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RESEARCH ARTICLE

VITAMIN D DEFICIENCY IN THE NORTHERN REGION OF RIYADH CITY.

Bassem Dalil Al-Osaimi, Yasir Saleh Abdulaziz Alsagaabi, Khalid Yahya Namazi, Abdullah Fehaid Alotaibi and Albaraa Abdullah Alhowaimil

College of medicine, Al-imam muhammad ibn saud islamic university (IMSIU), RIYADH, Saudi Arabia.

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Abstract

Introduction and background: There are multiple studies in different countries regarding the prevalence of vitamin D deficiency. These studies showed high prevalence of vitamin D deficiency in middle eastern countries. This study tries to elucidate the prevalence of vitamin D in the northern region of Riyadh City.

WE selected this topic as our research for its importance and its relevance to the Saudi community

Method and material: A cross-sectional study was carried out in may on 65 subjects 9-61 years old whom the health clinic have n previously measured the 25 (OH) D serum levels in the past six months.

the research team by random systemic sampling starting from the number (2,4,6,8....) selected 32 for the evaluation for vitamin D deficiency.

Results: A high percentage of vitamin D deficiency was defined in the study population. Prevalence of severe, moderate and mild Vitamin D deficiency .

The patients who have been found to have a vitamin D deficiency were 22 (out of 32) represented by the percentage 68.67%.

The number of male patients with vitamin D deficiency was 7 (out of 32)

Represented by the percentage 21.87%.

The number of female patients with vitamin D deficiency was 15 (out of 32)

represented by the percentage 46.87%.

the number of people in the normal range was 10(out of 32)

Conclusions: Vitamin D deficiency has a high prevalence in the northern region of Riyadh City. The observation concluded that females are more deficient than males. In order to avoid complications of vitamin D deficiency, public education and supplemental dietary intake seems essential.

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Introduction:-

What is vitamin D:-

Calcium and phosphate. In humans, the most important related compounds of vitamin D are vitamin D2 and vitamin D3. Cholecalciferol (vitamin D3) and ergocalciferol (vitamin D2) are unique as they constitute what we know as vitamin D and can be ingested from the diet and/or supplements. The body can also synthesize vitamin D (from

Corresponding Author:- Bassem Dalil Al-Osaimi.

Address:- College of medicine, Al-imam muhammad ibn saud islamic university (IMSIU), RIYAH, Saudi Arabia.

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can make vitamin D when exposed to sunlight (1, 2). Most vertebrates, including amphibians, reptiles, birds, and lower primates, depend on sun exposure for their vitamin D requirement (2). The lack of sunlight and its association with the devastating bone-deforming disease rickets in children was first recognized by Sniadecki in 1822 (3). One hundred years would pass before it was observed that exposure to ultraviolet B radiation (UVB; 290–315nm) from a mercury arc lamp or sunlight prevented and treated rickets (4). In the early 1930s, the US government set up an agency to provide recommendations to parents about the beneficial effect of sensible exposure to sunlight for the prevention of rickets (4-6).

The fortification of milk in the 1930s with 100 IU vitamin D2 per 8 ounces was effective in eradicating rickets in the United States and Europe. The unfortunate outbreak of hypercalcemia in the 1950s in Great Britain was blamed on the over fortification of milk with vitamin D, even though there was little evidence for this (7). Because milk was scarce at the end of the war, many local stores that sold milk would add vitamin D to it if it was not purchased by the expiration date. This was thought to extend the shelf-life of the vitamin D-fortified milk. This rise in the incidence of hypercalcemia in infants in the 1950s resulted in Europe forbidding the fortification of dairy products with vitamin D. Only recently have Finland and Sweden begun fortifying milk with vitamin D.

Vitamin D Sources and Function:-

Vitamin D is both a nutrient we eat and a hormone our bodies make. Few foods are naturally rich in vitamin D, so the biggest dietary sources of vitamin D are fortified foods and vitamin supplements. Good sources include dairy products and breakfast cereals (both of which are fortified with vitamin D), and fatty fish such as salmon and tuna. For most people, the best way to get enough vitamin D is taking a supplement, but the level in most multivitamins (400 IU) is too low. Encouragingly, some manufacturers have begun adding 800 or 1,000 IU of vitamin D to their standard multivitamin preparations. If the multivitamin you take does not have 1,000 IU of vitamin D, you may want to consider adding a separate vitamin D supplement, especially if you don't spend much time in the sun. Talk to your healthcare provider.

Two forms of vitamin D are used in supplements: vitamin D2 ("ergocalciferol," or pre-vitamin D) and vitamin D3 ("cholecalciferol"). Vitamin D3 is chemically indistinguishable from the form of vitamin D produced in the body.

The body also manufactures vitamin D from cholesterol, through a process triggered by the action of sunlight on skin, hence its nickname, "the sunshine vitamin." Yet some people do not make enough vitamin D from the sun, among them, people who have a darker skin tone, who are overweight, who are older, and who cover up when they are in the sun. Correctly applied sunscreen reduces our ability to absorb vitamin D by more than 90 percent.

And not all sunlight is created equal: The sun's ultraviolet B (UVB) rays—the so-called "tanning" rays, and the rays that trigger the skin to produce vitamin D—are stronger near the equator and weaker at higher latitudes. So in the fall and winter, people who live at higher latitudes (in the northern U.S. and Europe, for example) can't make much if any vitamin D from the sun.

Vitamin D helps ensure that the body absorbs and retains calcium and phosphorus, both critical for building bone. Laboratory studies show that vitamin D can reduce cancer cell growth and plays a critical role in controlling infections. Many of the body's organs and tissues have receptors for vitamin D, and scientists are still teasing out its other possible functions.

What is vitamin D deficiency:-

vitamin D deficiency means that there is not enough vitamin D in your body. Broadly speaking, this can occur in three situations:

The body has an increased need for vitamin D.

The body is unable to make enough vitamin D.
Not enough vitamin D is being taken in the diet

Causes of Vitamin D Deficiency:-

Vitamin D deficiency can occur for a number of reasons:

You don't consume the recommended levels of the vitamin over time. This is likely if you follow a strict vegetarian diet, because most of the natural sources are animal-based, including fish and fish oils, egg yolks, cheese, fortified milk, and beef liver.

Your exposure to sunlight is limited. Because the body makes vitamin D when your skin is exposed to sunlight, you may be at risk of deficiency if you are homebound, live in northern latitudes, wear long robes or head coverings for religious reasons, or have an occupation that prevents sun exposure.

You have dark skin. The pigment melanin reduces the skin's ability to make vitamin D in response to sunlight exposure. Some studies show that older adults with darker skin are at high risk of vitamin D deficiency.

Your kidneys cannot convert vitamin D to its active form. As people age their kidneys are less able to convert vitamin D to its active form, thus increasing their risk of vitamin D deficiency.

Your digestive tract cannot adequately absorb vitamin D. Certain medical problems, including Crohn's disease, cystic fibrosis, and celiac disease, can affect your intestine's ability to absorb vitamin D from the food you eat.

You are obese. Vitamin D is extracted from the blood by fat cells, altering its release into the circulation. People with a body mass index of 30 or greater often have low blood levels of vitamin D.

Vitamin D Deficiency Among Women in Saudi Arabia:-

So why are so many women in Saudi Arabia suffering from a lack of vitamin D in a country which is abundantly full of sunshine? The conservative Kingdom requires that when women go out from their residence they must cover at a minimum from shoulder to ankles in a black abaya. In addition to the abaya, the majority of Saudi women choose to wear a hijab which covers their hair and a niqab which covers all but their eyes. The social lives of Saudi women generally start after dark which further limits their exposure to sunlight.

It is typical for most Saudi homes to have a privacy wall around the entire home. Inside of the walls there is generally at least one courtyard which is open to the sky. However, Saudi women either start their day by late afternoon, have commitments which keep them inside or do not have an interest or desire to be outside.

The Saudi culture does not place the same emphasis on spending time outdoors as do other cultures and especially so for the women. It is hoped that with the rising generation of Saudi youth there is a better understanding on the importance for women to get exposure to sunlight.

What you can do to prevent vitamin D deficiency:-

Vitamin D deficiency may be a pervasive problem — one that we treat with specific therapies at our medical practice — but the best way to protect yourself from any deficiency is to build your health from the bottom up and let your body balance itself. We acknowledge the controversy over whether our primary source of vitamin D should be the sun, diet, or supplements. Which combination is best for you depends on many variables, including your age, nutritional status, and geographic location. In a world where so many of us are at risk of vitamin D deficiency, we recognize each of these sources as valuable. With this in mind we recommend the following steps to prevent vitamin D deficiency:

Allow yourself limited, unprotected sun exposure in the early morning and late afternoon (no more than 15 minutes for light-skinned individuals, 40 minutes for darker skin) — particularly between May and September if you live in anywhere higher than about 35–40° latitude. (See the World Atlas to check out your latitude!)

Eat a diet rich in whole foods. Nutrient-dense, fatty fish like mackerel and sardines are good sources of vitamin D. Egg yolks, fortified organic milk and other dairy products, and some organ meats (like liver) are also reasonably good natural sources of D. Because vitamin D is still somewhat of a mystery, we're not sure which co-factors are important for its absorption, but we can surmise they are most fully present in wholesome food.

Take a top-quality multivitamin every day to fill in any nutritional gaps, preferably one that includes fish oil. (We've designed our own multivitamin that we can offer the patients with confidence *Take a vitamin D supplement*. Supplement additionally with vitamin D3 at 1000–2000 IU daily if you do not get testing (or higher with testing, under the care of your healthcare practitioner). For a long time, vitamin D therapy was being prescribed as vitamin D2.

Nowadays vitamin D3 supplements are widely recognized as the superior, more bio-ready form for use in the body. How much you need really depends on your particular needs, so testing is really the best way to go for most people.

Check with your healthcare professional about vitamin D testing. If you think you may be suffering from vitamin D deficiency, get a blood test and ask for the results. I like to see an optimal value of 50–70 ng/mL. A conventional doctor might think anywhere from 20–50 ng/mL is normal, but that recommendation will soon change as the newest research becomes incorporated into the standard of conventional care. Please see our page on testing and treatment for guidelines and precautions.

Discuss adding a vitamin D supplement to your diet with your healthcare provider. If you don't get out in the sun every day for 15 minutes in the early morning and late afternoon, consider supplementing with 1000–2000 IU per day — *at least* during the winter months! But you may need higher levels to reap all the long-term health benefits vitamin D has to offer you, so talk it over with your healthcare provider. This is so important for women of all ages — especially those over 50. Then be sure to get follow-up testing to monitor your response.

And keep in mind that in the end, optimal health is never about just one thing. Vitamin D is just one component of an ever-changing picture — your health is a work in progress that needs your consistent attention and support.

It may turn out that vitamin D is the key everyone's been looking for, or more likely an important part of a far greater whole-health picture. But what matters most is how you feel and what works for you. I encourage you to investigate your personal vitamin D level with your medical practitioner as part of a comprehensive approach to your whole health.

Method and material:-

We started by dividing to three groups.

The first group was in charge of collecting data from topic related books and websites.

The second group was in charge of collecting data from a nearby hospital .

The third group was in charge of completing and distributing a survey to the public in the targeted area .

The first group was able to find a useful amount of information which we used in writing the research (all references are mentioned)

The second group in coadunation with a nearby health facility was able to maintain a number of data from a patients fails.

Do to the lack of patient consent ,the team was not able to ask a follow up questions related to vitamin D deficiency

The third group completed and distributed a survey to individuals in the targeted area .

Results:-

After collecting the results from the clinic we found the following :

A high percentage of vitamin D deficiency was defined in the study population. Prevalence of severe, moderate The patients who have been found to have a vitamin D deficiency were 22 (out of 32) represented by the percentage 68.67%.

The number of male patients with vitamin D deficiency was 7 (out of 32)

Represented by the percentage 21.87%.

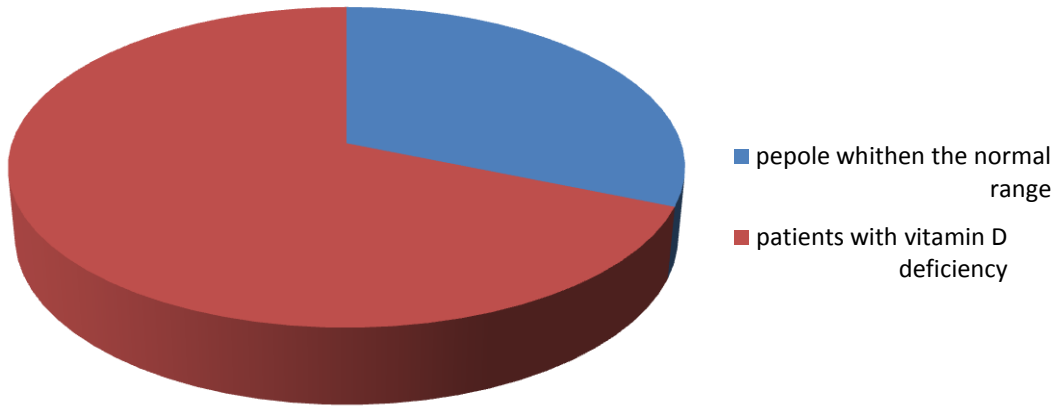
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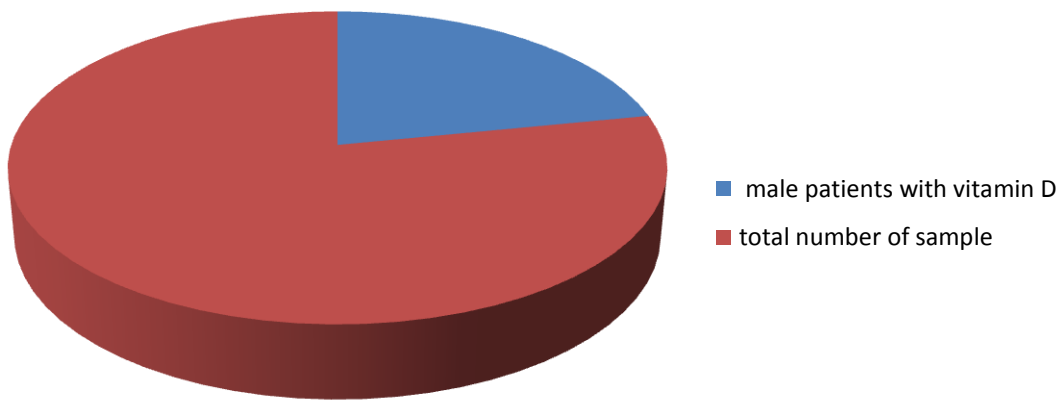
the number of people in the normal range was 10(out of 32)

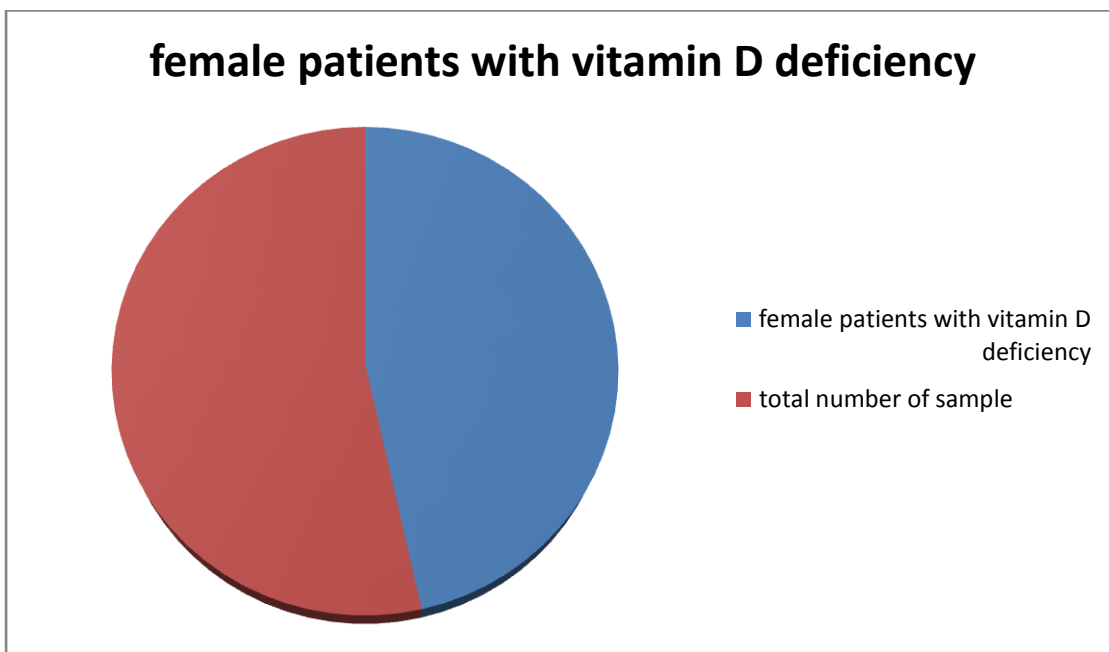
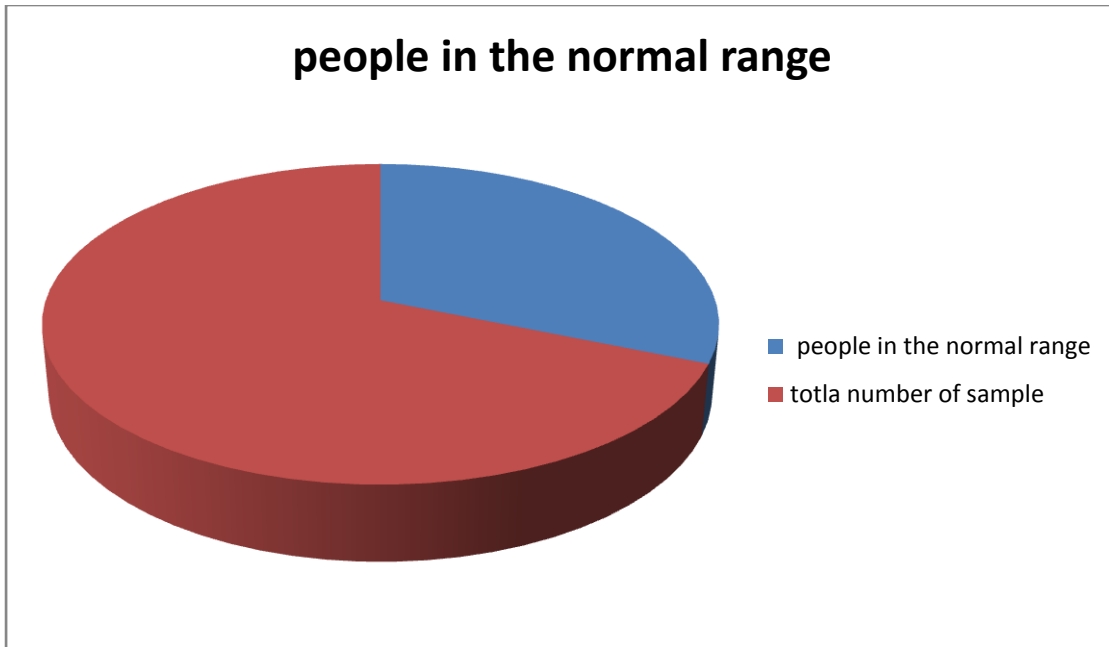
and mild Vitamin D deficiency .

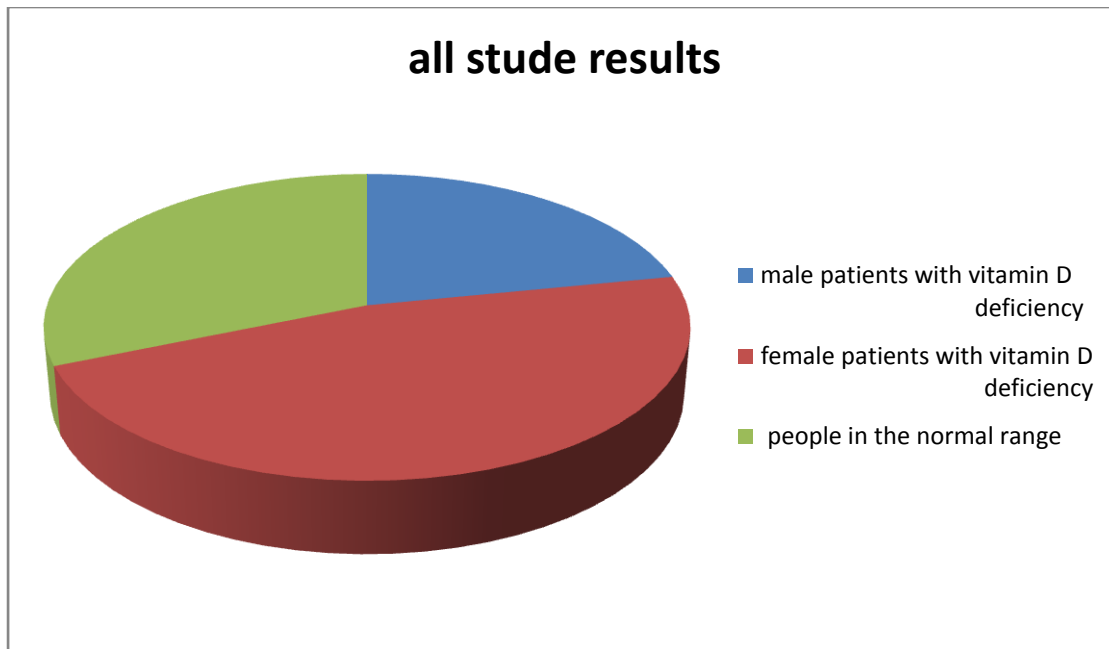
patients with vitamin D deficiency



male patients with vitamin D







Discussion and literature review:-

In our study we concluded that a high percentage of the population has a low vitamin D serum level . Multiple studies have been carried out about the prevalence of vitamin D deficiency but they were mostly limited to a small sample size or assessed a specific age group (especially elderly). In countries where vitamin D fortified foodstuffs are available (USA and some Scandinavian countries), prevalence of vitamin D deficiency is between 1.6–14.8% in different age groups. In other European countries where there is no vitamin D supplementation, deficiency is more prevalent. The studies which assessed middle-aged and elderly people showed vitamin D deficiency prevalence of 14% to 59.6% in these age groups .Vitamin D deficiency prevalence is much higher in meddle eastern countries .

Most studies have shown higher prevalence of vitamin D deficiency in the elderly . Elderly females demonstrated statistically significant higher serum levels of vitamin D compared with young and middle aged females. Parenteral vitamin D intake by elderly was the major differentiating factor between various age groups that could explain high prevalence of a high level of vitamin D in elderly females

The survey distributed was not helpful because of a variety of factors .

Conclusions:-

Despite the abundant sunlight in Saudi Arabia, the prevalence of hypovitaminosis D among young healthy Saudi male and females is 68.67%. This finding should be considered a public health problem. Case identification, health education and prevention should be encouraged.

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Copy of the survey

vitamin d deficiency in the northern region of riyadh city

all the data collected in this survey will be dealt with with the utmost secrecy it will only be observed by the research team and the supervising doctor your cooperation is highly appreciated

Gender

Mark only one oval.

- Male
- Female

Age group

Mark only one oval.

- Younger than 18
- From 18 to 25
- From 25 to 39
- Older than 39

Place of residence

Mark only one oval.

- The northern region of Riyadh city
- The southern region of Riyadh city
- The eastern region of Riyadh city
- The western region of Riyadh city

Do you exercise regularly

Mark only one oval.

- Yes
- No
- Sometimes

The best time to do your exercise is

Mark only one oval.

- Before 8 AM
- From 8 to 11 AM
- From 11 AM to 4 PM
- After 4 PM

Are you a smoker

Mark only one oval.

- Yes

- No

Does your daily diet consist of fish eggs or dairy products (milk , cheese.....)

Mark only one oval.

- Yes

- No

do you or anyone in your family suffer from vitamin d deficiency

Mark only one oval.

- Yes

- No

do you or anyone in your family suffer from osteoporosis or low calcium

Mark only one oval.

- Yes

- No

did you know that 10 minutes of sunlight exposure is sufficient to provide you with your daily vitamin d needs

Mark only one oval.

- Yes

- No

did you know that vitamin d deficiency can lead to serious illness

Mark only one oval.

- Yes

- No