IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Association of Junk food consumption and Fasting Blood Glucose level of Prediabetic Adolescents

[1]Rajapriya, K. and [2]Dr. Vijayanchali, S.S.

[1]Ph.D. Research Scholar, Department of Home Science, The Gandhigram Rural Institute-Deemed to be University, Gandhigram, Dindigul Dist., Tamil Nadu, India.

[2]Associate Professor& Head, Department of Home Science, The Gandhigram Rural Institute-Deemed to be University, Gandhigram, Dindigul Dist., Tamil Nadu, India

ABSTRACT

Diabetes mellitus poses a major public health problem worldwide and India ranks 2nd in the list. India currently represents 49% of the world's diabetes burden with an estimated 72 million cases in 2017, expected to double to 134 million by 2045. Around 58% of diabetic population are unaware of their disease. In India 24 million people have impaired glucose tolerance and is expected to increase to 41 million by 2045. Early identification of prediabetes helps in appropriate management including diet modification and healthy life style, thereby reducing the progression to diabetes and its complications. The study was designed to estimate the association of junk food consumption and fasting blood glucose level among Adolescents (10-12 Years) in Athoor Block of Dindigul District. A total of 289 adolescents aged 10-12 years were selected for the survey, using a Purposive sampling frame in two panchayat such as Gandhigram and Thopampatti. It is a part of research work. Around 93.3 % of the prediabetic Adolescents respondents' Fasting blood sugar level was 110 to 125 mg/dl and 6.7% of the respondents fasting blood glucose level was <110 mg /dl. Majority of the Adolescents respondents were consuming junk foods such as fried foods, sweets, chocolates, biscuits, packed foods, carbonated beverages, preserved juices, ice cream, parotta, baked foods, noodles and pizza, burger. There is a positive association between fasting blood glucose level of prediabetic adolescents and consumption of fried foods, chocolates, preserved juices, ice cream and pizza/burger and there is negative association between fasting blood glucose level of prediabetic adolescents and consumption of sweets, packed foods, parota, baked foods,carbonated beverages and noodles. Since, these food items contains added sugars and Tran's fats which is not good for health especially in the initial stages of life among adolescents. Hence this positive Dietary inputs has to be recommended by giving awareness among adolescents where they can be prevented from obesity and Non Communicable Disease like Diabetes Mellitus.

Key words: Diabetes mellitus, Prediabetic, Fasting Blood glucose, Impaired Fasting Glucose

INTRODUCTION

Diabetes mellitus poses a major public health problem worldwide and India ranks 2nd in the list. India currently represents 49% of the world's diabetes burden with an estimated 72 million cases in 2017, expected to double to 134 million by 2045. Around 58% of diabetic population are unaware of their disease. In India 24 million people have impaired glucose tolerance and is expected to increase to 41 million by 2045. Early identification of prediabetes helps in appropriate management including diet modification and healthy life style, thereby reducing the progression to diabetes and its complications (Aroor et al., 2019)[1].

Fried foods from restaurants and fast food consumption were positively associated with T2D. Data from the Nurses' Health Study/Health Professionals Follow-Up Study revealed a strong association between the frequency of fried food consumption and the risk of T2D with adjusted RRs (95% CIs) for individuals who consumed fried foods. Taken together, there seems to be strong evidence for a positive association between fried food consumption and risk of T2D (Gadiraju, 2015)[2].

Sugar-Sweetened Beverages (SSBs) are known to be significant sources of additional caloric intake, and given recent attention to their contribution in the development of chronic diseases. The consumption of SSBs in children is associated with adverse health outcomes. Most chronic diseases are associated with preventable risk factors, such as high blood pressure, high blood glucose or glucose intolerance, high lipid levels, sedentary life and physical inactivity, excessive weight and obesity. The occurrence of intermediate outcomes during childhood increases the risk of disease in adulthood (Paglia et al., 2019)[3].

High fructose corn syrup (HFCS), the most common added sweetener in processed foods and beverages, and some with sucrose or fruit juice concentrates. The HFCS that is commonly used in beverages contains 55% fructose and 45% glucose, while sucrose or table sugar consists of 50% fructose and 50% glucose (Gulati and Misra, 2014)[4].

Fast food has several inherent characteristics such as excessive portion size, with single large meals often approaching or exceeding individual daily energy requirements; palatability, emphasizing primordial taste preferences for added sugar, salt, and fat; high energy density and last, but not least, high glycaemic load. In addition, increased fast-food consumption was associated with higher insulin resistance (Asghari et al.,2015)[5].

A total of 100 samples were selected from indefinite diabetic population especially whoever staying more than 15days as an In-patient in Apollo Speciality Hospitals, Madurai. Among them 75 percent of the respondents were consuming maida once in a week before getting diabetic diet counselling from dietitians (Rajapriya &Vijayanchali, 2017)[6].

Much evidence indicates that eating habits and lifestyle during childhood and adolescence are risk factors for different nutritional and cardiovascular diseases in adulthood. Obesity is perhaps the most frequent chronic disease in children and adolescents, affecting each group of age, beginning with infancy. However, obesity is the most common nutritional disorder in children worldwide, its prevalence growing in both developed and developing countries, affecting all social and economic categories, both sexes, all ages and ethnic groups. Obesity among children and adolescents represents a serious public health problem, since it

is frequently associated with metabolic syndrome, type II diabetes mellitus, hypertension, dyslipidemias as well as more frequent sleep apnea and orthopedic diseases/ osteoporosis (Stoian, 2018)[7].

A child's dietary habits acquired early in childhood performance but also for long-term health. The health, physical growth, development and educational performance of schoolchildren depend largely on good nutrition. Dietary choices made by the children and their families' influence their health and may contribute towards both malnutrition and 'over nutrition' (Mukherjee and Chaturvedi, 2017)[8].

Based on the above background the objective of the study was to estimate the association of junk food consumption and fasting blood glucose level among Adolescents.

METHODOLOGY

The study was designed to estimate the association of junk food consumption and fasting blood glucose level among Adolescents (10-12 Years) in Athoor Block of Dindigul District. A total of 289 adolescents aged 10-12 years were selected for the survey, using a Purposive sampling frame in two panchayat such as Gandhigram and Thopampatti. The Samples were screened for diabetes, prediabetes through capillary Random Blood Glucose level and confirmed through fasting blood sugar and glucose tolerance test after informing the parents and caretakers and also got signature in the informed consent form. Fasting Blood glucose has been checked by Accu Sure Soul blood Glucose Monitor. The information regarding food consumption pattern were collected through pre tested interview schedule from the parents and care takers. Data was analysed by using SPSS 23 version.

RESULT AND DISCUSSION

Table 1

Association of Fried foods, Packed foods consumption and Fasting Blood Glucose level of Prediabetic Adolescents

Junk food	FBG(mg/dl)		Total (%)	Pearson's R
	Impaired Fasting Glucose Tolerance 110 -125 (%)	Normoglycemia <110 (%)		
Fried foods				0.161
Twice in a week	4(28.6)	-	4(26.7)	
Thrice in a week	10(71.4)	1(100.0)	11(73.3)	
Total	14 (93.3)	1 (6.7)	15(100.0)	
Packed foods				-0.102
Twice in a week	4(28.6)	-	4(26.7)	
Thrice in a week	1(7.1)	1(100.0)	2(13.3)	
No	9(64.3)	-	9(60.0)	
Total	14 (93.3)	1 (6.7)	15(100.0)	

Table 1 depicts the association of Fried foods, Packed foods consumption and Fasting Blood Glucose level of Prediabetic Adolescents. Around 93.3 % of the prediabetic Adolescents respondents' Fasting blood sugar level was 110 to 125 mg/dl and 6.7% of the respondents fasting blood glucose level was <110 mg /dl but they were confirmed as prediabetic through Oral Glucose Tolerance Test . Among them majority (71.4%) of the impaired fasting glucose tolerant respondents were consuming fried foods thrice a week and 28.6% of them were consuming fried foods twice in a week. Hundred percent of the normoglycemic respondents were consuming fried foods thrice a week. Totally 73.3% and 26.7% of the prediabetic respondents were consuming fried foods thrice a week and twice in a week respectively. There is a positive association between consumption of fried food and fasting blood glucose level of prediabetic adolescents.

Around 26.7% of the prediabetic respondents were consuming packed foods twice in a week and 13.3 % of the prediabetic respondents were consuming packed foods thrice in a week. Among them 28.6 % of the impaired fasting glucose tolerant respondents and 7.1 % of them were consuming packed foods thrice in a week. Hundred percent of the normoglycemic respondents were consuming packed foods thrice a week. There is a negative association between consumption of packed foods and fasting blood glucose level of prediabetic adolescents.

Table 2

Association of Sweets, Chocolates, Ice Cream consumption and Fasting Blood Glucose level of Prediabetic Adolescents

Junk food	FBG(mg/dl)		Total (%)	Pearson's R
	Impaired Fasting Glucose Tolerance 110 -125 (%)	Normoglycemia <110 (%)		
Sweets				-0.510
Once in a week	1(7.1)	1(100.0)	2(13.3)	
Twice in a week	6(42.9)	-	6(40.0)	
No	7(50.0)	-	7(46.7)	
Total	14 (93.3)	1 (6.7)	15(100.0)	
Chocolates				0.202
Daily	6(42.9)	-	6(40.0)	
Twice in a week	4(28.6)	-	4(26.7)	
Thrice in a week	1(7.1)	1(33.3)	2(13.3)	
No	3(21.4)	-	3(20.0)	
Total	14 (93.3)	1 (6.7)	15(100.0)	
Ice Cream				0.681
Once in a month	13(92.9)	-	13(86.7)	
Twice in a month	1(7.1)	1(100.0)	2(13.3)	
Total	14 (93.3)	1 (6.7)	15(100.0)	

Table 2 reveals the association of Sweets, Chocolates, Ice Cream consumption and Fasting Blood Glucose level of Prediabetic Adolescents. Around 40.0% of the prediabetic respondents were consuming sweets twice in a week and 13.3 % of the prediabetic respondents were consuming sweets once in a week. Among them 42.9 % of the impaired fasting glucose tolerant respondents were consuming sweets twice in a week and 7.1 % of them were consuming sweets once in a week. Hundred percent of the normoglycemic respondents were consuming sweets once in a week. There is a negative association between consumption of sweets and fasting blood glucose level of prediabetic adolescents.

Around 40.0% of the prediabetic respondents were consuming Chocolates daily, 26.7 % of the prediabetic respondents were consuming chocolates twice in a week and 13.3% of them were consuming chocolates thrice in a week. Among them 42.9 % of the impaired fasting glucose tolerant respondents were consuming chocolates daily, 28.6% of them were consuming twice in a week and 7.1 % of them were consuming chocolates thrice in a week. Hundred percent of the normoglycemic respondents were consuming chocolates thrice in a week. There is a positive association between consumption of chocolates and fasting blood glucose level of prediabetic adolescents.

Around 86.7% of the prediabetic respondents were consuming ice cream once in a month and 13.3% of them were consuming ice cream twice in a month. Among them 92.9 % of the impaired fasting glucose tolerant respondents were consuming ice cream once in a month and 7.1 % of them were consuming ice cream twice in a month. Hundred percent of the normoglycemic respondents were consuming ice cream twice in a month. There is a positive association between consumption of ice cream and fasting blood glucose level of prediabetic adolescents.

Table 3

Association of Carbonated Beverages, Preserved Juices consumption and Fasting Blood Glucose level of Prediabetic Adolescents

Junk food	FBG(mg/dl)		Total (%)	Pearson's R
	Impaired Fasting Glucose Tolerance 110 -125 (%)	Normoglycemia <110 (%)		
Carbonated Beverages				-0.155
Once in a week	3(21.4)	-	3(20.0)	
Thrice in a week	1 (7.1)	1(100.0)	2(13.3)	
No	10(71.4)	-	10(66.7)	
Total	14 (93.3)	1 (6.7)	15(100.0)	
Preserved Juices				0.218
Twice in a week	6(42.9)	-	6(40.0)	
No	8(57.1)	1(100.0)	9(60.0)	
Total	14 (93.3)	1 (6.7)	15(100.0)	

Table 3 indicates the association of Carbonated Beverages, Preserved Juices consumption and Fasting Blood Glucose level of Prediabetic Adolescents. Around 20.0% of the prediabetic respondents were consuming Carbonated Beverages once in a week and 13.3 % of the prediabetic respondents were consuming Carbonated Beverages thrice in a week. Among them 21.4 % of the impaired fasting glucose tolerant respondents were consuming Carbonated Beverages once in a week and 7.1 % of them were consuming Carbonated Beverages thrice in a week. Hundred percent of the normoglycemic respondents were consuming Carbonated Beverages thrice in a week. There is a negative association between consumption of Carbonated Beverages and fasting blood glucose level of prediabetic adolescents.

Around 40.0% of the prediabetic respondents were consuming Preserved Juices twice in a week. Among them 42.9 % of the impaired fasting glucose tolerant respondents were consuming Preserved Juices twice in a week. Hundred percent of the normoglycemic respondents were not consuming Preserved Juices. There is a positive association between consumption of Preserved Juices and fasting blood glucose level of prediabetic adolescents.

Table 4

Association of Baked foods, Biscuits, Piza/burger consumption and Fasting Blood Glucose level of Prediabetic Adolescents

Junk food	FBG(mg/dl)		Total (%)	Pearson's R
	Impaired Fasting Glucose Tolerance 110 -125 (%)	Normoglycemia <110 (%)		
Baked foods				-0.681
Once in a month	1(7.1)	1(100.0)	2(13.3)	
Twice in a month	13(92.9)	0(0.0)	13(86.7)	
Total	14 (93.3)	1 (6.7)	15(100.0)	
Piza/burger				0.218
Twice in a year	6(42.9)	-	6(40.0)	
No	8(57.1)	1(100.0)	9(60.0)	
Total	14 (93.3)	1 (6.7)	15(100.0)	

Table 4 shows the association of Baked foods, Piza/burger, Biscuits consumption and Fasting Blood Glucose level of Prediabetic Adolescents. Around 86.7% of the prediabetic respondents were consuming Baked foods once in a month and 13.3 % of the prediabetic respondents were consuming Baked foods once in a month. Among them 92.9 % of the impaired fasting glucose tolerant respondents were consuming Baked foods twice in a month and 7.1 % of them were consuming Baked foods once in a month. Hundred percent of the normoglycemic respondents were consuming Baked foods once in a month. There is a negative association between consumption of Baked foods and fasting blood glucose level of prediabetic adolescents.

Around 40.0% of the prediabetic respondents were consuming Piza/burger twice in a year. Among them 42.9 % of the impaired fasting glucose tolerant respondents were consuming Piza/burger twice in a year. Hundred percent of the normoglycemic respondents were not consuming Piza/burger.There is a positive association between consumption of Piza/burger and fasting blood glucose level of prediabetic adolescents.

Around 100% of the prediabetic respondents were consuming biscuits daily

Table 5

Association of Parotta, Noodles consumption and Fasting Blood Glucose level of Prediabetic Adolescents

Junk food	FBG(mg/dl)		Total (%)	Pearson's R
	Impaired Fasting Glucose Tolerance 110 -125 (%)	Normoglycemia <110 (%)		
Parotta				-0.378
Once in a month	4(28.6)	1(100.0)	5(33.3)	
No	10(71.4)	-	10(66.7)	
Total	14 (93.3)	1 (6.7)	15(100.0)	
Noodles				-0.019
Once in a week	6(42.9)	-	6(40.0)	
Once in a month	1(7.1)	1(100.0)	2(13.3)	
No	7(50.0)	-	7(46.7)	
Total	14 (93.3)	1 (6.7)	15(100.0)	

Table 5 specifies the association of Parotta, Noodles consumption and Fasting Blood Glucose level of Prediabetic Adolescents. Around 53.3% of the prediabetic respondents were consuming Parotta once in a month. Among them 28.6 % of the impaired fasting glucose tolerant respondents were consuming Parotta once in a month. Hundred percent of the normoglycemic respondents were consuming Parotta once in a month. There is a negative association between consumption of Parotta and fasting blood glucose level of prediabetic adolescents.

Around 40.0% of the prediabetic respondents were consuming noodles once in a week and 13.3% of the prediabetics were consuming noodles once in a month. Among them 42.9 % of the impaired fasting glucose tolerant respondents were consuming noodles once in a week and 7.1% of them were consuming noodles once in a month. Hundred percent of the normoglycemic respondents were consuming noodles once in a month. There is a negative association between consumption of noodles and fasting blood glucose level of prediabetic adolescents.

CONCLUSION

Majority of the Adolescents respondents were consuming junk foods such as fried foods, sweets, chocolates, biscuits, packed foods, carbonated beverages, preserved juices, ice cream, parotta, baked foods, noodles pizza and burger. There is a positive association between fasting blood glucose level of prediabetic adolescents and consumption of fried foods, chocolates, preserved juices, ice cream and pizza/burger and there is negative association between fasting blood glucose level of prediabetic adolescents and consumption of sweets, packed foods, parota, baked foods, carbonated beverages and noodles. Since, these food items contains added sugars and Tran's fats which is not good for health especially in the initial stages of life among adolescents. Unhealthy food habits promotes obesity, it leads diabetes mellitus and cardiovascular diseases. Hence this positive Dietary inputs has to be recommended by giving awareness

among adolescents where they can be prevented from obesity and Non Communicable Disease like Diabetes Mellitus.

REFERENCE

[1] Amitha Rao Aroor, Tharun C. Varghese , Santosh T. Soans(2019), Original Research Article Prevalence of prediabetes in children and its association with risk factors,*International Journal of Contemporary Pediatrics* Sep;6(5):1957-1963 http://www.ijpediatrics.com pISSN 2349-3283 | eISSN 2349-3291

[2]Taraka V. Gadiraju, Yash Patel, J. Michael Gaziano and Luc Djoussé(2015), Review Fried Food Consumption and Cardiovascular Health: A Review of Current Evidence, *Nutrients*, 7, 8424–8430; doi:10.3390/nu7105404 www.mdpi.com/journal/nutrients

[3] L. Paglia, S. Friuli, S. Colombo, M. Paglia (2019), The effect of added sugars on children's health outcomes: Obesity, Obstructive Sleep Apnea Syndrome (OSAS), Attention-Deficit/Hyperactivity Disorder (ADHD) and Chronic Diseases, *European Journal of Paediatric Dentistry vol*. 20/2-2019 DOI 10.23804/ejpd.2019.20.02.09

[4] Seema Gulati and Anoop Misra(2014), Sugar Intake, Obesity, and Diabetes in India
Nutrients. Dec; 6(12): 5955–5974. Published online 2014 Dec 22. doi: 10.3390/nu6125955

[5] Asghari G, Yuzbashian E, Mirmiran P, Mahmoodi B, Azizi F (2015) Fast Food Intake Increases the Incidence of Metabolic Syndrome in Children and Adolescents: Tehran Lipid and Glucose Study. PLoS ONE 10(10): e0139641. doi:10.1371/ journal.pone.0139641.mirmiran@endocrine.ac.ir

[6]Rajapriya,K., &Vijayanchali,S.S.(2017). Physical Activity, Life Style And Food Consumption Pattern of Type 2 Diabetes Mellitus. *International Journal of Current Research*, Vol. 9, Issue, 11, pp.60982-60985.

[7] Anca Pantea Stoian , Liliana F. Andronache , Razvan Hainarosie , Dan N. Paduraru , Cristinel D. Badiu , Andreea Arsene , Claudia Mehedintu , Georgiana Ditu , Silviu M. Pituru , Cristina Orlov , Mihaela Oros , Cornelia Nitipi.r (2018), Research Article Dietary habits and lifestyle in school-aged children from Bucharest, Romania. *Journal of Mind Medical Sciences*, 5(1): 85-92 doi: 10.22543/7674.51.P8592

[8] Reema Mukherjee, Sanjay Chaturvedi(2017), Original Research Article A study of the dietary habits of school children in Pune city, Maharashtra, India, *International Journal of Community Medicine and Public Health*, Feb;4(2):593-597 http://www.ijcmph.com pISSN 2394-6032 | eISSN 2394-6040