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The Relationship Between Caffeinated Beverages And The Risk Of Osteoporosis In The Elderly Posyandu Surakarta

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Abstract: Background: The prevalence of osteoporosis in elderly Indonesian women in the age of 50-70 years and above 70 years is 23% and 53%. Osteoporosis is a disorder of bone metabolism due to a loss of bone mass. The decrease in bone mass is caused by the speed of bone resorption which is greater than the speed of bone formation gradually, the bones become brittle and easily broken, even by light pressure. **Purpose:** determine the relationship between caffeinated drinks and the risk of Osteoporosis. **Methods:** Qualitative research with a cross-sectional design, which is research that intends to understand the phenomenon of what the research subject experiences with the observation method. **Result:** the results of this study indicate a significant relationship between caffeinated drinks and the risk of osteoporosis with a value of (p=0.007). **Conclusion:** As a result, there is a strong connection caffeinated drinks and the risk of osteoporosis in the elderly in Posyandu Surakarta

Keywords: Elderly, Osteoporosis, Caffeine

BACKGROUND

According to the Indonesian Ministry of Health, A person is considered elderly if they are over 60 years old and above. The aging population is still growing from year to year. In a period of almost 5 decades, the proportion of elderly people in Indonesia has increased approximately 2x (Mampa et al., 2022). while The World Health Organization (WHO) defines an elderly person as one who has reached the age of 60 or more (Priambodo, 2020).

The increasing age of humans, there is a degenerative aging process which will usually have an impact on changes in the human soul or self, not only physical changes but also cognitive, emotional, social and sexual (N. M. I. M. Dewi, 2020). One of the most common disorders that occur in the elderly population is musculoskeletal disorders. WHO identifies four conditions of musculoskeletal disorders in the elderly, namely Osteoarthritis (OA), Rheumatoid Arthritis (RA), Osteoporosis and back pain (Romadhoni et al., 2021).

One health problem that needs serious attention in the elderly is Osteoporosis. Osteoporosis is a disorder of bone metabolism due to decreased bone mass. The decrease in bone mass is caused by the speed of bone resorption which is greater than the speed of bone formation gradually, the bones become brittle and break easily, even by light pressure (Ginting & Aritonang, 2022). Osteoporosis is a condition where bones become brittle or easy due to changes in bone mass (Mansoben et al., 2020).

One of the social factors that influence the occurrence of Osteoporosis is caffeine consumption. Caffeine is a natural alkaloid found in coffee, tea, soda, and chocolate. The most consumed caffeine-containing beverages are coffee and tea. Excessive caffeine intake is associated with adverse cardiac effects, bone fracture risk, and behavioral changes in wholesome adults, pregnant women and children. The increased prevalence of fractures and its association with consuming coffee is attributed to the Caffeine's impact on calcium homeostasis, a key bone mineral. High caffeine intake (>560 mg) equivalent

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to 8 cups of coffee increases fracture risk in women. Caffeine increases calcium excretion, resulting in potential Osteoporosis (Biomedika et al., 2020).

Osteoporosis is a chronic bone metabolic disorder characterized by decreased bone mass, bone tissue abnormalities, and microarchitectural abnormalities that result in an increased incidence of fractures (Yusni & Rahman, 2019). One of the dramatic characteristics of osteoporosis is reduced height and a hunched spine due to the shriveling of several vertebrae accompanied by pain (Aklima, 2022). The decrease in height ranges from 1-5 cm of height loss history seen in the last 2 years (Iwasaki et al., 2023) while according to (Mathematic, 2019) the average decrease in height of the elderly is about 1-2cm every 10 years.

METHODS

The results of the research presented are based on research activities that have been carried out and then processed with the SPSS program. Then this research has been carried out at the Sekar Melati Elderly Posyandu RW 21 Mojosongo and Wiyasa Elderly Posyandu RW 02 Jebres in May 2023. Taking subjects in this study using purposive sampling method, where the subjects taken for research must be appropriate based on the inclusion criteria so that 50 subjects were obtained. Then the subject was measured for height and questioned regarding caffeine consumption by type of coffee.

RESULT AND DISCUSSION

The study's findings are presented in order to address the issues raised as well as the goals and research hypotheses. It is strongly advised that the conversation center on the why and how the research findings can occur as well as the extent to which they can be applied to other pertinent issues.

Table 1 Characteristic Respondents by Age

Age	**(n)**	**(%)**
60-65	27	54
66-70	23	46
Total	50	100.0
Upper Limit	70	
Lower Limit	60	

Table 1 shows that most of the research respondents were 60-65 years old with 27 subjects (54%) and the rest were 66-70 years old with 23 subjects (46%).

Table 2 Characteristic Respondents by Gender

Gender	(n)	(%)
Men	19	38
Woman	31	62
Total	50	100

Based on table 2 shows that more women than males participated in the study replies 31 subjects (62%) while men were 19 subjects (38%).

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Table 3 Sparman's correlations coefficients

Spearman	*Correlations Coefficient*	Sig (2-tailed)
Kafein	0,389	0,005
(n)	50	50

Based on the effect test in table 4.4 using the Spearman correlation test, It demonstrates that there is a connection. relationship between caffeinated drinks and the risk of osteoporosis in the Surakarta elderly posyandu at a 0.005 significance level (p 0.05). Based on this analysis, it can be concluded that Ha is accepted and Ho is rejected, therefore it can be concluded that the higher the caffeine consumption, the risk of osteoporosis. Excess caffeine consumed will increase the concentration of calcium in urine and plasma.

Based on many studies, 100 grams of caffeine in coffee will remove 2-3 milligrams of calcium in the body. The National Osteoporosis Foundation states that drinking coffee will risk osteoporosis if you already have reduced bone density, or osteoporosis. However, caffeine in coffee will not cause osteoporosis as long as you consume enough calcium from other foods and drinks (Martanti et al., 2018). caffeine that has an influence on osteoporosis, such as coffee, has an effect on bone metabolism. Caffeine can inhibit the activity of phosphodiesterase and become an agonist of adenosine cyclase which ultimately affects several tissues. Harris and Dawson believe that consuming caffeine daily increases mineral loss in women, especially if the caffeine content exceeds coffee drinks (Marwah Shoafa, 2021).

CONCLUSION

Based on findings from study done on 50 subjects who measured height using microtoise and interviews related to caffeine consumption, there were 27 people who consumed caffeine with an average of 1 time / day. The results showed a noteworthy connection between caffeinated drinks also the possibility of osteoporosis in the Surakarta elderly Posyandu. And it can be concluded that women are more women are more likely than males to get osteoporosis because of the menopause.

AUTHOR CONTRIBUTION

All author is contributed fully to this writing

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