Prevalence of Vitamin D Deficiency in women at Western Libya

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Vitamin D is play important role to build and maintain healthy bones. Vitamin D also regulates many other functions of the body's cells. Its anti-inflammatory, antioxidant and neuroprotective properties also support a healthy immune system, muscle function, and brain cell activity. In additional, vitamin D prevent of cardiovascular diseases and cancer especially colon &prostate). reduced risk from multiple sclerosis, Protective from type 1 diabetes mellitus, (Chiu et al., 2004; Holick, 2007; Khan, 2018). Vitamin D deficiency has been linked to an increased incidence of schizophrenia and depression (McGrath, 2002).

The objective; of this study was to assess vitamin D deficiency among a sample of population living in Western Libya.

Twenty six women were recruited to participate from the Western Libya (Tripoli City and Zwara City), who had not been diagnosed with any medical disorder or taking any medications that interfere with vitamin D status.

Plasma was separated by centrifugation at 4000 g for 10 minutes within an hour after the samples were drawn from case. Vitamin D levels, 25(OH)D were determined by a radioimmunoassay technique (Snibe Diagnostics, MAGLVML®, 800, Germany).

Vitamin D deficiency (25(OH) D < 10 ng/mL) was reported in 61.5% of the participants; had severe vitamin D deficiency. Furthermore, 34.6% of subjects were found with vitamin D insufficiency (25(OH)D 10-20 ng/mL) and another 23.1% of subjects were found with vitamin D sufficiency (25(OH)D 20- 40 ng/mL) (Fig. 2). Of all subjects was 14.2 ng/mL for women, whereas the median was 19.7 ng/mL for male (Table 1). Younger women aged 18–32 years had a significantly higher risk of vitamin D deficiency than other group of women aged 23–36 years.

In conclusion, the prevalence of vitamin D deficiency among population living in West Libya, Tripoli was high. A national strategy is needed to control a hypovitaminosis D crisis in a country.

Introduction:

Vitamin D deficiency is still considered a problem of the past by health care professionals and the public. Populations at risk include infants, children and women. The human body obtains sufficient amounts of vitamin D either from diet or adequate exposure to sunlight. Usually, 50–90% of vitamin D is produced by the skin on exposure to sun (Longo, 2012).

Vitamin D is play important role to build and maintain healthy bones. Vitamin D also regulates many other functions of the body's cells. Its anti-inflammatory, antioxidant and neuroprotective properties also support a healthy immune system, muscle function, and brain cell activity. In additional, vitamin D prevent of cardiovascular diseases and cancer especially colon &prostate). reduced risk from multiple sclerosis, Protective from type 1 diabetes mellitus, (Chiu et al., 2004; Holick, 2007; Khan, 2018). Vitamin D deficiency has been linked to an increased incidence of schizophrenia and depression (McGrath, 2002).

Vitamin D is not naturally found in many foods, but you can get it from fortified milk, fortified breakfast cereals, and fatty fish, such as salmon, mackerel and sardines. The body also produces vitamin D when direct sunlight converts a chemical in the skin into the active form of the vitamin (calciferol) (Holick, 2007; Ross et al., 2010).

The amount of vitamin D in the skin produces depends on many factors, including the time of day, season, skin pigmentation, and depending on the lifestyle, through limited outdoor activity, type of clothing, cultural practices, or thorough use of sunscreen when outdoors (Johnson, 2011; Michael and Holick,. 2007).

Vitamin D is produced in the human skin through photochemical conversion of 7-dehydrocholesterol to cholecalciferol (vitamin D3) (Holick, 2007).

Vitamin D3 is then metabolized to 25-hydroxyvitamin D (25(OH)D), the main storage and circulating form of the vitamin, and then to 1, 25-dihydroxyvitamin D, the hormonal form of the vitamin, by the hepatic and the renal enzymes (Christakos et al., 2012). In addition, there are alternative pathways of vitamin D activation by CYP11A1 (Slominski et al., 2012; Slominski et al., 2015).

The objective; of this study was to assess vitamin D deficiency among a sample of population living in Western Libya.

Methods

Study design, subjects and Data collection:

This study is a cross-sectional study. Twenty six women were recruited to participate from the Western Libya (Tripoli City and Zwara City), who had not been diagnosed with any medical disorder or taking any medications that interfere with vitamin D status. The study sample from women who had a follow-up examination at the clinic.

2.2 Biochemical analysis:

Plasma was separated by centrifugation at 4000 g for 10 minutes within an hour after the samples were drawn from case. Vitamin D levels, 25(OH)D were determined by a radioimmunoassay technique (Snibe Diagnostics, MAGLVML®, 800, Germany). Subjects were classified based on vitamin D level into vitamin D sufficient (25(OH)D ≥ 30 ng/mL), insufficient (25(OH)D = 20–29.9 ng/mL), and deficient (25(OH)D < 20 ng/mL). Moreover, severe vitamin D deficiency was defined as 25(OH)D < 10 ng/mL.

There are on specific conditions for a vitamin D test, but you should avoid taking vitamin D supplements 24 hours before the test.

Statistical analysis:

Statistical analysis was performed using prism 5 ® Qualitative data were described by absolute and relative frequencies (expressed in %). Quantitative variables were described by mean.

Results:

Overall, Twenty-Six patients living in West Libya; Tripoli and Zawara were involved in this study. Most of the study subjects (88%) Younger women aged ranged between 18–37 years. Whereas, 11% male patients (24-36 years) Figure 1.
Vitamin D deficiency (25(OH) D < 10 ng/mL) was reported in 61.5% of the participants; had severe vitamin D deficiency. Furthermore, 34.6% of subjects were found with vitamin D insufficiency (25(OH)D 10-20 ng/mL) and another 23.1% of subjects were found with vitamin D sufficiency (25(OH)D 20- 40 ng/mL) Figure 2. Of all subjects was 14.2 ng/mL for women, whereas the median was 19.7 ng/mL for male (Table 1). Younger women aged 18–32 years had a significantly higher risk of vitamin D deficiency than older women aged 23–36 years.

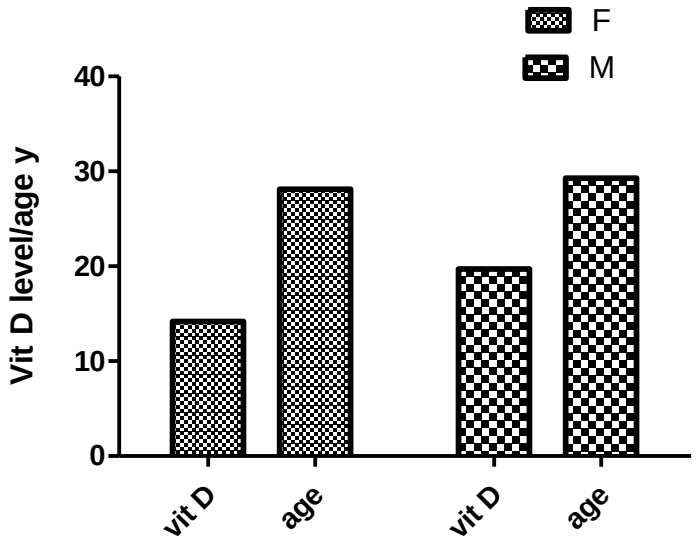

Figure. 1 The level serum 25(OH)D concentrations in male and female patients with ages.

The level serum 25(OH)D concentrations in women subjects was 14.2 ng/mL and the average of age for women are below 30 years. Whereas The level serum 25(OH)D concentrations in male subjects was 19.7 ng/mL . And no significant difference regarding the age between male and female.

	vit D/ng	age/y
F	14.2	28.1
M	19.7	29.3

Table. 1 The average level of serum 25(OH)D concentrations and the age in female and male patients.

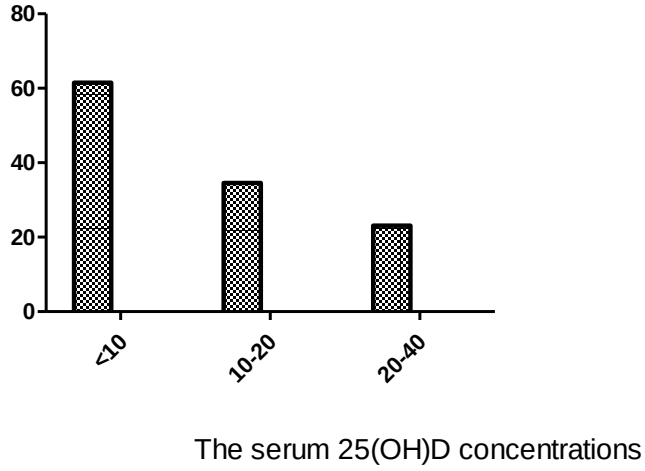

Figure 2. The mean of serum 25(OH)D concentrations and number of patients.

This figure shows that 60% of patients below 10ng/ml and 23% at 20-40ng/ml.

Discussion:

The present study showed a high prevalence of vitamin D deficiency among women living in west Libya. Actually, 61% of women who participated in this study had sever hypovitaminosis D. Our result is consistent with a recent study that carried out to determine the prevalence of hypovitaminosis D in the western Libyan population based on the currently available literature which suggest that the vitamin D deficiency is around 60% (Al-Alyani et al., 2018). However vitamin D deficiency should not be wide spread in Libyan population , as a country with sunshine that is available most days of the year (Al-Daghri., 2018; Zhao, et al 2022).

Recently, the global prevalence of vitamin D deficiency is an epidemic and considered as a public health concern in many regions around the world (Nair and Maseeh, 2012).

Our study consist with previous research as prevalence of vitamin D deficiency worldwide, estimate of the prevalence of 25(OH)D levels <50nmol/l (or 20ng/ml)have been reported as 24%(US) 37% (Canada) and 40%(Europe).

There are limited studies that show prevalence of vitamin D deficiency in Libyan population, the present study provides an important contribution in this direction. An interesting finding in this study was that younger women (18–32 years) had a higher risk of hypovitaminosis D than other age group women (23–36 years).

The same result was reported previously among children and young adult (Holick., 2007; Gordon et al., 2004).

This finding might be related to more vitamin D supplement taken by older women (Lips et al., 2006). Moreover, could be related to their frequent consumption of fast foods soft drinks in younger adult which are poor in vitamin D (Hammad and Benajiba, 2017).

women due to many reasons including; modern lifestyles which focus mainly on indoor sedentary activities, hot climate which limit outdoor activities during the daytimes, furthermore, women commonly use sun blockers as they prefer fair skin rather than suntanned skin, and religion reasons related to dress style of women which tend to be usually dark and covered the entire body (Nair and Maseeh, 2012).

In present study vitamin D deficiency is more prominent in women of varying ages in Western Libya. Several factors could contribute to vitamin D deficiency. Therefore, it is important to determine the risk factors that are associated with vitamin D deficiency among those women in order to establish relevant strategies to prevent and manage this serious health problem. Furthermore, vitamin D deficiency in male patients are less than women but was not significant. The same result was reported previously among the population in Saudi Arabia (Alzaheb., 2018).

Therefore, food fortification and dietary supplementation of vitamin D are considered as acceptable strategies to enhance vitamin D status among the general population (Jääskeläinen et al., 2017). The food fortification with vitamin D is mandatory and most foods sold at US markets (Sadat-Ali et al., 2013).

This study had a few limitations; The first one is the small sample size, second, this study still needs valuable data about risk factors might be associated with vitamin D deficiency among women living in Western Libya, Tripoli.

In conclusion, the prevalence of vitamin D deficiency among population living in West Libya, Tripoli was high. A national strategy is needed to control a hypovitaminosis D crisis in a country.

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