

THE RELATIONSHIP BETWEEN THE USE OF HORMONAL CONTRACEPTION AND THE INCREASE IN THE INCIDENCE OF HYPERTENSION: LITERATURE REVIEW

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Abstract

Background: There is an increase in blood pressure, one of which is due to the use of hormonal contraception. Hypertension is still one of the big challenges for health problems and is increasing every year. So researchers need to identify anything that can cause hypertension in users of hormonal contraception, whether it's Pills, Stun, Implants. Objective: To find out what characteristics can cause hypertension in hormonal contraceptive users. Method: This research uses a literature review study approach using 2 indexed data bases such as Google Scholars and Garuda Restikbrin. Journals or articles are selected based on predetermined criteria. Result: Characteristics of the use of hormonal contraception based on 10 journals, namely 4 journals stating the characteristics of age, 6 journals stating the characteristics of duration of use, 4 journals stating the characteristics of the type of contraception used, 1 journal stating the characteristics of a history of hypertension. Conclusion: 40% of journals stated that there was a significant relationship between age and increased blood pressure, 50% of journals from 60% of journals stated that there was a significant relationship between duration of use of hormonal contraception to increase blood pressure and 10% of journals from 60% of journals stated that there was no relationship which means the duration of use of hormonal contraception to increase blood pressure. 40% of journals stated that the characteristics of the type of contraception used stated that contraception containing hormones, such as pills, injections, implants, showed that there was a significant relationship to an increase in blood pressure. The characteristics of a history of hypertension show that only 10% or only 1 journal out of 10 research journals that discuss the history of hypertension, the journal shows that there is a significant relationship between a history of hypertension and an increase in blood pressure.

Keywords: Hormonal contraception, hypertension.

Introduction

Contraception is a method or tool for Family Planning (KB). According to Setyarini (2015) Family Planning (KB) is an integral part of national development which aims to institutionalize "Quality Families". This family planning program has become a necessity in an effort to cope with the growth of the world's population in general in Indonesia.

According to the World Health Organization (2017) contraceptive users have increased in many parts of the world, especially in Asia, Latin America and lowest in Sub-Saharan Africa. Globally, the use of modern contraceptives such as birth control pills, birth control injections, implants has not increased significantly from (54%) in 1990 to (57.4%) in 2014. Regionally, the proportion of women of childbearing age (WUS) 15-49 years reporting the use of modern contraceptive methods has increased in the last 6 years. In Africa from (23.6%) to (27.6%), in Asia it has increased from (60.6%) to (61.6%), while Latin America and the Caribbean from (66.7%) to (67.0%).

Based on data from the Indonesian Ministry of Health (2018), it is stated that there was a significant increase in contraceptive users, which in 1991-2017 there was an increase from 50% to 64%. Data from the National Population and Family Planning Agency (BKKBN) in year 2019 in Indonesia there were around 38,690,214 Couples of Childbearing Age (EFA) with the use of pill contraceptives (17.0%), injection contraceptive users (63.7%), implant contraceptive users (7.4%) (Ministry of Health RI, 2019)

Zahidah et al (2017) mention the use of hormonal contraception can cause an increase in blood pressure. Elevated blood pressure is a global public health problem that contributes to 9.4 million deaths worldwide each year. The World Health Organization (WHO) in 2015 stated that there were at least 839 million cases of hypertension and it is estimated that by 2025 it will increase to 1.15 billion or about 29% of the total world population and it is estimated that every year 9.4 million people die from hypertension and complications.

Based on data from the Indonesian Ministry of Health (2019) in Indonesia, hypertension is still a big challenge for health problems. Data from the 2018 Basic Health Research (Riskesdas) shows that the prevalence of the population with hypertension or high blood pressure is (34.11%). Based on these data, there is a significant increase in the number of hypertension in the previous year, namely the results of Riskesdas in 2007 of (31.4%) and in 2013 of (25.8%) and from 2017 of (30.9%). The prevalence of hypertension or blood pressure was higher in women (36.85%) compared to men (31.34%). This is also in line with Nafsiah's research (2014) which shows that hypertension is mostly found in women with a percentage of 55.88% while in men it is 44.12%.

Along with the increase in blood pressure in Indonesia, it is also directly proportional to the use of active contraception among couples of childbearing age (PUS). According to research from Ari Widyaningsih and Isfaizah (2018) with the title The Relationship of Hormonal Contraception to Blood Pressure at the Lenayang Health Center in 2018 states that side effects caused by excess

estrogen and progesterone hormones can cause changes in blood pressure in women who previously did not suffer from high blood pressure. . Another study was also conducted by Paul et.al (2012) which stated that hormonal contraceptives can cause blood pressure high onless than 4-5% of women whose blood pressure was normal before taking the drug.

Based on the description of the background above, there is an increase in the use of contraceptive methods which is directly proportional to the increase in the incidence of hypertension where from several previous studies the incidence of hypertension is influenced by the use of hormonal contraceptives. Therefore, the authors are interested in looking at the "Relationship of Hormonal Contraception With Increased Incidence of Hypertension" by using the literature review research method to see the relationship between the two based on previous research.

Method

The initial method used is a literature review. Literature review is a form of research conducted by tracing several books, journal literature, and articles related to the themes that will be discussed by the author, to answer the issues to be written (Neuman, 2011).

The literature review sources used in this study were searched through Google Scholar and Garuda Portal using the keywords "Contraception, hormonal, hypertension". This search was carried out from early November 2020 to the end of November 2020.

The study criteria used in this study are articles containing the word the same key as the research topic, the article is a full paper and is not limited to research methods open, the article must be published at least 2015

Result

The literature collection process is carried out by selecting the number of journals or articles using the keywords "Contraception, hormonal, hypertension" obtained (n = 3,190) journals from data based Google Scholar and Garuda Restikbrin obtained (n = 9). Then the screening was carried out and the results of 10 national journal literatures were obtained.

Discussion

Based on the results of the analysis in 10 research journals. Characteristics of the use of hormonal contraception to increase blood pressure include:

1. Characteristics of Hormonal Contraception Against Hypertension Based on Age

Noni Widiawatie's Research (2017) mentions that age characteristics are related to increased blood pressure which shows that the highest proportion of high blood pressure is in the late adult age group, which is aged 36-45 years (41.5%). Other studies have shown that women aged 35-49 years are at risk of developing hypertension 1.3 times more likely than those aged 15-35 years (Pangaribuan, 2013). In the journal Afina Karimatu Zahidah (2017) shows that age characteristics are associated with an increase in blood pressure. High blood pressure mostly occurs in the late adult group (36-45 years) with a proportion of 41.5%. The research is appropriate dengan penelitian yang dilakukan oleh Nurwidayanti (2010) menyatakan bahwa perempuan menjadi lebih berisiko 4,96% kali untuk mengalami peningkatan tekanan darah pada usia lebih dari 40 tahun.

In line with research conducted by Tri Yuana Bhakti (2020) which states that literature review research from 6 journals shows the majority shows a significant relationship between users of hormonal contraception and the incidence of hypertension based on age. In the journal Olivia, Gabby Pitoy, et al (2017) say that the characteristics of flowering age are associated with an increase in blood pressure. The study showed that the majority of respondents were aged 35 years as much as 78.9% and in the <21 year age group the least was 1.4%. WUS patients with hypertension as many as 52 people and who do not suffer from hypertension as many as 19 people who are not users of contraceptive pills. The study stated that age affects the occurrence of hypertension, with increasing age the risk of developing hypertension becomes greater. This is in line with research conducted by Nurwidayanti Wahyuni (2013) which shows that the characteristics of the age of more than 40 years have a 4.96 times risk of suffering from hypertension. This is caused by changes in the structure of large blood vessels, so that the lumen becomes narrower and the walls of the blood vessels become stiffer, as a result is an increase in systolic blood pressure (MOH, 2006).

2. Contraceptive Characteristics Hormonal Against Hypertension Based on Duration of Use

Based on research from Yuli Fatmasari, et al (2018), it is stated that the characteristics of long use are associated with an increase in blood pressure. The study showed that the proportion of hypertension mostly occurred in respondents who used hormonal contraception for a period of > 5 years (62.5%). This research is in line with that conducted by Indah Putri Lestari in 2013 which showed that mothers who used hormonal contraceptives >2 years had a 2,954

times chance of suffering from hypertension compared to those who used hormonal contraception for less than 2 years.

In line with research This study was conducted by Tri Yuana Bhakti (2020) which stated that the literature review research from 6 journals showed the majority showed a significant relationship between hormonal contraception users and the incidence of hypertension and the duration of use of hormonal contraceptives with the incidence of increased blood pressure. In the journal Ari Widyaningsih and Isfaizah (2019), it is stated that the long-term characteristics of the use of hormonal contraception are associated with an increase in blood pressure.increase in blood pressure. He mentioned that the injection frequency was >4 times for 56 acceptors and 4 times for 25 acceptors. MotherInjectable family planning acceptors who experiencethere were 8 acceptors with hypertension and 73 acceptors who did not have hypertension. There is an effect of 3-month Injectable Contraception with the incidence of hypertension at the Blindungan Community Health Center, Bondowoso Regency. 8 akseptor who have hypertension have injection frequency 4 times. Several factors can cause high blood pressure, one of which is due to hormones. The hormone in question is the hormone contained in the 3-month injection KB, namely the hormone progesterone. The hormones contained in the 3-month birth control injection have the ability to facilitate water retention, resulting in an increase in plasma volume in the body which eventually causes high blood pressure. This research is in line with the theory put forward by Hall (2007) that the hormone rposterone contained in 3-month injectable contraceptives has the ability to facilitate water retention due to increased plasma renin activity and the formation of angiotensin causes the adrenal glands to secrete aldosterone and then aldosterone increases water reabsorption by the renal tubules. Thus, whenever there is an excessive amount of angiotensin in the circulating blood, all body fluid mechanisms in the long-term kidney for regulation of arterial pressure automatically become set at a higher than normal arterial pressure value. In line with research from Amelia Nur Hidayanti, et al (2018), which states that blood pressure in family planning acceptors before using Combination Injectables has an average systolic value of 112.13 mmHg and diastolic 72.92 mmHg.

Meanwhile, blood pressure in family planning acceptors after using Combination Injectable KB had an average systolic value of 122.13 mmHg and a diastolic value of 77.08 mmHg. There was a significant difference in family planning acceptors between before and after using Combination Injections for 4 months.

Some of these studies are not in line with research from Regina Meysi Besouw, et al (2017) which states that the characteristics of prolonged use of contraception are not associated with an increase in blood pressure. He said that from 39 samples, 6 respondents aged <25 years, 21 respondents 25-26 years and 12 respondents aged 36-46 years. The duration of the use of implant contraceptives at the Kauditan Health Center <3 years was 22 respondents 3 years as many as 17 respondents, of which there were 6 respondents who experienced pre-hypertension within a period of <3 years of use and 6 respondents who experienced pre-hypertension in a long period of time. use 3 years. Thus, the researcher stated that there was no relationship between the duration of using implant contraceptives and hypertension.

3. Characteristics of the Use of Hormonal Contraception on the Type of Contraception Used

Research from Yuli Fatmasari (2018) based on the use of contraceptives used to increase blood pressure stated that the results of research from 100 respondents found that 47 of them had hypertension. With details of injection hormonal contraceptive users as many as 35 respondents, hormonal contraceptive pill users 5 respondents and implant contraceptive users 7 respondents. Research from Noni Widiawatie (2017) based on the use of contraceptives used to increase blood pressure stated that the results of research from 75 respondents showed that respondents who used injectable contraception experienced prehypertension, namely 20 respondents (71%) and normal 8 respondents (29%), users Pill contraception experienced prehypertension as many as 19 respondents (76%) and normal 6 respondents (24%) while contraceptive implant users experienced prehypertension as many as 9 respondents (41%) and normal as many as 14 respondents (59%). The study states that blood pressure tends to be high in users of combined injection hormonal contraception. This is in line with the theory from (Riberiro et al, 2017) that combined hormonal contraception such as 1-month injectable contraception contains ethynyl estradiol (EE) which always changes blood pressure.

In line with research from Afina Karimatu Zahidah (2017) based on the use of contraceptives used to increase blood pressure, it shows that the proportion of high blood pressure is more in respondents who use pill contraceptives as much as 47.1%. The results of this study are the same as the results of research from Liani Kawulur (2015) that from 3 types of hormonal contraceptives it is proven that the use of hormonal contraceptives is proven that the use of hormonal contraceptives is the pill type which has an effect on the acceptor's blood pressure. Then the results of research from Lamria Pangaribuan stated that the type of hormonal birth control pills had a risk of 1.4 times for experiencing an increase in blood pressure. Another

study from Ceidy Silva Tamanu, et al (2015) also stated that the incidence of hypertension was higher in women of childbearing age who used the contraceptive pill.

In the journal Yusro Hadi M and Yuliawati (2019), the proportion of respondents who experienced an increase in blood pressure (hypertension) was 26.9% (78 respondents) from 290 respondents, both exposed (users of implanted contraception) and not exposed (users of non-implanted contraception). The results of the analysis concluded that there was a significant effect of implant contraceptive users on the increase in blood pressure ($p = 0.0244$). According to Hartanto (2003), the side effect of using implants as a contraceptive is an increase in blood pressure. This study is in line with research by Wahyuni (2001) in Purbalingga, which stated that there was a relationship between the use of implant contraceptives and an increase in blood pressure ($p = 0.04$). One of the side effects of implant contraceptives is an increase in blood pressure of 2.2% and headaches by 5.5% (SDKI, 2010)

4. History of Hypertension

In the study of Afina Karimatu Zahidah, et al (2017) based on the characteristics of a history of hypertension to increase blood pressure after the use of hormonal contraception, the study showed a history of non-communicable diseases of hypertension showed that most of the respondents (68 respondents) had no history of hypertension and 32 respondents had a hereditary history of hypertension. In the study, the results showed that there was a significant relationship between the use of injectable contraceptives and blood pressure. This study is in line with the research of Made Yudha Ganesha where as many as 69.2% of respondents in his study showed that the results of a history of hypertension disease had a high proportion value to have an effect on increasing blood pressure.

References

- Besouw, Regina Meysi, Herlina Wungouw, Rina Kundre. 2017. The relationship between the duration of the use of implant contraceptives and blood pressure in mothers at the Kauditan Health Center, Kauditan District, North Minahasa. Nursing E-Journal (e-Kp) Volume 5 Number 1. Available at: https://scholar.google.com/scholar?hl=id&as_sdt=0%2C5&q=kontrasepsi+hormonal%2C+hypertension+%28regina+meysi&btnG=#d=gs_qabs&u=%23p%3DTcubYt8-d30J. [Accessed December 05, 2020].
- Bhakti, Tri Yuana. 2020. A review of the literature on the relationship between the use of hormonal contraception and the incidence of hypertension in women of

- childbearing age in Indonesia. [Internet]. Available at: https://scholar.google.com/scholar?hl=id&as_sdt=0%2C5&q=tri+yuana+bhakti&oq=tri#d=gs_qabs&u=%23p%3DieA7VCNujLMJ. [Accessed December 05, 2020].
- Fatmasari, Yuli, Lintang Dian Saraswati, Mateus Sakudarno Adi, Ari Udiyono. 2018. An overview of the use of hormonal contraception on the incidence of hypertension. *Journal of Public Health (e-Journal)*. [Internet]. Volume 6, Number 1, January 2018 (ISSN: 2356-3346) Available at: <https://garuda.ristekbrin.go.id/documents/detail/1424242>. [Accessed November 13, 2020].
- Hidayanti, Amelia Nur, Laily Himawati, Nurya Kumalasari. 2018. Differences in blood pressure in family planning acceptors after using combination injections for 4 months at the Ungaran Barat Health Center. *The Shine Light of the Midwifery World* 3 (1). [Internet]. Available at: https://scholar.google.com/scholar?hl=id&as_sdt=0%2C5&q=amelia+nur+hidayanti+kontrasepsi&btnG=#d=gs_qabs&u=%23p%3Dwhh1vJhkresJ. [Accessed December 05, 2020].
- Indonesian Ministry of Health. 2018. *Indonesian Health Profile 2018*. Jakarta: Ministry of Health of the Republic of Indonesia.
- Indonesian Ministry of Health. 2019. *Indonesia's Health Profile 2019*. Jakarta: Ministry of Health of the Republic of Indonesia.
- M, Yosro Hadi and Yuliawati. Effect of implant contraceptive use on weight gain and hypertension in East Lampung Regency. *Metro Sei Wawai Health Journal* 6 (2), 88-93. [Internet]. Available at: https://scholar.google.com/scholar?hl=id&as_sdt=0%2C5&q=kontrasepsi+hormonal%2C+hypertension+%28yusro+hadi+m&btnG=#d=gs_qabs&u=%23p%3DiSM0uFLCWxgJ. [Accessed 05 November 2020].
- Neuman, W, Lawrence. 2013. *Social Research Methodology: Qualitative and Quantitative Approaches*. Jakarta: PT. Index.
- Paul A,T, Kawatu, Grace E.C Korompes, B.H.R Kairupan, Gaby G. Langi. 2012. Analysis of the relationship between the use of birth control pills and the incidence of hypertension in fertile women in Tumbariri District.
- Pitoy, Olivia Gabby, Ricky. C. Sondakh, Budi. T. Patang. Description of the use of hormonal contraceptive pills and the incidence of hypertension in women of childbearing age in the working area of Taratar Health Center, West Tomohon District. *Public Health* 6 (3). [Internet]. Available at: https://scholar.google.com/scholar?hl=id&as_sdt=0%2C5&q=olivia+gabby+pitoy&oq=oli#d=gs_qabs&u=%23p%3Dyj2rQgYdWh8J. [Accessed on December 05, 2020].

- Rakhmawati, Goddess. 2021. Effect of 3-month injectable contraception on the incidence of hypertension at the Blindungan Sub-district Health Center, Kab. Bondowoso. *Journal of MD-Z (Midwifery Zygote) Scientific Journal of Midwifery* Vol 3 No (136-141).
- Setyarini, D. I. 2015. Duration of use of Depo Medroxy Progesterone Acetate (DMPA) and Body Mass Index (BMI) of Injectable Contraceptive Acceptors. *Indonesian Journal of Health Information*. Vol. 1. No. 1 (8-6)
- WHO.2017. World Health Statistics. World Health Organization.
- Widiawatie, Noni. 2017. The relationship between the use of hormonal contraceptives and hypertension in the working area of the Grogol Health Center. [Internet]. Available at: https://scholar.google.com/scholar?hl=id&as_sdt=0%2C5&q=noni+widiawatie&oq=wi#d=gs_qabs&u=%23p%3DJbTX4jIgAcgJ. [Accessed 12 November 2020].
- Widyaningsih, Ari and Izfaizah. 2018. The relationship between hormonal contraception and blood pressure at the Lenayang Health Center. *Indonesian Journal of Midwifery (IJM)* [Internet]. Volume 2 Number 1. Available at: https://scholar.google.com/scholar?start=70&q=contraception+hormonal,+hypertension&hl=en&as_sdt=0.5#d=gs_qabs&u=%23p%3DEo4AkxAMF98J. [Accessed 12 November 2020].
- Zahidah, Afina Karimatu, Udiyono Ari, Adi Mateus Sakudarno. 2017. Overview of Blood Pressure Factors in Hormonal Family Planning Acceptors in the Work Area of the Kedungmundu Health Center. *Journal of Public Health (e-Journal)* Volume 5, Number 1, January 2017 (ISSN: 2356-3346).