African Journal of Health, Nursing and Midwifery
ISSN: 2689-9418
Volume 6, Issue 1, 2023 (pp. 62-76)
www.abjournals.org

PLANNED HOME BIRTH AS A SAFE ALTERNATIVE TO HOSPITAL BIRTH FOR LOW-RISK WOMEN: A SYSTEMATIC REVIEW

Auwalu Muhammed (PhD)[1*], Khuan Lee (PhD)[2], Salmiah Md Said[3], Sazlina Shariff-Ghazali (PhD)[4] and Abdullahi Haruna Ibrahim[5]

[1]Department of Nursing Sciences, College of Health Sciences, Usmanu Danfodiyo, University, Sokoto.
[2]Department of Nursing and Rehabilitation, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, 43400 Serdang, Selangor, Malaysia.
[3]Department of Community Medicine, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, 43400 Serdang, Selangor, Malaysia.
[4]Department of Family Medicine, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, 43400 Serdang, Selangor, Malaysia.
[5] Department of Nursing Sciences, Bayero University Kano.

[*]Corresponding author Email: abukhalid.auwal@gmail.com, muhammed.auwalu@udusok.edu.ng
Phone: +2348035304009

Cite this article:

Muhammed A., Lee K., Said S.M., Shariff-Ghazali S., Ibrahim A.H. (2023), Planned Home Birth as a Safe Alternative to Hospital Birth for Low-Risk Women: A Systematic Review. African Journal of Health, Nursing and Midwifery 6(1), 61-75. DOI: 10.52589/AJHNM-DNQ6BNPK

Manuscript History

Received: 22 Jab 2023

Accepted: 22 Feb 2023

Published: 7 March 2023

Copyright © 2022 The Author(s). This is an Open Access article distributed under the terms of Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0), which permits anyone to share, use, reproduce and redistribute in any medium, provided the original author and source are credited.

ABSTRACT: *Home birth is a widely practised norm among women in most developing countries. Studies continue to evaluate the safety of planned home birth (PHB) for low-risk women in high-income countries. However, such studies are scarce in Africa and other developing countries. The study examined PHB as a safe alternative to planned hospital birth for low-risk women. An electronic search was carried out on databases such as Medline database, Cochrane, Google Scholar, PubMed, and CINAHL to identify studies published in English from January 2007 to December 2017. A Meta-analytic study, systematic reviews, and observational (prospective and retrospective) studies were included in the literature reviews. The studies were analyzed using descriptive and narrative synthesis. The strength and or limitations of each study were assessed. Sixteen eligible articles were finally reviewed. PHB is equally safe in terms of complication (especially postpartum haemorrhage) compared to planned hospital birth. PHB would have a similar outcome in reducing maternal death for low-risk women if compared with planned hospital birth. Although neonatal asphyxia is mixed across studies, PHB is associated with a similarly low rate of neonatal intensive care unit admission. It was also indicated that there was no increase in neonatal mortality for PHB, especially for parous women. PHB compared to the hospital is associated with a similar low risk of maternal complications, maternal deaths, newborn complications, and newborn deaths, especially for parous women. Therefore, PHB is a safe alternative to hospital birth for low-risk women. While studies that are more recent are required to evaluate its feasibility and safety in developing countries, PHB (if properly attended) may reduce maternal and newborn complications and death associated with unplanned home births.*

KEYWORDS: Planned, Childbirth, Home, Hospital, Safe Birth, Birthplace.

Registration Number: PROSPERO: CRD42018114956

Article DOI: 10.52589/AJHNM-DNQ6BNPK
DOI URL: https://doi.org/10.52589/AJHNM-DNQ6BNPK

African Journal of Health, Nursing and Midwifery
ISSN: 2689-9418
Volume 6, Issue 1, 2023 (pp. 62-76)

www.abjournals.org

INTRODUCTION

Studies have examined the safety of planned home birth (PHB) as an alternative to hospital birth for low-risk women, especially in the developed world. While home birth is a widely practised norm among women in most developing countries including Nigeria, hospital birth is a cultural norm in industrial countries (Zielinski, Ackerson, and Kane Low, 2015). Despite the wide gap in hospital delivery, PHB is often more practised in the developed world to offer few women the opportunity to give birth in their preferred settings (Zielinski et al., 2015). It is congruent across studies that women who are in low-risk groups have a better chance to give birth safely without having obstetric intervention such as forceps delivery, labour augmentation, epidural anaesthesia caesarian section, or episiotomy compared to their counterparts who delivered in hospitals (Bolten et al., 2016; Zielinski et al., 2015).

For instance, women who carried out PHB had around 70-80% chance of giving birth without intervention, and, with minimal use of drugs. PHB babies might be more alert compared to those who give birth in a hospital (Kresser, 2011). There are other reports that PHB is associated with fewer caesarean birth, episiotomy, induction or augmentation of labour, regional analgesia, and operative vaginal delivery (American College of Obstetrics and Gynaecologists [ACOG], 2017; Blix, Huitfeldt, Qian, Straume, & Kumle, 2012; Bolten et al., 2016; Cheng, Snowden, King, & Caughey, 2013; Snowden, Tilden, Snyder, Quigley, Caughey, & Cheng, 2015). Snowden et al. (2015) found that compared with planned hospital birth, PHB is associated with fewer caesarean sections (PHB vs. hospital = 53:247 per 1000 births, R^2 = 0.18, CI: 0.16-0.22) and labour augmentation (75:263 p/1000 live births, R^2 = 0.21, CI: 0.19-0.24). Similar findings are very scarce in developing regions, especially Sub-African and South Asian countries.

Furthermore, the researchers continuously report the maternal and newborn morbidity and mortality between the PHB and planned hospital birth. However, findings were rarely reported in the developing regions, especially Sub-African and South Asian countries. Thus, the present study will compare the maternal and newborn outcomes between PHB and planned hospital birth including available studies in developing countries.

Aim

The aim of the review was to examine PHB as a safe alternative to planned hospital birth for low-risk women attended by midwives.

Specific questions

1. What will be the effect of PHB regarding maternal complications compared to hospital birth for low-risk women?
2. What is the level of maternal mortality in PHB compared to hospital birth for low-risk women?
3. What is the level of newborn complication in PHB compared to hospital birth for low-risk women?
4. What is the level of newborn death in PHB compared to hospital birth for the low-risk women?

Article DOI: 10.52589/AJHNM-DNQ6BNPK
DOI URL: https://doi.org/10.52589/AJHNM-DNQ6BNPK

METHODS

This review systematically examined studies conducted to compare PHB and planned hospital birth for study outcomes described in the next section. A study published 10 years (2007 to 2017) preceding these studies were included. Although most studies on PHB were conducted in developed countries, the few reported studies in developing countries were included. In addition, this review will be limited to PHB and hospital birth attended by midwives for low-risk women. Table 1 presents the data Items list and operational definition of the variables for which data was sorted.

Table 1. Outcome definition of the study variables.

S/N		Outcome	Definition
	Maternal outcomes	Birth interventions	Assisted vaginal birth, induction of labour, or operative birth
		Post-partum haemorrhage	Loss of blood greater than 500ml-1000mil with 24 hours following birth
		Maternal death	Death of women within 42 days after birth
	Neonatal outcomes	Neonatal asphyxia	Difficulty or failure in establishing respiration at birth among newborns. The indicator for asphyxia is by APGA score, which is classified differently by the authors (e.g. < 4, while some <7 Apgar score).
		Newborn admission	Admission of newborn in neonatal intensive care unit
		Neonatal death	Death of newborn within 28 days of birth.

Information Sources and Search Strategies

An electronic search was carried out based on the Preferred Reporting Items for Systematic reviews and Meta-Analyses PRISMA. The searched databases include Medline database, Cochrane, Google Scholar, PubMed**,** and CINAHL. The search strategies used based on Joanna Briggs Institute (JBI) Reviewer's Manual (Aromataris & Munn, 2017) are summarized in Table 2. As mentioned earlier, articles published in English from 2007 to 2017 were assessed, and screened, for the set criteria before being included in the review. The articles were first reviewed and then send to the other reviewers who confirmed the eligibility of the paper. However, none of the authors was contacted for any further information on the articles.

Table 2. Search strategy recommended by JIB

Phases	Activities	Search strategies
Phase 1	Initial Search	● Searched for existing reviews from Cochrane ● Decided which database to be searched ● The topic was explored to gain familiarity ● Key terms associated with the title identified (home childbirth, home birth, homebirth, midwifery, hospital birth, place of birth, birthplace, birth setting, safety, outcome), a boolean method was

Article DOI: 10.52589/AJHNM-DNQ6BNPK
DOI URL: https://doi.org/10.52589/AJHNM-DNQ6BNPK

		also used to search for the combination terms: 'OR', 'AND'
Phase 2	Conduct Search	● The databases were searched using the search term. ● The inclusion criteria were used as a guide to select papers.
Phase 3	References search	● The reference list of the papers was searched for additional resources.

Study Selection

We searched for meta-analytic studies, systematic reviews, and observational (prospective and retrospective studies) reported in the literature. The study selected was based on the comparison between PHB and planned hospital birth on the study outcomes. Another criterion was that the birth must be attended by midwives and for low-risk women. However, studies that examined multiple outcomes were included to observe only the outcomes of interest in this study.

Data Extraction and risk of bias

The study identified and extracted findings from previous studies. Due to the variation in the study types, findings from each study were described based on the outcomes related to the present study's objectives. We assessed each article and summarized it in terms of its objective, outcomes examined, method, population and sample, analytical method, and key findings. This data is presented in the summary table (Table 3).

It was not possible to evaluate the studies using the critical appraisal skills programme (CASP, 2015) due to variations in the type of studies extracted. However, we highlighted the strength and or limitations of each study in the results section.

Synthesis of result

Findings from individual studies was summarized and described using descriptive and narrative synthesis. Accordingly, study findings were analyzed in the form of frequency and percentage mean, standard deviations; as well as odd ratio and relative risk.

RESULTS

Study characteristics

At first, 480 articles were found through database searching and 33 were retrieved from other sources. After the removal of the duplicate articles, 320 were screened. Out of the 320 articles screened, 295 were excluded because they did not meet the study criteria. The full text of the remaining 25 articles led to the exclusion of 9 other studies due to lack of comparable group, mixed comparison of hospital and birth centre instead of PHB, as well as including all out-of-hospital births (planned/not planned or on the way to hospital birth. As a result, 16 articles were included in the final synthesis. Figure 1 presents the flow chart for the study selection.

Article DOI: 10.52589/AJHNM-DNQ6BNPK
DOI URL: https://doi.org/10.52589/AJHNM-DNQ6BNPK

Table 3 presents the characteristics of the included studies. Only one study was a meta-analysis (Wax et al., 2010), two studies were systematic reviews (Elder, Alio, & Fisher, 2016; Zelinki et al., 2015), and none of the studies was a randomised control trial. Three of the included studies were prospective cohorts (Jansen et al., 2009; Broncklehust et al., 2011; Ekele & Tunau, 2007). Other studies were retrospective cohort studies (Blix et al., 2012; De Jonge et al., 2013; Bolten et al., 2016; De Jonge et al., 2015; Davis et al., 2012; Koshy Krishnan, 2012; Nove, Berrington, & Matthews, 2012). As shown in Table 3, most of the studies were conducted in Europe followed by those reported in Asia, and only one study from Africa.

Most of the studies reported multiple outcomes. However, the most frequently reported outcome, as in eight studies was postpartum haemorrhage (Blix et al., 2012; Bolten et al., 2016; Davis et al., 2012; De Jonge et al. 2013; Ekele & Tunau, 2007; Hiraizumi & Suzuki, 2013; Jansen et al., 2009; Nove, et al., 2012). The next most frequently reported outcome was neonatal mortality (Blix et al., 2012; Cheng et al., 2013; De Jonge et al., 2013; Elder et al., 2016; Homer et al., 2014; Wax et al., 2010.) Other outcomes compared include maternal mortality (Blix et al. 2012; De Jonge et al. 2015; Jansen et al., 2009), admission to intensive care (Elder et al., 2016; De Jonge et al., 2015), assisted vaginal delivery (Blix et al., 2012; Jansen et al., 2009), labour augmentation (Bolten et al., 2016), operative delivery (Ekele & Tunau 2007), and asphyxia (Ekele & Tunau, 2007). Three studies assessed maternal and newborn death as composite outcomes (Broncklehust et al., 2011; Ekele & Tunau, 2007; Zielinski et al., 2015). Key findings are described in Table 3.

DISCUSSION

This section describes the safety of PHB compared to hospital birth, as reported in the literature.

The maternal complication that is of great importance is post-partum haemorrhage. There is consistent evidence to suggest that the rate of post-partum haemorrhage is less frequent among low-risk women who opt for PHB compared to planned hospital birth (Blix et al., 2012; Hiraizumi & Suzuki, 2013; Janssen et al., 2009). In a 5-year prospective cohort study, PHB among low-risk women was associated with a low comparable incidence of post-partum haemorrhage with planned hospital cohorts (Janssen et al., 2009). The study uses a prospective study with a comparable low-risk group, but the incomplete data reported by the authors was the limitation of the findings. Nevertheless, Nove et al.,(2012) in an England observational cohort using a large sample of low-risk women found post-partum haemorrhage to be higher among the planned hospital group than those who opted for PHB. Furthermore, Blix, et al. (2012) concluded that planning for a home birth was associated with a reduced risk of post-partum bleeding compared to planned hospital birth. Although the authors from Norway adhered to the criteria in selecting the low-risk group, the sample for the PHB cohort (1631) might be small compared to the hospital cohort (16,310). A very large cohort study in the Netherlands supported that with trained midwives and planned transport, PHB has a lower incidence of post-partum haemorrhage compared to planned hospital birth (De Jonge et al., 2013).

While the above authors found PHB to have a better outcome in terms of post-partum haemorrhage, other studies maintained that both setting were equally safe for low-risk women (Davis et al., 2012; Hiraizumi & Suzuki, 2013). Hiraizumi and Suzuki (2013) found no

Article DOI: 10.52589/AJHNM-DNQ6BNPK
DOI URL: https://doi.org/10.52589/AJHNM-DNQ6BNPK

significant difference in the incidence of post-partum haemorrhage between the PHB group and their hospital counterparts. In similar findings, (Davis et al., 2012) used an adjusted analysis to conclude that the planned place of birth was not found to be associated with a risk of blood loss greater than 1,000 ml.

In the Nigerian context, Ekele and Tunau (2007) found that operative delivery was higher in hospital births compared to midwives' attended home births. However, there were no significant differences in maternal complications between hospital and home birth. Most of the women reported to have arranged the home birth with the midwives during pregnancy. The authors suggested that women should be encouraged to seek the assistance of midwives if home birth is inevitable.

The safety of PHB in terms of maternal mortality was also supported by the literature (De Jonge et al., 2015; Janssen et al., 2009). Janssen et al. (2009) in their prospective cohort study concluded that PHB attended by a registered midwife was associated with very low rates of maternal death compared with planned hospital birth. Similarly, in the largest nationwide cohort study by De Jonge et al. (2015), PHB was found to be a safe option for low-risk women irrespective of their parity. In addition, Blix et al (2012) in Norway suggested that PHB would have a similar outcome in reducing maternal death for low-risk women if compared with planned hospital birth. The main weakness of the finding by Blix is that the PHB cohort had a smaller sample compared to the hospital group. Conversely, Zielinski et al. (2015) established that PHB was associated with better maternal outcomes including maternal mortality compared to planned hospital birth. Although the use of narrative synthesis may not be the best in summarizing statistical data, it provides stronger evidence than a single study. Ekele and Tunau (2007), also reported a low incidence of death in both settings. The finding suggested that PHB could be as safe as a hospital for low-risk women.

One of the essential outcomes in newborns is neonatal asphyxia. Few studies observed a small but non-significant increase in the incidence of neonatal asphyxia among the PHB cohort. Nevertheless, most studies suggested a similarly low incidence among newborns delivered in both settings (De Jonge et al., 2015; Hiraizumi & Suzuki, 2013). For instance, Cheng et al. (2013) found that PHB compared to the hospital might have a small increase in neonatal asphyxia for Apgar score < 7 and similar for Apgar score <4. The authors used a low-risk group but the sample for PHB was small compared to the hospital cohort. Furthermore, Hiraizumi and Suzuki (2013) observed that PHB is associated with a similarly low rate of newborn asphyxia (Apgar <7) compared to hospital birth for low-risk women. Evidence also suggested that newborn admission to the neonatal intensive care unit (NICU) due to asphyxia was uncommon in PHB. For instance, De Jonge et al. (2015) found that newborn admission to NICU due to asphyxia was similar for Nulliparous and less for parous women. To conclude this section, Elder et al. (2016) in their critical review maintained that the issue of neonatal asphyxia is mixed across studies and is subjective, but the risk of NICU admission is often lower in the PHB among low-risk women. Thus, for women of low-risk categories, the risk of newborn asphyxia may be less or similar to hospital birth provided the midwife planned and attended the home birth.

Concerning the safety of PHB on newborn mortality, Wax et al. (2010) observed that newborn death was higher among home-birth babies compared to hospital babies. Although this is the only meta-analysis reported so far, it was highly criticized due to computational errors, unspecified birth attendants, the inclusion of unplanned homebirths, missing data and lack of

Article DOI: 10.52589/AJHNM-DNQ6BNPK
DOI URL: https://doi.org/10.52589/AJHNM-DNQ6BNPK

adjustment for other risk factors. Conversely, most evidence in the literature established a similarly low rate of newborn mortality for birth planned and attended by midwives in both homes and hospitals for low-risk women. In an England large prospective cohort study, newborn and maternal deaths were similar in both settings for parous women (Brocklehurst et al., 2011). However, the study suggested that newborn and maternal mortality might be higher for nulliparous in the PHB cohort. The implication is that risk factors associated with previous pregnancy and labour cannot be ascertained from a woman having her first child. Thus, the study might help in prioritizing clients for PHB. Similar findings were reported by Blix et al (2012) that PHB is not associated with an increased risk of newborn death compared to hospital birth. Thus, PHB might be a preferred option for parous women compared to nulliparous. In other studies (De Jonge et al., 2015; Homer et al., 2014) PHB could be safe for newborns of low-risk groups irrespective of their parity.

According to Koshy and Krishna (2012), newborns could be safe when delivered by midwives at home than those delivered in hospitals could. The authors suggested that hospitals might handle more complicated births than those supervised at home. However, the report might have been mixed between a low and high-risk group of women, and the findings were descriptive. In line with the above observational studies, Zielinski et al. (2015) in their systematic review concluded that the majority of studies across many countries showed no increase in neonatal mortality for PHB. Thus, with a trained midwife and transfer plans, low-risk women do not have a higher risk of infant mortality (Elder et al., 2016).

The study may have a number of limitations. First, most of the data on PHB are rarely reported in Africa and other developing countries and those make it difficult to generalize the finding to these contexts. In addition, the narrative summary may not be sufficient to provide an accurate estimate.

IMPLICATION TO RESEARCH AND PRACTICE

Midwives should provide patient-centred care and learn to respect the women's right to the choice of birthplace, especially during antenatal visits. Early discussion by the midwives about the choice of birthplace is essential to assist the woman and family in making an informed decision about the preferred place of birth. Low-risk women who preferred their home as a place of birth should be supported by the health care delivery system.

CONCLUSION

These findings may suggest that PHB is associated with a similar low risk of maternal complication, maternal death, newborn complication, and newborn death. Thus, an evidence-based practice allows midwives to support low-risk women who prefer home delivery. Based on the above studies, PHB, if properly attended (adequate preparation in terms of planning for transport and with midwives in attendance), may reduce maternal and newborn complications and death associated with unplanned home births. There are limited findings from developing countries, possibly due to limited PHB practice or its reporting among midwives (even though midwives might be helping in home births).

Article DOI: 10.52589/AJHNM-DNQ6BNPK
DOI URL: https://doi.org/10.52589/AJHNM-DNQ6BNPK

FUTURE RESEARCH

We recommend more research to report original data on the feasibility and effect of PHB on maternal and newborn outcomes in developing countries.

Conflict of Interest Statement: The authors declare that there is no conflict of interest.

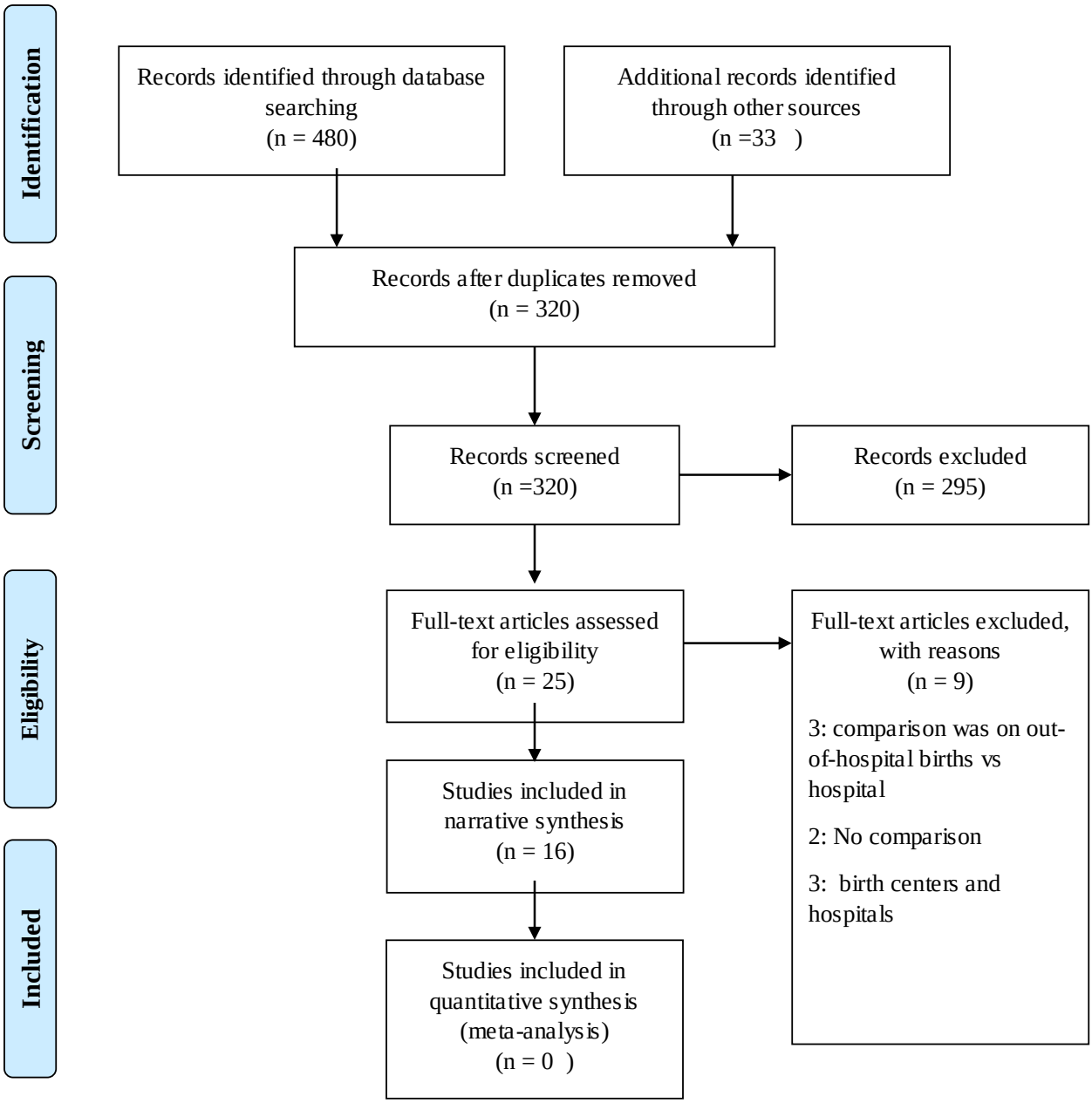

Figure 1. PRISMA Flow Chart

Article DOI: 10.52589/AJHNM-DNQ6BNPK
DOI URL: https://doi.org/10.52589/AJHNM-DNQ6BNPK

Table 3: Results and interpretation

Author, Year & Location	Outcome	Sample	Design & Analysis	Key findings	Interpretation/ Remark
(Nove et al., 2012) England	Postpartum haemorrhage	273,872 low-risk pregnancies	Retrospective cohort study, binary logistic	**Post-partum haemorrhage (PPH)** 0.38% home vs 1.04% hospital Odds ratio (OR) 2.5, 95% (CI: 1.7 to 3.8)	PPH was less frequent in PHB Authors used large comparable sample size, low-risk in both group
(Blix et al., 2012) Norway	Birth intervention, complications, and mortality	Low-risk 1631 PHB and 16,310 low-risk hospital births	Retrospective cohort study , Logistic regression using STATA	**Assisted vaginal delivery** 5.7% home vs 14.8% hospital (OR 0.32; 95% CI 0.20–0.48) **Postpartum haemorrhage** 7.1% home vs 10.7% hospital (OR 0.27; CI 0.17–0.41) **Maternal mortality** (Similar) PHB (0.6/1000, CI 0–3.4) Hospital (0.6/1000 (CI 0.3–1.1) **Neonate mortality** PHB (0.6/1000 (CI 0–3.4) Hospital (0.9/1000 (CI 0.5–1.5)	Planning for home birth was associated with reduced risk of interventions, PPH, and deaths -Authors used only low-risk women - But, the sample size is small to compare maternal and newborn death
(De Jonge et al., 2013) Netherlands	Maternal morbidity among women for PHB & Hospital birth	146 752 low risk women	Retrospective cohort study multivariable logistic regression analyses	**Post-partum haemorrhage** Nulliparous 43.1 home versus 43.3 hospital (OR 0.92, CI 0.85 to 1.00) Multiparous 19.6 home versus 37.6 hospital (OR 0.50, CI 0.46 to 0.55)	No significant difference between PHB and Hospital birth in PPH for Nulliparous, but lower for PHB among Parous women -One of the largest sample size -Authors used comparable low-risk

Article DOI: 10.52589/AJHNM-DNQ6BNPK
DOI URL: https://doi.org/10.52589/AJHNM-DNQ6BNPK

(Bolten et al., 2016) Netherlands	Maternal outcomes (intervention & PPH)	3495 low-risk women	Retrospective cohort study logistic regressions	**Episiotomy** 6.3% home vs 12.2% hospital aOR 0.47, 0.33–0.68) **Labour augmentation** 62.6% home vs 75.5% hospital aOR 0.55, 0.36–0.82 **Postpartum haemorrhage** Nulliparous:7.7% home vs 6.5% hosp. aOR1.03 (0.67–1.59) Parous: 2.4% home vs 3.3% hospital aOR 0.68 (0.38–1.23)	Women who PHB were less likely to have episiotomy, and labor augmentation - No significant difference in PPH in both settings for low-risk
(Janssen et al., 2009) British Columbia, Canada	Maternal death, PPH, Neonatal death	2889 PHB and 4752) hospital birth attended my midwives (low-risk all)	5-year prospective cohort Calculated relative risk	**Assisted vaginal delivery** 3.0% home vs 7.2% hospital, RR 0.41, 95% 0.33–0.52) **PPH** 3.8% home vs 6.0% hospital RR 0.62, 95% CI 0.49–0.77) **Maternal death per 1000 birth** 0.35/1,000 homebirth group (RR 0.35 (95% CI: 0.00–1.03) 0.57/1,000 hospital group (RR 0.57 (95% CI: 0.00–1.43)	PHB attended by midwife was associated with very low and comparable rates of maternal death, and PPH -Large prospective study -but might have unmeasured characteristics of women
(Koshy & Krishna, 2012), India	Neonatal death	10,000	Retrospective cohort	**Neonatal death** Home 198/10, 000 vs hospital 255/10,000	Newborns could be safe when delivered by midwives at home more than those delivered in hospitals

Article DOI: 10.52589/AJHNM-DNQ6BNPK
DOI URL: https://doi.org/10.52589/AJHNM-DNQ6BNPK

(De Jonge et al., 2015) Netherlands.	Maternal death, neonatal death, admission rate.	814 979 low-risk women	Nationwide Retrospective cohort study Binary Logistic regression, SAS 9.2	**Maternal death** Nulliparous: 0.57% home vs 0.63% hospital aOR1.02 (95% CI: 0.76–1.37) Parous: 0.33% home vs 0.31 hospital aOR 1.31 (95% CI: 0.89–1.94) **Neonatal death, 0–28 days:** 0.50% home vs 0.51% hospital aOR 0.97 (95% CI: 0.70–1.34) **Neonatal Intensive Unit admission** 3.41 % home vs 3.61% hospital aOR 0.95 (95% CI 0.84–1.06)	There was no significant difference between PHB and hospital birth in terms of maternal and newborn death -similar admission rate -A large cohort study
(Brocklehurst et al., 2011) England	Maternal and newborn mortality	64 538 low-risk women	Prospective cohort, April 2008 to April 2010. Logistic regression	**Maternal and newborn death** 4.2/1000 home vs 3.6/1000 hospital (aOR 1.16, CI: 0.76 to 1.77) Nulliparous: 9.3/1000 homebirth vs 5.3/1000 hospital birth aOR 1.75, (95% CI 1.07 to 2.86	Overall, no significant differences in the composite outcomes PHB is better for parous women
(Davis et al., 2012) New Zealand	Risk of postpartum haemorrhage	16,210 low-risk women giving birth in 2006 and 2007	Retrospective cohort study logistic regression	**PPH** RR 0.93 (95% CI: 0.49–1.74) for the PHB group, RR 1.07 (95% CI: 0.68–1.69) for hospital group	No significant difference between PHB and hospital in the risk of PPH among low-risk women -used large comparable groups

Article DOI: 10.52589/AJHNM-DNQ6BNPK
DOI URL: https://doi.org/10.52589/AJHNM-DNQ6BNPK

(Elder et al., 2016) USA	Selected infant outcomes	15 cohort studies were included.	A critical review of cohort studies Narrative synthesis	NICU admission is lower in the PHB group -Apgar scores is mixed across studies and is subjective -Low-risk women do not have a higher risk of infant mortality, with a trained midwife and transfer plan.	PHB attended by midwives is not associated with any risk of neonatal death for low-risk women -Authors used narrative synthesis
(Hiraizumi & Suzuki, 2013) Japan	PPH, Fever, newborn Asphyxia	291 women (PHB) + 291 women (Hospital)	Retrospective cohort study Logistic regression, t-test	**PPH** **5.7%** for home vs 6% for hospital OR 1.05(CI: 0.39–2.8), P= 0.93 Maternal fever PHB vs Hospital OR 1.10 (CI: 0.18–6.7), P= 0.92 Neonatal Asphyxia (Apga<7) 1.6% home, 1.8% hospital OR 1.10 (0.18–6.7), P= 0.92	No significant difference in PPH, fever, and neonatal death between PHB and hospital birth for low-risk groups -Authors used small, but equal samples for both groups.
(Homer et al., 2014) New South Wales, Australia	Neonatal mortality and morbidity by planned place of birth	258,161 full-term women and their infants	Retrospective cohort study 2000 to mid-2008 Logistic regression	**Stillbirth** 1.44/1,000 home vs 1.05/1,000 hospital **Early neonate death** hospital (1.05/1000) and PHB (1.44/1000) aOR1.29 (CI: 0.18-9.23)	No statistically significant differences in stillbirth and early neonatal deaths between hospital and PHB -The author used a large comparable low-risk group and adjusted for parity, age and gestational age.

Article DOI: 10.52589/AJHNM-DNQ6BNPK
DOI URL: https://doi.org/10.52589/AJHNM-DNQ6BNPK

(Zielinski, et al., 2015)	Maternal and neonatal outcomes of Planned home birth	21 reports related to safety,	Systematic review Narrative synthesis	Maternal outcomes are consistently better among PHB groups Neonatal outcome It is variable, but majority of studies have shown no increase in neonatal morbidity and mortality between PHB & Hospital birth	-It is clear that with midwives and planning for transfer, there is either minimal or no risk associated with home birth for low-risk women -Narrative summary may not be the best representation of the combined results.
(Ekele & Tunau, 2007), Sokoto, Nigeria	Foetal-maternal death	1,080 low-risk women	Prospective study. January to June 2004, Fisher's exact test	**Operative delivery** Hospital: 39 (5.3) Home: 0 (0) p<.05, RR 1.2 CI: 1.2 -1.3 **Maternal complication** Hospital: 33 (4.5) Home: 13 (7.3) p>.05 RR 0.9, CI: 0.7- 1.1 -**Feto-maternal death** -Hospital: 10 (1.4), Home: 4 (2.3), p>.05 RR: 0.9, CI: 0.7- 1.1	Homebirth is associated with less operative birth compared to hospital -No significant difference in maternal complication between homebirth and hospitals among low-risk women -Feto-maternal death was similar for both settings -Authors suggested women should be encouraged during antenatal care to reach out for midwives if homebirth is required -author used composite outcomes

Article DOI: 10.52589/AJHNM-DNQ6BNPK
DOI URL: https://doi.org/10.52589/AJHNM-DNQ6BNPK

(Wax et al., 2010) US	Neonatal dead	342,056 PHB and 207,551 planned hospital births	Meta-analysis	**Neonatal death rate** PHB group (0.20%) versus the planned hospital group (0.09%) OR = 1.92 (1.63–2.25)	Neonatal death rate was higher in the PHB -Births were not specifically conducted by midwives -births mixed with risk groups -There were errors in the computation
(Cheng et al., 2013)	5-minute Apgar score ,<4,	12,039 PHB 2,069,714 planned hospital	Retrospective cohort study of birth certificate data	**Neonatal outcomes:** 5-minute Apgar score <4 0.37% home vs 0.24% hospital (P=0.009)	Neonatal asphyxia are slightly more frequent in PHB than hospital births -Sample used for PHB is smaller

REFERENCES

American College of Obstetricians and Gynaecologists (2017). Planned home birth: committee opinion No. 667. Journal of Obstetrics and Gynaecology, 128, e26–31

Aromataris E, Munn Z. (2017).Chapter 1: JBI Systematic Reviews. In: Aromataris E, Munn Z (Editors). *Joanna Briggs Institute Reviewer's Manual.* The Joanna Briggs Institute Retrieved from: https://reviewersmanual.joannabriggs.org/

Blix, E., Huitfeldt, A. S., Øian, P., Straume, B., & Kumle, M. (2012). Outcomes of planned home births and planned hospital births in low-risk women in Norway between 1990 and 2007: A retrospective cohort study. *Sexual & Reproductive Healthcare*, *3*(4), 147–153. https://doi.org/10.1016/j.srhc.2012.10.001

Bolten, N., Jonge, A. de, Zwagerman, E., Zwagerman, P., Klomp, T., Zwart, J. J., & Geerts, C. C. (2016). Effect of planned place of birth on obstetric interventions and maternal outcomes among low-risk women: a cohort study in the Netherlands. *BMC Pregnancy and Childbirth*, *16*, 239. https://doi.org/10.1186/s12884-016-1130-6

Brocklehurst, P., Hardy, P., Hollowell, J., Linsell, L., Macfarlane, A., McCourt, C., … Stewart, M. (2011). Perinatal and maternal outcomes by planned place of birth for healthy women with low-risk pregnancies : the Birthplace in England national prospective cohort study. *Bio-Medical Journal*, *343*(7840), d7400.

Cheng Y. W., Snowden J. M., King T. L. (2013). Selected perinatal outcomes associated with planned home births in the United States. *American Journal of Obstetrics and Gynecology*, *209*(4), 325e1–325e8.

Davis, D., Baddock, S., Pairman, S., Hunter, M., Benn, C., Anderson, J., … Herbison, P. (2012). Risk of Severe Postpartum Hemorrhage in Low-Risk Childbearing Women in New Zealand: Exploring the Effect of Place of Birth and Comparing Third Stage Management of Labor. *Birth*, *39*(2), 98–105. https://doi.org/10.1111/j.1523-536X.2012.00531.x

Article DOI: 10.52589/AJHNM-DNQ6BNPK
DOI URL: https://doi.org/10.52589/AJHNM-DNQ6BNPK

De Jonge, A., Geerts, C., van der Goes, B., Mol, B., Buitendijk, S., & Nijhuis, J. (2015). Perinatal mortality and morbidity up to 28 days after birth among 743 070 low-risk planned home and hospital births: a cohort study based on three merged national perinatal databases. *BJOG: An International Journal of Obstetrics & Gynaecology*, *122*(5), 720–728. https://doi.org/10.1111/1471-0528.13084

De Jonge, A., Mesman, J. A. J. M., Mannien, J., Zwart, J. J., van Dillen, J., & van Roosmalen, J. (2013). Severe adverse maternal outcomes among low-risk women with planned home versus hospital births in the Netherlands: nationwide cohort study. *BMJ*, *346*(13 2), f3263–f3263. https://doi.org/10.1136/bmj.f3263

Ekele, B. A., & Tunau, K. A. (2007). Place of delivery among women who had antenatal care in a teaching hospital. *Acta Obstetricia et Gynecologica Scandinavica*, *86*(5), 627–630. https://doi.org/10.1080/00016340601134622

Elder, H. R., Alio, A. P., & Fisher, S. G. (2016). Investigating the debate of home birth safety: A critical review of cohort studies focusing on selected infant outcomes: Critical review of home birth studies. *Japan Journal of Nursing Science*, *13*(3), 297–308. https://doi.org/10.1111/jjns.12116

Hiraizumi, Y., & Suzuki, S. (2013). Perinatal outcomes of low-risk planned home and hospital births under midwife-led care in Japan. *Journal of Obstetrics & Gynaecology Research*, *39*(11), 1500–1504. https://doi.org/10.1111/jog.12094

Homer, C. S., Thornton, C., Scarf, V. L., Ellwood, D. A., Oats, J. J., Foureur, M. J., … Dahlen, H. G. (2014). Birthplace in New South Wales, Australia: an analysis of perinatal outcomes using routinely collected data. *BMC Pregnancy and Childbirth*, *14*. https://doi.org/10.1186/1471-2393-14-206

Janssen, P. A., Saxell, L., Page, L. A., Klein, M. C., Liston, R. M., & Lee, S. K. (2009). Outcomes of planned home birth with registered midwife versus planned hospital birth with midwife or physician. *Canadian Medical Association Journal*, *181*(6–7), 377–383. https://doi.org/10.1503/cmaj.081869

Koshy, J., & Krishn an, V. (2012). Supervised home birth safer than hospital deliveries. *Live mint 9*(1), 30. Retrieved from: http://www.livemint.com/Politics/VlKynmNXHnXxa8FQuFN8MJ/Supervised-home-births-safer-than-hospital-deliveries.html

Kresser, C. (2011). Natural birth: Is home birth more dangerous than a hospital? Retrieved from: http://www.chriskresser.com/natural-childbirth/

Nove, A., Berrington, A., & Matthews, Z. (2012). Comparing the odds of postpartum haemorrhage in planned home birth against planned hospital birth: results of an observational study of over 500,000 maternities in the UK. *BMC Pregnancy and Childbirth*, *12*(1), 130. https://doi.org/10.1186/1471-2393-12-130

Wax, J. R., Lucas, F. L., Lamont, M., Pinette, M. G., Cartin, A., & Blackstone, J. (2010). Maternal and newborn outcomes in planned home birth vs planned hospital births: a metaanalysis. *American Journal of Obstetrics and Gynecology*, *203*(3), 243.e1-243.e8. https://doi.org/10.1016/j.ajog.2010.05.028

Zielinski, R., Ackerson, K., & Kane Low, L. (2015). Planned home birth: benefits, risks, and opportunities. *International Journal of Women's Health*, *7*, 361–377. https://doi.org/10.2147/IJWH.S55561

Article DOI: 10.52589/AJHNM-DNQ6BNPK
DOI URL: https://doi.org/10.52589/AJHNM-DNQ6BNPK