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FACTORS AFFECTING NON-COMMUNICABLE DISEASES

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ABSTRACT

Background: Overweight children and adolescents with family history of chronic diseases are at greater risk to develop health problems compared to their normal-weight counterparts. The aim of this study was to assess the obesity and family history of non-communicable diseases among adolescents living in Pakistan. **Methods:** A descriptive cross sectional study was conducted among 171 conveniently selected school and college going students studying at educational institutes of Pakistan. The data was collected by trained data collectors and the height and weight of each student was measured after completion of the questionnaire to calculate BMI. The data were entered and analysed using IBM SPSS VERSION for Windows 20.0 software. **Results:** The average age of the students in the sample was 14-19 years, including 68% school going and 32% College students. Amongst them, 57.3% were males while 42.7% were females. Sample students belonged to a diverse ethnic and socioeconomic background. Almost half (53.8%) of the respondents had normal BMI while 17.5% were overweight and 28.6% were underweight. The study revealed, more than half of the sample (56.7%) had positive family history (FH) of hypertension, 54.4% had FH of Diabetes, 43.9% had FH of high cholesterol, while 12.9% had FH of asthma and 4.7% had FH of sleep apnoea. **Conclusions:** The study revealed 17.5% of Pakistani adolescents were overweight and almost half of the sample showed family history of non -communicable diseases including Hypertension, Diabetes and High Cholesterol. There is a need to create awareness regarding healthy lifestyle to address these modifiable risk factors among the adolescents and the community at large, which ultimately will result in total risk reduction of future non-communicable diseases among them.

KEYWORDS: Overweight children and 4.7% had FH of sleep apnoea.

INTRODUCTION

Pakistan is the sixth most populous country in the world, but a country in which close to 80 million of its individuals (approximately 50% of the population) suffer from one or more of the chronic conditions.[1] Death due to NCDs now far outnumber deaths due to communicable disease. The Global Burden of Disease 2010 data suggests that NCDs and injuries account for 77% of age standardized deaths in Pakistan.[2] An estimated 40 million individuals in Pakistan suffer from high blood pressure, 32 million from heart disease, 24 million from obesity, 18 million from high cholesterol, 8 million from diabetes and about 50 million from mental health disorders.1NCDs are largely attributed to unhealthy life style such as unhealthy dietary habits, physical inactivity, overweight/obesity and smoking. NCDs are projected to account for 73% of global mortality by the year 2020.[3] World Health Organization (WHO) estimates that NCDs accounted for at least 40% of all deaths in developing countries.[4]

The most common and problematic non-communicable conditions are heart disease[3], hypertension and diabetes.[5] There is significantly higher prevalence of cardiovascular disease risk factors in Pakistani adults.[6] Moreover, in Pakistan over 10% of people in the age group 25 years and above have type 2 diabetes and an equal number are suffering from impaired glucose tolerance.[7,8] It is also estimated that by the year 2025, the number of persons with diabetes in Pakistan will rise to 14.5 million as compared to 4.3 millionin the year 1995, representing a 3.37 fold increase in caseload.[9] There is sufficient evidence that the risk factors for noncommunicable diseases, which were predicted in childhood, track to adolescence and adulthood.[10,11] Family history of cardiac disease, hypertension and diabetes mellitus is also a strong predictor for the development of these diseases in future life. A positive family history [parents, siblings, grandparents, first cousins, or blood related uncles and aunts] of cardiac disease, hypertension and diabetes were reported by 4%, 23% and 16% of children respectively in a study done by Khuwaja, A. K., Fatmi, Z., Soomro, W. B., Khuwaja, N. K. (2003).[12]

For optimal identification of risk factors of noncommunicable diseases among healthy targets, we should screen out the children and adolescent age group to prevent the adverse consequences in future. Pakistani children are adopting more and more unhealthy life style. Physical activity is constantly decreasing among school children. A trend away from active leisure pursuits and recreational sports has been evident, and reliance on sedentary

entertainment, including television, computer and video games has increased. There is also an increasing trend of eating junk and empty caloric foods (chocolates, snack, and soft drinks) particularly by children and adolescents. These habits have fueled the epidemic of obesity, which itself is a potent modifiable risk factor for cardiovascular disease, hypertension, diabetes and dyslipidemia.[12,13] The current study aimed to assess the BMI as modifiable and family history of non-communicable diseases as unmodifiable risk factor among adolescents living in city of Karachi, Pakistan. We opted for BMI because it is the one most widely used method for classifying overweight and obesity in adults[15,16,18] and has also been recommended for screening overweight and obesity in adolescents.[19–,23] Weight-for-height is already used routinely in preschool children in clinical settings to screen for underweight and overweight.[14,15,24]

MATERIALS AND METHODS

A descriptive cross-sectional study was carried out among school and college going students studying at educational institutes of Pakistan. The study sample of 171 students was selected by convenient sampling from these institutes.

A formal permission was granted from the school management and consent forms were signed by guardians of all students. The data was collected by trained data collectors under the supervision of their teachers. In order to calculate BMI, the height and weight of each student was measured after completion of the questionnaire. For this purpose standardized weighing scales and measuring tapes were used. The data were entered and analysed using IBM SPSS VERSION for Windows 20.0 software.

Ethical considerations

Informed consent was obtained prior to the interview. Participation was voluntary and no coercion was used in the data collection process. They were fully informed of the nature of the study and the use of the data. They were free to withdraw from the interview at any time or refuse to answer any particular question. Participants were also ensured of confidentiality. No personal identifying information was obtained for any part of the investigation.

RESULTS

Response rate

A total of 171 students were recruited for the study. Both male and female students 14 to19 years of age and provided the signed written consent, were found eligible for the study.

General Characteristics

The average age of the students in the sample was 14-19 years. 100 percent of the participants were Muslims. Among them 57.3% (n=98) were males and 42.7% (n = 73) were females. Percentage of school going students was 68% (n=116) students while 32% (n=55) belonged to College. Sample students belonged to a diverse ethnic background and socioeconomic class. (see Table 1).

Family History of Non-communicable Diseases The study results showed 56.7% (n=97) respondents had family history positive for hypertension, 54.4% (n=93) had family history of Diabetes, 43.9% (n=75) had family history of high cholesterol, while 12.9 % (n=22) had family history of asthma and 4.7% (n=8) had family history of sleep apnoea. (see Table 2).

Body Mass Index

Almost half 53.8% (n=92) of the respondents' BMI was within the normal ranges 18.5 – 24.6, and amongst remaining half of the sample 17.5% (n=30) were overweight 25 – 39.9 and 28.6% (n=49) were underweight <18.5. (see Chart 1).

Table 1: Demographic Characteristics of the Participants (n=171)

Variable	Category	%
Gender	Male Female	98 (57.3%) 73 (42.7%)
Age (years)	14 15 16 17 18 19	15.2 24 29.2 15.2 7.6 8.8
Ethnicity	Urdu Speaking Sindhi Baloachi Punjabi Pathan	87 19 39 16 10
Household Income/month[+]	<10000 <25000 <50000 <100000 >100000	1.2 10.5 28.7 39.2 20.4

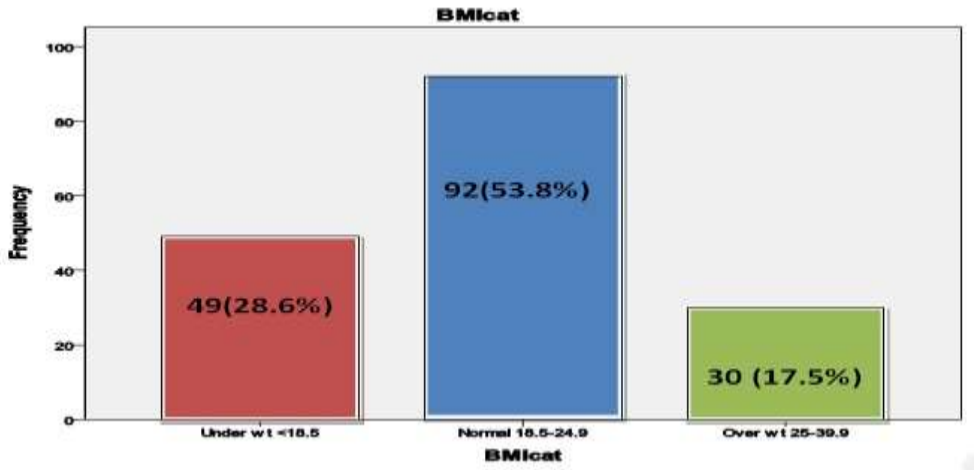

Chart 1: Body Mass Index.

Family History of HTN					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	97	56.7	56.7	56.7
	No	74	43.3	43.3	100.0
Family History of Diabetes					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	93	54.4	54.4	54.4
	No	78	45.6	45.6	100.0
Family History of Sleep Apnea					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	8	4.7	4.7	4.7
	No	163	95.3	95.3	100.0
Family History of Asthma					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	22	12.9	12.9	12.9
	No	149	87.1	87.1	100.0
Family History of High Cholesterol					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	75	43.9	43.9	43.9
	No	96	56.1	56.1	100.0
Total		171	100.0	100.0	

DISCUSSION

32 million from heart disease, 24 million from obesity, 18 million from high cholesterol, 8 million from diabetes The present study was designed to explore the obesity and about 50 million from mental health disorders.[1] The and family history as risk factors of non-communicable current study was just an attempt to have an estimate diseases among adolescents living in the metropolitan about obesity and family history as risk factors of noncity of Karachi, Pakistan. As the country undergoes communicable chronic diseases

among young generation economic development, the changing lifestyles have which is very occasionally screened for nonresulted in a transition in the health profile of the population.[23] Pakistan is the sixth most populous communicable diseases in a country like Pakistan. We conducted this study among adolescents in their mid and country in the world, but a country in which close to 80 late teens, belonged to a diverse ethnic background and million of its individuals (approximately 50% of the socioeconomic class. The study revealed, more than half population) suffer from one or more of these chronic conditions.[24] Although large population based studies on of the sample (56.7%) had positive family history (FH) of hypertension, 54.4% had FH of Diabetes, 43.9% had prevalence of these conditions are lacking, there are FH of high cholesterol, while 12.9% had FH of asthma smaller surveys that have shed light on the burden they and 4.7% had FH of sleep apnoea. Family history of pose. Translating these figures to a population of 180 cardiac disease, hypertension and diabetes mellitus is a million individuals means the numbers affected by these strong predictor for the development of these diseases in conditions are staggering. An estimated 40 million future life. There is a possibility of underestimation or individuals in Pakistan suffer from high blood pressure, overestimation in these figures because children may not be aware of their family's health problems. In addition, non-awareness about these diseases in the individual family members is also quite likely. In Pakistan, up to 85% of hypertensives and 64% of diabetics are un-aware of their disease.[24] A positive family history of cardiac disease, hypertension and diabetes were reported by 4%, 23% and 16% of children respectively in a study done by Khuwaja, A. K., Fatmi, Z., Soomro, W. B., Khuwaja, N. K. (2003).[12]

Childhood obesity has reached epidemic proportions, worldwide.[25,26] The tracking (persistence) of obesity has been well documented from childhood to adulthood.[27] It is reported that about 50% of obese adolescents become obese adults.[28] This trend is of particular concern because children, which constitute of almost half of total population of the country. This study measured Body Mass Index of the sample and found that almost half (53.8%) of the respondents had normal BMI while 17.5% were overweight and 28.6% were underweight which is alarming. Pakistan is a country in transition and now faces double burden of coexistent overnutrition and undernutrition. Obesity is becoming an increasingly prevalent problem in Pakistan, as it has in other developing countries, with undernutrition remaining a problem simultaneously.[29] Pakistan's neighboring country India has the double burden as well; a study done on school children in urban Madras found the number of overweight boys to be 17.8%, and girls 15.8%. In affluent cities of India, prevalence of

obesity reach the levels of industrialized countries, with values increasing with socioeconomic class.[30,31] This should be seen in the context of the double burden –a WHO study found 30–70% of Indian adults to be underweight, greater than the proportion in Sub-Saharan Africa.[32]

This study reports a quite high proportion of overweight teens. Childhood obesity is strongly associated with sedentary life styles and increased caloric intake,[33] less physical activity[34,35] and high socioeconomic status.[36] Awareness about balanced diet, improvement in the level of education and socioeconomic conditions and increased physical activity could help in decreasing the obesity in children.[36]

CONCLUSION

The study revealed 17.5% of Pakistani adolescents were overweight and almost half of the sample showed family history of non-communicable diseases including Hypertension, Diabetes and High Cholesterol. The reasons behind obesity are unhealthy trend of eating and adoption of sedentary life style. There is a need to create awareness regarding healthy lifestyle to address the modifiable risk factors among the adolescents and the community at large, which ultimately will result in total risk reduction of future non-communicable diseases among them.

LIMITATIONS OF STUDY

1. Only students who were willing to fill the questionnaire were included. Convenient sampling was a limitation as the data gathered for this study may not be generalized.
2. The results are based on self-reported family history of diseases.

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CONFLICT OF INTEREST

We have no pecuniary or other personal interest, direct or indirect, in any matter that raises or may raise a conflict with our duties as researchers.

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