

Awareness of Vitamin and mineral supplements among college students

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ABSTRACT

A Vitamin or mineral supplement is a kind of adjunct that aims to supplement the diet and it comprises a wide range of Vitamins, minerals, herbs, etc., that amplifies different nutrient levels. People intake such supplements for protection against health illnesses such as stress, cold, flu, osteoporosis, heart attacks, tooth decay, cancer, and neural tube defects in infants, etc. Anyhow, intake of large amounts without proper medical consideration can have severe negative consequences. This study aimed to assess the awareness on Vitamin and mineral supplements among College students. An online cross-sectional questionnaire was made using Google Forms and distributed among 100 College students. The data collected were analyzed using SPSS software. Descriptive analysis and Chi-square tests were done. Results showed that the majority of 63.43% of UG students and 21.64% of PG students believed that its consumption was beneficial and in general awareness was more among UG students. When asked about the Vitamin that should be avoided during pregnancy, a majority of 20.30% of UG students opted for Vitamin E and 7.52% of PG students opted for Vitamin A which shows that both were feasible options as they were fat-soluble vitamins capable of causing congenital defects. The most probable issue related with the use of dietary supplements is that the people who include them in their diet might see it as a substitute, in lieu of a supplement, thus, more people should be made aware of the proper consumption and side effects of Vitamin and mineral supplements.

Key words: Innovative study, innovative technology, minerals, novel method, protection, supplementation, Vitamins

INTRODUCTION

Vitamins and minerals are widely used as dietary supplements among the general public. Medical physicians

usually prescribe it as an auxiliary medication intended for the betterment of mild to severe chronic illnesses. Studies suggest that they aid in amplifying immunity and speedy recovery from illnesses.^[1] Vitamins are basically organic in nature which comes in the form of Vitamin A, B, C, D, E, K, etc., and minerals are chemical compounds such as magnesium, iron, and zinc. These substances must be prescribed in low amounts from the environment only if they cannot be synthesized *de novo* in the human body or if the rate of formation is deficient for the upkeep of health. Most people self-prescribe and consume it for their health, nutrition supplementation, and disease prevention.^[2]

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It has been studied that the most common supplement included among the diet of students of the U.S, is a multivitamin supplement. They conducted a large-scale study consisting of over 3000 participants of population, it was seen that more than 59% of the subjects were using these micronutrient dietary supplements. The use of these supplements kept increasing with the “intention to eat healthy” and age.^[3] Recently, a drug utilization study was conducted in secondary care hospitals and colleges in Maharashtra, India, where it was observed that in 16% of the prescriptions given by doctors, a multivitamin product was also prescribed and among 2% of the prescriptions, it was seen that more than one Vitamin supplement prescribed.^[4] The prevalence of intake of Vitamin and mineral supplements among colleges has increased. Most students have a high chance of experiencing adverse events, however, the awareness of Vitamin and mineral supplements among college students remains restricted and finite, even among medical students.^[5] For instance, consumption of larger doses of Vitamin A or C and megadoses of minerals can cause severe complications. When taken as directed by a physician then multivitamins and minerals are not expected to cause serious side effects.^[6]

The use of Vitamin and mineral supplements, across India, including multivitamins has enhanced in the past 50 years. In some developed countries, approximately 20%–30% of the population use Vitamin and mineral supplements in their day-to-day life.^[7] Industries that are involved in the manufacture of these supplements have become one of the world’s rapidly developing industries. Even though the consumption of Vitamin and mineral supplements may impart several advantages in terms of high nutrient consumption, there are complicated side effects that can be harmful due to increased intake.^[7] However, a few advantages, like that of folic acid supplementation, could be used for protection against neural tube defects and other supplements could potentially reduce the risk of cardiovascular diseases such as stroke or myocardial infarction.^[8]

In today’s scheme with people who are advanced in literacy and those who are health conscious, the awareness of the side effects due to high consumption is reduced as there is the easy and wide availability of such supplements as over-the-counter products.^[9] Most nutrition and medical experts have stipulated that it could be judicious for adults to take the multivitamin supplement on a daily basis along with an additional quantity of few specific nutrients, to make sure of sufficient intake and help in the prevention of diseases, thus, it is an unfolded question whether research that study and determine the safety of these supplements make a practical difference, specifically since their use is mostly not properly guided by a health-care professional. Our research and knowledge have resulted in high-quality publications from our team.^[10-23]

The aim and rationale behind the study are to assess the awareness on Vitamin and mineral supplements among college students.

MATERIALS AND METHODS

An online cross-sectional questionnaire was made using Google Forms and distributed among 100 College Students from Saveetha Dental College. A signed consent form stating the willingness to participate in the survey was obtained from all the participants. The data collected from subjects were tabulated in Excel and imported to SPSS software (version 19, IBM, India). Descriptive analysis was performed, and a Chi-square test was done for comparison among the groups. The significance level was set at 0.05.

RESULTS

The responses received through the questionnaire was statistically analyzed to and the results obtained are represented as bar graphs [Figures 1-5].

DISCUSSION

Vitamin and mineral supplements are the most commonly sold as over-the-counter agents and it may be taken often daily more than once. Sometimes, more than one particular type of multivitamin can be taken. Provided the circumstances are favorable as pregnancy and other health problems could pose a major threat to the consumption of particular supplements.^[24] From the results of our study, it was found that a majority of 63.43% of UG students

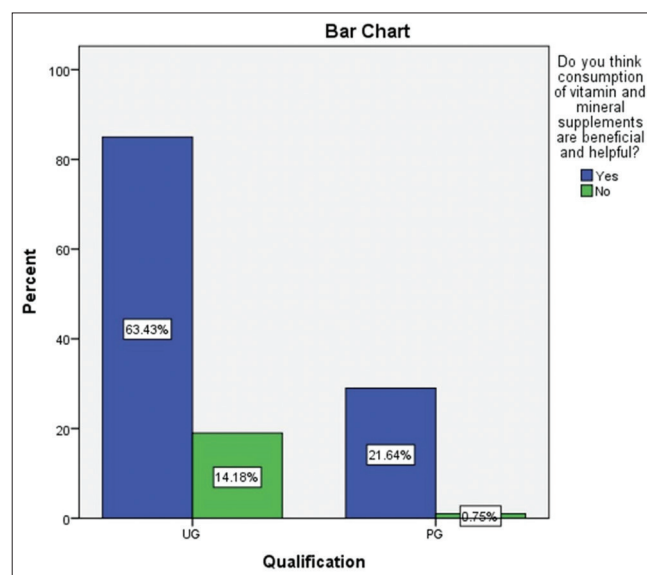


Figure 1: The graph shows the percentage of UG and PG students who believe consumption of vitamin and mineral supplements are beneficial where the X-axis indicates qualification and Y-axis indicates percentage response. Pearson’s Chi-square = 0.024 ($P < 0.05$) which is significant statistically

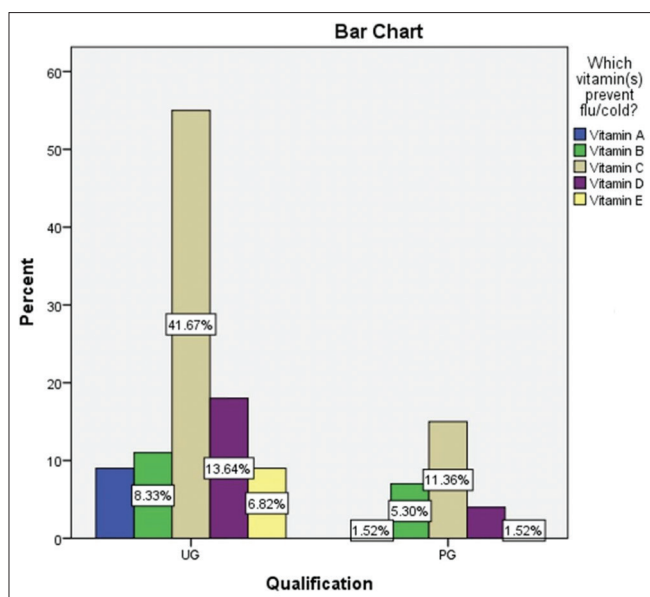


Figure 2: The graph represents the percentage of UG and PG students who are aware of the particular Vitamin that helps prevent colds and flu where the X-axis indicates qualification and Y-axis indicates percentage response to the question. Pearson's Chi-square = 0.032 ($P < 0.05$) which is significant statistically

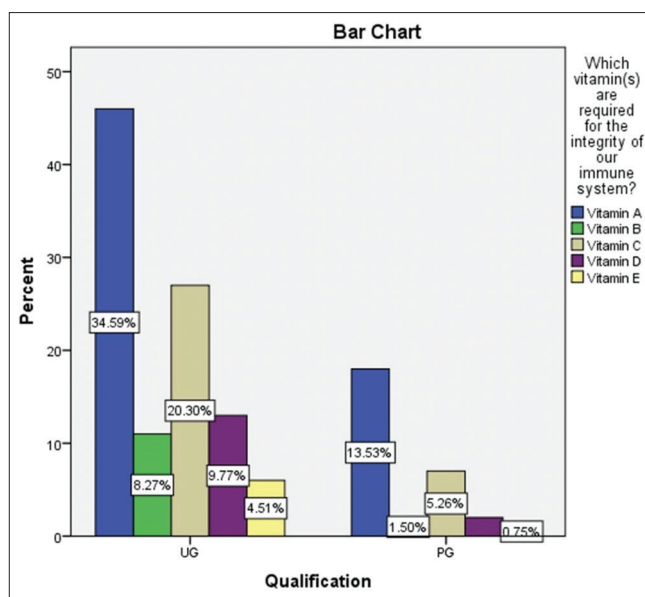


Figure 3: The graph represents the percentage of UG and PG students who are aware of the vitamin required for immune system integrity where the X-axis indicates qualification and Y-axis indicates percentage response to the given Vitamin options. Pearson's Chi-square = 0.043 ($P < 0.05$) which is significant statistically

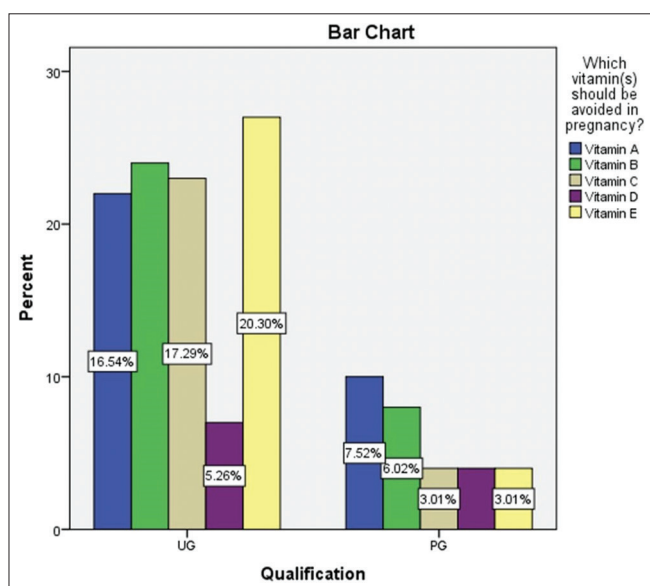


Figure 4: The graph shows the percentage of UG and PG students who are aware of the Vitamin that should be avoided during pregnancy where the X-axis indicates qualification and Y-axis indicates percentage response to the given vitamin options. Pearson's Chi-square = 0.022 ($P < 0.05$) which is significant statistically

and 21.64% of PG students believed that its consumption was beneficial among which percentage of undergraduate students was more. Recently, in a national large-scale survey that was conducted by Park *et al.*, it was shown that the intake of Vitamin and mineral supplements had enhanced from 23.2% to 33.9% in a period of 1987 to 2000 among all races, both males and females along with ethnic

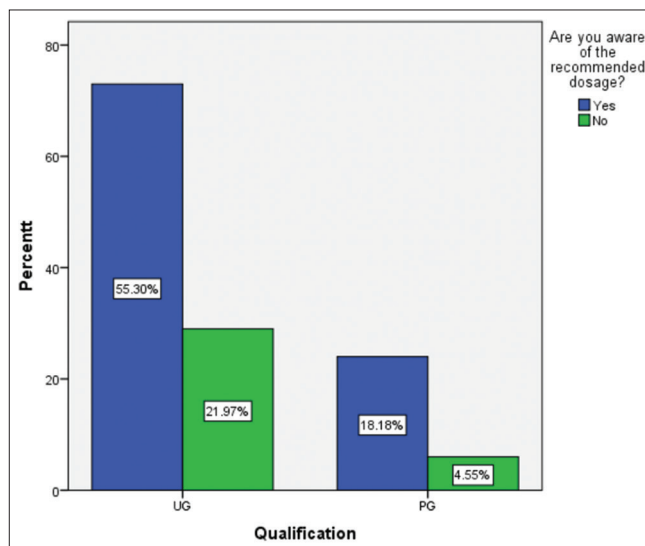


Figure 5: This graph shows the percentage of UG and PG students who are aware of the recommended dosage of supplementation. X-axis indicates qualification and Y-axis indicates percentage response to the given options. Pearson's Chi-square = 0.043 ($P < 0.05$) which is significant statistically

groups because they are under the belief of its multifaceted advantages.^[25]

Our result on the awareness of the particular Vitamin that helps prevent colds and flu showed that the majority of 41.67% of UG students and 11.36% of PG students opted for Vitamin C which indicated more awareness among the UG subjects, although <50% of the subjects opted for

the correct Vitamin. In another large multiethnic cohort study by Chugh and Lhamo, about 50% of the participants reported usage of a Vitamin C supplement at least once weekly to prevent flu and allergies which shows that a good majority of their subjects were aware of it as a possible prevention for cold.^[26]

Our result showed that 34.59% of UG students and 13.53% of PG students opted for Vitamin A as the Vitamin required for immune system integrity. This indicates that more UG students were aware of this than PG students.

In a similar study conducted by Lippman SM, 84% of the subjects were unaware of the role of Vitamin A in the immune system and its deficiency consequences. It was deduced that Vitamin A supplementation is more important for infants aged 6–24 months who are hospitalized as it reduces mortality rates.^[27]

Our result on the awareness of the Vitamin that should be avoided during pregnancy showed that a majority of 20.30% of UG students opted for Vitamin E and 7.52% of PG students opted for Vitamin A.

Klein EA suggested that it was best not to take foods that may be very rich in Vitamin A, which includes liver and liver products. However other studies also suggest avoiding high doses of Vitamin E during pregnancy as both these Vitamins are fat soluble and get stored in the liver. The fetal hepatic store levels for these are low and an increase in its reserves can cause teratogenicity.^[28]

From the result, it was clear that the majority of 55.30% of UG students and 18.18% of PG students were aware of the recommended dosages which are a statistically good result.

Study conducted in Delhi, many students and athletes consumed dietary supplements. The original safety and effectiveness of these products depend on the recommended dosages. Then such supplements are free of any harm and safe. For example, consumption of larger quantities of Vitamin D will lead to disorders such as osteoporosis and muscle weakness if not consumed in its recommended dose of 5 µg.^[29]

From the above-conducted study, we can extrapolate that the mild incomprehension of the subjects regarding the potential harmful side effects of over-supplementation shows that they have a flawed belief that these medications are safe which increases their ignorance to the given issue.^[29] Thus, physicians and health experts must ask straight questions to the patients related to the self-prescribed use of Vitamin and mineral supplements and instruct them toward the awareness of damaging side effects and potential drug interactions with other drugs consumed. For instance, an association of Vitamin E supplements and the commonly prescribed “aspirin” leads to a cumulative anti-thrombotic

effect. Similarly, between Vitamin E and warfarin, there is an elevated chance of bleeding that can be caused as per literature.^[30]

However, further research and surveys must be conducted among larger populations so as to spread awareness that Vitamin and mineral supplements should only be viewed as an enhancer of healthy body functions and not a substitute to consume instead of solid healthy foods.

CONCLUSION

From our study, we can derive that the most probable issue related to the use of dietary supplements is that users self-prescribe these supplements instead of naturally consuming fruits and vegetables which are particularly rich in those Vitamins and minerals. Most of these people may not know the severe side effects of overdosage. Hence, more people should be made aware of the proper intake of Vitamin and mineral supplements.

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Conflicts of interest

There are no conflicts of interest.

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