And There Was Sunlight: The Dangerous Deficiency of Vitamin D in Jewish Women

By **Shoshanah Marcus**

Over a billion people in the world are deficient in vitamin D. In addition to its important role in calcium regulation and subsequent bone formation, vitamin D plays a crucial role in a number of physiological systems. As a steroid with hormone-like activity, vitamin D regulates the activity of some genes and plays a crucial role in growth and development. Deficiency in this critical vitamin can have severe consequences and has been linked to serious pathological conditions, including: cancer, obesity, diabetes, depression, chronic fatigue syndrome, osteoporosis, and neuro-degenerative diseases such as Alzheimer's disease. Though some vitamin D is absorbed through dietary consumption, 50% to 90% of vitamin D is obtained through exposure of one's skin to sunlight [1]. Most cases of vitamin D deficiency seem to stem from people avoiding the sun due to the fear of skin cancer; however, for religious Jewish people there is a different component [2]. The religious Jew, especially the Orthodox Jewish woman, dresses in a modest way that covers the body more so than the average person, leading to an extreme lack of sun exposure, which ultimately results in dangerously low vitamin D levels.

Despite the Middle East having mostly clear skies and sunny weather throughout the year, the Orthodox Jewish religious residents in this area surprisingly have some of the lowest levels of vitamin D and highest rates of hypovitaminosis D, or insufficiency of vitamin D [1]. Religious Jewish women are among the most impacted by the lack of vitamin D because their traditional lifestyle fosters reduced exposure to sunlight. This deficiency is most pronounced in the ultra-Orthodox Jewish community. Not only do ultra-Orthodox Jewish women tend to dress in modest clothing and care for their children in an indoor environment, both of which limit their sun exposure, but they also lack proper education about the various health consequences of the lack of vitamin D.

Without an adequate understanding of their high risk nature for hypovitaminosis D, Jewish women may not be properly equipped to take preventative actions against potential health risks. The most common signs and symptoms of vitamin D deficiency include generalized weakness, and reduced bone mineralization, or less dense bones, commonly known as osteoporosis. Osteoporosis is more common in women and studies have linked this condition to the cause of bone fractures in nearly 50% of women over the age of 50. Moreover, as women age and reach menopause, their levels of estrogen, a hormone which normally protects women from bone loss, decrease dramatically, contributing to bone breakdown and tremendously increasing their chance of developing osteoporosis [3]. In a study comparing patterns of osteoporosis health-related behaviors in premenopausal and postmenopausal ultra-Orthodox and secular Jewish women, both groups were found to have calcium deficiencies. The main difference between the two groups was that Orthodox Jewish women had less knowledge about osteoporosis and were less likely to receive a bone density examination compared to the secular Jewish women. Additionally, the Orthodox women typically only engaged in walking as their main source of physical activity while the secular women participated in a wider range of activity, which was most likely due to their different religious levels. These findings encourage an expanding of knowledge about the importance of vitamin D intake and osteoporosis for Jewish women [4]. With the proper education, Jewish women may be able to build up their bone strength with supplements or engage in the appropriate exercise to avoid the serious consequences of living with weak bones.

Although women are the most impacted group by vitamin D deficiencies, religious Jewish men are also impacted by this. Healthy, young men in high-level religious *yeshivot* were found to have severe vitamin D deficiencies and were considered a high risk group for metabolic bone disease. Dressing in modest attire, studying religious texts in an indoor setting, and waiting 3 or 6 hours between eating meat and dairy limited these men's calcium and vitamin D intake [5]. Aside from genetic factors, the combination of physical activity and dietary intake of calcium and vitamin D affects the peak bone mineral density (BMD) a person can obtain in their teenage years.

The ultra-Orthodox Jewish lifestyle not only promotes indoor religious study over outdoor physical activity but also adheres to a modest dress code. Additionally, Rabbinical law requires one to wait up to six hours between eating meat and dairy, which limits the consumption of calcium-rich milk. In analyzing the BMD of 50 healthy, ultra-Orthodox Jews from Brooklyn, a study recommended that as a group at risk for poor bone health, ultra-Orthodox Jews should increase their calcium intake as well as increase in weight-bearing exercises, such as weight lifting and fast paced walking, to build up their bone strength [6].

Some have considered vitamin D deficiency to be "an ignored epidemic" and have urged health administrations to combat this growing issue [1]. Many concerns have been raised within the Jewish community to try to increase vitamin D intake among Jews, especially Jewish women. Studies have found that pregnant women who took vitamin D supplements during pregnancy were less likely to develop hypovitaminosis D [7]. Additionally, countries like Israel, where the levels of vitamin D in ultra-Orthodox people are dangerously low, have tried to fortify their milk but have faced some backlash. In response, some Israeli health officials have recommended the Health Ministry to reevaluate their regulations [8].

Ultimately, the most crucial factor in deterring dangerously low levels of vitamin D is education. With the proper education and proactive measures, Jewish women will be able to combat hypovitaminosis D by beginning to take vitamin D supplements in their youth to avoid severe cases of osteoporosis in later age. In their developmental stages, young Jewish women have the ability to actively build up their bone strength and bone density in order to avoid the serious repercussions of vitamin D deficiencies without sacrificing their religious values.

Acknowledgements

I would like to thank my amazing family for their unwavering love and support in pursuing my goals of becoming a women's health doctor. Furthermore, I would like to express gratitude to Dr. Babich for all of his guidance and for providing me with sources for this article. I would also like to extend thanks to my father for always pushing me to be my best self, both personally and academically.

References

[1] Naeem, Z. (2010). Vitamin D Deficiency- an Ignored Epidemic. Int. J. Health Sci. (Qassim) 4:V-VI.

[2] "Vitamin D Deficiency." MedlinePlus, U.S. National Library of Medicine. https://medlineplus.gov/vitaminddeficiency.html (retrieved January 3, 2020).

[3] "What Women Need to Know." National Osteoporosis Foundation. https://www.nof.org/preventing-fractures/general-facts/what-women-need-to-know/ (retrieved January 3, 2020).

[4] Werner, P., Olchovsky, D., Shemi, G., and Vered, I. (2003). Osteoporosis Health-Related Behaviors in Secular and Orthodox Israeli Jewish Women. Maturitas 46:283-294.

[5] Tsur, A., Metzger, M., and Dresner-Pollak, R. (2010). Effect of Different Dress Style on Vitamin D Level in Healthy Young Orthodox and Ultra-Orthodox Students in Israel. Osteoporos. Int . 22:2895-2898.

[6] Taha, W., Chin, D., Silverberg, A.I., Lashiker, L., Khateeb, N., and Anhalt, H. (2001). Reduced Spinal Bone Mineral Density in Adolescents of an Ultra-Orthodox Jewish Community in Brooklyn. Pediatrics 107:5:1-6.

[7] Mukamel, M.N., Weisman,Y., Somech, R., Eisenberg, Z., Landman, J., Shapira, I., Spirer, Z., and Jurgenson, U. (2001). Vitamin D Deficiency and Insufficiency in Orthodox and Non-Orthodox Jewish Mothers in Israel. IMAJ 3:419-421.

[8] Siegel-Itzkovich, J. (2008). Got Vitamin D? The Jerusalem Post. pp.1-4.