THE EPIDEMIC OF OBESITY, ITS CAUSATIVE FACTORS, PREVENTION AND CONTROL (A REVIEW STUDY FOCUSING FEMALE AND CHILDREN)

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Abstract

A number of factors, including societal, environmental, professional and behavioral, tend to promote the present trend of the masses towards sedentary lifestyle and its allied prevalence of obesity. Need of the hour is to address the obesity related issued accordingly to control the situation. Overweight and obesity have emerged as one of the most important global health problems. The prevalence of the menace of obesity has posed viable threat to the public of the masses in developed and developing societies. In global perspectives there are more than one billion people who have been overweight and among them, three hundred million are categorized as obese. The graph of the prevalence of overweight and obesity has been on rise. Consistent imbalance between the consumption and expenditure of the energy results in the establishment of overweight and obesity. Exercise and physical activities provide one of the most feasible and efficient way for the use of extra energy of the body. To address the epidemic of obesity, the strategy of intervention of dietary restriction in combination with the physical activities is vital in the prevention and control of the obesity.

Key Words: Obesity, Over Weight, Exercise, Physical Activity, Health

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Introduction

In global perspectives, obesity has been one of the world's most widely spreading health problems bringing premature end to millions of lives of the people of all ages, classes and both genders. During the last three decades obesity has emerged as one of the world's grave health risks. According to the report of the World Health Organization (2010), there are more than 1 billion people who have been overweight and among them, there are about 300 million people who have been categorized as obese. The widespread global prevalence of obesity has created a new term "globosity" (Speakman, 2003). World Health Organization report 2000 claims that obesity and overweight have been the world's main health problems for the last two decades (World Health Organization, Regional Office for the Western Pacific Report 2000). The issue of obesity has not been confined only to one segment or age group of the people. It has equally affected different segments and groups of the community. Obesity has been one of the major public health problems among children as well as adults (Theodore; Bray & Kehle 2009; Centers for Disease Control and Prevention 2010). Sedentary lifestyle and avoidance of participation in physical activities have made the environment very much conducive for the prevalence of obesity. Baba; Iwao; Koketsu; Nagashima; & Inasaka (2006); Yang; Telama; Leskinen; Mansikkaniemi; Viikari; & Raitakari (2007) & Brock; Thomas; Cowan; Allison; Gaesser; & Hunter (2009) have found that lack of proper participation in physical activities tends to promote obesity among the adults. Bundred, Kitchirter & Buchan (2001) and Booth et al., (2003) have also found that, in addition to a few other factors, inactive lifestyle and no or less participation in physical activities in everyday life is mainly responsible for the onset and prevalence of obesity. Pan American Health Organization (2003); Daniel et al., (2005) and Hills; Okely & Baur (2010) have linked obesity with prolonged sedentary lifestyle, excessive energy intake in comparison to its expenditure. And accordingly, the life full of action and use of a healthy diet are vital in the prevention of obesity.

Literature Review

The menace of obesity is prevalent among all ages of the population. If it is not attended and addressed timely, it can prevail throughout the life

and Singh et al., (2008) claim that "*Obese children are at risk of becoming obese adults"*

In addition to other deteriorating consequences of obesity it is also linked with the shortening the life span of the obese ones. Major risk factors of the premature death are deeply associated with the type of diet being used and the sedentary lifestyle pattern (World Health Organization, 2009). Besides obesity, some fatal ailments are also associated with inactive life. Sedentary life also poses threat of heart diseases, cancer and obesity to both male and female (World Health Organization, 2009). Avoidance of obesity and maintenance of the healthy body weight are nothing less than a difficult assignment. It does need consolidated and focused efforts. At present, healthy weight management has attracted attention of the health authorities for a number of reasons.

Firstly, it directly deteriorates health and performance of the victim, rendering the person unable to actively perform the duties as compared to his/her peers with healthy weight. Secondly, obesity is also associated with the life expectancy and longevity of life. It is the leading risk factor for a number of chronic diseases resulting in the premature deaths in the world (World Health Organization, 1998). Giving the estimated statistics, Kelly et al., (2009) and Banegas et al., (2003) claim that approximately 9% of the premature deaths in the world are associated with obesity in one way or the other. Obesity is considered to be directly associated with the life expectancy. It is amongst the leading factors responsible for different types of life threatening ailments that alternately cause premature deaths. Research has found that "*Approximately 58% of type 2 diabetes, 21% of heart disease and between 8% and 42% of certain cancers are believed to be attributable to obesity",* Department of Health and Children (2005). Flegal, Graubard, Williamson, & Gail (2005) and Flegal, Kit BK, Orpana, & Graubard (2013) have confirmed that obese ones have got higher mortality rate. With reference to life expectancy, Peeters et al., (2003) have found that obese people happen to have about seven years reduced life expectancy in comparison to the people with healthy body weight. Thirdly, obesity has social demerits rendering the person non-attractive and depressed particularly in perspectives of female. It also has serious socio-psychological

dimensions, in the everyday life of the people. Neumark-Sztainer, Story & Harris (1999) have concluded that 46% of their respondents agreed to the general notion that obese persons are considered to be less attractive marriage partners as compared to the ones having healthy weight. We have witnessed that during the last three decades the graph of the prevalence of obesity has been rising up in the world and the same tendency is expected to persist without any decrease (E.A. Finkelstein, Khavjou, Thompson, Trogdon, Pan L., & Sherry, 2012).

The Nature of Obesity

Obesity refers to state of the excessive accumulation of the fats in the body. Actually the term *"Obesity" comes from the Latin word "obere (obesusu)," which means "over eat",* Hammoud et al., (2008). WHO defines obesity as *"A condition of abnormal or excessive fat accumulation, to the extent that health may be impaired"*. Obesity is the imbalance of energy in the body occurred on account of increased energy intake in comparison to its expenditure (Karasu & Karasu, 2010). It is generally associated with the greater number and increased size of the fatty cells in the body and it emerges when intake of the energy exceeds its expenditure (Formiguera & Canton, 2004). In recent years, on account of its graveness, obesity has been regarded as "Global Pandemic" (Swinburn et al., 2011).

For measuring the weight to height appropriateness among the adults, a number of anthropometric index including BMI, waist circumference (WC), waist-to-height ratio (WHtR) and waist-to-hip ratio (WHR) have been used (Hsieh, Muto 2006; Vazquez, Duval, Jacobs, Silventoinen 2007; Welborn & Dhaliwa 2007 & Wang, Sun, Wang, Wang, Xie & Zhou, 2009). As a tool, BMI has been commonly used, simple and feasible index of height and weight which is used to determine the level of normal weight, overweight and obesity among the adults. BMI is defined as a person's weight in kg divided by squared height in meters (kg/m^2). A person showing high BMI reflects presence of excess amount of fats in the body. The BMI of 30 or more in respect of a person is regarded as obesity (National Institutes of Health Report 1998). Different studies have confirmed the importance of BMI as it has been markedly

associated with the presence of the fats in the body (World Health Organization, 2000). Authenticity of the use of BMI, for determining the overweight and obesity among adults as well as children, is established (Dietz & Bellizzi 1999; De Onis, Onyango, Borghi, Siyam, Nishida & Siekmann, 2007 and Cole, Bellizzi, Flegal & Dietz 2000). BMI is an appropriate index as its figures have close correlation with some specialized tools used specifically to measure the body fats (Freedman, Horlick, & Berenson, 2013; Wohlfahrt-Veje, C. et al., 2014 and Suchocka, 2009).

According to Lim; Vos; Flaxman; Danaei; Shibuya; Adair-Rohani et al., (2010), the prevalence of obesity has been getting higher and higher and it has been recognized as the fifth viable cause for deaths throughout the world taking an annual toll of 2.8 million lives on account of overweight or obesity. About the prevalence of obesity and overweight in perspectives of the world, the World Health Organization Fact Sheet 2009 had concluded that in 2015 there will be an estimated volume of 2.3 billion and 700 million overweight and obese persons respectively.

Obesity can be described as the umbrella term encompassing a number of health issues as it does not prevail alone. It renders a person prone to many different health problems. Obesity serves as a fountain for a number of health hazards (Francischetti & Genelhu 2007). Longevity of life is also subject to healthy body weight. Fontaine et al., (2003) have found that obesity decreases the life expectancy and this decrease in the age is proportional to the increase in the BMI. With reference to the life period lost on account of obesity, Olshansky et al. (2005), Adams et al. (2006), Mehta and Chang (2011), and Preston and Stokes (2010) have concluded that reduction in age varies from 0.52- 1.61 years for men and 0.61- 1.28 for women respectively.

Factors Causing Obesity

Obesity is a complex condition, with serious social and psychological dimensions, affecting virtually all ages and socioeconomic groups of the community. As defined earlier, obesity is the excessive and abnormal accumulation of the fats in the body causing impairment of health (WHO Technical Report, 2000). Obesity is the outcome of blended causative

factors dominantly behavioral and environmental. Sedentary lifestyle, inactivity, unhealthy dietary habits, medication, medical problem, age and some professions render a person prone to the onset of obesity.

The contributing factors with reference to the onset and prevalence of obesity include environmental, behavioral, socio-cultural and genetic factors (Aronne, Nelinson & Lillo, 2009). However, literature has repeatedly endorsed inactive lifestyle and high caloric food as the prominent causes contributing to obesity. Obesity is mainly associated with two main factors e.g., the prolong intake of the energy dense foods and inactive lifestyle (Aranceta, 2003; Prentice & Jebb, 2001 & Yach, Stuckler and Brownell 2006). Uffelen et al., (2010) have found linkage between sedentary working conditions and obesity. A number of studies have linked obesity with healthy behaviour and healthy life pattern which include taking healthy diet, avoidance of smoking & sedentary life and regular participation in physical activities. To avoid obesity, the content of energy taken by the individual should correspond with the amount of energy expenditure (Hall, Sacks, Chandramohan, Chow, Wang, Gortmaker, Swinburn & Lancet 2011).

Hereditary aspect and genetically involvement in perspectives of the development and prevalence of obesity can not be ignored. Chagnon, Yvon, Rankinen, Snyder, Weisnagel, Pe´russe, and Bouchard, (2003) have concluded that "*several genes seem to have the capacity to cause obesity or to increase the likelihood of becoming obese."* Health experts acknowledge and accept the role of genes in rendering a person susceptible to obesity (Newbold, Padilla-Banks and Jefferson 2009). Research has concluded that sedentary lifestyle is amongst the four main threats causing global mortality taking death toll of 5.5 % globally (World Health Organization 2009). Working conditions may render a person prone to weight gain (Schulte, Wagner, Ostry, Blanciforti, Cutlip & Krajnak KM, et al., 2007).

Obesity and poverty are related to each other and this is confirmed by the WHO European Region report (2013) which has concluded that people from low socio-economic backgrounds tend to have double chances to become obese. Besides other biological, environmental and physiological factors, obesity is also associated with the socio-economic

conditions, the higher is the socio-economic conditions the lower is the risk of obesity and vice versa (Gutierrez-Fisac, Regidor, Banegas Banegas & Rodriguez Artalejo 2002; Mahasin; Diez Roux; Borrell & Nieto 2005; Vernay; Malon; Oleko; Salanave; Roudier; Szego; Deschamps; Hercberg & Castetbon 2009).

Obesity among Female

Both the prevalence and degree of obesity are associated with the socio-economic status of the masses and it significantly varies from one socio-economic group to another (Kanter & Cabellero, 2012). In the countries having lower and middle socio-economic status, the rate of prevalence of obesity among female has been doubled as compared to male. Genetically, female are more likely to become obese. A number of studies have confirmed the higher prevalence rate of obesity among female. Pradhan, Skerrett & Manson (2002) and Sotoudeh (2005) have concluded that prevalence rate of obesity has been higher in female as compared to male. The International Obesity Task Force (2007) has concluded that "*Obesity ranges from 10 to 20% for men, and 10 to 25% for women".* Different studies have concluded that women are most prone to obesity as compared to men and that obesity prevails at higher rate among female (Flegal, Carroll, Ogden & Johnson 2002).

The causes of the high ratio of prevalence of obesity among women have been multidimensional including education (Sidik & Rampal (2009), Parkes (2003) and Report from Department of Statistics (2010) income (Kain, Vio & Albala 2003, and Suleiman AA et al., 2009). Similarly the sites for the accumulation of excess fats in the body also vary genetically. In male, the upper abdomen and in female, the buttocks and thighs are the sites where excess fats are deposited (Bose, 1995). Obese female is regarded as dull, lazy and inactive. There exists discrimination against obese women in all walks of life. Research has found that 60% of the respondents (women) have expressed that they have been discriminated during the course of employment (Kari Horner 2005). Similarly, a number of studies have confirmed that obese women are treated with discrimination from the early age, which persists in their later life (Puhl & Brownell 2001).

In addition to socio-psychological and decreased proficiency factors, obesity also has some negative implications in perspectives of physical

growth among the female folk. The report of the World Health Organization (2010) has concluded that 26% of the non-pregnant women aging 20 to 39 have been overweight and 29% are obese (Hedley, Ogden, Johnson, Carroll, Curtin & Flegal, 2004). There exists general tendency in the society that obese female are less likely to become mother of the healthy children in their life. They are less preferred for marriage and considered less favourite for future motherhood. Obese pregnant women pose greater health risk for their coming babies (Robertson, Lobstein & Knai 2013).

Another common problem confronted to the obese female is the early arrival of puberty which is not good from the long term health perspectives. Lash & Armstrong (2009) have concluded that "*Obese female most often experience the onset of puberty at a younger age than their normal-weight peers"*. According to the common perception of the masses there exist greater chances of infertility among obese women. In this regard a number of studies have confirmed the linkage between obesity and infertility among women (Balen et al., 2006; Hossain, Kawar & El Nahas 2007; & Balen & Anderson, 2007; and WHO, 2016). The more obese is the woman the higher are the chances of the infertility and additionally, there exist increased chances of abortion after treatment of the infertility (Shaikh, Robinson & Teoh, 2010).

Obesity among Children

The trends of epidemic of overweight and obesity among children have been on rise worldwide. Lobstein, Baur & Uauy (2004) have found that globally, there are approximately more than 170 million overweight children. Like adults, sedentary lifestyle among children has been one of the basic risk factors for the onset and prevalence of obesity. Lack of physical activities in daily routine and sedentary lifestyle among the children and adolescents are reported to have been the two main reasons for weight gain (Telama and Yang, 2000 & Crespo, Smit, Troiano, Bartlett, Macera, & Andersen 2001). In this regard, Crespo et al., (2001) have concluded that by reducing the sitting time in front of TV by seven hours a week, the chances of obesity can be decreased to more than 30%. The prevalence graph of childhood obesity has been moving upwards and it has now been regarded as one of the most viable health threats

(Lobstein, T.; Baur, L.; Uauy, 2004; and Daniels, Arnett, Eckel, Gidding, Hayman, Kumanyika, Robinson, Scott, Jeor & Williams 2005).

With reference to the avoidance of obesity among children, use of healthy diet and physical activities are generally regarded as the meaningful interventions. Evidence has shown the positive role of taking healthy diet and the life full of action in the prevention and control of obesity (Daniels et al., 2005; & Hills, Okely & Baur 2010). Overweight and obese children often show poor performance in physical as well as mental assignments. They hardly compete with their peer having healthy weight. (Krombholz, 2012) has found that children with obesity are likely to show poor academic performance in schools.

How to Prevent Obesity

Obesity has been a sort of disability and it needs to be addressed timely. To prevent and manage obesity, need of the hour is to address the causative factors that tend to cause obesity. Avoidance of inactivity and life full of action are vital in the maintenance of healthy weight (National Institute for Health and Clinical Excellence Report, 2006; Kay, Fiatarone Singh, 2006; & Fogelholm, Lahti-Koski, 2002). In addition to that, special attention is also required to control the intake of the extra energy. As a weight management strategy, the role of diet is more effective than physical activities (Management of obesity, A national clinical guideline 2010). Though people mostly rely upon alone exercises and physical activities as an effective means for the weight loss but as a matter of fact, this strategy doest not yield fruitful result. Without restriction upon the energy intake, desired objective can not be realized. Slentz, Duscha & Johnson JL et al., (2004) have concluded that weight loss through physical activities without caloric restriction happens to have been be very meager and it may be 0.1 kg/week. The role of exercise in weight loss is not so much significant however if followed for 12 months, it is effective in preventing further weight gain (Franz, VanWormer & Crain 2007).

A review of 493 studies has concluded that application of the strategy of the combination of diet control and exercise has been more effective than relying only upon diet restriction (Miller, Koceja & Hamilton 1997).

Stiegler and Cunliff (2006) also endorse the same stance as they have found that application of both physical activity and controlled energy intake yield good result in weight loss therapy course. As a general principle, for the effective prevention and control of obesity, alteration in perspectives of diet and physical engagement are the prerequisites (World Health Organization, 2000). Other studies have also held up the same results comprising of the exercise and diet regime for effective weight loss (Wu, Gao, Chen and Van Dam, 2009 & Curioni and Lourenço, 2005).

Literature widely endorses close association of the sedentary lifestyle with the higher prevalence of obesity among children and similarly active lifestyle safeguards them from the onset of obesity (Swinburn & Egger, 2002). Intensity and duration of the exercise is directly proportional to the amount of increase in the weight loss. Shaw, Gennat, O'Rourke and Del Mar (2006) have concluded that the higher is the intensity of the exercise, greater is the weight loss. Regular walking is an ideal physical activity for overweight people (Management of obesity, A national clinical guideline 2010).

Conclusions

This review study has confirmed that in addition to genetics, environment and behaviour, there are a few other risk factors like nutrition, physical activity; and sedentary lifestyle which have got very close relationship with the onset and prevalence of obesity. A good deal of literature has confirmed the role of physical activities in the maintenance of healthy body weight and prevention of obesity. It has further indicated that sedentary lifestyle renders a person prone to overweight and obesity. The role of diet alone has not been satisfactory as an effective intervention of weight loss strategy. The combination of the dietary restriction with introduction of physical activities in the daily routine has proved to be very useful in the prevention and control of overweight and obesity.

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