**INTRODUCTION**

One of the leading disorder that enhance mortality in anobese person. The definition of obesity says an excessive fat accumulation in the body that resulted in chronic diseases like hypertension, CVD, myocardial infarction (MI), and diabetes.Many researchers have found a strong correlation between obesity and CVD [1]. The study has suggested that animbalance of autonomic activity increases CVD chances in obesity [2]. The ANS is a control mechanism of the body that generally maintains homeostasis in the body. ANS regulates the glands, blood vessels, and internal organs. The ANS is divided into two branches sympathetic nervous system (SNS) and the parasympathetic nervous system (PNS). The SNS mobilizes the body systems to provide energy for the fight or flight response, whereas PNS conserve the energy by regulating the rest and digest response. HRV measures the effect of the ANS function on heart as the vagal nerve is the mediator between ANS and heart. Even a small change in ANS resulted in changes in heart rhythm. HRV is a variation in the RR interval of electrocardiogram (ECG). Thus, HRV could be the most important and noninvasive method to investigate the impact of obesity on ANS. The significantly decreased HRV in obesity increase the chances of CVD[2,3]. ANS control vital organs of the body, fluctuation in these organs can be represented using linear and non-linear HRV parameters. The paper is organized as follows- Section II presents the methodology where subjects, criteria for obesity, statistical test, and machine learning algorithm are discussed, section III discussed the statistical and machine learning results , and finally, the conclusion is given in section IV.