

Public knowledge, use and attitude toward multivitamin supplementation: A cross-sectional study among general public

Kavita Sekhri, Kirandeep Kaur¹

Departments of Pharmacology, Dr. Harvansh Singh Judge Institute of Dental Sciences, Panjab University, Chandigarh, ¹Dayanand Medical College and Hospital, Ludhiana, Punjab, India

ABSTRACT

Background and Objective: The use of supplements has increased substantially in the past few decades. The present study is an effort to explore pattern of use, knowledge and attitude toward consumption of multivitamin supplements among the general public. **Materials and Methods:** A descriptive cross-sectional study on 120 adult participants from the general public was conducted. The participants were interviewed and information was collected in a predesigned structured questionnaire. The data was analyzed and expressed as counts and percentages. **Results:** Of the 120 study participants, 66 were males and 54 were females. Results revealed that 68.33% (82) of the participants were users of multivitamin supplements. Out of the users, 69.5% (57) participants consumed on the advice of doctors, 18.2% (15) were self-prescribers while 12.1% (10) relied on advice of family or friends. Among the users, 70.96% considered such supplements to be helpful. Reasons quoted for self-medication use of multivitamins were multiple such as maintenance of general health (55%), to allay weakness or fatigue (20%), to improve appetite (15%) etc. Majority of the participants were unaware regarding the correct indications for multivitamin supplementation. Regarding knowledge about the natural sources of these vitamins, as many as 76% showed ignorance. **Conclusion:** Finding from this study suggests that multivitamin use is highly prevalent and the majority of the participants were ignorant of any possible harm or drug interactions. In light of this, there is a need to adopt certain educational interventions to minimize self-directed supplement use and increase awareness regarding their correct usage.

Key words: Multivitamin, multivitamin supplements, self-medication

Submission: 14-11-2013 **Accepted:** 06-02-2014

INTRODUCTION

The use of dietary supplements, including multivitamins has increased substantially in the past few decades.^[1] On an average 20-30% of the population in developed countries use

such vitamin supplements.^[2] Industries involved in their manufacture are reported to be one of the world's fastest growing industries.^[3] Although, the use of multivitamin supplementation may provide benefits in terms of increased nutrient intake, there are potential adverse effects also due to high intake.^[4] Although certain benefits, like that of folic acid supplementation and protection against neural tube defects in specific populations is well-established,^[5] but results of some large scale randomized trials have shown that for the majority of the population multivitamin supplements are ineffective.^[6] Sesso *et al.* in a randomized controlled trial conducted in 14,641 participants in USA revealed that daily multivitamin supplement did not reduce cardiovascular events, myocardial infarction or stroke in men.^[7]

In today's scenario with more literate and health conscious patients who are capable of making their own decisions regarding their health care coupled with wide availability of such supplements, present study was conducted to

Address for correspondence: Dr. Kavita Sekhri,
Department of Pharmacology, Dr. Harvansh Singh Judge Institute of
Dental Sciences and Hospital, Sector - 25, Panjab University,
Chandigarh - 160 014, India.
E-mail: message2kavita@yahoo.com

Access this article online	
Quick Response Code:	Website: www.ijabmr.org
	DOI: 10.4103/2229-516X.136780

explore pattern of use, public knowledge and attitude toward consumption of these multivitamin supplements.

MATERIALS AND METHODS

A descriptive cross-sectional population based study was conducted from January to June 2013 among the general public. Subjects included were patients and other hospital attendees like patients' family members/relatives or friends, of either sex aged 18 years or older while they were waiting in the outpatient department. Subjects were approached at random and the purpose of the study was explained. Study participants were assured of confidentiality and anonymity of the information and written informed consent was obtained from them. A total of 120 participants were interviewed and information was collected in a structured questionnaire. The questionnaire was based on previous studies undertaken among adults about their attitude toward multivitamin supplementation and it was suitably modified for the present setting.^[8-10] The survey questions in addition to questions covering demographic, education level (primary, secondary or above), alcohol drinking status, contained questions regarding awareness of multivitamin supplements, its consumption (frequency, duration of usage), reasons for usage (self-medication, physician advice) and its effect. At the end of the study, data was compiled and expressed as counts and percentages. Pearson Chi-square test was applied to see the association between genders and educational status with the use of multivitamins.

RESULTS

Of the 120 study participants, 66 were males (55%) and 54 were females (45%). Mean age of the males was 43.85 ± 15.44 years and of females was 38.75 ± 12.87 years. No association was found between gender and use of multivitamins ($P = 0.969$). Regarding educational status, approximately (58) 48% were graduates, (13) 11% postgraduates, (36) 30% had completed secondary education and (7) 6% had covered only primary education while (6) 5% were illiterate. Educational status of the participants did not show any association with the use of multivitamins ($P = 0.583$).

Nearly 70% (84) of the participants were aware of the multivitamin supplements. Source of awareness of vitamin supplement use was a family doctor, relatives or friends and media, e.g. newspaper/internet [Table 1].

About 68.33% (82) of the participants were either current or former users of multivitamin supplements while 31.66% (38) claimed that they had never taken multivitamins. Out of these users, 18.2% (15) admitted taking multivitamins of their own,

69.5% (57) consumed on the advice of their physicians while 12.1% (10) relied on the advice of family or friends.

Among the users, 70.73% (58) considered multivitamin supplements to be helpful. Study respondents when queried as to whether they had experienced any health problem due to the use of such supplements, only one reported diarrhea which he believed to be related to multivitamin supplement use. Majority of the participants were unaware of the harmful effects of multivitamin supplements or their possible interactions with other drugs.

Nearly 12% (14) of study participants were alcoholics and all of them were multivitamin supplement users. Out of these, only three said that there is a benefit of taking these supplements along with alcohol while seven considered no benefit in consuming supplements along with alcohol. Rests of them were ignorant of any such use.

Reasons quoted for the self-medication use of multivitamins are depicted in Figure 1. Physician prescribed reasons were multiple, like in mouth ulcers, with concurrent antibiotic prescription, arthritis, hypotension, weakness, leg pain etc.

There was a variable response regarding frequency of vitamin supplementation. Out of the self-medication group, approximately 10 consumed multivitamin on a daily basis while 3 consumed 2 times a day. Some of them reported consuming them 4 times weekly or some even mentioned taking for 4 weeks after every 6 months [Table 2].

Majority of the participants were unaware regarding the correct indications for the multivitamin supplementation. Study participants who were aware of the multivitamin use when asked about the opinion whether these drugs can be self-medicated, 60% (50) responded affirmatively. Regarding knowledge about the natural sources of these vitamins, as many as 76% (64) showed ignorance.

Table 1: Percentage of participants with different sources of information regarding multivitamins

Source of awareness of multivitamins	Number of participants (%)
Physician	83 (69.1)
Family/friends	19 (15.8)
Media (newspaper/internet)	18 (15)

Table 2: Frequency of usage of multivitamins by self-prescribed users

Frequency of multivitamin use among self-prescribed users (n=15)	Number
Once daily	10
Twice daily	3
Others	2

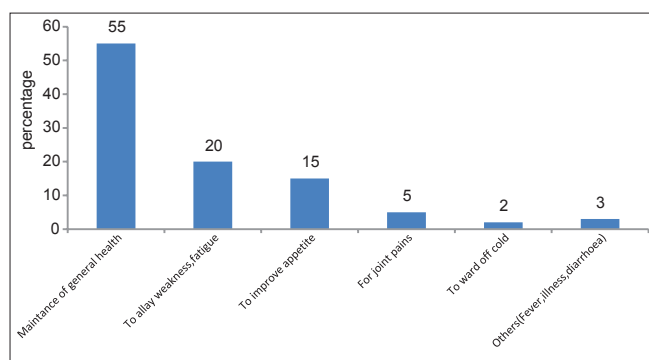


Figure 1: Reasons for the use of multivitamin supplements among self-medicated users

DISCUSSION

In the present scenario of high prevalence of nutrient supplementation use world-wide, present study was conducted to examine multivitamin consumption in the general adult population. Our study depicted multivitamin use by 68.33% of the participants. Similarly, National Health and Nutrition Examination Survey 2003-2006 reported use of dietary supplements by 53% of the respondents and out of which most frequently used supplement was multivitamin.^[11,12] A survey conducted in Columbia on the estimate of use of dietary supplements revealed 73% users, out of which 85% reported using multivitamin supplements.^[13] Likewise, a study conducted in 11,929 men in Germany reported use of vitamin or mineral supplements by 40% of population.^[14] Our findings corroborate with the reports of high prevalence and usage of multivitamins. This clearly confirms the widespread belief that vitamins help to maintain good health. Moreover, internet sites and television are flooded with advertisements depicting increased energy with the use of such supplements. Health conscious people now-a-days feel happy to consume such supplements thinking they are actively taking care of their health.^[15]

Most common source of information regarding vitamin supplement use, in our study was doctors, 69.1% users consumed multivitamins on the advice of doctors. These results are in concordance with the study conducted in Karachi, which revealed recommendation of vitamin supplement by doctors to be 66.2%.^[9]

Number of self-prescribed multivitamin users consuming multivitamins on a daily basis was high which is consistent with results from other studies where dietary supplement was consumed on a daily basis by more than 50% of multiple dietary supplement users.^[10] This is an area of concern as it has been seen in some other studies as well. A study conducted in America among five ethnic groups found that the median daily nutrient intake from multivitamin/minerals among users were

above the recommended daily allowance for some vitamins such as A, B-6, B-12 and E, thiamin, riboflavin, niacin, pantothenic acid and folate.^[16] This is more so a problem in the country like ours where there is the wide availability of supplements without physician prescription, which can clearly lead to excessive use of vitamins and hence possible adverse effects or interactions. Furthermore, nutrient composition of multivitamins is extremely variable which in some cases can lead to excessive use.^[16] In India, ChughChugh and Lhamo have shown that the majority of the supplements available in the market contained nutrient amounts higher than the recommended dietary intakes.^[17] Various studies such as Alpha-Tocopherol, Beta-Carotene Cancer Prevention Study reported increased risk of hemorrhagic stroke by 50% with the use of alpha tocopherol for 6 years^[18] and selenium and vitamin E cancer prevention trial revealed that vitamin E supplements could increase the risk of prostate cancer among healthy men.^[19,20] Even high doses of vitamin C can result in gastric upset.^[21]

Reasons quoted for using vitamin supplements by self-prescribers were similar to study conducted by Dickinson *et al.* where maintaining wellness was the top reason for personal use.^[22] Similar reasons were seen in studies by Neuhauser^[23] and Eldridge and Sheenan^[24] though there is no conclusive evidence that vitamin supplementation is beneficial in persons with adequate dietary intake.^[15] Results of the meta-analysis have revealed that for the majority of the population multivitamin supplements are not effective. Notable ones are meta-analysis of five randomized control trials which found no significant beneficial effect of such supplementation^[25] and data from eight prospective studies did not support the hypothesis that use of folate, vitamin A, C, E and multivitamins reduce the risk of lung cancer.^[26]

Ignorance of the participants regarding potential deleterious effects of over supplementation reflected their false belief that these medications are safe. Hence, physicians should ask direct questions to their patients regarding use of self-prescribed multivitamins and educate them toward harmful effects and potential interactions with prescription medication. Interaction between vitamin E and aspirin leading to additive antithrombotic effect and between vitamin E and warfarin leading to increased risk of bleeding are available in the literature.^[27] Similarly, large doses of antioxidants such as vitamin E and alpha lipoic acid can decrease the effectiveness of radiation or chemotherapy for cancer.^[28]

There are certain limitation of this study, which needs to be acknowledged like its cross-sectional design and its conductance at the single hospital. Furthermore, association between different variables cannot be established as it is a descriptive cross-sectional study.

CONCLUSION

Findings from this study suggest that multivitamin use is highly prevalent and the majority of the participants were ignorant of any possible harm or drug interactions. In light of this, there is a need to adopt certain educational interventions to minimize self-directed supplement use. At the same time health care professionals should take extra care to know about their patients' multivitamin use and hence should counsel them about the correct use. Preaching should be to eat the diet consisting of fresh fruits and vegetables.

REFERENCES

- McNaughton SA, Mishra GD, Paul AA, Prynne CJ, Wadsworth ME. Supplement use is associated with health status and health-related behaviors in the 1946 British birth cohort. *J Nutr* 2005;135:1782-9.
- El-Kadiki A, Sutton AJ. Role of multivitamins and mineral supplements in preventing infections in elderly people: Systematic review and meta-analysis of randomised controlled trials. *BMJ* 2005;330:871.
- Footo JA, Murphy SP, Wilkens LR, Hankin JH, Henderson BE, Kolonel LN. Factors associated with dietary supplement use among healthy adults of five ethnicities: The Multiethnic Cohort Study. *Am J Epidemiol* 2003;157:888-97.
- Sebastian RS, Cleveland LE, Goldman JD, Moshfegh AJ. Older adults who use vitamin/mineral supplements differ from nonusers in nutrient intake adequacy and dietary attitudes. *J Am Diet Assoc* 2007;107:1322-32.
- van der Horst K, Siegrist M. Vitamin and mineral supplement users. Do they have healthy or unhealthy dietary behaviours? *Appetite* 2011;57:758-64.
- Kamangar F, Emadi A. Vitamin and mineral supplements: Do we really need them? *Int J Prev Med* 2012;3:221-6.
- Sesso HD, Christen WG, Bubes V, Smith JP, MacFadyen J, Schvartz M, et al. Multivitamins in the prevention of cardiovascular disease in men: The Physicians' Health Study II randomized controlled trial. *JAMA* 2012;308:1751-60.
- Liang W, Lee AH, Binns CW. Dietary supplementation by older adults in southern China: A hospital outpatient clinic study. *BMC Complement Altern Med* 2009;9:39.
- Qidwai W, Samani ZA, Azam I, Lalani S. Knowledge, attitude and practice of vitamin supplementation among patients visiting out-patient physicians in a teaching hospital in Karachi. *Oman Med J* 2012;27:116-20.
- Block G, Jensen CD, Norkus EP, Dalvi TB, Wong LG, McManus JF, et al. Usage patterns, health, and nutritional status of long-term multiple dietary supplement users: A cross-sectional study. *Nutr J* 2007;6:30.
- Bailey RL, Gahche JJ, Lentino CV, Dwyer JT, Engel JS, Thomas PR, et al. Dietary supplement use in the United States, 2003-2006. *J Nutr* 2011;141:261-6.
- Gahche J, Bailey R, Burt V, Hughes J, Yetley E, Dwyer J, et al. Dietary supplement use among U.S. adults has increased since NHANES III (1988-1994). *NCHS Data Brief* 2011;61 1-8.
- Timbo BB, Ross MP, McCarthy PV, Lin CT. Dietary supplements in a national survey: Prevalence of use and reports of adverse events. *J Am Diet Assoc* 2006;106:1966-74.
- Reinert A, Rohrmann S, Becker N, Linseisen J. Lifestyle and diet in people using dietary supplements: A German cohort study. *Eur J Nutr* 2007;46:165-73.
- Briançon S, Boini S, Bertrais S, Guillemin F, Galan P, Hercberg S. Long-term antioxidant supplementation has no effect on health-related quality of life: The randomized, double-blind, placebo-controlled, primary prevention SU.VI.MAX trial. *Int J Epidemiol* 2011;40:1605-16.
- Park SY, Murphy SP, Martin CL, Kolonel LN. Nutrient intake from multivitamin/mineral supplements is similar among users from five ethnic groups: The Multiethnic Cohort Study. *J Am Diet Assoc* 2008;108:529-33.
- Chugh PK, Lhamo Y. An assessment of vitamin supplements in the Indian market. *Indian J Pharm Sci* 2012;74:469-73.
- The effect of vitamin E and beta carotene on the incidence of lung cancer and other cancers in male smokers. The Alpha-Tocopherol, Beta Carotene Cancer Prevention Study Group. *N Engl J Med* 1994;330:1029-35.
- Lippman SM, Klein EA, Goodman PJ, Lucia MS, Thompson IM, Ford LG, et al. Effect of selenium and vitamin E on risk of prostate cancer and other cancers: The Selenium and Vitamin E Cancer Prevention Trial (SELECT). *JAMA* 2009;301:39-51.
- Klein EA, Thompson IM Jr, Tangen CM, Crowley JJ, Lucia MS, Goodman PJ, et al. Vitamin E and the risk of prostate cancer: The Selenium and Vitamin E Cancer Prevention Trial (SELECT). *JAMA* 2011;306:1549-56.
- Gordon NP, Schaffer DM. Use of dietary supplements by female seniors in a large Northern California health plan. *BMC Geriatr* 2005;5:4.
- Dickinson A, Shao A, Boyon N, Franco JC. Use of dietary supplements by cardiologists, dermatologists and orthopedists: Report of a survey. *Nutr J* 2011;10:20.
- Neuhouser ML. Dietary supplement use by American women: Challenges in assessing patterns of use, motives and costs. *J Nutr* 2003;133:1992S-6.
- Eldridge AL, Sheenan ET. Food supplement use and related beliefs: survey of community college students. *J Nutr Educ* 1994; 26:259-65.
- Huang HY, Caballero B, Chang S, Alberg AJ, Semba RD, Schneyer CR, et al. The efficacy and safety of multivitamin and mineral supplement use to prevent cancer and chronic disease in adults: A systematic review for a National Institutes of Health state-of-the-science conference. *Ann Intern Med* 2006;145:372-85.
- Cho E, Hunter DJ, Spiegelman D, Albanes D, Beeson WL, van den Brandt PA, et al. Intakes of vitamins A, C and E and folate and multivitamins and lung cancer: A pooled analysis of 8 prospective studies. *Int J Cancer* 2006;118:970-8.
- Yetley EA. Multivitamin and multimineral dietary supplements: Definitions, characterization, bioavailability, and drug interactions. *Am J Clin Nutr* 2007;85:269S-76.
- Thomas PR. Supplement use among US adults: Implications for the dietetics professional. *J Am Diet Assoc* 2004;104:950-1.

How to cite this article: Sekhri K, Kaur K. Public knowledge, use and attitude toward multivitamin supplementation: A cross-sectional study among general public. *Int J App Basic Med Res* 2014;4:77-80.

Source of Support: Nil. **Conflict of Interest:** None declared.