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PREVALENCE OF OVERWEIGHT AND OBESITY IN ADOLESCENTS OF DISTRICT ANANTNAG, JAMMU AND KASHMIR

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ABSTRACT

Changes in physical and social environment over past 30 years have an antagonistic impact on children's eating habits and physical activity pattern. children are minimally active and eat more food, Excessive sugar intake in the form of soft drinks and fruit juices, fast food consumption, increase in the time spent in viewing TV, use of mobile phones and computers all contribute to the aetiology of obesity. Children and adolescent obesity has increased 10 fold in just 4 decades. It's a progressing global encounter sparing none. Jammu and Kashmir lies in the north of India, overweight and obesity is prevalent in here as well hence present study has been undertaken with the following objective in mind. Objective: To assess nutritional status and dietary pattern among adolescents and its association with BMI of adolescents. Methodology: The school based cross sectional study comprising of Anantnag district of Kashmir involving multistage stratified random sampling procedure was carried out in government and private schools. A sample comprising of 300 adolescents in the age group of 13-19 were selected randomly belonging to 7^{th}-13^{th}class. The diet survey was carried out by 24hr food recall. Detailed insight about the food items consumed was achieved with the help of food frequency table. Anthropometric measurements like Weight and height was recorded, BMI percentiles were obtained from IAP (Indian Academy of Paediatrics) age and gender specific BMI chart. Results: prevalence of overweight/ obesity was 7.32% among boys & 8% among girls.

KEY-WORDS:- Prevalence, Overweight, obesity, fast food, adolescents, food frequency, statistics

INTRODUCTION

Obesity a preface to public health disaster, a global public health issue, cutting down regional and economic obstacles. Children and adolescent obesity has increased 10 fold in just 4 decades. In 2019 approximately 38 million children below the age of 5years were overweight or obese.(WHO, 2020)In 2016 approximately 340 million children and adolescents in the age group of 5-19 years were overweight and obese.(Organization, 2018)It is so common that it is beginning to replace malnutrition .Obesity affects daily living as it is associated with morbidity and mortality , reduces life expectancy.(Fatima, Beigh, & Hussain, 2018)In accordance with WHO

overweight and obesity is abnormal fat accumulation, presenting a health risk.(Fruh, 2017) Obesity being a medical condition that adversely affects health, due to which surplus body fat getting collected to an extent that it can have negative effect on well-being. Obesity is associated with numerous diseases and conditions, mostly cardiovascular diseases, type 2 diabetes, obstructive sleep apnea, certain types of cancer, osteoarthritis and other comorbidities. (Kopelman, 2000) (Cefalu, et al., 2015).(Wikipedia, 2021)2.8 million people die every year due to being overweight and obese. Non communicable diseases (NCDs) are the leading causes of death which are killing more people each year globally than other combined causes. Until now obesity was associated with high income countries, now prevalent in low and middle income countries as well.(WHO, 2020)Prevalence of overweight and obesity has increased in Asian countries as well, varying in magnitude between countries. India is leading the world with number of diabetic patients followed by china. (Ramachandran .T, 2010) The prevalence of metabolic syndrome among 8-18 year children in Srinagar was 3.8% (boys: 3.9%, girls 3.8%) and the prevalence of obesity was 9.9% (boys:9.9%, girls:10.6%).(Andrabi, et al., 2013)The transition in lifestyle, food habits and physical inactivity has caused energy imbalance.(WHO, 2020). Research findings have shown that television (TV) viewing (Sedentary activity) and physical inactivity are independently associated with obesity and metabolic risk (Daradkeh, et al., 2015). Changes in physical and social environment over past 30 years has an antagonistic impact on children's eating habits and physical activity pattern, now a days children are minimally active and eat more food , Excessive sugar intake in the form of soft drinks and fruit juices. (Sahoo, Sahoo, Choudhury, & Sofi, 2015)(Anderson & Butcher, 2006) Consumption of fried ,processed, ready to eat meals, fast food consumption, less consumption of healthy foods among adolescents,(Jan, Masoodi, & Bhat, 2018) increase in the time spent in viewing TV, use of mobile phones and computers, (Kuriyan R. , Bhat, Thomas, & Mario. V Kurpad, 2007)(Kautianen, Koivusilta, Lintonen, & Rampela, 2005) inadequate knowledge about lifestyle habits all contribute to etiology of obesity.(Tharkar & Viswanathan, 2009). As per comprehensive national nutritional survey (2018) 8.7%boys and 8.5%girls are overweight/obese in Jammu and Kashmir.(Comprehensive National Nutrition Survey Jammu & Kashmir, 2018)Recent studies have testified that universally more than 1.9 billion adults are overweight and 650 million are obese. Around 2.8 deaths are reported due to being overweight or obese. The consumption of energy dense food, sedentary life style, lack of health care services and monetary support, developing countries are facing high risk of obesity and their confrontational consequences (i.e. diabetes, heart disease, etc.). In India, more than 135 million individuals were affected by obesity. The prevalence of obesity in India varies due to age, gender, geographical environment, socio-economic status, etc.(Ahirwar R, 2019) The major fables associated with obesity today is that it being a genetic issue, no matter what the person does, it remains a life-long problem,(The Hindu, 2007),which is not the case. Obesity is preventable provided people change their lifestyle, become physically active, consume healthy food (i.e. eat processed food /fast food in moderation) and increase dietary fiber intake.

MATERIALS AND METHODS

The school based cross sectional study comprising of Anantnag district of Kashmir involving multistage stratified random sampling procedure was carried out in government and private schools of mentioned district. List of govt. and private schools was acquired from directorate of school education of respective district. Heads of selected Institutions were contacted prior to the conduct of study and their support solicited. A day convenient to the school authorities was selected. Zones and schools were selected based on population size, access by road, remoteness etc. A sample comprising of 300 adolescents in the age group of 13-19 were selected randomly belonging to 7^{th}-13^{th} class. The sample was evenly distributed by class and gender .146 respondents were taken from government schools and equal number was acquired from private schools .8 students were taken from 13^{th} standard comprising total of 300 adolescents.

A detailed questionnaire was administered comprising of different sections (socio-economic status, eating habits and physical activity pattern) in order to attain the needed information by interviewing the respondents. Necessary information regarding socio-economic status was collected. The diet survey was carried out by 24hr food recall whereby the respondents were asked to recall the food items they had consumed in previous 24 hrs. This helped us to know the quantity consumed and then the intake was assessed in terms of nutrients, computed by using the ICMR nutritive value of Indian foods. Frequency of consumption of food items was also observed with the help of food frequency table which was divided into different food categories in order to have detailed insight about the food items consumed. Information regarding, time spent in watching TV, games etc. was also obtained from respondents. Anthropometric measurements like body weight was measured without shoes and with minimum clothes on using electronic weighing scale. The weighing scale was regularly checked with known standard weight, height was measured using non stretch tape to the nearest 0.1 cm. Weight and height were measured using standard procedures. BMI was calculated using formula;

BMI=Weight (kg)/Height $(m)^2$ and BMI percentile obtained from IAP age and gender specific BMI charts.(Indian Academy of Pediatrics Growth Charts, et al., 2015)

Overweight: BMI $\geq 23^{th}$ and $<27^{th}$ percentile for children of same age and sex.
Obese: BMI $\geq 27^{th}$ percentile for children of same age and sex

Statistical Analysis: The statistical analysis was performed using SPSS. Statistical tools such as mean, standard deviation and Chi-square were used for analysis purpose. The statistical significance was set at 5% level of significance and $P < 0.05$ was considered statistically significant at 5% level of significance.

RESULTS

Table 1: Demographic Characteristics

Variables	Type	Gender				Overall		Chi Sq	P value
		Male	(%)	Female	(%)	No	(%)		
Age	13	24	16.00	24	16.00	48	16.00	NA	-
	14	24	16.00	24	16.00	48	16.00		
	15	24	16.00	24	16.00	48	16.00		
	16	24	16.00	24	16.00	48	16.00		
	17	24	16.00	24	16.00	48	16.00		
	18	24	16.00	24	16.00	48	16.00		
	19	6	4.00	6	4.00	12	4.00		
	Total	150	100.00	150	100.00	300	100.00		
School	Govt.	72	48.00	72	48.00	144	48.00	NA	-
	Private	72	48.00	72	48.00	144	48.00		
	Colleges	6	4.00	6	4.00	12	4.00		
	Total	150	100.00	150	100.00	300	100.00		
Religion	Islam	148	98.67	149	99.33	297	99.00	1.0034	>0.05
	Hinduism	1	0.67	1	0.67	2	0.67		
	Sikhism	1	0.67	0	0.00	1	0.33		

	Total	150	100.00	150	100.00	300	100.00		
Family Type	Nuclear	104	69.33	112	74.67	216	72.00	1.4488	>0.05
	Joint	31	20.67	28	18.66	59	19.67		
	Extended	15	10.00	10	6.67	25	8.33		
	Total	150	100.0	150	100.00	300	100.00		
Family Size	1-4	24	16.00	19	12.67	43	14.33	3.449	>0.05
	5-8	106	70.67	108	72.00	214	71.33		
	9-12	9	6.00	16	10.67	25	8.33		
	≥13	11	7.33	7	4.67	18	6.00		
	Total	150	100.00	150	100.00	300	100.00		
Ordinal Position	First Born	58	38.67	47	31.33	105	35.00	2.3574	>0.05
	Second Born	40	26.67	43	28.67	83	27.68		
	Third Born	27	18.00	28	18.67	55	18.33		
	Fourth Born	17	11.33	20	13.33	37	12.33		
	Fifth Born	5	3.33	8	5.33	13	4.33		
	Sixth Born	3	2.00	4	2.67	7	2.33		
	Seventh Born	0	0.00	0	0.00	0	0.0		
	Total	150	100.00	150	100.00	300	100.00		

*P>0.05, non-significant at 5% l.o.s.; P<0.05, P<0.01significant at 5% and 1% l.o.s.

Table 1 depicts demographic characteristics of adolescents. As per age 96% respondents were male and 96% were female belonging to the age groups of 13-18 years. 4% of each gender were 19-year-old. It was seen that 48% of male and equal percentage of female went to government schools, 48 % went to private schools. Among19 year old 4% of each gender were college going adolescents. Majority of respondents 99% followed Islam as their religion, 0.6% and 0.3% were followers of Hinduism and Sikhism respectively. It was seen that 69.3% of males and 74.6% females dwelled in nuclear families, 20.6% males and 18.6% females resided in joint family system, 10% males and 25% females were from extended families. Majority of respondents 71.3% had 5-8 family members in their family. Further it was seen that 35% respondents were first born and 2.3% were sixth born respectively. Results were statistically non-significant (p>0.05)

Table 2: Socio Economic Characteristics

	Type	**Gender**				**Overall**		**Chi Sq**	**P value**
		Male	**(%)**	**Female**	**(%)**	**No**	**(%)**		
Monthly Income	<5000	11	7.33	20	13.33	31	10.33	18.30	<0.01
	5000-15000	83	55.33	58	38.67	141	47.00		
	15000-25000	27	18.00	26	17.33	53	17.67		
	25000-35000	19	12.67	42	28.00	61	20.33		
	≥35000	10	6.67	4	2.67	14	4.67		
	Total	150	100.00	150	100.00	300	100.0		
	Father Only	121	80.67	120	80.00	241	80.33		>0.05

Working Parents	Mother Only	4	2.67	2	1.33	6	2.00	1.97	
	Both	24	16.00	28	18.67	52	17.33		
	None	1	0.67	0	0.00	1	0.33		
	Other	0	0.00	0	0.00	0	0.00		
	Total	150	100.00	150	100.00	300	100.00		
Fathers Qualification	Illiterate	55	36.67	43	28.67	98	32.67	5.26	>0.05
	Middle/ Matriculate	41	27.33	36	24.00	77	25.67		
	Undergraduate	17	11.33	17	11.33	34	11.33		
	Graduate	33	22.00	46	30.67	79	26.33		
	Postgraduate &above	4	2.67	8	5.33	12	4.00		
	Total	150	100.00	150	100.00	300	100.00		
Mothers Qualification	Illiterate	88	58.67	82	54.67	170	56.67	4.93	>0.05
	Middle/ Matriculate	28	18.67	40	26.67	68	22.67		
	Undergraduate	13	8.67	6	4.00	19	6.33		
	Graduate	18	12.00	19	12.67	37	12.33		
	Postgraduate &above	3	2.00	3	2.00	6	2.00		
	Total	150	100.00	150	100.00	300	100.00		
Fathers Occupation	Business	36	24.00	37	24.67	73	24.33	2.42	>0.05
	Skilled-Worker	17	11.33	13	8.67	30	10.00		
	Semi-skilled Worker	32	21.33	34	22.67	66	22.00		
	Government Service	57	38.00	59	39.33	116	38.67		
	Semi-Government	3	2.00	5	3.33	8	2.67		
	Unemployed/ Dead	5	3.33	2	1.33	7	2.33		
	Total	150	100.00	150	100.00	300	100.00		
Mothers Occupation	Business	0	0.00	1	0.67	1	0.33	2.05	>0.05
	Semi-skilled Worker	3	2.00	3	2.00	6	2.00		
	Government Service	24	16.00	25	16.6	49	16.33		
	Semi-Government	0	0.00	1	0.67	1	0.33		
	Housewife	123	82.00	120	80.00	243	81.00		
	Dead	0	0.00	0	0.00	0	0.00		
	Total	150	100.00	150	100.00	300	100.00		

*P>0.05, non-significant at 5% l.o.s.; P<0.05, P<0.01significant at 5% and 1% l.o.s.

Table 2, reveals that 47% of respondents had a family monthly income of 5000-15000, 20.3% had 25000-35000 as their monthly family income. It was observed that 80.3% of respondent's fathers were the sole breadwinners of

family, further it was seen that 32.6% father's and 56.6% mothers of respondents were illiterate, 26.3% father's and 12.3% mothers of respondents were graduates, 81% mothers were housewives and 16.3% were government employs, 38.6% fathers were government employs respectively. Result is significant in terms of monthly income (P<0.01). In case of working parents, father's qualification, mother's qualification, father's occupation, mother's occupation, results were statistically non-significant (p>0.05)

Table 3: Time Spent In Sleep And Television Viewing By The Respondents

Variables		Male		Female		t-Value	P Value
	N	Mean	Standard Deviation	Mean	Standard Deviation		
Sleep Hrs/Day	150	7.63	1.50	7.63	1.33	0.00	>0.05
TV Viewing Hrs /Day	150	1.945	0.919	1.78	1.18	1.32	>0.05

*P>0.05, non-significant at 5% l.o.s.; P<0.05, P<0.01significant at 5% and 1% l.o.s.

Table 3 shows the adolescents time spent in sleep and television viewing, it was observed that mean±s.d. time spent in sleeping among boys was 7.63 ± 1.50 and7.63± 1.33 among girls with P>0.05. Mean time spent in T.V. viewing was1.945± 0.919 among males and 1.78± 1.18 among females with t value as 1.32 and p value >0.05 which is statistically non-significant.

Table 4: Food Frequency Table

Food Stuff	Frequency	Gender								Overall		Chi Sq	P value
		Male				Female							
		Overweight/ Obese		Non-Overweight / Obese		Overweight/ Obese		Non-Overweight/ Obese					
		No.	%	No.	%	No.	%	No.	%	No.	%		
Fast Food													
Soft Drinks	Daily	6	54.55	36	25.90	3	25.00	29	21.01	74	24.66	12.23	>0.05
	Twice a week	0	0.00	17	12.23	0	0.00	11	7.97	28	9.33		
	Thrice a week	0	0.00	13	9.35	2	16.67	6	4.35	21	7.02		
	Once a week	2	18.18	32	23.02	1	8.33	20	14.49	55	18.33		
	Occasionally	0	0.00	13	9.35	2	16.67	12	8.70	27	9.00		
	Never	3	27.27	28	20.14	4	33.33	60	43.48	95	31.66		
	Total	11	100.00	139	100.00	12	100.00	138	100.00	300	100.00		
	Daily	0	0.00	1	0.72	0	0.00	0	0.00	1	0.34	12.36	>0.05
	Twice a week	0	0.00	7	5.04	1	8.33	1	0.72	9	3.00		

Pizza	Thrice a week	0	0.00	2	1.44	0	0.00	2	1.45	4	1.33		
	Once a week	3	27.27	13	9.35	0	0.00	8	5.80	24	8.00		
	Occasionally	1	9.09	20	14.39	3	25.00	24	17.39	48	16.00		
	Never	7	63.64	96	69.06	8	66.67	103	74.64	214	71.33		
	Total	11	100.00	139	100.00	12	100.00	138	100.00	300	100.00		
Burger	Daily	0	0.00	3	2.16	0	0.00	0	0.00	3	1.00	NA	-
	Twice a week	1	9.09	7	5.04	0	0.00	4	2.90	12	4.02		
	Thrice a week	0	0.00	3	2.16	0	0.00	4	2.90	7	2.33		
	Once a week	3	27.27	15	10.79	0	0.00	7	5.07	25	8.33		
	Occasionally	1	9.09	24	17.27	4	33.33	21	15.22	50	16.66		
	Never	6	54.55	87	62.59	8	66.67	102	73.91	203	67.66		
	Total	11	100.00	139	100.00	12	100.00	138	100.00	300	100.00		
Noodles	Daily	1	9.09	8	5.76	0	0.00	11	7.97	20	6.66	5.15	>0.05
	Twice a week	2	18.18	12	8.63	2	16.67	8	5.80	24	8.03		
	Thrice a week	0	0.00	10	7.19	0	0.00	7	5.07	17	5.66		
	Once a week	2	18.18	13	9.35	3	25.00	13	9.42	31	10.33		
	Occasionally	0	0.00	21	15.11	2	16.67	21	15.22	44	14.66		
	Never	6	54.55	75	53.96	5	41.67	78	56.52	164	54.66		
	Total	11	100.00	139	100.00	12	100.00	138	100.00	300	100.00		
Cakes	Daily	0	0.00	7	5.04	0	0.00	4	2.90	11	3.66	12.26	>0.05
	Twice a week	1	9.09	6	4.32	2	16.67	5	3.62	14	4.66		
	Thrice a week	1	9.09	5	3.60	0	0.00	11	7.97	17	5.66		
	Once a week	1	9.09	31	22.30	3	25.00	25	18.12	60	20.02		
	Occasionally	1	9.09	44	31.65	5	41.67	40	28.99	90	30.00		
	Never	7	63.64	46	33.09	2	16.67	53	38.41	108	36.00		
	Total	11	100.00	139	100.00	12	100.00	138	100.00	300	100.00		
Pastries	Daily	0	0.00	7	5.04	0	0.00	1	0.72	8	2.66	8.82	>0.05
	Twice a week	1	9.09	7	5.04	0	0.00	8	5.80	16	5.33		
	Thrice a week	2	18.18	6	4.32	2	16.67	4	2.90	14	4.66		
	Once a week	1	9.09	21	15.11	3	25.00	19	13.77	44	14.66		
	Occasionally	1	9.09	43	30.94	3	25.00	48	34.78	95	31.66		
	Never	6	54.55	55	39.57	4	33.33	58	42.03	123	41.03		
	Total	11	100.00	139	100.00	12	100.00	138	100.00	300	100.00		
Chocolates	Daily	5	45.45	42	30.22	4	33.33	64	46.38	115	38.33	23.67	<0.01
	Twice a week	3	27.27	16	11.51	0	0.00	13	9.42	32	10.66		
	Thrice a week	0	0.00	15	10.79	5	41.67	9	6.52	29	9.66		
	Once a week	0	0.00	23	16.55	2	16.67	22	15.94	47	15.66		
	Occasionally	0	0.00	14	10.07	1	8.33	13	9.42	28	9.36		
	Never	3	27.27	29	20.86	0	0.00	17	12.32	49	16.33		
	Total	11	100.00	139	100.00	12	100.00	138	100.00	300	100.00		
Milk Shakes	Daily	2	18.18	10	7.19	2	16.67	3	2.17	17	5.66	14.59	>0.05
	Twice a week	2	18.18	11	7.91	1	8.33	6	4.35	20	6.66		
	Thrice a week	0	0.00	8	5.76	1	8.33	4	2.90	13	4.33		
	Once a week	0	0.00	12	8.63	1	8.33	16	11.59	29	9.66		
	Occasionally	0	0.00	13	9.35	2	16.67	23	16.67	38	12.66		
	Never	7	63.64	85	61.15	5	41.67	86	62.32	183	61.03		
	Total	11	100.00	139	100.00	12	100.00	138	100.00	300	100.00		
Fruit	Daily	2	18.18	22	15.83	5	41.67	35	25.36	64	21.33	22.64	<0.01
	Twice a week	1	9.09	17	12.23	3	25.00	7	5.07	28	9.33		
	Thrice a week	0	0.00	10	7.19	3	25.00	8	5.80	21	7.02		

Juices	Once a week	0	0.00	35	25.18	1	8.33	28	20.29	64	21.33		
	Occasionally	0	0.00	16	11.51	0	0.00	18	13.04	34	11.33		
	Never	8	72.73	39	28.06	0	0.00	42	30.43	89	29.66		
	Total	11	100.00	139	100.00	12	100.00	138	100.00	300	100.00		
Sandwiches	Daily	0	0.00	6	4.32	0	0.00	3	2.17	9	3.00	9.73	>0.05
	Twice a week	1	9.09	5	3.60	0	0.00	5	3.62	11	3.66		
	Thrice a week	0	0.00	2	1.44	1	8.33	2	1.45	5	1.66		
	Once a week	1	9.09	14	10.07	0	0.00	12	8.70	27	9.02		
	Occasionally	1	9.09	12	8.63	4	33.33	23	16.67	40	13.33		
	Never	8	72.73	100	71.94	7	58.33	93	67.39	208	69.33		
	Total	11	100.00	139	100.00	12	100.00	138	100.00	300	100.00		
Potato Chips	Daily	3	27.27	46	33.09	6	50.00	71	51.45	126	42.00	17.48	>0.05
	Twice a week	2	18.18	13	9.35	0	0.00	8	5.80	23	7.66		
	Thrice a week	2	18.18	8	5.76	1	8.33	7	5.07	18	6.02		
	Once a week	1	9.09	28	20.14	2	16.67	15	10.87	46	15.33		
	Occasionally	0	0.00	8	5.76	1	8.33	11	7.97	20	6.66		
	Never	3	27.27	36	25.90	2	16.67	26	18.84	67	22.33		
	Total	11	100.00	139	100.00	12	100.00	138	100.00	300	100.00		
Pakoda	Daily	1	9.09	17	12.23	0	0.00	16	11.59	34	11.33	16.57	>0.05
	Twice a week	2	18.18	10	7.19	1	8.33	15	10.87	28	9.33		
	Thrice a week	1	9.09	11	7.91	0	0.00	6	4.35	18	6.02		
	Once a week	0	0.00	21	15.11	1	8.33	8	5.80	30	10.00		
	Occasionally	1	9.09	9	6.47	4	33.33	18	13.04	32	10.66		
	Never	6	54.55	71	51.08	6	50.00	75	54.35	158	52.66		
	Total	11	100.00	139	100.00	12	100.00	138	100.00	300	100.00		
Samosa	Daily	3	27.27	29	20.86	1	8.33	30	21.74	63	21.03	13.85	>0.05
	Twice a week	1	9.09	19	13.67	2	16.67	19	13.76	41	13.66		
	Thrice a week	0	0.00	9	6.47	0	0.00	8	5.80	17	5.66		
	Once a week	2	18.18	28	20.14	1	8.33	10	7.25	41	13.66		
	Occasionally	1	9.09	12	8.63	3	25.00	18	13.04	34	11.33		
	Never	4	36.36	42	30.22	5	41.67	53	38.41	104	34.66		
	Total	11	100.00	139	100.00	12	100.00	138	100.00	300	100.00		
Biscuits	Daily	5	45.45	52	37.41	3	25.00	57	41.30	117	39.00	12.67	>0.05
	Twice a week	3	27.27	15	10.79	4	33.33	21	15.22	43	14.33		
	Thrice a week	0	0.00	9	6.47	1	8.33	7	5.07	17	5.66		
	Once a week	0	0.00	23	16.55	2	16.67	15	10.87	40	13.33		
	Occasionally	0	0.00	9	6.47	2	16.67	12	8.70	23	7.66		
	Never	3	27.27	31	22.30	0	0.00	26	18.84	60	20.02		
	Total	11	100.00	139	100.00	12	100.00	138	100.00	300	100.00		

*P>0.05, non-significant at 5% l.o.s.; P<0.05, P<0.01significant at 5% and 1% l.o.s.

Table 4 discloses frequency of consumption of fast foods among adolescents. It was seen that overall 24.66% adolescents out of which 54.55% overweight/obese boys and 25.9%non-overweight/obese boys and 25% of overweight/obese girls and 21% of non-overweight/obese girls used to consume soft drinks daily. It was seen that 18.18% of overweight/obese boys, 23% of non-overweight/obese boys consumed soft drinks once a week which was higher in comparison to girls 8.33%overweight/obese girls and 14.49% non-overweight/obese girls. Kerr et al 2009 also found that Sugar-sweetened carbonated and soft drinks persisted to be the most popular choice of snacks among adolescents.(Kerr, 2009) When probed about intake of pizza and burger, it was found that meagre amount (0.34% pizza and 1% burger) used to consume it daily. Among overweight/obese boys 27.27%, 9.35% non-

overweight/obese boys and 5.8% non-overweight/obese girls consumed pizza once a week, somewhat similar trend was seen in burger consumption 27.27% overweight/obese boys, 10.79% non-overweight/obese boys and 5% among non-overweight/obese girls. It was observed that 18.18% overweight/obese boys, 8.63% of non-overweight/obese boys and 16.67% overweight/obese girls and 5.80% non-overweight/obese girls consumed noodles twice a week. When enquired about intake of cakes it was seen that majority of non-overweight/obese boys 31.65% and 28.995 girls and among overweight/obese 9.09% boys and 41.67% girls used to have it occasionally. It was further seen that among overweight/obese 18.18% boys, 16.67% girls and 4.32% non-overweight/obese boys ,2.9% non-overweight/obese girls used to consume pastries thrice a week. When asked about chocolate consumption it was found that 45.45% overweight/obese boys, 33.33% overweight/obese girls and 30.22% non-overweight/obese boys and 46.38% non-overweight/obese girls consumed chocolates daily. Milkshake consumption showed that 18.18% overweight/obese boys, 16.67% overweight/obese girls and 7.19% non-overweight/obese boys, 2.17% non-overweight/obese girls consumed milk shakes daily. Pattern of consumption of fruit juices showed that 18.18% overweight/obese boys,41.67% overweight/obese girls and 15.83% non-overweight/obese boys, 25.36% non-overweight/obese girls used to have fruit juices daily. Majority of respondents 13.33% among which 9% overweight/obese boys, 33.33% overweight/obese girls and 8.63% non-overweight/obese boys, 16.67% non-overweight/obese girls consumed sandwiches occasionally. It has been observed that majority of respondents 42% among which 27.27% overweight/obese boys,50%overweight/obese girls and 33% % non-overweight/obese boys,51.45% % non-overweight/obese girls used to consume potato chips daily, further when queried about consumption of fried foods, majority of overweight/obese boys 18.18% consumed pakoda twice a week among overweight/obese girls' majority 33.33% consumed it occasionally. Among non-overweight/obese boys' majority 15.11% consumed it once a week and among non-overweight/obese girls' majority 11.59% consumed it daily. In case of samosa overweight/obese boys 27.27% and non-overweight/obese boys 20.86% consumed it daily. Among girls it was seen that 25% overweight/obese girls consumed it occasionally and 21.74% non-overweight/obese girls' consumed it daily. Majority of respondents' overweight/obese 45.45% boys', 25% girls and among non-overweight/obese 37.41% boys and 41.3% girls consumed biscuits daily. It was found that junk-food consumption was well liked by both overweight/obese and non-overweight/obese adolescents. Consumption of junk-food can be contributing factor towards overweight/obesity as it contains great amount of fat. Regular consumption may lead to hypertension and diabetes *owing* to greater amount of sodium and sugar present in them. Statistically it has been observed that there is non-significant difference in case of fast food between male and female in case of soft drinks, pizza, noodles, cakes, pastries, milkshakes, sandwiches, potato chips, pakoda, samosa and biscuits (p.0.05). However significant difference was observed in chocolates and fruit juices($p<0.01$)

Table 5: Relation of overweight/obesity with calorie intake Fast- food consumption, physical activity

Variables	Male				Female				Chi sq	P value
	Overweight /obese N=11		Non overweight /obese N=139		overweight /obese N=12		Non overweight /obese N=138			
Calories	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**		
Excess	0	0.00	136	97.84	0	0.00	9	6.53	NA	-

Normal	11	100.00	3	2.16	12	100.00	129	93.47	49.46	<0.01
Physical Activity										
Moderate	3	27.28	30	21.58	2	16.66	5	3.63	2.003	>0.05
Low	8	72.72	109	78.42	10	83.34	133	96.37	0.002	>0.05
Fast-food consumption										
Present	10	90.91	126	90.64	12	100.00	133	96.37	0.082	>0.05
Absent	1	9.09	13	9.36	0	0.00	5	3.62	0.376	>0.05
Meal consumption outside home										
Present	2	18.19	41	29.49	7	58.34	54	39.14	1.485	>0.05
Absent	9	81.81	98	70.51	5	41.66	84	60.86	0.571	>0.05

*P>0.05, non-significant at 5% l.o.s.; P<0.05, P<0.01significant at 5% and 1% l.o.s.

Table 5 reveals that maximum numbers of adolescents were consuming calories from food as per RDA (recommended dietary allowances). physical inactivity was observed among 72.72% of overweight/obese males and 83.34% among overweight /obese females and 78.42%among non-overweight/obese males and 96.37% among non-overweight/obese females. Among overweight/obese 90.91% males and 100% females consumed fast food, it was further examined that among non-overweight/obese 90.64% males and 96.37% females consumed fast-food. It was seen that 58.34% overweight/obese female consumed meals outside home, only 18.19% overweight/obese males consumed meals outside of home. It has been observed that there is significant difference between male and female in terms of calories ($p<0.01$), non-significant difference between male and female was observed in physical activity, fast-food consumption, meal consumption outside home ($P>0.05$)

DISCUSSIONS

Overweight and obesity are gaining quiet a lot popularity for the last two decades therefore studies regarding physical activity, dietary intake and lifestyle has also emerged to tackle this burden of preventable non-communicable disease. As obesity is no longer confined to urban settings, higher socio-economic group and developed countries, it's stretching further than that. This study made known that both undernutrition and over nutrition was prevalent among the studied population, if not to the expected extend. Higher prevalence of overweight and obesity has been reported by number of studies carried out in different parts of the state of Jammu and Kashmir in particular(Jan, Masoodi, & Bhat, 2018)(Arifa, Kumar, Rafiq, & Nabi, 2018)(Andrabi, et al., 2013)(Bhat & Ahmad, 2019) and in India. In this study it was comprehended that prevalence of overweight/ obesity was 7.32% among boys &8% among girls. The area chosen being a rural one may somewhat contradict with other studies in prevalence of overweight and obesity. Study also revealed poor consumption of healthy foods, (Azeredo CM, 2015) more T.V viewing hours,(Kautianen, Koivusilta, Lintonen, & Rampela, 2005) sedentary life-style among girls, consumption of junk-food(Jan, Masoodi, & Bhat, 2018) being among the causes of overweight which could lead towards severe obesity if not addressed at early stage. Intake of carbonated drinks, (Kerr, 2009) fried food was common among adolescents. Food related advertisements on electronic media motivate children to buy, making faulty food choices and consumption of large portion size also lead towards obesity.(Mushtaq MU, 2011)(Kotian MS, 2010)(Goyal JP, 2011). Food habits inculcated during childhood tend to persevere throughout

adulthood, its mandatory to impart information to children regarding healthy foods, harmful effects of fastfood on health at early stage and make them aware about importance of physical activity, games and sports by piloting awareness programmes in schools and colleges. (Ganie, et al., 2017)

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