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SURAT KETERANGAN

Nomor: 182/UNUSA/Adm-LPPM/III/2021

Lembaga Penelitian dan Pengabdian Kepada Masyarakat (LPPM) Universitas Nahdlatul Ulama Surabaya menerangkan telah selesai melakukan pemeriksaan duplikasi dengan membandingkan artikel-artikel lain menggunakan perangkat lunak **Turnitin** pada tanggal 09 Maret 2021.

Judul	: *Cervical Cancer Incidence Correlation With Hormonal Contraceptive Use*
Penulis	: Nur Zuwariyah, Rizki Amalia, Syafaatul Ainiyah
Identitas	: *Journal of health Science, Vol. 14, No. 01 2021*
No. Pemeriksaan	: 2021.03.10.077

Dengan Hasil sebagai Berikut:

Tingkat Kesamaan diseluruh artikel (*Similarity Index*) yaitu 12%

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Cervical Cancer Incidence Correlation With Hormonal Contraceptive Use

by Rizki Amalia

Submission date: 09-Mar-2021 05:58AM (UTC-0800)
Submission ID: 1528362756
File name: jhs_jujuk.pdf (220.59K)
Word count: 1971
Character count: 11013

ISSN 1978-6743
E-ISSN 2477-3948
Jurnal Ilmiah Kesehatan
(Journal of Health Science)
Fakultas Keperawatan dan Kebidanan | Universitas Nahdlatul Ulama Surabaya

Cervical Cancer Incidence Correlation With Hormonal Contraceptive Use

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ARTICLE INFORMATION

Received: August, 12, 2020
Revised: January, 5, 2021
Available online: February, 2021

KEYWORDS

The hormonal contraceptive use, Incidence of cervical cancer, Women

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A B S T R A C T

One of the most dangerous diseases for Indonesian women is cervical cancer. Hormonal contraceptive use is one of the risk factors for cervical cancer, especially in prolonged use for more than five years. This study evaluates the correlation between hormonal contraceptive use with cervical cancer incidence in Surabaya Wisnuwardhana Cancer Foundation. In this research, the authors used the analytical design with the cross-sectional approach. There were 30 respondents selected with the purposive sampling technique. The independent variable was hormonal contraceptive use, and the dependent variable was cervical cancer incidence. The instruments utilized questionnaires and medical records. Data analysis applied the Rank-spearman test with the significance level of $\alpha = 0.05$. The results showed that most of the respondents (63,3%) used hormonal contraception. Almost half of them (46.7%) are categorized in class 2 of pap smear classification (mild infection). Hormonal contraceptive use correlated with cervical cancer incidence (p=0.005). The prolonged hormonal contraceptive use, the greater cervical cancer incidence in women.

INTRODUCTION

Cervical cancer is cancer that appears in the cervix of women. The cervix itself serves as the uterus's entrance from the vagina (Collen and Robert, 2011). This cancer is the number one killer for Indonesian women. The high number of cervical cancer cases in Indonesia has made the WHO place Indonesia as the country with the highest number of people with cervical cancer in the world (Kementrian Kesehatan Republik Indonesia, 2013). In today's society, most of them use contraception to limit and keep their birth spacing. The increasing number of family planning acceptors is due to government programs to prevent a population explosion. Data from The National Population and Family Planning Board (BKKBN) shows that almost half of women use the hormonal contraceptive method. Hormonal contraception is still in great demand by women. Meanwhile, hormonal contraception itself is one of the risk factors for cervical cancer, especially if the use is longer or more than five years (Proverawati, 2010).

Based on data from The Global Cancer Observatory (GLOBOCAN), a project of the International Agency for Research on Cancer (IARCH), in 2012, reported that there were 14,067,894 new cases of cancer and 8,201,575 deaths from cancer worldwide. The highest percentage of breast cancer cases was in 2012. In 2012, the Incidence of cervical cancer globally was 14.0% new cases, and 6.8% of death cases due to cervical cancer (Sari, & Hartanto, 2016). According to the chairman of the Indonesian cancer foundation (Prof. Dr. dr. Aru Wicaksono), the number is also very high for people living with cervical

https://doi.org/10.33086/JHS.V14.I1.1210

cancer. Every year there are no less than 15,000 cases of cervical cancer in Indonesia. Data from the Wisnuwardhana Cancer Foundation in July - September 2018 on 150 women who conducted Pap smears. The pap smear classification results showed that 25 women were in class I (normal), 90 women were in class II (mild infection), 25 women were in class III (severe inflammation), and ten women were in class IV (suspicious and malignant cells). In a preliminary study conducted by researchers at the Wisnuwardhana Cancer Foundation in September 2018, from 7 people who ran a Pap Smear, six women (80%) had a mild infection or class II, and one woman (20%) experienced class I or normal. Six women mostly used hormonal contraception.

The American Cancer Society mentions several risk factors for cervical cancer. Its factors include multiple sexual partners, sexual intercourse at an early age, antiseptics, smoking, labor frequency, low economic, immune suppressants, and hormonal contraceptives (Riksani, 2016). Hormonal contraception is exposure to foreign hormones such as estrogen and progesterone in excess so that it disturbs the physiology in the body, including in the cervical tissue area. Estrogen and progesterone increase cell division in the ductal epithelium, thereby increasing the probability of mutations occurring. The estrogen and progesterone action mechanism also affects ovulation, implantation, gamete transport, luteolysis, and cervical mucus thickness. It is resulting in suppressing FSH and LH production. The mucus' thickness will prolong a carcinogenic agent's presence – by sexual contact and HPV virus – in the cervix.

Cervical cancer's impact causes several complications such as early menopause, vaginal narrowing, pain due to cancer's metastasis, abnormal vaginal fluid production, and even fatal death causes among women worldwide. Death occurs annually from this preventable disease. Therefore, the researchers wanted to investigate the correlation between hormonal contraceptives and cervical cancer incidence.

METHOD

The research design was an analytic and cross-sectional approach, namely the type of observational research where data collection was done once at the same time. The authors did this study at the Wisnuwardhana Cancer Foundation Surabaya for one week in April 2019. The population was all women who came to run the Pap Smear examination. There were 30 respondents with inclusion criteria. We applied a non-probability sampling technique with a purposive sampling technique. The independent variable was the hormonal contraceptive use, and the dependent variable was the cervical cancer incidence. The research instrument utilized a questionnaire and medical records (to measure the incidence rate of cervical cancer). The study's statistical analysis applied the Spearman Rank Correlation Test, with a significance value of $\alpha = 0.05$ and the result was $\rho = 0.005$. H0 ρ (0.029) $<\alpha$ = (0.05), which means that there was a rejection of H0. Hormonal contraceptive use correlated with cervical cancer incidence at the Wisnuwardhana Cancer Foundation Surabaya.

https://doi.org/10.33086/JHS.V14.I1.1210

RESULTS

Table 1 Frequency distribution of contraceptive use at the Wisnuwardhana Cancer Foundation Surabaya

No.	Use of contraceptives	Frequency	Percentage (%)
1.	Hormonal	19	63.3
2.	Non-hormonal	11	36.7
	Total	30	100.0

Table 1 shows that the majority of respondents (63.3%) use hormonal contraception.

Table 2 Frequency distribution of Pap smear classification at the Wisnuwardhana Cancer Foundation Surabaya

No	Pap Smear Classification	Frequency	Percentage (%)
1.	Class I	9	30,0
2.	Class II	14	46,7
3.	Class III	5	16,7
4.	Class IV	2	6,7
	Total	30	100,0

Table 2 describes that almost half of the respondents (46.7%) experience mild infection (level II).

Table 3 Cross-tabulation of the use of hormonal contraceptives with cervical cancer incidence rates in women at Wisnuwardhana Cancer Foundation Surabaya

No	Use of contraceptives	Pap Smear Classification								Total		
		Class I		Class II		Class III		Class IV				
		n	%	n	%	n	%	n	%	n	%	%
1	Hormonal	3	15,8	9	47,4	5	26,3	2	10,5	19	63,3	100
2	Non Hormonal	6	54,5	5	45,5	0	0	0	0	11	36,7	100
	Total	9	30	14	46,7	5	16,7	2	6,7	30	100	100

Table 3 narrates that of the 19 respondents who used hormonal contraceptives, almost half of them (47.4%) have a mild infection (class II). Of 11 respondents who used non-hormonal contraceptives, most of them (54.4%) had normal results (class I). Based on Rank-Spearman statistical test with maximum $\alpha = 0.05$, ρ value was 0.005, which means $\rho < \alpha$, there was a rejection of H0. There was a correlation between the use of hormonal contraceptives with cervical cancer incidence at the Wisnuwardhana Cancer Foundation Surabaya.

DISCUSSION

The Rank-Spearman statistical ρ value was 0.005 ($\rho < \alpha$), there was a rejection of H0. There was a correlation between the use of hormonal contraceptives and cervical cancer incidence at the Wisnuwardhana Cancer Foundation Surabaya. The use of hormonal contraceptives for five years or more increases the risk of cervical cancer two times (Aminati, 2013).

Based on table 3, class II of pap smear classification consists of respondents who used hormonal contraceptives. While class I of pap smear classification comprised of respondents who used non-hormonal contraceptives. Hormonal contraception is excessive exposure to foreign hormones such as

estrogen and progesterone. It disturbs the body's physiology, including in the cervical tissue area. Estrogen and progesterone function increases the rate of cell division in the ductal epithelium. Thereby, it will increase the probability of mutations. Estrogen and progesterone affect ovulation, implantation, gamete transport, luteolysis, and cervical mucus thickness. As a result, there is a suppression of FSH and LH production. The thickness of the mucus will prolong a carcinogenic agent's presence – through sexual intercourse, including the presence of the HPV virus – in the cervix (Winarsih, 2017). Cancer dysplasia or precancerous condition is a term used to describe the early growth of abnormal cells in the cervix that can develop into cancer. The time it takes from dysplasia to carcinoma in situ ranges from 1-7 years, while the time needed from in situ carcinoma to invasive is 3-20 years (Riksani, 2016).

The more prolonged women use hormonal contraceptives (more than five years), the greater cervical cancer incidence. Long-term use of hormonal contraception will cause higher hormone progesterone levels in a woman's body. Women can have adverse effects caused by the hormone progesterone, including early cervical cancer symptoms such as irregular menstruation and pathological vaginal discharge. The process of cervical cancer progression is slow, preceded by changes in dysplasia. Dysplasia can occur when there is increased epithelial regeneration activity due to mechanical or chemical trauma, viral or bacterial infection, and hormonal balance disorders. Within 7-10 years, this development becomes a pre-invasive form that develops into an invasive cervical stroma in the presence of a malignant process. Expansion of lesions in the cervix can produce sores, exophytic growths and infiltrate the cervical analyzer. The lesions can extend to the fornix, tissues in the cervix, and parametria and eventually invade the rectum and bladder. This DNA virus attacks the surface epithelium of the cervix in the basal cells of the transformation zone, assisted by other risk factors resulting in irreparable changes in genes in vital molecules, persistence and loss of characteristics, and control of cell growth, resulting in malignancy (Arumaniez, 2010).

CONCLUSIONS

We conclude a correlation between hormonal contraceptive use with cervical cancer incidence at the Wisnuwardhana Cancer Foundation Surabaya. The prolonged hormonal contraceptive use, the greater cervical cancer incidence in women.

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