Review Article

Access this article online

Quick Response Code:

Website: https://journals.lww.com/ijhm

DOI: 10.4103/ijh.ijh_30_24

Prevalence of anemia in Somalia: A systematic review and meta-analysis of 3988 participants

Yahye Ahmed Nageye, Abdirasak Sharif Ali Mude, Kizito Eneye Bello[1]

Abstract:

The incidence of anemia in Somalia is of medical concerns, especially among neonates and pregnant women. Despite the available intervention of the government to provide iron-based supplement, the associated morbidity of anemia in Somalia is still of medical relevance. This systematic review and meta-analysis were conducted to provide detailed information on the prevalence of anemia in Somalia. A systematic search for articles describing the prevalence of anemia within Somalia was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-analysis guidelines. A meta-analysis was performed on our eligible studies using the random effect model. Our search returned 13 eligible articles involving 3988 participants within Somalia. There was a relative high prevalence of anemia in Somalia in this study 39.7% (95% CI: 26.3–53.1; I2=99.26%, $P \leq 0.001$). A higher proportion of these cases was from pregnant women. Cross-sectional study designs had more incidence of anemia 39.8% (95% CI: 29.0–51.7) than retrospective studies 29.2% (95% CI: 17.0–45.3) in this review. There was a variation in the distribution of anemia in relation to the publication years at $P< 0.001$. Evidence from this study reveals that there is a high prevalence of anemiain Somalia and effort toward strategic treatment should be prioritized.

Keywords:

Anemia, meta-analysis, prevalence, Somalia, systematic review

Introduction

Anemia, which is defined as a lack of red blood cells or hemoglobin, is a noteworthy global public health issue, especially in Somalia.[1,2] The frequency of anemia in Somalia has garnered attention from researchers and health-care experts due to its significant influence on the health and overall well-being of the population.[3] The significant occurrence of this condition is ascribed to a multitude of variables, including inadequate nourishment, restricted availability of health-care facilities, and persistent wars that disrupt vital functions such as the distribution of food and medical assistance.[3]

In addition, a report from the World Health Organization emphasized the difficulties encountered in tackling anemia in Somalia, such as insufficient health-care infrastructure, limited access to iron supplementation programs, and a lack of awareness regarding the significance of diets rich in iron.[4] Notwithstanding these obstacles, endeavors have been undertaken to address anemia in Somalia.[5] NGOs and international agencies have enacted measures such as providing micronutrient supplements, advocating for breastfeeding habits, and delivering community-based education on nutrition and health. Nevertheless, these endeavors have encountered challenges such as inadequate finance, logistical complexities in accessing rural regions, and cultural impediments that shape nutritional preferences.[6]

Department of Microbiology and Laboratory Sciences, Faculty of Medicine and Health Sciences, SIMAD University, Mogadishu, Somalia, [1]Department of Microbiology, Faculty of Natural Science, Kogi State (Prince Abubakar Audu) University, Anyigba, Kogi State, Nigeria

Address for correspondence:
Dr. Abdirasak Sharif Ali Mude,
Faculty of Medicine and Health Sciences, SIMAD University, Mogadishu, Somalia.
E-mail: arshamyare@gmail.com

Submission: 21-03-2024
Revised: 08-05-2024
Accepted: 09-05-2024
Published: 27-06-2024

How to cite this article: Nageye YA, Mude AS, Bello KE. Prevalence of anemia in Somalia: A systematic review and meta-analysis of 3988 participants. Iraqi J Hematol 2024;13:170-6.

Recent research, including a survey carried out by UNICEF, has indicated positive advancements in decreasing the occurrence of anemia across specific demographic groups in Somalia.[7] Nevertheless, there are still differences, as rural areas and marginalized communities continue to have a higher prevalence of anemia in comparison to urban areas and more affluent populations.[6]

Anemia during pregnancy is a significant issue for public health, particularly in poorer countries, and it is linked to unfavorable results for both the mother and the infant. Individuals of all age groups are impacted, however, children and pregnant women are most prone to experiencing it.[8,9] Out of the total global population of anemic adults, which is 1.62 billion people, approximately 480 million of them are pregnant women.[10] Anemia during pregnancy has a detrimental effect on a woman's health, as well as her social and economic development.[8,11] Pregnant women who are anemic, especially those with severe anemia, are at risk of experiencing insufficient physical activity, elevated maternal morbidity, and mortality. Maternal anemia is also responsible for an increase in perinatal mortality, low birth weight, stillbirth, and fetal loss.[4,8,9,11,12]

There is a lack of comprehensive data on the overall occurrence of anemia in Somalia. This study aims to gather sufficient information on this blood disorder and help in developing strategies to reduce its impact on public health. Hence, this study was conducted to ascertain the frequency of anemia in Somalia.

Eligibility and Data Extraction

This review encompassed cross-sectional studies, prospective cohorts, and retrospective cohorts. Original research documenting the presence of anemia in Somalia was considered for inclusion if the samples or data were obtained from at least one city within Somalia. We excluded works that met the following criteria: (1) being reviews, (2) being editorials, (3) lacking a well-defined origin, (4) containing redundant or duplicate data, (5) not being conducted within Somalia, and (6) having an unavailable full text. Three authors (B. K. E, A. S. A, and Y. A) conducted a separate evaluation of the title, abstract, and full text of the study, following the predetermined criteria for inclusion. Disputes were resolved through the process of reaching a consensus among the authors. The titles, abstracts, and full texts of the eligible studies were examined based on the relevant categories (title, abstract, and full text). The structured pro forma was used to extract relevant data, including the names of authors, the year of publication, the prevalence of anemia, and factors related to the acquisition of anemia. Details of the search strategy is provided in Supplementary File 1.

Statistical Analysis and Quality Assessment

In all studies, a single-arm random-effects model was employed to ascertain the pooled prevalence of anemia in Somalia. We utilized the meta-analysis technique developed by DerSimonian and Laird, which is integrated into the OpenMeta and Comprehensive Meta-analysis Software.[13] A funnel plot was employed to assess the presence of publication bias.[14] The Cochran's Q test evaluated the variations in estimates among different subgroups.

The heterogeneity index was assessed using the Cochran Q test and I^2 values. In this context, an I^2 value of 25%, 50%, and 75% corresponded to low, moderate, and high levels of heterogeneity, respectively. The OpenMeta Analyst software version 10.10 was used to do subgroup analysis.

Descriptive statistics were employed to provide a concise summary of the data pertaining to anemia within Somalia. All tests yielded a statistically significant result with a $P < 0.001$. The methodological quality of the included papers in this review was evaluated using the Joanna Briggs Institute (JBI) critical assessment criteria for prevalence data[15] [Supplementary File 2]. A total quality score ranging from 0 to 18 was obtained by assigning a score of "2" for "yes" and "0" for "no." Studies with a quality score ranging from 14 to 18 were deemed sufficient. Supplementary Table 1 provides a comprehensive evaluation of the quality of the 1^2 papers that were included in the study.

Results

Search results and eligible studies

We retrieved a total of 5905 abstracts from five international electronic databases using our search method. All instances of duplication were eliminated, and a total of 3565 papers were excluded based on their titles and abstracts. Out of the 351 papers considered, 338 were excluded due to not meeting our inclusion criteria or receiving a low JBI assessment score. Figure 1 provides a comprehensive depiction of the selecting process. This study conducted a systematic review of the literature and performed a meta-analysis, which involved analyzing 10 published studies with a total of 3988 individuals.

This overview provides a comprehensive analysis of the frequency of anemia in Somalia, covering a period from 2000 to 2023. The studies exhibit variation in sample size, with the most extensive study conducted by Abidi and Deka (2023)[16] encompassing 1186 samples, whereas the smallest study conducted by Abdikareem and Mohammed (2022)[3] involved only 135 samples. The prevalence of positive cases exhibits considerable

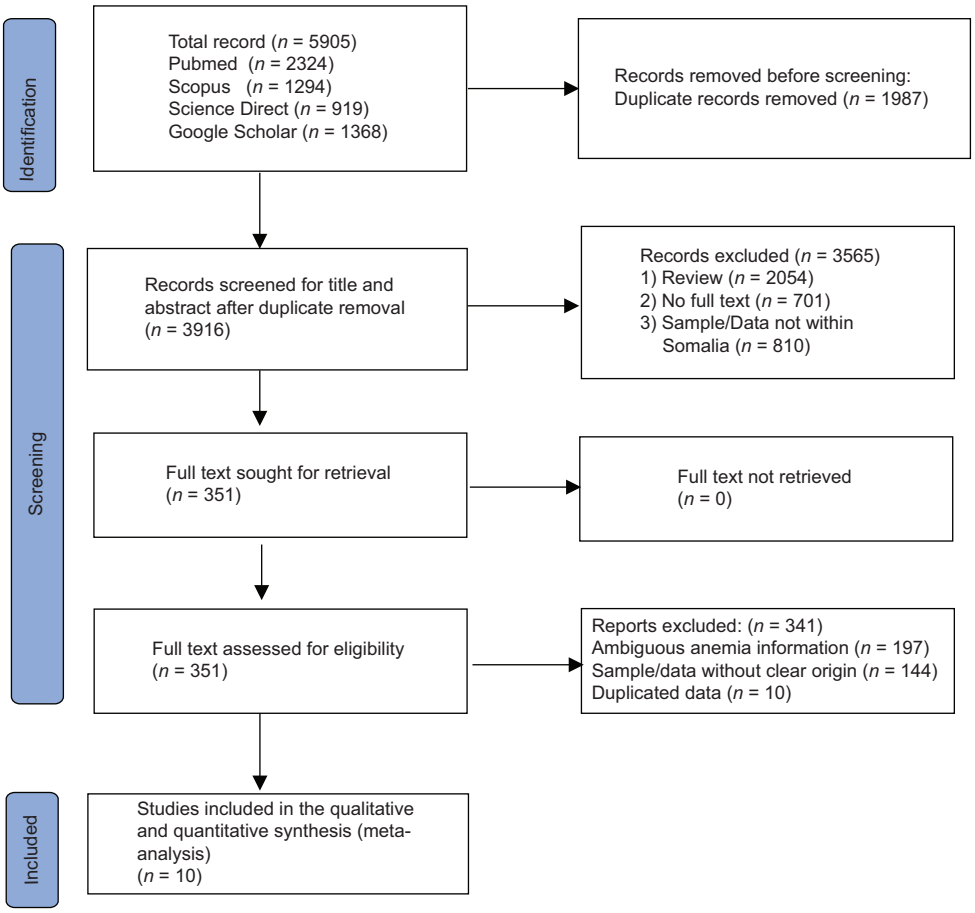

Figure 1: Summary of the article selection process

variation among different research, with the study conducted by Abidi and Deka (2023) reporting the highest number of positive cases at 769, whereas the study by Naszra *et al.* (2023)[22] recorded the lowest number of positive cases at 9.

Study designs encompass cross-sectional studies, which offer a momentary glimpse of anemia prevalence at a particular moment, and retrospective studies, which scrutinize past data to evaluate trends in anemia prevalence. The variety of study approaches enhances the comprehension of anemia prevalence in Somalia across time, emphasizing the significance of continuous research and monitoring in tackling this health issue.

The summary of the included studies is presented in Table 1.

There was a relative high prevalence of anemia in Somalia in this study 27.5% (95% CI: 17.2–40.9; $I^2 = 98.5\%$, $P \leq 0.001$). The study of Abidi and Deka (2023) had a significant weight in the overall pool of the study as represented in Figure 2. The study carried out by Naszra *et al*. (2023) had the least weight in the pooled prevalence of anemia in Somalia in this report. Despite the high heterogeneity of the included studies, there was, however, a publication bias in the study as displayed by the asymmetrical distribution of the studies in the funnel plot presented in Figure 3, with a nonsignificant Egger's probability value (Egger's $P = 0.217$).

The analysis of anemia prevalence in Somalia's subgroup shows various rates depending on the study designs and periods. Table 2 presents an elaborate subgroup analysis of the occurrence of anemia in Somalia, with a specific focus on various research methodologies and the year of publication.

The analysis conducted using research designs provides intriguing insights. The cross-sectional studies, which consist of seven research in total, reveal a prevalence of anemia of 27.0% with a 95% confidence interval (CI) ranging from 14.5 to 44.8. The level of heterogeneity in this category is quite high at 98.69%. The Q statistic and heterogeneity test indicate substantial variations within this subgroup (Q = 449.01=, df = 7, $P < 0.001$). On the other hand, the retrospective investigations, which amount to a total of 3, indicate a slightly lower occurrence of anemia at 28.4% (95% CI: 15.9–45). The level of heterogeneity in this subgroup is significant, although slightly lower

Table 1: Characteristics of eligible studies

Name of author	Year of publication	Number of samples	Number of positive	Study design
Abidi and Deka[16]	2023	1186	769	Cross-sectional
Mohamud *et al*.[17]	2023	200	28	Cross-sectional
Eva *et al*.[18]	2013	258	51	Retrospective
Ralma *et al*.[4]	2021	383	170	Retrospective
Abidirasak and Abd Elhadi[3]	2023	240	64	Cross-sectional
Hassan[19]	2022	533	171	Cross-sectional
Abidirasak and Abd Elhadi[20]	2023	433	273	Cross-sectional
Collins and Myatt[21]	2000	383	91	Retrospective
Abdikareem and mohammed[1]	2022	135	24	Cross-sectional
Naszra *et al*.[22]	2023	237	9	Cross-sectional

Table 2: Subgroup analysis of the prevalence of anemia in Somalia in relation to study designs and year of publication

Parameters	Number of studies	Prevalence (%)	95% CI	I^2 (%)	*Q*	Heterogeneity test (DF)	*P*
Study designs							
Cross-sectional	7	27.0	14.5–44.8	98.69	449.01	6	<0.001
Retrospective	3	28.4	15.9–45.4	96.38	55.18	2	<0.001
Year of publication							
2021–2024	8	29.2	17.6–44.3	98.49	462.14	7	<0.001
2011–2020	1	19.8	15.4–25.1	-	-	-	-
1991–2000	1	23.8	19.8–28.3	-	-	-	-

CI=Confidence interval

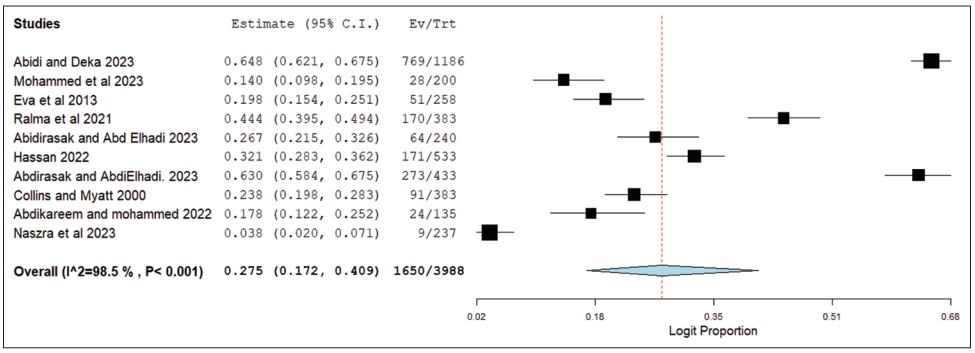

Figure 2: Forest plot showing the pooled prevalence of anemia in Somalia

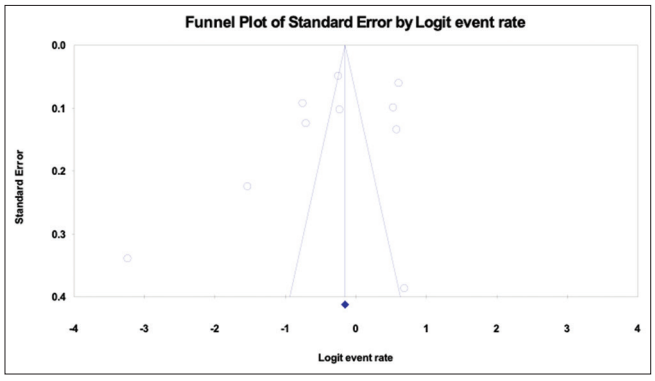

Figure 3: Funnel plot showing the publication bias in the prevalence of anemia in Somalia. Eggers *P* = 0.205

than that observed in the cross-sectional studies, at 96.38%. The heterogeneity test results ($Q = 55.18$, df = 2, $P < 0.001$) show that there are substantial variations within this subgroup as well, as represented in Table 2. Cross-sectional studies had more overall weight than retrospective studies, as represented in Figure 4.

Regarding the examination of publishing years, the data are categorized into three distinct periods: 2021–2024, 2011–2020, and 1991–2000. During the period from 2021 to 2024, a total of eight investigations were conducted. These studies found that the prevalence rate was 29.2% (with a 95% CI of 17.6%–44.3%). Notably, there is just one study available from 2011 to 2020, which reports a prevalence of 19.8% (95% CI: 15.4%–25.1%).

The longest period analyzed, spanning from 1991 to 2000, included a study that showed a greater occurrence of anemia with a prevalence rate of 23.8% (95% CI: 19.8%–28.3%), as represented in Figure 5.

Discussion

The incidence and trends of anemia in Somalia have been a matter of great concern to health-care practitioners and physicians.[23] The incidence of anemia in Somalia has been reported to be of great significance to pregnant women and neonates.[3,4] This systematic review and meta-analysis rigorously examined the prevalence of anemia in Somalia among dynamic cohorts. A total of 3988 participants participated in this study, between 2000 and 2023. The dynamism in the period included in this study added robustness to the overall quality of the study. The findings of this study are in alliance with the report of others.[24-26] The disparity in sample sizes across the studies included is remarkable, with a range of 135 samples in the study conducted by Abdikarim and Mohammed (2022) to Abidi and Deka (2023) encompassing 1186 samples. The variation in sample sizes is indicative of the extensive and comprehensive research carried out on the prevalence of anemia in Somalia.

There was a high prevalence of anemia in Somalia, the probable reason for the latter is not clear, but it can be attributed to the overall burden of anemia in Somalia, the findings of this study are in compliance with the report of others[3,20] where they independently reported a high prevalence burden of anemia among a pregnant cohort within Mogadishu, Somalia.[3,20]

The frequency of positive anemia cases showed significant variability among the studies. Abidi and Deka (2023) documented the maximum number of positive cases, totaling 769, whereas Naszra *et al*. (2023) recorded the lowest number, which was 9. The presence of such discrepancies emphasizes the intricate characteristics of anemia epidemiology and emphasizes the necessity for continuous surveillance and investigation.

The examination of study designs indicated a combination of cross-sectional and retrospective studies. Cross-sectional studies, which capture a momentary view of anemia prevalence, revealed a prevalence rate of 27.0%, whereas retrospective studies, which examine historical data, indicated a somewhat higher prevalence of 28.4%. These data indicate that the reported rates of anemia in Somalia are influenced by the time dimension and study approach. The findings of this study are in alliance with the report of others, where they independently reported that the type of study design influences the overall weight of a study in an epidemiological setting.[27]

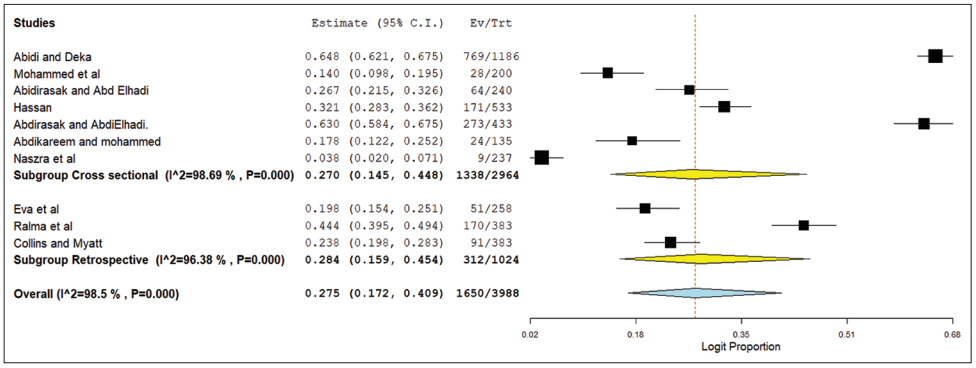

Figure 4: Subgroup forest plot showing the pooled prevalence of anemia in Somalia in relation to study designs

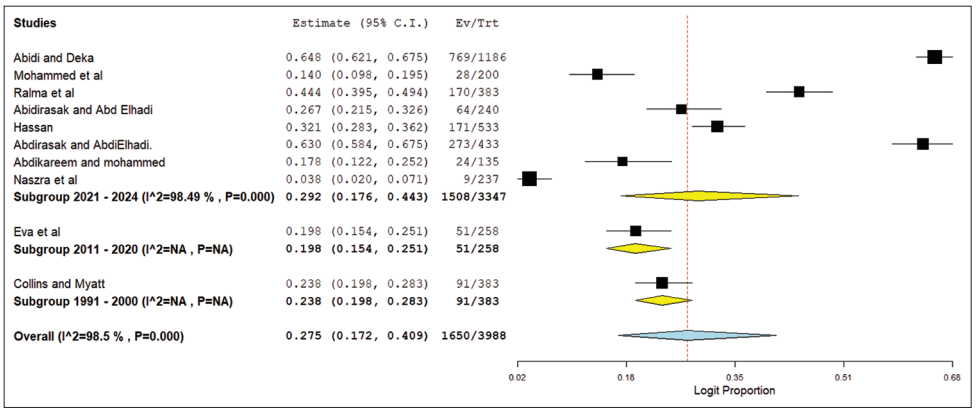

Figure 5: Subgroup forest plot showing the pooled prevalence of anemia in Somalia in relation to publication year

In addition, subgroup analysis conducted according to the years of publication revealed temporal patterns in the prevalence of anemia. Anemia reached its peak burden of 29.2% from 2021 to 2024, followed by a prevalence of 23.8% from 1991 to 2000. The findings of this study present an usually pattern of anemia in Somalia. Despite the surge in the prevalence of anemia from 1991 to 2000, there was a decrease in the morbidity of anemia between 2011 and 2020. The probable reasons for the later are unclear, but it could be attributed to the drastic reduction in the hematological cases between the said period. The findings of this study are in compliance with the report of others.[16,17,28]

Curiously, there was a solitary study conducted between 2011 and 2020, which revealed a prevalence rate of 19.8%. These variations highlight the ever-changing nature of anemia prevalence and the significance of ongoing monitoring throughout different periods.[12,29]

Strength and Limitations

This study is the first report of the pooled prevalence of anemia in Somalia; it is commendable for its thorough approach in determining eligibility criteria and extracting data. The diversity in the included studies and the critical statistical analysis are some of the strength of the study.

Although the study utilized suitable statistical methods, such as meta-analysis with a random-effects model and evaluating heterogeneity using Cochran's Q test and I^2 values, there were several areas that may have been enhanced. The presence of significant heterogeneity among the studies included in the analysis may have introduced variability that could impact the reliability of the pooled prevalence estimates. Moreover, the evaluation of publication bias using a funnel plot demonstrated asymmetry, suggesting a possible bias in the papers that were included in the study. Although the study offers vital insights into the occurrence of anemia in Somalia, it is important to consider these limitations when analyzing the results.

Conclusion

The findings of this systematic review and meta-analysis reveal a relative high prevalence of anemia in Somalia at 27.5% (95% CI: 17.2–40.9; $I^2 = 98.5\%$, $P \leq 0.001$). Therefore, efforts toward strategic interventions and treatments should be prioritized by the government and health agencies.

Financial support and sponsorship

This study was provided by Center for Research and Development SIMAD University.

Conflicts of interest

There are no conflicts of interest.

References

1. Abdikareem M, Mohammed J. Epidemiology of end-stage renal disease in Mogadishu, Somalia: First report at a tertiary care hospital. Int J Gen Med 2022;15:6259-67.
2. Bryant R. Anemias. In: Anemia. Peru: Springers; 2010. p. 141-72.
3. Abdirasak Mude A, AbdElhadi AM. Prevalence of anemia and its associated factors among pregnant women in Yaqshiid district, Somalia. Iraqi J Hematol 2023;12:78.
4. Ahmed RH, Yussuf AA, Ali AA, Iyow SN, Abdulahi M, Mohamed LM, *et al*. Anemia among pregnant women in internally displaced camps in Mogadishu, Somalia: A cross-sectional study on prevalence, severity and associated risk factors. BMC Pregnancy Childbirth 2021;21:832.
5. Omar sheikh Mohamed M. Mapping of main mosquitoes in Mogadishu-Somalia. Indian J of Agric and Life Sci 2022;2:8-19. [doi: 10.5281/zenodo.7032146].
6. Brazhalovich FL, Klyuchnikov MI, Lukyanov AI. The political-geographical aspects of problematic statehood (exemplified by Somalia). Geogr Nat Resour 2016;37:264-70.
7. Ministry of Health and Human Services Federal Republic of Somalia. Available from: https://www.seabring.org. [Last accessed o n 2024 May 07].
8. Sifakis S, Pharmakides G. Anemia in pregnancy. Ann N Y Acad Sci 2000;900:125-36.
9. Breymann C. Iron deficiency anemia in pregnancy. Semin Hematol 2015;52:339-47.
10. McLean E, Cogswell M, Egli I, Wojdyla D, de Benoist B. Worldwide prevalence of anaemia, WHO vitamin and mineral nutrition information system, 1993-2005. Public Health Nutr 2009;12:444-54.
11. Sukrat B, Sirichotiyakul S. The prevalence and causes of anemia during pregnancy in Maharaj Nakorn Chiang Mai hospital. Med Assoc Thai 2006;89 Suppl 4:S142-6. Available from: https://www.scopus.com/inward/record.uri?eid=2-s2.0-35248844616 and partnerID=40 and md5=be5ea826ed2d7ce8df2ae1073c7596dc. [Last accessed on, 2024 Feb 15].
12. Sharma D, Amgain K, Panta PP, Pokhrel B. Hemoglobin levels and anemia evaluation among pregnant women in the remote and rural high lands of mid-Western Nepal: A hospital based study. BMC Pregnancy Childbirth 2020;20:182.
13. George BJ, Aban IB. An application of meta-analysis based on dersimonian and laird method. J Nucl Cardiol 2016;23:690-2.
14. Hunter JP, Saratzis A, Sutton AJ, Boucher RH, Sayers RD, Bown MJ. In meta-analyses of proportion studies, funnel plots were found to be an inaccurate method of assessing publication bias. J Clin Epidemiol 2014;67:897-903.
15. Liberati A, Altman DG, Tetzlaff J, Mulrow C, Gøtzsche PC, Ioannidis JP, *et al*. The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: Explanation and elaboration. J Clin Epidemiol 2009;62:e1-34.
16. Abdi B, Deka MO. The association of maternal anaemia with adverse maternal and foetal outcomes in Somali women: A prospective study. BMC Womens Health 2023;23:193.
17. Farah Yusuf Mohamud M, Nur Adan F, Osman Omar Jeele M, Ahmed MA. Major cardiovascular events and associated factors among routine hemodialysis patients with end-stage renal disease at tertiary care hospital in Somalia. Front Med (Lausanne) 2023;10:101-8.
18. Råssjö EB, Byrskog U, Samir R, Klingberg-Allvin M. Somali women's use of maternity health services and the outcome

of their pregnancies: A descriptive study comparing Somali immigrants with native-born Swedish women. Sex Reprod Healthc 2013;4:99-106.

19. Dahie HA. Determinants of maternal near miss events among women admitted to tertiary hospitals in Mogadishu, Somalia: A facility-based case-control study. BMC Pregnancy Childbirth 2022;22:658.
20. Ali Mude AS, Mohamed Agena Musa AE. Exploring hematological parameters and their prognostic value in adult COVID-19 patients: Insights from Mogadishu, Somalia. Adv Hematol 2023;2023:37-43.
21. Collins S, Myatt M. Short-term prognosis in severe adult and adolescent malnutrition during famine: Use of a simple prognostic model based on counting clinical signs. JAMA 2000;284:621-6.
22. Naszra H, Ahmed SA, Yusuf Ali K, Altinel E, Waberi MM, Hassan MS, *et al*. Outcomes of women with preeclampsia and eclampsia admitted in the intensive care unit at a tertiary care hospital in Mogadishu, Somalia. Anesthesiol Res Pract 2023;2023. doi: 10.1155/2023/6641434.
23. Kassebaum NJ, GBD 2013 Anemia Collaborators. The global burden of anemia. Hematol Oncol Clin North Am 2016;30:247-308.
24. Alemayehu A, Gedefaw L, Yemane T, Asres Y. Prevalence, severity, and determinant factors of anemia among pregnant women in South Sudanese refugees, pugnido, Western Ethiopia. Anemia 2016;2016:11-23.
25. Getahun W, Belachew T, Wolide AD. Burden and associated factors of anemia among pregnant women attending antenatal care in Southern Ethiopia: Cross sectional study. BMC Res Notes 2017;10:276.
26. Derso T, Abera Z, Tariku A. Magnitude and associated factors of anemia among pregnant women in Dera district: A cross-sectional study in Northwest Ethiopia. BMC Res Notes 2017;10:359.
27. Mahalingaiah S, Fruh V, Rodriguez E, Konanki SC, Onnela JP, de Figueiredo Veiga A, *et al.* Design and methods of the apple women's health study: A digital longitudinal cohort study. Am J Obstet Gynecol 2022;226:545.e1-29.
28. Gråberger-Willcox G, Willcox MC. Megaloblastic anaemia among Somalis in North-Eastern Kenya. Trans R Soc Trop Med Hyg 1997;91:190.
29. Imai K. Parity-based assessment of anemia and iron deficiency in pregnant women. Taiwan J Obstet Gynecol 2020;59:838-41.

Supplementary Files

Supplementary file 1: Search strategy of anemia prevalence in Somalia.

PUB MED:

("anemia"[All Fields] OR "anemia"[MeSH Terms] OR "anemia"[All Fields] OR "anemias"[All Fields] OR "anemias"[All Fields] OR "Aneamia"[All Fields] OR (("rev econ des"[Journal] OR "red"[All Fields]) AND ("blood"[MeSH Subheading] OR "blood"[All Fields] OR "blood"[MeSH Terms] OR "bloods"[All Fields] OR "hematology"[All Fields] OR "hematology"[MeSH Terms] OR "hematology"[All Fields] OR "hematoma"[All Fields] OR "hematoma"[MeSH Terms] OR "hematoma"[All Fields] OR "hemorrhage"[All Fields] OR "hemorrhage"[MeSH Terms] OR "hemorrhage"[All Fields] OR "hemorrhages"[All Fields] OR "hemorrhages"[All Fields] OR "hemorrhagic"[All Fields] OR "hemorrhaging"[All Fields] OR "hematologies"[All Fields] OR "hematomas"[All Fields] OR "hematomas"[All Fields] OR "hematoma s"[All Fields] OR "hematoma"[All Fields] OR "hemorrhaged"[All Fields] OR "hemorrhagic"[All Fields] OR "hemorrhagical"[All Fields] OR "hemorrhaging"[All Fields]) AND ("shortage"[All Fields] OR "shortages"[All Fields]))) AND ("somalia"[MeSH Terms] OR "somalia"[All Fields] OR "somalia s"[All Fields])

Translations

anemia: «anemia»[All Fields] OR «anemia»[MeSH Terms] OR "anemia"[All Fields] OR "anemias"[All Fields] OR "anemias"[All Fields]

red: «Rev Econ Des»[Journal: __jid9918645785506676] OR «red»[All Fields]

blood: «blood»[Subheading] OR «blood»[All Fields] OR «blood»[MeSH Terms] OR "bloods"[All Fields] OR "hematology"[All Fields] OR "hematology"[MeSH Terms] OR "hematology"[All Fields] OR "hematoma"[All Fields] OR "hematoma"[MeSH Terms] OR "hematoma"[All Fields] OR "hemorrhage"[All Fields] OR "hemorrhage"[MeSH Terms] OR "hemorrhage"[All Fields] OR "hemorrhages"[All Fields] OR "hemorrhages"[All Fields] OR "hemorrhagic"[All Fields] OR "hemorrhaging"[All Fields] OR "hematologies"[All Fields] OR "hematomas"[All Fields] OR "hematomas"[All Fields] OR "hematoma's"[All Fields] OR "hematoma"[All Fields] OR "hemorrhaged"[All Fields] OR "hemorrhagic"[All Fields] OR "hemorrhagical"[All Fields] OR "hemorrhaging"[All Fields]

shortage: «shortage»[All Fields] OR «shortages»[All Fields]

Somalia: «somalia"[MeSH Terms] OR "somalia"[All Fields] OR "somalia's"[All Fields]

SCOPUS:

Anemia AND Somalia

Science Direct:

anemia AND Somalia

Google scholar:

anemia AND Somalia somalia "Anemia"

Supplementary file 2: JBI checklist for the prevalence data.

Supplementary Table 1: Quality of included studies by JBI critical appraisal checklist for studies reporting prevalence data

Name of authors and year of publication (References)		JBI checklist*									Total
Abidi and Deka[16]	2023	1	2	3	4	5	6	7	8	9	
Mohamud *et al*.[17]	2021	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	16
Eva *et al*.[18]	2013	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	16
Ralma *et al*.[4]	2021	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	16
Abidirasak and Abd Elhadi[3]	2023	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	16
Hassan[19]	2022	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	16
Abdirasak and AbdiElhadi[20]	2023	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	16
Collins and Myatt[21]	2000	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	16
Abdikarim and Mohammed[1]	2022	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	16
Naszra *et al*.[22]	2023	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	16

*JBI checklist 1=Appropriate sampling frame to address target population, 2=Appropriate sampling way of study participants, 3=Adequate sample size, 4=Detail description of study participants and settings, 5=Data analysis with sufficient coverage of identified sample, 6=Use of valid methods to identify the condition, 7=Standard, reliable way of measurement of condition for all participants, 8=Availability of appropriate statistical analysis, 9=Adequate response rate and management of low response rate. Scores are coded as Yes=2 and No=0. JBI=Joanna Briggs Institute