Supplementary Table 1. PubMed Search Strategy.

|  |  |
| --- | --- |
| Date | 01.06.2024 – 10.06.2024 |
| Search Strategy | (("postpartum haemorrhage"[MeSH Terms] OR ("postpartum"[All Fields] AND "haemorrhage"[All Fields] AND "experiences"[All Fields]) OR "postpartum haemorrhage experiences"[All Fields]) AND ("risk factors"[MeSH Terms] OR ("risk"[All Fields] AND ("factors"[All Fields] OR ("determinants"[All Fields] AND ("correlations"[All Fields] AND "factors"[All Fields] OR "association"[All Fields]) AND ("magnitude"[All Fields] OR ("prevalence"[All Fields] OR ("incidence"[All Fields] AND ("postpartum women"[Subheading] OR ("postpartum"[All Fields] AND "women"[All Fields] AND ("africa south of the sahara"[MeSH Terms] OR ("africa"[All Fields] AND "south"[All Fields] AND "sahara"[All Fields]) OR "africa south of the sahara"[All Fields] OR ("sub"[All Fields] AND "saharan"[All Fields] AND "africa"[All Fields]) OR "Saharan africa"[All Fields]) AND "nigeria"[All Fields] OR "uganda"[All Fields] OR "south africa"[All Fields] OR "cameroon"[All Fields] OR "ghana"[All Fields] OR "sudan"[All Fields] OR "mozambique"[All Fields] OR "senegal"[All Fields] OR "kenya"[All Fields] OR "malawi"[All Fields] OR "tanzania"[All Fields] OR "zimbabwe"[All Fields] OR "zambia"[All Fields] OR "togo"[All Fields] OR "burundi"[All Fields] OR "mauritius"[All Fields] OR "angola"[All Fields] OR "mali"[All Fields] OR "ethiopia"[All Fields] OR "rwanda"[All Fields] OR "sierra leone"[All Fields] OR "liberia"[All Fields] OR "chad"[All Fields] OR "niger"[All Fields] OR "namibia"[All Fields] OR "cote d’ivoire"[All Fields] OR "south sudan"[All Fields] OR "botswana"[All Fields] OR "democratic republic of congo"[All Fields] OR "somalia"[All Fields] OR "benin"[All Fields] OR "burkina faso"[All Fields] OR "zambia"[All Fields] OR "equatorial guinea"[All Fields] OR "gabon"[All Fields] OR "guinea"[All Fields] OR "guinea-bissau"[All Fields] OR "lesotho"[All Fields] OR "eswatini"[All Fields] OR "the gambia"[All Fields] OR "eritrea"[All Fields] OR "madagascar"[All Fields] OR "mauritania"[All Fields] OR "seychelles"[All Fields] OR "central african republic"[All Fields] AND ("2013/01/01"[PubDate] : "2023/12/31"[PubDate]) |
| Number retrieved | 115 |

Supplementary Table 2. Quality Appraisal Results.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **First author, Publication year** | **Reference** | **Selection** | **Comparability** | **Outcome** |
| Amanuel T., 2021 | (30) | **xxxx** | **x** | **xxx** |
| Mesfin S., 2021 | (31) | **xxxxx** | **x** | **xxx** |
| Habitamu D., 2019 | (32) | **xxxx** | **x** | **xxx** |
| Zenebe GA., 2023 | (33) | **xxxxx** | **x** | **xx** |
| Gebretsadik A., 2021 | (34) | **xxxx** | **xx** | **xxx** |
| Tiruneh B., 2022 | (35) | **xxxx** | **xx** | **xx** |
| Zewdu T., 2023 | (36) | **xxxx** | **x** | **xxx** |
| Muluye G., 2023 | (37) | **xxxx** | **xx** | **xxx** |
| Dagne AH., 2022 | (38) | **xxxx** | **x** | **xxx** |
| Kebede BA., 2019 | (39) | **xxxxx** | **x** | **xx** |
| Green KI., 2015 | (25) | **xxxxx** |  | **xxx** |
| Allagoa DO., 2021 | (26) | **xxxxx** |  | **xx** |
| Lamina MA., 2015 | (40) | **xxxx** | **xx** | **xx** |
| Onyema OA., 2015 | (27) | **xxxxx** |  | **xx** |
| Takang WA., 2022 | (41) | **xxxx** | **x** | **xxx** |
| Nana TN., 2021 | (42) | **xxxx** | **xx** | **xx** |
| Halle-Ekane, G.E., 2016 | (43) | **xxxx** | **x** | **xxx** |
| Lancaster L., 2020 | (44) | **xxxx** | **x** | **xx** |
| Glenzer MM., 2023 | (45) | **xxxx** | **xx** | **xxx** |
| Bazirete O., 2022 | (46) | **xxxx** | **xx** | **xx** |
| Ambounda NL., 2021 | (47) | **xxxx** | **xx** | **xxx** |
| Ngwenya S., 2016 | (48) | **xxxxx** | **x** | **xx** |
| Ujjiga TT., 2014 | (49) | **xxx** | **xx** | **xxx** |
| Valdes V., 2018 | (28) | **xxxxx** |  | **xx** |
| Clarke-Deelder E., 2023 | (29) | **xxxxx** |  | **xx** |
| Ononge, S., 2016 | (50) | **xxxx** | **xx** | **xxx** |

Supplementary Table 3. Risk factors for PPH from primary studies.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **First author, Publication year** | **Reference** | **Variables** | **PPH** | | **Crude Odds Ratio (95% Confidence Interval** |
| **Yes** | **No** |
| Amanuel T., 2021 | (30) | Age group in years | | | |
| <20 | 6 | 66 | 1.2 (0.4 – 3.3) |
| 20-34 | 13 | 174 | 1 |
| ≥35 | 9 | 30 | **4.0 (1.5 – 10.2)** |
| History of antenatal care | | | |
| No | 12 | 44 | **3.8 (1.7 -8.7)** |
| Yes | 16 | 226 | 1 |
| Previous history of PPH | | | |
| Yes | 11 | 40 | **3.7 (1.6 – 8.5)** |
| No | 17 | 230 | 1 |
| Mode of delivery | | | |
| Instrumental delivery | 7 | 22 | **4.5 (1.7 – 12.7)** |
| Caesarean Section | 5 | 17 | **4.2 (1.3 – 12.9)** |
| Spontaneous vaginal delivery | 16 | 231 | 1 |
| Duration of labor | | | |
| ≥24 hours | 16 | 40 | **7.6 (3.3 – 17.4)** |
| <24 hours | 12 | 230 | 1 |
| Episiotomy performed | | | |
| Yes | 12 | 45 | **3.7 (1.69 – 8.4)** |
| No | 16 | 225 | 1 |
| History of current uterine atony | | | |
| Yes | 7 | 15 | **5.6 (2.1 – 15.4)** |
| No | 21 | 255 | 1 |
| Mesfin S., 2021 | (31) | Residence | | | |
| Rural | 46 | 233 | **1.74 (1.09 – 2.77)** |
| Urban | 37 | 326 | 1 |
| History of PPH | | | |
| Yes | 23 | 28 | **7.27 (3.94 – 13.42)** |
| No | 60 | 531 | 1 |
| ANC Follow-up | | | |
| Yes | 41 | 451 | 1 |
| No | 42 | 108 | **4.27 (2.65 – 6.91)** |
| Age | | | |
| 20-34 years | 43 | 420 | 1 |
| ≥35 years | 39 | 52 | **7.33 (4.35 – 12.32)** |
| Gravidity | | | |
| 1 | 6 | 185 | 1 |
| 2-4 | 33 | 262 | **3.88 (1.6 – 9.46)** |
| ≥5 | 44 | 112 | **12.1 (5.001 – 29.3)** |
| Habitamu D., 2019 | (32) | Age | | | |
| 15-19 years | 1 | 13 | 0.19 (0.02 – 2.00) |
| 20-24 years | 1 | 37 | **0.07 (0.01 – 0.67)** |
| 25-29 years | 2 | 59 | **0.09 (0.01 – 0.53)** |
| 30-34 years | 3 | 14 | 0.54 (0.10 – 2.94) |
| ≥35 years | 4 | 10 | 1 |
| Gravidity | | | |
| 1 | 1 | 33 | 1 |
| 2-4 | 3 | 88 | 0.13 (0.11 – 11.20) |
| ≥5 | 7 | 12 | **19.25 – 173.22)** |
| Parity | | | |
| 1 | 1 | 46 | 1 |
| 2-4 | 3 | 72 | 1.92 (0.19 – 18.99) |
| ≥5 | 7 | 15 | **26.83 (3.00 – 239.65)** |
| ANC Attendance | | | |
| Yes | 3 | 121 | 1 |
| No | 8 | 12 | **26.89 (6.29 – 115.03)** |
| Previous PPH | | | |
| Yes | 4 | 1 | **75.43 (7.42 – 767.12)** |
| No | 7 | 132 | 1 |
| Zenebe GA., 2023 | (33) | Current APH | | | |
| Yes | 11 | 23 | **19.49 (7.88 – 48.14)** |
| No | 13 | 530 | 1 |
| Delivery characteristics | | | |
| Single | 21 | 546 | 1 |
| Twins | 3 | 7 | **11.14 (7.44 – 14.84)** |
| Uterine atony | | | |
| Yes | 9 | 15 | **21.52 (12.52 – 30.52)** |
| No | 15 | 538 | 1 |
| Prolonged labor | | | |
| Yes | 19 | 84 | 21.22 (17.74 – 24.70) |
| No | 5 | 469 | 1 |
| Bazirete O., 2022 | (46) | Age | | | |
| <25 years | 19 | 81 | 1 |
| 25-29 years | 21 | 75 | 1.19 (0.60 – 2.39) |
| 30-34 years | 18 | 73 | 1.05 (0.51 – 2.16) |
| ≥35 years | 46 | 82 | **2.39 (1.29 – 4.43)** |
| Health facility where delivery took place | | | |
| District Hospital | 62 | 265 | **0.29 (0.18 – 0.47)** |
| Health Centre | 46 | 57 | 1 |
| Hemoglobin on admission | | | |
| <11g/dl | 34 | 28 | 1 |
| ≥11g/dl | 73 | 288 | **4.79 (2.73 – 8.41)** |
| Body Mass Index | | | |
| <18.5 | 4 | 1 | 1 |
| 18.5-24.9 | 76 | 199 | **0.10 (0.01 – 0.87)** |
| 25-29.9 | 23 | 109 | **0.05 (0.006 – 0.49)** |
| ≥30 | 5 | 13 | 0.10 (0.009 – 1.08) |
| Intrauterine Fetal Death | | | |
| Yes | 11 | 5 | **7.14 (2.42 – 21.07)** |
| No | 97 | 315 | 1 |
| Medical Insurance | | | |
| Yes | 90 | 312 | **0.16 (0.07 – 0.36)** |
| No | 18 | 10 | 1 |
| Multiparity | | | |
| Yes | 92 | 238 | **2.03 (1.13 – 3.65)** |
| No | 16 | 84 | 1 |
| Previous PPH | | | |
| Yes | 9 | 6 | **4.79 (1.66 – 13.78)** |
| No | 99 | 316 | 1 |
| Antepartum hemorrhage | | | |
| Yes | 10 | 5 | **6.43 (2.15 – 19.26)** |
| No | 98 | 315 | 1 |
| Multiple pregnancies | | | |
| Yes | 15 | 7 | **7.26 (2.87 – 18.33)** |
| No | 93 | 315 | 1 |
| Anemia in pregnancy | | | |
| Yes | 11 | 2 | **18.53 (4.04 – 85.04)** |
| No | 95 | 320 | 1 |
| Ambounda NL., 2021 | (47) | Gravidity | | | |
| 1 | 40 | 127 | **0.23 (0.15 – 0.36)** |
| 2-3 | 131 | 95 | 1 |
| 4+ | 96 | 192 | **0.25 (0.25 – 0.52)** |
| Parity | | | |
| 1 | 39 | 181 | **0.01 (0.006 – 0.02)** |
| 2-3 | 255 | 14 | 1 |
| 4+ | 155 | 17 | 0.50 (0.24 – 1.04) |
| Gestational age | | | |
| Before term | 116 | 108 | **1.60 (1.15 – 2.22)** |
| Term | 158 | 235 | 1 |
| Post term | 74 | 17 | **6.47 (3.68 – 11.38)** |
| Duration of labor | | | |
| ≤12 hrs | 377 | 259 | 1 |
| >12 hrs | 31 | 4 | **5.32 (1.86 – 15.26)** |
| Birth weight | | | |
| <2500 g | 100 | 93 | **0.37 (0.26 – 0.52)** |
| 2500-4000 g | 357 | 122 | 1 |
| >4000 g | 4 | 12 | **0.11 (0.04 – 0.36)** |
| Mode of Delivery | | | |
| Artificial | 260 | 126 | **4.13 (1.02 – 16.77)** |
| Directed | 108 | 168 | 1.29 (0.31 – 5.25) |
| Spontaneous | 3 | 6 | 1 |
| Green KI., 2015 | (25) | No odds ratios provided for the risk factors. | | | |
| Ngwenya S., 2016 | (48) | No odds ratios provided for the risk factors | | | |
| Ujjiga TT., 2014 | (49) | Gravidity | | | |
| >5 | 20 | 14 | **4.4 (1.93 – 10.04)** |
| <5 | 24 | 74 | 1 |
| Parity | | | |
| >5 | 16 | 12 | **3.62 (1.52 – 8.59)** |
| <5 | 28 | 76 | 1 |
| Oxytocin use after delivery | | | |
| Given | 28 | 80 | **0.18 (0.07 – 0.45)** |
| Not given | 16 | 8 | 1 |
| Allagoa DO., 2021 | (26) | No odds ratios provided for the risk factors | | | |
| Onyema OA., 2015 | (27) | No odds ratios provided for the risk factors | | | |
| Lamina MA., 2015 | (40) | Age | | | |
| 15-19 years | 26 | 109 | 1 |
| 20-24 years | 61 | 90 | **2.84 (1.66 – 4.86)** |
| 25-29 years | 87 | 181 | **2.02 (1.22 – 3.32)** |
| 30-34 years | 63 | 95 | **2.78 (1.63 – 4.74)** |
| 35-39 years | 27 | 52 | **2.18 (1.16 – 4.09)** |
| ≥ 40 years | 8 | 17 | 1.97 (0.77 – 5.07) |
| Parity | | | |
| 1 | 44 | 155 | 1 |
| 2-4 | 69 | 299 | 0.81 (0.53 – 1.24) |
| ≥5 | 159 | 90 | **6.22 (4.08 – 9.50)** |
| Mode of delivery | | | |
| Spontaneous vertex delivery | 179 | 438 | 1 |
| Assisted breech delivery | 17 | 17 | **2.45 (1.22 – 4.90)** |
| Twin delivery | 61 | 61 | **2.45 (1.65 – 3.63)** |
| Forceps delivery | 4 | 9 | 1.09 (0.33 – 3.58) |
| Vacuum extraction | 8 | 19 | 1.03 (0.44 – 2.40) |
| Gebretsadik, A., 2021 | (34) | Age | | | |
| ≤20 years | 22 | 93 | 1 |
| 21-34 years | 155 | 310 | **2.1 (1.2 – 3.5)** |
| ≥35 years | 35 | 21 | **7.0 (3.4 – 14.3)** |
| Residence | | | |
| Urban | 33 | 129 | 1 |
| Rural | 179 | 295 | **2.40 (1.50 – 3.60)** |
| Parity | | | |
| Multiparas | 114 | 195 | 1 |
| Primiparas | 37 | 213 | **0.30 (0.20 – 0.51)** |
| Grand multipara | 61 | 16 | **6.50 (3.50 – 11.80)** |
| ANC attendance | | | |
| Yes | 162 | 360 | 1 |
| No | 50 | 64 | **1.70 (1.10 – 2.60)** |
| Previous history of PPH | | | |
| Yes | 56 | 5 | **30.0 (11.80 – 44.60)** |
| No | 156 | 419 | 1 |
| Previous history of APH | | | |
| Yes | 11 | 9 | **2.50 (2.00 – 6.10)** |
| No | 201 | 415 | 1 |
| Lancaster L., 2020 | (44) | Cesarean section | | | |
| Yes | 43 | 186 | **4.21 (2.20 – 8.07)** |
| No | 13 | 237 | 1 |
| HIV status | | | |
| Positive | 17 | 69 | **2.41 (1.28 – 4.53)** |
| Negative | 36 | 352 | 1 |
| Malaria | | | |
| Positive | 2 | 2 | **7.61 (1.05 – 55.11)** |
| Negative | 57 | 434 | 1 |
| Takang WA., 2022 | (41) | Induction of labor | | | |
| Yes | 7 | 6 | **29.50 (7.83 – 111.15)** |
| No | 7 | 177 | 1 |
| Duration of labor | | | |
| <12 hours | 10 | 27 | 1 |
| ≥12 hours | 4 | 153 | **0.07 (0.02 – 0.24)** |
| Mode of delivery | | | |
| Normal vertex delivery | 8 | 148 | 1 |
| Other forms of delivery | 6 | 35 | **3.17 (1.03 – 9.72)** |
| Tiruneh B., 2022 | (35) | Age at birth | | | |
| <35 years | 77 | 880 | 1 |
| ≥35 years | 17 | 86 | **2.26 (1.28 – 3.40)** |
| Residence | | | |
| Urban | 50 | 696 | 1 |
| Rural | 44 | 270 | **2.27 (1.48 – 3.48)** |
| Parity | | | |
| Nulliparous | 32 | 435 | 1 |
| Multiparous | 62 | 531 | **1.59 (1.02 – 2.48)** |
| ANC attendance | | | |
| Yes | 82 | 917 | 1 |
| No | 12 | 49 | **2.74 (1.40 – 5.35)** |
| History of eclampsia/pre-eclampsia | | | |
| Yes | 15 | 88 | **1.89 (1.05 – 3.43)** |
| No | 79 | 878 | 1 |
| History of stillbirth or neonatal loss | | | |
| Yes | 13 | 64 | **2.26 (1.19 – 4.28)** |
| No | 81 | 902 | 1 |
| History of spontaneous abortion | | | |
| Yes | 16 | 70 | **2.63 (1.46 – 4.74)** |
| No | 78 | 896 | 1 |
| The onset of labor | | | |
| Spontaneous | 68 | 793 | 1 |
| Induced | 26 | 173 | **1.75 (1.08 – 2.83)** |
| The duration of labor | | | |
| ≤24 hours | 83 | 947 | 1 |
| >24 hours | 11 | 19 | **6.60 (3.04 – 14.35)** |
| Vaginal or cervical lacerations | | | |
| Yes | 20 | 69 | **3.51 (2.02 – 6.10)** |
| No | 74 | 897 | 1 |
| Retained placenta | | | |
| Yes | 12 | 6 | **23.42 (8.57 – 64.00)** |
| No | 82 | 960 | 1 |
| APH in recent pregnancy | | | |
| Yes | 19 | 41 | **5.72 (3.16 – 10.34)** |
| No | 75 | 925 | 1 |
| Mode of birth | | | |
| Spontaneous vaginal | 66 | 775 | 1 |
| Instrumental | 13 | 38 | **4.02 (2.04 – 7.91)** |
| Cesarean section | 15 | 153 | 1.15 (0.64 – 2.07) |
| Birth managed by | | | |
| Medical intern | 75 | 480 | **4.00 (2.38 – 6.72)** |
| Staff | 19 | 486 | 1 |
| Glenzer MM., 2023 | (45) | No odds ratios provided for the risk factors | | | |
| Zewdu T., 2023 | (36) | Severe pre-eclampsia | | | |
| Yes | 5 | 34 | **4.68 (1.66 – 13.17)** |
| No | 21 | 668 | 1 |
| APH | | | |
| Yes | 10 | 48 | **6.23 (2.71 – 14.30)** |
| No | 16 | 654 | 1 |
| Age ≥35 years | | | |
| Yes | 11 | 85 | **5.32 (2.37 – 11.97)** |
| No | 15 | 617 | 1 |
| Cesarean section scar ≥2 | | | |
| Yes | 6 | 35 | **5.72 (2.16 – 15.13)** |
| No | 20 | 667 | 1 |
| Classic incision | | | |
| Yes | 6 | 14 | **14.74 (5.13 – 42.32)** |
| No | 20 | 688 | 1 |
| Poor ANC follow-up | | | |
| Yes | 19 | 647 | **4.33 (1.75 – 10.76)** |
| No | 7 | 55 | 1 |
| General anesthesia | | | |
| Yes | 12 | 41 | **13.82 (6.1 – 31.8)** |
| No | 14 | 661 | 1 |
| Stillbirth | | | |
| Yes | 10 | 61 | **6.57 (2.86 – 15.10)** |
| No | 16 | 641 | 1 |
| Valdes V., 2018 | (28) | No odds ratios provided for the risk factors | | | |
| Muluye G., 2023 | (37) | ANC visit | | | |
| Yes | 86 | 199 | 1 |
| No | 20 | 13 | **3.56 (1.69 – 7.48)** |
| Place of delivery | | | |
| Institutional | 97 | 206 | 1 |
| Non-institutional | 9 | 6 | **3.18 (1.10 – 9.20)** |
| Labor initiation | | | |
| Spontaneous | 91 | 197 | 1 |
| Induced | 15 | 15 | **2.50 (1.19 – 5.24)** |
| Mode of delivery | | | |
| Spontaneous vaginal delivery | 67 | 178 | 1 |
| Cesarean section | 34 | 25 | **3.61 (2.00 – 6.50)** |
| Assisted vaginal delivery | 5 | 9 | 1.47 (0.47 – 4.56) |
| Duration of labor | | | |
| <24 hours | 96 | 205 | 1 |
| ≥24 hours | 10 | 7 | **3.05 (1.12 – 8.25)** |
| Labor monitored | | | |
| Yes | 81 | 200 | 1 |
| No | 25 | 12 | **5.14 (2.46 – 10.72)** |
| Abnormal third stage | | | |
| Yes | 25 | 14 | 1 |
| No | 81 | 198 | **4.36 (2.16 – 8.82)** |
| Active management of third stage of labor | | | |
| Yes | 86 | 204 | 1 |
| No | 20 | 8 | **5.93 (2.51 – 13.98)** |
| Nana TN., 2021 | (42) | Gestational age | | | |
| 28-36 weeks | 20 | 96 | **0.50 (0.29 – 0.84)** |
| 37-42 weeks | 127 | 303 | 1 |
| >42 weeks | 5 | 71 | **0.17 (0.07 – 0.43)** |
| Duration of labor | | | |
| ≤12 hours | 140 | 264 | **9.10 (4.91 – 16.87)** |
| >12 hours | 12 | 206 | 1 |
| Birth weight | | | |
| 2500-4000 g | 111 | 287 | 1 |
| <2500 g | 13 | 120 | **0.28 (0.15 – 0.52)** |
| >4000 g | 28 | 63 | **1.15 (0.70 – 1.89)** |
| Dagne AH., 2022 | (38) | Age | | | |
| 20-34 years | 16 | 316 | 1 |
| ≥35 years | 51 | 110 | **9.16 (5.0 – 16.7)** |
| Disrespectful maternity care during ANC | | | |
| Yes | 45 | 35 | **22.9 (12.3 – 42.3)** |
| No | 22 | 391 | 1 |
| Labor induction and augmentation | | | |
| Yes | 42 | 29 | **23.0 (12.3 – 42.9)** |
| No | 25 | 397 | 1 |
| Duration of the second stage of labor | | | |
| ≤2 hours | 39 | 409 | 1 |
| >2 hours | 28 | 17 | **17.3 (8.7 – 34.3)** |
| PROM during pregnancy | | | |
| Yes | 8 | 23 | **2.4 (1.02 – 5.6)** |
| No | 59 | 403 | 1 |
| ANC attendance | | | |
| Yes | 12 | 338 | 1 |
| No | 55 | 88 | **17.6 (9.0 – 34.3)** |
| Kebede BA., 2019 | (39) | Age group | | | |
| <20 years | 5 | 18 | 1.9 (0.7 – 5.3) |
| 20-34 years | 46 | 308 | 1 |
| ≥35 years | 19 | 26 | **4.9 (2.5 – 9.5)** |
| Pregnancy complications | | | |
| Yes | 22 | 45 | **3.1 (1.7 – 5.6)** |
| No | 48 | 307 | 1 |
| History of previous PPH | | | |
| Yes | 16 | 25 | **3.9 (1.9 – 7.7)** |
| No | 54 | 327 | 1 |
| Complications during labor | | | |
| Yes | 16 | 36 | **2.6 (1.4 – 5.0)** |
| No | 54 | 316 | 1 |
| Pre-partum anemia | | | |
| Yes | 27 | 30 | **6.7 (3.7 – 12.4)** |
| No | 43 | 322 | 1 |
| Mode of delivery | | | |
| Normal vaginal delivery | 47 | 298 | 1 |
| Cesarean section | 5 | 30 | 1.1 (0.4 – 2.9) |
| Instrumental | 18 | 24 | **4.8 (2.4 – 9.4)** |
| Clarke-Deelder E., 2023 | (29) | No risk factors reported | | | |
| Ononge, S., 2016 | (50) | Information on risk factors not complete | | | |
| Halle-Ekane, G.E., 2016 | (43) | Surgical history | | | |
| None | 106 | 403 | 1 |
| Cesarean section | 8 | 7 | **4.35 (1.54 – 12.25)** |
| Dilatation and curettage | 8 | 6 | **5.07 (1.72 – 14.93)** |
| Myomectomy | 8 | 4 | **7.60 (2.25 – 25.73)** |
| Gravidity | | | |
| Primigravida | 9 | 85 | 1 |
| Multigravida | 108 | 281 | **3.63 (1.76 – 7.47)** |
| Grand multigravida | 13 | 54 | 2.27 (0.91 – 5.68) |
| Parity | | | |
| Primiparous | 19 | 77 | 1 |
| Multiparous | 106 | 341 | 1.26 (0.73 – 2.18) |
| Grand multiparous | 5 | 2 | **10.13 (1.82 – 56.30)** |
| Gynaecological history | | | |
| None | 102 | 403 | 1 |
| Previous abortion | 16 | 10 | **6.32 (2.79 – 14.34)** |
| Genito-urinary infections | 5 | 4 | **1.30 (1.30 – 18.72)** |
| Previous PPH | 7 | 2 | **13.83 (2.83 – 67.57)** |
| Duration of labor | | | |
| <12 hours | 12 | 206 | **0.12 (0.06 – 0.22)** |
| 12-24 hours | 104 | 208 | 1 |
| >24 hours | 12 | 6 | **0.03 (0.009 – 0.09)** |

Supplementary Table 4. Significant odds ratios of association between variables and PPH.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **First author, Publication year** | **Reference** | **Variable (Duration of labour)** | **PPH** | | **Crude odds ratio (95% Confidence Interval)** |
| **Yes** | **No** |
| **Age** | | | | | |
| Amanuel T., 2021 | (30) | <35 years | 19 | 240 | 1 |
| ≥35 years | 9 | 30 | **3.79 (1.57 – 9.13)** |
| Bazirete O., 2022 | (46) | <35 years | 58 | 229 | 1 |
| ≥35 years | 46 | 82 | **2.21 (1.40 – 3.52)** |
| Habitamu D., 2019 | (32) | <35 years | 7 | 123 | 1 |
| ≥35 years | 4 | 10 | **7.03 (1.76 – 28.14)** |
| Gebretsadik, A., 2021 | (34) | <35 years | 177 | 403 | 1 |
| ≥35 years | 35 | 21 | **3.79 (2.15 – 6.70)** |
| Mesfin S., 2021 | (31) | <35 years | 43 | 420 | 1 |
| ≥35 years | 39 | 52 | **7.33 (4.35 – 12.32)** |
| Tiruneh B., 2022 | (35) | <35 years | 77 | 880 | 1 |
| ≥35 years | 17 | 86 | **2.26 (1.28 – 3.40)** |
| Zewdu T., 2023 | (36) | <35 years | 15 | 617 | 1 |
| ≥35 years | 11 | 85 | **5.32 (2.37 – 11.97)** |
| Dagne AH., 2022 | (38) | <35 years | 16 | 316 | 1 |
| ≥35 years | 51 | 110 | **9.16 (5.0 – 16.7)** |
| Kebede BA., 2019 | (39) | <35 years | 51 | 326 | 1 |
| ≥35 years | 19 | 26 | **4.67 (2.41 – 9.05)** |
| **History of ANC attendance** | | | | | |
| Amanuel T., 2021 | (30) | Yes | 16 | 226 | 1 |
| No | 12 | 44 | **3.8 (1.7 – 8.7)** |
| Habitamu D., 2019 | (32) | Yes | 3 | 121 | 1 |
| No | 8 | 12 | **26.89 (6.29 – 115.03)** |
| Gebretsadik, A., 2021 | (34) | Yes | 162 | 360 | 1 |
| No | 50 | 64 | **1.74 (1.15 – 2.63)** |
| Tiruneh B., 2022 | (35) | Yes | 82 | 917 | 1 |
| No | 12 | 49 | **2.74 (1.40 – 5.35)** |
| Zewdu T., 2023 | (36) | Yes | 7 | 55 | 1 |
| No | 19 | 647 | **0.23 (0.09 – 0.57)** |
| Muluye G., 2023 | (37) | Yes | 86 | 199 | 1 |
| No | 20 | 13 | **3.56 (1.69 – 7.48)** |
| Dagne AH., 2022 | (38) | Yes | 12 | 338 | 1 |
| No | 55 | 88 | **17.6 (9.0 – 34.3)** |
| **History of PPH** | | | | | |
| Amanuel T., 2021 | (30) | Yes | 11 | 40 | **3.7 (1.6 – 8.5)** |
| No | 17 | 230 | 1 |
| Habitamu D., 2019 | (32) | Yes | 4 | 1 | **75.43 (7.42 – 767.12)** |
| No | 7 | 132 | 1 |
| Gebretsadik, A., 2021 | (34) | Yes | 56 | 5 | **30.0 (11.80 – 44.60)** |
| No | 156 | 419 | 1 |
| Kebede BA., 2019 | (39) | Yes | 16 | 25 | **3.9 (1.9 – 7.7)** |
| No | 54 | 327 | 1 |
| Halle-Ekane, G.E., 2016 | (43) | Yes | 7 | 2 | **13.83 (2.83 – 67.57)** |
| No | 102 | 403 | 1 |
| **Mode of delivery** | | | | | |
| Amanuel T., 2021 | (30) | Instrumental/CS | 12 | 39 | **4.44 (1.95 – 10.10)** |
| Vaginal | 16 | 231 | 1 |
| Tiruneh B., 2022 | (35) | Instrumental/CS | 28 | 191 | **1.72 (1.08 – 2.75)** |
| Vaginal | 66 | 775 | 1 |
| Muluye G., 2023 | (37) | Instrumental/CS | 39 | 34 | **3.05 (1.78 – 5.22)** |
| Vaginal | 67 | 178 | 1 |
| Kebede BA., 2019 | (39) | Instrumental | 23 | 54 | **2.70 (1.52 – 4.81)** |
| Vaginal | 47 | 298 | 1 |
| **Residence** | | | | | |
| Gebretsadik, A., 2021 | (34) | Rural | 179 | 295 | **2.40 (1.50 – 3.60)** |
| Urban | 33 | 129 | 1 |
| Mesfin S., 2021 | (31) | Rural | 46 | 233 | **1.74 (1.09 – 2.77)** |
| Urban | 37 | 326 | 1 |
| **Uterine atony** | | | | | |
| Amanuel T., 2021 | (30) | Yes | 7 | 15 | **5.6 (2.1 – 15.4)** |
| No | 21 | 255 | 1 |
| Zenebe GA., 2023 | (33) | Yes | 9 | 15 | **21.52 (8.14 – 56.92)** |
| No | 15 | 538 | 1 |
| **Gravidity** | | | | | |
| Mesfin S., 2021 | (31) | 1 | 6 | 185 | 1 |
| ≥2 | 77 | 374 | **6.35 (2.72 – 14.84)** |
| Halle-Ekane, G.E., 2016 | (43) | 1 | 9 | 85 | 1 |
| ≥2 | 121 | 335 | **3.41 (1.66 – 6.99)** |
| **Parity** | | | | | |
| Lamina MA., 2015 | (40) | 1 | 44 | 155 | 1 |
| ≥2 | 228 | 389 | **2.06 (1.42 – 3.00)** |
| Gebretsadik, A., 2021 | (34) | 1 | 37 | 213 | 1 |
| ≥2 | 175 | 211 | **4.77 (3.19 – 7.14)** |
| **APH** | | | | | |
| Zenebe GA., 2023 | (33) | Yes | 11 | 23 | **19.49 (7.88 – 48.14)** |
| No | 13 | 530 | 1 |
| Bazirete O., 2022 | (46) | Yes | 10 | 5 | **6.43 (2.15 – 19.26)** |
| No | 98 | 315 | 1 |
| Gebretsadik, A., 2021 | (34) | Yes | 11 | 9 | **2.52 (1.03 – 6.19)** |
| No | 201 | 415 | 1 |
| Tiruneh B., 2022 | (35) | Yes | 19 | 41 | **5.72 (3.16 – 10.34)** |
| No | 75 | 925 | 1 |
| Zewdu T., 2023 | (36) | Yes | 10 | 48 | **6.23 (2.71 – 14.30)** |
| No | 16 | 654 | 1 |
| **Twin pregnancy** | | | | | |
| Zenebe GA., 2023 | (33) | Yes | 3 | 7 | **11.14 2.69 –46.15)** |
| No | 21 | 546 | 1 |
| Bazirete O., 2022 | (46) | Yes | 15 | 7 | **7.26 (2.87 – 18.33)** |
| No | 93 | 315 | 1 |
| **Anaemia** | | | | | |
| Bazirete O., 2022 | (46) | Yes | 34 | 28 | **4.79 (2.73 – 8.41)** |
| No | 73 | 288 | 1 |
| Kebede BA., 2019 | (39) | Yes | 27 | 30 | **6.7 (3.7 – 12.4)** |
| No | 43 | 322 | 1 |
| **Stillbirth or IUFD** | | | | | |
| Bazirete O., 2022 | (46) | Yes | 11 | 5 | **7.14 (2.42 – 21.07)** |
| No | 97 | 315 | 1 |
| Tiruneh B., 2022 | (35) | Yes | 13 | 64 | **2.26 (1.19 – 4.28)** |
| No | 81 | 902 | 1 |
| Zewdu T., 2023 | (36) | Yes | 10 | 61 | **6.57 (2.86 – 15.10)** |
| No | 16 | 641 | 1 |
| **Gestational age** | | | | | |
| Ambounda NL., 2021 | (47) | Term | 158 | 235 | 1 |
| Preterm/Post-term | 190 | 125 | **2.26 (1.67 – 3.06)** |
| Nana TN., 2021 | (42) | Term | 127 | 303 | 1 |
| Preterm/Post-term | 25 | 167 | **0.36 (0.22 – 0.57)** |
| **Oxytocin use** | | | | | |
| Ujjiga TT., 2014 | (49) | Yes | 28 | 80 | **0.18 (0.07 – 0.45)** |
| No | 16 | 8 | 1 |
| Muluye G., 2023 | (37) | Yes | 86 | 204 | **0.17 (0.07 – 0.40)** |
| No | 20 | 8 | 1 |
| **Induction of labor** | | | | | |
| Dagne AH., 2022 | (38) | Yes | 42 | 29 | **23.0 (12.3 – 42.9)** |
| No | 25 | 397 | 1 |
| Muluye G., 2023 | (37) | Yes | 15 | 15 | **2.16 (1.01 – 4.62)** |
| No | 91 | 197 | 1 |
| Takang WA., 2022 | (41) | Yes | 7 | 6 | **29.50 (7.83 – 111.15)** |
| No | 7 | 177 | 1 |
| Tiruneh B., 2022 | (35) | Yes | 26 | 173 | **1.75 (1.08 – 2.83)** |
| No | 68 | 793 | 1 |
| **History of abortion** | | | | | |
| Tiruneh B., 2022 | (35) | Yes | 16 | 70 | **2.63 (1.46 – 4.74)** |
| No | 78 | 896 | 1 |
| Halle-Ekane, G.E., 2016 | (43) | Yes | 16 | 10 | **6.32 (2.79 – 14.34)** |
| No | 102 | 403 | 1 |

Supplementary Table 5. Sensitivity analysis results.

|  |  |  |  |
| --- | --- | --- | --- |
| **Excluded study** | **Reference** | **Pooled Magnitude (%)** | **95% Confidence Interval of Pooled Magnitude (%)** |
| Amanuel T., 2021 | (30) | 8.5 | 6.3 – 11.0 |
| Mesfin S., 2021 | (31) | 8.4 | 6.2 – 10.8 |
| Habitamu D., 2019 | (32) | 8.6 | 6.4 – 11.1 |
| Zenebe GA., 2023 | (33) | 8.8 | 6.5 – 11.3 |
| Gebretsadik A., 2021 | (34) | 8.9 | 6.5 – 11.6 |
| Tiruneh B., 2022 | (35) | 8.5 | 6.3 – 11.0 |
| Zewdu T., 2023 | (36) | 8.8 | 6.5 – 11.3 |
| Muluye G., 2023 | (37) | 7.9 | 5.8 – 10.2 |
| Dagne AH., 2022 | (38) | 8.4 | 6.2 – 10.8 |
| Kebede BA., 2019 | (39) | 8.3 | 6.1 – 10.7 |
| Green KI., 2015 | (25) | 8.7 | 6.5 – 11.3 |
| Allagoa DO., 2021 | (26) | 9.0 | 6.7 – 11.6 |
| Lamina MA., 2015 | (40) | 8.7 | 6.4 – 11.4 |
| Onyema OA., 2015 | (27) | 8.8 | 6.5 – 11.4 |
| Takang WA., 2022 | (41) | 8.6 | 6.4 – 11.1 |
| Nana TN., 2021 | (42) | 9.0 | 6.6 – 11.7 |
| Halle-Ekane GE., 2016 | (43) | 8.1 | 6.0 – 10.4 |
| Lancaster L., 2020 | (44) | 8.4 | 6.2 – 10.9 |
| Glenzer MM., 2023 | (45) | 8.2 | 6.5 – 10.2 |
| Bazirete O., 2022 | (46) | 8.0 | 5.9 – 10.4 |
| Ambounda NL., 2021 | (47) | 9.0 | 6.5 – 11.7 |
| Ngwenya S., 2016 | (48) | 9.0 | 6.6 – 11.6 |
| Ujjiga TT., 2014 | (49) | 7.9 | 5.8 – 10.3 |
| Valdes V., 2018 | (28) | 8.7 | 6.5 – 11.3 |
| Clarke-Deelder E., 2023 | (29) | 8.6 | 6.3 – 11.1 |
| Ononge, S., 2016 | (50) | 8.5 | 6.3 – 11.0 |
| **OVERALL** |  | **8.6** | **6.4 – 11.0** |