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## Early Detection of High Risk of Pregnant Women in Asia

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**Abstract**---This research is a Scoping Review. This study aims to map research on the early detection of high-risk pregnant women. The research method used is to adapt the Prisma-ScR framework. PubMed Database, Scientific direct and Google Scholar; critical appraisal carried out in this review is to use the Joana Briggs checklist from the Joana Briggs Institute (JBI). Results: based on the search results of 541 there were 10 articles that matched the inclusion criteria and came from the Asian continent. This review raises two sub-themes, namely early detection of high-risk pregnant women by health workers and early detection of high-risk pregnant women by non-health workers. The results showed that early detection of high-risk pregnancies was related to activities to obtain information about pregnant women who were detected as at-risk populations. This can only be detected by health workers scientifically.

**Keywords**---Asia, Detection, High Risk, Pregnancy

### Introduction

The health success of a country can be seen through the mortality rate of pregnant women and childbirth. Complications that often occur in pregnant women and childbirth mothers due to bleeding, preeclampsia/eclampsia. The potential risk of pregnancy and childbirth can result in death, so the introduction of this pregnancy is through early detection during pregnancy carried out by trained health workers or non-health workers (Karim & Sari, 2021).

High-risk pregnancies can be detected if pregnant women have regular pregnancy check-ups. This includes counselling services or providing information through the detection of danger / high-risk signs as early as possible, as well as providing information about efforts to maintain pregnancy and prepare for childbirth so that the delivery goes well. This is done to assess whether the development of the mother and fetus is progressing normally (City, 2021).

Pregnant women have a high risk of being 2.9 times more at risk of having complications of childbirth (Hazairin et al., 2021). High-risk pregnancies are found in pregnant women who are too old (over 35 years old), too young (under 20 years old), too many (more than 4 times), and too close (the distance of childbirth is less than 2 years) or better known as 4 Too (4T) (Hazairin et al., 2021).

Efforts that are tried to avoid the formation of pregnancy with high risk, namely the coverage of antenatal services increased at least during pregnancy must be examined 6 (six) times, after which all pregnant women are given treatment and antenatal screening to carry out early detection in a pro-active manner, understand the problems experienced during pregnancy so that they are aware, recognize the danger characteristics and risk aspects in pregnancy, improve service quality, utilization of facilities and planned health service facilities (Care & Pregnant, 2021).

## Research Methods

The research method used is to adapt the Prisma-ScR framework which includes: Identifying research questions through the PEO (Population, Exposure, Outcome) framework in managing and solving the focus of the review.

Table 1  
Framework PEO

P (Population)	E (Exposure)	O (Outcome)
Pregnant women	Early Detection	High Risk

After identifying the *scoping review* question, the next step is to identify the journal or article that is considered relevant, this can be done by determining the key parameters. Furthermore, the identification of relevant articles is based on the criteria of inclusion and exclusion.

Selecting articles based on abstract titles and full text, so that articles are obtained for *critical appraisal* and mapping. *Preferred Reporting Items for Systematic Review and Meta-Analysis* (PRISMA) will be used at the article selection stage. *PRISMA Flowchart* is a collection of minimum items that are evidence-based for making reports in *systematic review* and *meta-analysis*. Because its use can improve the quality of publication reporting, the *Prisma flowchart* is considered appropriate to use.

After completing the article selection process, it is then entered into a table which includes: Article title, author name, year, country, destination, type of research, data collection, participants/sample size, and results.

The results of the *review* in this study will be compiled in *mapping* or grouping themes and discussed in detail obtained from articles that have been *critical appraisal*. *Critical appraisal* in this *scoping review* uses the *Joanna Briggs Institute (JBI) critical appraisal tool* on 10 articles that have been found. Furthermore, the author makes the total value of the critical appraisal results in each article.

Table 2  
Characteristic

No.	Journal Identity	Research Methods	Research results
1	<b>Himatul Khoeroh, (2021),</b> <i>Implementation of Integrated Antenatal Care (ANC) for pregnant women in Dukuh Igir Pandan Pandansari Village, Paguyangan District, Brebes Regency</i>	The methods used in the implementation of community service activities are carried out in stages, including the networking of pregnant women, together with cadres, village midwives registering all pregnant women, especially the II trimester and III trimesters, then it is planned for the examination of pregnant women starting from <i>anamnesis, head to toe</i> physical examination, laboratory examination and finally the provision of health education following the problems found.	In general, <i>Antenatal Care</i> community service activities are running well. 90% of pregnant women in both the I and III trimesters check their pregnancies at integrated <i>Antenatal Care</i> activities. Pregnant women are enthusiastic in participating in this activity, with the awareness that the activity is only carried out once a month at the Auxiliary Health Center in Pandansari village. <i>Antenatal Care</i> activities for all pregnant women totalling 35 within normal limits either on physical examination or laboratory examination, there is only one pregnant woman Mrs. N in ongoing monitoring under the auspices of the Winduaji Health Center because the HIV laboratory test is positive and health workers recommend giving birth at the hospital.
2	<b>Asri Kusyani, Susanti, Shelfi Dwi Retnani Putri, Siti Fatimah, (2021),</b> <i>Ante Natal Care Examination 4 Visits with High-Risk Pregnancy in</i>	This research uses the literature review method, and identifies, assesses, and interprets all the findings of a research topic. The sources used are reputable national and international journal articles	The results of the search for articles that have been presented with <i>antenatal care</i> examinations less than four times are associated with an increase in high-risk pregnancies and surgical delivery. K4 pregnancy examination is related to the incidence of high-risk pregnancy in pregnant women. Therefore, early detection of high-risk pregnancies needs to be carried out at the

	<i>Pregnant Women: Literature Review</i>		puskesmas level to improve maternal, obstetric, and neonatal outcomes.
3	<b>Fatmawati Karim, Mela Mustika Sari, (2021),</b> <i>Early Detection of High Risk Using Promotional Media maternal health return sheets towards the knowledge and attitudes of pregnant women in the work area of the Purwadadi Health Center, Subang Regency.</i>	This study used a <i>pretest posttest control group design</i> . The subjects of the study were pregnant women at the Purwadadi Health Center, as many as 50 pregnant women, consisting of 25 respondents from the treatment group with maternal return sheets and 25 respondents from the control group using MCH books. Data analysis with <i>Kolmogorov-Smirnov</i> normality test and <i>Wilcoxon</i> test.	The treatment group using the return sheet had an increase in knowledge ( $p=0.001$ ), an increase in attitude ( $p=0.004$ ) and the control group using the MCH book there was an increase in knowledge ( $p=0.765$ ) and an increase in attitude ( $p=0.351$ ). Knowledge as the basis for the formation of attitudes, understanding or summary of the return sheet module is very complete and represents counselling that will be delivered to clients based on needs. Clients gain an understanding of the maternal health return sheet which is a development of the MCH book which is generally separate in its discussion.
4	<b>Nur Asia Hapsari Pratiwi, Sri Achadi Nugraheni, Apoina Kartini, (2019),</b> <i>Managing Early Detection of Mothers with HighRisk Pregnancy by Health Surveillance Workers for Maternal and Child Health in DecliningMaternal Mortality in Semarang City</i>	This quantitative research uses a <i>cross-sectional design</i> . The study population was 173 KIA Gasurkes in Semarang City in 2018. Research samples with <i>total sampling techniques</i> . Primary data using questionnaires, and secondary data include data on the coverage of early detection of high-risk pregnancies at the village level and supporting reports from direct records of Puskesmas at the Semarang and Semarang District Health Offices. Data analysis used the chi-square test to determine the relationship between free variables and bound variables.	MCH Gasurkes performs and forms management functions well, such as determining the number of target communities, target scope, and resources. Nevertheless, there are still some of them who do not have a good management function. MCH Gasurkes that manage early detection of high-risk pregnancies makes organizational functions run better. It can be seen that MCH Gasurkes, and other parties in the program have known the purpose of early detection of high-risk pregnant women. KIA Gasurkes has pushed the team members well. They have been able to work closely with cadres, village stakeholders, and other sectors efficiently and effectively in implementing early detection. MCH Gasurkes also monitors the early detection of high-risk pregnancies as per the procedure. They routinely evaluate it to find out the implementation results and processes and compare them with the targets and send all reports to the regional coordinators, primary puskesmas, and district health offices on a daily, weekly, monthly, quarterly, and annual basis
5	<b>Siti Khadijah, Arneti, (2018),</b> <i>Early Detection efforts of high risk of pregnancy determined by knowledge and support of health workers</i>	The survey research with a <i>cross-sectional</i> approach was conducted in the working area of the Mungka Health Center, 50 cities, in October-November 2017. The sampling technique with <i>total sampling</i> method amounted to 40 high-risk pregnant women. Data analysis was carried out with descriptive analysis, to determine the frequency distribution and <i>Chi-Square</i> statistical test.	The better the pregnant women's knowledge about high-risk pregnancy check-ups, the higher the mother's ability to carry out early detection of the high-risk pregnancy. Knowledge of the benefits of early detection of high-risk pregnancy causes a pregnant woman to have a positive attitude and will influence mothers to carry out early detection of high-risk pregnancy and antenatal care examination as early as possible health workers. The knowledge and support of health workers is the most decisive determinant in efforts to early detect the high risk of pregnancy.

6	<b>Ika Mardiyanti, Yasi Anggasari, (2021),</b> <i>Analysis of Determinant Factors of Affecting Family Ability in High-Risk Pregnancy</i>	This study used a <i>cross-sectional</i> analytical design. It consisted of a sample of 112 samples from a population of 155, with random sampling. The free variables are individual factors, interpersonal influences, filial values and commitment, while the dependent variables are the family's ability to detect high-risk pregnancies for 3 months, August-October 2020 at PMB Ika Mardiyanti. This study used a list of questions. Data collection is in the form of questionnaires. Data analysis using SEM-PLS.	The results of the significance test concluded that all coefficient pathways and statistical values of T personal factors in interpersonal (0.453; 6.612), interpersonal at filial value (0.753; 7.267), filial value for commitment (0.851; 17.048), filial value for ability (0.667; 4.679), commitment to ability (0.358; 2.356) were significant. Since all of them have a greater T statistic value than T-table 1.96. determinant factors that contribute to the family's ability to detect high-risk pregnancies need to be considered so that families are independent and have efforts to maintain the health of women's pregnant women in their families, furthermore, it is necessary to involve other parties' factors to increase family capacity, especially in the family's ability to early detection of high-risk pregnancies
7	<b>Ika Mardiyanti, Nursalam Nursalam, Shrimarti Rukmini Devy, Ernawati, (2020),</b> <i>Family Empowerment Model on Early Detection Ability of High-risk Pregnancy</i>	The research design is an explanatory survey with <i>cross-sectional</i> . The study population of pregnant women's families in the Surabaya area was taken using <i>the rule of thumb</i> guidelines of a sample of 120 respondents by <i>systematic random sampling</i> . Data analysis with SEM-PLS, via CFA (Confirmatory Factor Analysis). Ethical Clearance has been issued by the Ethics Team of the Faculty of Nursing, Universitas Airlangga No. 1752-KEPK in August 2019.	The results showed that the family model of empowering the ability to early detection of high-risk pregnancies is a fit model. This refers to the results of the goodness of fit test. Personal to interpersonal factors (statistical T = 10.301; P = 0.000), interpersonal to Filial Value (statistical T = 13.501; P = 0.000), Content Value for commitment (Statistical T = 9.495; P = 0.000), the family's commitment to the ability to early detection of high-risk pregnancies (Statistical T = 3,840; P = 0.000). This study provides information about the model of family empowerment in high-risk pregnancies so that it can be used as a reference in preparing for midwifery care planning in emergency cases of high-risk pregnant women. The application of the family empowerment model can improve the ability to early detection of high-risk pregnancies through personal factors, cognition, resources factors, and supporting interpersonal, high ( <i>Filial Values</i> ) and commitment to family ability in early detection of high-risk pregnancies.
8	<b>Suwarnisih, Eka Novitayanti, (2021),</b> <i>The Relationship between Knowledge Level and Application of High- risk Pregnancy Early Detection Model by Posyandu Cadres in Jaten Village, Karanganyar</i>	Analytical observational research method with the <i>cross-sectional</i> approach. The study population was 192 posyandu cadres in Jaten village, sampling using " <i>Accidental Sampling</i> " where those who filled out questionnaires through google forms were 54 people.	The level of knowledge of respondents mostly had a good level of knowledge, namely 42 respondents (77.8%), the application of the high-risk pregnancy early detection model by posyandu cadres, most of the respondents had a good application of the early detection model, namely 41 respondents (75.8%), the results of the cross-tabulation analysis with the Fisher's Exact Test test obtained the results of the p-value = 0.001. There is a relationship between the level of knowledge and the application of the model of early detection of high-risk pregnancies by posyandu cadres of Jaten Karanganyar.
9	<b>Susanti Pratamaningtyas, Ira</b>	His research used descriptive design and a pseudo-	The normality test results showed a p-value of 0.004 for the pretest and 0.000 for the posttest,

	<p><i>Titisari, (2022), Effect of Wellingbom 2.0 Application Use on Husband's Ability to Early Detect High-Risk Pregnancy</i></p> <p>experimental approach. The population is 100 people. The sample was 80 people using the <i>Incidental Sampling</i> technique with inclusion criteria, the husband of a pregnant woman who lives in the work area of the Sukorame Center Health Center and has an android-based smartphone. Analysis of normality test data, as well as statistical tests of pairs, matched Wilcoxon with SPSS 16.00. Respondents pretested and were given an application for one week, after which a posttest was carried out.</p>	<p>this shows the data were abnormally distributed. Analysis of non-parametric samples of the Wilcoxon 2-paired test showed a p-value of 0.000 <math>H_a</math> received, there was a significant change in the ability of respondents to perform early detection of high-risk pregnancies after using the wellingbom 2.0 application. Husbands should also be educated about high-risk pregnancies to raise their awareness of their wife's pregnancies. With the existence of the wellingbom 2.0 application, a husband has the knowledge and ability to early detect high-risk pregnancies better than before. The husband as the closest person to the mother also pays more attention to his wife's pregnancy, which will also have a positive impact on the health of the mother and baby</p>
10	<p><b>Sushma Rajbanshi, Mohd Noor Norhayati, Nik Hussain Nik Hazlina, (2020), High-Risk Pregnancies and Their Association with Severe Maternal Morbidity in Nepal: A Prospective Cohort Study</b></p> <p>The study used Malaysia's antenatal risk stratification approach, which applied four color codes, red and yellow indicating high-risk women, and green and white indicating low-risk women. The study sample involved 346 pregnant women between 28-32 weeks of pregnancy who were followed up after giving birth at Koshi Hospital in Nepal. Data analysis with multivariate confirmation logistic regression analysis and exploring the relationship between risk stratification and severe maternal morbidity.</p>	<p>The prevalence of high-risk pregnancies is 14.4%. Based on risk stratification by color code, 7.5% of women were categorized as red, 6.9% yellow, 72.0% green, and 13.6% white. Women with high-risk pregnancies are 4.2 times more likely to develop severe maternal morbidity conditions during childbirth. Although the percentage is smaller, the likelihood of severe maternal morbidity among high-risk pregnancies is higher than that of low-risk pregnancies. This risk assessment approach demonstrates the potential to predict severe maternal morbidity if routine screening is carried out in antenatal care services. Nonetheless, the unpredictable incidence of severe maternal morbidity also occurs in low-risk pregnant women, so all pregnant women need vigilance and quality obstetric care but high-risk pregnant women require special care and referrals.</p>

### Characteristic

Based on the results of the article analysis, it was obtained that all articles came from Asian countries, namely Indonesia and Nepal. The type of article obtained consists of 1 qualitative research and 9 cross-sectional studies.

Table 3  
Mapping or grouping themes

Theme	Subthemes	Article
Forms of Early Detection	1. Early Detection by Health Workers 2. Early Detection by Non-Health Workers	2, 3, 4, 5 & 7 1, 6, 8, 9 & 10

### Discussion

Based on 10 articles, the theme of early detection forms was obtained, which was reviewed by two sub-themes, namely early detection of high-risk pregnant women by health workers and early detection of high-risk pregnant women by non-health workers.

### *Early detection of high-risk pregnant women by health workers*

Early detection is an effort made to find out or not an abnormality. Early detection of high-risk pregnancies is related to activities to obtain information about pregnant women who are detected as high-risk populations. Article (1) explains that high-risk detection activities can be carried out through Antenatal Care activities, which are a national program, aimed at early detecting the occurrence of high risks to pregnancy and childbirth, as well as reducing maternal and infant mortality rates (Sinaci et al., 2020; Rakhshani et al., 2012). The activity was carried out by the KH Putra Midwifery Academy, in collaboration with the Paguyangan Health Center which was carried out by 5 female students, 1 doctor, 1 health analysis, 1 dentist, 3 midwives, and 4 cadres from puskesmas and 1 lecturer (Khoeroh, 2021). Article (2) explained that high-risk detection activities can be carried out through health services for pregnant women with Antenatal Care K4. Where pregnant women have received antenatal services according to the SOP at least four times as scheduled in each trimester. The quality of antenatal care services will affect the health of pregnant women and fetuses, maternity mothers and newborns and postpartum mothers. K4 pregnancy examination to avoid the risk of complications in pregnancy and childbirth (Kusyani et al., 2021). Article (3) explains that the high risk of pregnancy in pregnant women can be done by conducting regular pregnancy check-ups, obtaining counselling services or providing information on the detection of danger signs/high risks as early as possible, and providing information about efforts to maintain pregnancy and prepare for childbirth so that childbirth goes well, through a program from the Health Office, namely antenatal services, the use of MCH books, P4K stickers to suppress the occurrence of maternal and neonatal deaths (Karim & Sari, 2021a). Article (4) explains that early detection of high-risk pregnant women can be carried out by the mother and Child Health Surveillance Program (Gasurkes), including planning, organizing, encouraging and supervising (Morris et al., 2010; Alfirevic & Neilson, 1995). Planning is carried out by forming management functions properly, such as determining the number of target communities, target scope, and resources. Organizing is carried out by looking at the behavior of the mother, the individual's willingness to the object of health, the presence of family support, the availability of information about health, freedom of decision-making, and the situations that make them act early in detection. Encouraging is carried out by encouraging team members to be able to work together with cadres, village stakeholders, and other sectors efficiently and effectively in carrying out early detection (Herget-Rosenthal et al., 2004; Salawu, 1997). Supervision is carried out on mothers with high-risk pregnancies (HB Sag (+), cases of HIV) not getting proper treatment during childbirth. Pregnant women have no contact with health workers because they do not carry out pregnancy check-ups provided by puskesmas or other health facilities, or pregnant women living in elite housing (Pratiwi et al., 2019). Article (5) efforts made in the early detection of high-risk pregnant women are by providing information or knowledge, support of health workers and antenatal care examinations as early as possible to health workers. The health department provides counselling on early detection efforts of high-risk pregnancies and teaches and motivates pregnant women to be able to carry out early detection of high-risk pregnancies (Khadijah, 2018). Article (6) explains that early detection of high-risk pregnant women can be done through the health of pregnant women manifested through the provision of antenatal services at least 4 times during pregnancy, with a time distribution of at least 1 time in the first trimester (gestational age 0-12 weeks), at least 1 time in the second trimester (gestational age 12-24 weeks) and at least 2 times in the third trimester (gestational age 24 weeks of birth) (D'antoni et al., 2018).

### *Early detection of high-risk pregnant women by non-health workers*

A high-risk pregnancy is a pregnancy with conditions that can increase the risk of abnormalities or threats of danger to the fetus. In high-risk pregnancies, there are special measures against the mother and fetus. The health or even the life of the mother and fetus becomes threatened by danger due to pregnancy disorders so that with the early detection of high-risk pregnant women by non-health workers can help especially midwives in providing further services and actions (Tranquilli et al., 2014; Cheung & Lafayette, 2013). Article (1) explains that high-risk detection activities are carried out through non-health workers or independently, through efforts to empower healthy families, improve the family's ability to care for pregnant women, have efforts to maintain the health of pregnant women in the family, and involve other parties to increase family capacity, especially in the family's ability to early detect high-risk pregnancies and full support of other family members, as well as being able to carry out their role in increasing family capacity in early detection of high-risk pregnancies (Mardiyanti & Anggasari, 2021). Article (2) high-risk detection activities are carried out by non-health workers for several factors, namely, family members who are old enough to have maturity levels and family strength will be more mature in thinking and acting, age is one of the factors that affect a person's health behavior (Santi et al., 2021; Muthoharoh et al., 2022). Education is one of how the family receives knowledge about pregnancy care, high education and good knowledge will make the family

easily receptive to information and in this case, is to carry out early detection of high-risk pregnancies. (Mardiyanti et al., 2020). Article (3) high-risk detection activities are carried out by non-health workers through the role of the government by being carried out by puskesmas health cadres. The health cadres socialize and introduce high risks to pregnant women, by screening/early detection of various risk factors pro-actively for all pregnant women at the beginning of pregnancy, both by health and non-health workers, but trained in the community, for example, pregnant women, PKK mothers, coral cadets, families, and mothers of posyandu cadres Jaten Karanganyar. (Suwarnisih & Novitayanti, 2022). Article (4) high-risk detection activities carried out through non-health personnel can be carried out by the community itself, where midwives can provide direct guidance to husbands, provide knowledge about the role of husbands in the early detection of red flags in pregnancy including risk factors for pregnant women, knowledge of high-risk management involving the role of doctors, midwives and health workers appropriately to avoid complications for mothers and baby (Fatmawati et al., 2021). These roles can be grouped into 3 things, namely the presence of the husband during pregnancy, the commitment to the togetherness of the husband and wife, by providing encouragement, understanding, listening and empathizing, as well as the responsibility of the husband as a provider, caregiver and protector of the family (Tranquilli et al., 2013; Kalinski & Guss, 2002). The three roles of a husband to a pregnant wife have been helped by the existence of the Willingbom 2.0 Application which is a special application for husbands to have knowledge and ability to detect pregnancy high-risk (Pratamaningtyas & Titisari, 2022). Article (5) of high-risk detection activities is carried out by non-health workers through risk-oriented proximity using color codes (red, yellow, green, and white) adopted in Malaysia in 1989. Using this approach, a woman's risk status is assessed during an ANC visit, and the color code may change on each visit. The color-coded function is used as a managerial tool to determine the appropriate care provider and location of further ANC visits and childbirth. This approach is routinely practised in Malaysia and is included in the country's checklist guidelines for maternal and infant health care following a color-coded system. High-risk pregnancies refer to women with red and yellow codes, while women with green and white codes are considered low risk based on Malaysia's antenatal risk stratification. Risk stratification with color coding can be used and applied at any time during pregnancy, which will provide convenience to pregnant women (Rajbanshi et al., 2020).

## Conclusion

Based on the results of the article search, the conclusion was obtained: The study, which used research data from the Asian continent, produced two sub-themes, namely high-risk early detection of pregnant women by health workers and high-risk early detection of pregnant women by non-health energy found with using *scoping* reviews that fell of the 10 articles used. Early detection of pregnancy is at risk of high related to activities to obtain information about pregnant women who are detected as high-risk populations. The ha can only be detected by health workers scientifically. The health or even the life of the mother and fetus becomes threatened by danger due to pregnancy disorders so that with the early detection of high-risk pregnant women by non-health workers can help, especially midwives in providing services and further actions

## Suggestion

Based on the research conducted, the researcher submitted the following suggestions

- 1) The results of this study are expected to be a consideration for health workers in working using the *Scoping Review* method.
- 2) For subsequent researchers, it is interesting that if you want to research the early detection of high-risk pregnant women, it can be done on other continents besides the Asian continent.

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