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Efforts to improve vaginal birth after caesarean in Indonesia: Literature review

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***Abstract*---**Objective: to find out the evidence based onefforts to increase VBAC in Indonesia. Methods: This study used a five-step framework adapted from Arksey and O'Malley. The review focused on searching for articles with databases (PubMed and Science Direct), to find relevant articles published in 2015-2025 with the keywords used VBAC (Vaginal Birth After Caesarean). There were 225 articles found and sorted based on inclusion and exclusion criteria, so that 13 articles were used in this study which would then be extracted data, as well as compiled, summarized and reported the results. Results: The study showed that comprehensive education and counseling regarding the benefits and risks of VBAC, VBAC success factors and providing psychological support, careful assessment of VBAC candidates, labor strategies and monitoring of complications, increasing human resource capacity and readiness of health facilities and clear information systems and policies can increase VBAC. Conclusion:By implementing integrated efforts, it is hoped that the VBAC success rate can increase, thus providing a safer and more beneficial birth option for mothers and babies.

***Keywords*---**health education, health services, healthcare system, VBAC (vaginal birth after caesarean)

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Introduction

Maternal Mortality Rate (MMR) is a serious health problem in developing countries and is also a significant gap that contributes to world attention (Yuriah & Zahra, 2024). The target of the Sustainable Development Goals (SDGs) in 2030 is to reduce MMR globally to less than 70 per 100,000 live births. According to the World Health Organization (WHO) report, it was revealed that Global MMR in 2023 is 197 per 100,000 live births andSeveral countries have quite high MMR in Sub-Saharan African countries 542 per 100,000 live births, South and Central Asia 151 per 100,000 live births, North Africa and West Asia 84 per 100,000 live births, Latin America and the Caribbean 73 per 100,000 live births, East and Southeast Asia 69 per 100,000 live births, Oceania 60 per 100,000 live births, Europe and North America 12 per 100,000 live births (WHO, 2024). In IndonesiaBased on data from the 2020 Population Census Long Form, MMR in Indonesia reached 189 deaths per 100,000 live births. In 2023, based on data from the Ministry of Health, MMR in Indonesia was recorded at around 305 per 100,000 live births, which has not reached the target in 2024 of 183 per 100,000 live births, in accordance with the National Medium-Term Development Plan (RPJMN) (Central Statistics Agency, 2023).

In 2023, around 700 women worldwide will die from complications during pregnancy and after childbirth (Yuriah et al., 2024).The main complications that cause about 75% of all maternal deaths are: severe bleeding (mostly bleeding after delivery), infection (usually after delivery), high blood pressure during pregnancy (preeclampsia and eclampsia), complications of childbirth, unsafe abortion (WHO, 2025). In Indonesia, the leading cause of maternal death in 2023 was hypertension in pregnancy with 412 cases, obstetric hemorrhage with 360 cases and other obstetric complications with 204 cases (Ministry of Health of the Republic of Indonesia, 2024). The number of high-risk factors in pregnancy will also increase Caesarean section (Muthoharoh et al., 2022).

According to new research from WHO, the use of caesarean sections continues to increase globally, now accounting for more than 1 in 5 (21%) of all births. This figure is set to increase further over the next decade, with almost a third (29%) of all births likely to be by caesarean section by 2030. The global average caesarean section (CS) birth rate according to WHO is around 5-15% per 1000 births. Although CS is considered an important life-saving measure, surgery for maternal and newborn health is medically indicated. CS after a previous CS is the most common operation performed and is a major factor in the increasing number of CS (WHO, 2021).

Efforts to reduce the caesarean birth rate by 12-15% have been made throughout the world (Sepriani et al., 2024). Special treatment has been focused on mothers who have a history of CS, to reduce repeat cesarean births (Yuriah et al., 2022). Therefore, every pregnant woman needs to make an effort to assess the risk and empower herself so that vaginal birth can be successful after a cesarean section or what is called VBAC (Lipschuetz et al., 2020). VBAC (vaginal birth after caesarean) is a method of choice for childbirth that can be performed on mothers who have had a caesarean with good pre-natal support, to prepare for a successful vaginal delivery to reduce the risk in subsequent pregnancies.VBAC

has many benefits including avoiding surgical complications, shorter hospital stays, better maternal satisfaction, and reduced maternal morbidity and mortality rates (Fobelets et al., 2018). In the European Union, Some countries such as Finland, the Netherlands and Sweden have VBAC rates are high, ranging from 45-55%. But, other countries such as Germany, Ireland and Italy have much lower levels, ranging from 29-36% (Lundgren et al., 2016).

Women who have had a previous cesarean delivery have two options for how to give birth for their next delivery: 1) they can have a scheduled cesarean delivery; 2) they can have a vaginal birth, this is called a VBAC, which is a trial of labor after a cesarean delivery (Trial of Labor After Caesarean or TOLAC). A TOLAC is an attempt at a VBAC, if the TOLAC is successful it will result in a vaginal birth. If it is unsuccessful, it will require another cesarean delivery (Zhang et al., 2025). Data on CS (Caesarean Section) in Indonesia shows a significant increase. According to RISKESDAS 2021 data, CS deliveries reached 17.6% of total births. This figure is even higher according to the 2023 Indonesian Health Survey (SKI), which recorded a CS prevalence of 25.9%. Globally, there is an increase in cesarean sections in Asia and Indonesia. Researchers found an increase of 8% from 2021 to 2023 based on population surveys, mostly in tertiary care. Researchers also listed possible short-term and long-term health risks among mothers and fetuses. Advanced maternal age, high education and socioeconomic status, living in urban areas, avoiding pain, and having health insurance were found to be aspects associated with mothers' choice of cesarean delivery. This article discusses the increasing trend of cesarean sections in the world, especially in Indonesia. There has been no research in Indonesia that monitors the use of cesarean sections using national data, so researchers cannot conclude which groups contribute the most to cesarean sections, using the Robson classification system (Sungkar & Basrowi, 2020)

Some data show that the VBAC rate in Indonesia has increased from year to year, in 2019 as much as 17.8% to 35.3% in 2021. The VBAC success rate can reach 60-80%, even higher in cases of planned VBAC with appropriate delivery intervals. VBAC is a safer alternative to repeat CS for many women and should be recommended. However, there are still many factors that hinder the implementation of VBAC in various countries where legal risks cause medical professionals to avoid high-risk surgical procedures (Yuriah & Kartini, 2022). For example, concerns about complications such as uterine rupture and fetal distress, which can lead to litigation, often hinder the promotion of VBAC.Unsupportive delivery teams where the attitude of service providers, lack of adequate skills, high workload such as lack of manpower or mismanagement in the system and lack of experience, are sometimes barriers to receiving VBAC care (Zhang et al., 2025).

This is supported in studiesObstetric complications are unpredictable. Health facilities should be able to provide CS services at any time, whenever a woman needs them. The lack of anesthesiologists and obstetric consultants available 24/7 is a significant barrier to providing 24-hour emergency CS services, making obstetricians feel less confident in performing VBAC safely. The lack of skilled operators, functioning equipment, and fear of complications and litigation have been shown to prevent VBAC.Marginalization of midwives, limiting the role of

midwives to refer mothers to obstetricians to choose childbirth, disqualifying midwives from making decisions for VBAC, limiting midwives' duties in labor care, and not assigning VBAC responsibilities by some specialists to midwives are barriers to VBAC (Firoozi, Tara, Ahanchian, & Latifnejad Roudsari, 2020). Ministry of Health of the Republic of Indonesia, 2019 revealed that not all health services in Indonesia have received equal access, quality of health services and health workers for integrated ANC, both during childbirth and postnatal care. Therefore, it is important to conduct research on "Efforts to increase VBAC in Indonesia", in order to improve maternal health. and the fetus.

Method

Literature review searchusing articles from 2015-2025 with pubmed, sciencedirect, and google scholar databases. Articles were also identified by checking bibliographies, texts relevant to the keywords used VBAC (Vaginal Birth After Caesarean), women's empowerment; education; counseling; VBAC success factors; human resources and VBAC policies. The selection of articles was limited to articles published in English and Indonesian. This article focuses on research conducted in Indonesia that discusses efforts to increase VBAC (Vaginal Birth After Caesarean). Original research with qualitative and quantitative studies. Some articles taken were excluded because they were review articles and reports, opinion papers. The identification process used PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-analyses) (Nursalam, 2020). From the results of filtering the contents of the article, the suitability of the population, methods, and results, 13 articles were obtained to be used for the literature review.

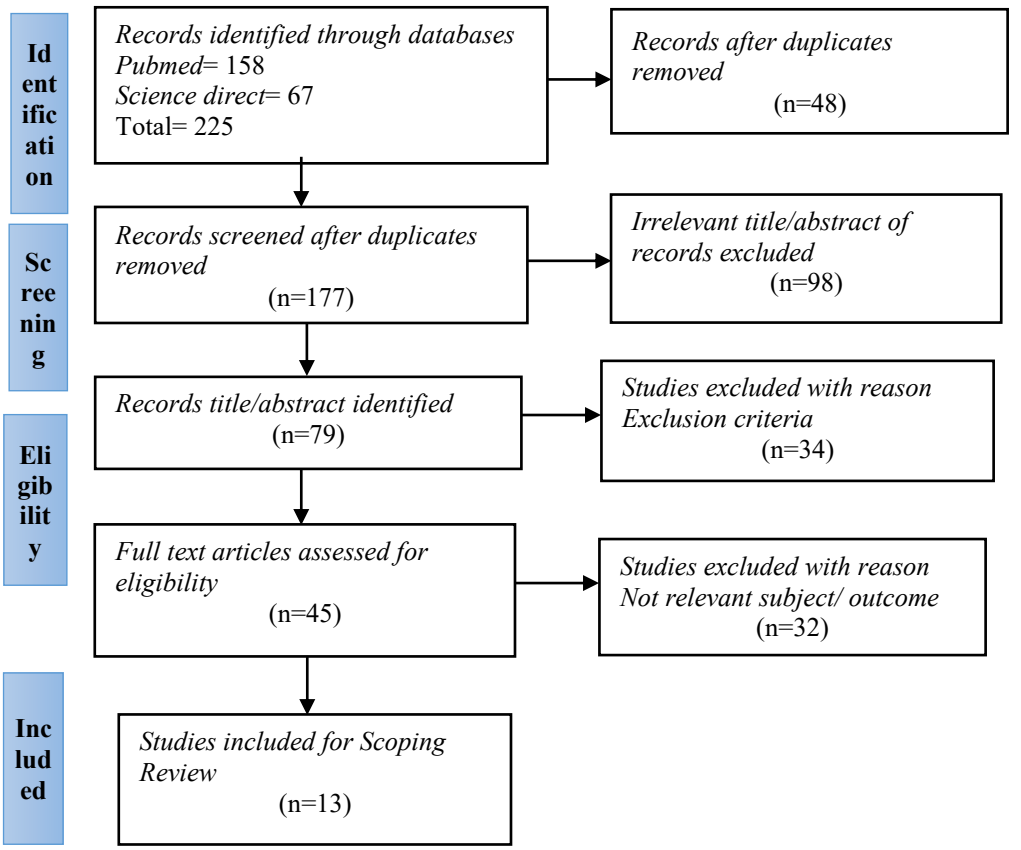

Figure 1. PRISMA Flowchart

Results

Table 1. Data Charting

No	Author /Year	Country	Sample	Results
1	(Koppes et al., 2021)	Dutch	1,364 women	National implementation of the decision-making tool demonstrated significant reductions in practice variation without an increase in caesarean section rates or complications, indicating improved equity of care.
2	(Lundgren et al., 2016)	Sweden	71 doctors	Increasing VBAC rates depends on organizational factors, the care provided during pregnancy and labor, the decision-making process, and the strategies used to reduce fear for all parties involved.
3	(Clarke et al., 2020)	Ireland	15 maternity units	Educational interventions provided by a health care professional providing evidence-based and unbiased information about the benefits and limitations of VBAC for women and enabling them to make informed and honest decisions about their

No	Author /Year	Country	Sample	Results
				care may increase VBAC.
4	(Hadjigeorgiou et al., 2021)	Cyprus	10 women	Women need evidence-based information, guidance on birth options, good preparation with personalized information as needed. Appropriate and unbiased consultation is a major factor influencing women's choice of birth method. The introduction of new perinatal strategies that are women-friendly, respect and promote birth rights is essential. All women have the right to exercise informed choice and the option of alternative birth options.
5	(Chen et al., 2023)	Taiwan	Medical center	An innovative web-based decision-making tool with support tools will help increase pregnant women's involvement in decision-making and communication with health care providers.
6	(Li et al., 2019)	China	pregnant women has a history of Caesarean section previously	TOLAC may be a potential strategy to reduce CS rates in China. A validated nomogram to predict successful VBAC may be a potential tool for VBAC counseling. Gestational age, history of vaginal delivery, estimated birth weight, body mass index, spontaneous onset of labor, cervical Bishop score, and rupture of membranes were independently associated with VBAC.
7	(Misgan et al., 2020)	Australia	268 women	Maternal age, pre-pregnancy BMI, previous vaginal delivery, previous VBAC, and type of indication for cesarean delivery, pre-pregnancy BMI, fetal membrane status, and fetal position are predictors of VBAC success.
8	(Firoozi, Tara, Ahanchian, & Roudsari, 2020)	Iran	28 interviewers (health workers, families and women who had previously had a caesarean section)	Improving women's attitudes through promoting maternity care, creating a supportive environment, informing mothers about birth method options and empowering them in shared decision-making can influence women's demand for VBAC. In addition, organizing VBAC care teams and creating motivation within the medical team and reporting the results of research projects on the safety and benefits of VBAC can influence VBAC rates.
9	(Zhang et al., 2025)	China	10,277 pregnant women with a history of previous caesarean section	A simple nomogram prediction model based on common antenatal predictors, which are independently associated with TOLAC success, including maternal age, height, cervical Bishop score, estimated fetal weight, and use of oxytocin and artificial rupture of membranes to induce labor.
10	(Mekonnin &	Ethiopia	295 women who had a	Having a history of previous spontaneous vaginal delivery and cervical dilation≥4cm at admission is

No	Author /Year	Country	Sample	Results
	Bulto, 2021)		previous Caesarean section	an independent determinant of VBAC success.
11	(Mesay et al., 2023)	Ethiopia	700 women who had previously had a Caesarean section	Rupture of membranes, and onset of labor, history of previous VBAC, interval between deliveries, and timing of ANC initiation increase the success of VBAC.
12	(Chinkam et al., 2022)	United States of America	10 women	Shared decision making is accepted as a method to improve women's decision making and can be integrated to enhance shared decision making discussions for other women.
13	(Lakra et al., 2020)	India	150 women	Maternal age, gestational age, Bishop score, body mass index, indication for primary cesarean section, and clinically estimated fetal weight are good tools for predicting TOLAC outcomes and can be used to counsel women regarding mode of delivery in the current and subsequent pregnancies.

Discussion

1. Comprehensive Education and Counseling
   a. Early Education

      Research in Sweden says it is important to provide information about VBAC to pregnant women with a history of CS from the beginning of pregnancy, even after the first CS delivery (Lundgren et al., 2016). Where this gives enough time for the mother to understand and make a decision. There are several studies on how to educate and make decisions, research in America developed a group counseling curriculum for shared decision making on how to give birth after a cesarean section as a whole was well received by women. The women in the group felt that they not only had the opportunity to share their experiences, but also to appreciate the experiences of other women (Chinkam et al., 2022). The sessions can increase women's knowledge about birth options, but make them feel more prepared and more comfortable with their decision-making.

      Research in the Netherlands shows the implementation of national decision-making tools.(1); previous birth experience (2); risks and benefits of TOLAC (trial of labor after caesarean section) and elective repeat caesarean section (ERCS) (including prediction models) (3); worksheets to consider options (4); birth plans where women can write down their preferences (5); initial choices (6); and follow-up to re-evaluate decisions (7). National implementation of the decision-making tool showed significant reductions in practice variation without an increase in caesarean section rates or complications, indicating improved equity of care (Koppes et al., 2021). Supported by a Taiwanese study of a web-based decision-making platform linked to medical records. The study combined communication education

and birth decision-making assistance that connects women and midwifery providers, with the potential to improve provider experience and VBAC rates (Chen et al., 2023). This supports the shift of service providers towards shared decisions with women and families by integrating decision-making assistance into the clinic workflow. As well asinformation and decision-making assistance for women significantly reduces decision-making conflict and increases their knowledge about childbirth methods.

b. Benefits and Risks Information
The Belgian study also highlighted the importance of transparently providing education about the benefits of VBAC. was found to be the dominant strategy, being less expensive and more effective than elective cesarean section strategy where VBAC resulted in shorter postpartum hospitalization, no abdominal surgery thus avoiding the risks associated with major surgery, reduced risk of infection, significant blood loss, and future pregnancy problems (such as placenta accreta), hysterectomy, and mortality, faster bonding with the baby allowing direct skin-to-skin contact and easier initiation of breastfeeding. However, there are also risks of VBAC associated with uterine rupture rates,placental abruption, bleeding, blood transfusionthus requiring emergency caesarean section, long-term neonatal morbidity such as cerebral palsy, and neonatal death (Fobelets et al., 2018). Evidence-based, unbiased information that helps in honest and informed shared decision-making will help women make informed choices about their health and care.

c. Success Factors
VBAC refers to the option for a woman to attempt a vaginal birth in her next pregnancy after having previously had a cesarean section. This process of attempting vaginal birth after a cesarean section is often referred to as TOLAC. If the TOLAC is successful, the result is a VBAC.TOLAC can be used in the antepartum counseling process and decision-making process when women present during the intrapartum period.Several studies in various countries have determined factors that increase the chance of successful VBAC: Maternal age under 40 years, Body Mass Index (BMI) <30, gestational age less than 40 weeks, good progress of cervical dilation and effacement, independent rupture of membranes, fetal head down position (cephalic presentation) not breech or transverse presentation, placenta in the correct position (not placenta previa), baby weight that is not too large (eg, under 4 kg), placenta attached normally, interval between previous CS delivery and current pregnancy more than 18-24 months, having a history of previous vaginal delivery (either before or after CS), women with one previous cesarean delivery and uterine incision in previous cesarean section (lower transverse incision has a lower risk of rupture), no history of uterine rupture, absence of serious maternal comorbidities (eg, cardiovascular, renal and metabolic), health facilities with appropriate equipment and trained personnel (Li et al., 2019) (Misgan et al., 2020) (Zhang et al., 2025) (Mekonnin & Bulto, 2021) (Mesay et al., 2023) (Lakra et al., 2020). Research in China TOLAC is a public health strategy that can be used to improve counseling, reduce conflict in decision making (Zhang et al., 2025). Increasing the success rate of vaginal delivery trials, ultimately improving

the prognosis for both mother and baby, by providing the possibility of case-specific counseling and management for women with a history of cesarean section and according to the characteristics of each pregnancy.

d. Psychological Support
The mother's request for elective CS is often not only due to a lack of solid information about VBAC but is also combined with the woman's fear of childbirth.Research in Sweden says that efforts to increase VBAC include addressing the fears and concerns of pregnant women regarding VBAC through empathetic counseling and psychological support. Virtual communities such as Telegram groups can also be an important platform for sharing information and emotional support. This solution could address the knowledge deficit, to initiate routine briefings around birth beforehand and to encourage women to keep an open mind about how to give birth (Lundgren et al., 2016). This is supported by research in Cyprus on the experiences of women with VBAC whereFrom a psychological perspective, women described VBAC as an empowering and 'healing' experience, how VBAC could improve their self-perception and confidence as women and mothers, and how it positively impacted 'bonding with baby' and breastfeeding. Women in the current study described VBAC as a "surreal experience" that left them feeling happy and proud of themselves, ready to claim what they had "lost" in their previous births. Seeing their VBAC success stories as personal triumphs and redemption from the trauma they had experienced "deep inside their souls" (Hadjigeorgiou et al., 2021). There is a need to understand these fears by giving women the opportunity to tell their birth stories; in this way, women have a way to share, understand and integrate their fears, worries or feelings of disappointment, and missing information and studies.shows that women who give birth naturally have positive feelings about their experience and a strong sense of pride.

2. Careful VBAC Candidate Assessment and Delivery Strategy
Previous obstetric history and current obstetric condition are both very important factors to identify in determining VBAC candidates (Carauleanu et al., 2021). Therefore, it is important toConduct a careful review of obstetric history and medical records, including previous cesarean section reports, to determine the type of uterine incision and the reason for the previous cesarean section (congenital heart disease, kidney disease, high blood pressure, history of uterine rupture, history of placenta previa delivery), a thorough clinical examination where periodic clinical examinations are performed to assess the condition of the mother and fetus, including cervical ripening (using the Bishop score) and fetal position and non-recurrent indications especially if the indication for the previous cesarean section was non-recurrent (eg, breech position or fetal distress) are factors in considering VBAC (Yuriah, 2024).

Spontaneous labor has a higher VBAC success rate and a slightly increased risk of uterine rupture if labor is induced. When labor is induced, appropriate mechanical induction (if needed) using low-dose oxytocin is preferred over misoprostol or dinoprostone, which may increase the risk of rupture. Induction of labor with amniotomy, prostaglandins, or oxytocin (or a combination of these methods) is associated with lower rates of vaginal delivery (Carauleanu et

al., 2021). Continuous electronic fetal monitoring is necessary because in 70% of cases of uterine rupture, there are fetal heart rate abnormalities and, increased uterine contractions, vaginal bleeding, loss of fetal position, or the development of severe uterine pain. If the patient is stable, without signs of hypovolemia, an ultrasound can be performed. Sonographic markers that support the diagnosis of uterine rupture are abnormalities in the uterine wall, hematoma next to the hysterotomy scar, free fluid in the peritoneum, or fetal parts outside the uterus. The definitive diagnosis is obtained by laparotomy with identification of the uterine defect, fetal parts, and hemoperitoneum (Haryanti & Yuriah, 2025). If there is a high suspicion of uterine rupture, an emergency cesarean section is necessary under general anesthesia, with a midline abdominal incision for faster access and better visualization of the abdominal cavity (Juniarti et al., 2024). If the uterine rupture is small, the doctor can proceed with uterine repair, otherwise, especially in hemodynamic instability, hysterectomy is indicated. Close monitoring of the progress of labor and signs of complications, especially uterine rupture, is necessary.

3. Improving Human Resource Capacity and Health Facility Readiness
   Research suggests that physicians are at the forefront of VBAC decision-making, and the mother's initial confirmation and encouragement for VBAC depend on physicians, but physicians are charged with the responsibility for VBAC. Therefore, physician acceptance and performance are the focus of VBAC promotion.Women need evidence-based information about the positive aspects of VBAC and their body's ability to give birth vaginally if they are to be supported in making truly informed decisions about how to give birth after CS (Hadjigeorgiou et al., 2021). Physicians should be sensitive to the fact that in addition to assessing concrete data on risk, women are often influenced by their personal values, attitudes, experiences, and obstetrician's expectations about childbirth when making decisions. Women are also influenced by the relationships they have with friends, family, and other sources of maternity information, and the impact of these influences on the decision-making process should not be underestimated (Lundgren et al., 2016). Support from obstetricians who are open to the idea of VBAC has been shown to have a significant positive impact on the VBAC experience and emotional well-being and suggests that women benefit from making informed decisions about how to give birth. It is therefore important to empower women and families so that they can take back control of their birth experience and there is no medicalization of childbirth.

   In a study in Iran it was stated thatincrease midwives' knowledge and positive perceptions of VBACwhere involving midwives in training courses on physiological childbirth and safe motherhood can help women as VBAC candidates more easily, as well asraising awareness about the role and benefits of midwivesBecause midwifery care during pregnancy is one of the most important predictors in a mother's choice of VBAC, midwives encourage mothers with a history of Caesarean section to attend VBAC counseling services and also childbirth preparation classes to make childbirth a positive experience that will encourage and persuade them to make a decision for VBAC (Firoozi, Tara, Ahanchian, & Roudsari, 2020). When well trained and working in a supportive environment, midwives can manage uncomplicated

normal births and support women with VBACs, leaving obstetricians more time to provide specialist care as needed.

The consensus among physicians participating in the study was that women planning a VBAC should be cared for in a delivery room that is appropriately staffed and equipped, with easy access to facilities for emergency Caesarean section and neonatal resuscitation if necessary according to professional guidelines.Hospitals and health facilities must be prepared with the equipment and resources needed to deal with possible complications, including the ability to perform emergency cesarean sections quickly . Ensure the availability of a medical team that supports VBAC, including midwives, and nurses who have the knowledge and skills to handle VBAC births. It is also important to have anesthesiology readiness for the possibility of an emergency cesarean section. In addition, interprofessional communication can also improve safe access to planned VBAC.

4. Clear information system and policies
   The study in Iran collected accurate data on the safety and success rates of VBAC and the factors influencing it for evaluation and improvement of programs that can influence VBAC rates (Firoozi, Tara, Ahanchian, & Roudsari, 2020). Highlighting the need for better reporting of reasons for first CS, if women undergoing primary CS for non-recurrent reasons could be easily identified, they could be provided with appropriate counseling on the benefits of VBAC. The need to improve data recording for other indicators is also a priority. Ensuring accurate data collection is essential to monitor improvements and ensure interventions are leading to desired outcomes.

   There is a need for policies and programs that support the increase in VBAC at the national and regional levels, as well as advocacy from professional organizations and health practitioners to educate the public and reduce unnecessary cesarean births, including implementing clear guidelines and protocols for VBAC management, including VBAC candidate selection criteria, close monitoring during labor (eg, continuous fetal heart rate monitoring), and emergency action plans.Strengthening of policies to ensure recommendations are context-specific is needed, encouraging a more supportive and legal environment for obstetricians and building trust among colleagues, mentoring and accountability systems (Hairon et al., 2024). This will ensure staff have confidence in their own skills and are able to learn from poor practice decisions. Advocating for better legal protection for doctors will also help reduce fear of complications among doctors and improve doctor-patient relationships.

Conclusion

Overall, the literature suggests that women's decision-making about vaginal delivery after cesarean section is influenced by a variety of factors including medical,psychological, material, and socio-cultural parameters.In an effort to increase VBAC rates, careful consideration of VBAC parameters is essential. A careful obstetric history, a positive attitude by all parties involved, and strategies such as early follow-up after the first cesarean section require attention. If VBAC

rates are to increase, organizational support and resources for women undergoing VBAC, including clinical expertise and resources during labor, are essential to achieving successful outcomes. Fear is a major barrier to successful VBAC, therefore, understanding the fears of women and their physicians is essential. Shared decision-making requires the availability of consistent, realistic, and unbiased information, and a trusting relationship between the woman and her physician.By implementing these efforts in an integrated manner, it is hoped that the VBAC success rate can increase, thus providing a safer and more beneficial birth option for mothers and babies.

Conflict of interest statement
The authors declared that they have no competing interests.

Statement of authorship
The authors have a responsibility for the conception and design of the study. The authors have approved the final article.

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