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DIETARY HABITS (CALCIUM, NUTRIENTS, PROTEIN, CALORIE) AND ITS ASSOCIATION WITH BODY MASS INDEX (BMI), OVERWEIGHT, OBESITY AND WAIST CIRCUMFERENCE

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Abstract:

Objective: *We aimed at the determination of the prevalent risk factors including increase BMI (Body Mass Index), physical activity, dietary intake and waist circumference in the healthy adults and also compared with recommended standard. We also identified the chronic disease related risk factors.*

Methods: *A total of 153 healthy employees were assessed for waist circumference, BMI and physical activity in the age bracket of (20 – 50) at Allied Hospital, Faisalabad (August, 2016 to June, 2017). Information was gathered through a questionnaire about the patterns of demographic, dietary, anthropometric and physical activity. Protein and Calorie were measured in the twenty-four-hours diet duration. Various foods average intake was also compared in the given food guidelines.*

Results: *Normal BMI was observed in (35.3%) participants; whereas, remaining participants were obese – I & II respective BMI was (25 – 29.9) & (> 30) and overweight. However, Risk about the waist circumference was observed in males and females respectively 45% & 40%. Males and females had an average intake of calorie respectively as (2000 ± 420) and (1500 ± 380) kcal/Day. An average intake of protein in males and females was respectively (60.5 ± 13) & (42.5 ± 12) grams/day. Major calorie sources were cereal, bread, fat and oil respectively (38.4%) & (33.5%). Milk was taken on an average with fruits and vegetables less than the suggested intake. Physically active cases were (44%).*

Conclusion: *An increased weight of the body, sedentary life style and improper diet can be risky in the development of chronic diseases associated with diet. There was less intake of certain diets than recommended including milk, fruits and vegetables. Protein intake was mostly observed in the cereal and bread intake. There is a need for the modification of diet and life-style in order to reduce the chronic diseases risk associated with the dietary intake.*

Keywords: *Chronic diseases, Diet, Body Mass Index (BMI), Over-Nutrition, waist circumference and obesity.*

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INTRODUCTION:

Good health is promoted through better body weight and diet which reduces the risk of disease such as diabetes, obesity, certain cancer, heart diseases and osteoporosis [1 – 3]. Diet pattern has shifted from grain to fat fortified diet all over the world with chronic disease pattern requiring preventive strategies in lifestyle and diet pattern [2, 4]. Adults are facing double disease burden because of this shift of diet and sedentary lifestyle in the shape of obesity and overweight (National Survey). Higher degenerative disease patterns have been reported in Pakistan back in 1990 and 1994. Hyperlipidemia, Hypertension, Obesity and Diabetes are increased in all age groups and sex without any socioeconomic restriction [4]. Asian population need to consider waist circumference, obesity, overweight and physical activity with BMI to reduce the disease pattern [23]. Europe leads Asia in waist circumference measurements [5]. WHO focuses on overweight cut-off point combined with physical activity and associated risk factors [4].

For the reduction of disease pattern healthy diet, controlled BMI and physically activity are desirable [6]. There are numerous benefits (physical and psychological) connected with exercise, moderate routine of activity reduces the risk factor effectively. Recently, health benefits have been associated with other active routines instead of exercise which are not classified as exercise such as gardening. There is an inverse association of obesity and physical activity including CVD and diabetes (T2DM) [7].

Pattern of the diet is described as use of single or multiple nutrients which includes grain, vegetables, fruits poultry and fish consumption in terms of snacks intake, eating frequency and meals [3]. Specific diet is targeted by the health professional through assessment and evaluation of the diet components and nutritional plans are forwarded for the solution of diet problems [3, 8, 9]. There is a scarcity of diet surveys in our country [10]. There is need for such activity is also highlighted in the health survey of 1994 – 96 for the assessment of diet and health pattern with associated risk factors [4, 11]. Educational and nutritional interventions should replace medical interventions [12].

Therefore, our research aimed at the determination of the prevalent risk factors including increase BMI (Body Mass Index), physical activity, dietary intake and waist circumference in the healthy adults and also compared with recommended standard. We also identified the chronic disease related risk factors.

SUBJECTS AND METHODS:

A total of 153 healthy employees were assessed for waist circumference, BMI and physical activity in the age bracket of (20 – 50) at Allied Hospital, Faisalabad (August, 2016 to June, 2017). Information was gathered through a questionnaire about the patterns of demographic, dietary, anthropometric and physical activity. Protein and Calorie were measured in the twenty-four-hours diet duration. Various foods average intake was also compared in the given food guidelines. We did not include the participants with diabetes history, cardiovascular diseases (CVD), hypertension and cancers. Classification of the respondents was made on the physical activity type and duration in planned and sedentary active groups. Moderate and active division was made on the duration of exercise per week respectively thirty minutes and thirty minutes for three to five times a week. Standard measuring tools were used for the measurement of BMI and waist conference. We compared outcomes in the light of criteria set by WHO for the assessment of obesity [10 – 12]. Final analysis was made on SPSS software (P-value < 0.05).

RESULTS:

Normal BMI was observed in (35.3%) participants; whereas, remaining participants were obese – I & II respective BMI was (25 – 29.9) & (> 30) and overweight. However, Risk about the waist circumference was observed in males and females respectively 45% & 40%. Males and females had an average intake of calorie respectively as (2000 ± 420) and (1500 ± 380) kcal/Day. An average intake of protein in males and females was respectively (60.5 ± 13) & (42.5 ± 12) grams/day. Major calorie sources were cereal, bread, fat and oil respectively (38.4%) & (33.5%). Milk was taken on an average with fruits and vegetables less than the suggested intake. Physically active cases were (44%). Male to female proportion was 105 and 48 respectively. Detailed outcomes analysis has been made in Table I, II and III with respective figures placed against each table.

Table – I: Educational, Income, physical activity level data and its association with BMI, Kcal and protein intake of respondents

Respondent's Characteristics		N	%	BMI		kcal		Protein	
				Mean	±SD	Mean	±SD	Mean	±SD
Education	Primary	7	4.50	23.6	5.00	1743	462.00	47.6	16.00
	High school	35	23.00	23.2	4.10	1757	355.00	50.9	14.80
	Intermediate	31	20.00	24	4.70	1906	491.00	57.3	15.20
	Graduate and above	80	52.00	24.5	4.50	1782	406.00	56.4	14.60
P-value				0.538		0.447		0.111	
Income Level	<5000	19	12.40	24	3.49	1783	268.00	53	12.90
	5000-15000	70	45.80	23.2	4.73	1738	439.00	51.4	15.50
	15000-30000	40	26.00	24.9	3.91	1888	463.00	58.3	15.00
	>30,000	24	15.70	24.6	4.90	1843	340.00	61.1	12.50
P-value				0.228		0.305		0.014	
Physical Activity Level	Sedentary (no planned activity	30	19.60	25.3	4.93	1635	309.00	51.56	14.00
	Mod. Active (30min./week)	55	35.90	23.9	4.56	1793	463.00	51.4	15.40
	Active (3-5 Times /week)	66	43.00	23.4	4.12	1880	388.00	59	13.80
	Strenuously active	2	1.30	25.4	0.71	1819	935.00	65	21.60
	Active & strenuously active	68	44.30	24.4	4.83	1849	940.00	62	35.00
P-value				0.264		0.064		0.014	

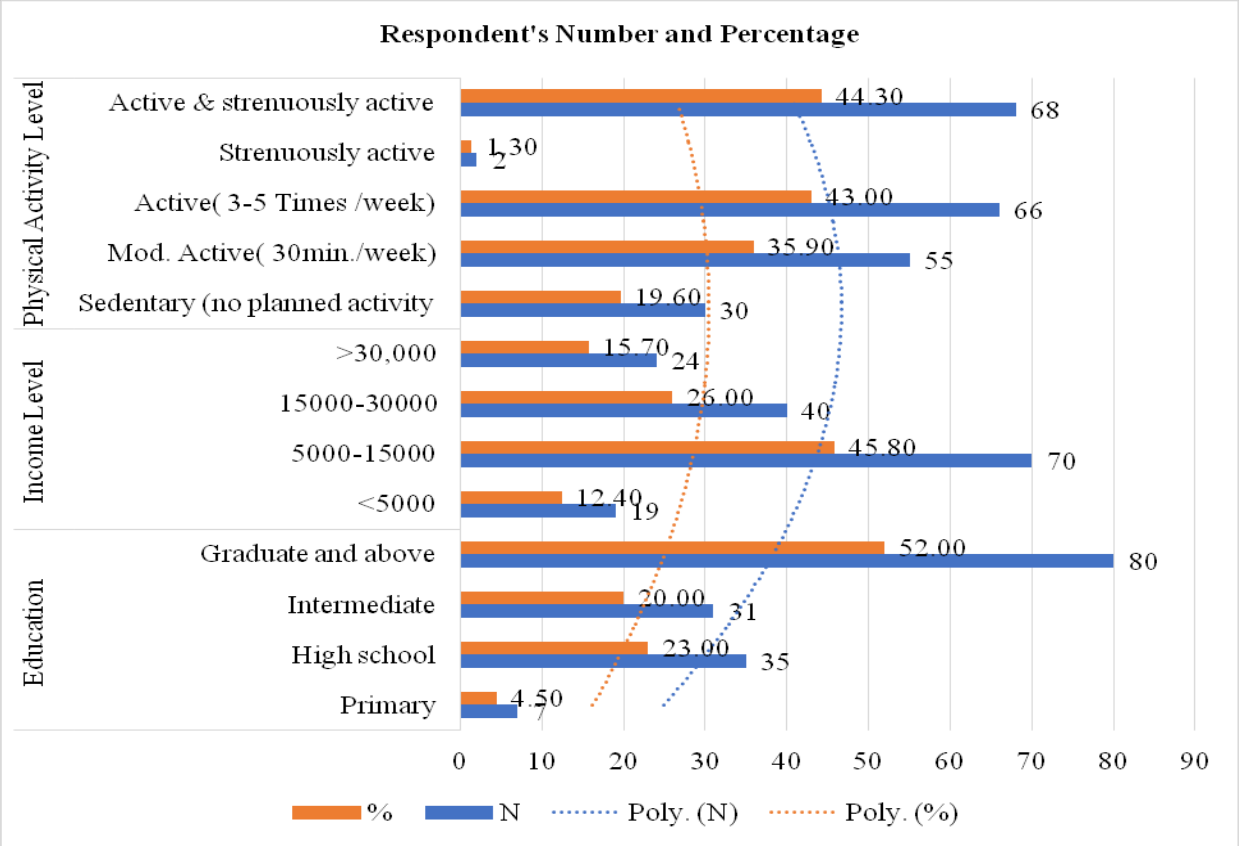


Table – II: Comparison of WHO Food guide with the Average number of servings consumed by the group studied

Group	Servings	
	Number	Average Number
Bread and Cereal	6 to 11	8.5
Vegetables	3 to 4	1.2
Fruits	2 to 3	0.4
Milk	2 to 3	0.69
Meat	3 to 5	3.26
Oil and Refined Sugars	2 to 3	10

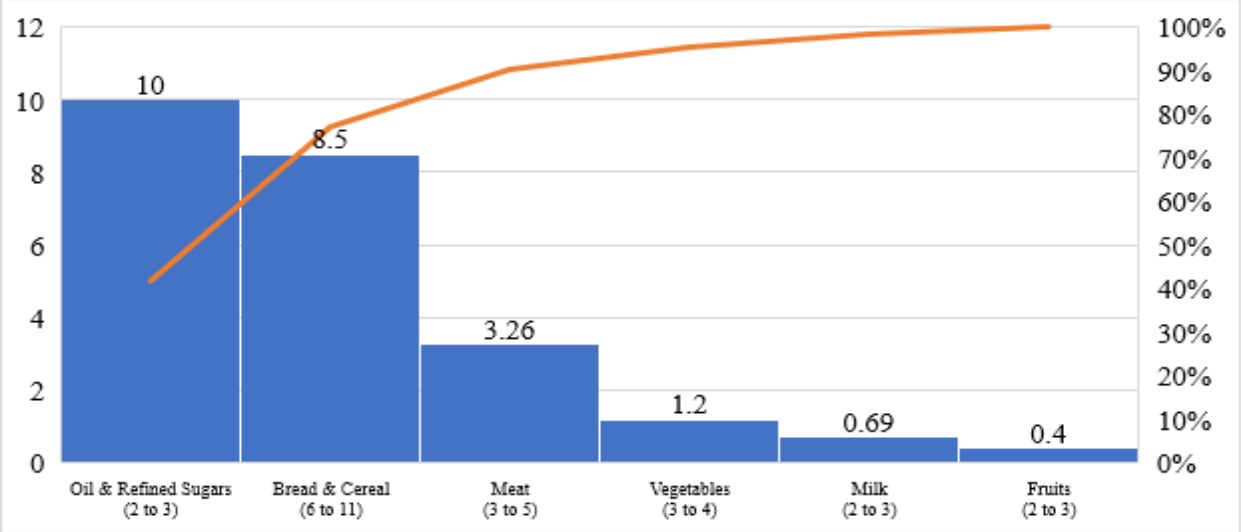
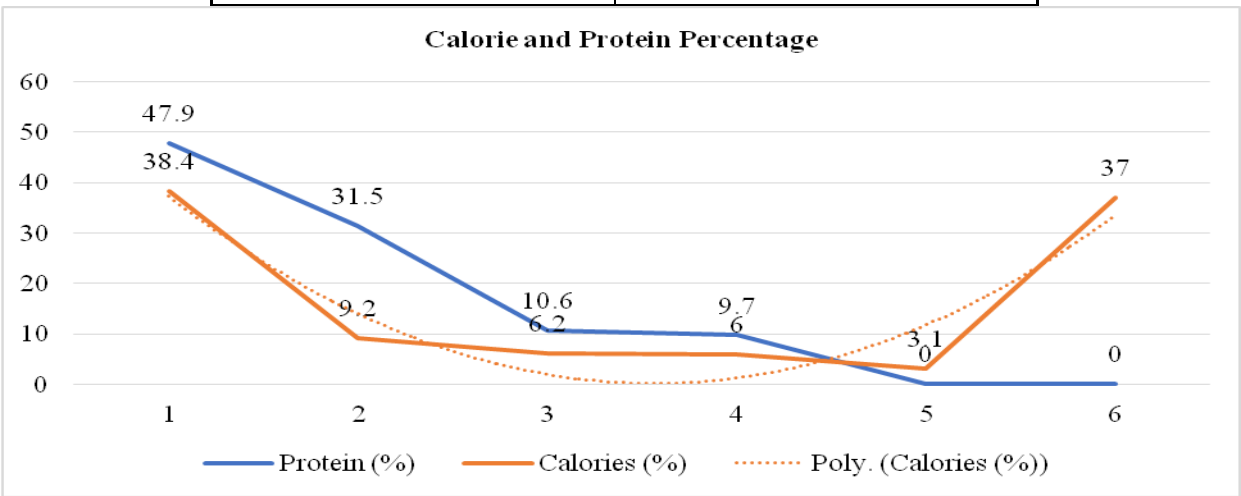


Table – III: Percentages of Calories and Protein from various food groups

Protein (%)	Calories (%)
47.9	38.4
31.5	9.2
10.6	6.2
9.7	6
0	3.1
0	37



DISCUSSION:

Healthy life depends upon better lifestyle and diet habits. Healthy weight can be maintained through balanced diet and physical activity routine [2, 3]. Asian population was studied for BMI and cut-off values of the waist circumference in this research with participation of high and low risk groups. BMI caused (56%) respondents in the high-risk group. Diet related issues are mostly associated with these outcomes causing overweight, obesity and non-communicable illness of diet. Premature death, chronic illness and poor life quality are among the possible outcomes [16, 17, 18]. National Survey of Health (1990 – 1994) also supports degenerative disease burden in Pakistan; gender and socio-economic state was involved in the obesity incidence [11, 19]. Obesity and BMI were also an issue in the urban population [4, 11, 18]. Modification of life style is mandatory for the reduction of disease development. We did not find any over consumption of calories that may be attributed to less energy requirement; large number of population was in the category of obese and overweight. However, gearing up of physical activity pattern is recommended in the affected cases. Consistent calorie intake was found in this research which indicated fats as one of the main calorie sources [10, 11].

However, cereal and bread group were the primary source in comparison to the meat group, this can be compared with the NHS (National Health Survey) [11]. However, western authors report the intake of protein from the animal food as a reason behind obesity and overweight [16]. In the concern of Vit-B, protein and iron, population can be jeopardized. Obesity is strongly associated with the composition of diet [12, 20]. A healthy diet pattern can be maintained by the intake of fruits, whole grain, vegetables, cereals, poultry and fish full of micronutrients [3]. Whereas, an inverse dietary pattern is associated with the CVD and mortality [1, 3, 6]. Diet consumption, recognition and identifications of lapses can be used an instrument of diet intervention [21]. An increased vegetable and fruit intake is recommended in the conducted health surveys [22]. However, there were very few who consumed healthy diet as we observed in this particular research as consumption of vegetables was (23%) and fruits was (20%). A minimum scale of vegetables, fruits and meat have been reported in FAO/WHO report specifically for the under developed countries [1, 22]. According to Gopalan, South East Asian countries were observed with a shift in their social and economic status and shift in the diet was also observed from coarse to refine grain cereals which reduced the intake of fiber; animal fat increased with a subsequent decrease in the vegetables and fruits [23].

Bone health and Osteoporosis are also emerging problems that are associated with the calcium intake which can be reduced with increased calcium intake (> 500 mg) and Vit-D in high osteoporosis cases, this can ultimately reduce the risk of fracture and physical activity with sun-exposure are good for the muscles and bones [1]. Calcium can be obtained from milk; whereas, only forty percent were regular consumers of milk which can develop bone issues and osteoporosis [1, 24]. Positive markers also include education and income as they support healthy intake resources accommodation but it was not significant statistically.

CONCLUSION:

Nutritional guidelines can be taken from this research with modification in life-style, health educational awareness, preventive strategies and involvement of the individuals. Outcomes suggest the increased consumption of vegetables, fruits and dairy items which give anti-oxidant, fiber, nutrients substances & non-nutrient substances such as Phyto-chemicals. Surveys are also required for better and in-depth understanding of the diet routine in our country.

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