



# Factors Related to Occurring Osteoporosis in Women of Childbearing Age

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**Abstract.** Osteoporosis is a reduced intake of vitamin D and calcium in the body. Lack of calcium in the body can lead to reduced bone density. Osteoporosis is riskier in women than in men, therefore preventive measures should be taken early. The purpose of this study is to analyze factors related to osteoporosis in women of childbearing age in Panyabungan Jae Health Center mandaling Natal. The research is quantitative with a cross-sectional study research design. The research was conducted at the Puskesmas Panyabungan Jae Mandailing Natal Regency against all PUS numbered 103 people with a sample of 82 people selected purposively. The data analysis used is Chi-Square. The results showed an age relationship with osteoporosis in women of childbearing age, where the value of the p-value is 0.037 ( $p < 0.05$ ). There is an educational relationship with osteoporosis in women of childbearing age, where the value of the p-value is 0.027 ( $p < 0.05$ ). There is a working relationship with osteoporosis in women of childbearing age, where the value of p-value is 0.026 ( $p < 0.05$ ). There is an income relationship with osteoporosis in women of childbearing age, where the value of the p-value is 0.014 ( $p < 0.05$ ). There is a relationship between the use of injectable birth control and osteoporosis in women of childbearing age, where the value of p-value is 0.005 ( $p < 0.05$ ). This study recommend that health workers play an active role in socializing osteoporosis, in addition, WUS should regularly exercise and consume milk for osteoporosis prevention measures.

**Keywords:** Osteoporosis · Women of Childbearing Age

## 1 Introduction

Health problems in the world, especially people in developing countries, one of which is osteoporosis and usually the problem of this disease is often associated with parents, but the fact is this osteoporosis can affect anyone including young age (Kemenkes, 2015).

The World Agency that handles health problems, the World Health Organization (WHO) estimates that in 2025 the number of osteoporosis worldwide will reach 1.2 billion people who will continue to grow to 2 billion people in 2050 according to WHO data (2017) osteoporosis ranked second. Under heart disease as a major world health problem. WHO data also estimates that 75% of the world's population in 2025 will be in developing countries like Indonesia (Wardhana, 2018).

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Indonesian osteoporosis data is already in a watched level, reaching 19.7% of the population. Where one in three women and one in five men in Indonesia are attacked by osteoporosis. Indonesian data, the prevalence of osteoporosis for the age of less than 70 years in women is 18–30%. Five provinces with higher osteoporosis risk are South Sumatra (27.75%), Central Java (24.02%), Yogyakarta (23.5%), East Java (21.42%), Sumatra North (22.82%) (Minropa, 2017).

According to the Indonesian Ministry of Health, women have a higher risk of osteoporosis of 21.7%, compared to men who are only at risk of developing osteoporosis as much as 14.8%. This is because women experience a process of pregnancy and breast-feeding and a decrease in the hormone estrogen during menopause, menopause, and post-menopause (MOH, 2014). In 2015–2018 in North Sumatra the risk of osteoporosis reached 22.82% and became a dangerous disease, especially in menopausal women. Data at the General Hospital Dr. Pirngadi Medan mentioned the number of osteoporosis sufferers in 2018 was 174 people (Ayu, 2019).

Data at the Panyabungan General Hospital mentioned the number of osteoporosis sufferers in 2020 as many as 124 people (Profile of Panyabungan Hospital, 2021). The number of WUS in the Panyabungan Jae Health Center was 103 people so it was feared that the risk of osteoporosis. Data regarding people with osteoporosis recorded 46 cases of osteoporosis recorded from January to November 2020 where 80% are women of childbearing age (Profile of Panyabungan Jae Health Center, 2020).

Several studies have been widely conducted including the relationship between ages about osteoporosis. The results of Johanna's research (2019) about the relationship of age with osteoporosis prevention in women of childbearing age states there is a relationship between knowledge and the act of WUS to prevent osteoporosis. The results of Helvana's research (2020) stated that there was a significant relationship between Wus's age education and the prevention of osteoporosis.

Based on the results of the initial survey by means of interviews at 10 WUS, the researcher received a statement that the action of WUS is still low about the prevention of osteoporosis which has a less good lifestyle of 9 people (90%) including, lack of physical activity or exercise, consuming fast food or fast food or Caffeine, consuming lack of high calcium foods and stated that they have never consumed calcium milk because of the difficult economy. 8 people (80%) of 10 wines in this area also show the characteristics of osteoporosis, namely the body shape bent and complaints in the bones by stating that it is an ordinary complaint due to fatigue because it works in the fields. In addition, in the working area of the local Puskesmas, the Panyabungan Jae Health Center has never been carried out by a bone density and bone inspection density that is not yet available. From the description above, the authors are interested in conducting research that aims to analyze factors related to the occurrence of osteoporosis in women

of childbearing age at the Panyabungan Jae Health Center in Mandailing Natal Regency in 2021.

## 2 Method

The type of research used in this study is quantitative research. Cross sectional study research. Research location was conducted at the Panyabungan Jae Health Center in Mandailing Natal Regency. Time This study took place from February 2020 to August 2021. Population was WUS in the Panyabungan Puskesmas Working Area which amounted to 103 people and samples of 82 people.

## 3 Result

### Univariate Analysis

**Table 1.** Frequency description on WUS at Panyabungan Jae Health Center, Mandailing Natal Regency in 2021

Variabel	n (82)	%
<b>Age</b>		
20–35 years	48	58,5
<20 years or >35 years	34	41,5
<b>Level of education</b>		
Low (not graduated from elementary/graduated SD and graduated from junior high school)	47	57,3
High (High School Graduated and PT)	35	42,7
<b>Type of work</b>		
Not working (IRT)	11	13,4
Work (PNS/TNI/Polri, Entrepreneur, Farmers, laborers)	71	86,6
<b>Income</b>		
Low (<UMK Rp 2.691.808,00,-)	45	54,9
High (≥UMK, Rp 2.691.808,00,-)	37	45,1
<b>The use of injection of KB</b>		
Yes	47	57,3
No	35	42,7
<b>Osteoporosis is happening</b>		
Osteoporosis is happening	60	73,2
Osteoporosis not happening	22	26,8

Based on Table 1 the respondent's age group, at most in the age category 20–35 years there are 34 people (41.5%) and at least in the age category <20 years or >35 years as many as 48 people (58.5%). Based on the level of respondent's education, the most in the category of low education (not graduated from elementary/graduated elementary school and graduated from junior high school) as many as 47 people (57.3%), and at least on Category of Higher Education (graduated from high school and PT) as many as 35 people (42.7%). Based on the type of respondent's work, the most in the work category (PNS/TNI/Polri, Entrepreneur, Farmers, Labor) are 71 people (86.6%) and at least in the category of not working (IRT) as many as 11 people (13.4%).

### **Bivariate Analysis**

Based on the results of bivariate analysis between variables which include factors related to the occurrence of osteoporosis in women of childbearing age in the Panyabungan Jae Health Center in Mandailing Natal Regency found that: The results of the Chi Square analysis show that the value of P value 0.037 ( $p < 0.05$ ) means that  $H_a$  is accepted and  $H_0$  is rejected. These results prove that there is a significant relationship between age and the occurrence of osteoporosis in women Suburdi Age Panyabungan Jae Health Center in Mandailing Natal Regency in 2021 (Table 2).

The results of the Chi Square analysis show that the value of P value 0.026 ( $p < 0.05$ ) means that  $H_a$  is accepted and  $H_0$  is rejected. These results prove that there is a significant relationship between the type of work with the occurrence of osteoporosis in women of childbearing age at the Panyabungan Jae Health Center in Mandailing Natal Regency in 2021.

The results of the Chi Square analysis show that the value of P value 0.014 ( $p < 0.05$ ) means that  $H_a$  is accepted and  $H_0$  is rejected. These results prove that there is a significant relationship between income and the occurrence of osteoporosis in women Suburdi Panyabungan Penkesmas Jae Mandailing Natal Regency in 2021.

The results of the Chi Square analysis show that the value of P value 0.005 ( $p < 0.05$ ) means that  $H_a$  is accepted and  $H_0$  is rejected. These results prove that there is a significant relationship between the use of family planning injections and the occurrence of osteoporosis in women of childbearing age at the Panyabungan Jae Health Center in Mandailing Natal Regency in 2021.

## **4 Discussion**

### **4.1 A Picture of Age, Education, Occupation, and Income**

Based on univariate analysis obtained by the age of respondents' age, at most in the age category <20 years or >35 years as many as 34 people (41.5%) and at least in the age category 20–35 years as many as 48 people (58.5%). The results of the Chi Square analysis show that the value of P value 0.037 ( $p < 0.05$ ) means that  $H_a$  is accepted and  $H_0$  is rejected. These results prove that there is a significant relationship between age and the occurrence of osteoporosis in women Suburdi Age Panyabungan Jae Health Center in Mandailing Natal Regency in 2021.

This result is in line with Johanna's research (2019) states that the results of the mother's age have a relationship with the preventive measures of osteoporosis in women

**Table 2.** Cross Cabulation Factors related to the occurrence of osteoporosis in WUS at the Panyabungan Jae Health Center in Mandailing Natal Regency in 2021

Osteoporosis Occurrence in Women of Childbearing Age							
Variabel	Osteoporosis is happening		Osteoporosis not happening		Jumlah		<i>p value</i>
	n (60)	%	N (22)	%	n	%	
<b>Age</b>							
20–35 years	31	37,8	17	20,7	48	58,5	0,037
<20 years or >35 Years	29	35,4	5	6,1	34	4,5	
<b>Level of education</b>							
Low (not graduated from elementary/graduated SD and graduated from Junior high school)	30	36,6	17	20,7	47	57,3	0,027
High (high school Graduate and PT)	30	36,6	5	6,1	35	42,7	
<b>Type of work</b>							
Not working (IRT)	5	6,1	6	7,3	11	13,4	0,026
Work (PNS/TNI/Polri, Entrepreneur, Farmers, Polri, entrepreneur, laborers)	55	67,1	16	19,5	71	86,6	
<b>Penghasilan</b>							
Low (<UMK Rp 2.691.808,00,-)	28	34,2	17	20,7	45	54,9	0,014
High (≥UMK, Rp 2.691.808,00,)	32	39,0	5	6,1	37	45,1	
<b>The use of injection of KB</b>							
Yes	40	48,8	7	8,5	47	57,3	0,005
No	20	24,4	15	18,3	35	42,7	

of childbearing age in Babakan Ciparay District, Bandung City ( $\rho = 0.003 < 0.05$ ). And the results of Helvana's research (2020) in Beringin Village, Medan Selayang District, Medan City, said there was a significant relationship between Wus's age education in the age group  $\leq 32-35$  years with the prevention of osteoporosis.

According to the assumption of the writer characteristic in PUS based on age is very influential on the way of treatment in preventing osteoporosis, where the lack of calcium in the body can cause a reduction in a person's bone density, the readiness in preventing osteoporosis.

Based on univariate analysis, respondents' education results were obtained, at most in the low education category (not graduated from elementary/graduated from junior high school) as many as 47 people (57.3%), and at least in the category of higher education (graduated from high school and PT) as many as 35 people (42.7%). The results of the Chi Square analysis show that the value of P value 0.027 ( $p < 0.05$ ) means that  $H_a$  is accepted and  $H_0$  is rejected. These results prove that there is a significant relationship between the level of education and the occurrence of osteoporosis in women Suburdi Panyabungan Jae Health Center in Mandailing Natal Regency in 2021.

The results of this study are in accordance with Hardayati's research (2012) about factors related to osteoporosis prevention behavior in pre-menopausal women, obtained the results of a significant relationship between education and osteoporosis prevention behavior. This is because the higher a person's education, the more afraid of the person to find out the disease.

According to the assumption of the author of the relationship between education and the occurrence of osteoporosis, it cannot be released with knowledge, because education is a precondition and a process to improve knowledge, because knowledge in determining nutritional health regarding the intake of vitamin D and calcium in the body that will be given in order to obtain bone health or Good bone density. Education can spur one's self-improvement. Someone with higher education will be more motivated than someone with low education.

Based on the univariate analysis obtained the results of respondents' work., at most in the work category (PNS/TNI/Polri, Entrepreneurs, Farmers, Labor) as many as 71 people (86.6%) and at least in the category of not working (IRT) as many as 11 people (13.4%). The results of the Chi Square analysis show that the value of P value 0.026 ( $p < 0.05$ ) means that  $H_a$  is accepted and  $H_0$  is rejected. These results prove that there is a significant relationship between the type of work with the occurrence of osteoporosis in women of the fertile age of Panyabungan Penkesmas Jae, Mandailing Natal Regency in 2021.

Other studies that support the results of this study include Hardayati (2012) which states that work factors have a relationship with osteoporosis prevention behavior.

According to the assumption of the author of a PUS work, however they are housewives who are difficult to escape from the family environment. Women have a burden and obstacles more severe than their male colleagues. In the sense that women must first overcome family, husband, children and things matters relating to the household problem. In fact, many women are not able to overcome these obstacles, even though they have high technical abilities if they are unable to balance their doubling roles finally they will have difficulty. But that does not mean that women who do not work are guarantees that their children will be better than the children of women who work.

Based on univariate analysis obtained respondents' income results, at most in the low income category (<mk Rp 2,691,808.00) as many as 45 people (54.9%) and at least in the high income category ( $\geq$ UMK, Rp 2,691,808, 00,-) as many as 37 people (45.1%). The results of the Chi Square analysis show that the value of P value 0.014 ( $p < 0.05$ ) means that  $H_a$  is accepted and  $H_0$  is rejected. These results prove that there is a significant relationship between income and the occurrence of osteoporosis in women Suburdi Panyabungan Penkesmas Jae Mandailing Natal Regency in 2021.

This result is that with Helvana's research (2020) in Beringin Village, Medan Selayang District, Medan City, stated that there is a significant relationship between income to prevent osteoporosis ( $\rho = 0,000 < 0.05$ ). It can be said that the higher the income, the better the prevention of osteoporosis.

According to the assumption of the authors between income and the occurrence of osteoporosis, there is clearly a beneficial relationship. Increased income will affect health improvement and family conditions and subsequently related to nutritional intake of vitamin D and calcium in the body that will be lacking in which the lack of calcium in the body can Causes a reduction in a person's bone density, readiness in preventing osteoporosis. However, increased income or purchasing power often cannot defeat the influence of eating habits on effective nutritional improvement.

#### 4.2 An Overview of the Use of Injection KB

Based on the univariate analysis obtained the results of the use of the most KB injection of respondents were those who injection of the depotes, namely 64 people (57.3%), and at least respondents who did not injection of the depotes were 47 people (57.3%). The results of the Chi Square analysis show that the value of P value 0.005 ( $p < 0.05$ ) means that  $H_a$  is accepted and  $H_0$  is rejected. These results prove that there is a significant relationship between the use of family planning injections and the occurrence of osteoporosis in women Suburdi Panyabungan Penkesmas Jae Mandailing Natal Regency in 2021.

This is in accordance with the research of Helvana (2020) in Beringin Village, Medan Selayang District, Medan City, stated that there is a significant relationship between the injection of the depot (KB injection) to the prevention of osteoporosis ( $\rho = 0,000 < 0.05$ ).

According to the assumption the writing of the depotes (KB injections) obtained will provide a beneficial attitude for him, family and community. Pus attitudes and behavior in terms of their closeness in giving birth to children, eating with nutritional intake of vitamin D and calcium in the body that will be given a densely concentrated, care, pay attention to personal hygiene, and of course starts from good knowledge. All of them are related to the state of pus, especially women of childbearing age in terms of health (physical and mental), nutritional status, general education, skills about consuming calcium nutritional intake in the body can cause a reduction in a person's bone density, the readiness in preventing osteoporosis.

#### 4.3 Overview of Osteoporosis

Based on the univariate analysis, it was found that the majority of respondents had osteoporosis, namely 60 people (73.2%), and at least 22 people (26.8%) who did not have osteoporosis.

The results of Chi Square analysis show that among the variables that include factors related to the occurrence of osteoporosis in women of childbearing age at Panyabungan Jae Health Center, Mandailing Natal Regency, it means that  $H_a$  is accepted and  $H_0$  is rejected. These results prove that there is a significant relationship between age, education, occupation, income and use of family planning injections with the occurrence

of osteoporosis in women of childbearing age at Panyabungan Jae Public Health Center, Mandailing Natal Regency in 2021.

This is in accordance with Helvana's research (2020) on WUS behavior towards preventing osteoporosis in the Beringin Village, Medan Selayang Subdistrict, Medan City in 2020 stated that there was a significant relationship between age, education, occupation, income and use of family planning injections with the prevention of osteoporosis.

## 5 Conclusion

There is a relationship between age and the occurrence of osteoporosis in women of childbearing age, where the p value is 0.037 ( $p < 0.05$ ), There is a relationship between education and the occurrence of osteoporosis in women of childbearing age, where the p value is 0.027 ( $p < 0.05$ ), There is a work relationship with the occurrence of osteoporosis in women of childbearing age, where the p value is 0.026 ( $p < 0.05$ ), There is a relationship between income and the occurrence of osteoporosis in women of childbearing age, where the p value is 0.014 ( $p < 0.05$ ), There is a relationship between the use of KB injections with the occurrence of osteoporosis in women of childbearing age, where the p value is 0.005 ( $p < 0.05$ ).

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