



Case Report: The Effect of Ajwa Dates on Calcium Levels in Perimenopausal Women

Muftihatur Rahma^{1,4}, Nasrudin Andi Mappaware^{1,4}, Ajar Diana², Mona Nulanda^{1,4}, M. Hamsah^{1,4}, Zulfiah Surdam³

¹Department of Obstetrics and Gynecology, Faculty of Medicine, Muslim University of Indonesia

²Haji Hospital, Makassar

³Dapartement of anatomy, Faculty of Medicine, Muslim University of Indonesia

⁴Ibnu Sina Hospital

*Corresponding Author: Nasrudin Andi Mappaware

E-mail: nasrudin.nasrudin@umi.ac.id



Article Info

Article history:

Received 1 May 2024

Received in revised form 17

May 2024

Accepted 4 June 2024

Keywords:

The Influence of Ajwa Dates

Calcium Levels

Perimenopausal Women

Abstract

Perimenopause itself is defined as the permanent cessation of menstruation due to loss of ovarian activity confirmed by the onset of amenorrhea for 12 consecutive months in the absence of other pathological or physiological causes, occurring at the age of 42 years until menopause. In perimenopausal women, besides decreasing estrogen levels, there is also a decrease in calcium absorption which causes osteoporosis. Where dates contain iron, magnesium, calcium, phosphorus and potassium, but it also contains phytochemical compounds such as phytosterols and phytoestrogens. Phytoestrogens have the same structure and function as endogenous estrogens that serve to exert a major effect on women on bone remodeling and also control the timing of osteoclast apoptosis. Objective : To determine the relationship between giving ajwa dates to calcium levels in perimenopausal women. Method : Literature review with narrative review design. Results : Based on several journals that have been reviewed, it can be concluded that giving ajwa dates can inhibit the decrease in bone density in elderly women, where the active substances that play a role in this are calcium and phytoestrogens. Conclusion : Giving ajwa dates can inhibit the decrease in bone density in elderly women. Keywords : ajwa date (*Phoenix dactylifera* L), perimenopause, calcium.

Introduction

Perimenopause occurs due to a decrease in the number of follicles in the ovaries so that estrogen decreases in the amount of production. Perimenopause period with an age range of 40-50 years. As a result of the decrease in estrogen, symptoms such as, for example, burning sensation in the face that often arises at night, vaginal dryness, irregular menstrual cycles, and other signs. Perimenopausal age usually occurs at the age of 42 years until the onset of menopause (Santi et al., 2022).

In perimenopausal women, in addition to decreased estrogen levels, there is also a decrease in calcium absorption which causes osteoporosis. At the age of 50 years the amount of calcium content will shrink by 30%, the loss will reach 50% when the age of 70 years then will continue to experience calcium deficiency. When blood calcium levels are low, the body takes calcium from bones to perform bodily functions. As estrogen levels decrease, calcium absorption from food decreases so women who reach menopause tend to experience a 20-25% decrease in

calcium absorption. Reduced absorption of calcium from the digestive tract can cause bone calcium to be taken up or absorbed to reach blood calcium levels leading to osteoporosis (Linda & Yetti, 2019).

Date palm (*Phoenix dactylifera* L.) is one fruit that has many health benefits, including as an antioxidant, antihyperlipidemia, and hepatoprotective and prevents cardiovascular disease. It was revealed that the highest phenol levels were observed in ajwa dates, while the highest flavonoids were found in ajwa dates and saffawi dates (Aisah et al., 2022).

Dates are a fruit that is very beneficial for our body including for the growth of bones and teeth, in regulating cell function in extracellular and intracellular fluid (nerve transmission, muscle contraction, blood clotting and maintaining cell permeability), regulating the work of hormones and growth factors, and dates also contain very high phosphorus (Sriwulan et al., 2022).

In 100 grams of dates there is a date content of 40mg of phosphorus. This level is higher than the phosphorus content in fruits, which is as much as 20mg. dates contain iron, copper, vitamin B2, so they can prevent anemia. Dates weighing 100 grams contain 2.81 grams of protein, 7.1 grams of fiber, 35mg calcium, 88.78 grams of carbohydrates, 0.4mg of vitamin C, and 1.02mg of iron (Bachtiar et al., 2023).

Methods

The method used in influencing the results of the effect of ajwa dates on calcium levels in perimenopausal women is an experimental study using a pre-post test control design, where variable measurements were carried out before and after the intervention (Hastjarjo, 2019). The study will be conducted in March-May 2022. Stages of screening and research sampling. The research will be carried out at RSIA Sitti Khadijah I Muhammadiyah Makassar Branch. The sample examination will be carried out at the Sitti Khadijah I Muhammadiyah Research Laboratory Makassar Branch Jl. R.A Kartini N0. 15-17, Baru, Kec.Ujung Pandang, Makassar City, South Sulawesi.

With the independent variable is ajwa dates and the variable is tied to perimenopausal calcium levels. The number of respondents to this case study was 1 perimenopausal woman. Ajwa dates are consumed as many as 7 ajwa dates in the morning before meals for 8 weeks where in 7 ajwa dates have 60-80gr.

Result and Discussion

The research was conducted in March-May 2022 at RSIA Sitti Khadijah I Muhammadiyah Makassar Branch. With the number of respondents 1 perimenopausal woman who was given ajwa dates. Data collection was carried out by interviews, checking calcium levels and giving ajwa dates, how to consume ajwa dates and conducting direct and online monitoring to ensure clients eat ajwa dates and conduct evaluations. Evaluation will be carried out by rechecking calcium levels after the research is carried out, then the data that has been obtained and the results of interviews and observations are presented in table form.

Table 1. 0811419XXX

Responden 1	
Article Info	Ny. HM
Abstract	48 Tahun
Pekerjaan	Karyawan Swasta
Status	Menikah
Alamat	Jl. Jati Blok A/3
No HP	0811419XXX

Maternal characteristics were selected for homogeneity by selecting perimenopausal age, baseline calcium levels and parity amounts. Mothers did not take calcium supplements during the study so that the effects of date consumption could be monitored.

Table. Respondent 1

No.		Minggu Ke-							
		1	Respondent 1	Name	Mrs. Hm	Age	48 Years	Work	Private Employees
Status	Marry								

Based on table 2, respondents are very obedient in consuming ajwa dates in the morning before breakfast.

Table 3. Increase

Nama	1	2	3
4	5	6	7

Based on table 3, respondent data were obtained before and after giving ajwa dates. Calcium levels in respondents before giving ajwa dates and after routine ajwa date feeding, increased by an average of 0.3094 mmol / L / 8 weeks.

Perimenopause occurs due to a decrease in the number of follicles in the ovaries so that estrogen decreases in the amount of production. In perimenopausal women, in addition to decreasing estrogen levels, there is also a decrease in calcium absorption which causes osteoporosis. As estrogen levels decrease, calcium absorption from food decreases, so women who reach menopause tend to experience a decrease in calcium absorption by 20-25%. Reduced absorption of calcium from the digestive tract can cause bone calcium to be taken up or absorbed to reach blood calcium levels leading to osteoporosis. Where ajwa dates contain phytochemical compounds such as phytosterols and phytoestrogens that have benefits to modulate body estrogen, have pro-apoptotic and antioxidant activity. Phytoestrogens have antiosteoporosis benefits, some organs that can be affected by phytoestrogens are the ovaries, uterus, prostate, and testes (Nainggolan & Iliwandi, 2023).

Date palm fruit contains many compounds needed by the body. The nutritional compounds they contain have an important role in the development and function of the reproductive system. Date palm fruit contains phytochemical compounds such as phytosterols and phytoestrogens. Phytoestrogens in the diet of pregnant women can be found in amniotic fluid and umbilical blood. In addition, the high polyphenol content in dates (50.2 mg / g), especially epicatechins, and catechins determine antioxidant activity, both in vivo and in vitro. Therefore dates also have the potential to increase fertility in women (Anugrah et al., 2022).

Women have three estrogenic hormones such as Estradiol, Estrone and Estriol, among which estradiol is the most potent hormone in reproductive age and estrone is the female hormone of menopause. This is in line with the results of research based on references two and three, where in reference two it was found that dates also have the potential to increase fertility in women, with the nutritional compounds they contain which have an important role in the development and function of the reproductive system. And in reference three results obtained namely in this study that Phoenix dactylifera can also be used for infertility women who are deficient in hormonal because dates contain estradiol and estrone compounds (Sriwulan et al., 2022).

Endogenous estrogens found in the human body are estradiol-17 β (E2), estrone (E1) and estriol (E3). All three are steroids with 18 carbon atoms formed from cholesterol. Estrogen receptors can be found on osteoclast cells as well as osteoblasts. Estrogen inhibits bone resorption by inhibiting PTH, suppressing the production of IL-1, IL-6 and TNF α , and inhibiting RANK-RANKL interaction by stimulating stromal cells to produce OPG. This shows how important

estrogen replacement therapy is in postmenopausal women to prevent postmenopausal osteoporosis (post menopausal osteoporosis). Hormone replacement therapy used when estrogen decreases is phytoestrogen. Phytoestrogens are phytochemicals that have estrogenic activity (Wang et al., 2021). There are many phytoestrogen compounds, but those that have been studied are isoflavones and lignans. Isoflavones that have estrogenic effects include genistein, daidzein and glycosides which are found in legumes (Leguminosae) such as soy beans and red clover. In addition to phytoestrogens, calcium and vitamin D can also be hormone replacement therapy. Calcium is an element that is indispensable for the body, both during growth and in the postmenopausal period. During growth, giving calcium with sufficient doses will result in bone growth can reach the maximum, while giving calcium in the postmenopausal period can inhibit bone resorption. Vitamin D plays a role in the formation of a matrix that works by synthesizing type I collagen and osteocalcin but can also play a role in the bone remodeling process. Vitamin D helps in the process of osteoclast formation and if in very large concentrations can stimulate osteoclasts to resorb bone (van Duursen, 2017).

Women of childbearing age are women who are still in productive age (from getting their first period until they stop menstruating) between the ages of 15-49 years. Physiologically, the hormone estrogen will decrease starting from the age of 35 years to the age of 65 years. In the perimenopausal phase, estrogen decreases to more and vasomotor, constitutional, psychological and so on complaints begin. In this phase osteoporosis is also common. By providing adequate intake of calcium and vitamin D before entering the postmenopausal age will provide sufficient calcium reserves, so that when it has entered the menopausal phase where estrogen cannot work optimally, and calcium cannot be absorbed into the bones optimally, these reserves can replace calcium deficiencies lost during the aging process, this is expected to prevent osteoporosis (Galasinska & Szymkow, 2021; Wolde et al., 2022).

The cause of osteoporosis is a disorder in bone metabolism. Under normal circumstances, bone cells, namely builders (osteoblasts) and disassembly cells (osteoclasts) work one after another, filling each other, balanced, so that intact bones occur. When the work of osteoclasts exceeds the work of osteoblasts, then bone density becomes less and eventually shaft. Bone metabolism can be disrupted by various conditions, namely reduced estrogen hormones, reduced intake of calcium and vitamin D, reduced mechanical stimulation (inactive) in bones (Voulgaridou et al., 2023).

The population of menopausal women in Indonesia will increase, with all the impacts due to the decrease in the hormone estrogen in the form of climateric complaints and an increased risk of bone loss or osteoporosis. The best option and standard treatment for climateric complaints and osteoporosis is hormonal therapy (Estrogen + Progesterone / Estrogen) according to the cause due to lack of the hormone estrogen. Where the administration of isoflavones >80 mg / day for more than 24 months in women over the age of 45 years can maintain vasomotor stability, increase the precursors of catecholamine estrogen synthesis, and improve sympathohypothalamic control that affects heat regulation and the cardiovascular system, so as to prevent and relieve symptoms of hot flushes, night sweats and palpitations (Asifah & Daryanti, 2021). Administration of isoflavones more than 80 mg/day for 24 months lowered the menopausal index by 30%. In addition, in the premenopausal period estrogen is needed in the formation and maintenance of bone mass. The main effect of estrogen on bone formation is to decrease bone resorption. The influence of phytoestrogens on bone metabolism is caused by phytoestrogen binding to estrogen receptors β found in bones which will affect bone mass through inhibition of osteoclast activity and increased osteoblast activity, as well as increased calcitonin secretion which will inhibit parathyroid hormone (PTH) activity in the bone resorption process (Rusnaldi et al., 2022). Estrogen increases the activity of 1- α hydroxylase in the kidneys which converts inactive vitamin D into active, so calcium resorption through the intestines increases. In perimenopausal women, isoflavone administration of more than 90 mg

/ day for 24 months increases bone mineral density in the lumbar vertebrae and collum femoris, and prevents osteoporosis. The benefits of isoflavones to bone tissue are a result of increased bone formation by osteoblasts or decreased resorption by osteoclasts (Miedziaszczyk et al., 2023).

Bone strength is mainly determined by bone density or often referred to as Bone Mineral Density (DMT). DMT is affected by the balance between bone modeling and bone remodeling. Bone remodeling is regulated by hormones and other factors. These hormones are parathyroid hormone (PTH), insulin, growth hormone, vitamin D, calcium, calcitonin, glucocorticoids, sex hormones (estrogen and androgen) and thyroid hormone. Where estrogen deficiency can cause calcium loss due to decreased intestinal calcium absorption and decreased renal calcium conservation, in other words decreased estrogen levels will be followed by decreased absorption of calcium contained in food so that women who reach menopause and perimenopause tend to experience a reduction in calcium absorption by 20-25% (Cahyaningsih et al., 2017). Reduced absorption of calcium from the digestive tract results in bone calcium to be taken or absorbed to meet blood calcium levels resulting in bone loss (osteoporosis). While dates contain a lot of mineral resources such as calcium, selenium, magnesium, manganese and copper. Adequate calcium will prevent osteoporosis. When you don't get enough calcium from food, your body takes it from "calcium banks" in the joints of your hands, feet and other long bones. Lack of calcium consumption for a long time will result in bones taking it directly from solid bones. This results in porous bones and easy fractures (osteoporosis) (Ahmad et al., 2022).

Conclusion

After checking the Calcium Levels, it was found that respondents increased by 32.17% or 0.3094mmol / L within 8 weeks. It is proven that giving ajwa dates to respondents is effective in increasing calcium levels in perimenopausal women consuming ajwa dates in accordance with the recommendations that have been given to respondents.

References

- Ahmad, A., Sirajuddin, H. K., & Rosihan. (2022). Sistem Pakar Diagnosa Penyakit pada Tulang dengan Menggunakan Metode Penalaran Berbasis Kasus. *JATI (Jurnal Jaringan dan Teknologi Informasi)*, 1(1), 33–39.
- Aisah, A., Rasyid, R., Rofinda, Z. D., & Masrul, M. (2022). Pengaruh Pemberian Buah Kurma (*Phoenix Dactylifera* L) terhadap Peningkatan Kadar Hemoglobin dan Feritin pada Mahasiswi. *Jurnal Akademika Baiturrahim Jambi*, 11(1), 126.
- Anugrah, I., Hambali, S., Syamsu, R. F., Bamahry, A., & Murfat, Z. (2022). Perbandingan Kandungan Antioksidan Senyawa β -Karoten Golongan Karotenoid pada Kurma Ajwa (Madinah), Kurma Sukari (Mesir), Kurma Medjool (Palestina), Kurma Khalas (Dubai), dan Kurma Golden Valley (Mesir). *Fakumi Medical Journal: Jurnal Mahasiswa Kedokteran*, 2(9), 612–618.
- Asifah, M., & Daryanti, M. S. (2021). Pengetahuan Wanita dalam Menghadapi Menopause di Pedukuhan Gowok Kabupaten Sleman. *JKM (Jurnal Kesehatan Masyarakat Cendekia Utama)*, 8(2), 180.
- Bachtiar, R., Asmah, N., & Arif, A. C. (2023). Efek Antibakteri Ekstrak Buah Kurma Ajwa (*Phoenix Dactylifera* L) Terhadap Bakteri *Porphyromonas Gingivalis*. *DENThalib Journal*, 1(1), 1–6.
- Cahyaningsih, M. N., Saraswati, L. D., Yuliawati, S., & Wuryanto, M. A. (2017). Gambaran Densitas Mineral Tulang (DMT) pada Kelompok Dewasa Awal (19-25 Tahun) (Studi di Fakultas Kesehatan Masyarakat Universitas Diponegoro). *JKM: Jurnal Kesehatan Masyarakat*, 5(4), 424–430.

- van Duursen, M. B. M. (2017). Modulation of estrogen synthesis and metabolism by phytoestrogens in vitro and the implications for women's health. *Toxicology Research*, 6(6), 772–794.
- Galasinska, K., & Szymkow, A. (2021). The More Fertile, the More Creative: Changes in Women's Creative Potential across the Ovulatory Cycle. *International Journal of Environmental Research and Public Health*, 18(10), 5390.
- Hastjarjo, T. D. (2019). Rancangan Eksperimen-Kuasi. *Buletin Psikologi*, 27(2), 187.
- Linda, L., & Yetti R., E. (2019). Hubungan Perubahan Fisik dengan Kesiapan Ibu dalam Menghadapi Menopause di Wilayah Kerja Puskesmas Maroangin Kota Palopo. *Media Publikasi Promosi Kesehatan Indonesia (MPPKI)*, 2(1), 33–40.
- Miedziaszczyk, M., Maciejewski, A., Idasiak-Piechocka, I., Karczewski, M., & Lacka, K. (2023). Effects of Isoflavonoid and Vitamin D Synergism on Bone Mineral Density—A Systematic and Critical Review. *Nutrients*, 15(24), 5014.
- Nainggolan, S. S., & Iliwandi, J. (2023). Perubahan Fisik dan Tingkat Kecemasan Fisik pada Wanita Perimenopause. *Jurnal 'Aisyiyah Medika*, 8(2), 109–120.
- Rusnaldi, Shalahuddin, & Rajuddin. (2022). Peran Fitoestrogen sebagai Terapi Alternatif pada Menopause. *Jurnal Kedokteran Syiah Kuala*, 22(3), 187–197.
- Santi, N., Andryani, Z. Y., & A. Tihardimanto. (2022). Manajemen Asuhan Kebidanan Perimenopause pada Ny “N” dengan Menstruasi Tidak Teratur di Puskesmas Kassi-Kassi Kota Makassar Tahun 2021. *Jurnal Midwifery*, 4(1), 19–29.
- Sriwulan, W., Anggraini, R., & Safira, D. P. M. (2022). Stabilitas Antioksidan Buah Kurma (*Phoenix dactylifera* L.) pada Suhu Pemanasan dengan Metode ABTS. *The Journal Of Muhammadiyah Medical Laboratory Technologist*, 5(1), 98–102.
- Voulgaridou, G., Papadopoulou, S. K., Detopoulou, P., Tsoumana, D., Giaginis, C., Kondyli, F. S., Lymperaki, E., et al. (2023). Vitamin D and Calcium in Osteoporosis, and the Role of Bone Turnover Markers: A Narrative Review of Recent Data from RCTs. *Diseases*, 11(1), 29.
- Wang, X., Ha, D., Yoshitake, R., Chan, Y. S., Sadava, D., & Chen, S. (2021). Exploring the Biological Activity and Mechanism of Xenoestrogens and Phytoestrogens in Cancers: Emerging Methods and Concepts. *International Journal of Molecular Sciences*, 22(16), 8798.
- Wolde, M., Kassie, A., Shitu, K., & Azene, Z. N. (2022). Knowledge of Fertile Period and Its Determinants Among Women of Childbearing age in Ethiopia: A Multilevel Analysis Based on 2016 Ethiopian Demographic and Health Survey. *Frontiers in Public Health*, 10.