

# Knowledge, Attitude and Practice of Vitamin Supplementation among Patients visiting Out-Patient Physicians in a Teaching Hospital in Karachi

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Received: 12 Oct 2011 / Accepted: 19 Dec 2011  
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## Abstract

**Objective:** To determine the knowledge, attitude and practices regarding the use of vitamin supplements among patients visiting Out-Patient clinics of a teaching hospital.

**Methods:** Four hundred patients were interviewed during the period of July to September 2008, at the Out-patient clinics, Aga Khan University hospital, Karachi. A pre-tested and structured questionnaire was used to collect information. It consisted of questions regarding demographics, awareness of vitamin supplements and its consumption, reasons for usage and its effects. The purpose of the study was explained and assurance of confidentiality was given. After obtaining written consent, eligible individuals were interviewed. Statistical Package for the Social Sciences version 19.0 was used to analyze the data.

**Results:** The results revealed that 98% of the respondents were aware of vitamin supplements. The most known vitamin was found to be Vitamin C (16.9%) with Vitamin K being the least well-known (0.4%); while 51.8% of the respondents were unaware of the harmful effects of vitamin supplements. The results also showed that 84.8% of the study population had taken vitamin supplements, and 79% of the participants considered that vitamin supplements to be helpful. Taking vitamin supplements as a compensation for the deficiencies in the body was the most frequently chosen answer (17.7%) as the reason for use of vitamin supplements. On the other hand, a majority of the population was unaware of the indications for use of vitamin supplements.

**Conclusion:** This study highlights a very significant yet ignored issue of vitamin supplementation in Pakistan. A need exists to inform the general population about the use of vitamin supplementation. The media and the medical community are required to play their role in this regard. Short/ refresher training courses are needed for doctors to update and disseminate adequate knowledge of vitamin supplementation to their patients.

**Keywords:** Vitamin supplements; Vitamins; Vitamin deficiency.

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## Introduction

The use of vitamin supplements is a common practice in complementary or alternative medicine; being second to the use of prayers in the general population.<sup>1</sup> The vitamin supplement market is reported to be one of the world's fastest growing industries.<sup>2</sup> There is growing use of vitamin supplements in the United States, with sales estimated at over \$21 billion for the year 2006.<sup>3</sup> According to a study by Archer et al. 52% of participants reported the use of at least one vitamin supplement.<sup>4</sup> Another study by Gardiner et al. found that 27% of youth reported using one or more vitamin supplement in the month prior to the survey.<sup>5</sup>

Patients ask healthcare professionals to provide advice about vitamins, minerals, and other dietary supplements, and a healthcare professional's personal health habits may affect whether they will recommend a vitamin supplement.<sup>6</sup> In healthcare professional training programs, many healthcare professionals learn about the role that nutrition and vitamin supplements play in the prevention and treatment of chronic diseases such as osteoporosis, heart disease, cancer, and neural tube defects.<sup>7-10</sup> Some medical and nutrition experts have indicated that it would be prudent for adults to consume a daily multivitamin and perhaps additional amount of some specific nutrients, in order to ensure adequate intakes and potentially help protect against some chronic diseases.<sup>11,12</sup>

It is an open question whether research evaluating the safety and efficacy of supplements makes a comparable practical difference, especially as their use is often not mediated by a healthcare provider.<sup>10</sup> In the domain of vitamin supplements, findings published in medical journals make their way into popular information channels.<sup>13</sup>

Patient disclosure of supplement use to physicians is an important public health issue.<sup>14</sup> Low rates of disclosure may place some populations at greater risk of clinical complications arising from adverse drug reactions or interactions, and from delays or substitution of appropriate conventional medical treatments.<sup>14</sup> In 2008, a study by Kennedy et al. showed that most Americans who use vitamin supplements, do so in addition to conventional medical treatment, but only about a third discuss their decision with a physician.<sup>14</sup>

Excessive and inappropriate use of medications has been recognized as a public health problem resulting in an increased likelihood of adverse drug events, drug interactions, and

inappropriate drug prescribing and increased costs.<sup>15</sup> The hidden and growing phenomenon of vitamin supplement polypharmacy adds a new layer of complexity to patient care and poses a significant public health problem, still largely unrecognized and poorly understood.<sup>16</sup> The high prevalence of vitamin supplement use, coupled with the uncontrolled access to such supplements is a cause for concern.<sup>17</sup> In a developing country like Pakistan with poor healthcare indicators and weak infrastructure, this issue poses a major economic burden on the healthcare system of the country.

To the best of our knowledge, there is limited data available in Pakistan on this issue; therefore, this study was conducted to determine the current knowledge, attitudes and practice of vitamin supplements among the Pakistani population.

## Methods

This is a descriptive cross-sectional study conducted at the family medicine clinics located in the Community Health Centre and the Consulting Clinics at Aga Khan University Hospital (AKUH), Karachi, Pakistan. AKUH is a tertiary care hospital in the private sector. By conducting the study in two different locations, a mixture of participants from both the middle and higher economic communities living in Karachi was ensured.

All patients attending their respective family medicine clinics were consecutively approached according to their time and convenience to participate in the study until the final sample size was achieved. However, patients who were below 18 years of age were excluded. Permission to conduct the study was sought from all the concerned clinics. Written informed consent was obtained from the participants after the study protocol was explained to them. The study participants were assured about the confidentiality and anonymity of the information. After informed consent was obtained; face to face interviews were conducted by medical graduates who were specifically trained for the task by the research team. Each interview took 20 minutes. The data was collected from 1<sup>st</sup> July 2008 to 30<sup>th</sup> September 2008.

A pre-tested and structured questionnaire was used to collect information. The questionnaire was composed of two parts: part 1 included questions on demographics (age, gender, occupation, and education); while the second part of the questionnaire included questions based on awareness of vitamin supplements, its importance, reasons for consuming vitamins and the effects of vitamin supplements (both harmful and desired).

To achieve the study objective, at least 400 participants were required. The sample size was calculated assuming the knowledge of vitamin supplements among patients to be 50%, with 5% bound on error and 4% non-response rate.

The data was analyzed using the Statistical Package for Social Sciences (SPSS) version 19. Multiple responses were divided into separate sub-variables. The mean and standard deviations (SD) for continuous variables such as age and percentages were reported for categorical demographic variables. Indications for use of vitamins

(A, B, C, D and E) among the study participants were calculated and reported separately.

## Results

The 400 study participants were Pakistanis; about 246 were females (61.5%) and 154 were males (38.5%). The mean age of the study population was  $33.35 \pm 11.83$  years. About 27% of the study participants were single while the majority was married (70.2%). Approximately half (49%) of the study participants were graduates, having more than 14 years of education. Based on the occupation of the respondents, approximately 28.5% were housewives and approximately 13% were doing business. The demographics of the study population are presented in Table 1.

**Table 1:** Demographics of Study Population (n=400).

Parameter	N (%)
<b>Sex</b>	
Males	154 (38.5)
Females	246 (61.5)
<b>Mean age in years</b>	33.35
(standard deviation)	(11.83)
<b>Marital Status</b>	
Single	109 (27.2)
Married	281 (70.2)
Widow/Divorced/Separated/Unspecified	10 (2.5)
<b>Educational status</b>	
Illiterate/Can read and write/Unspecified	10 (2.5)
Grade 6-10	12 (3.0)
Grade 11-12 or Diploma	36 (9.0)
Graduate (14-16 years)	196 (49)
Postgraduate ( $\geq 16$ years)	146 (36.5)
<b>Occupational Status</b>	
Housewife	114 (28.5)
Student	68 (17.0)
Private Service	51 (12.8)
Businessman	46(11.5)
Medical Personnel	32 (8.0)

Almost all (98%) participants were aware of vitamin supplements, and the most known vitamin was found to be Vitamin C (16.9%), while Vitamin K was found to be the least known (0.4%). The commonly chosen answer (39.2%) as the main source of information about supplements was found to be Doctors; however, more than half (51.8%) of the respondents were unaware of the harmful effects of supplements.

Among the study subjects, 79% of the participants considered supplements to be helpful. The use of supplements as a compensation for deficiencies in the body was the most frequently cited (17.7%) reason for the use of vitamin supplements. The study findings showed that the majority (84.8%) of the study population

had taken vitamin supplements, and around two-thirds (66.2%) of the participants took their supplements after being recommended to by a doctor. On the other hand, 41% of the sample population was unaware of the number of times they took supplements; while over half of the study population (56.8%) took the recommended dose of the supplements. The knowledge, attitudes and practices of the study population about Vitamin Supplements are presented in Table 2.

**Table 2:** Knowledge, Attitude and Practices of Study Population about Vitamin Supplements (n=400).

Question/Response	N	%
<b>Knowledge</b>		
<b>1. Awareness of vitamin supplements:</b>		
Yes	392	98
No	8	2
<b>2. Awareness of which of the following vitamin supplements: (multiple response)</b>		
Vitamin A	116	13.6
Vitamin B	133	15.6
Vitamin C	144	16.9
Vitamin D	119	13.9
Vitamin E	100	11.7
Vitamin K	3	0.4
Multivitamins	47	5.5
<b>3. Sources of awareness of vitamin supplements: (multiple response)</b>		
Doctor	231	39.2
Friends or Relatives	126	21.4
Media or Newspaper	119	20.2
Others	114	19.3
<b>4. Awareness of harmful effects of vitamin supplementation:</b>		
Yes	168	42
No	207	51.8
Not specified	25	6.2
<b>Attitude</b>		
<b>5. Vitamin supplements helpful:</b>		
Yes	316	79
No	42	10.5
Don't know	42	10.5
<b>6. Reasons for use of vitamin supplements: (multiple response)</b>		
To overcome deficiencies	218	17.7
To improve general health	185	15
To replenish Energy	159	12.9
Required during pregnancy or lactation	123	10
For recovery from disease	116	9.4
To improve skin condition	112	9.1
To prevent hair loss	105	8.5
Others	212	17.3
<b>Practice</b>		
<b>7. Taken vitamin supplements:</b>		
Yes	339	84.8
No	61	15.2

**Table 2:** Knowledge, Attitude and Practices of Study Population about Vitamin Supplements (n=400).

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Question/Response	N	%
<b>8. Recommendation of vitamin supplements use by:</b>		
Doctor	265	66.2
Friends or Relatives	38	9.5
Others	97	24.3
<b>9. Frequency of vitamin supplements use:</b>		
Don't know	165	41.2
Once daily	140	35
Twice daily	18	4.5
Others	77	19.3
<b>10. Taken the recommended dose of vitamin supplements:</b>		
Yes	227	56.8
No	70	17.5

Overall, there was a lack of knowledge regarding the indications for use of vitamin supplements, with "Don't know" being most commonly selected for all questions. Vitamin "A" was most commonly chosen (36.5%) as the vitamin which prevents blindness; while 7.8 of the respondents thought that vitamin "A" should be avoided during pregnancy.

For lowering the risk of coronary heart disease, Vitamin "E" was the most frequently selected (10.6%); and 27.9% of the participants selected Vitamin "E" as the vitamin important for healthy skin. On the other hand, Vitamin "C" was the most common vitamin taken for lowering the risk of cancer (12.4%). Vitamin "C" was also commonly taken (12.4%) to maintain the integrity of the immune system. For prevention of flu/cold, Vitamin "C" was most commonly taken; and Vitamin "C" was also the most commonly (14.8%) considered vitamin which should be given during pregnancy. Then again, Vitamin "B" was most frequently taken (11.4%) by patients to prevent numbness or tingling. Vitamin "B" was also the most frequent (14%) vitamin cited for prevention of birth defects. The indications for use of vitamin supplements among the study population are presented in Table 3.

## Discussion

Almost all of the study participants in the current study were aware of vitamin supplements and more than 80% had taken vitamin supplements. This supports the basis of the study that vitamin supplements use is common. In our study, female participants outweighed the percentage of males; this could be one of the reasons that the study found a high percentage of participants consuming vitamin supplements. Other studies have reported that females are more concerned about their health than their male counterparts as males tend to be the bread earners in our part of the world, and they generally have poor health seeking behavior.<sup>2,4</sup>

**Table 3:** Indications for Use of Vitamin Supplements among study population (n=400). (Multiple response questions in %)

Questions	Vitamin A	Vitamin B	Vitamin C	Vitamin D	Vitamin E
Which vitamin(s) prevent blindness?	<u>36.5</u>	3.2	3.6	2.2	7.5
Which vitamin(s) lower the risk of coronary heart disease?	8.3	7.1	10.4	5.1	<u>10.6</u>
Which vitamin(s) lower the risk of cancer?	6.7	6.7	<u>12.4</u>	6.1	10.1
Which vitamin(s) are important for preventing numbness or tingling?	3.8	<u>11.4</u>	8.1	10.5	4.8
Which vitamin(s) are required for integrity of immune system?	6.9	9.7	<u>12.4</u>	3.9	5.5
Which vitamin(s) are important for healthy skin?	9.5	6.2	23.1	6.4	<u>27.9</u>
Which vitamin(s) prevent flu/cold?	2.7	4.0	<u>40.2</u>	1.2	2.0
Which vitamin(s) prevent birth defects?	7.2	<u>14.0</u>	11.5	7.9	4.7
Which vitamin(s) should be given in pregnancy?	7.2	14.4	<u>14.8</u>	7.8	4.3
Which vitamin(s) should be avoided in pregnancy?	<u>7.8</u>	2.7	3.6	2.7	6.3

Our study showed doctors, friends/relatives and media/newspaper to be the three most common sources of information regarding vitamin supplements. This is consistent to the research by Leah et al. where these were also found to be the three most common sources of information.<sup>18</sup> While Annette et al. found that most physicians said they trusted professional journals and clinical studies for reliable information about dietary supplements they recommended to patients. Most physicians indicated they had not received any formal education or training on the subject of vitamin supplements.<sup>19</sup> Furthermore, the reasons reported for using vitamin supplements in the study by Leah et al.<sup>18</sup> were similar to the reasons reported in the current study, (i.e., to overcome deficiencies, improve general health and to replenish energy).

Regarding the frequency of use, 41% of the respondents were unaware of the number of times they take vitamin supplements; while around one-third (35%) of the study population took a vitamin supplement once daily. Similar results were also reported in a study conducted by Mary et al. where 44.6% took one supplement daily.<sup>20</sup> This is a particularly important finding as excessive use or over-dosing of vitamins can lead to adverse effects.

Moreover, around two-thirds (66%) of the study population was recommended to use vitamin supplements by a doctor. This was also shown in a study by Annette et al. where 72% of physicians used vitamin supplements and when asked whether they "ever recommend dietary supplements" to their patients, 79% of the physicians said they did.<sup>20</sup>

However, over half the study population declared that they were unaware of the harmful effects of vitamin supplements. Although considered by many consumers to be safe because supplements are "natural," they can still be potentially harmful as a result of drug interactions, toxicity, contamination, and other dangers.<sup>21</sup> Efficacy and safety studies of dietary supplements are limited and often methodologically poor.<sup>21</sup> Probably for the preceding reasons, many studies of the same supplement yield conflicting results.<sup>21</sup> Despite these problems, the use of vitamin supplements continues to increase and is prevalent in developed countries.<sup>21</sup>

Two widespread faulty assumptions are that "natural" equals safe, and that long-term use connotes effectiveness. Unfortunately, neither of these assumptions is correct.<sup>21</sup> Vitamin supplements are presumed to be safe and are freely available without prescription to all.<sup>21</sup> Patients, especially those taking prescription medications, should be counseled on the possible side effects.<sup>21</sup>

Excluding the patients who responded "Don't know" for the above indications, the remaining study population correlated certain vitamins for specific indications; for example: Vitamin "A" prevents blindness, Vitamin "E" is important for healthy skin, Vitamin C improves flu/cold and Vitamin 'B' prevents birth defects and numbness. Although no concrete evidence is provided in the literature suggesting these specific indications, health related articles in newspapers and marketing statements have a significant contribution for these perceptions.

Patients interviewed in this study were visiting a tertiary care teaching hospital, where the urban and literate population mostly seek healthcare; hence, the results cannot be generalized to the whole population. Nevertheless, this is the first such study to be conducted in Pakistan and can form the basis for further studies and awareness programs regarding the safe and correct use of vitamin supplements.

This study has several limitations that need to be addressed. Since the study was a descriptive cross sectional study; the association or correlation between variables could not be studied. Secondly, most of the study participants were highly educated (more than 14 years of education), so their knowledge about vitamin supplementation might be different from the less educated or illiterate population, this may have biased the study results. Thirdly, the harmful effects of vitamins were not specifically raised in the questionnaire. Furthermore, the study was conducted at single private hospital with patients recruited from both general practice clinics/specialty clinics; therefore, it may not be possible to generalize the results of this study since other populations may have different behaviors.



## Conclusion

This study highlights a very important but neglected area of vitamin supplementation. Since, awareness about the use of vitamin supplements seems to be deficient in Pakistan; we therefore recommend that this should be addressed either by conducting awareness campaigns or educating the general population through media and health professionals. Most importantly, short training sessions/workshops should be arranged specifically for doctors, to educate them as to which explanation/description should be given to patients seeking or requiring vitamin supplementation. In addition, refresher training programs are essential for the continuous improvement of doctors' knowledge and skills. The results of this study signify that further studies are needed to assess the overuse of multivitamins and the factors related to description of multivitamins by doctors to their patients.

## Acknowledgements

We acknowledge with thanks for the participants' time and information provided for the study. We would also like to thank Mr. Mustafa Saleem for his co-operation and his contribution is gratefully acknowledged. We declare no competing interests in conducting this research or in the publication of this work.

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