Asian Obesity Paradox: Implications for Healthcare Management Approaches

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The millennial journey from starvation to sudden abundance, though exciting still, will be haunting the mankind; and in specific, the Asian populace for altered metabolic state leading to certain diseases. While explanations may be there, but current data highlights that the ancestors of current day South Asia typically adopted a farmer's life and struggled between droughts and thriving farming seasons. The indisputable fact of early life in the region was a more exhaustive pattern with extreme seasonal variations modifying body's food storing mechanisms. Available genetic studies highlight the transmission of these epigenetic traits to their offsprings, shaping their bodies to be resilient to weather changes, starvation and physical fitness.[1]

Like different races occupying different regions of the Globe, the South Asians also adapted to their environment and global improvements in life standards with availability of refined carbohydrates and fat diets, posing an abrupt requirement for body's metabolism to modify.[2] Measures of obesity i.e., fat deposition within body vary with body mass index (BMI), which has been shown to be a remarkably heterogeneous parameter and does not account for true body fat deposition.[3] The South Asians, with their typical body pattern, have been shown to have higher rate of adverse events even at lower BMI, identifying them to have a very different lean phenotype with excessive fat deposition.[2] The South Asian population, unlike other population groups, demonstrate a contrastingly unique mode of fat deposition with low BMI, but higher waist to height ratio, a pattern associated with early development of cardiovascular events, diabetes, and heart failure.[4,5] This unique pattern of obesity with higher waist to height and hip ratio (WHpR and WHtR) is typically been associated with South Asian population.[6]

This, so termed "Asian Obesity Paradox," is important to understand, appreciate and incorporated in our various healthcare policies.[6] The currently upper defined cut-off for defining obesity, regardless of consideration of newer tools to measure obesity, may not provide us with wholesome picture leading to faulty clinical and public health-related decisions leading to irreversible consequences, specifically for Pakistani population.[4]

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Of note here, is the study by Tromp *et al*. which has demonstrated higher prevalence of cardiovascular morbidity among lean South Asian diabetic patients.[7] Sellayah *et al*. have allowed an explanation to the escalating burden of cardiovascular disease burden in South Asian population by giving a concept of "thrifty genotype," which implies the natural selection of genes which survived starvation and environmental ruggedness; but overtime, learnt to store excess food as reserves for unfavorable weathers.[8] Obviating the environmental harshness from the equation, this additional reserve finally leading to visceral fat accumulation with lean phenotypes which culminated in development of metabolic diseases like hypertension, diabetes, and ischemic cardiac diseases. This hypothesis becomes more acceptable by further data, which has shown a 3-fold higher diagnosis of diabetes mellitus among South Asians, despite being young and lean in comparison to Caucasian population.[9] Two key aspects of "Asian Obesity Paradox" needs to be appreciated, which specifically challenges the way obesity is being perceived globally for South Asians. Firstly, the term subcutaneous fat excess needs to be clearly distinguished from visceral accumulation of fat in the inter-abdominal regions and intra-abdominal solid organs, like liver, where the later remains the hallmarks of "Asian Obesity Paradox" and is associated with multiple cardiovascular diseases.[10] Further insight as emerged from the molecular study of health and risk in ethnic groups [mol-SHARE] indicated higher adipocyte areas for South Asians in comparison to age-matched Caucasian controls. These adipocytes showed strong association with insulin resistance and lower adiponectin levels in South Asians subject in "mol=SHARE" study.[11]

Perhaps there is a degree of awareness among international medical communities– specific South Asian obesity paradox and possible metabolic tendencies. However, this aspect is still translated to primary clinics, where most decisions and patient screening is done. There remains a dire need to appreciate the visceral obesity pattern prevailing in South Asians to avoid unnecessary morbidity, and mortality related directly to the metabolic disorders like cardiovascular disease or indirectly through acquiring a disease like diabetes reducing immune response. The right and desirable approach needs to be targeting the primary clinics where a BMI focused approach may be shifted to anthropometric assessment, measuring more towards evaluating visceral fat. BMI in reality adds very little to patient's wellbeing as fat seems to be lighter on weighing machine than muscle mass. Specific population strata, based

anthropometric cut-offs, are needed to better triage risk among South Asian population. Following these basic policy measures, there is need of strict implementation of primary health prevention for Pakistani population by adding more exercise, taxing unhealthy items, and educating health from non-healthy food items. Obesity is said to be the analogous to the "new smoking," so does the author believe. In Pakistani population, a little obesity is even worse and may pay off during the productive life years where the youth was supposed to be taking the nation's toll on their shoulders. These aspects must be started from antenatal care to schooling, and later in life under governmental ownership. Following that, periodic screening must be inducted to evaluate inter-abdominal and fat deposition in organs, like liver. Necessary and timely involvement through more time physical activities must be encouraged during schooling years.

Regional policy-makers must acknowledge the over burdening effect from South Asian specific genotype-phenotype buildup, which can lead to early appearance of metabolic derangements including several cardiovascular disorders. The literature review clearly highlights the "Asian Obesity Paradox" so new anthropometric measures and not BMI like waist to hip ratio (WHpR), waist to height ratio (WHtR), abdominal volume index (AVI), body roundness index (BRI), body adiposity index (BAI), and concavity index (C-Index).[12] Not applying these measures, will create a huge burden of metabolic diseases in South Asian countries, which will not only be an economic drain but also reduces quality of life of humans in our population.

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