zain and Naing, 2013) and Malaysia (71.8%) (Woh PY et al., 2016). This may be due to awareness and access differences in facilities for complementary food preparation practices among mothers. In addition to this, the discrepancy may be due to the use of different methods to measure proper hygienic practices, the lack of promotion of good food hygienic practices reported in the media, and the insufficient attention given to the hygienic practice of complementary food at the community level across the country. To avert this low hygienic practice during complementary food preparation in different parts of the world, it might include differences in the robustness of regulations on access to information about complementary food preparation (Kajjura et al., 2019), the knowledge of mothers on the consequences of poor hygienic food preparation (Tariqujjaman et al., 2022), and the strengthening of food preparation and advertisement policies (Magnitude, 2018). In Ethiopia, for instance, there are no guidelines on how to prepare complementary foods (Wolf et al.,

2022). However, this meta-analysis report is in line with studies in Ghana (52%) (Saaka et al., 2021), Pakistan (38.46%) (Manikam et al., 2018), and the United Arab Emirates (40%) (Padhani et al., 2023).

This meta-analysis revealed that those mothers who have a separate kitchen for food preparation were approximately 6.78 times more likely to have good hygienic practices compared to those who do not have a separate kitchen. Additional investigations that were carried out backed up this conclusion in Kerala (Babita Susan Kuruvilla et al., 2019) and rural Sudan (Magnitude, 2018). This could be due to the fact that having a separate and clean kitchen room plays an important role in maintaining complementary food hygienic practices. Another important finding of this review was that mothers who had good hygienic practices in complementary food preparation and also had three bowls of dishwashing facilities were 10.61 times more likely to do better compared to those who did not have three bowls of dishwashing facilities in their houses. This finding implies that there is a need for a three-bowl dishwashing facility in the house to ensure hygienic and standardized food preparation at all household levels (Ayehu Gashe Tessema, 2014). The literature also documented that having a three-bowl



dishwashing facility in their houses is important to improve food hygiene during food preparation in house care systems (Behavior).

In this meta-analysis, access to information about the importance of complementary food preparation was also found to have a 4.81-times greater positive association with good hygienic practices in complementary food preparation than for those who had no access to media. This could be due to the fact that access to information will provide knowledge and awareness on how preparation and managing food can develop skills in their daily activities so that they can use routine health information easily. Furthermore, mothers who have good information can transform data into meaningful information for preparing food in general. Evidence studies from Malawi revealed that access to health information depends on knowledge and practice of food preparation (Numeri Chalumpho Geresomo EWK-M; Bhadra et al., 2015).

This meta-analysis has several strengths. All studies indicated that urban dwellers had a very strong association with hygienic practices in complementary food preparation. According to the association, the odds of good hygienic practices in complementary food preparation were approximately 4.78 times higher (AOR = 4.78; 95% CI: 2.73 and 8.38) among urban dwellers compared to those who were rural dwellers. This practice was

typically not supported by industry standards or expert guidance, making it a terrible method of seeking healthcare, especially for vulnerable groups like mothers with children aged 6–24 months (Verga et al., 2022). This could be due to the fact that urban dwellers have the chance to get health information through television for their day-to-day activities. Moreover, mothers may attend workshop presentations, which will then increase mothers’ knowledge and practice of complementary food preparation.

Strengths and weaknesses of the research

The information on hygiene practices during the preparation of complementary foods and related variables among mothers of children aged 6–24 months has never been completely mapped before, until this systematic review. It is also one of the few reviews that are country-specific, focusing on Ethiopia. Prior to this study, there was no coherent and complete information on hygienic practices during the preparation of complementary foods and related factors among Ethiopian mothers of children aged 6–24 months. Our analysis helps close this gap. The study methodology was supported by the use of a thorough screening process that was directed by the PRISMA checklist and the widely

used PICOT framework for choosing studies. Despite the above mentioned benefits, this review study includes some built-in drawbacks. Articles were only available in English, and only data from three out of twelve regions in Ethiopia (the Hareri, Oromia, and Amhara regions) were included in this meta-analysis.

Relevance to research

Future research will be guided by the results of this study to provide a thorough understanding of hygienic practices during the preparation of complementary food among mothers of children aged 6–24 months in Ethiopia. Specifically, future policymakers should focus on reducing child morbidity and mortality related to food contamination-caused diseases. Additionally, research should concentrate on advancing the understanding of the socio-demographic and other factors associated with hygienic practices during complementary meal preparation to customize health promotion initiatives for the most vulnerable sections of children under five.

Conclusion

This systematic review and meta-analysis found that more than half of household mothers who had children aged 6–24 months had poor hygienic practices when preparing complementary foods. This low-pooled prevalence was associated with various reasons, including sociodemographic, environmental, and housing-related factors. In order to attain sustainable development goals for improving child health in Ethiopia, it is reasonable to urge proactive measures to raise the level of good hygienic practices during complementary food preparations among mothers of children aged 6–24 months in Ethiopia. We advise the Ethiopian Ministry of Health to design complementary food hygienic practice preparation guidelines to be incorporated into the future postnatal care healthcare system. Additionally, we advise providing sustainable training and health promotion campaigns at the

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community level and advertising in the media. Furthermore, health extension workers are better advised to maintain food hygiene during prenatal care visits, which is recommended to improve good hygienic practices during complementary food preparation for Ethiopian children.

Author contributions

TM, AZ, WT, and YA searched the data and screened the articles. YA and WT performed data extraction. AZ and WT conducted analysis on extracted data. AZ, WT, and YA performed the risk of bias assessment and wrote the manuscript. All authors contributed to the article and approved the submitted version.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Supplementary material

The Supplementary Material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/frfst.2024.1240979/full#supplementary-material>

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