Nutritional Awareness and Weight Status of Nursing College Students during COVID 19 Lockdown

K. Silambu Selvi[1*], C. Kanniammal[2], B. Jayabharathi[2] and E. Lakshmi[1]

[1]Department of Clinical Nutrition, SRM Medical College Hospital and Research Centre, SRMIST
Kattankulathur, Chengalpattu district, India.
[2]SRM College of Nursing, SRMIST, Kattankulathur, Chengalpattu district, India.

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final
manuscript.

Original Research Article

ABSTRACT

Aim: The present study aim was to assess the BMI status and level of nutrition knowledge among nursing college students during covid19 lockdown
Methods: This cross sectional survey was carried out during covid19 lockdown period in Tamil Nadu among 247 nursing college students .The tool used in the data collection comprised of a Google link form structured questionnaire with two sections. Section an included height, weight, socio-demographic variables and Section B elicited 45 Nutrition knowledge questions with 3 sub sections. Data were tabulated and analyzed statistically.
Results: The nutrition knowledge level results showed that majority of 54.8% had moderate knowledge, 35.7% had adequate knowledge and only 9.6% of students had inadequate knowledge. Body mass index (BMI) status revealed that 58.5% of the students were in obese II stage,36% were in obese I stage, 3.7% were overweight, 1.1% were normal and 0.7% were found to be under weight .No significant association was found between level of nutritional knowledge and body mass

_____

Corresponding author: E-mail: silambuk1@srmist.edu.in;

index at 5% level (p=0.079). High significant association was found between "programme (p = 0.000), year of study (p = 0.000) and the level of nutritional knowledge at 1% level. There was significant association between Age (p = 0.020) Family income (p = 0.021) and the level of nutritional knowledge at 5% level.

Conclusion: Students had moderate level of nutritional knowledge and majority of them were found to be Obese. No significant association and correlation was found between level of nutritional knowledge and body mass index. Transformation of nutritional knowledge into practice and creating awareness about impact of obesity, healthy life style and dietary habits would enhance their knowledge and create positive attitude towards health challenges

1. INTRODUCTION

Health is the prerequisite of all population especially the students, the growing potential. Young adolescent girls are considered to be the most crucial segment of population .They need special attention due to the turbulence of adolescence experienced in multiple stages of development [1]. The transition from adolescence may lead to the development or the consolidation of unhealthy habits. The preferment of healthy habits in this group of population should be considered in a public health prospective [2]. Due to unhealthy dietary habits majority of students are not able to meet their recommended standards of nutrient requirements [1]. Nutrition knowledge help to inculcate healthy dietary habits and ensures that nutritional requirements are met during each stage of lifecycle [3]. Eating behaviors creates direct impact and long standing effects on health status of children [4]. Weight gain is one among the leading global health problems [5]. Anthropometric indices indicate cumulative effect of quality and quantity of food intake as well as other health factors. Body mass index is a valuable anthropometric index calculated with weight and height and is commonly used to find the weight status of an individual. After the age of twenty ideal body weight should not increase by more than two or three kilograms to maintain optimal health. A desirable weight should not be more than the BMI level of 18.5 to 25 kg/m². BMI act as an indicator and helps in planning interventions to help eliminate many preventable diseases [6]. Research studies states that lack of nutritional knowledge about healthy eating practices and physical inactivity among children may result in increased number of obesity status [7]. Good Nutritional knowledge may influence the eating pattern and boost the nutritional status and leads to change in the attitude towards wrong practices of food consumption pattern and it also to reduce adolescent malnutrition [8]. The

Novel Corona Virus (Covid-19) which has symptoms very similar to other viral respiratory infections, has spread its circle to different regions and finally expanded its routes to India. This pandemic brought several individual and collective protection measures such as social distancing and lockdown to withhold the expansion of its transmission, Unhealthy dietary practices are the foremost cause of morbidity. Dedicated action on nutrition will help to reduce different forms of malnutrition which are likely to rise as a result of the pandemic's effect on food environments [9]. The Dietary Guidelines of FAO as of 27 March 2020 emphasis the need to include different variety of foods within each food group and across all the food groups with special mention on fruits and vegetables, nuts, whole grains and healthy fats. Both good nutrition and proper hydration are vivacious. People who consume a well-balanced diet have healthy immune systems and are at less risk of chronic illnesses and infectious diseases. Adolescents overweight and obesity have emerged as a major public health threat [10]. Covid-19 case studies also concluded that higher BMI increases the risks of intensive care unit admission, invasive mechanical ventilation, hospitalization and death [11]. With so many people becoming affected with the coronavirus, poor dietary practices are leading to pre-existing conditions that make them more vulnerable [12]. Nutritional knowledge indirectly determines the nutritional status of an individual when good dietary practices are construed into persistent practice in life. During the lock down period very little was known about the relationship between nutritional awareness and dietary practice during Covid 19 by adolescents. Good nutrition knowledge helps in recognizing nutritional facts, good dietary behaviors and practices [13-15]. Hence the objective of this study is to assess the weight status and level of nutrition knowledge among nursing college students using a well-validated tool.

2. MATERIALS AND METHODS

A descriptive, quantitative research study was conducted among 247 female nursing students during the lock down period of pandemic between May and June 2021. Permission was obtained from the Dean, SRM College of nursing, verbal explanation about the purpose of this study was communicated to the subjects through the google platform and consent was obtained before starting data collection .By purposive sampling technique students in the age group of 17-23 years were recruited. The study variable included forty five questions to assess the level of nutritional knowledge, the demographic variables included age, religion, programme of the study, year of the study, father's occupation, family monthly income and residency. The tool used in the data collection comprised of a google link form structured questionnaire with two sections. Section an included height, weight and Socio-demographic variables and Section B elicited nutrition knowledge questions with 3 sub sections. A) Basic nutrition knowledge b) Knowledge about diet therapy for fever and Infection c) Knowledge about therapeutic nutrition. Every correct answer was scored as 1 and wrong answer as 0. Obtained score was converted into percentage and then categorized as adequate, moderate and inadequate. A higher score reflected adequate knowledge. Self-reported weight and height was used to find the BMI. Body mass index was calculated using the formula weight in kilograms divided by height in meters square (kg/m^2). Weight was categorized according to World health organization Asian BMI classification: BMI ≤ 18.5 kg/m^2 as underweight, between 18.5 and 22.9 kg/m^2 as normal weight, between 23 and 24.9 kg/m^2 as overweight and BMI between 25 and 29.9 kg/m^2 as obese I , and BMI ≥ 30 kg/m^2 as obese II [16]. All collected data were tabulated and analyzed statistically.

3. RESULTS

Table-1 and Fig. 1 below indicates that majority of 58.5% samples were in obese II stage, 36.0% were in obese I stage,3.7% were overweight ,1.1% had normal weight and 0.7% were under weight.

Table 1. Level of body mass index

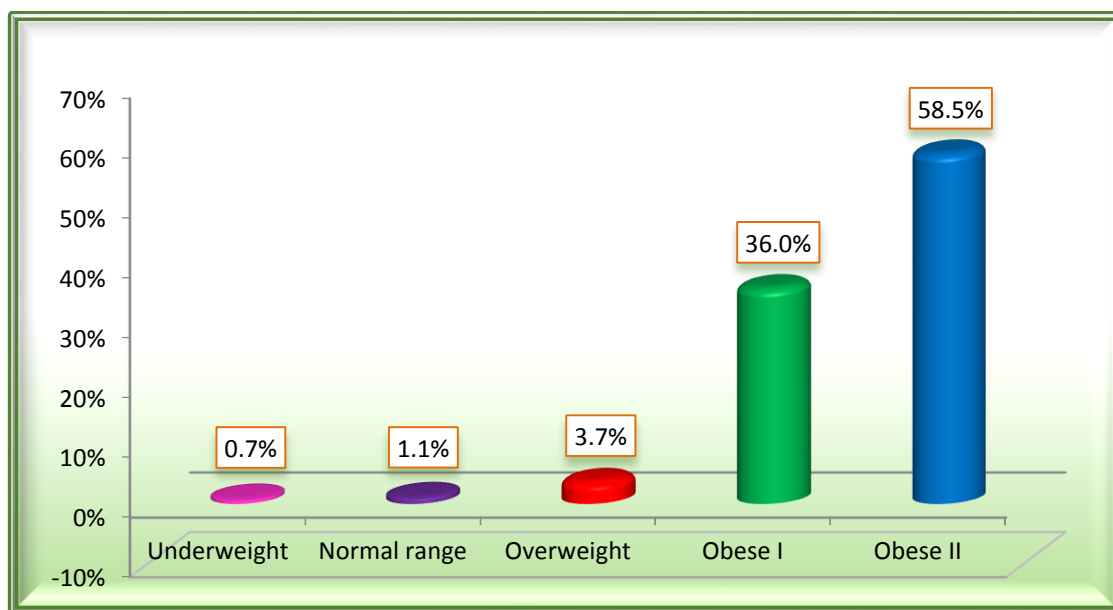| S. No.	Level of BMI	No. of respondents	Percentage
1	Underweight	2	0.7%
2	Normal range	3	1.1%
3	Overweight	10	3.7%
4	Obese I	98	36.0%
5	Obese II	159	58.5%

Fig. 1. Level of body mass index

Table 2 and Fig. 2 depicts the results on Overall nutrition knowledge level of the subjects. 54.8% samples had moderately adequate knowledge, 35.7% had adequate knowledge and 9.6% had inadequate nutrition knowledge level.

Table 3 shows that majority of 47.4 % samples had adequate nutrition knowledge about basic nutrition, 37.9% had moderately adequate knowledge and 14.7% had inadequate basic nutrition knowledge. Results on therapeutic nutritional knowledge showed that 49.6% samples had moderately adequate awareness, 36.0 % had adequate awareness and 14.3% had inadequate awareness. Results on diet therapy for fever and infection showed that 44.1% subjects had moderately adequate knowledge, 38.2 % had adequate knowledge and 17.6% had inadequate knowledge. Majority of them (47.4%) had adequate Basic nutrition knowledge awareness compared to other two category.

Table 2. Overall Nutritional Knowledge level among students

S. No.	Level of Nutrition Knowledge	No. of respondents	Percentage
1	Inadequate knowledge	26	9.6%
2	Moderately adequate knowledge	149	54.8%
3	Adequate knowledge	97	35.7%

Table 3. Nutrition knowledge level based on sub-sections among students

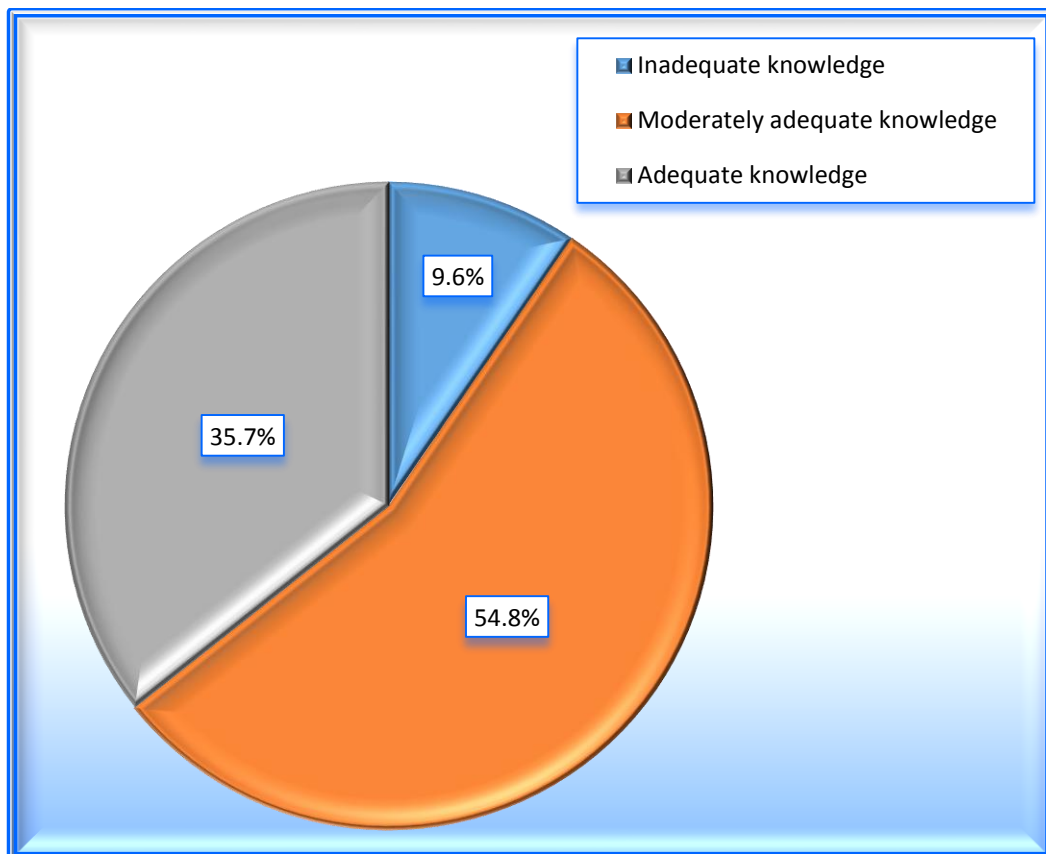| S.no	Knowledge	Level of Nutrition Knowledge					
		No	%	No	%	No	%
1	Basic Nutrition	40	14.7	103	37.9	129	47.4
2	Therapeutic nutrition	39	14.3	135	49.6	98	36.0
3	Diet therapy - fever and infection	48	17.6	120	44.1	104	38.2

Fig. 2. Level of overall nutritional knowledge

Table 4. Association between the overall level of nutritional knowledge and level of body mass index

S. No.	Level of BMI	Level of Nutrition Knowledge			Chi Square Value	DF	P value
		Inadequate knowledge	Moderately adequate knowledge	Adequate knowledge			
1	Underweight	0	0	2	14.096	8	0.079
2	Normal range	0	3	0			
3	Overweight	0	8	2			
4	Obese I	5	58	35			
5	Obese II	21	80	58			

* -Significant at 5% level * *-Significant at 1% level

Table 4 reveals that the obtained p value=0.079 was not significant at 5% level so there was no significant association between "level of Body mass index" and the "level of Nutritional knowledge".

Table 5 revealed that there was significant association at 5% level among age 15.08 (< 0.05), and family income 21.047 (< 0.0) and the level of nutritional knowledge. The Programme of study 29.36(< 0.01) and year of study 24.41(< 0.01) also had significant association at 1% level with nutritional knowledge.

4. DISCUSSIONS

Lifestyle choices such as less physical activity and consumption of low nutritious put the college students at risk for becoming overweight [17]. The results of this present study show that majority of students were found to be obese and majority of them were found to have moderately adequate nutrition knowledge. No significant association and correlation was found between BMI and level of nutrition knowledge. Sedentary behavior due to covid lockdown and online classes may be cause of obesity among students. The period from high school into the initial year of college is significant for weight gain and factors such as behavior and environment deserve concentration [18-19]. The findings of the study is in consistent with. Brein O. et al. [20] Ireland study which analyzed the relationship between knowledge and body mass index and concluded that though nutrition knowledge level was high among the sample ,no significant correlation was found between levels of nutrition knowledge and body mass index; The study recommended that knowledge deficit may not be the major factor preventing overweight individuals from adopting a healthy dietary habits but questions the utilization of educational approaches to dietary behavior change. Highest score for general nutrition knowledge was observed among obese students compared to underweight, normal, and overweight students [21]. Arnaud C et al., 2008 study acknowledged that though overweight and obese individuals have good nutrition knowledge, but do not always make use of it in terms of making healthy food choices [22]. Nutrition knowledge is influenced by a range of factors such as sex, age, socio-economic status and educational level. Higher socio-economic status with less physical activity and more sophisticated life are the major contributing factors for the escalation of obese population in India [23] Age was considered as an important demographic factor while assessing nutrition knowledge. Studies say there is no significant difference between knowledge and attitude among overweight and normal weight women [24]. Parmenter, K et al. [25] carried .out a cross-sectional survey in England among 1040 adult population to find the relation between nutrition knowledge with dietary recommendations, nutrient sources, food choices and diet–disease relation. A significant difference was observed in knowledge among socio-demographic groups, female had good knowledge than males, and the level of knowledge decreased with standard of education and socio-economic status level. Hendrie et al. [26] also conducted a similar study among 201 people, between 18 years and above , and observed that there was lack of nutrition awareness and variation among demographic variables in nutrition knowledge levels. Nutrition knowledge increased with age. In majority, knowledge levels varied with educational status. University qualified students had good nutrition knowledge than high school individuals. Spronk, I et al. [27] observed the relation among nutrition knowledge and dietary pattern by reviewing twenty-nine studies and concluded that nineteen studies had significant positive relationship between level of nutrition knowledge and dietary

Table 5. Association between the demographic variables and the level of nutritional knowledge

S. no.	Demographic Variable	Class	Level of Nutrition Knowledge			Chi Square Value	DF	P value
			Inadequate	Moderately adequate	Adequate			
1	Age in years	17-18years	6	49	29	15.086	6	0.020 *
		19-20 years	11	80	40			
		21-22 years	5	15	22			
		23 years	4	5	6			
2	Religion	Hindu	23	116	68	5.669	4	0.225
		Muslim	0	3	5			
		Christian	3	30	24			
3	Programme of the study	B.Sc.	18	123	87	29.364	6	0.000 **
		M.Sc.	5	1	4			
		P.B.B.Sc.	0	2	2			
		DGNM	3	23	4			
4	Year of the study	I	5	71	41	24.411	6	0.000 **
		II	7	20	14			
		III	7	45	16			
		IV	7	13	26			
5	Fathers occupation	Unemployed	3	29	9	17.563	12	0.130
		Unskilled workers	1	8	4			
		Semi-skilled workers	0	22	10			
		Skilled worker	4	16	17			
		Clerical, Shop owner, Farmer	7	41	30			
		Semi professional	1	9	4			
		Professional	10	24	23			
6	Family monthly income (in Rs.)	1590-4726	6	29	14	21.047	10	0.021 *
		4727-7877	3	21	10			
		7878-11816	2	30	23			
		11817-15753	10	40	16			
		15754-31506	1	22	19			
		> 31507	4	7	15			
7	Residency	Urban	9	58	39	4.648	4	0.325
		Rural	14	69	36			
		Semi urban	3	22	22			
8	Diet type	Vegetarian	4	20	9	1.232	2	0.540
		Non Vegetarian	22	129	88			
9	Weight gain recently	Yes	12	72	58	3.521	2	0.172
		No	14	77	39			

*-Significant at 5% level * *-Significant at 1% level*

consumption pattern. Awareness about the impact of poor nourishment on health will sensitize the individuals to follow balanced diet and maintain proper weight. Nutritional knowledge is important for promoting good eating habits, and to prevent overweight and obesity [28]. Sedentary behavior due to covid lockdown and online classes may be cause of obesity among students. More focus on

transforming nutrition knowledge into practice is the need [29].

5. CONCLUSION

Students had moderate level of nutritional knowledge and majority of them were found to be Obese. They had adequate knowledge on basic nutrition but they need more awareness about

therapeutic nutrition, an essential need in this pandemic situation. No significant association was found between level of Nutritional knowledge and Body Mass Index.

CONSENT AND ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s). Informed consent was obtained from all the participants.

ACKNOWLEDGEMENTS

The authors are thankful to all the students for their participation, cooperation and support.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Marjan Manouchehri Naeeni, Sakineh Jafari, Maryam Fouladgar, Kamal Heidari, Ziba Farajzadegan, Maryam Fakhri, Parvaneh Karami, Razieh Omidi, Int J Prev Med. 2014;5(Suppl 2):S171–S178.
2. Gallè F, Sabella EA. Da Molin,G. et al. A cross-sectional study investigating lifestyle and weight perception of undergraduate students in southern Italy. BMC Public Health. 2019;19:1316 .
3. Worsley A. Nutrition knowledge and food consumption: can nutrition knowledge change food behaviour? Asia Pac J Clin Nutr. 2002;11 Suppl 3:S579-85.
4. Story M, Neumark-Sztainer D, French S. Individual and environmental influences on adolescent eating behaviors. J Am Diet Assoc. 2002,102(3 Suppl):S40–51.
5. Paul de Vos, Christoph Hanck, Marjolein Neisingh, Dennis Prak, Henk Groen, Marijke M. Faas,Weight gain in freshman college students and perceived health,Preventive Medicine. 2015,Report 2:229-234.
6. Md. Sadekur Rahman, Himangshu Karmaker, Md. Abul Basar, Md. Reazul Karim, Md. Masud Rana, Asma Mamun, Farhana Hasan, Md. Ismail Hossain, Md. Kamruzzaman, Md. Abdul Wadood & Md. Golam Hossain Body Mass Index of University Students and Gender Differential: Survey in Rajshahi University, Bangladesh. South Asian Anthropologist. 2016;16(1): 27-33 .
7. Gordon K, Mann G, Cafer A, Meadows P, Mitchell S, Knight K. P12 Health Perceptions of Children in the Mississippi Delta. J Nutr Educ Behav. 2019;51:S37-S38 .
8. Ritu Priya,Mukul Sinha,Nutritional knowledge and nutritional status amongst university students IP Journal of Nutrition, Metabolism and Health Science. 2020;3(1):22-25.
9. Food Environments in the COVID-19 Pandemic. Impacts and positive policy actions to deliver sustainable healthy diets for all, UNSCN Secretariat; 2020.
10. Güngör, Neslihan Koyuncuoğlu. "Overweight and obesity in children and adolescents." Journal of clinical research in pediatric endocrinology. 2014;6(3):129-43.
11. Kompaniyets L, Goodman AB, Belay B, Freedman DS, Sucosky MS, Lange SJ, Gundlapalli AV, Boehmer TK, Blanck HM. Body Mass Index and Risk for COVID-19-Related Hospitalization, Intensive Care Unit Admission, Invasive Mechanical Ventilation, and Death - United States, March-December 2020. MMWR Morb Mortal Wkly Rep. 2021;70(10):355-361.
12. Nutrition amid the COVID-19 pandemic: a multi-level framework for action Farah Naja, Rena Hamadeh.Eur J Clin Nutr. 2020;20 :1–5.
13. Mill LMS, Er, DL. Cassady.The effects of nutrition knowledge on food label use. A review of the literatureAppetite. 2015,92,207-216.
14. Drichoutis AC, Lazaridis P, Nayga RM Jr. Consumers use of nutritional labels: a review of research studies and issues. Acad. Mark. Sci. Rev. 2006;9:1–22.
15. Kolodinsky J , Harvey-Berino JR, Berlin L, Johnson RK, Reynolds TW. Knowledge of current dietary guidelines and food choice by college students: better eaters have higher knowledge of dietary guidance. J. Am. Diet Assoc. 2007;107(8):1409-1413.
16. Sangeeta Girdhar, Sarit Sharma, Anurag Chaudhary, Priya Bansal, Mahesh Satija An Epidemiological Study of Overweight and Obesity Among Women in an Urban Area of North India, Indian Journal of Community Medicine. 2016;41(2):154-157.

17. Lowry R, Galuska D, Fulton J, Wechsler H, Kann L, Collins J. Physical Activity, Food Choice, and Weight Management Goals and Practices Among U.S. College Students. American Journal of Preventive Medicine. 2000;18(1):18-27.

18. Edmonds M, Ferreira K, Nikiforuk E, Finnie A, Leavey S, Duncan A, Simpson J. Body Weight and Percent Body Fat Increase During the Transition From High School to University in Females. Journal of the American Dietetic Association. 2008;1033-1036.

19. Mihalopoulos N, Auinger P, Klein J. The Freshmen Fifteen: Is It Real. Journal of American College Health. 2008;56 (5):531-533

20. Brien GO, Davies M. Nutrition knowledge and body mass index, Health Education Research. 2007;22(4):571–575.

21. 21.Labban Louay, Nutritional knowledge assessment of syrian university students. 2015;42(2): 71-77.

22. Arnaud C, Faeh D, Paccaud F, Cornuz J. Consequences of Smoking for Body Weight, Body Fat Distribution, and Insulin Resistance. Am J Clin Nutr. 2008;87(4):801–9 .

23. Premlal KS, Balaji Arumugam, Saranya Nagalingam. Prevalence of Overweight and Obesity Among College Going Students at Kancheepuram Town, Tamil Nadu. International Journal of Preventive and Public Health Sciences. 2016;1(6):15-19.

24. Ali Barzegari, Mohsen Ebrahimi, Mohammad Azizi and Kazem Ranjbar A Study of Nutrition Knowledge, Attitudes and Food Habits of College Students. World Applied Sciences Journal. 2011;15 (7):1012-1017.

25. Parmenter K, Waller J, Wardle J. Demographic variation in nutrition knowledge in England. Health Educ Res. 2000;15(2):163-74.

26. Hendrie GA, Coveney J, Cox D. Exploring nutrition knowledge and the demographic variation in knowledge levels in an Australian community sample. Public Health Nutr. 2008,11(12):1365-71.

27. Spronk I, Kullen C, Burdon C, O'Connor H. Relationship between nutrition knowledge and dietary intake. Br J Nutr. 2014;111(10):1713-26.

28. Kruger HS, Venter CS, Vorster HH, Margetts BM. Physical inactivity is the major determinant of obesity in black women in the North West Province, South Africa: the THUSA study. Transition and Health during Urbanisation of South Africa. Nutrition. 2002;18(5):422-7.

29. Pandit-Agrawal D, Khadilkar A, Chiplonkar S, Khadilkar V. Knowledge of nutrition and physical activity in apparently healthy Indian adults. Public Health Nutr. 2018;21(9):1743-1752.

Peer-review history:
The peer review history for this paper can be accessed here:
https://www.sdiarticle4.com/review-history/72993