Factors Associated with the Knowledge Level and Behavior to Prevent Osteoporosis in Women of Childbearing Age

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Abstract

The increase in osteoporosis rates in women is two times greater than in men. This is usually associated with hormonal changes due to menopause. This research contributed to the analysis of factors related to the level of knowledge and prevention behavior of osteoporosis in women of childbearing age. This study used a cross-sectional study design. 100 women of childbearing age were research respondents. The result showed that most of the respondents are 36 - 45 years old (39%), graduated with a diploma or bachelor's (51%), working (50%), prefer online media info (70%), good knowledge for osteoporosis (56%), and performed to osteoporosis prevention behavior (78%). This study concluded that there was no association between age with knowledge level (p=0.668) and prevention behavior (p=0.489), job with knowledge level (p=0.389) and prevention behavior (p=0.814), and media info with behavior (p=0.844). This study also found that there was an association between education level with knowledge level (p=0.000) and prevention behavior (p=0.000), media info with knowledge level (p=0.024), and knowledge level with prevention behavior (p=0.000). Further research should provide interventions to improve knowledge and prevent osteoporosis behavior.

Keywords: Knowledge; Osteoporosis; Prevention; Women

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1. Introduction

Osteoporosis is a bone disorder that occurs when bone density and mass decrease or changes in bone structure and strength occur. This condition can cause a decrease in bone strength, which results in a high risk of fractures. This disease is a "silent disease" because it does not cause initial symptoms until the sufferer experiences a broken bone (Schoeb et al., 2020). Osteoporosis is a health problem that occurs in everyone. The World Health Organization states that people living with osteoporosis currently reach 200 million people. Osteoporosis is the primary factor in 50% of bone fractures. This is a significant problem that causes lifelong disability and even death. Therefore, WHO declared osteoporosis a silent killer, which is a real threat to world health (Noh et al., 2023). In Indonesia, 41.7% of people suffer from osteopenia (early osteoporosis), and 10.3% suffer from osteoporosis. This means that 2 out of 5 Indonesians are at risk of developing osteoporosis (Soewarlan, 2019).

The increase in osteoporosis rates in women is two times greater than in men (Fredianto

et al., 2022). This is usually associated with hormonal changes due to menopause. On average, Indonesian women will experience menopause at the age of 50. If the average life expectancy of Indonesian women is 70 years, then it will take almost 20 years for them to experience various health problems during menopause. One of the problems during menopause is the increasing osteoporosis. Osteoporosis incidence of examination itself has yet to become a priority in national health in Indonesia. This is due to the inadequacy of osteoporosis screening in Indonesia and the high cost (Curtis et al., 2022).

Data from the Semarang City Health Service recorded 1,154 residents (74%) had osteoporosis. The Head of DP3A Semarang City said that he did not want any more women to suffer from osteoporosis (Shapiro, 2020). Tawang Mas, Indonesia, is a subdistrict with a population primarily female and of childbearing age. The results of interviews with the village head and Village Health Forum (FKK) cadres revealed that most women of childbearing age in Tawang Mas Village are busy with school or college, as well as working. Hence, most of them need to pay attention to their health.

Prevention of osteoporosis in women of childbearing age is essential. To prevent osteoporosis, one needs to pay attention to lifestyle because it dramatically influences bone mass. Examples include eating foods that contain lots of calcium and vitamin D and exercising in the sun (Motooka & Matsuo, 2019). The community's knowledge can affect how they act in carrying out prevention measures or early examinations to detect osteoporosis early (John, 2020). Increasing knowledge of women of childbearing age regarding osteoporosis, accompanied by attitudes and actions to prevent osteoporosis, is expected to reduce the risk of osteoporosis in women (Alhouri, 2022). The results of interviews with ten women of childbearing age in Tawang Mas Village, Semarang City, found that 7 out of 10 women had insufficient knowledge about osteoporosis, and 6 out of 10 women did not prevent osteoporosis from an early age by exercising, avoiding alcohol consumption, and eating food. High in calcium (Bardosono et al., 2020). This result contributed to analyzing factors related to the level of knowledge and behavior needed to prevent osteoporosis in women of childbearing age.

2. Method

This research is correlation research with a cross-sectional study design. One hundred women of childbearing age were research respondents. The inclusion criteria in this study were women of childbearing age aged 15 - 49 years who had no obstacles in reading and writing and filled out an informed consent form. The sampling technique used is quota sampling. The respondents' level of knowledge about osteoporosis was measured using a knowledge questionnaire. This questionnaire consists of 15 questions (12 favourable questions and three nonfavourable questions). In contrast, prevention behavior was measured using an osteoporosis behavior questionnaire. prevention This questionnaire consists of 15 questions (8 favourable questions and seven non-favourable questions). Knowledge level and behavior prevention questionnaires were distributed to respondents using Google Forms. Spearman rank test was used to analyze factors related to the level of knowledge and behavior needed to prevent osteoporosis in women of childbearing age.

3. Results and Discussion

Age is one of the factors that influences the level of knowledge. The older humans get, the more their understanding and thinking patterns develop so that the knowledge they gain also improves and increases. As a person's age increases, their health behavior will also improve. The results of this study show that the majority of respondents are in the age group of 36–45 years (39%). The age range of 36–45 is mature, with the consideration that someone at that age will have good grasping patterns and thinking power so that their health knowledge and behavior will also improve (Sari et al., 2020). However, the results of this study found that there was no relationship between age and level of knowledge (p = 0.668) or osteoporosis prevention behavior (p = 0.489) in women of childbearing age (Table 1).

These results align with research, which states that there is no relationship between age and the level of health knowledge (Saimi et al., 2023). This is because all respondents are still in the productive age category, where their cognitive function is still excellent. Sari et al. also stated that there is no relationship between age and disease prevention behavior due to almost the same proportion between the age groups of teenagers, adults, and the elderly with disease prevention behavior (Ivey et al., 2023).

Education is one of the factors that influences a person's knowledge and behavior regarding health. Education is the process of changing a person's attitudes and behavior through teaching and training and increasing knowledge through formal and non-formal education. Information is the transfer of knowledge, which includes data, text, images, sound, code, computer programs, and databases. In this research, it was found that the majority of respondents had a diploma or bachelor's degree (51%). From the results of this study, it was also found that education has a very significant influence on knowledge (p = 0.000) and preventive behavior (p= 0.000) regarding osteoporosis in women of childbearing age (Table 1). This could be because all respondents understood and were able to answer correctly. Education is the factor that has the most significant influence on knowledge and behavior (Roh, 2019). Also confirmed that a woman with a higher level of education has a good knowledge of osteoporosis. A person with higher education can provide a more rational response to the information received and will think about the extent of the benefits a person provides to the development of others in achieving specific goals (Sommer et al., 2019).

Work is an activity or activity of a person to earn income to be used for daily living needs. In this study, the majority of women of childbearing age worked (56%). There was no relationship between work and the level of knowledge (p =0.389) or prevention behavior (p = 0.814) of osteoporosis in women of childbearing age (Table 1). These results are in line with states that there is no relationship between employment status and

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health knowledge and behavior (Svendsen et al., 2020). Working is not one of the factors related to knowledge and behavior of osteoporosis prevention. But, working women highly risk of developing osteoporosis because they are at work for a long time. This causes them to get less sun

exposure and do less exercise. In this study, most of the respondents had higher education. Therefore, researchers assume that the respondent's high level of knowledge influences knowledge and prevention behavior.

Table 1. Respondent characteristics and association factors associated with knowledge level and Beha	vior to
Prevent Osteoporosis in Women of Childbearing Age	

Characteristics	Frequency	Percentage	Knowledge	Osteoporosis
	(f)	(%)	Level of	Preventive
			Osteoporosis	Behavior
Age			0.668	0.489
17 - 25 years old	23	23		
26 – 35 years old	16	16		
36-45 years old	39	39		
46 – 55 years old	22	22		
Last Education			0.000	0.000
Elementary school	2	2		
Junior high school	14	14		
Senior high school	33	33		
Diploma/bachelor	51	51		
Job			0.389	0.814
Working	56	56		
Not working	37	37		
Students	7	7		
Most Favorable Media Info				
Community health cadres	26	26	0.024	0.844
Electronic media (television, radio)	4	4		
Online media (website, social media)	70	70		
Knowledge Level of Osteoporosis			-	0.000
Poor (score ≤ 5)	1	1		
Average (score $6 - 10$)	43	43		
Good (score ≥ 11)	56	56		
Osteoporosis Preventive Behavior			0.000	-
Not Perform (score ≤ 7)	22	22		
Perform (score ≥ 8)	78	78		

Health promotion media are all means or efforts to display messages or information that the communicator wants to convey, whether through print, electronic, or outdoor media, so that targets can increase their knowledge, which ultimately is expected to change their behavior in a positive direction towards their health (Panahi et al., 2021). In this study, the majority of respondents preferred online media (websites and social media) as a medium for health information. The research results also showed that there was an influence between health information media and osteoporosis knowledge (p = 0.024), but it did not affect osteoporosis prevention behavior (p = 0.844) (Table 1). These results are in line with research that states that online media significantly influences the level of knowledge and preventive behavior related to health (Jeong et al., 2021). Online social media in the contemporary realm is a new era in terms of communication facilities, which are increasingly intensive with technological advances. Several

studies or research projects have been carried out regarding the contribution of online media to the health sector. Much of this research and study examines the potential of social media, the availability of information, support for patients with specific diseases, and its effectiveness in conveying information or discourse on a particular topic. Online media has proven to be effective as a means of health promotion education, especially in increasing knowledge and attitudes and providing support for healthy behavior. In this study, there was no relationship between health information media and osteoporosis prevention behavior. This is because the majority of respondents in this study were working women. Lack of time and fatigue, which are common among work people, have been reported as the main causes of physical inactivity (Schultchen et al., 2019). This theory confirmed which mentioned that unhealthy lifestyle behaviors was higher in the working population (Lee et al., 2022).

The research results showed that the majority of respondents had a good level of knowledge about osteoporosis (56%), and they carried out osteoporosis prevention behaviours (78%). So, from the results of the analysis, it was found that there was an influence of knowledge on osteoporosis prevention behavior in women of childbearing age (p = 0.000) (Table 1). This is in line with research, which states that there is a relationship between the level of knowledge and secondary osteoporosis prevention behavior. Knowledge is part of the predisposing factors (factors that are manifested in beliefs as well as demographic variations such as status, age, and gender) that originate from individuals. Knowledge is also the result of knowing after sensing objects, where most knowledge is obtained through the eyes and ears. Knowledge and cognition are fundamental to the formation of behavior. Behavior that is based on knowledge will be more lasting than behavior that is not based on knowledge. The better a person's knowledge, the better his behavior will be. The level of education, the sources of information, and experience all have an impact on knowledge itself. In addition, knowledge determines psychological readiness, which in turn causes changes in understanding, attitudes, and behavior so that people are willing to adopt new behaviors. Therefore, better efforts are needed to increase knowledge about osteoporosis and bone health in young adult women.

Knowledge can influence osteoporosis prevention behavior in pre-menopausal women (< 50 years). *Behavior* is a human activity that results from a stimulus or response and is visible to outsiders either directly or indirectly. The formation of new behavior, especially in adults, begins in the cognitive domain, where the individual knows more about stimuli in the form of material, thereby giving rise to new knowledge in the individual. Then next is the affective domain, namely the emergence of an inner response in the form of the individual's attitude towards the known material. In the end, the stimulus in the form of material that is fully known and realized will cause a further response, namely in the form of action toward the stimulus.

A healthy and ac. Increasing public awareness regarding osteoporosis risk factors and prevention efforts can effectively reduce its prevalence. Additionally, public health beliefs regarding osteoporosis may promote more positive preventive behavior (Sava et al. 2020). Improving preventive behavior of osteoporosis is the cornerstone of its management. To improve behavior of osteoporosis, it is important to explore its determinants and identify the role of health knowledge and beliefs in improving osteoporosis preventive behavior (Elgzar et al., 2023).

4. Conclusions and Suggestions

This study concluded that there were no association between age with each factor of knowledge level, prevention behavior, job with knowledge level and prevention behavior, media info with behavior. While this study also resulted that there were association between education level with knowledge level and prevention behavior, media info with knowledge level, and knowledge level with prevention behavior. Further research should give intervention to improve knowledge and prevention behavior of osteoporosis.

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