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ANALYSIS OF CARDIO-METABOLIC RISKS IN YOUNG PAKISTANI ADULT

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Abstract:

Introduction: *Cardiometabolic risks, especially hyperglycaemia, hypertension and dyslipidaemia, are on the rise globally in parallel with type 2 diabetes (T2D), cardiovascular diseases (CVDs) and non-alcoholic fatty liver disease (NAFLD), with high disability and mortality rates.* ***Aims and objectives:*** *The basic aim of the study is to find the cardio-metabolic risks in young Pakistani adult.* ***Methodology of the study:*** *This study was conducted at King Edward medical university, Lahore during Dec 2017 to May 2018. All participants were informed of the study objectives and signed a written informed consent before questionnaire-based interview and blood sampling. Subjects diagnosed with advanced stage health complications and on specific medications were excluded from the study.* ***Results:*** *The data shows that there is a significant relationship between hypertension and CVD. There is also some positive relationship between socio-economic status and hypertension with respect to CVD.* ***Conclusion:*** *It is concluded that the rise in general and abdominal obesity also led to an elevation in levels of blood pressure, fasting glucose and lipid profiles along with significantly high rates of hyperglycaemia, hypertension and dyslipidaemia.*

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INTRODUCTION:

Cardiometabolic risks, especially hyperglycaemia, hypertension and dyslipidaemia, are on the rise globally in parallel with type 2 diabetes (T2D), cardiovascular diseases (CVDs) and non-alcoholic fatty liver disease (NAFLD), with high disability and mortality rates. At the same time, overweight and obesity have also become serious issues across all developing and developed world nations. T2DM and IGT are associated with a significantly increased risk of cardiovascular disease (CVD) with South Asian's particularly predisposed to early onset of T2DM and CVD, with almost a third of future T2DM cases predicted to be in those below 45 years [1]. Both CVD and T2DM may share a common pathogenesis and indeed retain many common risk factors/features. Elevated blood pressure (BP) is a causal risk factor for cardiovascular disease (CVD). In addition, randomized clinical trials among people with hypertension have illustrated, in total, a decrease in CVD occasions by 20%, coronary illness (CHD) by 17%, stroke by 27%, and heart disappointment by 28% for each 10 mm Hg systolic BP (SBP) bringing down with medicinal treatment [2]. In this manner, counteractive action, location, treatment, and control of lifted BP, and its clinical connect hypertension, is a critical general health need and an essential focus for CVD aversion.

According to 2014 WHO estimates, 5.4% people in Pakistan are obese, of which 3.7% are male and 7.3% females, whereas almost 23% (18.6-27.2) population >18 years of age was found overweight.12 Despite introduction of new adiposity indices and their role as strong markers of disease risk, simple yet affordable measurements of BMI and WC still have high risk predictive scores [3]. Due to their simplicity and affordability, measurements of height, weight and WC are quite common when collecting population data on a large scale, both in hospital-based settings or when performing an epidemiological study. In addition, numerous past and present studies have reported reliable and accurate associations of raised BMI, WC and health complications [4]. In Pakistan, several studies have conducted health surveys while taking into account obesity parameters and their ill health effects on age- and gender-stratified population groups. But complete information regarding obesity-associated metabolic dysregulations in rather healthy young individuals is scarce [5].

Aims and objectives

The basic aim of the study is to find the cardio-metabolic risks in young Pakistani adult.

METHODOLOGY OF THE STUDY:

This study was conducted at King Edward medical university, Lahore during Dec 2017 to May 2018. All participants were informed of the study objectives and signed a written informed consent before questionnaire-based interview and blood sampling. Subjects diagnosed with advanced stage health complications and on specific medications were excluded from the study. All the demographic characteristics of selected individuals were noted. For biochemical assays, venous blood samples (4.0mL) were withdrawn from cubital vein using sterile syringes and collected in evacuated gel tubes and transferred to the institution's biochemistry laboratory. Samples were centrifuged at 3,500 revolutions per minute (rpm) for 30 minutes within 2 hours of sampling and serum aliquots stored at -20°C until analysis. Biochemical analysis including total cholesterol (TC), triglycerides (TG), high-density lipoprotein (HDL) cholesterol, low-density lipoprotein (LDL) cholesterol, very low-density lipoprotein (vLDL) cholesterol and fasting blood sugar (FBS) was performed using commercially available kits (Roche Diagnostics, United States) on the spectrophotometer.

Analysis

Student's t-test was performed to evaluate the differences in roughness between groups. Two-way ANOVA was performed to study the contributions. A chi-square test was used to examine the difference in the distribution of the fracture modes (SPSS 19.0 for Windows, SPSS Inc., USA).

RESULTS:

The data shows that there is a significant relationship between hypertension and CVD. There is also some positive relationship between socio-economic status and hypertension with respect to CVD. Table 01 shows the value of LDL, HDL, Cholesterol and demographic values of patients.

Table 01: Statistical analysis values of Control group and diseased group

Variable	Diseases Group	Control Group	t Value	*p* Value
Age（Year）	56.56±8.46	53.64±8.36	1.716	0.081
BMI（kg/m2）	24.31±2.26	23.37±2.09	2.195	0.031
SBP（mmHg）	140.36±15.70	116.53±13.46	8.248	0.000
DBP（mmHg）	87.94±10.69	75.81±9.94	5.967	0.000
PP（mmHg）	52.42±12.87	40.72±8.74	5.426	0.000
FBG（mmol/）	5.12±0.65	5.06±0.49	1.764	0.081
TG（mmol/L）	1.74±0.75	1.69±0.86	1.838	0.071
TC（mmol/L）	4.95±0.76	4.88±0.82	1.712	0.090
HDL-	1.30±0.43	1.31±0.56	1.717	0.089
LDL-C	3.46±0.58	3.38±0.66	1.139	0.266

DISCUSSION:

Our approach to understand disease development in early life, identify key pathways of interest in predisposition to hypertension and develop specific preventive approaches has been to use multi-modality imaging to capture information on cardiovascular structure and function 'from heart to capillary'[6]. With this approach it becomes possible to model the interrelationship between features of the cardiovascular system and, with longitudinal data, study the progression of disease across vessel and heart. By extending the data collection to other organs such as brain and liver, a holistic view of disease development can be captured [7].

High blood pressure was the leading risk factor for the overall global burden of disease in 2010. The recent decrease in cardiovascular mortality in high-income countries has been associated with a rise in the numbers of patients living with cardiovascular disease, and the wider use of preventive drugs. Thus, an up-to-date understanding of the associations of blood pressure with different non-fatal and fatal cardiovascular disease outcomes would help to refine strategies for primary prevention and inform the design of future clinical trials [8].

The Prospective Studies Collaboration meta-analysis of 61 cohorts recruited between 1950 and 1990 reported log-linear associations of systolic and diastolic blood pressure with death from ischaemic heart disease and stroke, with no apparent threshold below which no further reduction in risk is observed, down to a blood pressure of 115/75 mm Hg, in participants aged 40–89 years. These findings predated several public health initiatives, including efforts to reduce salt consumption and tobacco use, and the more widespread use of blood pressure-lowering treatments for primary prevention, and did not provide information about major chronic and non-fatal diseases, including heart failure, peripheral arterial disease, abdominal aortic aneurysm, and stable angina [9]. Importantly, no current estimates are available for the lifetime incidence and years of life lost associated with hypertension attributable to specific cardiovascular diseases [10]. Although in previous studies investigators have estimated the associations of cardiovascular disease risk factors with lifetime risks or cardiovascular disease-free years of life lost, their focus was on total cardiovascular disease, with only one study so far to have analyzed the incidence of specific cardiovascular diseases in a competing risks context [11].

CONCLUSION:

It is concluded that the rise in general and abdominal obesity also led to an elevation in levels of blood pressure, fasting glucose and lipid profiles along with significantly high rates of hyperglycaemia, hypertension and dyslipidaemia. However, the use of combined risk scores of BMI and WC verses BMI or WC alone led to contrasting associations with common metabolic risk phenotypes.

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