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Ectopic Pregnancy and Its Risk Factors: A Literature Review

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A B S T R A C T

Ectopic pregnancy is an abnormal pregnancy condition where the conception implants outside the uterine cavity, most commonly in the fallopian tubes. This condition is one of the main causes of maternal morbidity and mortality in the first trimester, mainly due to tube rupture and internal bleeding. Some factors that can increase the risk of having an ectopic pregnancy include the mother's age, number of previous pregnancies, history of abortion, previous ectopic pregnancy, pelvic infections, use of contraception, and smoking habits. This study aims to identify and review risk factors, diagnostic methods, and the management of ectopic pregnancy based on published research. The study uses a literature review design by searching for articles through Google Scholar and various open-access journals. The review results show that early diagnosis through medical history, physical examination, ultrasonography, and β-hCG level tests is very important to prevent complications. The management of an ectopic pregnancy can be done through medical therapy or surgical procedures, depending on the patient's clinical condition. This means that an ectopic pregnancy is an obstetric emergency that requires early detection, comprehensive examination, and prompt and proper management to reduce the risk of complications and improve the mother's safety

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INTRODUCTION

Ectopic pregnancy is a pathological condition where the conception implants outside the uterine cavity, most commonly in the fallopian tube. This condition is considered an obstetric emergency that requires immediate attention because it can cause tube rupture and internal abdominal bleeding, which can be life-threatening for the mother. Ectopic pregnancy is also one of the main causes of maternal morbidity and mortality, especially in the first trimester.

Studying mothers' worries during pregnancy is really important because there's a connection between a mother's mental state and pregnancy outcomes, like low birth weight and C-sections. These worries and concerns can affect a mom's sleep and overall quality of life. Anxiety during pregnancy can also increase the chances of postpartum depression.

Because mothers' concerns during pregnancy have cultural, social, economic, and medical dimensions, it's important to conduct a qualitative study as a first step in understanding this concept. This comes from the fact that qualitative studies provide in-depth information that can explain the complex human dimensions like pregnancy worries. Moreover, identifying mothers' concerns during pregnancy allows for finding solutions to improve their health, quality of life, and experiences during this period.

When a pregnant woman feels and experiences a higher level of pregnancy risk for herself and her child, she may also experience increased uncertainty, higher psychological stress, and levels of discomfort or depression, as well as anxiety.

Husbands participating in antenatal care (ANC) and childbirth has been linked to more ANC attendance, better birth preparedness, reduced maternal stress, and improved newborn outcomes. Systematic reviews have shown that male involvement leads to increased use of maternal health services and lower maternal morbidity and mortality. However, despite these well-documented benefits, male involvement in Africa and Nigeria is still low.

Globally, the occurrence of ectopic pregnancies continues to show significant numbers, especially in developing countries. This is related to high rates of reproductive tract infections, delayed diagnosis, and limited access to adequate healthcare services. Additionally, the increased use of assisted reproductive technologies also contributes to the rising risk of ectopic pregnancies.

Several risk factors are known to play a role in the occurrence of ectopic pregnancy, including the mother's age, history of previous pregnancies, history of abortion, pelvic infections, and contraceptive use (Kurniawati et al., 2024). Pelvic infection is one of the most influential factors because it can cause damage to the fallopian tubes, which can hinder the transport of the ovum to the uterus (Nugraha et al., 2020). In addition, women of certain reproductive ages and high parity also have a higher risk of experiencing an ectopic pregnancy (Aravianti et al., 2022).

Diagnosing an ectopic pregnancy can often be tricky because the symptoms that appear aren't specific and can resemble a normal early pregnancy. Common signs like lower abdominal pain, vaginal bleeding, and missed periods are often overlooked by patients. That's why additional tests like an ultrasound and checking β-hCG levels are needed to help make an accurate diagnosis (Arifuddin, 2018).

The management of an ectopic pregnancy really depends on the patient's clinical condition, the implantation site, and how far along the pregnancy is. Treatment can be done medically using methotrexate for cases that haven't ruptured, or surgically if there are complications. Proper and prompt management is super important to prevent serious complications and reduce maternal mortality.

Based on that background, it's important to do a literature review to get a deeper understanding of the risk factors, occurrences, diagnosis, and management of ectopic pregnancy based on the results of studies that have been published.

LITERATURE REVIEW

Ectopic pregnancy is when a conception implants outside the normal location of the uterine endometrial cavity. Most cases occur in the fallopian tubes, especially in the ampulla, but implantation can also happen in the interstitial part, cervix, ovary, abdomen, cesarean section scars, or other rarer sites. Modern classification distinguishes between extrauterine ectopic pregnancy and ectopic pregnancy that is still within the uterus but outside the normal endometrial cavity. Understanding the implantation location is important because it affects ultrasound imaging, bleeding risk, and treatment options ("Erratum: ACOG Practice Bulletin No. 193: Tubal Ectopic Pregnancy (Obstet Gynecol (2018) 131 (E91-E103) DOI: 10.15585/Mmwr.Mm6805a5)," 2019; Farren et al., 2026; Mullany et al., 2023)

Pathophysiology

Physiologically, a fertilized egg is transported to the uterine cavity through the movement of cilia and contractions of the smooth muscles of the tube. Structural or functional problems in the tube, such as from inflammation, scarring, pelvic surgery, or changes in motility, can slow down the transport of the embryo, causing implantation to happen before it reaches the uterine cavity. After implantation, the trophoblast tissue invades the surrounding tissues. In fallopian tubes that have limited ability to stretch, tissue growth can lead to blood vessel erosion, hematosalpinx, tube rupture, and internal abdominal bleeding (Mullany et al., 2023).

Risk Factors

The strongest risk factors include a history of previous ectopic pregnancy, pelvic inflammatory disease, infertility, abdominal or pelvic surgery, and procedures on the fallopian tubes, including sterilization. The risk can also increase with older maternal age, smoking habits, a history of abortion, the use of assisted reproductive technology, and tubal damage due to infection. Although ectopic pregnancy can occur without identified risk factors, the presence of these factors should raise awareness and encourage early evaluation in subsequent pregnancies (Brim et al., 2025).

Clinical Manifestations

Clinical manifestations range from asymptomatic to hemorrhagic shock. Common complaints include amenorrhea or delayed menstruation, abdominal or pelvic pain, and vaginal bleeding. These three symptoms don't always appear together, so diagnosis shouldn't be based solely on symptoms. Shoulder pain, dizziness, syncope, paleness, tachycardia, hypotension, sudden severe pain, and signs of peritoneal irritation can indicate rupture and intra-abdominal bleeding. Physical examination might reveal abdominal tenderness, adnexal pain, or cervical motion tenderness, but these findings still need to be combined with supportive tests (Mullany et al., 2023; National Institute for Health and Care Excellence, 2021).

Diagnosis

Ectopic pregnancy is diagnosed through a combination of medical history, physical examination, transvaginal ultrasound, and serial measurements of β-human chorionic gonadotropin (β-hCG) levels. Transvaginal ultrasound is used to determine the location of the pregnancy, assess adnexal masses, and detect free fluid in the pelvic cavity. If a pregnancy test is positive but the location of the pregnancy cannot be confirmed, this situation is called a pregnancy of unknown location and requires clinical monitoring, serial β-hCG tests, and follow-up ultrasounds. A single β-hCG value or just one ultrasound examination is not always enough to make a diagnosis, especially in very early pregnancy ("Erratum: ACOG Practice Bulletin No. 193: Tubal Ectopic Pregnancy (Obstet Gynecol (2018) 131 (E91-E103) DOI: 10.15585/Mmwr.Mm6805a5)," 2019; National Institute for Health and Care Excellence., 2021).

Management

Management consists of expectant, medical, and surgical approaches. Expectant management can be considered for patients who are stable, not in pain, have low or decreasing levels of β-hCG, and are able to follow up until hormone levels become negative. Methotrexate can be used for unruptured ectopic pregnancies in patients who are hemodynamically stable, have no contraindications, and for whom a viable intrauterine pregnancy has been ruled out. Surgery is needed if the patient is unstable, there's suspected or confirmed rupture, internal abdominal bleeding, significant pain, failure or contraindication to medical therapy, or other high-risk situations. Choosing the method should take into account the clinical condition, ultrasound results, β-hCG levels, fertility desires, and the patient's ability to follow up (Colombo et al., 2020; NICE, 2026; Xiao et al., 2021). (Colombo et al., 2020; Xiao et al., 2021).

Complications and Prognosis

The main complications are rupture, massive bleeding, hypovolemic shock, the need for transfusions, and maternal death. Long-term effects can include fertility problems, a higher risk of repeated ectopic pregnancies, and psychological issues from pregnancy loss and emergency experiences. Diagnosing before rupture broadens the options for more conservative treatments and can help preserve reproductive function. Therefore, education about danger signs, adherence to β-hCG monitoring, and early evaluation in subsequent pregnancies are important parts of care (Farren et al., 2026).

METHODOLOGY

This study uses a literature review method by examining various scientific articles that discuss ectopic pregnancy. The literature search was carried out through the Google Scholar database and open-access journals using the keywords *ectopic pregnancy*, *risk factors*, *diagnosis*, and *management*. Articles relevant to the research objectives were then selected and analyzed descriptively by comparing methods, research characteristics, and the main findings of each article. The analysis results were then synthesized to provide an overview of the risk factors, diagnosis, and management of ectopic pregnancy.

RESULTS

Based on the literature search results through the specified databases, several articles relevant to the research topic on ectopic pregnancy and its risk factors were obtained. The articles that met the inclusion criteria were then analyzed based on the research objectives, research methods, respondent characteristics, and main findings. The literature synthesis results showed that the most commonly found risk factors for ectopic pregnancy include maternal age, parity, history of abortion, history of previous ectopic pregnancy, contraceptive use, pelvic infections, history of pelvic surgery, and smoking habits. In addition, early diagnosis through ultrasonography and β-hCG levels plays an important role in reducing the risk of complications and improving management success. A summary of the analyzed articles used in this literature review can be seen in the table below.

Table 1. Analysis Results of Articles on Ectopic Pregnancy and Its Risk Factors

NO	Author	Research Objectives	Research Methods	Research Results
1.		Analyzing risk factors for recurrent ectopic pregnancies	Case Studies	**Risk factors found included a history of previous ectopic pregnancy, a history of abortion, contraceptive use, and smoking habits.**
2.	(Nugraha et al., 2020)	Identifying risk factors and characteristics of	Retrospective descriptive analytic study	**Dominant risk factors include pelvic infections, history of**

		ectopic pregnancy patients Retrospective descriptive		**pelvic surgery, hormonal contraception, and history of previous ectopic pregnancies.**
3.	(Arifuddin, 2018)	Knowing the relationship between age and parity with the incidence of KET	Cross sectional	**There is a relationship between age and parity with the incidence of disrupted ectopic pregnancies.**
4.	(Fatehah et al., 2024)	Studying the diagnosis and management of ectopic pregnancy	Literature review	**Early diagnosis using ultrasound and β-hCG helps prevent complications.**
5.	(Aravianti et al., 2022)	Knowing the importance of early detection of ectopic pregnancy	Cross sectional	**Early pregnancy screening helps prevent tubal rupture and complications.**
6.	(Kurniawati et al., 2024)	Identifying risk factors for recurrent ectopic pregnancies	Case study	**A history of abortion, fallopian tube disorders, and a previous history of KET increase the risk of recurrence.**
7.	(Widiasari & Dewi Lestari, 2021)	Reviewing the diagnosis and management of ectopic pregnancy	Literature review	**Proper diagnosis and management can prevent tubal rupture and hypovolemic shock.**

Based on Table 1, the most commonly found risk factors for ectopic pregnancy are pelvic infections, a history of previous ectopic pregnancies, a history of abortion, contraceptive use, maternal age, and parity. In addition, the study results show that early diagnosis through transvaginal ultrasound and β-hCG examination plays an important role in preventing complications. Management of ectopic pregnancy can be done medically using methotrexate or surgically through laparoscopy or laparotomy depending on the patient's clinical condition.

DISCUSSION

Based on the literature review, it is known that ectopic pregnancy is influenced by various interrelated risk factors. The main risk factors most often found include age, previous pregnancy history, history of abortion, pelvic infections, and contraceptive use (Kurniawati et al., 2024)

These results are in line with the research by Nugraha et al. (2020) which states that pelvic infections are the most dominant risk factor for ectopic pregnancy. This infection can damage the structure of the fallopian tubes, including the cilia that help move the egg towards the uterus. This damage blocks the egg, increasing the chances of implantation outside the uterus.

Besides that, age and parity also have a significant connection. Women of reproductive age, especially those between 20–35 years old, as well as multigravida women, have a higher risk of experiencing an ectopic pregnancy (Aravianti et al., 2022). This is likely due to increased exposure to risk factors like infections or a history of medical procedures as age and number of pregnancies increase. So, it can be concluded that ectopic pregnancy isn't caused by a single factor, but rather is the result of the interaction of various risk factors affecting the condition of the fallopian tubes.

Diagnosing an ectopic pregnancy is challenging in clinical practice because the symptoms are often non-specific and can resemble a normal early pregnancy. According to research, the most commonly found symptoms include lower abdominal pain, vaginal bleeding, and missed periods (Arifuddin, 2018). However, these symptoms alone cannot be used as the sole basis for diagnosis. Therefore, additional tests such as ultrasonography and β-hCG level checks are needed. Ultrasound is important for determining the implantation location of the pregnancy, while checking β-hCG levels helps in assessing the progress of the pregnancy.

Research by Aravianti et al. (2022) shows that combining these two tests can improve the accuracy of ectopic pregnancy diagnosis. However, diagnosis delays still often occur, especially in patients who come in already experiencing complications like tubal rupture. This indicates that increasing healthcare workers' awareness of early symptoms of ectopic pregnancy is really necessary to prevent delayed diagnosis. Management of ectopic pregnancy can be done with two main approaches: medical therapy and surgical procedures. Choosing the management method really depends on the patient's clinical condition, the location of the pregnancy, the size of the mass, and whether there are any complications.

Medical therapy using methotrexate is an option for patients who are stable, have relatively low β-hCG levels, and have not had a rupture. This therapy works by inhibiting the growth of trophoblastic tissue so that the pregnancy can be stopped without surgery (Kurniawati et al., 2024). Meanwhile, surgical procedures like salpingectomy are performed on patients in emergency conditions, such as a tubal rupture or internal bleeding. Nugraha et al. (2020) stated that surgery is still the main choice in most cases because many patients come in late.

Comparisons from several studies show that the success of management heavily depends on early detection. The sooner the diagnosis is made, the higher the chances of handling it with medical therapy, which can reduce the risk of complications and preserve a woman's reproductive function. Therefore, the management of ectopic pregnancy should be done quickly, accurately, and according to the patient's condition to improve the mother's safety and prevent more serious complications.

CONCLUSIONS AND RECOMMENDATIONS

Based on the literature review of various journals analyzed, it can be concluded that ectopic pregnancy is a pathological condition with high risks to the mother's health and can cause serious complications if not treated quickly and appropriately. The occurrence of ectopic pregnancy is influenced by various interrelated risk factors, including the mother's age, parity, history of previous ectopic pregnancies, pelvic infections, history of abortion, contraceptive use, and smoking habits.

These factors play a role in causing disorders in the structure and function of the fallopian tubes, which hinders the transport of the ovum to the uterus and increases the likelihood of implantation outside the uterine cavity. In addition, a history of previous ectopic pregnancy is a significant risk factor because it can cause permanent damage to the fallopian tubes and increase the risk of recurrence in subsequent pregnancies. Diagnosing an ectopic pregnancy requires a comprehensive approach through medical history, physical examination, as well as supporting tests like ultrasonography (USG) and B-hCG levels. Early detection is very important in determining the success of management and preventing more severe complications such as tubal rupture and heavy bleeding. Management of an ectopic pregnancy should be adjusted to the patient's clinical condition, which can include medical therapy using methotrexate, surgical procedures like laparoscopy or laparotomy, or observation in certain cases. Choosing the right treatment method aims not only to save the mother's life but also to preserve future reproductive function.

Overall, ectopic pregnancy is a health issue that needs serious attention from both healthcare providers and the community. Therefore, efforts to prevent it through raising awareness, early detection, and proper, comprehensive management are very important to reduce maternal morbidity and mortality due to ectopic pregnancy.

FURTHER STUDY

This study still has some limitations, so more research on the topic 'Ectopic Pregnancy and Its Risk Factors: A Literature Review' is needed to improve this study and provide more insight for both the writer and the readers

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