

Letter to Editor

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Obesity; An outcome of abnormal eating behavior

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The Arabic word for health *صحي* is synonymous in English language to “weight” *وزن* (Khoury, 2001), and a cultural link for perceiving weight as health can very well be understood, the impact of Arabic culture and values on a random Pakistani cannot be denied under any circumstances. Obesity is a major concern, in adults and more so in children. Pakistan is going through a transitional phase for some decades whereby changes are coming across in lifestyles, family structures, incomes, a new set of stresses, rural to urban shift, migrants’ influx making the transition all the more complex when compared to other countries (Nanan, 2002).

Being overweight and being obese is associated with an increased risk of early mortality or debilitating diseases (WHO, 1998). In Feb 2000, WHO BMI cutoffs for adults being overweight in Asia Pacific region were reported >23 while >25 for being obese. A 2002 study on Pakistani population showed 22% and 37% of urban men and women respectively to be obese as compared to 9% and 14% rural men and women of comparable age group, 22-44 (Nanan, 2002). The study outlines adopted lifestyle changes when comparing urban and rural populace, where diet quality and quantity together with a much mechanized lifestyle can easily be blamed for. It doesn't come off as a surprise that urban population is at a higher risk of developing non-communicable diseases, such as hypertension, cardiovascular disorders, type 2 Diabetes Mellitus, cancer which resulted in 63% deaths globally. (David et

al., 2012). In 1953 first of its kind study showed a higher incidence of coronary heart diseases in inactive bus drivers than active bus conductors (Morris et al. 1953), suggesting that an active lifestyle can certainly promote a much healthier state of the body. Not only exercise to promote a healthier lifestyle, but it can also delay the onset of 40 diseases (Rueggsegger & Booth, 2018). Lack of exercise can be regarded as a major cause of chronic illness leading to death (Mokdad et al., 2004). Apart from BMI, the WHR (waist (cm)/ hip (cm)) waist to hip ratio can also be used to highlight the fat distribution of the body and body shape (WHO, 1998 & McKeigue, 1996).

In adults, fat is stored primarily beneath the skin as subcutaneous fat tissue, where 80% of body fat resides (Ibrahim 2010). If a person takes in more calories beyond the capacity of the body to store it under the skin, it gets stored as visceral fat, around and in vital organs such as liver, pancreas, intestines that in turn release inflammatory mediators increasing vulnerability to non-communicable diseases (Chaldakov et al., 2003). Some of these mediators have been associated with impaired memory and compromised cognitive skills (Trollor et al., 2012). South Asians as compared to Europeans have a greater tendency of abdominal fat deposition and it shows a gender bias, where men are more likely to develop central obesity than women (WHO, 2000 & McKeigue, 1996). About 300 gene loci have been associated with obesity (Lau, 1997) with an intricate polygenic inheritance.

So should adults be the only ones concerned? Well, the first link between fitness and enhanced cognitive skills was established in a group of children (Clarke, 1958). An increased BMI in Childhood has been linked with a decline in cognitive functioning (Smith et al. 2011) poor performance in academics (Castelli et al., 2007) predisposition towards metabolic and cardiovascular disorders (Ebbelling et al., 2002) poor health and high risk of mortality (Must et al., 1992), suggesting that childhood obesity can actually be a greater concern than adult obesity.

In 2000 the Framingham Study stated that type 2 diabetes has a strong genetic interplay, an individual with a single diabetic parent is 3.5 times likely to get diabetes while if both parents were diabetic, the probability rise to six folds (Meigs et al., 2000). A United States (US)-based survey predicted in 2001 that by 2050 29 million US residents would be suffering from type 2 diabetes, however the alarming number of 29 million was reached in 2012 only, it was then predicted that by 2050 1 in 3 would be suffering from type 2 diabetes (Boyle et al., 2001). A study in 2000 stated that Pakistan ranks 8th in the world diabetes caseload and is expected to rise to 4th position by 2025, while currently having the highest prevalence of 11% in all south Asian countries (White et al., 2000).

While most studies have attributed obesity with male gender, a 1999 study had a contrasting approach, suggesting that urban middle-aged women are more likely to gain obesity than aged matched men & young women (James, 1999) that again can be linked with poor eating habits and a sedentary lifestyle. In Pakistan, the situation of cardiovascular disorders, hypertension, elevated cholesterol are more prevalent in nationals belonging to a higher socioeconomic strata which is a complete

contrast from developed countries where these factors are more common in lower socioeconomic strata (Pappas & Gergen, 2001).

What can be done?

In a recent study on adults at high risk of developing type 2 diabetes, its prevalence was reduced by 58% by extensive lifestyle changes where intervention was brought about with exercise and diet (Knowler et al., 2002). Despite the well-known benefits of exercise, most adults and many children lead relatively sedentary lifestyles and are not active enough to achieve the health benefits of exercise (Warburton et al. 2006). Apart from the systemic benefits of exercise, it is known to have an immense positive effect on the mental state as well. Exercise enhances the synthesis of BDNF (Cotman & Bretchold, 2002) causing increased neurogenesis that in turn facilitates memory consolidation and learning skills (Kobilo et al., 2011). This was further strengthened by a study on rodents where neurogenesis was observed in the hippocampus in the group exercising regularly, an area involved in learning and consolidation of memory. (Gomez et al., 2013).

Depression is a common mental illness, exercise increases kynurein that leads to an increased synthesis of Kynurenic acid that helps in fighting stress induced depression (Agudelo et al., 2014). Experimenting with rats showed exercise enables fighting drug addiction, cocaine (Larson & Carol, 2005) and can be a viable interventional approach at rehabilitation centers. Neurogenic reserve hypothesis (Kempermann, 2003) proposed that if an individual is exposed to physical activities earlier in life, it would lead to optimizations in brain networks associated with memory's and cognition, furthermore, a reserve of precursor cells is also created that

influences learnings abilities of that child throughout the lifespan. In 2010 a study concluded higher fit children to have a larger hippocampal volume (Chaddock, 2010). Exercise apart from delaying the onset of chronic diseases promotes mental health. Studies have suggested improvements in cognitive skills in exercising individuals (Beiers et al., 2014), lowering anxiety (Greenwood et al., 2012) helping fight depression (Kratz et al., 2014), and more importantly delays the progression and even onset of neurodegenerative diseases such as Alzheimer's and Parkinson's (Mattson et al., 2014)

Exercise is the Holy Grail if Pakistanis are to reduce the burden of non-communicable diseases in the next 20 years, or else if our current adult generation fails to acknowledge the dangers of obesity in their age group as well as in children, the long-term effects would be anything but beneficial. A time bomb wrapped in fancy packaging is a bomb nonetheless and is bound to explode.

Conflicts of Interests

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