Male partners' participation in birth preparedness and complication readiness in global south: systematic review and meta-analysis

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Abstract

Background: The lower priority given for involving male partners in birth preparedness and complication readiness contributes to the poor maternal and neonatal health outcomes. Male partners in low- and middle-income countries determine women's access to and affordability of health services and directly influence their health outcomes. This systematic review and meta-analysis determine the pooled magnitude of the male partner's participation in birth preparedness and complication readiness in the global south.

Methods: Literature published in the English language from 2004 to 2019 was retrieved using appropriate search terms on Google Scholar, PubMed/MEDLINE, CINHAL, Scopus, and Embase. The Joanna Briggs Institute Meta-Analysis of Statistics Assessment and Review Instrument (JBI-MAStARI) was used for critical appraisal of studies. A pooled statistical meta-analysis was conducted using STATA Version 14.0 software. The heterogeneity and publication bias were assessed using the I^2 statistics and Egger's test, respectively. Duval and Tweedie's nonparametric trim and fill analysis using the random-effect analysis. The Random effects model was used to estimate the summary prevalence of BPCR and the corresponding 95% confidence intervals (CI).

Results: 12 studies and 4210 participants were included. The overall pooled result showed 52.3% of male partners of pregnant women and nursing mothers were prepared for birth and its complications. Forty-nine percent of male partners saved money for delivery and 40.5% of them identified skilled birth attendants, and 55% of male partners saved money for birth or its complication. Only 42.1% of male partners arranged transportation and 59.8% of them identified the place of birth. Only 18.9% of male partners identified a potential blood donor for emergency cases of childbirth and postpartum complication.

Conclusions: A low proportion of male partners of pregnant women and nursing mothers were prepared for childbirth and its complications. Countries in the global south region should review their health care policies and design strategies to improve the birth preparedness and complication readiness practice among male partners of pregnant women and nursing mothers.

Background

Low- and middle-income countries (LMICs) account for 84 percent of the world population and 93 percent of the global burden of disease and 99% of worldwide maternal mortality [1, 2]. In Sub-Saharan Africa, 1 out of 39 women dies due to avoidable or curable complications of pregnancy and childbirth as compared to 1 in 3800 in the high-income countries[3, 4]. The 1994 International Conference on Population and Development emphasized the active presence and collective responsibility of men in maternal health service utilization including the male partner participation in birth preparedness and complication readiness[5]. Male partner engagement in birth preparedness and complication readiness is

a comprehensive term which refers to “the several ways in which men share reproductive health problems and programs, reproductive rights and reproductive behavior, which is considered as a significant intervention for improving maternal and child health[6].

Evidence from various developing countries revealed that men are the key decision-makers and providers, often influencing women’s access to and affordability of economic means to cover their basic maternal health care needs [7–10]. This practice has impacts for maternal health as it defines the nutritional requirements of the mother and the fetus during pregnancy, maternal access to health services including receiving the delivery of emergency obstetrics care due to the direct payments made by a male partner to health care providers at the time of service in the health system of developing countries, and the postpartum care services such as access to and affordability of transportation, buying clean clothes for the baby and the mother, and arrangement of skilled postnatal care[11–13].

Several studies have described the importance of the involvement of male partners in maternal and child health globally, among others but not limited to are improved maternal access to prenatal and post-delivery services, discouragement of harmful maternal practices including smoking[14–17] better mental health of the mother and the baby; the increased possibility of contraception practice; and relief from anxiety, discomfort, and unease at the time of childbirth[18–26], more couples adhering to the program of prevention of mother-to-child HIV transmission and the use of skilled birth attendants[27, 28], improved cognitive and socio-emotional development of children[Father’s engagement]. Nevertheless, arguments on the disadvantages of male partner involvement have also been underlined such as increased male supremacy in decision-making[27, 28] and the potential for intensifying labour trouble while nervous in delivery places[29].

Evidence from primary studies suggests that male partner participation could be beneficial to maternal and child health; however, the pooled magnitude of the association is not clear. There have also been assumptions on likely undesirable effects if men were engaged in maternal health, therefore, it is essential to commence a systematic review to resolve these contrasting views. Nonetheless, the review must center on the global south as they bear the highest magnitude of worldwide maternal mortality and men’s significant roles in this region have been shown to impact health outcomes. Systematic reviews have previously conducted on both the developed and developing regions on the influence of male partner participation on non-maternal health areas such as child health outcomes[30, 31], or on its impact on mother-to-child HIV/AIDS transmission in developing countries[27, 32, 33], however, the pooled prevalence or magnitude of male partner involvement in BP/CR to inform policy decision – makers as an up to date evidence is widely lacking[16, 34], Therefore, this systematic review aimed to determine the pooled magnitude of male partner participation in BP/CR in the global south. The review was restricted to maternal outcomes to have a much more focused research question. In addition, ensuring appreciably reduced maternal and neonatal mortality is one of the Sustainable Development Goals in which progress lagging furthest behind, thus requiring research on alternative interventions[35]. A preliminary search of PROSPERO[36], the Cochrane Database of Systematic Reviews[37], and the JBI Database of Systematic

Reviews and Implementation Reports[38] were conducted and no current or underway systematic reviews on the topic were identified.

Methods

Types of studies and participants

Both institutional and community-based cross-sectional studies published in the English language from January 2004 to December 2019 were included. Literature was eligible for inclusion if they reported the involvement of male partners of pregnant women and nursing mothers in birth preparedness and complication readiness in (LMICs) as their study participants and/or the main outcome of the studies reported the magnitude of male partners' participation in (BP/CR) in the global south. Systematic reviews, studies conducted on women participation in BP/CR, studies found to have methodological flaws after a quality assessment and conducted in high-income countries were excluded.

Search strategy, identification, and selection of studies

The search strategy was aimed to locate both published and grey literature. An initial limited search of Google Scholar was undertaken to identify articles on the topic. The text words contained in the titles and abstracts of relevant articles, and the index terms used to describe the articles were used to develop a full search strategy for PubMed/Medline, EMBASE, CINHAL, Google Scholar, and Scopus (Appendix 1). The search strategy, including all identified keywords and index terms, were adapted for each included information source. The reference list of all studies selected for critical appraisal was screened for additional studies.

Following the search, all identified citations were organized and uploaded into EndNote version 15.0 and duplicate removed. Titles and abstracts were screened by MTB and MBS and double – checked by HT for assessment against the inclusion criteria for the review. Potentially relevant studies were retrieved in full including their citation details. The full text of selected citations was assessed in detail against the inclusion criteria by MTB and MBS and double – checked by HT and MY. Reasons for exclusion of full-text studies that do not meet the inclusion criteria were recorded and reported in the systematic review. Any disagreements that arise between the reviewers at each stage of the study selection process were resolved through discussion, or with a third reviewer. The results of the search were reported in full in the final systematic review and presented in a Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) flow diagram (Fig 1)[39].

Definition of BPCR: Birth Preparedness and Complication Readiness (BP/CR) is a strategy to support the active use of trained maternal and neonatal care, especially during childbirth, based on the theory that arranging for childbirth and being prepared for complications decreases delays in receiving this care.

Whereas male partner participation in BP/CR refers to the active involvement in the health care services delivery uptake by the male partner of pregnant women and nursing mother within the 42 days of the delivery of the neonate[40, 41].

Data collection, data synthesis, and analysis

The authors jointly prepare and determined the data extraction tool for this study.

The data were extracted from primary studies included in the review using the data extraction tool prepared by two independent reviewers. The tool includes variables such as the name of the author, publication year, study design, data collection period, sample size, study area, participants, response rate, and prevalence of birth preparedness and complication readiness. Additionally, the tool contains information on; the percentage of women who saved money for birth and emergency case, women who prepared blood donor, women who identified skilled birth attendant, women who were aware of danger signs during pregnancy, women who arranged transportation, women who identified the place of birth and women who planed health facility delivery. All authors involved in the data extraction. Any disagreements that arise between the reviewers were resolved through discussion, or with a third reviewer. Authors of papers were contacted to request missing or additional data if needed.

Included studies were pooled in a statistical meta-analysis using version 14. Effect sizes were expressed as a proportion with 95% confidence intervals around the summary estimate. Heterogeneity was assessed statistically using the standard chi-square I^2 test. A random-effects model using the double arcsine transformation approach was used. Sub-group analyses were conducted to investigate the level of male partner participation in the Sub-Saharan African and Asian regions. Sensitivity analyses were conducted to test decisions made regarding the included studies.

Assessment of risk of bias and methodological quality

Eligible studies were critically appraised by two independent reviewers at the study level for methodological quality in the review using standardized critical appraisal instruments from the Joanna Briggs Institute for incidence and prevalence. Authors of papers were contacted to request missing or additional data for clarification, where required. Any disagreements that arise were resolved through discussion, or with a third reviewer. The results of the critical appraisal were reported in narrative form and a table and lower risk of bias (64.2) observed after assessment (Table 2). Following the critical appraisal, studies that do not meet a certain quality threshold were excluded. This decision will be based on inadequate sample size, inappropriate sampling frame, and data analysis conducted with sufficient coverage of the identified sample. Articles were reviewed using titles, abstracts, and full review. Studies that did not meet inclusion criteria were excluded. Full texts of included studies were examined using the

Joanna Briggs Institute Meta-Analysis of Statistics Assessment and Review Instrument (JBI-MAStARI) for critical appraisal (Table 2).

Results

Study inclusion

Studies included in the meta-analysis

A total of 3099 research articles were identified by electronic search in MEDLINE/PubMed, Google Scholar, CINAHL, EMBASE, and Scopus databases. Of which, 18 were excluded due to duplication, 3019 through review of titles and abstracts. Additionally, 80 studies found to be eligible for full – text screening, out of which 51 were excluded for not reporting the outcome variable and not including husbands or male partners of pregnant women and nursing mother as the study population. 21 studies were eligible for quality assessment, and finally twelve studies were found to be eligible and included in the Meta-analysis (**Fig. 1**).

The total sample size of the included studies in this review were 4210, ranging among studies included from 125 in Nepal[42] to 592 in Ethiopia [43]. Five of the included studies were from Asia [10, 42, 44-46], seven studies from Africa with the majority from Ethiopia [43, 47-52]. Additionally, all studies included in the review were cross-sectional study designs (**Table 1**).

Review findings

The minimum birth preparedness and complication readiness among male partners of pregnant women and nursing mothers in the global south was 30% seen in a study conducted in Ethiopia[52] whereas the maximum was 57.6% observed in Nepal[42]. The pooled result of the studies showed that less than half (48.8%; 95%CI: 41.9, 55.6) of male partners of pregnant women and nursing mothers practiced BP/CR (Fig 2). The I^2 test statistics result showed high heterogeneity (I^2 = 95.3%, p= < 0.001) and Eggers test (p-value <0.001). Duval and Tweedie's nonparametric trim and fill analysis using the random-effect analysis was conducted to account for publication bias and heterogeneity. The lowest 29% and highest 76.3% percentage of saving money for delivery was observed in Southern[52] and Nothern [49] Ethiopia respectively, (Table 1). The pooled meta-analysis showed that 49.8% (95%CI: 28, 71.6) of male partners saved money for delivery (Fig 4). The I^2 test result showed high heterogeneity (I^2 = 99.4%, p= < 0.001) but Egger's test showed no statistically significant publication bias. In the sub-analysis the heterogeneity test showed the presence of heterogeneity (I2 = 98.6%, p= < 0.001) and publication bias (Egger's test p-value <0.001).

Therefore, the Duval and Tweedie nonparametric trim and fill analysis using the random-effect analysis was conducted to account for publication bias. Accordingly, the pooled result of studies showed only 18.9% (95% CI: 9.8, 28.1) of male partners have identified potential blood donors for an emergency case that could occur during pregnancy or childbirth (Fig 4). Identifying skilled birth attendant ranges from the lowest 4.8% in Ethiopia[52] and the highest 73% observed in Bangladesh[45], (Table 1). The finding of this study revealed that 40.8% (95% CI: 22.7, 58.2) of the male partners of pregnant women and nursing mothers have identified skilled birth attendants (Fig 4). The I^2 test result showed high heterogeneity (I^2 = 99.4%, p<0.001) and Egger's test (p-value < 0.01). Only 42.1% (95% CI: 26.7, 57.6%) of male partners arranged transportation to take the pregnant women for delivery and nursing mother for post-partum complication (Fig 5). High heterogeneity was observed with the I^2 test result of (I^2 = 98.93%, p= < 0.001) and Egger's test (p-value <0.001).

According to the finding of this study, 59.8% (95% CI: 51.4, 68.3) of male partners identified health facility as a place of birth for the baby (Fig 5). High heterogeneity revealed by the I^2 test result of (I^2 = 95.2%, p<0.001) and Egger's test (p-value <0.001). The result of this review showed that 55% (95% CI: 45.8, 64.1) of male partners of pregnant women and nursing mothers saved money for emergency cases during pregnancy and childbirth (Fig 5). The I^2 test result showed heterogeneity (I^2 = 94.95%, p<0.001) and Egger's test (p-value < 0.01). Clean clothes being made ready for both the baby and the mother observed to be the lowest 45.6% in Nepal[42] and the highest 86.5% in Ethiopia[47] (Table 1). In the sub-analysis the heterogeneity test showed the presence of heterogeneity (I^2 = 94.4%, p<0.001) and publication bias (Egger's test p-value < 0.001). As a result, the Duval and Tweedie nonparametric trim and fill analysis using the random-effect analysis was carried out to describe for publication bias. Therefore, the pooled result of studies showed 71.8% (61.2, 82.4) of male partners of pregnant women and nursing mothers prepared clean clothes for the baby and the mother (Fig 5). The pooled prevalence of male partner involvement in birth preparedness and complication readiness in Sub-Saharan Africa and Asia was 51% and 45.6% respectively (Fig 3).

Discussion

Twelve studies were eligible for the meta-analysis. The finding of this meta-analysis revealed that less than half of male partners of pregnant women and nursing mothers in the global south were prepared for the birth of the baby and its related complications.

The finding of this review shows identifying a potential blood donor, looking for a skilled birth attendant, an arrangement of transportation, and saving money for delivery and emergency case during the birth of the baby and nursing time during postpartum period were among the poorly practiced components of BP/CR in low- and middle-income countries. Failure to identify skilled birth attendants is among the main contributors to the disproportionate pregnancy – related complications in the global south[53, 54]. In this study 40.5% of male partners of pregnant women and nursing mothers were identified skilled birth attendant.

The distance from the male partner's home to a health facility and shortage of transportation during emergencies are among the barriers for the delay in reaching a health facility[55, 56]. The result of this review showed only 42.1% of male partners had arranged transportation for the birth of the child and related emergency cases. The finding of this study additionally revealed that only 59.8% of male partners identified the place of delivery, which indicates that huge strides should be made to curb stillbirth, which is a key indicator of the quality of antenatal care service uptake in global south[57].

According to this review, less than one fifth (18.9%) of male partners arranged a potential blood donor for an emergency cases which could happen during delivery and the postpartum period. Postpartum hemorrhage is a significant contributor to maternal and neonatal mortality and it could appreciable curbed by preparing readily available blood in the maternity ward[58]. Effective enrollment and retaining of male donors are important for the continuing delivery of blood products. Compared with women, male donors are less likely to be medically late or experience vasovagal responses and are typically preferred for plasmapheresis donation in charitable non-remunerated settings[59].

The overall finding of this study showed a huge gap in the utilization of BP/CR by male partners of pregnant women and nursing mothers in low- and middle-income countries. This indicates the higher maternal and neonatal mortality in the global south could be attributed to the underutilization of birth preparedness and complication readiness packages by male partners, as lack of funds for the birth of the child and emergency case during the delivery and postpartum period coupled with being poorly prepared to identify potential blood donor for probable emergency largely delays access to emergency obstetrics and newborn care (EmONC) in event of complication[60-62]. Therefore, policymakers and program planners should make targeted intervention by reviewing maternal and neonatal healthcare delivery guidelines to include context-specific evidence and develop evidence-informing interventions promoting male partner's active involvement in birth preparedness and complication readiness[63, 64]. Further researches are encouraged to address the factors affecting the lower practice of birth preparedness and complication readiness as this meta-analysis didn't discourse on this area.

Strengths And Limitations Of The Study

As there was no similar study previously done, this systematic review and meta-analysis revealed the magnitude of BP/CR among male partners of pregnant women and nursing mothers in the global south. Stringently applying the PRISMA guideline and the Joanna Briggs Institute Meta-Analysis of Statistical Assessment and Review Instrument (JBI-MAStARI) during critical appraisal was a further strength to this systematic review and meta-analysis. The presences of high statistical heterogeneity in the sub-analysis together with limiting the search strategy to articles published in the English language are limitations of this study.

Conclusions

The level of birth preparedness and complication readiness among male partners of pregnant women and nursing mothers in low- and middle-income countries is low. Particularly, among the key elements of birth preparedness and complication readiness, a very low percentage of male partners prepared a potential blood donor for the emergency during pregnancy and the birth of the child.

Abbreviations

ANC
Antenatal Care
BPCR
Birth Preparedness and Complication Readiness
EmONC
Emergency Obstetric and Newborn Care
JBI
The Joanna Briggs Institute
JBI – MAStARI
The Joanna Briggs Institute Meta-Analysis of Statistical Assessment and Review Instrument
LMICs
Low- and Middle-Income Countries
PRISMA
Preferred Reporting Items for Systematic Reviews and Meta-analyses
PROSPERO
International Prospective Registry of Systematic Reviews
SBA
Skilled Birth Attendant
SDG
Sustainable Development Goal
SSA
Sub-Saharan Africa

Declarations

Ethics approval and consent to participate

Not applicable.

Consent for publication

Not applicable

Availability of data and material

The datasets during and/or analyzed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that this study is free of any competing financial and non-financial interests.

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Authors' contributions

MTB, MBS and ASK; was involved in a principal role in the conception of ideas, developing methodologies, and writing the article. HT and MY were involved in the analysis while ATB, BOA, and ZK participated in the analysis, interpretation and writing. ATB and ZK involved in proofreading, and writing. All authors read and approved the final version of the manuscript.

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Tables

Due to technical limitations, tables are only available as a download in the supplemental files section.

Figures

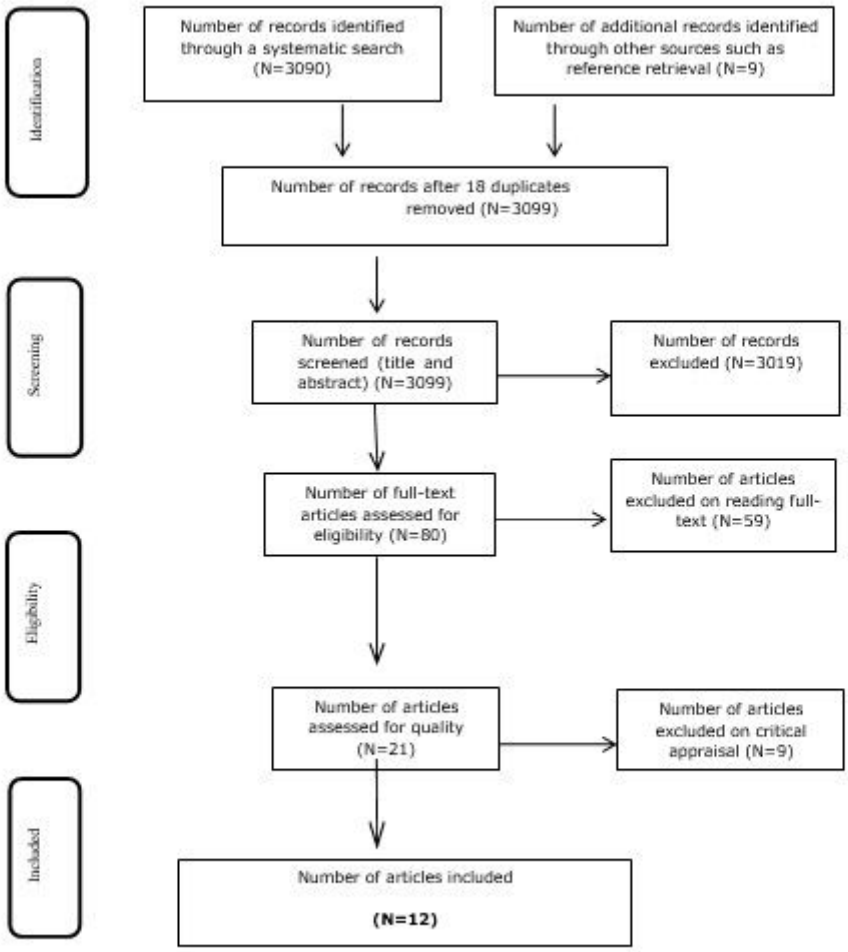

Figure 1

Flow diagram of the included studies Moher, D., et al., Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Medicine, 2009. 6(7) [39]

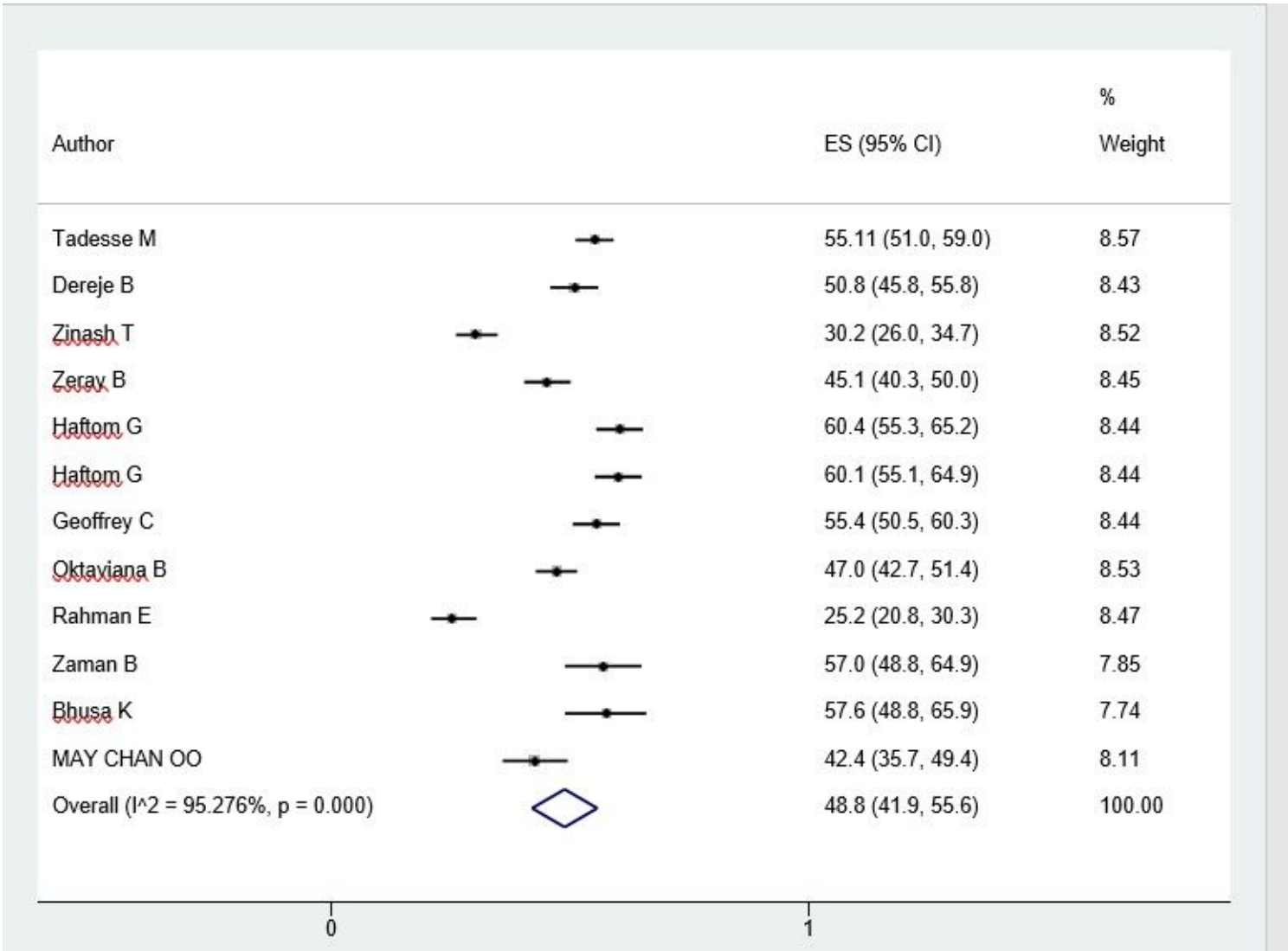

Figure 2

Forest plot displaying the pooled result of male partners' participation in birth preparedness and complication readiness in global south

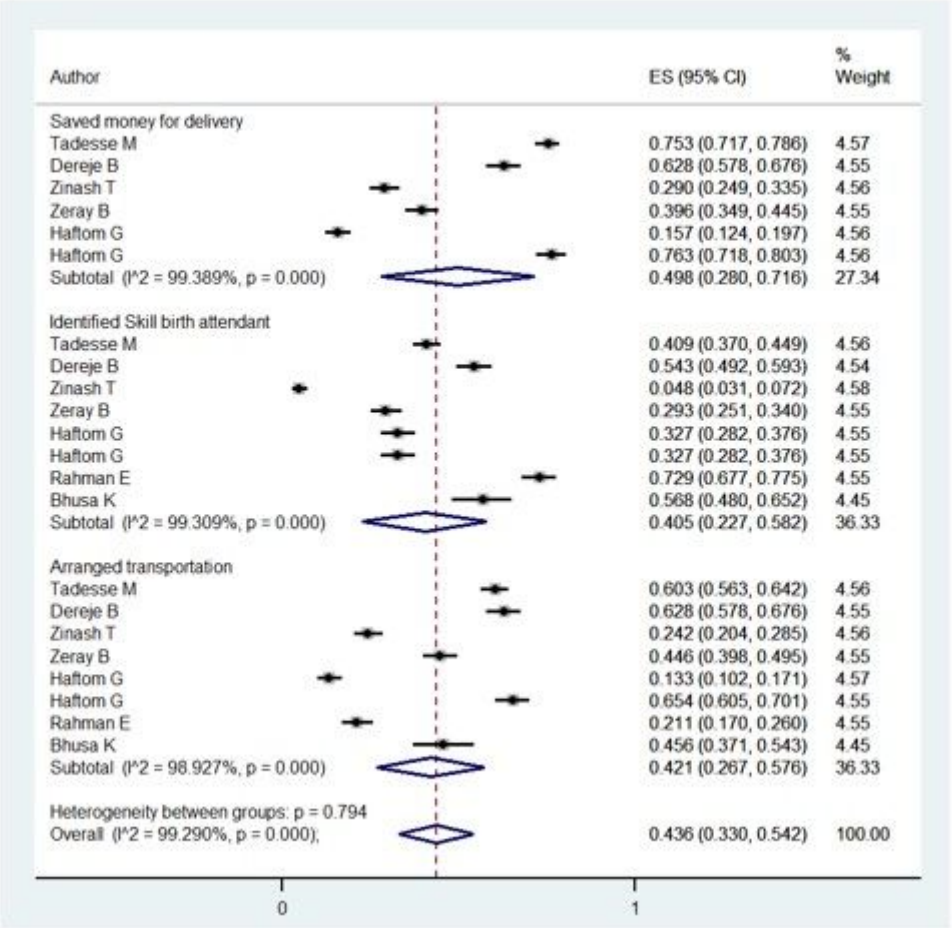

Figure 3

Forest plot displaying the pooled result of male partners' participation in birth preparedness and complication readiness in Africa versus Asia region in global south

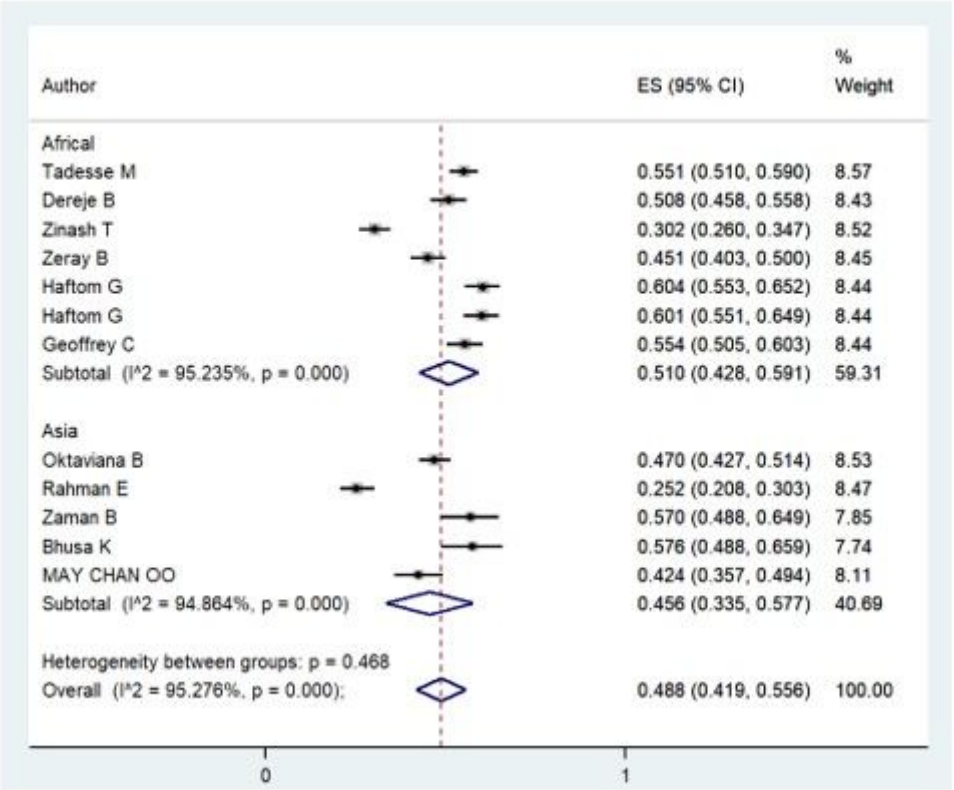

Figure 4

Forest plot displaying the pooled result of determinants of male partner participation in birth preparedness and complication readiness in global south

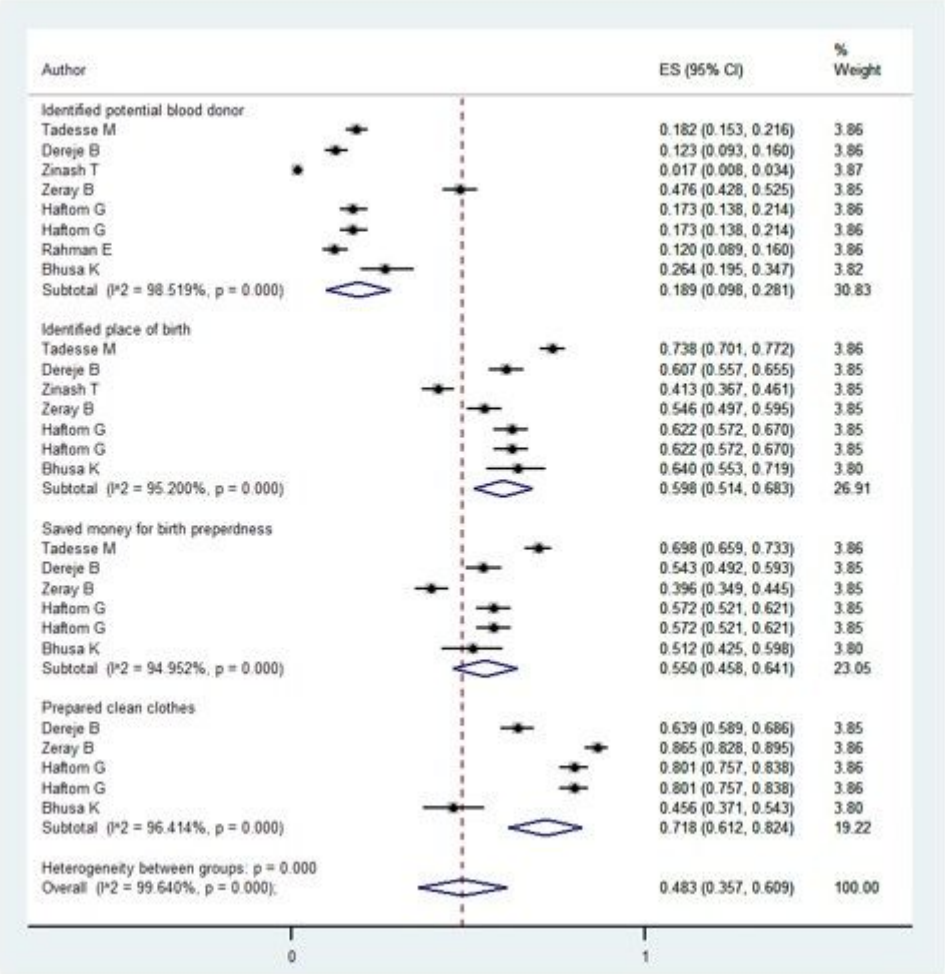

Figure 5

Forest plot displaying the pooled result of determinants of male partner participation in birth preparedness and complication readiness in global south

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- Table2.docx
- Table11.xlsx
- CoverLetterforBMCGlobalizationandHealthJournal.doc
- AppendixISearchstrategy.docx