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Knowledge, Attitude and Perceptions Towards Vitamin D Among General Public

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ABSTRACT
Vitamin D deficiency is becoming a global epidemic. Vitamin D deficiency is associated with numerous chronic diseases including cancer, heart disease and diabetes type 1 and type 2.. It is currently estimated that one billion people suffer from vitamin D deficiency worldwide. The aim of this study is to investigate the knowledge, attitude and practices (KAP) towards vitamin D deficiency, sun exposure, supplementation and fortification.

Methods
A cross-sectional study was performed among 200 people from all age groups for a a period of six months (January 2021-June 2021).

Result
About 60% of the participants are educated from college or university. Additionally, there is a negative attitude towards Vitamin D and sunlight exposure. Nearly 25.5% of the respondents were unsure to expose themselves to sunlight. About 50% of population has taken vitamin D supplement. About 78% of people accepted vitamin D is important for health. 46.5% of people are willing to undergo test for Vitamin D. About 54.9% of people preferred Vitamin D supplement in form of pills. tablets, granules. Therefore, extensive health educational campaigns for the public should be implemented by the government to raise their knowledge on the importance of Vitamin D. Governmental actions including increasing awareness of the importance of vitamin D and guidelines on how to obtain it are necessary.

Keywords: knowledge ,attitude ,practice; vitamin D

INTRODUCTION

Vitamin D is essential for absorption of dietary calcium and phosphorus from the intestine, thereby adequate levels of vitamin D is essential for promoting healthy bone growth and has protective effect against several bone manifestations .Vitamin D is a fat-soluble, sunshine hormone needed during infancy, adolescence, adulthood, and pregnancy [(1)]. Cutaneous synthesis of Vitamin D is obtained by the conversion of 7-dehydrocholesterol to Cholecalciferol (Vitamin D3) by ultraviolet radiation from the sun.

Besides the central role of vitamin D in mineral metabolism, data reveals that low levels of this important micronutrient might be associated with risk of various cancers, cardiovascular diseases, diabetes, autoimmune disorders, infection, chronic kidney disease, and muscle metabolism. However, foods that are naturally rich in vitamin D are limited and not widely consumed [(1)].

Vitamin D helps your body absorb calcium. Calcium is one of the main building blocks of bone. Vitamin D also has a role in your nervous, muscle, and immune systems.You can get vitamin D in three ways: through your skin, from your diet, and from supplements. Your body forms vitamin D naturally after exposure to sunlight. But too much sun exposure can lead to skin aging and skin cancer, so many people try to get their vitamin D from other sources. UV radiation is a carcinogen, and UV exposure is the most preventable cause of skin cancer. Federal agencies and national organizations advise taking photoprotective measures to reduce the risk of skin cancer, including using sunscreen with a sun protection factor (SPF) of 15 or higher, whenever people are exposed to the sun.

Benefits of Vitamin D includes promoting healthy bones and teeth ,supporting immune system, brain, and nervous system health, regulating insulin levels and supporting diabetes management,lung function and cardiovascular health.Vitamin D plays a significant role in the regulation of calcium and maintenance of phosphorus levels in the blood. These factors are vital for maintaining healthy bones. Need vitamin D to allow the intestines to stimulate and absorb calcium and reclaim calcium that the kidneys would otherwise excrete. Symptoms of vitamin D deficiency may include: regular sickness or infection ,Fatigue ,bone and back pain, low mood, impaired wound healing, hair loss

Researchers are calling for public health strategies including supplementation to address high levels of vitamin D deficiency [(24)]. A recent international report into vitamin D deficiency in the developing world recommended improvement in awareness about vitamin D and its impact of health outcomes among adult population. There is an absence of studies that examine existing knowledge, attitudes and practices about vitamin D among young adults. Understanding the level of knowledge, attitudes and practice about vitamin D is vital to facilitate policy makers in designing interventions. Therefore the aim of this study is to assess vitamin D related knowledge, Attitudes and Practices (KAP).

MATERIALS AND METHODS

A prospective questionnaire-based study was conducted for a period of 6 months from January 2021 to June 2021 in the urban areas of Raichur district , after obtaining the ethical clearance.

People above the age of 18 years and participants who are willing to participate in the study between periods of January 2021 to June 2021 were included in the study. Participants who were not willing to participate in the study were excluded from the study. Participants consent form was taken. It was a self-administered questionnaire. Participants were asked to put a tick mark on appropriate answer. The completed questionnaire was taken back and data were analyzed using appropriate statistical tools. The study was approved by Committee by issuing ethical clearance certificate**.**

A four-part questionnaire form was specially designed**.** Section A deals with socio-demographic characteristics of respondent like age, sex, level of education and marital status. Section-B deals with

knowledge towards vitamin d. Section-C deals with attitude towards vitamin d . Section-D deals with practices towards vitamin d.

Collection of Data

Information on name, age, sex, level of education, and marital status were collected from the general participants. Prospective data collected regarding the knowledge attitude and practice towards vitamin d. A total of 200 data were collected, observed and recorded. The project team include one Pharm D students. Project team distributed questionnaire to the study participants. Project team approached eligible study participants and discussed about purpose of the study. Participants consent form was taken. It was a self-administered questionnaire. Participants were asked to put a tick mark on appropriate answer. The completed questionnaire was taken back and data were analyzed using appropriate statistical tools.

A total of 200 collected questionnaires were analysed for accurate data.

The filled questionnaires from January 2021 to June 2021 were analysed and monitored the following variables

- Age
- Gender
- Marital status
- Level of Education
- Knowledge towards vitamin d
- Attitude towards vitamin d
- Practice towards vitamin d

Data from the questionnaire were analyzed using descriptive statistics namely total numbers, percentage and mean. Microsoft word and Excel have been used to generate graphs, tables etc.

RESULTS

A total of 200 participants among general population residing in urban areas of Raichur district were randomly selected and followed for the present study. The cases were analyzed based on the following parameters.

Demographic status of participants

Out of these 200 respondents, (55.%) were males and (45%) were females. Most of the respondents (60%) were aged between 20 - 40 years. Most of the respondents were educated; 18% of respondents had up to secondary education, 60% were university graduates and 1% was illiterate as shown in Table 1.

Knowledge towards vitamin d

Out of 200 participants 43.5% agreed that vitamin d is relevant for bone disease condition.

13.5% thinks that body gets vitamin d from diet. 27.5% agrees vegetables and fruits are good source od vitamin d.

Attitude towards vitamin d

Out of 200 people 39% agrees that vitamin d is important for health.

29% disagree to expose them to sunlight, 27% disagree that sunlight is harmful for skin.

46.5% agrees to undergo test for vitamin d if medical condition demands.

Practice towards vitamin d

Out of 200 participants 50% have taken vitamin d supplement. 54.9% prefer pills\tablet as vitamin d supplement. 68.5% are involved in outdoor activity.

DISCUSSION

There were many studies in India which focused on finding awareness of Vitamin D among the general public as results keep changing every year. The present study clearly provides the baseline information on knowledge, attitude and practices of Vitamin D through a form of questionnaire filled by general population in percentages to identify the awareness of the particular vitamin.

During the study period, a total of 200 participants filled the questionnaire by the people who visited respective hospital. Out of 200 participants 110 (55%) were female and 90 (45%) were male. This showed higher no. of male participants than female participants.

The next component of the study is to classify the different age groups among the respondents. Maximum number of respondents 121 (60.5%) were in the age group of 20-40 years followed by 52 (26%) respondents in < 20 years age group whereas 27(13.5%) respondents belong to 40-60 years of age.

Among 220 participants, most of the participants received graduation 120 (60%) followed by 36 (18%) and 27 (13.5%) participants received secondary and primary education besides 17(18.5%) of participants didn't receive any form of education.

The collected data of this study reveals that, the more no. of respondents were students (79) followed by self-employed individuals (66), government employees (37), retired (11) and unemployed (7).

In our study, it was found that most of the participants (67%) knew that Vitamin D deficiency is related to bone diseases and osteoporosis, but very few (3%, 8%, 16%) were aware that Vitamin D is also related to other health conditions such as Heart diseases, Kidney disease and cancer respectively.

From the study, it was observed that majority of the participants knew the source of Vitamin D for body. Combination of diet, sunlight and vitamin supplements was considered as source by 89(44.5%) of respondents while few other 59 (29.5%) participants responded that sole exposure to sunlight is source followed by diet (13.5%) and vitamin supplements (10.5%) respectively also 2% of participants were completely unaware of the vitamin D source to the body. This information was received from literate patients which can be related to the level of education.

Of the 200 respondents surveyed, 29.5% identified milk and dairy products whereas 27.5% identified fruits and vegetables followed by 20.5% identified fatty fish as the possible food sources of vitamin D. Besides only few respondents identified olive oil (8%) and eggs (6%) as the food sources while 8.5% of respondents were unaware of good food source.. Overall the study findings demonstrated a knowledge deficit towards good food source of Vitamin D and its deficiency.

In this study, majority of the participants 155 (77.5%) showed positive attitudes on acknowledging importance of Vitamin D for their health. Also they had negative attitudes (62%) towards sun exposure. Moreover, it might be due to awareness of the harmful consequences of sunlight exposure such as skin cancer and skin ageing because most of the participants responded with positive attitude regarding harmful effects of sun on skin. But majority participants also refused to use a sun block cream or umbrella to shade them from sun.

Furthermore, positive attitudes were shown by many respondents (72%, 73%) regarding the consumption of supplements in order to reduce the risk of Vitamin D deficiency and also to undergo test for detecting

levels of Vitamin D if a medical condition demands. Therefore, these findings showed that study participants had a moderate attitude towards Vitamin D and sun exposure which seemed similar.

The different practices of participants towards Vitamin D and sunlight exposure showed a positive approach. Interestingly, majority of participants 153 (76.5%) practised exposure to sunlight on daily basis despite of negative perceptions. Also, 130 (68.5%) respondents answered that they practice exposure to sun by involving in any form of outdoor activity. Moreover regardless of negative attitudes 50 % of participants have also taken Vitamin D supplement in various forms. Besides, the findings revealed that among 200 participants the most consumed form (50%) of Vitamin D supplement was in pills or tablet form followed by syrup (10.5%).

CONCLUSION

The study had presented the knowledge, attitude and practice of disposal of unused and expired pharmaceuticals among general public in north Karnataka region. From the questionnaire it was observed that the knowledge of general public about disposal of unused and expired medicines and problems associated with it was good. Attitude was also very empathetic, but this was not transforming into practices. Gaps exist in knowledge and practices, therefore robust, safe and cost-effective pharmaceutical waste management program supported with media campaign is needed. Healthcare practitioners and community pharmacists should be trained and then offer training to educate customers on standard medicine disposal practices.

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Table 1: Demographic characteristics of respondents (N=200)

SL. No.	Age(in years)	No. of participants (n= 200)	Percentage (%)
1.	< 20	52	26%
2.	20-40	121	60.5%
3.	40-60	27	13.5%

2.Distribution according to Gender(n=200)

SL. No.	Gender	No. of participants	Percentage(%)
1.	Female	110	55%
2.	Male	90	45%

SL. No.	Education	No. of participants (N= 200)	Percentage (%)
1.	No Formal Education	17	8.5%
2.	Primary Education	27	13.5%
3.	Secondary Education	36	18%
4.	College or University	120	60%

3.Distribution according to Education(n=200)

4.Distribution according to Occupation(n=200)

SL. No.	Occupation	No. of participants (N= 200)	Percentage (%)
1.	Government	37	18.5%
2.	Private or Self employed	66	33%
3.	Retired	11	5.5%
4.	Student	79	39.5%
5.	Unemployed	7	3.5%

Knowledge regarding Vitamin D (N=200)

SL. No.	Questions	n	%
1.	According to you, is Vitamin D relevant for the following health conditions? a. Bone disease	87	43.5 %
	b. Osteoporosis	47	23.5 %
	c. Rickets	38	19 %
	d. Cancer	16	8 %
	e. Kidney Disease	8	4 %
	f. Heart Disease	3	1.5 %
	g. Psychiatric Disease	1	0.5 %
2.	Where do you think the body gets Vitamin D from? a. Diet	27	13.5 %
	b. Sunlight	59	29.5 %
	c. Vitamin D Supplements	21	10.5 %
	d. All of the Above	89	44.5 %
	e. Don’t know	4	2 %

3.	What type of food is a good source of Vitamin D? a. Vegetable and Fruits	55	27.5 %
	b. Milk and Dairy products	59	29.5 %
	c. Fatty Fish	41	20.5 %
	d. Olive oil	16	8 %
	e. Eggs	12	6 %
	f. I don't know	17	8.5 %

Attitude towards Vitamin D and Sunlight Exposure (n=200)

SL. No.	Questions	Agree	Strongly Agree	Unsure	Disagree	Strongly Disagree
1.	I think Vitamin D is important for our health	39%	38.5%	10%	6%	6.5%
2.	I like to expose to sunlight all the time	21%	17%	25.5%	29%	7.5%
3.	The exposure to sunlight is harmful for the skin	27%	5%	20.5%	27.5%	20%
4.	I am willing to undergo test for Vitamin D if a medical condition demands it	46.5%	27%	16%	8.5%	2%
5.	Taking Vitamin D supplements reduces the risk of Vitamin D deficiency	46%	26.5%	17.5%	9%	1%

Practice about Vitamin D and Sunlight exposure in daily routine (N=200)

SL. No.	Questions	n	%
1.	Ever taken vitamin D supplement a. Yes	100	50%
	b. No	100	50%

2.	If yes, what is your preferred form of consuming a supplement? a. Syrup	21	11.5%
	b. Drops	16	8.8%
	c. Pills/Tablet/granules	100	54.9%

	d. Injection	8	4%
	e. None	37	20.3%

3.	Are you involved in any kind of outdoor activity?		
	a. Yes	130	68.5%
	b. No	70	35%

4.	Do you expose to the sunlight?		
	a. Yes	153	76.5%
	b. No	47	23.5%