



Screening for Pregnancy Program Patients with Vaginal Swab and Pap Smear Examination

Ivanna Beru Brahmana^{1*)}; Agus Widiyatmoko²

^{1*)} Departement of Obstetrics and Gynecology, Faculty of Medicine and Health Science, Universitas Muhammadiyah Yogyakarta

² Departement of Internal Medicine, Faculty of Medicine and Health Science, Universitas Muhammadiyah Yogyakarta

ARTICLE INFO

Article history:

Received 11 December 2021

Accepted 21 April 2022

Published 10 June 2022

Keyword:

Pap smear

Pregnancy program

Vaginal swab

ABSTRACT

Background: Pregnancy programs not only require data on the size and shape of the uterus. The health of the vagina and cervix as sperm recipients should also be required, examined by vaginal swab and Pap smear. **Objective:** To describe the importance of vaginal swabs and Pap smears for the success of the pregnancy program. **Methods:** This research is a descriptive study. The data collected were secondary data from the medical records of pregnant patients during the first year of practice at the Reproductive/Obstetrics and Gynecology Polyclinic of AMC Muhammadiyah Hospital Yogyakarta from July 2019 to June 2020. The results of vaginal swab and Pap smear using descriptive analysis. **Results and Discussion:** 58 subjects enrolled in this research. The result of the vaginal swab and Pap smear examination showed normal and abnormal/pathogenic. Vaginal swab examination found more pathogenic microorganisms than nonpathogenic ones (58.6% vs 3.5%). The Pap smear examination found abnormal results (1.7%). These results show that vaginal swab and Pap smear are required for patients with pregnancy programs. **Conclusion:** Vaginal swab and Pap smear examinations are necessary when infertile patients need pregnancy programs.

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Kata kunci:

Pap smear

Program kehamilan

Swab vagina

**) corresponding author*

Ivanna Beru Brahmanma

Departement of Obstetric and Gynecology

Medical of Faculty Universitas

Muhammadiyah Yogyakarta

Email: ivanna@umy.ac.id

DOI: 10.30604/jika.v7i2.952

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ABSTRAK

Latar belakang: Program kehamilan tidak hanya memerlukan data tentang ukuran dan bentuk rahim. Kesehatan vagina dan serviks sebagai penerima sperma semestinya juga diperlukan, dengan pemeriksaan swab vagina dan Pap smear. **Tujuan:** untuk mengetahui perlunya pemeriksaan swab vagina dan Pap smear dalam keberhasilan program kehamilan. **Metode:** Penelitian ini merupakan penelitian deskriptif. Data merupakan data sekunder dari rekam medis pasien program kehamilan saat praktek tahun pertama di Poliklinik Reproduksi/Kebidanan dan Kandungan RS AMC Muhammadiyah Yogyakarta sejak bulan Juli 2019–Juni 2020. Hasil pemeriksaan swab vagina dan Pap smear dianalisis secara deskriptif. Hasil dan Pembahasan: Didapatkan 58 subyek penelitian yang mengikuti program kehamilan. Hasil pemeriksaan swab vagina menunjukkan 58,6% berupa mikroorganisma patogen dan 3,5% berupa mikroorganisme nonpatogen. Hasil pemeriksaan Pap smear abnormal sebesar 1,7%. Hasil ini menunjukkan bahwa swab vagina dan Pap smear perlu dilakukan pada pasien program kehamilan. **Kesimpulan:** Pemeriksaan swab vagina dan Pap smear perlu dilakukan pada pasien yang sedang program kehamilan.

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INTRODUCTION

The number of pregnancy programs of patients who visited the Reproductive/Obstetrics & Gynecology Polyclinic at AMC Muhammadiyah Yogyakarta Hospital in July-December 2019 was 15.5% (Brahmana, 2020). This percentage is significant for a more complex pregnancy program than the Artificial Insemination running so far. Pregnancy success in the program is a considerable achievement, starting from routine examinations to more complex ones.

History and routine examinations were carried out in Ultra Sono Grafi (USG) and gynaecological examinations. Ultrasound examination provides information on the size and shape of the uterus and information on the state of the vagina and cervix. In terms of the presence of whitish discharge or leucorrhoea, cervical inflammation is evident with this gynaecological examination. Gynaecological examination or pelvic examination do to evaluate such as bacterial vaginosis, candidiasis, genital warts, genital herpes, trichomoniasis, and pelvic inflammatory disease (Bibbins-Domingo *et al.*, 2017)

The prevalence of bacterial vaginosis (BV) in non-pregnant women is 15-30% (Aduloju *et al.*, 2019). Bacterial vaginosis causes loss of normal vaginal flora, especially hydrogen peroxide as a producer of Lactobacillus sp, but increases other bacteria that cause pathological vaginal discharge. It leaves pathological vaginal discharge as it goes unnoticed and gets therapy developed into an infection of the cervix.

The vagina, as the first place to receive sperm from the husband, has to be free from the bacteria that cause pathological vaginal discharge, especially for married couples who participate in the pregnancy program. Vaginal infection complaints against BV, candidiasis, trichomoniasis and Chlamydia trachomatis infection are frequently found in women of reproductive age (Abdelaziz *et al.*, 2014). Abnormal microorganisms in the vagina have a detrimental effect during pregnancy (Tellapragada *et al.*, 2017). The identifying vaginal conditions can be carried out by conducting a microscopic examination of microorganisms in the vagina (Abdelaziz *et al.*, 2014).

Vaginal examination by inspeculo can describe cervical condition. Pap smear examination describe the cervical condition, it is normal or abnormal cervical cytology. Abnormal cervical cytology results ranging from 0.72 to 1.6% were found during pregnancy. These anomalous results are challenging to evaluate, constrained by the standard conditions of metaplastic changes in pregnancy (Gill *et al.*, 2020). Research conducted by Sachan involved sexually active women, including infertile respondents (Sachan *et al.*, 2018).

Based on this reason, this study attempts to reveal the need for vaginal swab examinations and Pap smear examinations for pregnant couples at the Reproductive/Obstetrics and Gynecology Polyclinic in the period July 2019 – June 2020.

METHOD

This research is descriptive study. The data collected were secondary data from the medical records of pregnant program patients during the first year of practice at the Reproductive/Obstetrics and Gynecology Polyclinic of AMC

Muhammadiyah Hospital Yogyakarta from July 2019 – June 2020. The results of the vaginal swab and Pap smear examinations were analyzed using descriptive analysis.

This research has received ethical approval from the Health Research Ethics Committee of the University of Aisyiyah Yogyakarta with no 1710/KEP-UNISA/X/2020, on October 6, 2020. The pregnant program patients mean they are infertile women who attendance to the Reproductive/Obstetrics and Gynecology Polyclinic of AMC Muhammadiyah Hospital Yogyakarta want to check her reproductive organs. After evaluation her reproductive organs, she hope become a pregnant women. So all of the patients who had swab vaginal and Pap smear examination results in this research were not pregnant women.

Table 1 shows the characteristics of the research subjects. The number of research subjects for the pregnancy program was 58 respondents. The wives were mostly between 20-35 years old (65.5%) (38/58). It show a majority pregnancy program patients who attendance at this hospital were healthy reproductive age. The American Cancer Society (ACS) revealed that Pap smears start at 25 years old (Fontham *et al.*, 2020). In this study, most respondents were 20 -35 years old (65.5%), which aligns with the ACS.

Respondents who have never been pregnant were 79.3% (46/58). 13.8% already had one child (8/58), 3.4% have had two children (2/58), and no data was 3.4% (2/58). Respondents who never had an abortion were 75.9% (44/58), while those who had were 13.8% (8/58). Those who had abortions twice were 5.2% (3/58), while those who had an abortion >2x were 1.7% (1/58). Meanwhile, no data as much as 3.4% (2/58).

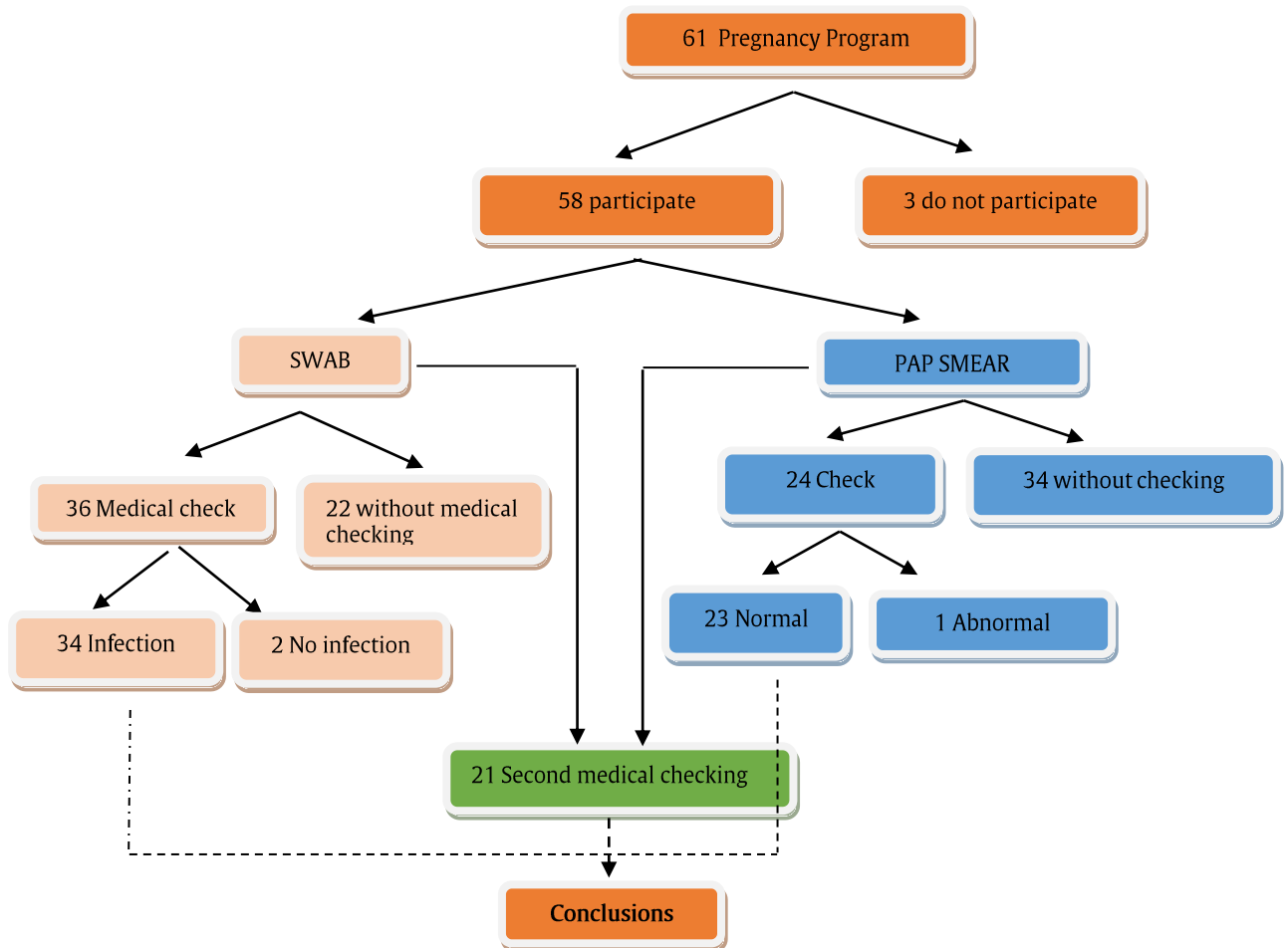
Investigations carried out were vaginal swabs and Pap smears. Vaginal swabs were performed on 62.1% (36/58), with the result that there was infection and no infection in 58.6% (34/58) and 3.5% (2/58), respectively. Pap smears were found in 41.4% (24/58), with regular and abnormal cytology results in 39.7% (23/58) and 1.7% (1/58), respectively.

The routine examination plus vaginal swab and Pap smear found 10.3% (6/58) of respondents who were successful in pregnancy. Respondents who still had not succeeded in getting pregnant were 89.7% (52/58). Actions were taken to conceive using Planned Coitus. It is likely that if Intra Uterine Insemination (IUI) is carried out, even IVF, pregnancy success is expected to be more significant. Based on this reason, AMC Muhammadiyah Yogyakarta Hospital has the opportunity to continue to be developed into a reproductive clinic centre to serve IVF.

The success of pregnancy with ST of 10.3% requires efforts to maintain the health of the mother and fetus to obtain optimal fetal growth and development. On examination of microorganisms in the vagina of pregnant women, abnormal colonization in the first trimester (21.7%) was more significant than in the second (21%) and third trimester (14.5%) ($p = 0.048$) (Son *et al.*, 2018).

By the time pregnancy has been achieved, the challenges of the first trimester of abnormal vaginal colonization are the greatest. It risks the fetus not to develop and grow well into the next trimester. Fetuses who can develop into the second trimester face the challenge of risking a preterm pregnancy before 28 weeks of age if Klebsiella pneumonia is found, with a p-value of 0.029 (Son *et al.*, 2018). It is in line with the study results of 36 respondents who were willing to undergo vaginal swab examination; 94.4% (34/36) contained pathogenic or infectious microorganisms.

Chart 1. Research Flowchart



RESULTS AND DISCUSSION

The incidence of preterm pregnancy also occurs due to the extreme shortness of the cervix. In short, the disproportionate size of the cervix is influenced by the presence of pathogenic microorganisms in the vagina, namely *L. liners-dominated*(Di Paola *et al.*, 2020). It further supports the need for vaginal swab examinations in pregnancy program patients. When the pregnancy is successfully achieved, it is expected that the pathogenic microorganisms have been appropriately handled; thus, the pregnancy can healthily take place.

Microorganisms found in preterm pregnancies were *E. Coli* (34%), *Candidial spp* (21%), *Enterococci* (10%), *Staphylococci* (8%), *Gardnerella vaginalis* (7%), and *Group B Streptococcus* (5%). Preterm pregnancies are associated with genital infections in pregnant women(Singh *et al.*, 2016). The presence of pathogenic microorganisms in the vagina of pregnant women causes prolonged labour, which induces labour to be stuck. Vaginal colonization of these potential pathogens is 49% by *E. Coli*, 8% by *Enterococcus*, and 5% by *GBS*(Ngonzi *et al.*, 2018). In this study, the pathogenic microorganisms obtained are as shown in table 2.

Pathogenic microorganism from vaginal swab results showed Gram rods was a largest number 67.7% (23/34). Bacterial vaginosis and Gonorrhoea were very risk microorganism if found in a pregnant women. Bacterial vaginosis is diagnosed from a whitish discharge like fishy odour and microscopic clue cells or vaginal pH 4.5. Bacterial vaginosis clinically causes preterm labour, premature

rupture of membranes, spontaneous abortion, and puerperal infection (Joyisa *et al.*, 2019).

Table 1.
Characteristics of Research Subjects (n=58)

Characteristics /Classification	n	%	Mean ± SD
Wife's age			
20-35 years old	38	65.5	31.89±5.575
36-40 years old	10	17.2	
>40 years old	5	8.6	
No data	5	8.6	
Parturition			
0	46	79.3	
1	8	13.8	
2	2	3.4	
No data	2	3.4	
Abortion			
0	44	75.9	
1	8	13.8	
2	3	5.2	
>2	1	1.7	
No data	2	3.4	
Swab results (n=36)			
Infection	34	58,6	
No infection	2	3,5	
No swab	22	37,9	
Pap smear results (n=24)			
Normal	23	39,7	
Abnormal	1	1,7	
No Pap smear	34	58,6	

Pregnancy test results		
Pregnant	6	10.3
Not Pregnant	52	89.7

Table 2.
Types of Vaginal Swab Pathogenic Microorganisms (n=34)

No.	Types of Microorganisms	n	Percentage
1	Gram rods -	23	67,7
2	Polymorphonuclear (pmn) >10/lp	22	64,7
3	Cocobacil Gram -	16	47,1
4	Kokobacil G+	10	29,4
5	Candida	6	17,7
6	Cocci Gram +	5	14,7
7	Bacterial vaginosis	3	8,8
8	Gonorrhoea	1	2,9

Pathogenic microorganism from vaginal swab results showed Gram rods was a largest number 67.7% (23/34). Bacterial vaginosis and Gonorrhoea were very risk microorganism if found in a pregnant women. Bacterial vaginosis is diagnosed from a whitish discharge like fishy odour and microscopic clue cells or vaginal pH 4.5. Bacterial vaginosis clinically causes preterm labour, premature rupture of membranes, spontaneous abortion, and puerperal infection (Joyisa *et al.*, 2019).

Besides, pathogenic microorganisms found on vaginal swab examinations are at the risk of causing sepsis in babies born. It is shown in studies of pregnant women with premature rupture of membranes at term gestation, singleton fetuses, head presentation, vaginal swabs before vaginal toucher examination, and administration of antibiotics. However, the incidence of premature rupture of membranes that is less than six hours does not cause sepsis in newborns (Gopal, 2017).

Human Papillomavirus (HPV) is a cause of cervical cancer, where the disease can be prevented (Ebu *et al.*, 2014) or at least detected at an early stage (Nkwabong *et al.*, 2019). The maximum age of women at the risk of HPV infection ranges 20-35 years old (Pandey *et al.*, 2019). It is in line with the characteristics of respondents in this study, where the age range is the most significant respondent, with a total of 65.5% (38/58). Due to a robust immune system, most HPV infections in this age range are asymptomatic and can even improve without therapy (Pandey *et al.*, 2019).

Women aged between 20-35 years are sexually active. HPV infection in pregnancy can cause the risk of premature rupture of membranes (preterm rupture of membranes), preeclampsia, slow growth of the fetus (fetal growth restriction), preterm delivery, and placental abnormalities (Pandey *et al.*, 2019).

Early detection of cervical cancer is carried out by Pap smear examination (Terlan & Cesar, 2018) and HPV test; both assessments can be carried out separately or simultaneously (Rerucha *et al.*, 2018). Pap smear examination conducted in this study found one respondent (1/58) with abnormal results (1.7%). Pap smear examination conducted on pregnant women in the first trimester also obtained abnormal results with a total of 0.9% (3/308). The three respondents with abnormal results consisted of 2 Low-Grade Squamous Intraepithelial Lesions (LSIL) and 1 Atypical Squamous Cells Of Undetermined Significance (ASCUS) (Ahuja *et al.*, 2020).

The data above aligns with the result of this study showing that one respondent with an abnormal Pap smear result was ASCUS. Another study found ASCUS, LGSIL, and high-grade squamous intraepithelial lesion (HGSIL) as much as 2.90%, 5.09%, and 0.48%, respectively (Sachan *et al.*, 2018). LGSIL and HGSIL of Pap smear results of 4.5% (5/110) and

1.8% (2/110) were obtained in the Ekwedigwe study (Ekwedigwe *et al.*, 2018).

Respondents who had a Pap smear examination had a high complaint of vaginal discharge (Sachan *et al.*, 2018). It further supports the need for vaginal swabs and Pap smears in patients with pregnancy programs by considering the risks that pathogenic vaginal microorganisms can pose during pregnancy.

LIMITATION OF THE STUDY

The research was only carried out for a year practicing at the Obstetrics and Gynecology polyclinic at AMC Muhammadiyah Yogyakarta Hospital. The data is presented in descriptive form.

CONCLUSIONS AND SUGGESTIONS

Vaginal swab examination found more pathogenic microorganisms than nonpathogenic ones (58.6% vs 3.5%). Pathogenic organisms in the vagina were more commonly found in the first trimester. These pathogenic microorganisms were at risk of causing preterm labour and sepsis in newborns. Furthermore, the pap smear examination found abnormal results (1.7%), indicating the need for a vaginal swab and Pap smear examinations in patients with pregnancy programs.

Acknowledgment (If Necessary)

Thank you to AMC Muhammadiyah Yogyakarta Hospital as the place for data collection in this research.

ETHICAL CONSIDERATIONS

The research has received ethical approval from the Health Research Ethics Committee of the Universitas 'Aisyiah Yogyakarta numbered: 1710/KEP-UNISA/X/2020 dated October 6, 2020.

Funding Statement

No funding was received for conducting this study.

Conflict of Interest Statement

No conflicts of interest in this study.

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