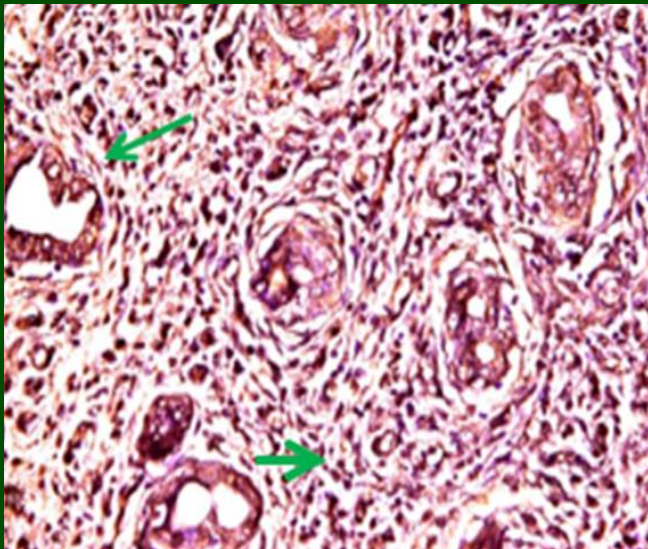


Majalah Obstetri & Ginekologi



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Immunohistochemistry of α -SMA in ovarian endometriosis

Original Articles

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JOURNAL OF OBSTETRICS & GYNECOLOGY SCIENCE

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AUTHOR GUIDELINES

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- Rose ME, Huerbin MB, Melick J, et al. Regulation of interstitial excitatory amino acid concentrations after cortical contusion injury. *Brain Res.* 2002;935(1-2):40-6.

2. Books

- Butler SW. *Secrets from the black bag.* London: The Royal College of General Practitioners; 2005.

Chapter of an edited book

- Meltzer PS, Kallioniemi A, Trent JM. Chromosome alterations in human solid tumors. In: Vogelstein B, Kinzler KW, editors. *The genetic basis of human cancer.* New York: McGraw-Hill; 2002. p. 93-113.

Translated book

- Luria AR. *The mind of a mnemonist.* Solotaroff L, translator. New York: Avon Books; 1969.

Electronic book/E-book

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Proceeding book

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For examples:

- Moir and Jessel maintain “that the sexes are interchangeable”.¹
- Numerous studies²⁰⁻²² have.....
- Smith's research²¹
- Smith and Jones²² research
- Up to 3 authors eg. Smith, Jones and McDonald reported that²³
- More than 3 authors eg. Smith et al²⁴ reports.

ORIGINAL ARTICLE

Correlation between mother's knowledge and husband's support for the success of the Lactational Amenorrhea Method (LAM)Wahyunnisa Indrarosiana¹, Ernawati^{2*} , Ivon Diah Wittiarika¹¹Midwifery Education Program, Faculty of Medicine, Universitas Airlangga, Surabaya, Indonesia.²Department of Obstetrics and Gynecology, Faculty of Medicine, Universitas Airlangga, Surabaya, Indonesia.**ABSTRACT**

Objectives: This study aimed to analyze the relationship between mother's knowledge and husband's support for the success of LAM contraception in Brengkok Village, Brondong District, Lamongan Regency, East Java, Indonesia.

Materials and Methods: This study was an analytic observational study with a sample of 46 mothers who gave exclusive breastfeeding to their babies who met the inclusion criteria. The research instrument used a questionnaire to determine the level of mother's knowledge and husband's support about exclusive breastfeeding. Spearman Rank Correlation Test was used for data analysis with a significance level of 0.05.

Results: More than 50% of the respondents (25 respondents) successfully used the LAM method to prevent pregnancy. Statistical test showed that there was a relationship between mother's knowledge and success of LAM contraception with p value of 0.000, with a correlation coefficient of 0.523. Meanwhile, husband's support was not related to the success of LAM contraception with p value of 0.461 with a correlation coefficient of 0.111.

Conclusion: Mother's knowledge is related to the success of LAM contraception, and there is no relationship between husband's support and the success of LAM contraception.

Keywords: mother's knowledge; husband's support; Lactational Amenorrhea Method (LAM); contraception; maternal health

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ABSTRAK

Tujuan: untuk menganalisis hubungan pengetahuan ibu dan dukungan suami terhadap keberhasilan kontrasepsi MAL di Desa Brengkok Kecamatan Brondong Kabupaten Lamongan Jawa Timur.

Bahan dan Metode: Penelitian ini adalah penelitian observasional analitik dengan sample 46 ibu yang memberikan ASI eksklusif untuk bayinya yang memenuhi kriteria inklusi. Instrumen penelitian menggunakan kuisioner untuk mengetahui tingkat pengetahuan ibu dan dukungan suami tentang ASI Eksklusif. Uji Korelasi Rank Spearman digunakan untuk analisis data dengan taraf signifikansi 0,05.

Hasil: Lebih dari 50% responden (25 responden) berhasil menggunakan metode MAL untuk mencegah kehamilan. Uji statistik menunjukkan ada hubungan antara pengetahuan ibu dengan keberhasilan kontrasepsi LAM dengan nilai p=0,000, dengan koefisien korelasi 0,523. Sedangkan dukungan suami tidak berhubungan dengan keberhasilan kontrasepsi LAM yang dengan nilai p=0,461 dengan koefisien korelasi sebesar 0,111.

Simpulan: Pengetahuan ibu berhubungan keberhasilan kontrasepsi LAM, dan tidak ada hubungan antara dukungan suami dengan keberhasilan kontrasepsi LAM.

Kata kunci: pengetahuan ibu; dukungan suami; Metode Amenore Laktasi (MAL); kontrasepsi; kesehatan ibu

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INTRODUCTION

Contraception is an attempt to determine the number of children and spacing of children as desired, by delaying or prevent pregnancy. Based on the method of implementation, there are two kinds of contraception methods, namely the permanent method or steady contraception to end fertility and prevent pregnancy permanently, as well as the temporary method or spacing to regulate the distance between pregnancies for several years.¹

The Lactational Amenorrhoea Method (LAM) is one of the natural contraception methods of postpartum women. LAM is often called natural family planning by relying exclusively on breastfeeding. Breast milk is only given to babies without other foods or drinks until 6 months. LAM can be used as a contraceptive if it fulfills several conditions, including mothers who give exclusive breastfeeding entirely for their baby, mothers who have not experienced menstruation, and babies less than 6 months old.² In pursuance to the World Health Organization or WHO, the effectiveness of this LAM contraception reaches 98% for mothers who breastfeed exclusively during the first 6 months postpartum and before menstruation after childbirth. LAM contraception can be used by women who want to avoid pregnancy and meet the following criteria: mothers who breastfeed exclusively, postpartum mothers and their babies are less than 6 months old, and the women who have not had their period after giving birth.³

Lawrance W. Green states that a person's behavior will be affected by 4 factors: predisposition factors, supporting factors, driving factors, and environmental factors.⁴ Knowledge is a predisposition factor that influences individual behavior, the definition of knowledge is a process of the addition of information to an individual after sensing an object which indirectly becomes an essential domain in shaping human behavior.⁵ The another driving factor that is important in influencing human behavior is the husband's support. The husband's support is all the efforts made by a husband to his wife to give attention, comfort, and self-confidence to help the wife deal with a problem and make a decision. This husband's support can be in the form of emotional, instrumental, appreciation, and information support.⁶

Lamongan Regency is one of the regencies located in East Java Province, Indonesia, with a fairly high population, reaching 1,179,059 people with a population density of 622 people/km², and with a population spread in Brondong District of 62,074 people.⁷ Based on data obtained from the practice place of midwives in Brengkok Village in May 2020, 20 people with

exclusive breastfeeding were found 6 (30%) of whom had a pregnancy with the distance from their previous births < 1 year, and 4 people (66.67%) were found not to choose using contraception after childbirth and only relied on exclusive breastfeeding for their babies, so that it can be considered unsuccessful in using of LAM contraception. Based on the results of research by Kurniawati, out of 52 mothers who had used LAM contraception, 7 of them failed to use LAM as a contraception method because of the mother's less knowledge about LAM contraception and the procedures exactly of breast-feeding.⁸

This study aimed for analyzing relationship between mother's knowledge and their husband' supports with the successful contraception of Lactational Amenorrhoea Method (LAM) for some mothers who gave exclusive breastfeeding for their babies in the Village of Brengkok, Sub-District Brondong of Lamongan Regency, East Java, Indonesia. The hypothesis in this study was that there was relationship between mother's knowledge and husband's support with the success of the Lactational Amenorrhoea Method (LAM) in mothers with exclusive breastfeeding.

MATERIALS AND METHODS

This was is conducted by using observational analytic method with cross-sectional approach. The population in this study was all mothers who gave exclusive breastfeeding for their babies in Posyandu at the Village of Brengkok, Sub-district Brondong, Lamongan Regency, East Java, Indonesia, in the period of July-December 2019. The samples was calculated using the formula for estimating a correlation coefficient and obtained result of as many as 46 respondents. The purposive sampling was the technique of sampling that used in this study based on the inclusion criteria obtained from the number of existing populations. The inclusion criteria that used in this study were mothers who gave breastfeeding exclusively, having baby aged 6 – 12 months, no menstruation for ≤ 6 months after giving birth, not using contraception other than LAM, stayed housemate with her husband and had active sexual relationships, as well as mothers who came at the time of the research and could communicate spoken or written. The exclusion criterion used was mothers who were not willing to become research respondents.

The first variables assumed to be the independent variables in this study were mother's knowledge and their husband's supports. The variable of mother's knowledge was defined as everything a mother knows about the exclusive breastfeeding and LAM contraception. This variable had an ordinal scale. The

instrument used as a measuring instrument for this variable was a questionnaire consisting of 10 questions. The assessment was divided into 3 categories of score, which was poor with 0%-56% correct answer, sufficient with 56%-75% correct answer, and good with 76%-100% correct answer. The variable of husband's supports was all the efforts which were given by the husband mentally, physically, and socially while accompanying the mother in conducting exclusive breastfeeding and using the LAM contraception. This variable had nominal scale by using research instrument of a questionnaire consisting of 16 questions with the assessment divided into 2 categories of scores that the if the husband was regarded as not providing support the score was 0-8 of correct answers, while if the husband was regarded as providing support the score was 9-16 of correct answers.

The second variable as the dependent variable was the successful contraception of Lactational Amenorrhea Method (LAM). This variable had nominal scale, measured using questionnaire with 3 statements measuring the success of LAM. There were 2 categories of assessment. LAM was successful if the answers obtained from the questionnaire met the determined parameters that the mother was not pregnant within 6 months after giving birth, with the condition that the mother had active sexual relations with her husband and the mother did not use other contraception. The mothers

were regarded as unsuccessful in using LAM contraception if there was one parameter not fulfilled.

This research was conducted in November 2019 – September 2020. Data processing was done by editing, coding, scoring, tabulating, data entry, and clearing. Data collected were analyzed using Spearman Rank correlation test with a level of significant $\alpha=0.05$ (degree of Confidence 95%) and using SPSS statistic computer program.

RESULTS AND DISCUSSION

The variable of mother's knowledge

The variable of a mother's knowledge was divided into 3 categories: poor, sufficient, and good. Based on data obtained from 46 respondents, most of them had sufficient knowledge of LAM contraception, consisting of 26 respondents (56.5%).

Table 1 shows that Spearman Rank correlation test statistical results obtained value of $P(0.000) < \alpha(0.05)$ with a correlation coefficient of 0.523 which means that there is a strong relationship between the mother's knowledge with the successful contraception of LAM with a positive direction of the relationship.

Table 1. Relationship between mother's knowledge and the successful contraception of LAM

The Mother's Knowledge	The successful contraception of LAM				Total		Correlation coefficient
	Not successful		Successful		Σ	%	
	n	%	N	%			
Poor	7	15.2	1	2.2	8	17.4	0.523
Sufficient	13	28.3	13	28.3	26	56.5	
Good	1	2.2	11	23.9	12	26.2	
					46	100	

Spearman's rho, $P = 0,000$ $\alpha = 0,05$

Table 2. Relationship between husband's supports and the successful contraception of LAM

Husband's Support	The successful contraception of LAM				Total		Correlation coefficient
	Not successful		Successful		Σ	%	
	N	%	N	%			
Not support	2	4.3	1	2.2	3	6.5	0.111
Support	19	41.3	24	52.2	43	93.5	
					46	100	

Spearman's rho, $P = 0.461$ $\alpha = 0.05$

The husband's supports

The husband's support variable was divided into 2 categories, support and not support. The husband supported the mother using LAM contraception if the score was between 9-16 correct answers. Of the 46 respondents, mostly had husbands who supported mothers in using LAM contraception, comprising 43 respondents (93.5%).

Table 2 shows that Spearman Rank correlation test statistical results had the value of $P(0.461) < \alpha(0.05)$ with a correlation coefficient of 0.111 indicating no relationship between their husband's supports with the successful contraception of LAM and shows frail relationship strength with a positive direction of the relationship.

The relationship between mother's knowledges and the successful contraception of LAM

The Spearman Rank correlation test results on mother's knowledge and the successful contraception of LAM indicated a relationship between mother's knowledge and the successful contraception of LAM in mothers with exclusive breastfeeding. A study by Pratiwi's obtained similar results,⁹ where there was a strong relationship between knowledge and attitudes about LAM in fertile age couples and stated that knowledge can affect one's perspective mood.

Respondents who showed correct information about LAM were able to accept the contraception positively. The research result of Darmayanti's also showed a relationship of the knowledge of pregnancy. The higher the knowledge of respondents about LAM, the higher the respondent's interest in using LAM.¹⁰

The relationship between mother's knowledge and the successful contraception of LAM in Posyandu in the Village of Brengkok had a correlation coefficient of 0.523, showing a strong relationship between the mother's knowledge with the success of LAM. A good understanding will help the success of LAM contraception. Data in the results of this study showed that 11 out of 12 respondents who had good knowledge could succeed in using LAM contraception.

Knowledge is defined as the addition of information to an individual after sensing an object that will affect the perception and intensity of attention to the object.⁵ In addition, knowledge is also a critical domain in shaping one's actions.¹¹ In the opinion of Lawrence W. Green, 3 factors influence health behavior, ie. the predisposition factors, supporting aspects, and driving factors. One of

the predisposition factors that influence an individual's health behavior is knowledge.⁴

The relationship between husband's supports and the successful contraception of LAM

The Spearman Rank correlation test results showed that husband's support had no correlation with the success of LAM. They had very weak relationship strength with a positive direction of the relationship. The result of Kurniawati's research showed different outcomes, where there was a relationship between husband's supports and the success rate of LAM. She found that if the husband supported the mother emotionally and instrumentally, by providing appreciation and information about LAM, the mother would feel comfortable and confident so that she could succeed in using LAM.⁸ The research result of Febriniwati's study also showed different results, that there was a relationship between the husband's support and the application of LAM.¹² The different results between this study and other studies resulted from several factors.

The role of husband's supports in the successful use of LAM contraception was encouraging. The majority of the respondents who succeeded in exclusive breastfeeding had husband's support with the success of LAM contraception as much as 52.2%, in this case, because the majority of the husbands had continuously provided support to the respondents in all aspects. In this study, the husband's support husbands with the lowest score was appreciation.

Husband's support is some efforts provided by the husband to provide attention, comfort, and strong self-confidence that can produce emotional benefits and support to the recipient's behaviour.¹³ Husband's support is a social source a mother needs in facing pressure and some problems. The support can be in the form of appreciation and interest for the wife, tolerance, and affectionate attitudes.¹⁴ According to Hardiningsih and Ngadiyono, family is a group of people who are closest to an individual and always give encouragement in any form and situation, and the husband is the closest family member who can be trusted to provide support to his wife.¹⁵

CONCLUSIONS

There was a relationship between mothers' knowledge and no relationship between husband's supports successful use of LAM's contraception in mothers with exclusive breastfeeding in the Village of Brengkok, Sub-District Brondon, Lamongan Regency, East Java, Indonesia. It is important to increase health workers'

awareness to provide more education to pregnant women and their spouses about exclusive breastfeeding and LAM contraception to increase successful exclusive breastfeeding and contraception.

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ORIGINAL ARTICLE

Development of auditory and palpatory educational media on pregnancy danger signs for visually impaired mothers

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ABSTRACT

Objectives: This study was a preliminary study (pilot project) on auditory and palpatory educational media of pregnancy danger signs for blind mothers. With the development of auditory and palpatory educational media, it was hoped that it helps blind mothers to understand pregnancy danger signs.

Materials and Methods: The design of the study was a research and development study adapted into two stages, namely the needs analysis and the product design stages.

Results: The results of the development of auditory and palpatory educational media included braille-lettered health education media and audio mp4 media which contained material on the danger signs of pregnancy in blind mothers.

Conclusion: Auditory and palpatory media can increase the knowledge in health education because of their function to help overcoming many problems of difficulties in understanding and facilitating the reception of information by blind mothers.

Keywords: pregnancy danger signs; visually impaired mothers; auditory educational media; palpatory; accessible

ABSTRAK

Tujuan: Penelitian ini merupakan studi pendahuluan (pilot project) tentang media edukasi auditori dan palpatori tanda-tanda bahaya kehamilan bagi ibu tunanetra. Dengan adanya pengembangan media edukasi auditori dan palpatori diharapkan dapat membantu ibu tunanetra dalam mengetahui tanda bahaya kehamilan.

Bahan dan Metode: Penelitian ini merupakan penelitian dan pengembangan diadaptasi menjadi dua tahapan yaitu analisis kebutuhan dan tahap desain produk.

Hasil: Hasil pengembangan media edukasi auditori dan palpatori meliputi media edukasi kesehatan berhuruf Braille dan media audio mp4 yang memuat materi tentang tanda-tanda bahaya kehamilan pada ibu tunanetra.

Simpulan: Media auditori dan palpatori dapat meningkatkan pengetahuan dalam pendidikan kesehatan karena fungsinya yang membantu mengatasi banyak permasalahan hambatan dalam pemahaman dan memudahkan penerimaan informasi oleh ibu tunanetra.

Kata kunci: tanda-tanda bahaya kehamilan, tunanetra, media edukasi auditori, palpatori; aksesibilitas

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INTRODUCTION

Visually impaired people rank the highest for people with disabilities in Indonesia. The number of these people reached 3.5 million in 2015.¹ According to International Agency for The Prevention of Blindness, two thirds of visually impaired people are women.¹

Women with disabilities, including those with visually impaired, are always treated discriminatively and stigmatized in certain conditions. Women with disabilities are also often victims, both in domestic and public spheres. Visually impaired women find it more difficult to access education, affordable health services, work opportunities, and experience isolation at a higher ratio than visually impaired men.¹⁻³

Homeyard's study (2016) found that women with disabilities rarely visit health facilities. This also happens when pregnant. Women with disabilities also very rarely make antenatal visits. This results in poor maternal and infant welfare and pregnancy outcomes when compared to the general population. They are also more likely to have premature and low birth weight babies.⁴

There is a stigma in the society that visually impaired women are unable to become mothers, even though visually impaired adult women also want to have children.⁵⁻⁶ This stigma causes visually impaired women to be reluctant to make antenatal visits when pregnant. In addition, health workers often do not have adequate competence to provide antenatal services to those women. Problems in communication when providing health education about pregnancy make the antenatal services not of quality.³⁻⁷

Midwives, as one of health professionals who are very close to women, should be able to answer these challenges. In social context, midwives must have skills in providing services to marginalized groups of women such as young mothers, women with disabilities, lesbian groups, and commercial sex workers. Midwives must have good communication skills so that they can build trust and good relationships with clients.⁸ From year to year, the number of women with disabilities who become mothers continues to increase. However, studies on their access to and experiences during pregnancy, delivery, and the puerperium are very rare.^{3,9}

A case study on 16 blind mothers conducted in 2019 found that 43.75% of informants had negative perception of the antenatal care they received during pregnancy. The informants also revealed that they had never been introduced to educational media that were easily accessible to visually impaired mothers. Visually

impaired mothers are still receiving MCH handbook from the midwife or community health center. However, the handbook does not provide any information to them because they cannot use the handbook due to their limitations.

Current MCH handbook is only a medium of communication between health workers regarding client pregnancy information. MCH handbook is available only in alphabet and not available in braille which is accessible to blind mothers. In fact, the MCH handbook also contains health information that is needed by mothers during pregnancy, childbirth, the puerperium and breastfeeding, as well as information related to the growth and development of infants, toddlers, and children.

The recommendation from the results of the author's investigation is the procurement of educational media that can be used by blind mothers independently without having to depend on others when using them. The educational media that are most likely to be developed are auditory (audio) and palpatory (Braille) educational media. This educational media is considered effective as a media for health education for clients with visual impairment or blindness. Therefore, researchers are interested in developing these educational media to be used by clients with visual impairments.

MATERIALS AND METHODS

This study had received ethical approval from the Research Ethics Commission, Faculty of Medicine, Andalas University, Padang, Indonesia, number 142/UN.16.2/KEP-FK/2020 on November 25, 2020. This study was a Research and Development (R & D) study. D). The development model used in this study was the model from Dick & Carey (2015)¹⁰ which consists of 10 stages. These stages in this study were limited to four because this study only created models/patterns of auditory and palpatory media for pregnancy danger signs for mothers with visual impairment. The stages in this research were: (1) Identifying Instructional Goals, (2) Conducting Instructional Analysis, (3) Identifying Entry Behaviors, and (4) Writing Performance Objectives. Based on the four steps in the R & D development stage, the Dick & Carey development stages¹⁰ were adapted into this development study into two steps, the needs analysis stage and the product design stage.

Needs Analysis Stage

This stage aimed to examine the purpose of the auditory and palpatory educational media that would be

developed, which were the auditory and palpatory educational media. Data in this development were collected through focused discussion techniques, observation, interviews, and literature studies. Data sources were taken from visually impaired mothers, practitioners, academics of special education, the Indonesian Blind Union, and books and journals on auditory and palpatory media, as well as danger signs of pregnancy and health disability, especially for mothers with visual impairment.

Product Design Stage

The results of the needs analysis determined the design of the media to be developed. Activities at the product design stage include: determining the components of auditory and palpatory educational media, and the concept of delivering and organizing material. This stage produced initial product design in the form of auditory and palpatory educational media on the danger signs of pregnancy for visually impaired mothers. The development procedure/step can be seen in Figure 1.

RESULTS AND DISCUSSION

The results of this study were formulated referring to the results of observations and interviews with visually impaired mothers, practitioners, academics of special education, and the Indonesian Blind Union. Women with visual impairment were also found to experience discrimination more often than visually impaired men. They find it more difficult to access affordable health services.^{1,2} In his study, Homeyard (2016) stated that women with disabilities rarely visit health facilities. This also happens when they are pregnant. Women with

disabilities also rarely have antenatal visits, resulting in poor maternal and infant well-being as well as poor pregnancy outcomes compared to general population. They are more likely to experience premature birth and low birth weight babies.^{4,11} This problem had prompted the authors to create auditory and palpatory educational media on the danger signs of pregnancy for visually impaired mothers as shown in Figure 2.

Figure 2 describes the development of media for auditory and palpatory education on danger signs of pregnancy for visually impaired mothers. The educational media is the one that can be used by those mothers independently without having to depend on others when using them.

The result of this study was a product in the form of educational media on danger signs of pregnancy for visually impaired mothers in Braille and audio mp4 media. The following is the explanation on the development of the resulted media in each stage according to Mulyatiningsih (2019).¹²

Define stage (defining)

The defining stage included facts and a series of needs in health education for visually impaired pregnant women. The development of this health education media was based on research recommendations in 2019 regarding the Perception and Experience of Antenatal Care Assessment for Blind Mothers in the City of Padang, Indonesia. The informant stated that they had never been introduced to educational media for visually impaired mothers, so the development of this media was urgent.

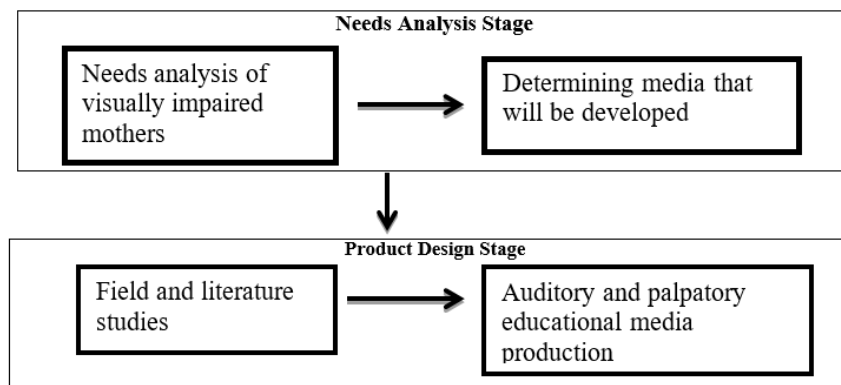


Figure 1. Procedures/steps for developing auditory and palpatory educational media on danger signs of pregnancy for visually impaired mothers.

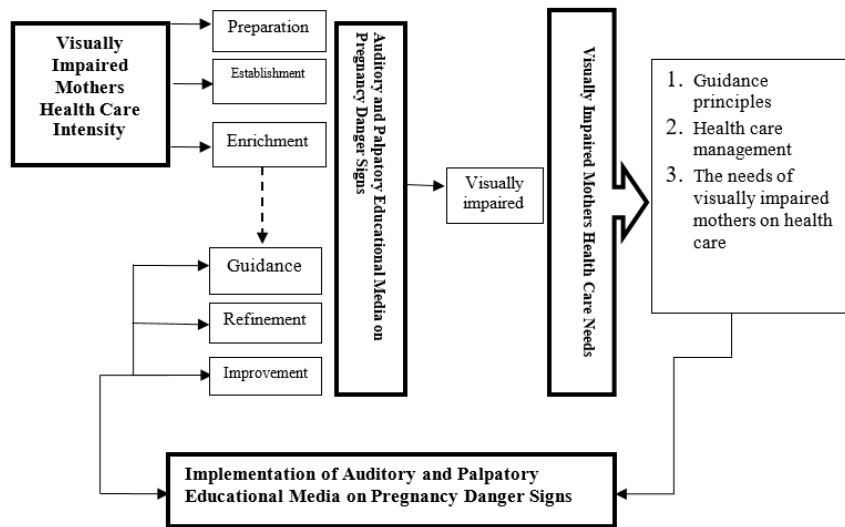


Figure 2. Prototype of auditory and palpatory education media on danger signs of pregnancy for visually impaired mothers

Design stage (designing)

At this stage the media design was generated. The steps were as follows: 1) Format selection. In this step, the educational media developed were in the form of palpatory media in Braille and audio media in mp4 format. 2) Initial media design. At this stage the educational materials were made based on MCH book published by Padang City Health Office in 2016. The materials were typed in docx format, then rewritten in Braille.

The audio media developed in mp4 format were created using Anchor application. The steps for creating audio media with Anchor application are as follows: 1) The Anchor application is installed on Android, 2) The Anchor application is opened and the (+) menu is selected then the "record" menu is selected, 3) After the recording process is complete, the "add background music" menu is selected and the desired background music is selected, 4) After the background music is embedded, the audio recording is saved.

Development stage (develop)

This development stage aimed to produce a final product after going through a validation and revision process. The validation results would be considered in the final product. The validation was carried out by validators of media feasibility experts, material experts, and audio experts. In this study, the authors involved 3

validators with an average result of 3.52 with a note: very valid.

Dissemination stage (field test)

After going through the validation stage, the developed media were tested on trial subjects that matched the criteria, ie. the respondents from previous research in 2019. The field test in this study was limited to a small scale, only 16 trial subjects. In the field test, the average score for the developed educational media was 19.06 with a percentage of 95.31%.

The validity test stated that the educational media about the danger signs of pregnancy for the visually impaired women that had been developed was valid. The validity test by material experts showed that the developed media reached 3.90 points with a very valid category. The material presented in educational media was considered very valid because it was in accordance with the needs of the pregnant women. The material presented was quoted from the 2016 handbook on Maternal and Child Health.

The validity test by the media experts showed that the developed media obtained 3.20 points in the valid category. The recommendation from the validator was the use of printed paper using special Braille paper so that it was not easily damaged and the retention of the legibility of the letters was longer. Language and audio experts gave 3.76 points with a very valid category on

the developed media. Linguists and audio experts recommended the use of a simpler language and in accordance with the user's level of education in the developed audio media.

The results of this study were in line with Mardiaty's study (2018) who found that both audio and Braille leaflets increased respondents' knowledge about how to maintain oral and dental hygiene in visually impaired children. This study proved that Braille and audio media were valid to be used as health education media.¹³

Another similar study by Dewi et al. in 2019 about the effectiveness of braille media in increasing knowledge of HIV/AIDS for the visually impaired people at PPSDN Pendowo Kudus, Indonesia, also found that braille media was effective and valid to be used as a medium for health education for the visually impaired.¹⁴

In the field test with a small group of 16 people, this study obtained an average score of 19.06 (95.3%). On the first question about "How useful is this educational media for the blinds?", all respondents (100%) answered that it was very useful. Furthermore, on the second question about "How effective is the use of this educational media in providing health information to pregnant women?", as many as 81.25% of respondents gave the answer: very effective. According to the respondents, so far they had never been introduced to such educational media regarding information on the danger signs of pregnancy. The use of Braille media helps the blind who do not have android to access health information, while the audio media makes it easier to access for the visually impaired people who are not very proficient at reading Braille.

In the next question items, "How is the legibility of the Braille printed on this educational media?" and "How is the clarity of the information conveyed through audio media?", as many as 62.5% of the respondents gave the response: very good. In the last question, "How is the material presented in this educational media?", all respondents (100%) stated that the material was presented very well.

CONCLUSION

Visually impaired people have the right to obtain information and communication in health. This can be met through health education. Health education with right media will increase knowledge, especially for visually impaired people who have limitations, so that Braille media is the right medium in increasing their knowledge.¹⁴

Media plays an important role in increasing knowledge in health education because of its function which helps to overcome many obstacles in understanding and facilitates the acceptance of information by the target, especially those with visual impairment. Braille allows the transfer of information to be more adequate for visually impaired people and provides an opportunity for them to respond to the information so that it can be obtained properly.¹⁵ The use of printed media with Braille for visually impaired people's education is to complement the orally-provided information.

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ORIGINAL ARTICLE

Relationship of pregnant mother's anxiety level with preparation for childbirth during Covid-19 pandemic in Surabaya, IndonesiaIrma Maya Puspita^{*ID}, Nova Elok Mardiyana^{ID}

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ABSTRACT

Objective: Corona Virus (Covid-19) currently occurring in Indonesia greatly affects the health of the entire community, both physically and psychologically. During the pandemic period, social restrictions are required in an effort to reduce the spread of the virus, especially for pregnant women who are vulnerable to infection because of their weak immune system. This causes increased maternal anxiety during pregnancy. Therefore, good preparation for childbirth is needed so that mothers receive sufficient information and receive safe services from exposure to viruses.

Materials and Methods: This research used an analytic survey method with cross-sectional approach by distributing closed questions on online questionnaires to pregnant women in Surabaya, Indonesia, through social media networks. The sampling technique used simple random sampling and managed to collect a sample of 90 persons.

Results: This research showed that pregnant women during the Covid-19 pandemic in Surabaya, Indonesia, experienced 13% mild anxiety, 24% moderate anxiety, and 63% severe anxiety. In regard with preparation for childbirth during the Covid-19 pandemic in Surabaya, 20% were unprepared and 80% ready.

Conclusion: There is no relationship between the anxiety experienced by pregnant women during the Covid-19 pandemic and their preparation for delivery. Pregnant women were worried that they can be exposed to the virus. Therefore, they can prepare for childbirth properly so that they can go through delivery safely and comfortably.

Keywords: Pregnancy; anxiety, preparation for childbirth; Covid-19; maternal health

ABSTRAK

Tujuan: Corona Virus (Covid-19) yang terjadi di Indonesia saat ini sangat berpengaruh pada kesehatan seluruh masyarakat baik secara fisik maupun psikis. Selama masa pandemi diharuskan melakukan pembatasan sosial sebagai upaya mengurangi penyebaran virus, terutama pada ibu hamil yang termasuk kelompok rentan terinfeksi karena daya tahan tubuh yang lemah. Hal tersebut menyebabkan meningkatnya rasa cemas ibu selama menjalani kehamilan. Oleh karena itu, diperlukan persiapan persalinan yang baik agar ibu mendapat informasi yang cukup dan mendapat pelayanan yang aman dari paparan virus.

Bahan dan Metode: Metode pada penelitian ini adalah survey analitik dengan pendekatan cross sectional. Pengambilan sampel dilakukan dengan menyebarkan pertanyaan tertutup pada kuisioner online kepada ibu hamil di Surabaya melalui jejaring media sosial dan berhasil mengumpulkan sampel sebanyak 90 orang.

Hasil: Penelitian ini menunjukkan bahwa pandemi Covid-19 menyebabkan ibu hamil di Surabaya mengalami kecemasan ringan 13%, kecemasan sedang 24%, kecemasan berat 63% dengan persiapan persalinan tidak siap sebanyak 20% dan siap 80%.

Simpulan: Tidak ada hubungan antara kecemasan yang dialami ibu hamil saat pandemi Covid-19 dengan persiapan persalinannya. Ibu hamil merasa khawatir akan terpapar virus sehingga mereka melakukan persiapan persalinan dengan baik supaya dapat menjalani persalinan dengan aman dan nyaman.

Kata kunci: Kehamilan; kecemasan; persiapan persalinan, Covid-19; kesehatan ibu

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INTRODUCTION

Childbirth is an event that can make a woman happy, because she has been waiting for almost 9 months for the birth of the baby she has conceived. However, some mothers feel afraid and anxious about the delivery process.¹ In preparing for childbirth, mothers must obtain sufficient information about the delivery process so as not to feel excessive fear and worry, especially during the Covid-19 pandemic. This pandemic is not only disturbing the physical health but also the psychological health, including those of pregnant women. The appearing psychological impact is not the same for each individual. The impact may be mild for some, but severe to others. Pregnant women may feel more anxious because they are worried about contracting the virus and the fear may interfere with the health of themselves and their fetuses.^{2,3}

Cases of corona virus diseases were found in Indonesia in March 2020 and up to the time of this study the cases were increasing. East Java was one of the provinces with the highest cumulative Covid-19 cases in Indonesia.⁴ The pandemic Covid-19 period requires the public to participate in breaking the transmission by implementing stringent health protocols, especially among vulnerable populations, including pregnant women. Vulnerable groups are groups of people who have low health conditions and low immunity. Therefore, they are vulnerable to being exposed to Covid-19.⁵

National and international studies showed the number of pregnant women who experienced anxiety were as much as 23% in Alberta, Canada, 15% in Germany and 49% in Pakistan.² The results of Hernani's research showed that 53.3% experienced anxiety in the face of childbirth.⁶ According to METER Survey data during the pandemic, Indonesian population experienced anxiety by 55% of the 3533 respondents and 58% experienced depression. This can lead to tension in marriage and affect greatly the health of the pregnant women.⁷

Activity restrictions for the entire community, especially pregnant women, are needed to reduce virus exposure. However, there are some things that cannot be postponed by pregnant women to continue doing activities outside, such as continuing to do pregnancy checks in the hospital. Pregnancy examination must continue to be carried out to ensure a healthy pregnancy condition and avoid complications by adhering to strict health protocols. When coming to the hospital, the mother must ensure that she always maintains cleanliness and avoids contact with new people. People always wear a mask, wash the hands regularly or carry

hand sanitizer and wear closed clothes.⁸ The frequency of visits by pregnant women to the hospital has also been reduced and more online or virtual consultations with midwives or obstetricians have been conducted. This method can be used by pregnant women and their families to be more comfortable and receive psychological support during pregnancy, especially for pregnant women who are approaching delivery.⁹

Delivery is a physiological event and experienced by all women that can make that process a good experience and sometimes bad. Unpleasant experiences are usually caused by physical and psychological problems that can make the mother feel guilty, anxious, panic, lose the ability to control emotions so that sexual desire decreases for fear of getting pregnant again.¹⁰

Preparation of giving a birth is one of the measures that can reduce maternal anxiety. Anxiety often appears at the time of delivery because the mother is afraid and worried about childbirth.¹¹ During the Covid-19 pandemic, the anxiety can increase that can be apart from facing the delivery process, mothers are also more worried about being infected with the Covid-19 virus. Therefore, it is necessary to prepare for childbirth to reduce anxiety so that the delivery process becomes safe and comfortable. This research aimed to determine the relationship between anxiety levels in pregnant women and preparation for childbirth during the Covid-19 pandemic in Surabaya, Indonesia.

MATERIALS AND METHODS

The method in this research was an analytical survey with a cross sectional approach. This was done by distributing closed-ended questions in an online questionnaire to pregnant women in Surabaya through social media networks. This research was carried out in April – May 2020. The sampling technique used was simple random sampling and obtained a sample of 90 persons.

The instruments used the HARS (Hamilton Anxiety Rating Scale) questionnaire to determine the level of anxiety of pregnant women and a questionnaire about the Childbirth Preparation and Complications Prevention Program (P4K) to determine the mother's preparation for delivery.

RESULTS AND DISCUSSION

Characteristics of research respondents included age, education, occupation, parity, and gestational age can be seen in [Table 1](#). Data of respondents of young

reproductive age was 13% (12 persons), healthy reproductive age was 82% (73 persons), old reproductive age was 5% (5 persons). The education of the pregnant women were elementary 7% (6 persons), intermediary 54% (49 persons) and higher education 39% (35 persons). Respondents' occupation were employed of 47% (43 persons) and 43% (47 persons) were unemployed. The parity of multigravida respondents was 58% (52 persons) and primigravida 42% (38 persons). In terms of gestational age, respondents in the first trimester were 22% (20 persons), in the second trimester 37% (33%), in the third trimester 41% (37 persons).

Table 1. Characteristics of the respondents

Characteristics	Frequency	Percentage (%)
Age		
Young reproductive	12	13
Healthy reproductive	73	82
Old reproductive	5	5
Education		
Elementary	6	7
Intermediary	49	54
High	35	39
Occupation		
Employed	43	47
Unemployed	47	43
Parity		
Multigravida	52	58
Primigravida	38	42
Gestational age		
Trimester I	20	22
Trimester II	33	37
Trimester III	37	41
Total	90	100

Table 2. Frequency distribution of pregnant women anxiety levels

Anxiety	Frequency	Presentation (%)
Mild Anxiety	12	13
Moderate Anxiety	22	24
Severe Anxiety	56	63
Total	90	100

Table 2 shows that during the pandemic the anxiety level of pregnant women was mild anxiety 13% (12 persons), moderate anxiety 24% (22 persons), and severe anxiety 63% (56 persons).

Table 3. Frequency distribution of childbirth

Preparation	Frequency	Presentation (%)
Not Ready	18	20
Ready	72	80
Total	90	100

Table 3 shows that preparation for delivery of pregnant women during the Covid-19 pandemic in Surabaya is classified as not ready as much as 20% (18 persons), 80% ready (72 persons).

Table 4. Data tabulation and analysis of the relationship between anxiety levels and preparation for giving a birth

Preparation of delivery	Anxiety levels						P value
	Mild		Moderate		Severe		
	n	%	n	%	n	%	
Not Ready	8	8.6	2	2.2	1	1.2	0.49
Ready	4	4.4	20	21.8	55	61.8	

Table 4 shows that the Fisher's exact statistical analysis revealed p value of $0.49 > 0.05$.

DISCUSSION

Anxiety level in pregnant women

Almost all pregnant women experienced moderate and severe levels of anxiety. According to Angesti¹², the diseases caused by the SARS-CoV-2 virus caused the pregnant women to experience more anxiety because there was no cure or vaccine for this virus (until this research was conducted). Therefore, they can be worried about contracting this disease and endanger their health and their future baby. The anxiety of pregnant women, especially during the third trimester affected greatly the preparation for childbirth.

The Covid-19 pandemic had resulted in restrictions on health services, including a reduction in prenatal care and classes for pregnant women.¹³ The condition also can trigger anxiety in pregnant women. Anxiety is a normal response to a threat or danger from the human experience, but it can interfere with mental health in everyday life if the response is excessive. During pregnancy, the level of anxiety will increase and if it is not handled properly, there is a risk of complications such as excessive nausea and vomiting, premature birth, low birth weight and impaired fetal growth.¹⁴

Mothers who are expecting their first child exhibit higher levels of anxiety than mothers who have given birth before. Most mothers have less understanding and information about pregnancy during their first pregnancy, which causes anxiety in primigravida, especially before birth. Anxiety can emerge as a result of the belief that childbirth is a frightening experience. Many accounts or personal experiences depict childbirth as frightening, especially when experiencing pains while giving birth. As a result, it may heighten the mother's worry.^{11,15,16}

Based on the research of Sahin and Kabakci¹⁷ Covid-19 pandemic has the potential to induce enormous anxiety and fear in pregnant women, which can lead to bad emotional outcomes. This occurs due to pregnant women's increased concern for their own and their fetus' health, a decreased schedule for antenatal care with health care providers, a lack of access to health information, and a loss of social interaction as a result of having to stay at home more.¹⁷

Preparation for delivery in pregnant women

This study found that 80% of pregnant women were ready to give birth during the Covid-19 pandemic. Based on the data on the characteristics of the respondents (parity), most respondents of 58% were multigravida, meaning that they had previous experience of giving birth. In addition, currently there are many CIE (Communication, Information, and Education) that can be provided online, do not require face-to-face contact, pregnant women can still consult with health workers or share childbirth experiences with others through electronic media. Therefore, they can help mothers in preparing childbirth properly. This was in accordance with Aggraini's research¹⁸ that there was an increase in knowledge and good behavior in pregnant women after receiving electronic CIE.

Recommendations from the Ministry of Health of the Republic of Indonesia¹⁹ during the Covid-19 pandemic, pregnancy examination at health service facilities are also limited by continuing to carry out health protocols, ie. wearing masks, washing hands, maintaining distance and making prior agreements with the health workers concerned. Pregnant women are advised to study the book on Maternal and Child Health (KIA). Filling out P4K stickers is also guided by health workers through communication tools. At the end of pregnancy, the mother should check her pregnancy to prepare for delivery. Pregnant women must also continue to apply a clean and healthy lifestyle.

Preparation for childbirth can be done from the beginning of the pregnancy which includes mother's knowledge about the estimated date of delivery, mother's physical condition, maternal risk factors, signs of giving a birth and completeness of delivery needs for mothers and prospective babies. One of the government's efforts in realizing safe delivery is the Delivery Planning and Complication Prevention Program or commonly known as P4K. This activity is carried out by midwives or health workers by involving the role of husbands, families and the community with P4K stickers which are affixed in front of pregnant women's homes.²⁰ Mothers were declared ready to face childbirth after filling out the P4K sticker because they

automatically knew the estimated time of delivery, and determined birth attendants, birth attendants, delivery places, transportation used when going to health care facilities, preparation for maternity savings and blood donations. Good preparation in giving a birth is expected to reduce the occurrence of complications during delivery.^{21,22}

The relationship between anxiety levels and childbirth preparation

Analysis of research data showed that the p value was $0.49 > 0.05$ or not significant. This research showed that there was no relationship between the level of anxiety of pregnant women and preparation for childbirth during the Covid-19 pandemic in Surabaya. This research showed that most pregnant women experienced severe anxiety levels (63%) and 80% were ready to give birth. The absence of a relationship may be caused by other variables not examined in this research, such as support from husbands, family and health workers in the form of emotional support, appreciation and information. The role of the family, especially the husband, is very important, which helps to reduce maternal anxiety in preparing for childbirth. The higher the husband's support given to pregnant women, the better the preparation for childbirth.²³⁻²⁵

According to Nurdianti²⁶ there is a relationship between age, knowledge and income with preparation of delivery in third trimester pregnant women. Data on the characteristics of the respondents in this research stated that most of the mothers were of young and healthy reproductive age, having secondary and higher education levels, and more working. Therefore, it was possible that these factors influenced the mother's readiness to face childbirth.

Preparations for maternity mothers to face childbirth must have been started since pregnancy, especially during the Covid-19 pandemic. There were many ways to prepare mothers to be ready for childbirth, including the provision information about pregnancy, preparation for delivery, and social support.

CONCLUSION

There was no relationship between the level of anxiety of pregnant women and preparation for childbirth during the Covid-19 pandemic in Surabaya, Indonesia. Pregnant women in Surabaya mostly experienced moderate and severe anxiety during Covid-19 pandemic but stated that they were ready to prepare for childbirth. Good and planned delivery preparation was expected to

help mothers in obtaining safe and comfortable services during the Covid-19 pandemic.

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ORIGINAL ARTICLE

Comparison of pain intensity, smooth muscle cells density, and α -smooth muscle actin expression in ovarian and peritoneal endometriosisSutrisno^{*}, Muhammad Nooryanto¹, Shella Widya Gani¹

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ABSTRACT

Objectives: to identify the role of smooth muscle through the analysis of smooth muscle cells density, expression of α -SMA, and pain intensity.

Materials and Methods: The study design was cross-sectional analytic observational. Study sample consisted of women with ovarian endometriosis and women with peritoneal endometriosis who underwent laparoscopy and laparotomy in Dr. Saiful Anwar Hospital and RSIA Melati Hospital, both in Malang, Indonesia, from January until December 2019. There were 16 samples: 8 samples of ovarian endometriosis and 8 samples of peritoneal endometriosis. Smooth muscle cell density was analyzed by comparing the number of smooth muscle cells with the total area of endometriosis tissue in one microscopical field. α -SMA expression was obtained by immunohistochemistry. The degree of pain was determined by filling the part 1 point 1-11 of EHP-30 questionnaire the day after the procedure. Data were analyzed with Independent T-test and Pearson's correlation test.

Results: Pain intensity, smooth muscle cells density, and α -SMA expression was higher in endometriosis patients compared to healthy individuals. Pain intensity, smooth muscle cells density, and α -SMA expression was lower in the ovarian endometriosis compared to peritoneal endometriosis.

Conclusion: There was a significant correlation between the expression of α -SMA, smooth muscle density, and pain intensity in endometriosis.

Keywords: Ovarian endometriosis; peritoneal endometriosis; α -SMA expression; smooth muscle cells density; pain intensity

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ABSTRAK

Tujuan: mengetahui peran otot polos melalui analisis densitas otot polos and ekspresi α -SMA terhadap derajat nyeri.

Bahan dan Metode: Studi ini merupakan studi observasional cross sectional analytic. Sampel adalah wanita dengan kista endometriosis dan wanita dengan peritoneal endometriosis yang menjalani laparoskopi dan laparotomi di RSUD Saiful Anwar dan RSIA Melati, Malang, Indonesia, pada bulan Januari – Desember 2019. Didapatkan 16 sampel dengan 8 sampel berasal dari pasien kista endometriosis dan 8 lainnya berasal dari pasien peritoneal endometriosis. Densitas otot polos dianalisis dengan membandingkan jumlah otot polos dengan total area jaringan endometriosis pada satu lapang pandang. Ekspresi α -SMA dianalisis menggunakan imunohistokimia. Derajat nyeri didapatkan menggunakan kuisioner EHP-30 bagian 1 poin 1-11 satu hari setelah prosedur. Analisis data menggunakan Uji T independen dan korelasi Pearson.

Hasil: Derajat nyeri; densitas otot polos, dan ekspresi α -SMA yang lebih tinggi pada pasien endometriosis dibandingkan dengan individu sehat. Derajat nyeri, densitas otot polos, dan ekspresi α -SMA didapatkan lebih rendah pada kista endometriosis dibandingkan dengan peritoneal endometriosis.

Simpulan: Terdapat korelasi yang signifikan dari ekspresi α -SMA, densitas otot polos dengan derajat nyeri pada endometriosis

Kata kunci: Kista endometriosis; peritoneal endometriosis; ekspresi α -SMA; densitas otot polos; derajat nyeri

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INTRODUCTION

Endometriosis is a gynecological pathology when there is an implantation of abnormal tissues that resemble endometrium outside the uterus that induce chronic inflammation.¹ Implantation most often found in ovarium, tuba fallopii, bladder, rectosigmoid colon, and myometrium of the uterus. Endometriosis known as the cause of infertility that stil could not be resolved until now.²

Endometriosis found more often in women with reproductive age. A study conducted by Surrey et al found that the mean age of endometriosis case in American is 36 years.² The prevalence of endometriosis in fertile women is 0,5-5% while in unfertile women is 25-40%.³

The pathogenesis of endometriosis is still controversial however there are 3 widely accepted theories which are retrograde menstruation, coelomic metaplasia, and endometriosis induction. There are a distinct prevalence of retrograde menstruation and endometriosis. This indicate that there are many other factors that also related to the pathogenesis of endometriosis that include specific molecular abnormalities or defect in immunity.⁴

Pain, as one of the clinical finding in endometriosis, is a multifactorial manifestation. Inflammatory response known to differ pain.⁴ Smooth muscles contraction in the endometriotic lesion could also produce pain by stimulating the nociceptor. Smooth muscles was found in all endometriosis type (ovarian, peritoneal, and deep infiltrating).⁵

Hyperplasia and hypertrophy of smooth muscles in endometriotic lesion consistently show expression of α -smooth muscle actin (α -SMA). Increase of the number and density of smooth muscles accompanied by contractility of the muscles known to be related to the induction of pain in endometriosis.⁶

Role of smooth muscles in the presentation of pain lead to an analysis to differentiate the density of smooth muscles also the expression of α -SMA in endometriotic lesion. The relation of smooth muscle and α -SMA expression with the pain intensity also being observed. This study was conducted in the Physiology Laboratory of Brawijaya Medical Faculty in the year of 2020.

MATERIALS AND METHODS

This study was conducted with cross sectional analytic observational design. The study sample consist of women with ovarian endometriosis and women with

peritoneal endometriosis that undergo laparoscopy and laparotomy in RSUD Dr. Saiful Anwar, Malang, Indonesia and RSIA Melati Malang, Indonesia, within January until December of 2019. According to the formula of study sample with two independent variables, the sample number needed are 16 : 8 samples of ovarian endometriosis and 8 samples of peritoneal endometriosis.

The smooth muscles density in endometriosis tissue was done by making a comparisson of smooth muscles number with the total area of endometriosis tissue for each microscopical field with 400x magnification. The smooth muscle density with actin positive in 10 microscopical field also being calculated. α -SMA expression was identified by calculating the percentage of area that express the α -SMA using immunohistochemistry and the analysis was done by Image J software. The pain intensity was observed using Endometriosis Health Profile Questionnaire (EHP-30) part 1 point 1-11 one day after the procedure.

Inclusion and exclusion criteria

Inclusion criteria: women with endometriotic lesion (ovarian or peritoneal) age 18-49 years old, agreed to the procedure of laparoscopic and laparotomy, not having any hormonal therapy in the past 3 months. Exclusion criteria: women with endometriosis that also has degenerative problems, endocrine problems, contra-indicated to the procedure (bowel obstruction, ileus, peritonitis, intraperitoneal hemorrhage, and cardio-respiration problems), pregnant.

Data analysis

Data was analyzed using the SPSS. Normality test was done by Shapiro Wilk and Independent T test for the comparisional study. The relation of two variables was analyzed by Pearson correlation.

RESULTS AND DISCUSSION

The sample characteristic of this study was shown on [Table 1](#).

Tabel 1. Sample characteristics

Characteristic	Group (Mean \pm SD)		p-value
	Ovarian (n = 8)	Peritoneal (n = 8)	
Age (years)	31.75 \pm 3.15	36.63 \pm 6.05	0.063

According to [Table 1](#), the mean age of the ovarian endometriosis sample is 31.75 \pm 3.15 years old and for

the peritoneal endometriosis is 36.63 ± 6.05 with $p=0.063$. P-value greater than 0.05 shows there are no significant difference in the age of the sample in both groups.

Data collected from normality test using Saphiro-Wilk, was shown on [Table 2](#).

Table 2. Result of normality test

Variable	Saphiro-Wilk Test Result	
	Ovarian (n = 8)	Peritoneal (n = 8)
α -SMA Expression	0.839 (p = 0.073)	0.973 (p = 0.917)
Smooth Muscle Cells Density	0.908 (p = 0.340)	0.848 (p = 0.091)
Pain Intensity	0.869 (p = 0.146)	0.906 (p = 0.327)

Corresponding to the normality test result shown in [Table 2](#), the comparative study of α -SMA expression, smooth muscle cells density, and pain intensity could be done using the independent T-test. According to observation done in one healthy individual, the pain intensity obtained is 1.82. The comparison of pain intensity in endometriosis patient and healthy individual was shown in [Table 3](#).

Table 3. Comparison of pain intensity in endometriosis patient and healthy individual

Group	Mean \pm SD	Healthy	p-value
Ovarian	31.84 ± 19.33	1.82	0.003
Peritoneal	59.38 ± 5.22		0.000

According to [Table 3](#), pain intensity in ovarian endometriosis is 31.84 ± 19.33 while the intensity in peritoneal endometriosis is 59.38 ± 5.22 . If we compare the result with pain intensity in the healthy individual (1.82), the p-value is less than 0.05 in both groups which indicate that there is a significant increase of pain intensity in the endometriosis patient compared to the healthy individuals.

Then the pain intensity in the ovarian and peritoneal endometriosis patient was compared using the Independent T-test. [Figure 1](#) shows the comparison of pain intensity in the two groups of endometriosis that shows a lower pain intensity in ovarian endometriosis patient compared to the peritoneal endometriosis patient ($p = 0.002$).



Figure 1. Pain intensity of ovarian endometriosis and peritoneal endometriosis

Observation of smooth muscle cells density in one healthy individual shows a result of 7,3. The comparison of smooth muscle cells density in the endometriosis patient and healthy individual was shown in [Table 4](#).

Table 4. Comparison of smooth muscle cells density in endometriosis patient and healthy individual

Group	Mean \pm SD	Healthy	p-value
Ovarian	44.05 ± 3.76	7.3	0.000
Peritoneal	50.01 ± 2.87		0.000

According to [Table 4](#), the mean density of smooth muscle cells in ovarian endometriosis is $44.05 \pm 3,76$ while in the peritoneal endometriosis is 50.01 ± 2.87 . Comparing the result with healthy individual (7.3) we obtained $p<0.05$ that indicate there is a significant increase in the density of smooth muscle cells in endometriosis.

Then we compare the smooth muscle cells density in the two groups of endometriosis patient using Independent T-test. [Figure 2](#) shows the comparison of smooth muscle cells density in ovarian and peritoneal endometriosis. The result shows that the mean density in ovarian endometriosis is lower than the peritoneal endometriosis ($p = 0.003$).

Observation of α -SMA in one healthy shows an expression of 1.51%. The comparison of α -SMA expression in endometriosis patient and healthy individual was shown in [Table 5](#). According to [Table 5](#), the mean expression of α -SMA in the ovarian endometriosis is $20.49 \pm 7.65\%$ while in the peritoneal endometriosis is $64.19 \pm 9.4\%$. If the result is being compared with the α -SMA expression in healthy individual (1.51%) we obtain $p<0.05$ that implivate the the increase of α -SMA expression in both endometriosis group is statistically significant.

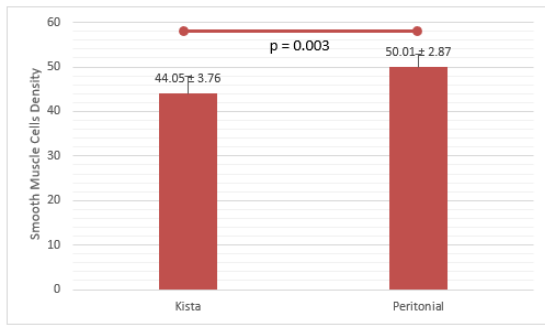


Figure 2. Smooth muscle cells density in ovarian endometriosis and peritoneal endometriosis.

Table 5. Comparison of α -SMA expression in endometriosis patient and healthy individual

.Group	Mean \pm SD	Healthy	p-value
Ovarian	20.49 \pm 7.65	1.51	0.000
Peritoneal	64.19 \pm 9.4		0.000

In the aim of knowing the difference of α -SMA expression in the ovarian and peritoneal endometriosis, we did comparative study using the Independent T-test. Figure 3 shows the comparison of α -SMA expression in ovarian and peritoneal endometriosis. The mean expression of ovarian endometriosis is lower than the peritoneal endometriosis with p-value of 0,000.

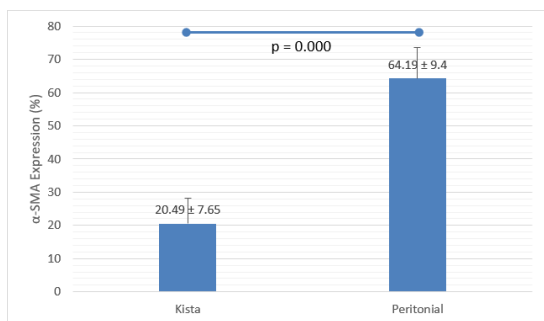


Figure 3. α -SMA expression in ovarian endometriosis and peritoneal endometriosis

To know the relation of α -SMA expression, smooth muscle cells density, and pain intensity, we did Pearson correlation test. The result was shown in Table 6. According to Table 6, the correlation coefficient of α -SMA expression and smooth muscle cells density is 0.640 with p=0.008. P-value less than 0.05 shows that there are a significant correlation between α -SMA

expression and smooth muscle cells density. Correlation coefficient of 0.640 shows that there is a strong correlation. The positive number shows that the correlation between the variables is positive so in this case, when there is an increase in the expression of α -SMA, the smooth muscle cells density will also increase.

Table 6. Correlation test result of α -sma expression, smooth muscle cells density, and pain intensity

Relation	Correlation	p-value	Implication
α -SMA Expression with Smooth Muscle Cells Density	0.640	0.008	Significant
α -SMA Expression with Pain Intensity	0.646	0.007	Significant
Smooth Muscle Cells Density with Pain Intensity	0.472	0.065	Not Significant

In the correlation test between α -SMA expression and the pain intensity in Table 6, the correlation coefficient is 0.646 with p=0.007. The result indicate that there are a strong correlation between the α -SMA expression and pain intensity.

The correlation between smooth muscle cells density and pain intensity (Table 6) shows correlation coefficient of 0.472 with p=0.065. P-value greater than 0.05 shows there are no significant correlation with smooth muscle cells density and pain intensity. The relation of α -SMA expression, smooth muscle cells density, and pain intensity in each group of endometriosis was also being conducted. The relation of all variables was analyze using Pearson correlation test. The result of correlation test in the ovarian endometriosis sample was shown in Table 7.

Table 7. The result of correlation test between α -SMA expression, smooth muscle cells density, and pain intensity in ovarian endometriosis sample

Relation	Correlation	p-value	Implication
α -SMA Expression and Smooth Muscle Cells Density	-0.280	0.502	Not Significant
α -SMA Expression and Pain Intensity	-0.264	0.527	Not Significant
Smooth Muscle Cells Density and Pain Intensity	-0.031	0.942	Not Significant

According to Table 7, in ovarian endometriosis sample the relation of α -SMA expression with the smooth muscle cells density has a correlation coefficient of -

0.280 with p-value of 0.502. P-value greater than 0.05 shows there are no significant correlation in the expression of α -SMA with smooth muscle cells density.

In the correlation test of α -SMA expression with pain intensity in the ovarian endometriosis, the correlation coefficient is -0.264 with $p=0.527$ (Table 7). $P>0.05$ indicate that there are no significant correlation between α -SMA and pain intensity.

The correlation test result of smooth muscle cells density and pain intensity (Table 7) shows a correlation coefficient of -0.031 with $p=0.942$. $P>0.05$ indicate that there are no significant correlation between smooth muscle cells density and pain intensity in the ovarian endometriosis sample.

The identical test was done with peritoneal endometriosis sample to identify the relation of α -SMA expression, smooth muscle cells density, and pain intensity. The correlation test result of the 3 variables in peritoneal endometriosis sample was shown in Table 8.

Table 8. The result of correlation test between α -SMA expression, smooth muscle cells density, and pain intensity in peritoneal endometriosis sample

Relation	Correlation	p-value	Implication
α -SMA Expression and Smooth Muscle Cells Density	0.238	0.571	Not Significant
α -SMA Expression and Pain Intensity	0.167	0.693	Not Significant
Smooth Muscle Cells Density and Pain Intensity	-0.165	0.696	Not Significant

According to Table 8, in the peritoneal endometriosis sample the relation between α -SMA expression and the smooth muscle cells density shows a correlation coefficient of 0.238 with $p=0.571$. P-value greater than 0.05 shows there are no significant correlation between the expression of α -SMA with the smooth muscle cells density.

In the correlation test result of the α -SMA expression with pain intensity in peritoneal endometriosis as shown in Table 8, the correlation coefficient is 0.167 with $p=0.693$. $P>0.05$ shows there are no significant correlation between the expression of α -SMA with pain intensity.

Correlation test between smooth muscle cells density and the pain intensity (result shown in Table 8), the correlation coefficient is -0.165 with $p=0.696$. P-value greater than 0.05 shows there are no significant

correlation between the smooth muscle cells density and the pain intensity in the peritoneal endometriosis sample.

Study sample characteristic analysis

Statistically, there are no significant difference in the age population between ovarian and peritoneal endometriosis so the characteristic between the two group is identical. Ashrafi (2016) showed a difference in the age of infertile women with and without endometriosis (32.4 ± 4.9 vs 31.4 ± 5.2 ; $p=0.02$).⁷ In the study conducted by Khan (2012), from the total of 2988 laparoscopic procedure, the endometrioma cyst was found in women age 20-29 years old (31.4%) or 30-39 (51.7%). Both of the groups are still considered as premenopausal age.⁸

Analysis of pain intensity comparison in endometriosis patient

Analysis of pain intensity comparison in patient with endometriosis and healthy individual

In the last decade, the theory of a novel nerve fibers that induce the pain manifestation in endometriosis is widely accepted. Anaf (2000), found that in deep infiltrating endometriosis that has the highest pain intensity, the nerve fibers are denser in the location of endometriotic lesion. In the patient with more intense pain, endometriosis could invade the neuron (intraneural invasion) or the area adjacent to the nerve fiber (perineural invasion).^{9,10}

Analysis of pain intensity comparison in patient with ovarian endometriosis and peritoneal endometriosis

Chiantera et al (2017) found that in endometriosis patient, the patient could feel visceral and somatic pain concomitantly and it depends on the location of the endometriosis. Visceral pain is triggered by the involvement of other organs (uterus, bladder, bowel). Meanwhile the somatic pain will be felt if the endometriosis located in the pelvic wall, muscle, or joint.¹¹

Anatomically, peritoneum is a structure that is innervated by a bunch of nerve fibers. Unlike peritoneum, ovary is relatively less sensitive to pain.¹¹ This founding lead to some hypothesis formulation that include: a. The pain intensity of endometriosis is related to the depth of the infiltration.¹² b. The pain intensity of endometriosis is affected by the anatomical location of the implantation. The endometriosis location could be stratified based on the intensity of the pain: uterosacral ligament, vagina, bladder, bowel, and urether (starting

from the mildest to the most intense pain).¹² c. In the case of severe endometriosis with ovarian cyst and deep infiltration, pain could be generated from the hip distortion and wide adhesion in the hip.¹² d. Factor contributing to pain generation is multifactorial, including: anatomical distortion of the hip, hip adhesion, cyclical bleeding inside the lesion, pelvic inflammation, pain generator substances in the peritoneal fluid, hip nerves irritation and infiltration, neurogenesis, and neuropathy.¹²

Analysis of smooth muscle cells density comparison in endometriosis patient

Analysis of smooth muscle cells density in patient with endometriosis and healthy individual

Widely accepted theory of endometriosis is the retrograde menstruation. Retrograde menstruation is a condition when there is an endometrial tissue reflux to the tuba fallopia. The tissue then implanted to the peritoneal surface or pelvic organ and develop according to the hormonal cycle. Other theory that is also widely accepted is the metaplastic theory where the peritoneal cell is differentiated into functional endometrial tissue. The induction theory is a combination of retrograde menstruation and metaplastic theory. Endometrium secreted a substance that differentiate the undifferentiated mesenchyme into endometrial tissue.¹³

Anaf et al (2000) discovered that ovarium, uterosacral, and rectovaginal endometrium significantly comprised of more smooth muscle cells compared to the unaffected location ($p < 0.001$).⁹ This finding is coherent with our study. In the normal ovarium, the smooth muscle cells that were stained by actin commonly located in the stromal while in the ovarian endometriosis the stained cells were located in the cortex. This finding proved the hypothesis that ovarian endometriosis was a product of ovarian mesothelium metaplasia that was invaginated to the ovarian cortex.

The result of hematoxylin eosin staining of the ovarian and peritoneal endometriosis was shown in [Figure 4](#). Our study shows a significant difference of smooth muscle cells density in endometriosis patient compared to the patient without endometriosis. Smooth muscle cells is more prevalent in the endometriotic lesion compared to the normal adjacent tissue or the eutopic endometrium. The smooth muscle cells found in black peritoneal lesion is denser than in red lesion and it shows the metaplastic phenomenon in the pathogenesis of endometriotic lesion.⁹

Analysis of smooth muscle cells density in patient with ovarian endometriosis and peritoneal endometriosis

Histologically, in deep endometriotic lesion the endometrium-like tissue is minimal. The main component of nodular lesion is not endometrial tissue but the fibromuscular tissue with extension to the gland and stroma.¹⁴

Zhang et al., stated that endometriotic lesion is basically a structure that undergo repetitive process of trauma and healing (ReTIAR) that eventually resulted in fibrosis because of thrombocyte aggregation.¹⁵ A similar theory of thrombocyte activation stated that it promote the process of epithelial-to-mesenchymal transition/EMT, fibroblast-to-myofibroblast transition/FMT, and smooth muscle differentiation in the ovarian and deep infiltrating endometriosis.^{16,17}

Metaplasia of the smooth muscle cells is a response of injury. Kim et al., stated that their case is the first smooth muscle nodular metaplasia in the peritoneal endometriosis. Factor provoking the transformation in the metaplastic smooth muscle remains unknown.¹⁸

Smooth muscle cells found in peritoneal endometriosis could be from the proliferation of smooth muscle cells in endometriotic foci or endometriosis stroma that undergo metaplasia to smooth muscle. Multipotent stem cell found in the endometrium stroma could also related to the generation of smooth muscle.¹⁹

A significant difference of smooth muscle cells in ovarian, uterosacral, and uterovaginal endometriosis remains unexplained. The infiltration rate was known to be dependent to the plasma concentration of sex steroid while in ovarian cyst there could be a possibility of relation between microenvironment and steroid concentration.⁹

Our study found that the density of smooth muscle cells in ovarian endometriosis is less than peritoneal endometriosis. Statistically, the difference in both group is significant.

Matsuzaki et al., that identify the EMT process using molecular marker in all form of endometriosis, found that the expression of epithelial marker (cytokeratin) is lower than mesenchymal marker (vimentin) in the red peritoneal lesion and ovarian endometriosis compared to menstrual endometrium. This finding shows that endometrium epithelial cell might undergo EMT process after the implantation of endometrium to the peritoneum, resulting in red lesion that is more invasive.²⁰ In contrast, the black peritoneal lesion and deep infiltrating endometriosis shows more expression of epithelial marker (E cadherin) compared to the menstrual endometrium and red lesion. This finding

indicate that there is an EMT-like process in the evolution of deep infiltrating endometriosis.^{21,22}

Analysis of α -SMA expression in endometriosis patient

Analysis of α -SMA expression in endometriosis patient and healthy individual

Our study shows a significant increase of α -SMA expression in endometriosis patient. α -SMA is the main component of smooth muscle cells and the antibody anti α -SMA could be use in the detection of smooth muscle cells metaplasia due to its specificity to smooth muscle cells.⁵ In the normal endometrial tissue, we can found staining of α -SMA but in fact it is the staining of myometrium and vascular smooth muscle.²³

Zhang et al (2016) stated that platelet has a key role in the development of endometriosis because in fact endometriosis is a tissue that undergo repetitive trauma and healing process. Endometriosis was stimulated by platelet-derived transforming growth factor β 1/TGF- β 1 that lead to activation of TGF- β 1/Smad3 signalling pathway and also EMT and FMT process. This resulted in increase of cellular contractility, collagen production, smooth muscle metaplasia/SMM, and eventually lead to fibrosis. As endometriosis progress, TGF- β 1 and Smad3 increase and the number of α -SMA positive myofibroblast and differentiating smooth muscle cells in stroma is also increase. This finding is harmonious with our study finding.¹⁶

Analysis of α -SMA expression in ovarian endometriosis and peritoneal endometriosis

An experimental study in rat model shows that signalling pathway of STAT3 is a strong generator of EMT, FMT, and SMM in the epithelial and stromal endometriotic lesion that leads to increase of contractility, collagen deposit, and fibrosis.^{24,25} Sub-coelomic mesenchymal smooth muscle cell was identified in the biopsy of endometrial peritoneal lesion,

mostly from the uterosacral ligament and the lateral wall of hip meanwhile biopsy result without smooth muscle mostly found in pararectal or rectal serous. Neo-vascularization was also observed.²⁶

Analysis of the correlation between α -sma expression and smooth muscle cells density

α -SMA was found in the smooth muscle cells, pericyte, myoepithel, and normal endometrial stroma. In endometrium, α -SMA positive stromal cells (SMA-SC) and α -SMA expression was regulated by estrogen.⁵

Odagiri et al found that the interstitial in the endometrial lesion from human and rat model is denser than control. In the interstitial fibrotic area, positive immunostaining for α -SMA and Neural cell adhesion molecule (NCAM) was also found while there were none in the normal endometrium. Staining of inflammatory cell by anti-NGF in the endometriotic interstitium was also found. This finding indicate that the main pathological process of endometriosis is the smooth muscle metaplasia and induction of nerve by the inflammatory cells like macrophage and lymphocyte.²³

Analysis of the correlation between α -sma expression and pain intensity

Other mechanisms that could generate endometriotic pain includes cytokine release by macrophage that induce smooth muscle metaplasia and nerve fiber. Smooth muscle contraction and also hyperalgesia of sensoric fibers could also resulted in endometriotic lesion.²³

Study conducted in other organs found that there are a relation between α -SMA expression and pain intensity due to the smooth muscle contraction. In the in vivo and in vitro study conducted by Alarcon-Martinez, α -SMA was found to have a role in brain and retinal capillary contraction by alternating between contraction and relaxation.²⁶

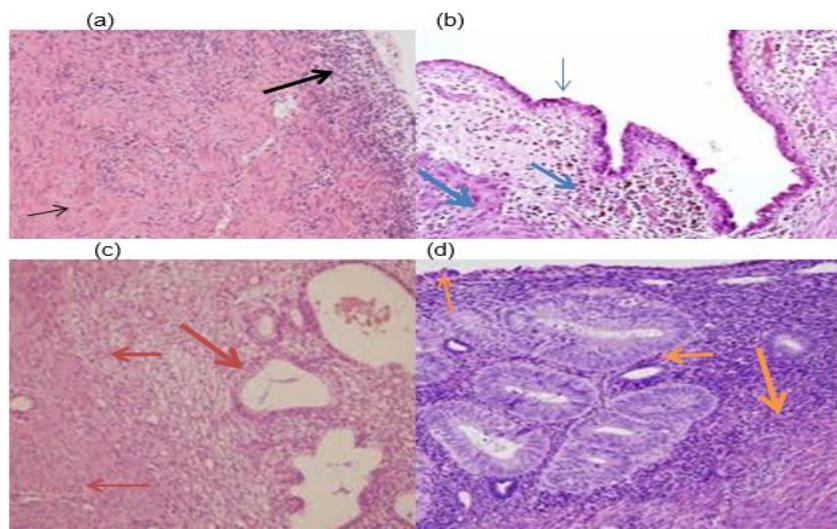


Figure 4. Hematoxylin Eosin staining in the negative control, peritoneal endometriosis, and ovarian endometriosis. (a) Peritoneum without endometriosis (thin black arrow: peritoneal fibrous stroma; thick black arrow: chronic inflammatory with lymphocyte in the margin) (b) Cyst without endometriosis (thin blue arrow: cuboid epithelial; medium blue arrow: loose connective tissue with hemosiderophage; thick blue arrow: stroma of fibrous tissue) (c) Peritoneal endometriosis (thin red arrow: peritoneal fibrous stroma; medium red arrow: smooth muscle cell; thick red arrow: gland with endometrial stroma) (d) Ovarian endometriosis (thin orange arrow: cyst wall with cuboid epithelial; medium orange arrow: endometrial stroma and gland; thick orange arrow: smooth muscle cell). Using Hematoxylin Eosin in 100x magnification.

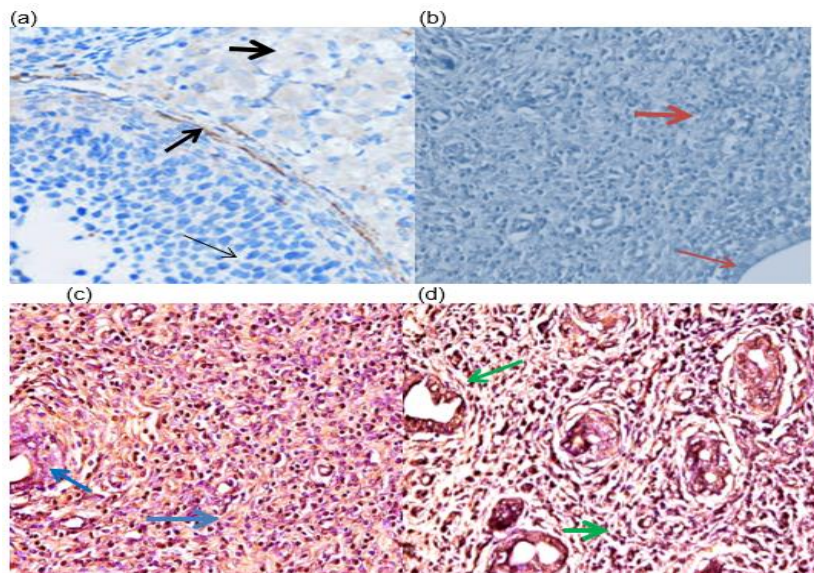


Figure 5. Immunohistochemistry of α -SMA in the negative control, peritoneal endometriosis, and ovarian endometriosis. (a) Peritoneum without endometriosis (thin black arrow: peritoneal stroma; medium black arrow: peritoneal visceral smooth muscle; thick black arrow: subperitoneal fat) (b) Cyst wall without endometrium (thin red arrow: cuboid epithelial; thick red arrow: stromal) (c) Peritoneal endometriosis (thin blue arrow: endometrial stroma and gland; thick blue arrow: smooth muscle cell) (d) Ovarian endometriosis

CONCLUSION

This study is a relatively new area of research but have a critical clinical correlation. The mechanism of smooth muscle metaplasia development in endometriosis is still poorly understood and the research concerning this topic remains limited so it is a challenge to search for reference.

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ORIGINAL ARTICLE

Association of age at menarche, parity, and hormonal contraceptive use with the histologic type of ovarian cancerFirda Azizah¹, Pungky Mulawardhana², Willy Sandhika³¹Midwifery Program, Faculty of Medicine, Universitas Airlangga, Surabaya, Indonesia, ²Department of Obstetrics and Gynecology, Faculty of Medicine, Universitas Airlangga, Dr. Soetomo General Academic Hospital, Surabaya, Indonesia,³Department of Pathology, Faculty of Medicine, Universitas Airlangga, Dr. Soetomo General Academic Hospital, Surabaya, Indonesia.**ABSTRACT**

Objectives: This study analyzed the relationship between age at menarche, parity, and contraceptive use with histologic type of ovarian cancer.

Materials and Methods: This study used an observational analytic with a retrospective cross-sectional approach. The research samples were 128 patients with ovarian cancer at Dr. Saiful Anwar Hospital, Malang, Indonesia, in 2017-2019. All patients underwent primary staging laparotomy. The histologic types of the ovarian cancer consisted of serous type as many as 45, mucinous 45, endometrioid 10, clear cell 20, and others 4. Data analysis used chi-square test.

Results: The p value for the relationship between age of menarche and histologic type of ovarian cancer was $p=0.500$ ($p>0.05$), parity $p=0.313$, and contraceptive use $p=0.824$. The distribution of clear cell was more common in multiparous, 40% of endometrioid found in nulliparous, while serous were more common in women with hormonal contraceptive use ≥ 5 years, whereas mucinous were more common in those with history of use of <5 years.

Conclusion: There was no significant relationship between age of menarche, parity, and hormonal contraceptive use on histologic type of ovarian cancer.

Keywords: Ovarian cancer; histologic type; menarche age; parity; hormonal contraceptive

ABSTRAK

Tujuan: Penelitian ini bertujuan untuk menganalisis hubungan riwayat usia menarche, paritas, dan penggunaan KB hormonal terhadap jenis histopatologi kanker ovarium.

Bahan dan Metode: Penelitian ini menggunakan metode analitik observasional dengan pendekatan cross sectional bersifat retrospektif. Sampel penelitian adalah 128 penderita kanker ovarium di RSUD Dr. Saiful Anwar, Malang, Indonesia, pada tahun 2017-2019 semua pasien dilakukan tindakan surgical staging. Didapatkan jenis serous sebanyak 49; mucinous 45; endometrioid 10, clear cell 20, dan others 4. Uji analisis data menggunakan chi square.

Hasil: Nilai p untuk hubungan usia menarche dengan jenis histopatologi adalah $p=0,500$ ($p>0,05$), paritas $p=0,313$, penggunaan KB hormonal $p=0,824$. Sebaran jenis clear cell lebih banyak ditemukan pada multipara, jenis endometrioid 40% pada nullipara, serous lebih banyak ditemukan pada wanita dengan riwayat penggunaan KB hormonal ≥ 5 tahun, sedangkan jenis mucinous lebih banyak ditemukan pada riwayat penggunaan < 5 tahun.

Simpulan: Tidak ada hubungan yang signifikan antara usia menarche, paritas, dan penggunaan KB hormonal terhadap jenis histopatologi kanker ovarium.

Kata kunci: Kanker ovarium; tipe histologi; usia menarche; paritas; kontrasepsi hormonal

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INTRODUCTION

Ovarian cancer is a gynecological malignant tumor that is difficult to find its clinical symptoms at an early stage. This type of cancer is often diagnosed at an advanced stage, with poor prognosis. This causes ovarian cancer to be the most lethal gynecological cancer.¹ According to the Centers for Disease Control and Prevention (CDC) in 2019, ovarian cancer is the fifth leading cause of death in women from cancer in the United States. Based on GLOBOCAN data in 2018, new cases of ovarian cancer were identified as many as 295,414 or 3.4% of all cancer cases suffered by women worldwide, while the death rate from ovarian cancer were 4.4% of all deaths caused by cancer worldwide. In Indonesia, ovarian cancer accounts for 7.1% of all new case findings, or around 13,310 women were diagnosed with ovarian cancer in 2018.² At Dr. Saiful Anwar Hospital, Malang, Indonesia, ovarian cancer cases were recorded as much as 37.8% of all gynecological cancer cases that had been treated in the 2017-2019 period, while the most cases were cervical cancer.

Due to the complexity of the ovarian organ, the anatomical structure of the tissue, endocrine function, and the lack of early symptoms, it becomes a challenge in determining the degree of malignancy and histological classification of ovarian cancer.³ Ovarian cancer has a more diverse histological classification compared to other gynecological cancers, so that the interpretation of histological examination results in patients must be carefully considered in accordance with internationally accepted guidelines. Each type of histology has different molecular properties that affect the level of sensitivity to chemotherapy drugs, metastatic patterns, and patient survival.⁴

In the last twenty years, there has been a major evolution in the classification of epithelial ovarian cancer. In the past, ovarian cancer was thought to originate from the epithelial tissue of the ovaries alone. However, studies on morphology, immunohistology, and molecular genetics have categorized epithelial ovarian cancer based on its pathogenesis and organ origin. Epithelial ovarian cancer is divided into two types, namely: type 1 and type 2.⁵ Type 1 includes low grade serous carcinoma, endometrioid, clear cell, and serous. This type develops locally, with slow growth and metastasis. Type 2 includes high grade serous carcinoma, carcinosarcoma, and undifferentiated carcinoma. This type grows aggressively and is malignant, mostly found at an advanced stage. Type 1 epithelial ovarian cancer is associated with mutations in the KRAS, ARID1A, PIK3CA, PTEN, and BRAF genes. Meanwhile, type 2 is associated with mutations in the TP53 gene.⁶

The study of Reid⁷ states that there is a relationship between age at menarche and the risk of ovarian cancer. This is related to the incessant ovulation hypothesis where a large frequency of ovulation will increase the risk of ovarian cancer. In addition, according to Yang¹ the relationship for the effect per year of age at menarche on the incidence of ovarian cancer has not been studied. The protective effect provided by a history of parity also influences the histologic type of ovarian cancer. Women with a history of aterm pregnancy have a 20% lower risk of suffering from serous carcinoma, while for clear cell and endometrioid types the risk is reduced by 50-70%.⁷ According to Cook,⁸ hormonal contraceptive use, especially those containing estrogen and progesterone, such as combination oral contraception taken before the first term of pregnancy, can give protective effect against high grade serous types.

Research results of Wentzensen⁹ concluded that etiological studies regarding the subtypes of ovarian cancer are important considering the heterogeneous relationship between the risk factors and the types of ovarian cancer histopathology. This is necessary to develop new strategies in the prevention of ovarian cancer.

MATERIALS AND METHODS

This research was an observational analytic study using secondary data with a retrospective cross-sectional approach. The study population was 261 new ovarian cancer patients who were diagnosed for the first time in 2017-2019 period. Sampling was based on inclusion and exclusion criteria with a total sampling technique. The research sample obtained as many as 128 medical records that met the research requirement. The inclusion criteria were women with ovarian cancer who under-went primary surgical staging at Dr. Saiful Anwar Hospital, Malang, Indonesia, and had complete medical records covering age at menarche, parity, history of contraceptive use, and histologic type examination result. The exclusion criteria were incomplete medical records and patients who did not perform any primary surgical staging.

Data collection was carried out in August-October 2020 starting with the determination of the research sample. Data collection from patient medical records then processed and analyzed using chi-square test and alternative fisher exact test using SPSS application.

RESULTS AND DISCUSSION

Most of the respondents were at menopause stage (29.7%), but the proportions were not much different from the adult and perimenopause (25% and 24%), a small proportion (0.8%) found in child stage and were not found in adolescent. Most of the patients (95.3%) were married, and the rest were unmarried.

Age at menarche was divided into three categories ≤ 11 years, 12-13 years, and ≥ 14 years (according to the Medical Research Council National Survey of Health and Development, UK). Most of the respondents experienced menarche at ≥ 14 y.o, followed by the age range of 12-13 y.o of 34.4%, and age ≤ 11 years of 29.7% (Table 1).

Table 1. Characteristic of women with ovarian cancer at Dr. Saiful Anwar Hospital, Malang, Indonesia in 2017-2019

Characteristic	Number of patients (n=128)	
Age (y.o)		
Child (0-9)	1	0.8
Adolescent (10-19)	0	0
Reproductive age (20-35)	5	3.9
Adult (36-44)	32	25
Perimenopause (45-50)	32	24
Menopause (51-59)	38	29.7
Elderly (≥ 60)	20	15.6
Marital status		
Married	122	95.3
Not Married	6	4.7
Age at menarche (y.o)		
≤ 11	38	29.7
12 - 13	44	34.4
≥ 14	46	35.9
Parity		
Nullipara	36	28.1
Primipara	32	25
Multipara	60	46.9
Hormonal contraceptive use		
Never or using non hormonal contraceptive	97	75.8
Less than 5 years	24	24
≥ 5 years	7	7
Histologic type		
Serous carcinoma	49	38.3
Mucinous carcinoma	45	35.2
Endometrioid carcinoma	10	7.8
Clear cell carcinoma	20	15.6
Others (Transitional, mixed epithelial tumor, undifferentiated and unclassified tumor)	4	3.1

Table 2. The relationship between age at menarche with histologic type of ovarian cancer

	Histologic type of ovarian cancer (expectation frequency)				Total (n=128)	p	Confidence Interval (CI) 95%
	Serous	Mucinous	Endometrioid	Clear cell & others			
Age at menarche (y.o)						0.500	
≤ 11	17 (14.5)	9 (13.4)	2 (3)	10 (7.1)	38		
12 - 13	17 (16.8)	17 (15.5)	3 (3.4)	7 (8.3)	44		
≥ 14	15 (17.6)	19 (16.2)	5 (3.6)	7 (24)	46		
Parity						0.313	
Nullipara	17 (13.8)	9 (12.7)	4 (2.8)	6 (6.8)	36		
Primipara	12 (12.3)	14 (11.3)	3 (2.5)	3 (6)	32		
Multipara	20 (23)	22 (21.1)	3 (4.7)	15 (11.3)	60		
Hormonal contraceptive use						0.824	
Never or using non hormonal contraceptive	39 (37.1)	32 (34.1)	8 (7.6)	18 (18.2)	97		
Less than 5 years	7 (9.2)	11 (8.4)	1 (1.9)	5 (4.5)	24		
≥ 5 years	3 (2.7)	2 (2.5)	1 (0.5)	1 (1.3)	7		

There was no significant difference regarding the age at menarche in each age range. Most of the respondents had parity ≥ 2 (46.9%), while the remaining were nulliparous and primiparous (28.1% and 25%). Most of the respondents (75.8%) had never used family planning or had ever used non-hormonal methods, 19.5% had a history of using hormonal contraceptive for ≥ 5 years, and 4.7% had a history of using hormonal contraceptive < 5 years, such as: injections, pills, or implants.

The most common type was serous carcinoma (38.3%) followed by mucinous carcinoma (35.2%), the third was clear cell carcinoma (15.6%), endometrioid (7.8%), and the least was transitional types, mixed epithelial tumors, undifferentiated and unclassified tumors (3.1%).

[Table 2](#) shows the statistical test result of the relationship between age at menarche, parity, and hormonal contraceptive use with the histologic type of ovarian cancer. Statistical data processing used Fisher's exact test. The p value for age at menarche obtained $p=0.500$, parity $p=0.313$, and hormonal contraceptive use ($p=0.824$); indicating that there was no significant association of age at menarche, parity, and hormonal contraceptive use with the histologic type of ovarian cancer.

The proportion of ovarian cancer histologic type in Dr. Saiful Anwar Hospital, Malang, Indonesia, was slightly different from the proportion based on epidemiological studies in scientific articles published in the period 1925-2018 by Momenimovahed.¹¹ Based on the epidemiological study, it was found that the proportion of histologic type of ovarian cancer was serous type 70%, mucinous 5%, endometrioid 10%, clear cell carcinoma 10%, and others 5%. Whereas in this study, it was found that the most common histologic type was serous carcinoma (38.3%) followed by mucinous carcinoma (35.2%), clear cell carcinoma (15.6%), endometrioid (7.8%), transitional types, mixed epithelial tumors, undifferentiated and unclassified tumors (3.1%).

This difference may occur due to differences in the number and characteristics of the study sample. The research conducted by Momenimovahed had a very large sample size with diverse characteristics of women from all continents, namely Asia, America, Europe, Africa and Australia. The highest prevalence of ovarian cancer cases was in non-Hispanic white women, followed by Hispanics, black women, followed by Asian and Pacific women. Two-thirds of ovarian cancer deaths were found in high-grade serous cases, with the highest mortality rate in African women, which was associated with poor access to adequate health facilities.

Relationship between age at menarche and the histologic type of ovarian cancer

The results of this study were in line with the opinion of Momenimovahed.¹⁰ that age at menarche does not have an effect on the risk of ovarian cancer or the type of histopathology in patients with ovarian cancer. In addition, according to Yang¹ the association for the effect per year of age at menarche on ovarian cancer incidence had not been studied, and traditional observational studies had scientific methodological flaws and could lead to bias. A literature study conducted by Reid² states that the relationship between the age at menarche shows mixed results. These inconsistent findings may be related to differences in definition, memory and bias towards the experiences of respondents with menarche and menopause.

Although many studies suggest that the age at menarche-menopause is closely related to the theory of incessant ovulation and lifetime ovulation cycle (LOC) in women, there are no research results that can explain the carcinogenesis pathway which is influenced by the age at menarche. Likewise, regarding the relationship between age at menarche and histologic type of ovarian cancer, there is no literature that can clearly describe the closeness of the relationship.

Relationship between parity and the histologic type of ovarian cancer

Many epidemiological studies have been conducted and agree that the amount of parity is a protective factor for ovarian cancer. The increase in the amount of parity is inversely related to the risk of ovarian cancer in women. Specifically, research conducted by Siegel¹¹ found that every aterm pregnancy can reduce the risk of ovarian cancer by up to 19% and each birth experienced by women on average can reduce the risk of ovarian cancer by 6%.¹²

The protective effect obtained due to pregnancy is related to the anovulation process which can reduce the possibility of mutation of epithelial cells into neoplasm cells. Cell mutation may occur as a consequence of ovulation that occurs in a woman's life cycle. When a woman ovulates, several processes occur: ovarian epithelial cells burst, cells are exposed to follicular fluid, and hormonal fluctuations.. Meanwhile, term pregnancy provides a protective effect against ovarian cancer, because it can prevent the growth of precursor lesions that can grow into neoplasm cells.

The popular hypothesis used to underlie the malignant process of ovarian cancer in women is incessant ovulation. This hypothesis was proposed by Casagrande,¹³ in which pregnancy causes cessation on pro-inflammatory process in incessant ovulation (ovulation that occurs continuously in women) through hormonal modification or changes and the process of destroying pre-malignancy cells in the ovaries. during the period of pregnancy or breastfeeding.

The protective effect provided by a history of parity also influences the histologic type of ovarian cancer. Women with a history of aterm pregnancy have a 20% lower risk of suffering from serous carcinoma, whereas for clear cell and endometrioid the risk is reduced by 50-70%.⁷ The results of this study are in line with a prospective study conducted by Gaitskell¹² on 1.3 million women in the UK. Gaitskell found nulliparous women were 50% more at risk for endometrioid and almost 70% more at risk for clear cell, whereas for mucinous the risk was lower, and there was no significant risk for the serous, which is the most common type of histopathology.

The results of the cross-test conducted in this study found that there was no significant relationship between the amount of parity and the histologic type of ovarian cancer, especially in the clear cell and endometrioid that already had references from previous studies. In this study, there were 20 respondents with clear cell. 60% or 12 respondents were multiparous (≥ 2 aterm pregnancies), 30% were primiparous, and 10% were nulliparous. As for the endometrioid, 40% had a history of nulliparous, 30% were primiparous, and 30% were multiparous.

The results showed that clear cell were more common in women with a history of multiparous, in contrast to previous studies which stated that pregnancy can reduce the risk of clear cell by up to 70%. Meanwhile, 40% of the endometrioid type is experienced by women with a history of nulliparous. This is in line with previous studies which state that nulliparous women are at risk of suffering from endometrioid up to 50%. The discrepancy in the results of research with existing theories or studies may be due to the different number of samples.

Relationship between hormonal contraceptive use and the histologic type of ovarian cancer

Most of the patients with hormonal contraceptive use less than five years had mucinous type. The use of hormonal contraceptives more than five years should be able to provide protection for serous, but in this study serous types were more common. Cell mutation to

serous carcinoma is caused due to dysfunction of the BRCA1/2 gene for high grade serous carcinoma and mutations of the KRAS and BRAF genes for low grade serous carcinoma. However, until now it is not known about the mechanism of the protective role of estrogen and progesterone in influencing the formation of cell mutations into certain types. So far, estrogen and progesterone have been given to regulate the female ovulation cycle so as to suppress the continuous inflammatory process that can trigger the growth of neoplasm cells.

According to Cook⁸ the use of hormonal birth control, especially those containing the hormones estrogen and progesterone, such as combine oral contraception taken before the first aterm of pregnancy can have a protective effect against high grade serous. Meanwhile, the use of combine oral contraception one year after delivery provides 50% less protective effect. The protective effect is influenced by the duration of use, use before the first term of pregnancy, and the age of the woman when she first took the pill.

The cohort study conducted by Trabert¹⁴ found that the use of hormonal contraceptive was statistically associated with a reduced risk of high grade serous and clear cell ovarian cancer. Trabert studied the effect of increasing the LOC on increasing the risk of ovarian cancer. The study stated that for every 60 LOC increase or within 5 years, women also had an increased risk of ovarian cancer by 14%. This association also had an effect on histologic type of ovarian cancer. Each five year increase in LOC was associated with clear cell risk, high grade serous, and less endometrioid, but not mucinous.¹⁵

The limitation of secondary data obtained causes the history of hormonal birth control data to only be categorized based on the duration of use. This study did not specifically categorize the types of hormonal contraceptive used by respondents based on the type of hormonal birth control method, age at first use, and history of parity when using hormonal contraceptive. Besides that, very few patients have a history of using hormonal birth control more than 5 years, that is, only seven patients. The use of hormonal birth control as a choice of long-term family planning methods is less popular in Indonesia.

CONCLUSION

It can be concluded that there is no significant relationship between age at menarche, parity, and hormonal contraceptive use on the histologic type of ovarian cancer. Therefore, it is necessary to examine the

histopathology to determine the histologic type in patients with certainty. The histologic type of ovarian cancer affects the sensitivity of chemotherapy drugs, prognosis, and the course of the patient's disease. The introduction of risk factors in women is expected to be able to awaken women's awareness about the reproductive health status especially the ovaries.

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ORIGINAL ARTICLE

Postpartum contraceptive use among pregnant women who delivered at Cipto Mangunkusumo General Hospital: A descriptive study

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ABSTRACT

Objectives: The maternal mortality rate in Indonesia is one of the highest in the world at 305 out of 100.000 live birth. One of the best ways to reduce MMR is conception prevention through contraceptive methods. According to 2018 Demographic and Health Survey, Indonesia's Contraceptive Prevalence Rate was as low as 57%, not even reaching the 2015 Millenium Development Goals target of 65%. We conducted a study on postpartum contraceptive use in Dr. Cipto Mangunkusumo National Central General Hospital (RSCM), Jakarta, Indonesia, to see the use of contraception in RSCM so that it can be an example of how contraception is used in RSCM for patients who give birth here.

Materials and Methods: A descriptive study was conducted from all patients giving birth in RSCM from 2016 until 2019, data including patient data, consisting of patient age, parity, the origin of referral, and type of contraception, are input from the medical record

Results: There were 5,596 deliveries, consisting of 3,785 C-sections and 1,811 vaginal deliveries. As many as 5332 (95.3%) of subjects had postpartum contraception, 725 (13.67%) of which received tubectomy, and most of which received long-term contraceptive methods (IUD 4414 (82.78%) and implant 44 (0.82%)). As many as 1.065 subjects were more than 35 years of age, 6.2% of which did not use any postpartum contraception. As many as 984 subjects were RSCM bookcases, 6.9% of which did not use any postpartum contraception.

Conclusion: Most patients giving birth in RSCM had postpartum contraception, especially permanent contraception and long-term contraception. The contraception profile in RSCM alone can neither describe nor represent the condition and distribution of contraceptive methods in Indonesia because RSCM is a national referral and medical education center whose cases are relatively more complex.

Keywords: Contraception; Post Partum; RSCM; Maternal mortality; maternal health

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ABSTRAK

Tujuan: Angka Kematian Ibu (AKI) di Indonesia sebesar 305 kematian per 100.000 kelahiran hidup sedangkan target Indonesia menurut Sustainable Development Goals (SDGs) adalah 70 kematian per 100.000 kelahiran hidup pada tahun 2030. Salah satu cara terbaik untuk mengurangi kematian ibu adalah mencegah kehamilan melalui metode kontrasepsi. Menurut Survei Demografi dan Kesehatan 2018, Angka Prevalensi Kontrasepsi di Indonesia sebesar 57%, belum mencapai target Millenium Development Goals (MDGs) 2015 sebesar 65%. Penelitian ini dilakukan untuk mengetahui penggunaan kontrasepsi pascasalin di Rumah Sakit Umum Pusat Nasional Dr. Cipto Mangunkusumo (RSCM) sehingga dapat menjadi role model bagi pelayanan kesehatan reproduksi di Indonesia.

Bahan dan Metode: Penelitian deskriptif dilakukan dengan menggunakan data yang diambil dari rekam medis seluruh pasien yang bersalin di RSCM dari tahun 2016 sampai dengan tahun 2019.

Hasil: Terdapat 5.596 persalinan, yang terdiri dari 3.785 Sectio Caesaria (SC) dan 1.811 persalinan pervaginam. Sebanyak 5.332 (95,3%) subjek menggunakan kontrasepsi pascasalin, sebagian besar menggunakan IUD 4.414 (82,78%), tubektomi 725 (13,67%), dan implant 44 (0,82%). Sebanyak 1.065 subjek berusia lebih dari 35 tahun, 6,2% di antaranya tidak menggunakan kontrasepsi postpartum. Sebanyak 984 subjek terdaftar sebagai pasien RSCM, 6,9% di antaranya tidak menggunakan kontrasepsi postpartum.

Simpulan: Sebagian besar pasien bersalin di RSCM menggunakan kontrasepsi postpartum, terutama kontrasepsi permanen dan kontrasepsi jangka panjang. Gambaran kontrasepsi di RSCM ini tidak dapat menggambarkan atau merepresentasikan kondisi dan distribusi metode kontrasepsi di Indonesia karena RSCM merupakan pusat rujukan yang kasusnya relatif lebih kompleks.

Kata kunci: Kontrasepsi; pascasalin; RSCM; kematian ibu; kesehatan ibu

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INTRODUCTION

Maternal mortality rate (MMR) is an Indonesia of the impact of various efforts aimed at improving the degree of maternal health. Mother's death will not occur without a pregnancy.¹ Based on the 2015 Intercensal Population Indonesia (SUPAS), Indonesia's MMR is at 305 per 100,000 live births.² The SDGs (Sustainable Development Goals) target for Indonesia is to reduce maternal mortality to below 70 per 100,000 live births by 2030.^{3,4}

In 2013 around 38% of women of childbearing age did not use birth control. So the chance of getting pregnant and dying during childbirth increases. This is because the coverage of Contraceptive Prevalence Rate (CPR) in 2012 was only 57.9% so that special attention was needed to reach 65% of the MDGs in 2015. The population growth and marriage rates in adolescents that continue to increase affect the still high total Fertility Rate (TFR) in Indonesia. TFR was stagnant at 2.6 in 2012. Family planning services are still dominated by short-term contraceptive methods (pills and injections).^{1,3}

Prevention of maternal death can be divided into three, namely: (1) Primary prevention by delaying or not getting pregnant, (2) Secondary prevention by early detection and prevention of complications, (3) Prevention of tertiary by preventing death in pregnancy or childbirth with complications. Family Planning is an effort to regulate the birth of children, the ideal distance and age for giving birth, regulating pregnancy, through promotion, protection, and assistance following reproductive rights to realize quality family.^{5,6}

To provide the best service as a national referral hospital which must also be a reference for maternal health services in Indonesia, Cipto Mangunkusumo General Hospital (RSCM) participated in research looking at the profile of postpartum contraceptive use. This research is expected to be used as a basis for standardization and models of antenatal care services in Indonesia.

MATERIALS AND METHODS

A descriptive study was conducted using secondary data retrieved from medical records of all patients giving birth in RSCM from 2016 until 2019. Patients with abortions or with incomplete medical records were excluded from the study. Patient data, consisting of patient age, parity, the origin of referral, and type of contraception, are input from the medical record to Microsoft Excel for further editing and coding of the

data. Data analysis was performed with SPSS 20.0 for Windows. This study was approved by the Ethics and Medical Research Committee of the Faculty of Medicine, Universitas Indonesia, Indonesia by Number: KET-573/UN2.F1/ETIK/PPM.00.02/2020. The implementation of this research is subject to the principles of the Declaration of Helsinki, the Guidelines for Good Clinical Practice of the ICH Tripartite Guidelines, and the regulations that apply in Indonesia.

RESULTS AND DISCUSSION

From 2016 until 2019, as many as 5,596 deliveries took place at the RSCM, consisting of 1,811 (32.4%) patients who had vaginal deliveries and 3,785 (67.6%) patients who delivered by cesarean section. The median age of patients was 29 years (13-48 years) with 1,065 (19%) patients > 35 years old. The median age of patients undergoing vaginal delivery was 27 years (14-48 years), while the median age of patients undergoing cesarean section was 30 years (13-48 years). A total of 172 (3.0%) patients had a parity of more than three. A total of 2,256 (40.3%) patients were non-referral patients, while 3,340 (59.7%) patients were referral patients. Of the 2,256 non-referral patients, 984 (43.6%) patients were classified as bookcase patients, ie patients who had undergone antenatal care at least three times in the RSCM obstetrics clinic.

Table 1. Patients characteristics

	Vaginal Delivery	Caesarean Section
Age	27 y.o (14 – 48 y.o)	30 y.o (13 – 48 y.o)
≤ 35 y.o	1546 (85.4%)	2985 (78.9%)
> 35 y.o	265 (14.6%)	800 (21.1%)
Parity		
≤ 3	1,752 (96.7%)	3,672 (97%)
> 3	59 (3.3%)	113 (3%)
Booked or Referral		
Bookcase	230 (12.7%)	754 (20%)
Non-bookcase		
– Referral	1056 (58.3%)	2284 (60.3%)
– Non-referral	525 (29%)	747 (19.7%)

Of the 5,596 patients who delivered at Cipto Mangunkusumo General Hospital in 2016-2019, 5,332 patients (95.3%) used postpartum contraception. Patients who did not use postpartum contraception (264 patients, 4.7%) due to various reasons, such as refusing the use of contraception (143 patients, 54.17%), had not chosen the contraceptive method (39 patients, 14.77%), undergoing hysterectomy postpartum (47 patients, 17.7%), planned IUD interval installation (80 patients, 30.3%), history of postpartum hemorrhage, having a deceased husband, and catheter condoms attached (each

reason 1 patient, 0.38%). Postpartum contraceptive programs, in particular, were not attended by 66 (6.2%) from 1065 patients aged > 35 years, 5 (2.9%) from 172 patients with parity more than three, and 68 (6.9%) from 984 bookcase patients.

The method of postpartum contraception that many patients choose in RSCM is an IUD. IUD were mostly chosen by patients undergoing vaginal delivery (1,611 patients, 93.4%) or cesarean section (2,806 patients, 77.8%). A total of 725 patients (13.67%) underwent tubectomy as a method of contraception. Tubectomy was proportionately more favored by patients undergoing cesarean section (701 patients, 19.4%). Only 24 patients (1.4%) who underwent vaginal delivery chose tubectomy as their method of contraception. Another long-term contraceptive method used by patients in the RSCM is implants 44 patients (0.82%). Other postpartum contraceptive methods are chosen by study respondents included DMPA (94 patients, 1.8%) and combined birth control pills (5 patients, 0.1%).

This study found several things related to the use of postpartum contraception in patients who delivered at the Cipto Mangunkusumo General Hospital in 2016-2019. In general, the percentage of postpartum contraception in RSCM patients is relatively high. The percentage of postpartum contraception in RSCM reached 95.3%, relatively higher, compared to national data according to 2017 Indonesian Demographic and Health Survey (IDHS)⁷; 46.0% of all women; 63.6% of all women who had already married or when compared to various developing countries in South and Southeast Asia, such as India⁸ (2015-2016; 53.5% of married women), Pakistan⁹ (2017-2018; 33.6% of married women), Laos¹⁰ (2017; 53.6% of all women; 54.1% of married women/in relationships), Philippines¹¹ (2017;

33.6% of all women; 54.3% of married women), and Myanmar¹² (2015-2016; 31.6% of all women; 52.2% of married women). However, several factors, such as the intensity of education and the role of the RSCM as a tertiary referral hospital, many complex obstetric cases, cause the findings of this study cannot be a general description of conditions in Indonesia.

This study found that most of the patients who gave birth at RSCM chose the long-term contraceptive method, either tubectomy (13.67%), IUD (82.78%), or implants (0.82%). Tubectomy was proportionately more favored by patients undergoing cesarean section compared with patients undergoing vaginal delivery. This is influenced by the policy of the Indonesian Health Social Security Organizing Agency (BPJS Kesehatan) which covers the costs of tubectomy performed jointly with cesarean section but does not cover the cost of elective tubectomy. The high IUD preference among study respondents is not similar to the national preference according to the 2017 IDHS,⁷ where the IUD is generally the third-most preferred contraceptive method (7.6%) after DMPA (45.4%) and the contraceptive pill (18.9%). The 2017 IDHS also found that the preference for implants (7.4%) was slightly less than the IUD, while the preference for tubectomy (6.1%) was less than the preference for an implant and interrupted intercourse (6.7%). Compared to five Southeast Asian and South Asian countries, besides Indonesia, a preference for DMPA was also found in Myanmar¹² (52.8%). Preference for contraceptive pills was found in Laos¹⁰ (50.5%) and the Philippines¹¹ (37.8%). Preference for tubectomy was found in India⁸ (67.3%) and Pakistan⁹ (26.6%), although the preference for tubectomy in Pakistan was as great as the preference for condoms. Tubectomy is also one of three methods of contraception that are widely used in

Table 2. Contraceptive Use

	Vaginal Delivery	Caesarean Section	Total
Family Planning	1725 (95.3%)	3607 (95.3%)	5332(95.3%)
Pills	4 (0.2%)	1 (0.03%)	5 (0.09%)
DMPA	61 (3.5%)	33 (0.9%)	94(1.76%)
Implant	25 (1.5%)	19 (0.5%)	44(0.82%)
IUD	1611 (93.4%)	2806 (77.8%)	4414(82.78%)
Tubectomy	24 (1.4%)	701 (19.4%)	725(13.67%)
Hysterectomy	0	47 (1.37%)	47(0.88%)
No Family Planning	86 (4.7%)	178 (4.7%)	264(4.7%)
Refused			
Not decided yet	44 (51.1%)	99 (55.6%)	143(54.17%)
Planned to use	8 (9.3%)	31 (17.4%)	39 (14.77%)
interval IUD	32 (37.2%)	48 (27%)	80 (30.3%)
Deceased husband	1(1.2%)	0	1(0.38%)
Condom	1(1.2%)	0	1(0.38%)
Total	1811	3785	5.596

Laos¹⁰ (8.1%), the Philippines¹¹ (14.3%), and Myanmar¹² (9.2%). IUDs and implants, besides not being widely used in five Asian countries when compared to tubectomy, are also not the top three contraceptive methods that are widely chosen in these countries. Based on data by the United Nations, the worldwide prevalence of tubectomy and IUD use has been decreasing since 1995, however IUD use was found to be most prevalent in the Democratic People's Republic of Korea (46.9%), Uzbekistan (36.9%), and Turkmenistan (30.6%).

Postpartum contraceptive programs, in particular, were not attended by 6.2% of patients aged > 35 years. The percentage of non-participation of contraceptive programs among respondents aged > 35 years in this study was smaller, compared to the findings of the 2017 IDHS9 (41.4%) or findings in various Asian countries such as India⁸ (35.5%), Pakistan⁹ (59.1%), Laos¹⁰ (45.2%), the Philippines¹¹ (55.7%), and Myanmar¹² (65.3%). The percentage of patients with parity of more than three who did not use contraception in this study was 2.9%. This finding is relatively low when compared with existing studies. Channon¹³ found in her study in five South Asian countries that although women with high parity had higher rates of contraceptive use compared to women with low parity, the range of percentage of women with parity of more than three who did not use contraception in India (29-56%), Pakistan (49-76%), Bangladesh (36-47%), Nepal (35-60%), and Afghanistan (68-73%) are still relatively high.

On the other hand, this study also found 6.9% of bookcase patients did not use postpartum contraception. This needs to be an evaluation for the RSCM obstetric clinic, bearing in mind that bookcase patients should have received contraceptive education and counseling during antenatal care at the polyclinic. Hernandez et al. found that patients who received antenatal contraception counseling had a tendency to use postpartum contraception effectively (adjusted OR 1.47; p-value 0.01; 95% CI 1.10-1.96), regardless of the patient had used contraception before pregnancy or not. The evaluation can be done not only related to the practice of education in the clinic but can also include the evaluation of various other factors that can have an impact on contraceptive use, such as stress in pregnancy.¹⁴

The highest use of family planning in this study was IUD in postpartum. One of the keys to the use of an IUD is counseling regarding immediate postpartum contraceptive use. According to a study in Thailand, counseling at the time of delivery can increase the

acceptance of the use of the IUD immediately after delivery compared to conventional postpartum contraceptives (4-6 weeks).¹⁵

CONCLUSION

Most patients giving birth in RSCM had postpartum contraception, especially permanent contraception and long-term contraception. However, education on contraceptive methods through counseling has yet to be improved, especially for vulnerable patients; i.e. patients above 35-year-old, bookcases with complicated obstetric/medical problems, and high parity women. Contraception profile in RSCM alone can neither describe nor represent the condition and distribution of contraceptive methods in Indonesia because RSCM is national referral and medical education center whose cases are relatively more complex.

CONFLICT OF INTEREST

All authors have no conflict of interest.

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CASE REPORT

Maternal outcome in accreta cases. Conservative surgery and hysterectomy in Cipto Mangunkusumo Hospital, Jakarta, Indonesia, from January 2017 to January 2018

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ABSTRACT

Objectives: To report maternal outcome based on surgical technique on the management of accreta. The study was conducted in Cipto Mangunkusumo Hospital, Jakarta, Indonesia from January 2017 to January 2018.

Case Report: There were 1609 cases of pregnant women delivered during the study period. From these, the prevalence of previous caesarean section was 73 cases, including 20 cases of accreta. Total maternal mortality for 1 year in Cipto Mangunkusumo Hospital, Jakarta, Indonesia, was 11, and accreta contributed 3 cases. We reported 20 cases of accreta in pregnancy. The maternal outcomes, including bladder injury, duration of operation, intraoperative bleeding, length of hospitalization, and mortality, were evaluated. From 20 cases, 8 patients had one previous caesarean history, 11 had second previous caesarean section, while 2 patient had third previous caesarean section history. Of women with placenta accreta, about 7 patients (35%) had delivery in fullterm pregnancies, while 13 (65%) had delivery in preterm pregnancy. Surgical technique in accreta management mostly was hysterectomy to override bleeding complication along the delivery. From 20 cases, 16 caesarean sections were followed-up with hysterectomy. Four cases were with conservative management. From all the hysterectomy performed, four were complicated with bladder injury. The mean intraoperative bleeding was 600 - 5500 cc of blood, while the mean of post-operative transfusion was 1000 - 3000 cc. There were 2 maternal deaths in this study. Thirteen patients were admitted to the ICU after the procedure.

Conclusion: Accreta increases morbidity due to massive bleeding. It is important to have algorithm for managing abnormal implantation of the placenta. Our cases revealed no significant results of maternal outcome between conservative surgery and conventional hysterectomy in managing accreta cases in Cipto Mangunkusumo Hospital, Jakarta, Indonesia.

Keywords: accreta; maternal outcome; conservative management; surgery in accreta; maternal health

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ABSTRAK

Tujuan: Melaporkan luaran maternal berdasarkan teknik pembedahan pada manajemen akreta. Penelitian dilakukan di Rumah Sakit Cipto Mangunkusumo, Jakarta, Indonesia, dari Januari 2017 hingga Januari 2018.

Laporan Kasus: Terdapat 1609 kasus ibu hamil yang melahirkan selama masa penelitian. Dari jumlah tersebut, prevalensi C-section sebelumnya adalah 73 kasus, termasuk 20 kasus akreta. Total kematian ibu selama 1 tahun di RS Cipto Mangunkusumo adalah 11, dan akreta menyumbang 3 kasus. Kami melaporkan 20 kasus akreta pada kehamilan dan mengevaluasi hasil ibu, termasuk cedera kandung kemih, durasi operasi, perdarahan intraoperatif, lama rawat inap, dan kematian. Dari 20 kasus, 8 pasien memiliki riwayat operasi caesar sebelumnya, 11 pasien memiliki riwayat operasi caesar kedua, sedangkan 2 pasien memiliki riwayat operasi caesar ketiga sebelumnya. Dari ibu dengan plasenta akreta, sekitar 7 pasien (35%) melahirkan pada kehamilan penuh, sementara 13 (65%) melahirkan pada kehamilan prematur. Teknik pembedahan dalam manajemen akreta sebagian besar adalah histerektomi untuk mengesampingkan komplikasi perdarahan selama persalinan. Dari 20 kasus, 16 operasi caesar dilanjutkan dengan histerektomi, dan empat kasus dengan manajemen konservatif. Dari semua histerektomi yang dilakukan, empat di antaranya dengan komplikasi cedera kandung kemih. Rerata perdarahan intraoperatif adalah 600 - 5500 cc darah, sedangkan rerata transfusi pascaoperasi adalah 1000 - 3000 cc. Terdapat 2 kematian ibu dalam penelitian ini. Tiga belas pasien dirawat di ICU setelah prosedur.

Simpulan: Akreta meningkatkan morbiditas akibat perdarahan masif. Algoritma untuk mengelola implantasi abnormal plasenta penting untuk dimiliki. Kasus ini tidak menunjukkan hasil maternal yang signifikan antara operasi konservatif dan histerektomi konvensional dalam penanganan kasus akreta di Rumah Sakit Cipto Mangunkusumo, Jakarta, Indonesia.

Kata kunci: akreta; hasil ibu; manajemen konservatif; operasi akreta; kesehatan ibu

INTRODUCTION

The incidence of placenta accreta has increased and seems to parallel the increasing cesarean delivery rate. A morbidly adherent placenta includes placenta accreta, increta and percreta as it penetrates through the basal decidua into and then through the myometrium.¹ Although placenta accreta is uncommon (0.004%) in women with a normally situated placenta, it occurred in 9.3% of women with placenta praevia according to data from many studies. It was estimated that by 2020 cesarean delivery rate in US may approach 56.2%, resulting annually in an additional 6236 placenta previas, 4504 placenta accretes, 130 maternal deaths.¹

Advance planning should be made for management of delivery. Delivery of the baby by caesarean section in the presence of a suspected placenta praevia-accreta should be considered by opening the uterus at a site away from the placenta, and delivering the baby without disturbing the implantation site, in order to enable conservative management of the placenta or elective hysterectomy. Entering the uterus through the placenta in order to achieve delivery is associated with more bleeding and a high chance of hysterectomy. Some studies have described successful conservative management of placenta accreta that can preserve fertility. If the placenta separates, the placenta needs to be delivered if it begins to separate.¹ Any haemorrhage that follows needs to be managed in the normal way. If the placenta partially separates, the separated portion(s) should be delivered and any haemorrhage that occurs should be dealt with. Adherent segments can be left in place, but blood loss in such circumstances can be large and the management of massive haemorrhage should follow without delay. The woman should be warned of the risks of bleeding and infection postoperatively and monitored, even until admission to ICU room after procedure should be mentioned to the patient before operation. Prophylactic antibiotics may be useful in the immediate postpartum period to reduce this risk.¹⁻⁵

CASE REPORT

We presented 20 cases of accreta in pregnancy in Cipto Mangunkusumo Hospital, Jakarta, Indonesia, with either conservative or hysterectomy management that correlated to maternal outcome as can be seen in Table 1.

Table 1 shows early morbidity for women with antenatally suspected placenta accreta according to various management strategies. Although composite morbidity did not differ between women undergoing conservative and hysterectomy procedure, there were differences in >3000 cc volume of intraoperative bleeding (0% versus 25%), bladder injury (0 versus 25%), length of surgery of > 3 hours (0 versus 31.2%), ICU admission (15% versus 50%), and maternal mortality (0 versus 12.5%). Prophylactic hypogastric artery ligation did not reduce the mean blood loss or the need for large volume of blood transfusion, between women who did and did not undergo the procedure on the conservative management.

Table 2. Patients' characteristics

Characteristics	N	%
Previous c-section		
1x	9	45%
2x	9	45%
3x	3	15%
PAI		
>6	4	20%
≤5	3	15%
Time of delivery		
Elective	14	70%
Emergency	6	30%
Surgical techniques		
Conservative	3	15%
Hysterectomy	17	85%

From 20 cases we had, about 8 patients had one previous caesarean history, 11 had second previous caesarean section, while 2 patients had third previous caesarean section history. Of women with placenta accreta, about 7 patients (35%) had delivery in fullterm pregnancies, while 13 patients (65%) had delivery in preterm pregnancy.

Surgical technique in the management of accreta cases is mostly by hysterectomy to override bleeding complication along the delivery. From 20 cases, there were 16 caesarean sections that continued with hysterectomy, and four cases with conservative management. From all hysterectomy performed, four cases were complicated with bladder injury. The mean of intraoperative bleeding was 600 - 8000 cc of blood. There were 2 maternal deaths in this study and 13 patients were admitted to ICU after procedure.

Table 1. Early morbidity in women with antenatal suspected placenta accreta according to various management strategies

No	PAI	Obstetric status	Prior C-section	Surgical techniques	Intraoperative bleeding (cc)	Complications	Uterine hemostasis	Length of operation and stay	ICU admission
1	2.5	G4P2A1 36 wga	1x	Hysterectomy	1000	-	-	2 hours, 3 days	Ward
2	3.5	G3P1A1 35wga	1x	Hysterectomy	1500	-	-	2 hours, 3 days	Ward
3	7	G3P2 38 wga	2x	Hysterectomy	1000	-	-	2 hours, 3 days	Ward
4	6.5	G4P3 27 wga	3x	SC+ uterine incision	1800	-	Hypogastric artery ligation	2.5 hours,4 days	HCU
5	3.5	G8P5A2 33 wga	1x	Hysterectomy	2200	-	Hypogastric artery ligation	2 hours, 4 days	ICU
6	2.5	G2P1 38 wga	1x	SC+ uterine incision	1000	-	Hypogastric artery ligation	3 hours, 4 days	HCU
7	5.25	G3P2 33 wga	1x	Hysterectomy	5000	Died	Torniquet	4 hours, 2 days	ICU
8	6.5	G3P2 26-27 wga	2x	Hysterectomy	2500	Bladder injury	Local pressure	5 hours,6 days	ICU
9	5	G3P1A1 38 wga	1x	Hysterectomy	3500	-	Hypogastric artery ligation	3 hours,5 days	ICU
10	8.5	G3P2 36-37 wga	2x	Hysterectomy	5500	Bladder injury	Hypogastric artery ligation	5 hours,7 days	ICU
11	6.5	G3P2 37-38 wga	2x	Hysteroography+hypogastric artery ligation	1000	-	Hypogastric artery ligation	2 hours,4 days	HCU
12	9	G4P2A1 34 wga	2x	Hysterectomy	1000	-	-	2 hours,3 days	Ward
13	9	P2 post SC	1x	Hysterectomy	1000	-	-	2 hours, 5 days	ICU
14	9	G3P2 36 wga	2x	Hysterectomy	1800	Bladder injury	-	4 hours, 8 days	ICU
15	4.5	G3P2 37 wga	2x	Hysterectomy	1000	-	-	3 hours, 4 days	HCU
16	6.5	G3P2 29-30 wga	2x	Hysterectomy	8000	Bladder injury Died	Hypogastric artery ligation	5 hours, 1 day	ICU
17	5.5	G3P2 32 wga	1x	Hysterectomy	1100	-	-	3 hours, 4 days	ICU
18	5.5	G3P2 24 wga	2x	Hysterectomy Methotrexate	600	-	Baloon tampon	2 hours, 3 days	Ward
19	4.5	G4P3 37 wga	3x	Hysterectomy	1200	-	-	2 hours, 3 days	Ward
20	2.5	G2P1 37 wga	1x	Hysterectomy	950	-	Torniquet	2 hours, 3 days	Ward

From this data it was apparent that the prevalence of pregnant women with previous C-section with accreta in this study was 0.012% and total number of the pregnant

mothers who came with previous history within this period was 73 cases and the prevalence of pregnant women with accreta in this study was 0.27%.

Conservative management of the accreta cases

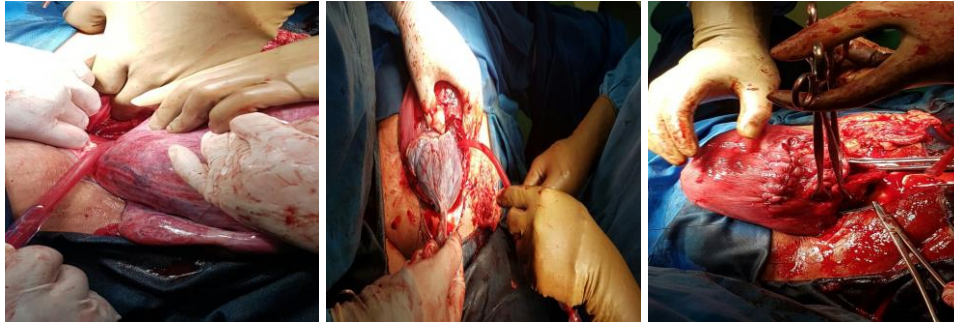


Figure 1. Both hypogastric arteries were identified, sutured and ligated. The placenta was put back into the uterine cavity, and the incision was sutured. One hour after the baby was born, uterine contraction was fine, and the mother was had stable hemodynamic. The suture was reopened, and the placenta was born completely. Uterine resection was performed in the haematoma area of 1 x 4 cm.

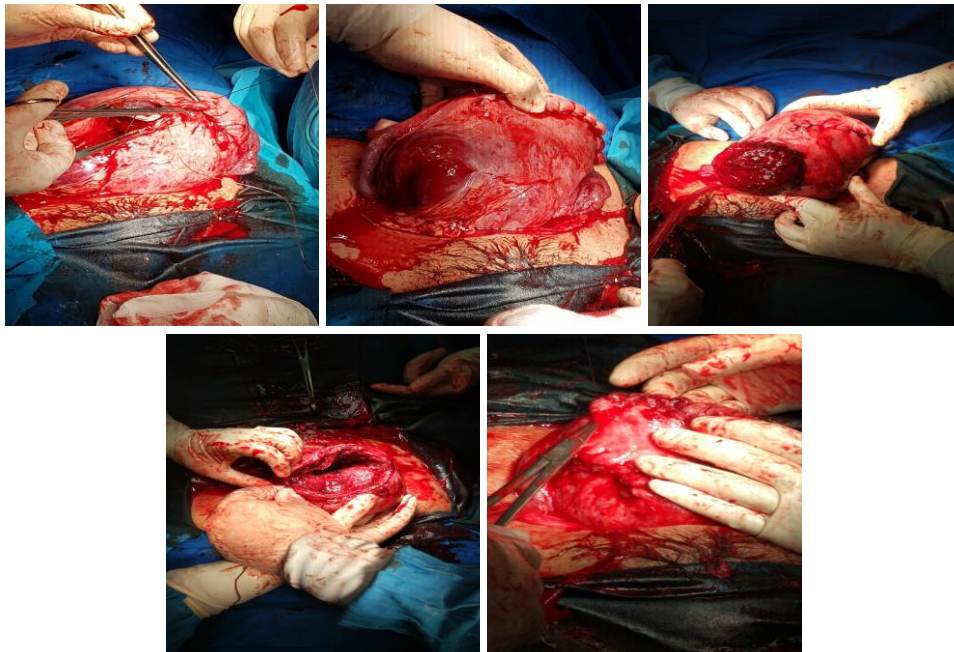


Figure 2. The umbilical cord was clamped. The placenta was put back into the uterine cavity, and the uterotonic was given. Uterine incision was hemostatic sutured using Chromic no 1, and the placenta was waited to detach spontaneously. During observation, uterine contraction was good. Uterine wall was ruptured spontaneously at the site of the placenta. Hysterorhaphy was performed on ruptured uterine wall and cesarean incision using PGA no 1.



Figure 3. The umbilical cord was clamped. The placenta was left with minimal handling. Uterine incision was sutured with Chromic no. 1, and both hypogastric arteries were identified and suture-ligated. The uterine incision was re-opened. By gentle cord traction, the placenta was born partially. Resection was performed on the suspected accreta site. Hemostasis was achieved and hysterography was performed.



Figure 4. The placenta was born by manual extraction. Some parts of the placenta were adhered (2 x 1 cm). The balloon catheter was placed in the cave, and suturing was performed at the incision. The patient was given with methotrexate at the outpatient clinic.

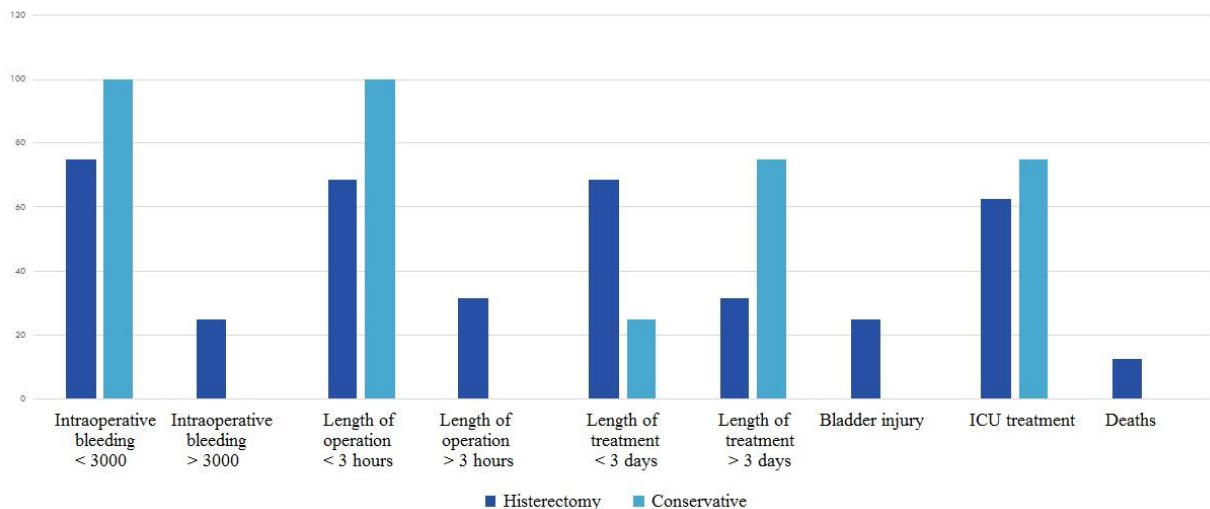


Figure 5. The outcome of the placenta accreta cases.

DISCUSSION

Placenta accreta is associated with considerable maternal morbidity including large volume of blood transfusion, peripartum hysterectomy, cystotomy, intensive care unit (ICU) admission, infection, and prolonged hospitalisation. Major risk factors include placenta praevia and prior caesarean delivery.^{5,6}

Among women who were already hospitalised at the time of emergency delivery for vaginal bleeding, 41% experienced early morbidity. In contrast, among women who presented to the hospital with bleeding severe enough to prompt emergency delivery, 60% experienced early morbidity. Although not statistically significant because of small sample size, the results of this study suggested that inpatient management might be protective in some cases for women with suspected placental accreta.^{6,7}

Delivery planning (the value of ultrasound)

Delivery planning may involve an anesthesiologist, obstetrician, pelvic surgeon such as a gynecologic oncologist, intensivist, maternal fetal medicine specialist, neonatologist, urologist, hematologist, and interventional radiologist to optimize the patient's outcome. Because of the risk of massive blood loss, attention should be paid to maternal hemoglobin levels in advance of surgery, if possible.^{6,8}

The timing of delivery in cases of suspected placenta accreta must be individualized. This decision should be made jointly with the patient, obstetrician, and neonatologist. Patient counseling should include discussion of the potential need for hysterectomy, the risks of profuse hemorrhage, and possible maternal death.⁹⁻¹¹ A guiding principle in the management is to achieve a planned delivery because data suggest greater blood loss and complications in emergent cesarean hysterectomy versus planned cesarean hysterectomy. Although a planned delivery is the goal, a contingency plan for emergency delivery should be developed for each patient, which may include following an institutional protocol for maternal hemorrhage management.^{12,13}

Surgical approach or methotrexate

Whereas hysterectomy is performed in the usual fashion, dissection of the bladder flap may be performed relatively late, after vascular control of the uterine arteries is achieved, in cases of anterior accreta, depending on intraoperative findings. Occasionally, a subtotal hysterectomy can be safely performed, but persistent bleeding from the cervix may preclude this

approach and make total hysterectomy necessary. For conservative management with part of the placenta remains in the uterus, we can consider to use methotrexate therapy.^{14,15}

CONCLUSION

Accreta causes severe bleeding, which worsens morbidity. It is critical to have a plan in place for dealing with faulty placenta implantation. In our cases at Cipto Mangunkusumo Hospital in Jakarta, Indonesia, there were no significant differences in maternal outcomes between conservative surgery and standard hysterectomy in the management of accreta patients.

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REVIEW ARTICLE

Trends in delivery mode occurring during the Covid-19 pandemic and risks in long-term urogynecology cases: A narrative review**Eighty Mardiyani Kurniawati^{1*}, Gatut Hardianto¹, Hari Paraton¹, Azami Denas Azinar¹, Tri Hastono Setyo Hadi¹, Nur Anisah Rahmawati²**¹Department of Obstetrics and Gynecology, Faculty of Medicine, Universitas Airlangga, Dr. Soetomo General Academic Hospital, Surabaya, Indonesia, ²Faculty of Public Health, Universitas Airlangga, Surabaya, Indonesia.**ABSTRACT**

Women's quality of life in the long term is also influenced by their reproductive health. Various diseases appear related to urogynecology cases such as sexual dysfunction, pelvic floor dysfunction and stress urinary incontinence. The study reviews the trend of types of delivery during the pandemic and the risk of urogynecology cases, especially in the three cases. The narrative review study was conducted using the PubMed, Science Direct, and Google Scholar databases. The results showed that the percentage of cesarean section was higher than normal deliveries because of the view on the safety of exposure to the virus. Several studies have found that sexual dysfunction was not related to mode of delivery but women who delivered by emergency caesarean section, vacuum extraction, or caesarean section were more likely to report dyspareunia at 18 months postpartum but adjusted for maternal age and other confounders. Meanwhile, compared with spontaneous vaginal delivery, cesarean delivery with a protective effect or reduction of stress urinary incontinence, overactive bladder, and pelvic organ prolapse. There is a tendency to choose a certain pattern of delivery so that the choice of method needs to be chosen wisely and through medical indications and consider risk factors for long-term reproductive health problems.

Keywords: delivery method; maternal health; pelvic organ prolapse; stress urinary incontinence; sexual dysfunction

ABSTRAK

Kualitas hidup perempuan dalam jangka panjang juga dipengaruhi oleh kesehatan reproduksinya. Berbagai penyakit muncul terkait kasus uroginekologi seperti disfungsi seksual, disfungsi dasar panggul dan stres inkontinensia urin. Penelitian ini mengkaji tren jenis persalinan pada masa pandemi dan risiko kasus uroginekologi, terutama pada ketiga kasus tersebut. Studi tinjauan naratif dilakukan menggunakan database PubMed, Science Direct, dan Google Cendekia. Hasil penelitian menunjukkan bahwa persentase operasi caesar lebih tinggi dari persalinan normal karena pandangan tentang keamanan paparan virus. Beberapa penelitian telah menemukan bahwa disfungsi seksual tidak berhubungan dengan cara persalinan tetapi wanita yang melahirkan melalui operasi caesar darurat, ekstraksi vakum, atau operasi caesar lebih mungkin untuk melaporkan dyspareunia pada 18 bulan pascapersalinan tetapi disesuaikan dengan usia ibu dan perancu lainnya. Sedangkan dibandingkan dengan persalinan pervaginam spontan, persalinan sesar dengan efek protektif atau pengurangan stress inkontinensia urin, overactive bladder, dan prolaps organ panggul. Ada kecenderungan untuk memilih pola persalinan tertentu sehingga pemilihan metode perlu dipilih secara bijak dan melalui indikasi medis serta mempertimbangkan faktor risiko timbulnya masalah kesehatan reproduksi jangka panjang.

Kata kunci: metode persalinan; kesehatan ibu; prolaps organ panggul; stres inkontinensia urin; disfungsi seksual

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INTRODUCTION

Women's quality of life is influenced by their reproductive health. Urogynecology cases that arise in women such as pelvic organ prolapse, sexual dysfunction or stress urinary incontinence can interfere their long-term quality of life. A study found that the problem of disorders of the pelvic floor does not only occur in developing countries, but the incidence of about one in four women also experience it in developed countries.¹ Pelvic floor dysfunction often occurs in more than 50% of women in peri- and postmenopausal and can be caused by many factors that occur related to reproductive organ function during reproductive age.² This case, in addition to leading to a poor quality of life, also affects social, sexual and emotional functions so that they often visit certain urogynecology clinic. Although these cases are not as life-threatening as maternal deaths from complications of childbirth or pregnancy, they cause limitations, discomfort and satisfaction in daily life so that there is a tendency to require regular follow-up care.³ In addition to pelvic organ prolapse, lower quality of life was also associated with severe stress urinary incontinence, as well as the occurrence of sexual dysfunction in sexually active women.⁴ Female sexual dysfunction and quality of life are multidimensional aspects and have a two-way relationship throughout the life span. It is proven that about 40-50% of women experience sexual dysfunction and are at risk throughout their life at least related to sexual symptom disorders.⁵

Various factors are associated with urogynecology cases in the female reproductive cycle and many studies have focused on the topic. One of them is related to the aspect of childbirth. Reproductive health problems are associated with the function and history of reproductive organs that may experience changes throughout a woman's life cycle. Around 140 million women give birth every year in the world.⁶ Most healthy pregnant women want a positive and safe delivery experience. This safety also concerns the impact of childbirth itself on long-term reproductive health.⁷ Every woman must have a view on efforts to maintain and pay attention to long-term reproductive health after childbirth.

The situation around the world is currently affected by the pandemic situation. A virus called Severe Acute Respiratory Syndrome Coronavirus (SARS-CoV2) that causes Covid-19. This single-stranded RNA virus has a high rate of infectivity in the general population and tends to be at risk in people with comorbid disease.⁸ One of the services affected is maternal health services. Various efforts and policies are aimed at the safety of maternity mothers and their babies, such as attention to the type of delivery. This study review the trend of the

type of delivery during the pandemic and the risk of urogynecology cases, especially in these three cases. The cases discussed were sexual dysfunction, pelvic floor disease and stress urinary incontinence.

METHOD

The non-systematic review was conducted through a review of the journals on the PubMed, Science Direct, and Google Scholar databases. The search was conducted using the keywords 'delivery mode', 'maternal health', 'pelvic organ prolapse', 'stress urinary incontinence', 'sexual dysfunction', Covid-19. Boolean operators are used to search for scripts, namely AND, OR, NOT. The literature review process is carried out through a database search and then the appropriate terms are reviewed. The data entered with the criteria are peer-reviewed academic journals in English. The first step is to choose a topic, define the scope and develop a title. After that introduce the importance of the topic and formulate a goal. Furthermore, a database search was carried out followed by the collection, analysis, and organization of sources. The data found are collected in one group, synthesize the information, determine the main points for future research, and recommendations. The research team extracted and organized in chronological order all the findings and related key phrases.

OVERVIEW

Trends in delivery mode during Covid-19

Exposure to the virus in hospitals and facilities that provide delivery services is the main focus. The mode of delivery is an important *u*focus that is widely studied in research because of the hypothesis that considers the possible risk of transmitting the virus from mother to baby during the delivery process. A study found that cesarean delivery was found in 385 women (65.47%) so that it had a greater prevalence than vaginal delivery which was only 218 women (34.53%). This selection was due to more than half of them being due to Covid-19-related conditions.⁹ Compared with the rate of caesarean section in the general healthy population, this act of delivery has a higher prevalence than the general population. WHO recommends protecting mothers from unnecessary medical technology.¹⁰ In a state of lockdown, pregnant women will not necessarily develop complications for indications of cesarean delivery. Unfortunately, the demand for caesarean sections at their own request during the pandemic has actually increased.¹¹

This tendency to select delivery mode is not entirely true. Each route of delivery was not correlated with a possible risk of vertical transmission during labour, and cesarean delivery should be performed based on obstetric indications.⁹ In addition, complications to the mother and fetus after delivery are not greater if the mother gives birth through vaginal delivery. The concept of giving birth and its selection must be individual and based on the severity of the disease and its indications.¹²

Relationship between type of delivery and urogynecology cases

Table 1 shows that sexual dysfunction was not related to the type of delivery but in cases of dyspareunia at 18

months postpartum, compared with women who delivered spontaneously vaginally with an intact perineum or tears without sutures, women who underwent emergency caesarean section, vacuum extraction, or caesarean section has a greater probability in dyspareunia cases. This is subject to adjustment for maternal age and other confounders. Meanwhile, compared with spontaneous vaginal delivery, cesarean delivery was associated with a protective effect or decreased stress urinary incontinence, overactive bladder, and pelvic organ prolapse. Six years postpartum, vaginal delivery and caesarean section were associated with different cases. Vaginal delivery is associated with urinary incontinence. Sectio caesarea is associated with the incidence of dyspareunia.

Table 1. Relationship between type of delivery and urogynecology cases

Author, country, year	Research type	Case	Finding
Fan et al, 2017 ¹³	Systematic review dan meta analysis	Sexual dysfunction	Postpartum (short and long-term) sexual satisfaction is not affected by mode of delivery
Dabiri et al, 2014 ¹⁴	Cross-sectional descriptive study	Sexual dysfunction	Postpartum sexual function was not related to the type of delivery.
Ghorat et al, 2017 ¹⁵	Cross sectional study	Sexual dysfunction	No long-term effect on a woman's sexual function related to the method of delivery
Barbara et al, 2017 ¹⁶	Cross sectional study	Sexual dysfunction	Poorer sexual function can be associated with operative vaginal delivery (which is not spontaneous) but no conclusions can be drawn from this study regarding the impact of pelvic floor trauma (perineal laceration or episiotomy) on sexual function due to the high rate of episiotomy.
Urbankova et al, 2019 ¹⁷	Single-centre prospective observational cohort study	Pelvic floor anatomy and dysfunction	The most critical risk factor for levator ani muscle (LAM) avulsion was forceps delivery, while an epidural had a protective effect
Eason et al 2004 ¹⁸	Prospective cohort study	Urinary incontinence	A person can experience urinary incontinence during pregnancy which correlates with the possibility of urinary incontinence at 3 months postpartum, regardless of whether the delivery is vaginal or by caesarean section
Tähtinen et al, 2016 ¹⁹	Systematic review and meta analysis	Stress Urinary Incontinence	Vaginal delivery was associated with a twofold increase in the risk of long-term SUI, and the effect was greatest in younger women compared with caesarean section
Baud et al, 2020 ²⁰	A cross-sectional study	Pelvic floor dysfunction	After an elective caesarean section women reported significantly less urgency urinary incontinence and stress incontinence than after vaginal delivery. Six years postpartum, vaginal delivery was associated with urinary incontinence, whereas elective caesarean section was associated with sexual pain and urination.
Gyhagen et al, 2019 ²¹	Nationwide matched cohort study	Urinary incontinence	Cesarean delivery was associated with a significant 30.0% reduction in urinary incontinence compared with vaginal delivery and a 35-52% reduction in the rate of more severe urinary incontinence independent of age.
Blomquist, et al, 2018 ²²	Cohort study	stress urinary incontinence, overactive bladder, and pelvic organ prolapse	Cesarean delivery had a protective effect against stress urinary incontinence, overactive bladder, and pelvic organ prolapse, whereas a significantly higher risk of anal incontinence and pelvic organ prolapse was associated with operative vaginal delivery.
Marvi et al, 2021 ²³	Systematic review and meta analysis	Dyspareunia	Dyspareunia differed according to mode of delivery although this difference was not statistically significant.
McDonald et al, 2015 ²⁴	Prospective Cohort study	Dyspareunia	Dyspareunia at 18 months postpartum tended to be reported by women who underwent emergency caesarean section, vacuum extraction, or caesarean section but adjusted for maternal age and other confounding factors.

Solutions for choosing delivery mode during a pandemic with attention to the effects of urogynecology cases

From the explanation about trends in delivery mode during Covid-19, it is known that it is necessary to choose the method of delivery wisely. Each delivery basically has its own risks such as the association of caesarean section with a reduced risk of pelvic organ prolapse and stress urinary incontinence in several studies. Both elective caesarean section and vacuum extraction were associated with sexual pain and urination at 6 years after delivery. Although influenced by many other factors, the choice of delivery method must be in accordance with medical indications. Some women may choose caesarean section method over vaginal delivery during a pandemic, because they feel safer from exposure to the virus but research reveals that each route of delivery is not associated with possible risks of intrapartum vertical transmission, and cesarean delivery. Complications for mother and baby after delivery are not greater if the mother gives birth through vaginal delivery. The increase in cesarean delivery rates can be justified in part because of the possible complications that most Covid-19 infections occur in the third trimester and have the potential to cause around 15% to require hospitalization. Experts argue that early delivery, even in less severe cases, is beneficial for the treatment and subsequent outcome of Covid-19.

In addition to the relationship between childbirth and the impact on urogynecological cases, cases related to urogynecology have experienced problems in service also during the pandemic. During the pandemic alone, several studies identified a decline in female sexual function in different countries, with an emphasis on sexual desire. Most studies have found a decrease in the frequency of sexual intercourse during the pandemic and an increase in solitary sexual behavior. This is associated with decreased sexual satisfaction and relationship satisfaction.²⁵ After Covid-19 disease, women may experience a change in the frequency of sexual intercourse, decreased sexual satisfaction even though the quality of life score does not change significantly.²⁶

This study has limitations, namely it is still a narrative review. The long-term effects of problems or risk factors that arise during the pandemic need to be analyzed more deeply, in an effort to anticipate and prepare for better service delivery. During the pandemic, it is known that the number of patient visits has decreased, so further impacts need to be explored further.

CONCLUSION

The caesarean section rate increased compared to vaginal delivery during the Covid-19 pandemic. Even in women with Covid-19, the mode of delivery by cesarean section was higher than the general population. The choice of delivery method needs to be chosen wisely and through medical indications so as to prevent long-term effects on women's reproductive health, such as pelvic organ prolapse, stress urinary incontinence and sexual dysfunction.

CONFLICT OF INTEREST

There is no conflict of interest

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