

## THE EFFECT OF HORMONAL CONTRACEPTION ON FEMALE SEXUAL DYSFUNCTION : A SYSTEMATIC LITERATURE REVIEW

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### Abstract

One of the side effects of hormonal contraception is sexual dysfunction. Sexual dysfunction can cause serious problems such as depression, emotional disorders, mental health disorders, dissatisfaction in husband and wife relationships, decreasing harmony and reducing the quality of life for women. The aim of this study was to determine the effect of hormonal contraception on the sexual function of women who became family planning recipients. Systematic literature review used search engines in the PubMed, Proquest and Science Direct databases from January 2008 to December 2018. The cause of sexual dysfunction in female hormonal contraceptive acceptors was hormonal changes. Factors that influence included age, race, parity, socioeconomic status, education level, depression, health conditions, body mass index (BMI), partner ownership, interpersonal, socio-cultural, alcohol consumption, pregnancy and smoking. The impact of sexual dysfunction in women covered depression, emotional disturbances, mental health disorders, physical health problems, anxiety and fear that affected the satisfaction of marital relationships. It is expected that health workers provide counseling regarding the long-term side effects of hormonal contraceptive use and become a consideration for policy makers to promote family planning programs for men.

**Keywords : hormonal, contraception, sexual dysfunction**

### 1. INTRODUCTION

Contraception Services is an effort to support national contraception program policies. One indicator of contraception programs is the current contraception using and CPR (Contraceptive Prevalence Rate). CPR is the percentage of the using contraceptive methods by couples ages 15-49 years married or living together [6]. One main problems in developed countries is population growth which causes economic, cultural and social problems. Developed countries must balancing the growth rate of the population to achieve prosperity and optimal health status [3]. According to the World Health Organization (WHO) contraceptive use has increased in many parts of the world. Among ASEAN countries, Indonesia with the largest region remains the most populous country with the number of injectable contraceptive use, which is around 45%. The most interested contraceptive programs in Indonesia is injection contraception by 34.3% [6]. Hormonal contraception used to prevent pregnancy from occurring can have both positive and

negative influences, the negative effects of contraceptive methods as a cause of dropping out are fear of the side effects. The Special Region of Yogyakarta is the highest province with reason of fear of side effects (26.0%) [6]. Side effects caused by hormonal contraception are sexual dysfunction. Sexual dysfunction in women is a failure of women to achieve sexual desire, interest, orgasm and lubrication during sexual intercourse [3]. Sexual dysfunction can cause serious problems such as depression, emotional disorders, mental health disorders, dissatisfaction in husband and wife relationships, reduce harmony and reduce the quality of life for women. Sexual dysfunction is a common problem, with an estimated prevalence of 40% [9].

Sexuality issues are still considered as taboo by the community, that is why many women who hide sexuality problems slip the attention of health workers [9]. Therefore health workers must be able to dig deeper into information about the issues of female sexuality and still provide counseling about the side effects of using contraception. At each KB service visit, health workers must assess the time since the last contraceptive exposure, menstrual pattern, changes in sexual health, and examination women that still meet medical eligibility criteria to be able to use certain types of contraception or replace with other methods of contraception [2].

## 2. METHODS

### 2.1 Identification Problems

Identification problems that will be used as ground for reviewing articles, namely sexual dysfunction problems in female contraception acceptors which includes:

- a. The causes of sexual dysfunction on female hormonal contraceptive acceptors
- b. The Factors that affecting sexual dysfunction on female hormonal contraceptive acceptors
- c. The impact of sexual dysfunction on female hormonal contraceptive acceptors

### 2.2 Priority Problems and Research Questions

The priority problem in this systematic literature review is the effect of hormonal contraception on the sexual function of women with contraception acceptors can have an impact on the quality of women's life. Research questions in this systematic literature review are:

- a. How can hormonal contraception cause sexual dysfunction in women with contraception acceptors?
- b. What is the factors that influences sexual dysfunction on female hormonal contraceptive acceptors?
- c. What is the effects of sexual dysfunction on female hormonal contraceptive acceptors?

### 2.3 Framework Data Inclusion and Exclusion Criteria

The following below is the Framework that can be use reference for inclusion and exclusion criteria in this Systematic Literature Review:

**Table 1. Framework Research Question**

<i>Element</i>	<i>Inclusion</i>	<i>Exclusion</i>	<i>Rationale</i>
<i>Population</i>	Female hormonal contraceptive acceptors	Non hormonal contraceptive acceptors	
<i>Exposure/Event</i>	Sexual disfunction		
<i>Outcomes</i>	Hormonal contraceptive		
<i>Study Design</i>	Case control; Cross Sectional;		Quantitative method

### 2.4 Identification of Relevant Studies

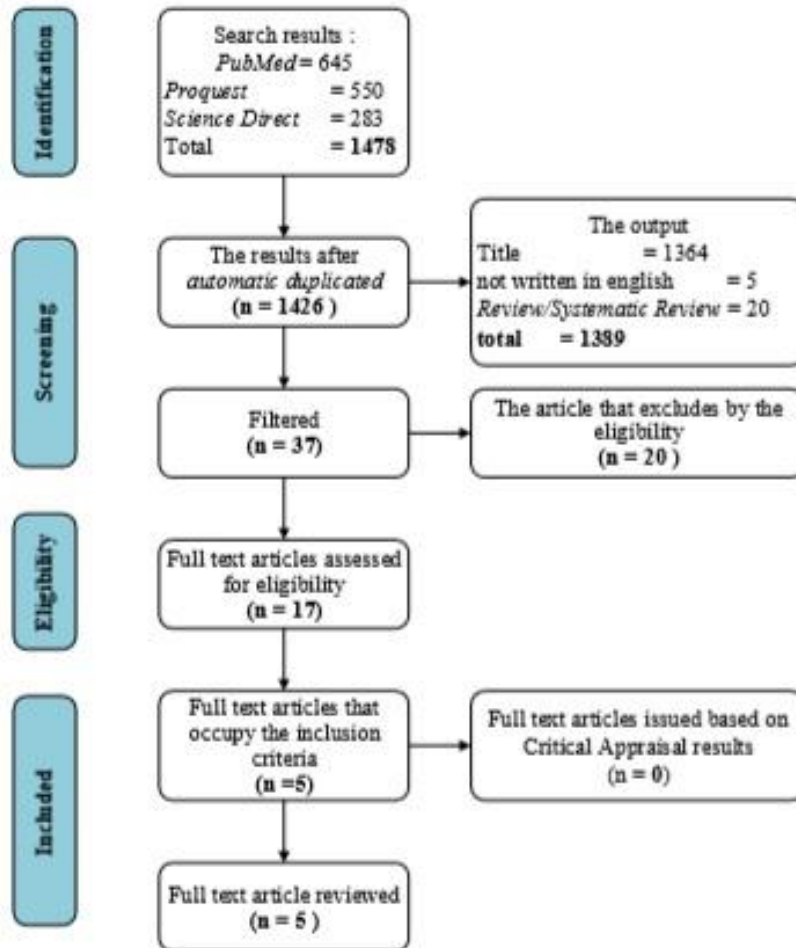
In this systematic literature review, literature studies have been conducted. The first step is the making of frameworks as a basis for determining inclusion and exclusion criteria so that the data sought does not expand and focus on the context that being sought. Second, compile keywords that are designed and focused on the framework. Third, enter the keyword into the search engine in the PubMed, Proquest and Science Direct databases. PubMed, Proquest and Science Direct databases also manage filters on the page such as Full Text, Data Publish filters in 10 years ago, Human, Not Review and English language filters. The fourth step, after finding a total of 645 articles, namely PubMed, 550 Proquest articles and 283 Direct Science articles. The three pages are then saved to the Zotero bibliography engine. In Zotero the data is inputted and the data is then filtered according to the framework. Unsuitable articles are removed from the "relevant" folder. The findings of the number of articles and filter processes will be discussed on the Prisma Flowchart. The keywords used in search engine searches in the PubMed, Proquest and Science Direct databases are Female sexual dysfunction, Sexual function, Libido, Desire, Sexual arousal, Sexual life, Vaginal pain, Dyspareunia, contraception, combined oral contraceptives, ethinyl estradiol, contraceptive method , hormonal contraceptive, DMPA, Depo-Medroxyprogesterone Acetate. Search keywords using a combination of "OR" and "AND".

## 2.5 Prisma Flowchart

On the three search engines, the Pubmed, Proquest and Science Direct database found 1478 articles. Then the duplicate article was identified and found the same 52 articles so that the remaining articles were 1426 articles. From the number of articles, many articles were filtered or released because the titles were not in accordance with the framework, abstracts were not in accordance with the framework, there were languages that did not speak in English, there were articles in the form of reviews and articles that were not indexed scopus so that the number was reduced to 37 articles . 37 articles were accessed full text and filtered again according to the framework. Six suitable articles will be carried out data extraction analysis. The results that have been extracted are findings that will then be "critical appraisal" and compiled a mapping for the discussion chapter. Next is the Prisma Flowchart in this systematic literature review (**Picture 1**).

## 2.6 Data Extraction Analysis

After the eligibility process has been selected as many as 5 articles that occupy the inclusion criteria in full text access and are filtered again according to the framework and the appropriate results will be extracted data analysis. Five articles of good quality are indexed scopus with standards Q1 and Q2, then the next step is Critical Appraisal.



Picture 1. Prisma *Flowchart*

Table 2. Data Extraction

N o	TITLE/WRITER/YEAR/LEVEL/ COUNTRY/JOURNAL	PURPOSE	RESEARCH DESIGN	SAMPLE/SIZE	RESULTS
1	Sexual Desire and Hormonal Contraception / Amanda Boozalis, Nhial T Tutlam, Camaryn Chrisman Robbins and Jeffrey F Peipert / 2016 / Scopus Q1 / America / Journal Obstetrics & Gynecology	To find out the effect of hormonal contraception on sexual desire	Cross Sectional	A cross-sectional study in 1938 of 9256 participants enrolled in the Contraception Choice Project.	More than 1 in 5 participants (23.9%) reported being less interested in having sex at 6 months after starting a new contraceptive method. On the 262 IUD contraceptive users (reference groups), 18.3% reported being less interested in sex. Women under the age of 18 show OR 2.04, women whose marry or live with partners showing OR 1.82. Compared with IUD users, participants using medroxyprogesterone acetate depot showed OR 2.61, 95% CI (1.47-4.61), vaginal rings showed OR 2.53, 95% CI (1.37-4.69), and OR implants 1 , 60, 95% CI (1.03-2.49) more often reported a lack of interest in sex. The study found no association between the use of hormone IUDs, oral contraceptive pills, and patches and a lack of interest in sex.
2	Sexual Function in Iranian Women Using Different Methods of Contraception / Gharidian Fataneh, Mardani H Marjan, Rezaee Nasrin and Taghavi Taraneh / 2013 / Scopus Q1 / Iran / Journal of	To find out sexual function in Iranian women using different methods of contraception	Case Control	In this study, the samples included 608 married women aged 15–49 years from the Shahin Shahr medical center in Isfahan. The sample	The independent results of the t test showed significant differences in all sexual function domains in the two groups ( $p < 0.05$ ). Most contraceptive methods in the control group were natural methods (28.4%), and the least

Table 2. Data Extraction

	Clinical Nursing			chosen, based on the use of the contraceptive method, was divided into the case group (n = 306) and the control group (n = 302).	used was a vasectomy (1.8%). The results showed that the least sexual dysfunction in Iranian women used the condom method, and the most was done in the vasectomy method. There were no significant differences between all sexual function domains (except pain) in the type of contraceptive method (p <0.05).
3	Hormonal Contraception and Female Pain, Orgasm and Sexual Pleasure / Nicole K Smith, Kristen N Jozkowski and Stephanie A Sanders / 2014 / Scopus Q1 / United States / Journal Sexual Medicine	Exploring sexual function and behavior of women in relation to the use of hormonal contraception compared to non-hormonal methods	Cross sectional	The total sample of 1,101 women was divided into 2 groups: the first group of 535 participants used a combination of hormonal and non-hormonal methods, while the second group 566 participants used only non-hormonal contraceptive methods.	Women who used hormonal contraceptive methods experienced less sexual activity (t = -2.88, P <0.01), less passion (t = -3.09, P <0.01), less enjoyment (t = -1.95, P <0.05), and orgasmic difficulties (t = -2.39, P <0.05) and more difficulties in lubrication (t = 2.00, P <0.05)
4	Hormonal Contraception and Sexual Desire : A Questionnaire-Based Study of Young Swedish Women / Agota Malmborg, Elin Persson, Jan Brynhildsen and Mats Hammar / 2015 / Scopus Q2 / Swedia / The European Journal of Contraception & Reproductive Health Care / ISSN: 1362-5187	To determine whether a decrease in sexual desire is more common among women who use hormonal contraception than women who use non-hormonal	Cross Sectional	Participants numbered 3470 women aged 22 years, 25 years and 28 years	As many as 81% of respondents use various types of contraception, and 88% are generally satisfied with the method used. However, 27% of users of hormonal contraception reported a decrease in sexual desire, while only 12% of women using non-hormonal contraception reported a decrease in sexual desire (p <0.01). Women who have a partner experience a

Table 2. Data Extraction

	contraception and whether a decrease in sexual desire increases the risk of changes to other contraceptive methods			decrease in sexual desire 2 times more often than women who have no partners. The odds ratio observed for planning drop out or changing methods due to a decrease in desire was 8.16 (CI 95% 6.65-10.1) among women who had experienced the same experience during the previous period using hormonal contraception.	
5	A study of the impact of the commonly used female contraceptive methods in Egypt on female sexual function / Ahmed Mohamed Hassanin, Ahmed Mohamed El-Halwagy, Nashaat N Ismail & Basma Atef Shehab / 2018 / Scopus Q2 / Mesir / Journal of Sex & Marital Therapy	To identify contraceptive use for the sexual function of Egyptian women	Cross Sectional	The total participants were 207, divided into 2 groups 9 (group 1 as many as 107 participants, group 2 as many as 100 participants)	The results showed that there were no differences in sexual function between IUD and COP (combined oral pill) users, but progestin users showed changes in sexual function (p <0.001)

## 2.7 Critical Appraisal

Critical appraisal is a step to find out the quality of an article. In this case, the articles filtered in the critical appraisal stage were 5 articles of good quality, namely indexed scopus with appropriate Q1 and Q2 standards about the effect of hormonal contraception on sexual dysfunction in female KB acceptors. This selected article uses a quantitative research method with a type of case control and cross sectional study design. This article is assessed by a checklist or the Joanna Briggs Institute Critical Appraisal Tools tool.

## 2.8 Literature Mapping

Based on the articles obtained, a number of 5 articles were selected using quantitative research methods with cross sectional research designs as many as 4 articles and case control as many as 1 article. In the article obtained there were 2 articles from developing countries, from Iran and Egypt. While 3 articles from developed countries, from the United States, United States and Sweden. In this mapping step the authors classify the intervention or treatment given to the research sample into several groups, namely:

- a. Causes of sexual dysfunction in female hormonal contraceptive acceptors, found in The European Journal of Contraception & Reproductive Health Care, with the title Hormonal Contraception and Sexual Desire: A Questionnaire-Based Study of Young Swedish Women
- b. Factors affecting sexual dysfunction in female hormonal contraceptive acceptors, contained in the Journal of Obstetrics & Gynecology, with the title Sexual Desire and Hormonal Contraception and in the European Journal of Contraception & Reproductive Health Care with the title Hormonal Contraception and Sexual Desire: A Questionnaire-Based Study of Young Swedish Women.
- c. The impact of sexual dysfunction on female hormonal contraceptive acceptors, found in the Journal of Clinical Nursing with the title Sexual Function in Women in Women Using Different Methods of Contraception

## 3. RESULTS AND DISCUSSION

### 3.1 Result

#### a. The causes of the sexual dysfunction on female hormonal contraceptive acceptors

According to The European Journal of Contraception & Reproductive Health Care [5], estrogen component in hormonal contraception causes an increase in sexual production of hormone binding globulin (SHBG), which causes a decrease in testosterone hormone. In addition, through progesterone hormones, hormonal contraception directly suppresses androgen production in the ovary and to a lesser extent in the adrenal gland. The antiandrogenic progesterone inhibits the enzyme 5- $\alpha$  reductase, which converts testosterone to dihydrotestosterone, the latter being a form that binds to cellular receptors.

#### b. The factors that affect sexual dysfunction in women hormonal contraceptive acceptors

According to the Journal of Obstetrics & Gynecology [1], factors that influence sexual dysfunction on women using hormonal contraception include age, race, marital status, parity, socioeconomic status, education level, depression, condition health and body mass index (BMI). Meanwhile, according to The European Journal of Contraception & Reproductive Health Care [5], factors that influence sexual dysfunction on women using hormonal contraception includes age, hormonal contraceptive users, partner ownership (husband), education level, parity, BMI and depression.



**c. Impact on sexual dysfunction on female hormonal contraceptive acceptors**

According to the Journal of Clinical Nursing [3], the impact of sexual dysfunction on women includes depression, emotional disturbances, mental health disorders, physical health problems, anxiety and fear that affect the satisfaction of marital relationships.

**3.2 Discussion****a. Causes of sexual dysfunction in female hormonal contraceptive acceptors**

According in The European Journal of Contraception & Reproductive Health Care [5], estrogen component in hormonal contraception causes an increase in the production of sexual hormone binding globulin (SHBG), which causes a decrease in testosterone hormone. In addition, through progesterone hormones, hormonal contraception directly suppresses androgen production in the ovary and to a lesser extent in the adrenal gland. The antiandrogenic progesterone inhibits the enzyme 5- $\alpha$ -reductase, which converts testosterone to dihydrotestosterone, the latter being a form that binds to cellular receptors. Changes in the level of androgens vary in response to each woman so that the effect is different for each woman. Decreasing testosterone hormone can affect women's libido is still controversial, although some studies do not show a relationship between androgen levels and sexual function in hormonal contraceptive users, but the results of recent studies show that a decrease in testosterone hormone contributes to sexual dysfunction in women.

Hormonal contraception causes sexual dysfunction is also in line in the Journal of Sexual Medicine [10] which states that sexual dysfunction in users of hormonal contraception is caused by a decrease in androgen hormone production in the ovaries which causes an increase in sexual hormone binding globulin (SHBG) and binding protein in the blood circulation so that testosterone production will decrease. Hormone testosterone is needed to stimulate sexual desire and regulate genital, structural and functional blood flow, genital integrity.

The results of the study on hormonal contraception led to sexual dysfunction also carried out in the American Journal of Obstetrics and Gynecology [7] which stated that hormonal contraception can cause a decrease in testosterone while the testosterone contributes greatly to sexual desire in women. The estrogen hormone contained in hormonal contraception can increase the concentration of serum sex hormone binding globulin (SHBG) which binds to testosterone so that testosterone production will decrease.

Depo Medroxyprogesterone acetate (DMPA) contraception is another form of hormonal contraception that does not contain estrogen so it is considered not to contribute greatly to increasing the concentration of sex hormone binding globulin (SHBG) so it does not reduce the concentration of testosterone hormone. Although a prospective analysis of women with DMPA showed no difference in sexual function from the beginning of use up to 4 months afterwards, another survey revealed that the use of DMPA can reduce libido by 15% [7].

The results showed that the use of long-term hormonal contraception can affect women's sexual function. This is in line with the study of Hassanin et al [4] which states that the use of long-term hormonal contraception can have a negative impact on women's sexual function. The results showed that contraceptive methods that did not affect female sexual function were non-hormonal contraceptive methods.

Based on the results of the study, it can be concluded that at each family planning service visit, health workers must assess the time since the last contraceptive exposure, menstrual pattern, changes in sexual health, and examination that women still meet medical eligibility criteria to be able to use certain types of contraception or replace with other methods of contraception [2].

**b. Factors that affect sexual dysfunction in women hormonal contraceptive acceptors**

According to the Journal of Obstetrics & Gynecology [1], factors that influence sexual dysfunction in women using hormonal contraception include age, race, marital status, parity, socioeconomic status, education level, depression, condition health and body mass index (BMI). Meanwhile, according to The European Journal of Contraception & Reproductive Health Care [5], factors that influence sexual dysfunction in women using hormonal contraception include age, hormonal contraceptive users, partner ownership (husband), education level, parity, BMI and depression.

Based on research by Boozalis *et al* [1], women younger than 21 years had lower sexual desire than women aged 21-25 years. Black races have lower sexual desire than other skin races. Married women have lower sexual desire than women who are divorced or separated from their husbands. Grandemultipara has lower sexual desire than multipara. Depressed women have lower sexual desire than women who do not experience depression. Obese women have lower sexual desire than women who are not obese. The type of contraception that causes the most sexual dysfunction is depo medroxyprogesterone acetate (DMPA).

Based on research by Malmborg *et al* [5], age less than 25 years has lower sexual desire. The use of hormonal contraception has lower sexual desire than non-hormonal contraception. Women who have a partner or are married have lower sexual desire than women who divorce or separate from their husbands. Low educated women have lower sexual desire than highly educated women. Grandemultipara has lower sexual desire than multipara. Depressed women have lower sexual desire than women who do not experience depression. Obese women have lower sexual desire than women who are not obese.

Based on Wallwiener *et al* [9], other factors that can affect sexual dysfunction in hormonal contraceptive users include interpersonal, psychological conditions, physical condition, socio-cultural, alcohol consumption, pregnancy and smoking. Pregnant women who use contraception are reported to experience pain during sexual intercourse due to hormonal changes thereby reducing sexual satisfaction.

**c. The impact of sexual dysfunction in female hormonal contraceptive acceptors**

According to the Journal of Clinical Nursing [3], the impact of sexual dysfunction in women included depression, emotional disturbances, mental health disorders, physical health problems, anxiety and fear, which affected marital relationship satisfaction.

The results of this study are in line with the research conducted by Wallwiener *et al*

[9] which states that sexual dysfunction can cause serious problems such as depression, emotional disorders, mental health disorders, dissatisfaction in husband and wife relations, decrease harmony and reduce the quality of life of women .

Based on the results of the study, it can be concluded that it is important for health workers to evaluate the side effects of contraceptive methods. Health workers must also continue to support government programs by continuing to echo KB programs to prevent unwanted pregnancies while still providing counseling, information and education about the benefits of contraception, choice of contraception, short-term and long-term side effects, so that women have the power to decision making in using contraception [8].

#### 4. CONCLUSION

It is expected that health workers will provide counseling regarding the long-term side effects of hormonal contraceptive use and be considered by policy makers to promote family planning programs for men.

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