



Injection Contraceptive Method and Osteoporosis Among Woman Sexual Active in Mandailing Natal

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Abstract. Objective: The aim of study is to analyze injection contraceptive method and osteoporosis among women sexual active in Mandailing Natal. Method: A cross-sectional study using primary survey data conducted on October 2021 in Mandailing Natal. The sample of women sexual active were 82 acceptor contraceptive that chosen using purposive sampling. The variables injection contraceptive method were categorized into 2 groups (injection method and other method) and linked to osteoporosis diseases (yes and no). The bivariate analyzed chi-square test and showed Prevalence ratio (PR) with confidence interval (CI) 95%. Results: The contraceptive method used injection contraceptive (58.5%), condom (18.5%), Pill contraceptive (11%), Implant (8.5%) and Intrauterine Device/IUD (3.7%). Percentage of injection contraceptive method was skewed 48 (58.5%). Percentage of osteoporosis were 60 (73.2%). The chi-square test showed prevalence ratio of injection contraceptive method and osteoporosis among women sexual active was 1.41 (CI: 1.04–1.92). The mean of analyzed were women sexual active that used injection contraceptive method risk 1.41 higher osteoporosis diseases than used other methods. Conclusions: Injection contraceptive method was risk factor osteoporosis diseases among women sexual active. The use of the injection contraceptive method must be adjusted to the user's goals.

Keywords: injection contraceptive · osteoporosis · women sexual active

1 Introduction

Osteoporosis is characterized by decreased bone mass and micro architectural deterioration of the bone, leading to increased risk of fragility fracture [1]. The prevalence of osteoporosis increases with age and the burden of osteoporosis is expected to increase with aging populations. Hereby, the number of individuals at high risk of fragility fractures has been estimated to increase twofold from 158 million in 2010 to 319 million in 2040 [1]. Depot medroxyprogesterone acetate (DMPA) injectable contraception may decrease bone density and increase the risk for osteoporosis in later life. Prospective data

are scarce, especially of the effects of DMPA discontinuation on bone. Depot medroxyprogesterone acetate (DMPA) injectable contraception may decrease bone density and increase the risk for osteoporosis in later life. Prospective data are scarce, especially of the effects of DMPA discontinuation on bone [2].

Osteoporosis is a chronic disease that is estimated to affect more than 75 million people worldwide. Depot medroxyprogesterone acetate (DMPA), an injectable progestosterone, is a widely used contraceptive acting primarily by inhibiting secretion of pituitary gonadotropins, thus producing estrogen deficiency. Decreasing bone mass density (BMD) in women is associated with decreased estrogen levels as a contributing factor in bone formation. This can occur due to several factors such as pregnancy, breastfeeding, and long-term use of contraception, including Depomedroxy Progesterone Acetate (DMPA) contraception (Tahir, 2009).

The use of oral and injectable contraceptives as steroid hormonal contraceptive are highly effective and widely used. These contraceptives not only have important health benefits, including contraceptive and non-contraceptive benefits, but also have some health risks, such as bone health, particularly in reference to the use of depot medroxyprogesterone acetate (DMPA) [3]. There are publications discussing that bone mass density (BMD) declines in various Bone Mass Density measurements in women beginning use of DMPA for the first time [4], with potential detrimental effects on adolescent bone mass accrual only occurring when DMPA was used for greater than 12 months [5]. However, other studies have not been able to confirm this [6], with systematic review showing that after cessation of DMPA, BMD will normal again as early as 24 weeks after cessation [7].

Data at the Panyabungan General Hospital mentions the number of people with osteoporosis in 2020 as many as 124 people (Panyabungan Hospital Profile, 2021). The number of WUS in the Panyabungan Jae Health Center area is 103 people, so it is feared that they are at risk of developing osteoporosis. Data regarding patients with osteoporosis recorded 46 cases of osteoporosis which were recorded from January to November 2020, of which 80% were women of childbearing age (Panyabungan Jae Health Center Profile, 2020). And injectable contraceptive also the skew used people in Panyabungan Jae. So, this research aims to analyze injectable contraceptive use as one of the factors of osteoporosis in women at Panyabungan Jae.

2 Method

A cross-sectional study using primary survey data conducted on October 2021 in Mandailing Natal. The sample of women sexually active was 82 acceptors of contraceptive chosen using purposive sampling. The variable of injection contraceptive method was categorized into 2 groups (injection method and other method) and linked to osteoporosis symptoms (yes and no). The bivariate analysis used chi-square test and showed Prevalence Ratio (PR) with confidence interval (CI) 95%.

The variable of osteoporosis diagnosis as a skeletal disorder characterized by low bone density and micro-architectural deterioration of bony tissue. The questioner of osteoporosis resulting fractures pose a major health problem. Hip, vertebral, and wrist fractures are most common. And the questioner variable of injectable contraceptive use also about the long time use of contraceptive.

3 Result

This research found description of osteoporosis on woman that used contraceptive, where the age of subject reproductive form 15–49 years old in district Panyabungan Jae. There were 82 woman in reproductive age and used method contraceptive that ask about the kind of used method and osteoporosis experience.

Table 1 showed that the analyzed result method contraceptive detail among woman. And the result of this study show osteoporosis disease on woman used method contraceptive is high (73%). From the all women that used contraceptive skewed injection contraceptive method as 58.5%. And the significant association of two variables are 0.027, that mean Among women that used injection method contraceptive have higher risk to get osteoporosis symptoms than women used others method. The chi-square test showed prevalence ratio of injection contraceptive method and osteoporosis symptoms among women sexual active was 1.41 (CI: 1.04–1.92). The mean of analyzed were women sexual active that used injection contraceptive method risk 1.41 higher osteoporosis symptoms than used other methods.

Table 2 showed five kinds on method used woman in Panyabungan Jae district where as injection, condom, pill, implant and IUD. Many women used hormonal contraceptive method are injection, pill and implant, while several women used non hormonal.

Table 1. Analyzed the use of Injection Contraceptive method with osteoporosis symptoms experience among women reproductive age in Panyabungan Jae district

Variable	Osteoporosis		PR (CI)
	Yes	No	
Injection Method Use			1.41 (1.04–1.92)
Yes	40 (83.3%)	8 (16.7%)	
No	20 (58.8%)	14 (41.2%)	

Table 2. Kind of Contraceptive Method used women reproductive age in Panyabungan Jae

Kind of Method Contraceptive	F	%
Injection Method	48	58%
Condom Method	9	11%
Pill	15	18%
Implant	7	9%
IUD	3	4%

4 Discussion

Osteoporosis is a bone disease that leads to an increased risk of fracture. In osteoporosis, the BMD is reduced and the bone microarchitecture is disrupted. Bones become fragile and are more likely to break [8]. Typical fragility fractures occur in the spine, rib, hip, and wrist. The Effect of Depo Medroxy Progesterone Acetate (DPMA) injection on bone mineral density was affected by *Glucocorticoid like effect which caused osteoblast deficiency and inhibited bone formation* [9].

Theoretically, progesterone injection caused anterior pituitary pressure then caused on ovulation pressure. Estrogen production in ovary was inhibited strongly so that declined estradiol level in blood and followed by decreased bone density. Estrogen had important role in keeping bone mass and preventive osteoporosis [10]. Depo Medroxy Progesterone Acetate (DMPA) contraceptive (150 mg) can affect mood of body that make estrogen deficiency and influence bone mineral density. The mechanism of DMPA is press ovulation process. The level of E2 serum on DMPA user significantly lower than non-hormonal contraceptive user. This result in hypoestrogenic atmosphere which in turn has a negative impact on calcium absorption in bone. The excessive bone resorption result in impact mineral formation and decrease bone mineral density [11].

Osteoporosis can appear accidentally for decades because osteoporosis does not cause symptoms until a fracture occurs. In addition, some osteoporotic fractures can go undetected for years because they are asymptomatic. Symptoms associated with osteoporotic fractures are usually pain. The location of the pain depends on the location of the fracture. While the symptoms of osteoporosis in men are similar to the symptoms of osteoporosis in women. Bone density decreases slowly, so at first osteoporosis does not cause symptoms. Usually symptoms will appear in women of childbearing age, although it can be sooner or later. If bone density is reduced, bones can collapse or crumble, resulting in bone pain and deformities [12].

Meanwhile, according to [13] osteoporosis is often called a silent disease because the process of bone density decreases slowly and takes place progressively and for years without us realizing it, therefore almost all osteoporosis does not cause symptoms so many people do not cause symptoms so that many people do not realize that they have osteoporosis, but there are also people with osteoporosis who have signs and symptoms. The specific cause of osteoporosis is unknown, but there are risk factors that predispose to osteoporosis. Genetics, estrogen hormone disorders, age, sex, smoking, Depo-Provera injections (KB injections) nutrition, lifestyle choices, and physical activity affect peak bone mass [12].

Estrogen deficiency due to cessation of menstruation will increase the likelihood of developing osteoporosis in women at the age of around 50 years. Most women will lose 25% of their bone density in the first five years after menstruation stops. Bone loss is a universal age-related phenomenon. Increasing age causes a decrease in calcitonin (inhibits bone re-sorption and stimulates bone formation), estrogen (inhibits bone breakdown). There is an increase in parathyroid hormone (increases bone re-sorption). In women who have experienced menopause, the production of the hormone estrogen, which helps absorb calcium, decreases drastically, so that calcium in the bones also decreases. As a result, the bones will lose a large amount of mass, and their strength will also drop sharply. Unfortunately, the expenditure of calcium in the body of menopausal

women more than is formed again. As a result, old bones become brittle and porous. If this condition is not treated quickly, then the risk of fracture will be difficult to overcome [12].

5 Conclusions

Osteoporosis is reduce the bone density because of many factor, where one of them contraceptive used that contain Depot Medroxyprogesterone Acetate (DMPA) is injection method. The osteoporosis risk ask from the symptom of disease. The skewed Injection method also found in Panyabungan Jae District like as in the many countries also mater. The suggestion contraceptive method important know the purpose of use, if used to spacing the pregnancy in a short time may use injection, but if used to limiting the pregnancy must have to long term contraceptive method as IUD, implant or method operation on woman or man. Because effect of DMPA influence the ovulation period.

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Authors' Contribution. In this study, the author plays a role in completing data collection to data analysis so that this research can complete.

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