ISSN: 2581 – 3633
PubMed - National Library of Medicine - ID: 101745081

International Journal of Medical Science and Advanced Clinical Research (IJMACR)

Available Online at:www.ijmacr.com

Volume – 8, Issue – 2, April - 2025, Page No. : 15 – 21

Health Care Professional's Practices and Perspective regarding screening and management of Vitamin D deficiency in Mysuru: A Cross-Sectional Study

[1]Kavya G Upadhya, Department of Community Medicine, JSS Medical College, Mysuru – 570020, Karnataka, India

[2]Sunitha Singh, Department of Community Medicine, JSS Medical College, Mysuru – 570020, Karnataka, India

[3]Mythily M R, Department of Community Medicine, JSS Medical College, Mysuru – 570020, Karnataka, India

Corresponding Author: Kavya G Upadhya, Department of Community Medicine, JSS Medical College, Mysuru – 570020, Karnataka, India

How to citation this article: Kavya G Upadhya, Sunitha Singh, Mythily M R, "Health Care Professional's Practices and Perspective regarding screening and management of Vitamin D deficiency in Mysuru: A Cross-Sectional Study", IJMACR- April - 2025, Volume – 8, Issue - 2, P. No. 15 – 21.

Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Introduction: Micronutrient deficiency contributes to the hidden hunger. Vitamin D (the sunshine vitamin), a fat-soluble vitamin, a deficiency of which is highly prevalent in India. It is mostly underdiagnosed as well as undertreated in the Indian setting. Vitamin D deficiency majorly affects the musculoskeletal system, and also, there is emerging evidence on its role in various lifestyle diseases, COPD/Asthma, Immunity, Mental ailments and Infectious diseases. Therefore, prompt diagnosis and management of this deficiency is very important.

Objective

a) To assess the Health Care Professionals Practice of screening and supplementation for Vitamin D deficiency.

b) To assess the Health Care Professionals Perspectives regarding empirical Vitamin D Supplementation

Methodology: A cross-sectional study was conducted over a period of 3 months among the health care professionals of Mysuru. Using convenience sampling technique, a sample of 169 study subjects were included in the study. Data was collected using a pre-tested semi-structured questionnaire shared via google form. Data analysis was done using SPSS v 25.

Results: Among the 177 study participants, the mean age was 39.3 ± 10.6 years. Majority of them i.e. 108 (61.01%) were Males. 31.07 % study participants commonly screened patients with osteoporosis / recurrent fractures for vitamin D deficiency. 58.19% study participants commonly practiced empirical Vitamin D supplementation in elderly followed by 50.28% in infants and 49.71% in those who stay mostly indoors / minimal sunlight exposure. Out of 177 study participants, 98 (55.37%) were of the opinion that

routine Vitamin D supplementation to general population would not be beneficial.

Conclusion: In the present study screening for Vitamin D deficiency was commonly practiced among patients with osteoporosis / recurrent fractures, chronic kidney/liver disease and post-menopausal women. Empirical Vitamin D supplementation was practiced majorly among elderly population and infants. There is a need to update the health care professional's knowledge of vitamin D screening and supplementation especially in the risk groups as per the guidelines

Keywords: Health Care Professionals, Vitamin D, Screening, Supplementation, Practice, Perspective

Introduction

Vitamin D, a fat-soluble micronutrient also known as the sunshine vitamin plays a crucial role in bone mineralization. Vitamin D deficiency is emerging as a potential public health problem especially in the low and lower middle-income countries. The global prevalence of serum 25(OH)D <30 nmol/L was 15.7%. 22.0% of the South-East Asia population, Lower-middle-income countries had a higher prevalence of 26.7%[1] The direct impact of deficiency of Vitamin D leading to defective bone mineralization causes rickets in children and Osteomalacia in adults. Also, reduction in muscle strength and size causing musculoskeletal dysfunction has been associated with Vitamin D Deficiency. There is as well a growing body of evidence which suggests the role of vitamin D deficiency in various lifestyle diseases (Hypertension, Diabetes, Cardiovascular Disease, Cancer), infectious diseases like acute respiratory illness including influenza and covid19, Parkinson's disease and Auto-immune disorders.[2] Despite the abundance of sunlight in India, Vitamin D deficiency is more prevalent, primarily due to a lifestyle that is increasingly indoor-based, limiting exposure to sunlight, air pollution, dietary habits, cultural habits and use of sunscreens.[4] As per the IAP guidelines, the average daily requirement of Vitamin D in older children should be met with diet and exposure to sunlight and Vitamin D supplementation is recommended during infancy at a dose of 400 IU/ day and at a dose of 3000 IU for 12 weeks in older children diagnosed to have rickets or Vitamin D deficiency.[3] The recent Endocrine Society Clinical Practice Guideline suggests screening for Vitamin D deficiency in those at high risk / when indicated and empiric vitamin D supplementation for children and adolescents aged 1 to 18 years, for those aged 75 years and older, pregnant women and those with high-risk prediabetes[5] Previous guidelines too suggested screening in those individuals with the risk of deficiency but also recommended supplementation only in those who were deficient.[6] In recent years, there has been a significant rise in routine vitamin D screening, accompanied by a dramatic increase in the sales of vitamin D dietary supplements, although most organizations do not recommend universal Vitamin D screening as widespread screening can incur unnecessary healthcare cost.[14] In this regard, the study aimed to assess the health care professional's practices and perspective regarding screening and management of Vitamin D deficiency.

Objective

1. To assess the Health Care Professional's Practice of screening and supplementation for Vitamin D deficiency
2. To assess the Health Care Professional's Perspectives regarding empirical Vitamin D Supplementation

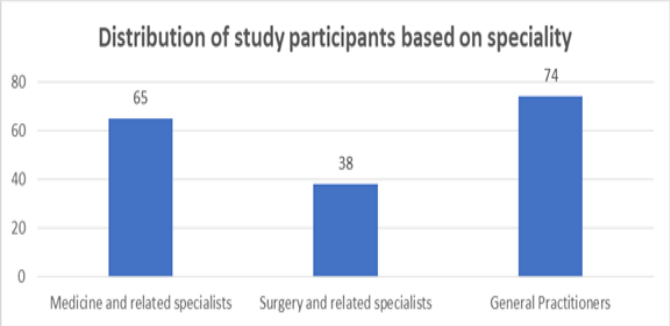
Materials and Methods

- Study Design: Cross-Sectional Study
- Study Population: Health Care Professionals of Mysuru
- Study duration: June 2024 – August 2024
- Sample Size: 177 (considering p = 50%, relative precision of 15%)
- Sampling Technique: Convenience sampling
- Inclusion criteria: All currently practicing health care professionals consenting to the study
- Data collection tool: pre-tested semi-structured questionnaire shared through Google forms
- Data analysis: data retrieved into Microsoft Excel and analysis was done using SPSS version 25.0. The data was analyzed by using descriptive statistics like mean, standard deviation, percentages. In inferential statistics, odd's ratio was applied.

Results

Of the total 177 study participants, the mean age was 39.3 ± 10.6 years. Majority of them i.e. 108 (61.01%) were Males. 148 (83.61%) study participants mainly catered to the adult patients and 106 (59.88%) geriatric population. 97 (54.80%) of respondents had clinical experience of 6 – 10 years.

Graph 1: Distribution of study participants based on the speciality



Majority of the study participants i.e. 74 (41.80%) were general practitioners. Most of them i.e. 112 (63.28%) worked in a private hospital/setup while 65 (36.72%) worked in government hospitals. On an average about 9.7% of the patients were supplemented with Vitamin D by the study participants in their routine practice. 48 (27.11%) study participants routinely got themselves screened for vitamin D levels whereas 42 (23.72 %) self-administered weekly Vitamin D supplements for atleat 8 weeks in a year.

Table 1: Distribution of study participants based on the patient groups whom they commonly screened for Vitamin D deficiency

Patient groups	n = 177
Osteoporosis/recurrent fractures	55 (31.07%)
Chronic Kidney/Liver disease	44 (24.85%)
Post-menopausal women	41 (23.16%)
Those with vague musculoskeletal pain	28 (15.82%)
Cardiovascular diseases	23 (12.99%)
Obese/Diabetics/Hypertensives	23 (12.99%)
Limited sun exposure/inadequate dietary intake	11 (06.21%)

Table 1 shows the patient screening pattern for vitamin D deficiency by the study participants. 31.07 % study participants commonly screened patients with osteoporosis / recurrent fractures followed by 24.85% and 23.16% who screened patients with chronic

Kidney/Liver Disease and post-menopausal women respectively for Vitamin D deficiency.

Table 2: Distribution of study participants based on the patient groups in whom Empirical Vitamin D Supplementation was practiced

Patient groups	Frequency (%)
Elderly (>60 years)	103 (58.19%)
Infants	89 (50.28%)
Limited Exposure to sunlight	88 (49.71%)
Post Menopausal women	78 (44.06%)
Those with Vague Musculoskeletal pain	53 (29.94%)
Diabetics/ Hypertensives	45 (25.42%)
Obese Individuals	41 (23.16%)

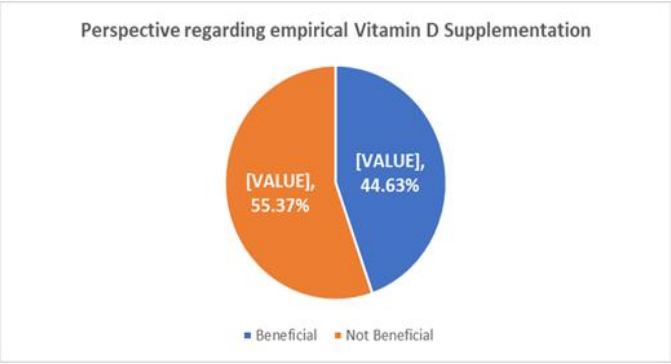
Table 2 shows the study participant's practice of empirical vitamin D supplementation to various patient groups. 58.19% study participants commonly practiced empirical Vitamin D supplementation in elderly followed by 50.28% in infants and 49.71% in those who stay mostly indoors / minimal sunlight exposure.

Vitamin D prescribing patterns is summarized in Table 3. Compared to general practitioners, medical specialists were more likely to prescribe empirical vitamin D supplements (odds ratio 3.103 [95% confidence interval {CI} 1.13–1.64]; $p < 0.001$). Government medical practitioners were more likely to prescribe vitamin D in comparison with Private practitioners (OR 3.246 [1.69 – 6.34]; $p < 0.001$). No significant relationship was found in prescribing patterns of vitamin D supplements between surgical and medicine related specialists.

Table 3: Vitamin D prescribing patterns of the study participants

	Odds ratio	95% CI
Medicine specialist vs General practitioners	3.103	1.542 – 6.354
Surgery vs Medicine specialist	0.454	0.193 – 1.053
Private vs Government practitioners	3.246	1.692 – 6.345

Graph 2: Perspective of the study participants regarding empirical Vitamin D supplementation to general population



Out of 177 study participants, 98 (55.37%) were of the opinion that routine Vitamin D supplementation to general population would not be beneficial. **(Graph 2)** All 98 of them suggested that exposure to sunlight would be sufficient whereas 51 (52.04%) among them also suggested that consumption of diet rich in Vitamin D / fortified with Vitamin D would be beneficial to obtain the daily requirements of Vitamin D.

Discussion

The present study aimed to assess the practice and perspective of the healthcare professionals regarding

vitamin D deficiency screening and management. Majority of the study participants i.e. 74 (41.80%) were general practitioners. On an average about 9.7% of the patients were supplemented with Vitamin D by the study participants in their routine practice. 48 (27.11%) study participants routinely got themselves screened for vitamin D levels whereas 42 (23.72 %) self-administered weekly Vitamin D supplements for atleat 8 weeks in a year. Similar findings were observed in a study done among the Polish Medical doctors wherein 25% of respondents monitor their vitamin D (25-hydroxyvitamin D) serum concentration, 14% of respondents self-administered vitamin D all-year-round while 24% only in autumn and winter.[11]

In our study, 31.07 % study participants commonly screened patients with osteoporosis / recurrent fractures followed by 24.85% and 23.16% who screened patients with chronic Kidney/Liver Disease and post-menopausal women respectively for Vitamin D deficiency. 58.19% study participants commonly practiced empirical Vitamin D supplementation in elderly followed by 50.28% in infants and 49.71% in those who stay mostly indoors / minimal sunlight exposure. However, a study by F. Buckinx et. al. observed that more than 80% of the general practitioners prescribed Vitamin D supplementation to patients following diagnosis of osteoporosis and more than 50% supplemented in case of patients with history of fracture[8] A KAP study on Vitamin D supplementation in infants among general practitioners in Dammam reported that 60% of them regularly prescribed vitamin D supplementation for infants[9] A cross-sectional study from Ethiopia assessing the KAP of health care workers found out that 12.4% of study participants prescribed vitamin D supplementation for adults recently and only 0.3% prescribed Vitamin D supplementation for pregnant women.[13]

A comparative survey of attitudes and practices of healthcare practitioner diagnosing and recommending vitamin D by Alschuler LN et. al. concluded that more than 70% of the healthcare practitioners were of the opinion that vitamin D status can be accurately assessed by measuring serum 25-hydroxyvitamin D, and that vitamin D supplementation improves overall health of patients. Majority of them practiced testing and supplementing vitamin D3 for various chronic conditions and in at-risk populations.[15] A study done by Hofstede H et. al. identified a mismatch between patients and medical professionals regarding the presumed appropriate indications for testing for vitamin D thereby resulting in a drastic increase in vitamin D testing and suggested that updating the knowledge of the general practitioner regarding indications for vitamin D testing would facilitate a reduction in unnecessary Vitamin D testing.[12]

An interventional study by Robert A. Gregor Jr., Aaron M. Sebach wherein incorporation of a prompt into the Electronic Medical Record to screen elderly for Vitamin D deficiency during the annual wellness visit increased the number of patients screened as well as those supplemented with Vitamin D suggesting Annual Wellness Visits serves as a platform to screen and supplement vitamin D to mitigate chronic diseases associated with deficiency [10]

In the present study, medical specialists and Government medical practitioners were more likely to prescribe empirical vitamin D supplements compared to general practitioners and private practitioners respectively. However, a study on Vitamin D prescribing practices among clinical practitioners concluded that 82.9%

prescribed vitamin D and in comparison, to our study, a difference in the prescribing pattern across specialist (general practitioners were more likely to prescribe Vitamin D in comparison with medical specialists) was noted. [7]

More than 55% of the study participants in our study were of the opinion that routine Vitamin D supplementation to general population would not be beneficial and all of them suggested that exposure to sunlight would be sufficient and more than 50% also suggested that consumption of diet rich in Vitamin D / fortified with Vitamin D would be beneficial to obtain the daily requirements of Vitamin D. Similar findings were observed in a study done among Polish Medical Doctors wherein more than 60% of the study participants did not recommend supplementing vitamin D to their patients on a regular basis. [11]

Conclusion

The present study concluded that the health care professionals commonly screened high-risk groups like patients with osteoporosis / history of recurrent fractures, chronic kidney / liver disease and post-menopausal women. The patient / risk groups in whom Empirical Vitamin D supplementation was practiced were elderly, infants and those with limited exposure to sunlight. Majority of them were of the opinion that routine vitamin D supplementation would not be beneficial which is in line with the Endocrine society clinical Practice guidelines. There is a need to update the health care professional's knowledge regarding the recent guidelines regarding Vitamin D screening and supplementation especially in the high-risk groups so that the health care professionals promptly implement it in their practice which in turn helps to identify and treat the deficiency early and prevent its long-term consequences.

References

1. Cui A, Zhang T, Xiao P, Fan Z, Wang H, Zhuang Y. Global and regional prevalence of vitamin D deficiency in population-based studies from 2000 to 2022: A pooled analysis of 7.9 million participants. Front Nutr. 2023 Mar 17; 10:1070808. doi: 10.3389/ fnut.2023.1070808. PMID: 37006940; PMCID: PMC10064807.
2. Rebelos E, Tentolouris N, Jude E. The Role of Vitamin D in Health and Disease: A Narrative Review on the Mechanisms Linking Vitamin D with Disease and the Effects of Supplementation. Drugs. 2023 Jun;83(8):665-685. doi: 10.1007/s40265-023-01875-8. Epub 2023 May 6. PMID: 37148471; PMCID: PMC10163584.
3. Indian Academy of Pediatrics Revised (2021) Guidelines on Prevention and Treatment of Vitamin D Deficiency and Rickets. [Online] Available from: https://www.indianpediatrics.net/feb2022/142.pdf. [Accessed on 15th March 2025]
4. Aparna P, Muthathal S, Nongkynrih B, Gupta SK. Vitamin D deficiency in India. J Family Med Prim Care. 2018 Mar-Apr;7(2):324-330. doi: 10.4103/ jfmpc. jfmpc_78_18. PMID: 30090772; PMCID: PMC6060930.
5. Marie B Demay, Anastassios G Pittas, Daniel D Bikle, Dima L Diab, Mairead E Kiely, Marise Lazaretti-Castro, Paul Lips, Deborah M Mitchell, M Hassan Murad, Shelley Powers, Sudhaker D Rao, Robert Scragg, John A Tayek, Amy M Valent, Judith M E Walsh, Christopher R McCartney, Vitamin D for the Prevention of Disease: An Endocrine Society Clinical Practice Guideline, The

Journal of Clinical Endocrinology & Metabolism, Volume 109, Issue 8, August 2024, Pages 1907–1947, https://doi.org/10.1210/clinem/dgae290

6. Michael F. Holick, Neil C. Binkley, Heike A. Bischoff-Ferrari, Catherine M. Gordon, David A. Hanley, Robert P. Heaney, M. Hassan Murad, Connie M. Weaver. Evaluation, Treatment, and Prevention of Vitamin D Deficiency: an Endocrine Society Clinical Practice Guideline. The Journal of Clinical Endocrinology & Metabolism. July 2011. 96(7). 1911–1930
7. Jude EB, Tentolouris N, Rastogi A, Yap MH, Pedrosa HC, Ling SF. Vitamin D prescribing practices among clinical practitioners during the COVID-19 pandemic. Health Sci Rep. 2022 Jul 11;5(4):e691. doi: 10.1002/hsr2.691. PMID: 35844828; PMCID: PMC9273939.
8. Buckinx F, Reginster JY, Cavalier E, Petermans J, Ricour C, Dardenne C, Bruyère O. Determinants of vitamin D supplementation prescription in nursing homes: a survey among general practitioners. Osteoporos Int. 2016 Mar;27(3):881-886. doi: 10.1007/s00198-015-3469-3. Epub 2016 Jan 5. PMID: 26733374.
9. Knowledge, attitude, and practice of general practitioners in Dammam, Saudi Arabia towards Vitamin D supplementation to infants. J Family Community Med. 2015 Sep-Dec;22(3):135-9. doi: 10.4103/2230-8229.163025. PMID: 26392792; PMCID: PMC4558733.
10. Robert A. Gregor Jr., Aaron M. Sebach. Nurse Practitioner–Led Vitamin D Screening and Supplementation Program in Rural Primary Care. The Journal for Nurse Practitioners. 2022; 18(2): 155 – 158.
11. Zgliczyński WS, Rostkowska OM, Sarecka-Hujar B. Vitamin D Knowledge, Attitudes and Practices of Polish Medical Doctors. Nutrients. 2021; 13(7) :2443.
12. Hofstede H, vander Burg H.A.M, Mulder B.C,et al. Reducing unnecessary vitamin testing in general practice: barriers and facilitators according to general practitioners and patients. BMJ Open 2019;9:e029760. doi:10.1136/bmjopen-2019-029760
13. Mekonnen, W., Feleke, Y., Desalegn, Y. et al. Knowledge, attitude and practice of health care workers on measuring adult vitamin D level, diagnosis of deficiency, and management of consequent health conditions in three ecologies of Ethiopia: a cross-sectional study. BMC Nutr.2020; 6(77)
14. Taylor, Christine L. et al. Questions About Vitamin D for Primary Care Practice: Input From an NIH Conference. The American Journal of Medicine. 128(11): 1167 – 1170
15. Alschuler LN, Chiasson AM, Brooks A, Chen MK and Marshall K. Healthcare Practitioner Diagnosing and Recommending Vitamin D: a Comparative Survey of Attitudes and Practices. J Fam Med. 2021; 8(8): 1273.