



KNOWLEDGE, PERCEPTION AND ATTITUDE ON THE USE OF MULTIVITAMIN SUPPLEMENTS AMONG YOUNG OMANI COMMUNITY IN WILAYAT OF IBRI

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Abstract

The daily use of multivitamins has risen considerably in recent years among population all over the world due to aggressive marketing by pharmaceutical companies and the accessibility of these products over the counter. Perception of the public about benefits of multivitamins to enhance overall health and wellbeing had led to its encouraged use without proper knowledge of their safety and side effects. The present work focuses on assessing the knowledge, perceptions, and attitudes of multivitamins supplement among young Omani communities in Wilayat, Ibri. A descriptive cross-sectional, questionnaire-based survey was conducted online among 382 young Omani adults aged 20-40 years in Wilayat of Ibri over a period of five months from April 2022 to August 2022, using a validated 38-item questionnaire. Descriptive statistical analysis was performed on the acquired data using SPSS software 20.0. The survey analysis showed that females made up the majority of respondents (78.5%) in the overall study population (n = 382), while male made up only 21.5%. The mean knowledge score of the participants was found to be 4.59 (SD ± 2.6). The results of independent t-tests and ANOVA analyses revealed a significant relationship between mean knowledge scores and sociodemographic factors, such as gender (p = 0.00), educational level (p = 0.01), and multivitamin use (p = 0.004). The study participants had a poor understanding of the proper use of multivitamins and their safety. A significant relationship between perception and sociodemographic factors such as gender (p = 0.01), physical activity (p = 0.005), and multivitamin use (p = 0.007) was found using the Mann-Whitney U and Kruskal-Wallis tests. Most participants acknowledged the need for regular intake of vitamin supplements by pregnant women (89 %) and the detection of vitamin deficiencies through blood tests (89.8 %). A significant association between attitude and socio-demographic variables such as gender (p = 0.003) and multivitamin consumption (p = 0.00) was identified using Mann-Whitney U and Kruskal-Wallis tests. The study recommends organizing regular awareness campaigns for the public regarding the correct use of multivitamins by media/health care professionals.

Key words: Multivitamin; Supplements; Knowledge; Perception; Attitude; Omani community

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INTRODUCTION

Worldwide, the number of people taking multivitamins daily has increased significantly in recent years. Many people believe that increasing multivitamin intake improves health. A report estimates that the United States sold supplements worth \$55.7 billion in 2020, including vitamins and other minerals (Boulder *et al.*, 2021). Contrary to popular belief, multivitamins and other vitamin supplements may not provide as many benefits as previously thought. There is an ongoing debate over whether multivitamin supplements are required for good health for daily use (Sharadkumar *et al.*, 2022). It is possible that some supplements may have side effects. Supplements such as iron, magnesium, zinc, copper, vitamin B6, folic acid, and even seemingly safe substances such as magnesium and zinc can cause serious health problems (Kaufman *et al.*, 2002).

The human body needs micronutrients such as vitamins and minerals in small amounts to function effectively and maintain health. Most of these required amounts can be easily obtained from a healthy balanced diet that includes fruits, vegetables, chicken, eggs, and seafood. In addition to serving as a source of dietary fiber, vegetables are a vital source of vitamins, minerals, and trace elements. They are also rich in vitamins A, C, and E and have antioxidant properties (Ebabhi *et al.*, 2022). The daily intake of sufficient vegetables will help reduce the risk of cancer, stroke, cardiovascular disease, and other chronic illnesses (Saini *et al.*, 2022). Recent global economic inflation and unpredictable climate changes due to global warming directly affect agricultural productivity, which makes it significantly more difficult for low- and medium-income populations to balance their nutrient levels (Sharadkumar *et al.*, 2022). This situation has forced the population to acquire alternative sources of vitamins and nutrients from ready-made supplements available in the market.

Another claim by Hamishehkar *et al.*, (2016) cited that, since advertisements on vitamins are unregulated and their easy availability in different forms in the market, people use them on a daily basis. Minerals and multivitamins may or may not be effective, but their consumption has increased rapidly in many wealthy countries. According to Tatantino (2021), multivitamins do not reduce the risk of heart disease, cancer, cognitive decline, or early mortality. For instance, consuming too much of multivitamins can cause serious and fatal side effects, such as photosensitivity, hair loss, vision

issues, nausea, headaches, and poor appetite. According to Petry *et al.* (2020), the most concerning nutritional problem in Oman is anemia among both children and women. Anemia was found in 23.8% of the children aged 0–59 months. Approximately 10.2%, 9.5%, and 10.6% of children had iron, vitamin A, and vitamin D deficiencies, respectively. The prevalence of anemia among women was 27.8%. In addition, vitamin B12 and vitamin D deficiencies were found in 8.9% and 16.2% of the women, respectively. According to Aronson, J. K. (2013) an overdose of certain vitamins can have serious and life-threatening effects by means of interaction with drugs or diseases.

According to pharmacovigilance reports on adverse drug reactions, there were 16 types of multivitamins and minerals that caused 37 adverse drug reactions in the population. The most common vitamins/ minerals that caused adverse drug reactions were folic acid, vitamin D3, Vitamin B1, Vitamin B12, Vitamin B6, Iron, calcium and magnesium (Ministry of Health, 2020). An initial literature search revealed that limited research has been conducted on multivitamin use and misuse in Oman. This calls for investigating the issue of the importance of knowing the risk factors behind excessive nutrient and multivitamin supplements. Thus, the intention of this study was to examine the knowledge, perception, and attitude regarding the use of multivitamin supplements among young Omani communities.

MATERIALS AND METHODS:

Study design

This study was conducted in the Wilayat of Ibri, Oman. Ibri town in the Al-Dhahirah Governorate is located in the northwest part of the Sultanate of Oman. According to the National Center for Statistics & Information (2020), the total population of young Omani age group 20-40 years in Ibri was about 71084. The study site Ibri Wilayat was selected mainly because of its large population density, which enabled diversification of the selection of the study sample. Second, due to the convenience and accessibility of the researcher, potential study participants were approached.

Study Population and Sampling Technique

The study was conducted over a period of 5 months, from April 2022 to August 2022. This study included a young Omani population age group 20-40 years in Ibri. The sample size of 382 subjects required for the study was calculated using Raosoft (sample size calculator; Raosoft Inc.). The

target population was selected using the random sampling method. This study was approved by the Institutional Research Committee of the University of Nizwa and the National Center for Statistics and Information.

Inclusion and Exclusion criteria

The inclusion criteria were as follows: young Omani subjects aged 20–40 years residing in Wilayat of Ibri with records of consuming and not consuming multivitamin supplements and voluntarily consented to participate in the study. The exclusion criteria were age 20–40 years and use of multivitamins prescribed by doctors. The mentally challenged, expatriates, and people with a profile of healthcare staff or medical students were excluded from the study.

Study tool

The self-reported questionnaire was developed to assess the knowledge, perception, and attitude regarding the use of multivitamin supplements in the adult Omani community in Ibri. On the basis of the review of several related studies (Basheer *et al.*, 2020; Alsofyani *et al.*, 2018; Rosalia *et al.*, 2017). The study tool consisting of four parts. Part A related to socio-demographic data of the respondents, Part B related to knowledge on use multivitamins supplements, Part C related to perception the use of multivitamins supplement, Part D related to attitude of using multivitamins supplement.

The tool was originally prepared in English, and translation and back-translation were performed with the assistance of language experts at the writing center of the University of Nizwa to ensure the consistency of the survey tool. The online version of the questionnaire was created using Google Forms, and the participants were shared with the link to the questionnaire.

Reliability and Validity testing of the survey tool

The study tool was pilot tested among a small number of participants (n =38). 10% of the actual study population was enrolled in the test to ensure content and face validity of the study tool. The tool was modified based on the results of the pilot testing. The study tool was subjected to a Cronbach's alpha test to ensure its reliability and validity. The reliability analysis showed a Cronbach's alpha coefficient of 0.71, indicating good internal consistency among the survey items being analyzed. The final version of the questionnaire was used for the main study, and pilot study data were excluded from the main study.

Data Collection Procedure

Potential study subjects were approached at public places, such as parks and shopping malls of Ibri Wilayat, by the researchers and detailed them with the aims and nature of the study. The consented participants satisfying the inclusion criteria of the study were shared with the online questionnaire link through their Whats app or email. Follow-up was performed every two weeks to achieve the target sample size. The collected data were kept confidential according to institutional ethics and were used only for the study.

Statistical analysis

Collected data was analyzed using Statistical Package for Social Science (SPSS) version 20.0 Responses to knowledge-based items were recorded as yes, no, or unsure. The correct answer for each item in knowledge was given a score of 1, and incorrect answers were given a score of 0. The highest possible score was 12, and the lowest was 0. The mean knowledge of the participants was calculated according to the selected socio-demographic information. For the attitude and perception items, responses were assessed using a 5-point Likert rating scale. (5 = strongly agree, 4 = agree, 3 = undecided, 2=disagree, 1= strongly disagree). To minimize response bias, both positive- and negative-worded statements were included in the questionnaire. Negative-worded statements were reverse-coded for the analysis of the results. Descriptive analysis of the data was performed, and the results are expressed as frequencies, percentages, means, and standard deviations.

Statistical methods and measurement

Frequency (n) and percentage (%) distributions were used to describe the socio-demographic profile of the study participants in Ibri. Parametric tests, such as the independent t-test and one-way ANOVA tests, were used to determine the association between mean knowledge scores and the selected socio-demographic variables. Statistical significance was set at p value ≤ 0.05 . Non-parametric tests, such as the Mann-Whitney U and Kruskal-Wallis tests, were used to determine the association between perception and selected socio-demographic variables. The p value of ≤ 0.05 was considered statistically significant. The parametric test Pearson's Chi-square test was used to determine association between multivitamin users and the selected socio- demographic variables. The p value of ≤ 0.05 was considered statistically significant.

RESULTS:

The survey on knowledge, perception, and attitude on the use of multivitamin supplements was conducted in Wilayat of Ibri over five months from April 2022 to August 2022, which included young Omani adults between the age group of 20-40 years. The link to the survey questionnaire was sent to approximately 400 participants and completed questionnaires were received from 382 participants. The response rate of the survey was 95.5 %. The study assessed the responses of 382 participants who satisfied the inclusion criteria.

Demographic characteristics

Sex and age group distributions

Survey analysis showed that among the total study population (n=382), the majority (78.5%, n=300) were female and male (21.5%, n=82). The gender distribution is shown in Figure-1. The age of the respondents ranged from to 20-40 years. The ages of the respondents are grouped as shown in Table-1. The study observed that most respondents (33.2 %; n=127) were in the age group of 31-35 years, followed by the age group of 26 -30 years (30.4 %; n=116).

Social, educational and employment status

The survey analysis showed that among the total study population (n=382), the majority (77%, n=294) were married, followed by single (20.4%; n=78). In terms of educational status, the majority of the participants (61.5%; n= 236) had a higher education (university/college), followed by post-basic (secondary) education (35.3%; n= 135) and basic education (2.9%; n=11). The employment survey status data revealed that half of the participants (50.8%; n=194) were unemployed, followed by employed (38%; n=145), and self-employed (11.3%; n=43), as shown in Table 1 and Figure -2.

Body mass index and physical activity survey on participants

The survey results showed that, among the survey population, nearly two fifth of the participants (41.9%; n=160) had a normal weight, followed by overweight (28.5%; n= 109), obesity (18.1%; n= 69), and underweight (11.5%; n=44), as shown in Table 1 and Figure-3. Among the population, majority of the participants regularly engaged in physical exercise (67.8%; n=259) and nearly one-third (32.2%, n=123) did not perform any exercise, as shown in Table 1.

Frequency and Duration of exercise survey on participants

The survey observed that, among the total subjects who has performed daily exercise (n=259), more than three-quarters (76.5%; n=198) of participants exercised once daily, followed by participants who performed twice daily (20.8% n=123) exercise and participants who exercised three times or more (2.7%; n = 7), as shown in Table 1. In the case of duration of exercise (n=259), nearly two-fifths (39%; n= 101) of the participants exercised for less than 30 minutes, nearly half (48.3%; n=125) exercise for 30-45 minutes and a small number of participants (10.8%; n= 28) performed exercise for a duration in middle of 60-90 minutes and (1.95; n=5) for more than 90 minutes as shown in Table1.

Smoking Habits:

The survey observed that among the total study population (n=382), most participants (99%, n = 378) were nonsmokers, as shown in Table 1.

Consumption of multivitamin supplements among the participants

The survey analysis showed that among the total study population (n=382), the majority of participants (65.2%; n=249) had not taken any multivitamin supplements before, while over a one-third (34.8%, n=133) of the participants had consumed it, as shown in Table 1.

Frequency of consumption of multivitamin supplements

Among the total participants (n=382), majority of participants never used multivitamins (65.2%; n=249), 23 % of total participants had a habit of consuming multivitamin once in daily basis (23.8%, n=123), and only 4.1% participants consuming twice daily (4.1%, n= 16). Most importantly, a small number of participants (6.9%; n = 26) acknowledged that they were unaware of the daily frequency of multivitamin consumption. The frequency of multivitamin supplement consumption is shown in Table 1.

Information source of multivitamin supplements for participants

The survey reported on total respondents (n=382); more than one-third of participants were aware of multivitamin supplements through media/internet (37.7%; n=144), followed by doctors (20.4%, n = 78), pharmacists (12.8%, n=49), friends (10.2%; n = 39), relatives (9.9%, n= 38), and only the least number of participants through nutritionists (8.4%, n= 32), as shown in Table 1. The study results showed that among multivitamin users (n=133), over two-thirds (43.6%; n=58) had a normal weight. There was no significant association

between the consumption of multivitamins and the BMI of the participants ($p= 0.578$) as shown in Table-2. The study reported that among multivitamin users ($n=133$), the majority (72.7%; $n=96$) exercised, as shown in Table-3. There was no significant association between the consumption of multivitamins and the physical activity of the participants ($p= 0.091$). Most of the multivitamin users are non-smokers (98.5%; $n=131$), as shown in Table-4. There was no significant association between the consumption of multivitamins and the smoking habits of the participants ($p= 0.434$). The study exhibits that among multivitamin users ($n=133$), the majority (61.6%; $n= 82$) were between the age of 26-35 years as shown in Table-5. There was no significant association between the consumption of multivitamins and the age group of the participants ($p= 0.841$). The study evidenced a significant association between the consumption of multivitamins and the gender of the participants ($p= 0.036$), as shown in Table-6. Cramer's V test showed a weak association (Cramer's V = 0.100) among the gender.

Knowledge on use of multivitamin supplements

The survey was done among the young Omani population to assess their knowledge on the use of multivitamin supplements. The mean knowledge score of the participants was found to be 4.59 (SD ± 2.6). Independent t-tests and ANOVA tests were used to explore the association between knowledge scores and socio-demographic variables, and a significant association was observed between knowledge scores and socio-demographic variables such as gender ($p = 0.00$), educational level ($p = 0.01$), and multivitamin consumption ($p = 0.004$). The mean knowledge scores according to the demographic variables are presented in Table 7.

The study observed that nearly half (46.1%; $n= 176$) of the young Omani population in Wilayat of Ibri had proper knowledge about the role of multivitamin in brain function and boosting immunity. Among the total participants ($n= 382$), half acknowledged that multivitamins were not a substitute for a healthy diet. However, their understanding was poorly related to the incorrect indication of multivitamins for preventing cancer (67%; $n= 256$) and chronic diseases (70.1%; $n= 268$).

The study assessed participants' knowledge regarding the safety of multivitamins. The study observed that half of the participants were aware that multivitamins in large doses can cause toxicity (50.3%; $n=192$), and it is important to consider the

dose of multivitamins (73.8%; $n=282$) while consuming it. However, their understanding of safety use was poor related to the co-administration of multivitamins with other medicines (36.1%; $n= 138$) and the presence of unlabeled toxic ingredients in the multivitamin formulation (25.7%; $n=98$). Knowledge on the use of multivitamin supplements among the young Omani population is depicted in Table-8.

This study assessed respondents' perception on multivitamins. Most of the participants opined that blood test is necessary to identify the vitamin deficiency (89.8%; $n= 343$) and pregnant woman requires regular intake of iron and vitamin supplements (89 %; $n= 340$). However, nearly two-fifths (39% ; $n= 146$) of the population agreed that multivitamin intake does not reduce the need for daily food. Furthermore, more than two-fifths of the population (44%, $n= 168$) were of neutral opinion that males require a higher dose of vitamins than females. Nearly half of the population was neutral regarding side effects that could be caused by multivitamin supplement use. Participants' perceptions of the use of multivitamin supplements are shown in Table -9.

Association of sociodemographic variables and the perception of participants towards multi vitamin supplements.

The study analyzed the association between socio-demographic variables and the perception of participants towards multivitamins using the Mann Whitney U Test and Kruskal Wallis test. The study observed that female participants had more positive beliefs ($p=0.001$) regarding the use of multivitamins than their male counterparts. Furthermore, the participants who exercised regularly had more positive views ($p= 0.005$) than those who did not perform any exercise. The participants who consumed multivitamins had positive views ($p=0.007$) towards the use of multivitamins. Meanwhile, the study observed no association between education level and the perception of participants towards multivitamin use. The mean score of the perception of participants towards the use of multivitamins and the association with socio-demographic variables are shown in Table-10 and Table 11.

Association of sociodemographic variables and the attitude of participants towards multi vitamin supplements.

The study analyzed the study participant's attitude towards the use of multivitamins. Just over a half

of the participants (56.5 %; n= 216) agreed that consuming multivitamin supplements can help in the gym work outs. The study reported that over a two fifth of the respondents (45.5 %; n= 175) agreed multivitamin supplements delivers body with nutrients faster than a normal diet. Just over a third of the participants (37.5 %; n= 143) opined that multivitamins can assist in treatment and provide a speedy recovery from diseases if consumed. More than half of the participants agreed that multivitamin supplements can be consumed with or without medical advice (58.4 %; n= 223) and were ready to recommend to other people to use multi vitamins in their daily life. (56.1; n=214) Majority of the participants (64.4 %; n= 246) acknowledged that multi vitamin supplements are essential for body's strength and

health. Table12. depicts the participant's attitude towards use of multivitamins.

The study observed that female participants had a more positive attitude (p= 0.003) than their male participants regarding the use of multivitamins. Furthermore, the participants who consumed multivitamins exhibited positive attitude (p= 0.000) towards multivitamins use. Meanwhile the study observed no significant association between the socio-demographic variables like education level and physical activity with the attitude of participants regarding multivitamin use. The mean score of the participant's attitude towards use of multivitamins and its association between socio-demographic variable is depicted in Table 13 and Table14 respectively.

Table. 1: Socio-demographic characteristics

Age Group Distribution			
S.No	Age group in years	Frequency (n)	Percentage (%)
1	20-25	61	16
2	26-30	116	30.4
3	31-35	127	33.2
4	36- 40	78	20.4
Social status of participants			
S.No	Marital status	Frequency(n)	Percentage(%)
1	Married	294	77
2	Single	78	20.4
3	Divorced	10	2.6
Educational Level			
S.No	Educational Level	Frequency(n)	Percentage(%)
1	Higher education (University/College)	236	61.8
2	Post-Basic (Secondary) Education	135	35.3
3	Basic Education	11	2.9
Employment status of participants			
S.No	Employment status	Frequency(n)	Percentage(%)
1	Un -employed	194	50.8
2	Employed	145	38
3	Self employed	43	11.2
Body mass index of participants			
S.No	BMI category	Frequency(n)	Percentage(%)
1	Normal weight (BMI 18.5–24.9)	160	41.9
2	Overweight (BMI 25–29.9)	109	28.5
3	Obesity (BMI of 30 or greater)	69	18.1
4	Underweight (BMI<18.5)	44	11.5
Physical activity(exercise) among participants			
S.No	Exercise	Frequency(n)	Percentage(%)
1	Yes	259	67.8
2	No	123	32.2
Frequency of exercise among participants			
S.No	Frequency of Exercise	Frequency(n)	Percentage(%)
1	Once daily	198	76.5
2	Twice daily	54	20.8
3	Three times or more	7	2.7
Duration of exercise session			
S.No	Duration of exercise session	Frequency(n)	Percentage(%)
1	Less than 30 minutes	101	39
2	30-45 Minutes	125	48.3
3	60- 90 Minutes	28	10.8
4	More Than 90 min	5	1.9
Smoking Habits			

S.No	Cigarette smoking	Frequency(n)	Percentage(%)
1	Yes	4	1
2	No	378	99
Multivitamin supplements usage			
S.No	Multivitamin supplements usage	Frequency(n)	Percentage (%)
1	Yes	133	34.8
2	No	249	65.2
Frequency of use of multivitamins			
S.No	Frequency of use of multivitamin supplements	Frequency(n)	Percentage (%)
1	Never	249	65.2
2	Once daily	91	23.8
3	Twice daily	16	4.1
4	Don't Know	26	6.9
Source of information of multivitamin supplements			
S.No	Source	Frequency(n)	Percentage (%)
1	Media/internet	144	37.7
2	Doctor	78	20.4
3	Pharmacist	49	12.8
4	Friends	39	10.2
5	Relatives	38	9.9
6	Nutritionist	32	8.4

Table.2: Association between multivitamin use and indicators of BMI

Variable			BMI				Total
			Underweight (BMI <18.5)	Normal weight (BMI 18.5–24.9)	Overweight (BMI 25–29.9)	Obesity (BMI of 30 or greater)	
Use of Multi vitamins	Yes	Count	16	58	40	19	133
		% within MV use	12.0%	43.6%	30.1%	14.3%	100.0%
		% within BMI	36.4%	36.2%	36.7%	27.5%	34.8%
		% of Total	4.2%	15.2%	10.5%	5.0%	34.8%
	No	Count	28	102	69	50	249
		% within MV use	11.2%	41.0%	27.7%	20.1%	100.0%
		% within BMI	63.6%	63.8%	63.3%	72.5%	65.2%
		% of Total	7.3%	26.7%	18.1%	13.1%	65.2%
Total	Count	44	160	109	69	382	
	% within MV use	11.5%	41.9%	28.5%	18.1%	100.0%	
	% within BMI	100.0%	100.0%	100.0%	100.0%	100.0%	
	% of Total	11.5%	41.9%	28.5%	18.1%	100.0%	

Table.3: Association between multivitamin use and physical activity

Variable			Physical activity		Total
			Yes	No	
Use of Multi vitamins	Yes	Count	96	36	132
		% within MV use	72.7%	27.3%	100.0%
		% within Physical activity	37.1%	29.5%	34.6%
		% of Total	25.2%	9.4%	34.6%
	No	Count	163	86	249
		% within MV use	65.5%	34.5%	100.0%
		% within Physical activity	62.9%	70.5%	65.4%
		% of Total	42.8%	22.6%	65.4%
Total	Count	259	122	381	
	% within MV use	68.0%	32.0%	100.0%	
	% within Physical activity	100.0%	100.0%	100.0%	
	% of Total	68.0%	32.0%	100.0%	

Table.4: Association between multivitamin use and smoking habits

Variable			Smoking Habits		Total
			Yes	No	
Use of Multi vitamins	Yes	Count	2	131	133
		% within MV use	1.5%	98.5%	100.0%
		% within Smoking habits	50.0%	34.7%	34.8%
		% of Total	0.5%	34.3%	34.8%
	No	Count	2	247	249
		% within MV use	0.8%	99.2%	100.0%
		% within Smoking habits	50.0%	65.3%	65.2%
		% of Total	0.5%	64.7%	65.2%
Total	Count		4	378	382
	% within MV use		1.0%	99.0%	100.0%
	% within Smoking habits		100.0%	100.0%	100.0%
	% of Total		1.0%	99.0%	100.0%

Table.5 Association of multivitamin use and age group distribution

Variable			Age				Total
			20- 25 years	26 – 30 years	31 – 35 years	36 – 40 years	
Use of Multi vitamins	Yes	Count	21	41	41	30	133
		% within MV use	15.8%	30.8%	30.8%	22.6%	100.0%
		% within Age group	34.4%	35.3%	32.3%	38.5%	34.8%
		% of Total	5.5%	10.7%	10.7%	7.9%	34.8%
	No	Count	40	75	86	48	249
		% within MV use	16.1%	30.1%	34.5%	19.3%	100.0%
		% within Age group	65.6%	64.7%	67.7%	61.5%	65.2%
		% of Total	10.5%	19.6%	22.5%	12.6%	65.2%
Total	Count		61	116	127	78	382
	% within MV use		16.0%	30.4%	33.2%	20.4%	100.0%
	% within Age group		100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total		16.0%	30.4%	33.2%	20.4%	100.0%

Table.6 Association of multivitamin use and the gender of the participants

Variable			Gender		Total
			Female	Male	
Use of Multi vitamins	Yes	Count	97	36	133
		% within MV use	72.9%	27.1%	100.0%
		% within Gender	32.3%	43.9%	34.8%
		% of Total	25.4%	9.4%	34.8%
	No	Count	203	46	249
		% within MV use	81.5%	18.5%	100.0%
		% within Gender	67.7%	56.1%	65.2%
		% of Total	53.1%	12.0%	65.2%
Total	Count		300	82	382
	% within MV use		78.5%	21.5%	100.0%
	% within Gender		100.0%	100.0%	100.0%
	% of Total		78.5%	21.5%	100.0%

Table.7: Mean knowledge scores of the Participants

Demographic variable		Mean knowledge score (± SD)	p-value
Gender	Male	6.30(±2.561)	0.00
	Female	4.12(±2.5)	
Educational Level	Basic Education	6.67(±2.6)	0.017
	Post-Basic (Secondary) Education	4.33(±2.5)	
	Higher education (University/College)	4.63(±2.7)	
Physical activity	Do exercise	4.77(±2.6)	0.062
	No exercise	4.22(±2.7)	
Consumption of Multivitamins	Used Multivitamins	5.12(2.2)	0.004
	Not used Multivitamins	4.31(2.8)	

Table - 8: Knowledge on use multivitamins supplements among young Omani population

Statements	Yes		No		Unsure		Correct response (%)
	n	%	n	%	n	%	
Multi vitamins promote brain function and boost your immunity	176	46.1	50	13.1	156	40.8	46.1
Multi vitamins reduce risk of heart attacks and death	103	27	93	24.3	186	48.7	24.3
Consumption of large doses of multivitamin can cause toxicity	192	50.3	33	8.6	157	41.1	50.3
Taking multivitamins along with other medicines is safe	79	20.7	138	36.1	165	43.2	36.1
Multivitamins can prevent cancer	43	11.3	126	33	213	55.8	33
Multivitamins can prevent chronic diseases	83	21.7	114	29.8	185	48.4	29.8
Multivitamins can cause weight gain	146	38.2	84	22	152	39.7	38.2
Multivitamins are completely safe for consumption	119	31.2	94	24.6	169	44.2	24.6
Dosage of multivitamins is an essential factor to consider when taking it.	282	73.8	21	5.5	79	20.7	73.8
Multivitamins are right for all age groups	123	32.2	147	38.5	112	29.3	32.2
Multivitamins is a substitute for a healthy diet	89	23.3	189	49.5	104	27.2	49.5
Vitamins supplements may contain unlabeled toxic ingredients	62	16.2	98	25.7	222	58.1	25.7

Table.9: Perception of Participants on the use of multivitamins

Items	Strongly agree		Agree		Neutral		Disagree		Strongly disagree	
	n	%	n	%	n	%	n	%	n	%
Blood tests is necessary to identify the Vitamin deficiency	212	55.5	131	34.3	28	7.3	5	1.3	6	1.6
Pregnant woman requires regular intake of iron & vitamin supplements	226	59.2	114	29.8	20	5.2	10	2.6	12	3.1
Taking multivitamins reduces the need for daily food.	29	7.6	76	19.9	131	34.3	108	28.3	38	9.9
Male requires to consume more dose of vitamins compared to females	59	15.4	90	23.6	168	44	55	14.4	10	2.6
Excessive use of multivitamins is harmful	100	26.2	191	50	78	20.4	11	2.9	2	0.5
Multivitamins does not cause any side effects.	12	3.1	60	15.7	174	45.5	113	29.6	23	6

Table.10: Mean scores perception of Participants on the use of multivitamins

Items	Mean score (\pm SD)
Blood tests is necessary to identify the Vitamin deficiency	4.41(\pm 0.81)
Pregnant woman requires regular intake of iron & vitamin supplements	4.39(\pm 0.93)
Taking multivitamins reduces the need for daily food.	2.87(\pm 1.08)
Male requires to consume more dose of vitamins compared to females	3.35(\pm 0.99)
Excessive use of multivitamins is harmful	3.98(\pm 0.79)
Multivitamins does not cause any side effects.	2.80(\pm 0.885)

Table :11 Association between socio-demographic variables and the perception of participants on the use of multivitamins

Demographic Variable		n	Mean Rank	P value
Gender	Male	82	182.01	0.001
	Female	300	226.22	
Physical activity	Doing Exercise	259	201.7	0.005
	No Exercise	122	168.32	
Multivitamin consumption	Yes	133	212	0.007
	No	249	180.51	
Educational Level	Basic education	11	213.15	0.204
	Basic secondary education	135	178.04	
	Higher education	235	197.39	

Table: 12 Study Participants attitude towards use of multivitamins

Items	Strongly agree		Agree		Neutral		Strongly disagree		Disagree	
	n	%	n	%	n	%	n	%	N	%
Taking Multivitamin supplements help in working out in the gym.	33	8.6	183	47.9	135	35.3	26	6.8	5	1.3
Taking Multivitamin supplements provides body with nutrients faster than a normal diet	31	8.1	144	37.7	145	38	48	12.6	14	3.7
Taking Multivitamin supplements can assist in treatment and provide a speedy recovery from diseases.	30	7.9	113	29.6	156	40.8	73	19.1	10	2.6
There is no difference in consuming multivitamin supplements with or without medical advice	15	3.9	53	13.9	91	23.8	175	45.8	48	12.6
I consider the multi vitamin supplements are important to the body for strength and health	46	12	200	52.4	92	24.1	39	10.2	5	1.3
I recommend other people to use multi vitamin supplements in their daily lives	51	13.4	163	42.7	112	29.3	49	12.8	7	1.8

Table: 13 Mean score of the attitude of participants towards use of multivitamins

Items	Mean score(\pm SD)
Taking Multivitamin supplements help in working out in the gym.	3.56 (\pm 0.79)
Taking Multivitamin supplements provides body with nutrients faster than a normal diet	3.34 (\pm 0.92)
Taking Multivitamin supplements can assist in treatment and provide a speedy recovery from diseases.	3.21 (\pm 0.93)
There is no difference in consuming multivitamin supplements with or without medical advice	2.51 (\pm 1.00)
I consider the multi vitamin supplements are important to the body for strength and health	3.64 (\pm 0.87)
I recommend other people to use multi vitamin supplements in their daily lives	3.53 (\pm 0.94)

Table :14 Association between socio-demographic variables with the attitude of participants towards use of multivitamins

Demographic Variable		n	Mean Rank	P value
Gender	Male	82	159.6	0.003
	Female	300	200.22	
Physical activity	Doing Exercise	259	191.61	0.874
	No Exercise	122	189.70	
Multivitamin consumption	Yes	133	223.31	0.00
	No	249	174.51	
Educational Level	Basic education	11	155.55	0.55
	Basic secondary education	135	192.39	
	Higher education	235	191.86	

Figure-1 Gender distribution

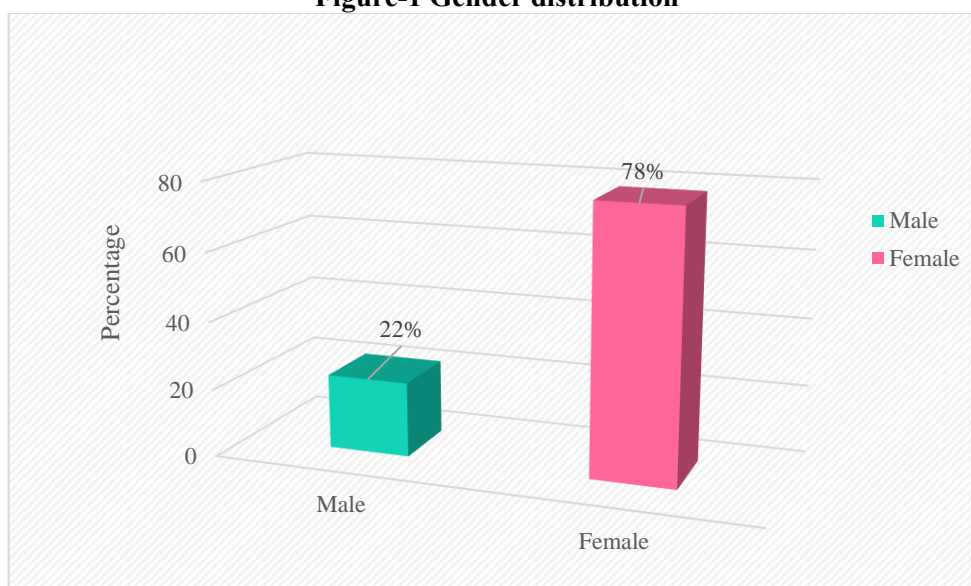


Figure 2: Employment status of participants

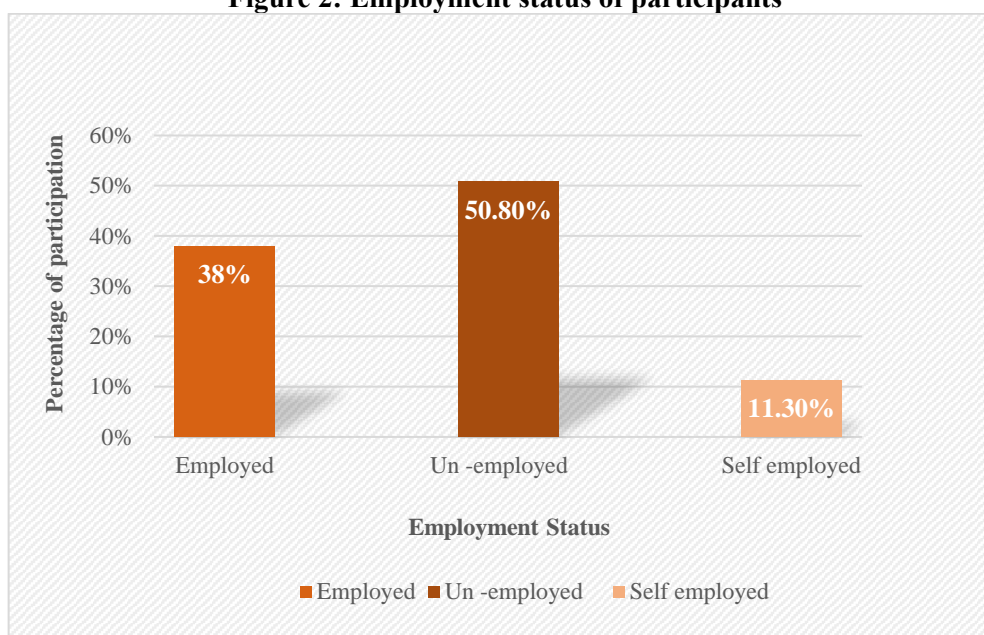
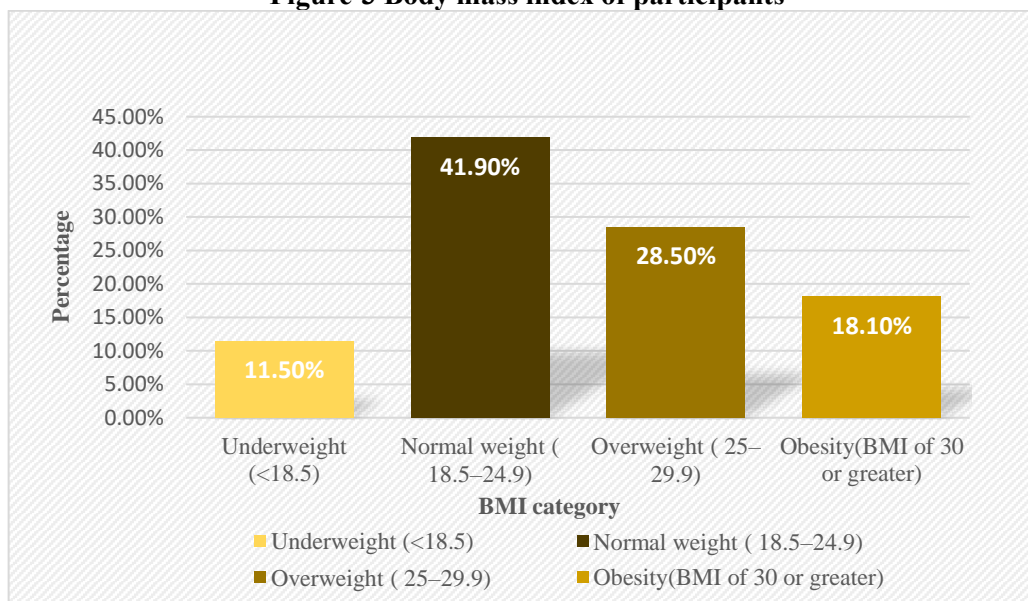


Figure-3 Body mass index of participants



DISCUSSION

The survey was conducted among young Omani communities (n=382) in the Wilayat of Ibri to assess knowledge, perceptions, and attitudes regarding the use of multivitamin supplements. The present study reported that the majority of the study population was females (78.5%). These findings are similar to those of Basheer *et al.* (2020) and Algaed *et al.* (2019). In the current study, multivitamin usage was higher among females (72.9 %) than males. This could be due to the fact that the majority of study participants were females than male. The results were consistent with the study findings that females are more apprehensive about their health than their male counterparts who have poor health seeking behaviors (Qidwai *et al.*, 2012, Basheer *et al.*, 2020)

The majority of the participants (61.5%) had a higher education level (university/college), which is similar to the study done by Basheer *et al.* (2020). Furthermore, nearly two-fifths of the participants (41.5%) had normal body weights according to BMI, which was similar to the results of the study by Basheer *et al.* (2020). Meanwhile, in a study conducted in Saudi Arabia, the majority (62.3%) of the population had normal body weight. Indeed, in the current study, among the participants who used multivitamins, only a small group (12 %) were underweight, which is consistent with the results reported by Algaed *et al.* (2019). Additionally, among those who consumed multivitamins, more than two-fifths (43.6%) had normal body weight, which was less than that reported by Basheer *et al.* (2020) and Algaed *et al.* (2019), where the majority of participants with normal body weight

consumed multivitamins. The current study observed that the majority of the participants (67.8%) exercised, and those who exercised and used multivitamins (72.7%) were much higher. A study had reported that physically active participants consume multivitamins at higher rates (Basheer *et al.*, 2020).

The study revealed a high prevalence of multivitamin use among non-smokers. This could be due to the reason that the majority of the study population were females and non-acceptance of smoking in Omani culture. Furthermore, a study had reported that multivitamin users are more interested in improving their overall health by maintaining healthy habits (Basheer *et al.*, 2020). A significant association was observed between knowledge scores and socio-demographic variables such as gender, educational level, physical activity, and multivitamin consumption of the participants. The knowledge score of female participants (6.30 ± 2.56) was higher than that of male participants (4.12 ± 2.50). This could be primarily due to the fact that multivitamin usage is more prevalent among female participants, and secondly because of the belief that multivitamin use can be beneficial in the prevention and treatment of various ailments. These results are similar to study done by Basheer *et al.*, (2020). It is noteworthy that in the present study, the participants who used multi vitamins (34.8%) exhibited higher knowledge than those who did not use multivitamins. This could be attributed to the fact that they might have a clear understanding of use of multivitamins which was acquired through various information sources.

Most of the participants were aware of multivitamins and their usage mainly from media/internet sources, followed by healthcare professionals. This finding is very alarming considering the authenticity of information available from media/Internet sources. The current study results showed that the majority of the participants (70.1%) had poor understanding of the indication of multivitamins in preventing chronic diseases. This could be due to the lack of in-depth knowledge regarding the indications for multivitamins among the participants. The results were in consistent with the results observed with study done by Basheer et al., (2020)

Nearly half of the study population had a correct understanding of the role of multivitamins in promoting brain function and boosting immunity. This could be because of the general belief that multivitamin products improve overall health. However, the study done by Rosalia et al.. (2017) reported that awareness was high (74.8%) among the participants. Indeed, nearly a quarter of the study participants (24.6%) were aware that multivitamins are not completely safe for consumption, while awareness was higher (53.5%) compared to the study by Rosalia et al., (2017), The low awareness could be due to the false perception of the participants that most multivitamins originating from natural sources were safe.

Moreover, the respondents (35.6%) believed that multivitamin can cause side effects, while compared to the studies done Qidwai et al. (2012) and (Basheer et al. 2020) the awareness was little higher (42%) and (46.8 %,) respectively. A study conducted by Alsofyani et al. (2018) demonstrated that multivitamin supplements are associated with side effects. The majority of the study participants (76.2%) believed that excessive use of multivitamins was harmful, and the results were in agreement with the study conducted by Algaeed et al. (2019). Most study participants (89.8%) acknowledged that the blood test is a method of identifying vitamin deficiency. The awareness was higher in comparison to the study by Alsofyani et al. (2018), which was about (54.8 %). Nearly two-quarters of the study participants (38.2%) were of the view that taking multivitamins did not reduce the need for daily food intake. In contrast, a study by Alsofyani et al. (2018) reported that the majority of participants (83.7%) believed that multivitamins did not reduce the need for daily food intake. More than half of the study participants (58,4%) acknowledged that multivitamin supplements could be consumed with or without medical advice.

This is in contrast with the observations of this study. Only one-third (35.8%) of the participants agreed with this aspect. The majority of participants (64.4 %) acknowledged that vitamin supplements are vital for body strength and health. The findings were similar to studies done by (Alsofyani et al., (2018), Rosalia at et., (2017).

The current study showed that over a third of the participants (37.5 %) agreed that multivitamin use can assist in treatment and provide a speedy recovery from diseases, while study done by Algaeed et al. (2019) reported that majority (74.8%) participants agreed to this statement. Interestingly, over half (56.1%) of the participants in the current study were ready to recommend multivitamins to other people for use in their daily lives. In addition, the study done by Rosalia et al., (2017) reported that the majority of participants (61.3%) would recommend multivitamins to others.

Limitations of the study

The study was conducted in a single Wilayat; hence, its findings cannot be extrapolated to the entire county. Similar to the self-administered questionnaire surveys, a response bias may be possible. In addition, the study population was predominantly female, which could have skewed our findings.

CONCLUSION

The prevalence of multivitamin use was low among the young Omani population of Ibri wilayat. The current study highlights a lack of awareness regarding many aspects of multivitamin use. Even though awareness was high among the female population, multivitamin users, and participants with basic education, their knowledge about safety and correct indication of multivitamins was poor. The study demonstrated that the perception of the study population on the use of multivitamins was significantly associated with socio-demographic variables, such as gender, physical activity, and multivitamin consumption. Female participants and multivitamin users showed a more positive attitude towards multivitamin use. The study participants mainly used media/internet sources to obtain information about multivitamins. The study recommends conducting awareness campaigns for the public regarding the correct use of multivitamins through media/health care professionals, as they are more accessible to the public.

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