International Journal of Scientific Engineering and Applied Science (IJSEAS) – Volume-7, Issue-6, June 2021
ISSN: 2395-3470
www.ijseas.com

Study the relationship between Nutritional status and Non Communicable Diseases (NCD)

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Abstract

Introduction: Human body needs a proper nutrition through well balanced diet to fulfill body requirements and to maintain basic body physiology. Improper nutrition leads to the consumption of excess calorie (over-nutrition) or insufficient supply of one or more essential nutrients (under-nutrition). Over-nutrition is a threat that increases body weight and causes several non-communicable diseases. Non communicable diseases (NCDs), also known as chronic diseases, tend to be of long duration and are the result of a combination of genetic, physiological, environmental and behavioral factors.

Objectives: To identify the relationship between nutritional status and Non Communicable Diseases

Methodology: This study used the data from the training programme of dispensers at the National Institute of Traditional Medicine(NITM). This is a cross sectional study. Socio-economic information were collected from survey participants through self administered questionnaire, including age, gender, area of residence, marital status, dietary habits and education. Nutritional status of the study participants were assessed by conventional methods, BMI Anthropometric data ,Weight and height of respondents were measured using scale. Body mass index (BMI). SPSS (version 16) was used for data entry and analysis. Association between variables was determined using chi-square.

Result: According to the socio demographic characteristics most of them were age group in 31-40 year (60%)s,living in urban area(73.3%),Female(76.3%),married(76.7%),100% in Sinhales, Buddhist and having employment, monthly income Rs.30000-60000(66,7%). Nutritional status in the study group most of them were normal weight(53.3%),Obese I (30%),Under weight(10%).,Obese II and ,Obese II(3.3%). Most of them were non vegetarian(90%),all of them had main tree meals, getting additional meal(50%)saturated fat used to food preparation (56.7%),daily salt intake below 5g(56.7%),not consuming fruit. According to the non communicable disease most of them have Joint diseases (13.3%).Gastritis(6.7%) Hyperlipidemia ,Diabetes Mellitus in 3.3%. Systolic Blood Pressure was significantly associated with body mass index, food pattern, Types of fat used to food preperation and daily junk food intake.Non communicable diseases were significantly associated with daily salt intake,daily fruit intake,daily junk food intake and addiction Prevalence of Non communicable diseases was significantly associated with addiction

Conclusion: In our study Systolic Blood Pressure was significantly associated with body mass index(p <0.05). As well as Obese I (30%),Underweight(10%).,Obese II and ,Obese II(3.3%).It is essential to enhanced health promotion and education should be targeted at younger people and employees in order to prevent non communicable diseases in the later years

Key words: Non communicable diseases, Nutrition, Body Mass Index

Introduction

The principles of nutrition is the practical application of dietetics. It includes the planning of meal for both the normal and sick individuals. A set of satisfactory dietetic code has been identified and prescribed by Ayurveda. According to the Charaka Acharya the products of food play important role in development of body and mind as well as disease caused by food. Addition to that happiness and unhappiness in the body and mind due to(intake) wholesome and unwholesome diet [1]Human body needs a proper nutrition through well balanced diet to fulfill body requirements and to maintain basic body physiology. Improper nutrition leads to the consumption of excess calorie (over-nutrition) or insufficient supply of one or more essential nutrients (under-nutrition). Over-nutrition is a threat that increases body weight and causes several non-communicable diseases.[2]Nutritional status are important determinants of NCD. Poor dietary quality, in particular high salt intake, high saturated and trans-fatty acid intake, and low fruit and vegetable consumption coupled with sedentary lifestyle and stressful environment are some risk factors of NCD development . The role of diet in the etiology of most NCDs is extremely important and considered a modifiable risk factor for NCDs [3]Nutritional status of the study participants were assessed by conventional methods, BMI(body mass index)and MUAC(mid-upper arm circumference)[2] To assess the Status of Nutrition is to map out the magnitude and geographical distribution of malnutrition as a public health problem. Nutrition and its assessment can be done by direct and indirect methods.The direct method includes clinical signs, nutritional anthropometry, and biochemical tests. Indirectly, it can be assessed by the use of vital statistics, mortality and morbidity rates and studying the ecological factors. Field investigations (surveys) also form a direct measure of nutritional status.[4]According to the WHO fact sheet Non communicable diseases (NCDs), also known as chronic diseases, tend to be of long duration and are the result of a combination of genetic, physiological, environmental and behavioral factors.

The main types of NCD are cardiovascular diseases (such as heart attacks and stroke), cancers, chronic respiratory diseases (such as chronic obstructive pulmonary disease and asthma) and diabetes. Noncommunicable diseases (NCDs) kill 41 million people each year, equivalent to 71% of all deaths globally. Each year, more than 15 million people die from a NCD between the ages of 30 and 69 years; 85% of these "premature" deaths occur in low- and middle-income countries.77% of all NCD deaths are in low- and middle-income countries. Cardiovascular diseases account for most NCD deaths, or 17.9 million people annually, followed by cancers (9.3 million), respiratory diseases (4.1 million), and diabetes (1.5 million).These four groups of

diseases account for over 80% of all premature NCD deaths. Tobacco use, physical inactivity, the harmful use of alcohol and unhealthy diets all increase the risk of dying from a NCD.Detection, screening and treatment of NCDs, as well as palliative care, are key components of the response to NCDs.[5]Non-communicable diseases (NCD) related to excessive energy, fat, salt and sugar consumption and reduced levels of physical activity are increasingly prevalent, especially among urban populations. Diets are however extremely diverse due to various geographic, cultural, social and economic factors, making it more appropriate to define and study sub-national dietary patterns rather than a national average diet[6]In Sri Lanka NCDs (ischemic heart disease, diabetes, cerebrovascular disease, chronic kidney disease, asthma and chronic obstructive pulmonary disease) also rank among the top 10 causes of premature death. A higher proportion of men compared to women are dying due NCDs, prematurely. In 2015, 54% of male NCD deaths and 36% of female NCD deaths were below 70 years. Since 2015 number one leading cause of NCD deaths is ischemic heart disease. [7]In Sri lanka 73% not concumed sufficient fruit and vegetables as well as overweight 25% among mele and 34% among the female[8]

Objectives

1) To identify the relationship between nutritional status and Non Communicable Diseases
2) To identify the socio demographic characteristic among the participants

MethodologyThis study used the data from the training programme of dispensers at the NITM. All participants were included.. This is a cross sectional study. Socio-economic information were collected from survey participants through self administered questionneire, including age, gender, area of residence, marital status, dietary habits and education. Nutritional status of the study participants were assessed by conventional methods, BMI Anthropometric data ,Weight and height of respondents were measured using scale. Body mass index (BMI) was computed as weight (in kg) divided by the square of height (in meter). It was grading according to the Under weight (Below 18.5 Kg/m^2)Normal weight (18.5-24.99 Kg/m^2)Over weight(25-29.99 Kg/m^2)Obesity I(29-34.99 Kg/m^2), Obesity II(35-39.99 Kg/m^2)Extremely Obesity(Above 40 Kg/m^2)[9]. Systolic and diastolic blood pressure (BP) measurements were collected using a mercurial sphygmomanometer and stethoscope. SPSS (version 16) was used for data entry and analysis. Association between variables was determined using chi-square.

Result

According to the socio demographic characteristics most of them were age group in 31-40 year (60%), living in urban area(73.3%),Female(76.3%),married(76.7%),100% in Sinhalese, Buddhist and having employment, monthly income Rs.30000-60000(66,7%).

Table 1: Frequency distribution of socio demographic characteristics in the study group

Socio-demographic characteristics		Frequency	Percentage
Age group	20-30years	5	16.7%
	31-40years	18	60.0%
	41-50 years	6	20.0%
	51-60years	1	3.3%
Living Area	Urban	22	73.3%
	Suburban	6	20.0%
	Rural	2	6.7%
Gender	Male	7	23.3%
	Female	23	76.7%
Civil status	Married	23	76.7%
	Unmarried	7	23.3%
Employment	Government	30	100%
Ethnicity	Sinhala	30	100%
Religion	Buddhist	30	100%
Monthly Income	Below Rs 30000	10	33.3%
	Rs 30000-60000	20	66.7%

Table 2: Frequency distribution of Nutritional status in the study group

Body Mass Index	Frequency	Percent
1 Under weight	3	10.0
2 Normal weight	16	53.3
3 Obese I	9	30.0
4 Obese II	1	3.3
5 Obese III	1	3.3
Total	30	100.0

According to the Nutritional status in the study group most of them were normal weight(53.3%),Obese I (30%),Under weight(10%).,Obese II and ,Obese II(3.3%)

Table 3: Frequency distribution of Nutritional Habits in the study group

Nutritional Habits	Frequency	Percentage
Food patern		
Vegetarian	3	10%
Non Vegetarian	27	90.0%
Number of meals		
3-Main Number of meals	30	100%
Additional meals		
Yes	15	50%
No	15	50%
Types of fat used to foo preparation		
Saturated fat	17	56.7%
Both Saturated fat and unsaturated fat	13	43.3%
Daily salt intake		
Below 5g	17	56.7%
Above 5g	13	43.3%
Daily fruit intake		
Yes	12	40.0%
No	18	60.0%
Daily junk fruit intake		
Yes	3	10%
No	27	90%
Daily sugar intake		
Below 5 teaspoons	25	83.3%
6-9 teaspoons	5	16.7%
Daily artifial drink intake		
Yes	25	83.3%
No	5	16.7%

According to the above table most of them were non vegetatian(90%),all of them had main tree meals, getting additional meal(50%)saturated fat used to food preparation(56.7%),daily salt intake below 5g(56.7%),not consuming fruit

daily(60%),not taking junk fruit daily(90%),daily sugar intake below 5g (83,3%).daily artificial drink intake(83.3%)

Table 4 **Frequency distribution of Non communicable disease**

	Non communicable disease	Frequency	Percent
	Diabetes Mellitus	1	3.3
	Hyperlipidemia	1	3.3
	Joint diseases	4	13.3
	Gastritis	2	6.7
	Total	8	26.7
Not having NCD		22	73.3
Total		30	100.0

According to the non communicable desease most of them have Joint deseases(13.3%).Gastritis(6.7%) Hyperlipidemia ,Diabetes Mellitus in 3.3%

Result of Chi-square test

	Variable 1	Variable 2	*P* value
1.	Body Mass Index	Systolic Blood Pressure	0.051
2.	Food Pattern	Systolic Blood Pressure	0.026
3.	Types of fat used to food preparation	Systolic Blood Pressure	0.035
4.	Daily junk food intake	Systolic Blood Pressure	0.054
5.	Daily salt intake	Non communicable diseases	0.046
6.	Daily fruit intake	Non communicable diseases	0.046
7.	Daily junk food intake	Non communicable diseases	0.046
8.	Addiction	Non communicable diseases	0.046
	Addiction	Prevalence of Non communicable diseases	0.019

Significant level is $p<0.05$

Systolic Blood Pressure was significantly associated with body mass index, food pattern, Types of fat used to food preparation and daily junk food intake. Non communicable diseases were

significantly associated with daily salt intake, daily fruit intake, daily junk food intake and addiction Prevalence of Non communicable diseases was significantly associated with addiction

Discussion

In the present study according to the socio demographic characteristics most of them were age group in 31-40 year (60%),living in urban area(73.3%), Female (76.3%), married (76.7%),100% in Sinhales, Buddhist and having employment, monthly income Rs.30000-60000(66,7%).

Most of them were non vegetarian(90%),all of them had main tree meals, getting additional meal(50%)saturated fat used to food preparation(56.7%),daily salt intake below 5g(56.7%),not consuming fruit daily(60%),not taking junk fruit daily(90%),daily sugar intake below 5g (83,3%),daily artificial drink intake(83.3%)

F. A. Olatona,et al (2018) reflected that the mean age was 20.3 ± 3.5 years; 54.7% of them were female. More than one third (37.6%) had no consistent source of income or received less than $31.7 per month.

Less than one third (31.0%) ate three daily meals, only 2% consumed the recommended daily amount of fruits and vegetables. Almost half (44.0%) ate pastry snacks daily. Refined rice was the commonest cereal (28.2%)Twenty-nine (29.0%) and 6.2% of the population daily consumed carbonated soft drinks and alcohol, respectively[8]

Charles Apprey et al2019) said that prevalence of overweight, obesity and high blood pressure among the older adults was 30.9%, 11.2% and 75.2% respectively[9]. But in our study According to the Nutritional status in the study group most of them were normal weight(53.3%),Obese I (30%),Under weight(10%).,Obese II and ,Obese II(3.3%).As well as non communicable disease most of them have Joint diseases(13.3%).Gastritis(6.7%) Hyperlipidemia ,Diabetes Mellitus in 3.3%

Suthahar Ariaratnam et al.(2020) reveled that factors significantly associated with obesity among Malaysian were being female, hypertensive or diabetic[12]. In our study Systolic Blood Pressure was significantly associated with body mass index, food pattern, Types of fat used to food preparation and daily junk food intake.

Non communicable diseases were significantly associated with daily salt intake, daily fruit intake, daily junk food intake and addiction.

Marte Kjøllesda et al (2016) said that a high intake of fruits and vegetable was associated with lower odds of hypertriglyceridemia among men and women. It was also associated with cholesterol levels, negatively among women and positively among men.[13]

Our study reflected that Prevalence of Non communicable diseases was significantly associated with addiction.

Charles D Parry et al(2011) said that there is association in alcohol and non-communicable diseases, particularly cancer, cardiovascular disease, liver disease, pancreatitis and diabetes[14]

Conclusion

In our study Systolic Blood Pressure was significantly associated with body mass index, food pattern, Types of fat used to food preparation and daily junk food intake. Non communicable diseases were significantly associated with daily salt intake, daily fruit intake, daily junk food intake and addiction .Prevalence of Non communicable diseases was significantly associated with addiction. As well as Obese I (30%),Under weight(10%).,Obese II and ,Obese II(3.3%).It is essential to enhanced health promotion and education should be targeted at younger people and employees in order to prevent non communicable diseases in the later years.

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