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Prevention of Childhood Obesity in Saudi Arabia

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Abstract

The levels of obesity are continuously increasing across Saudi Arabia. The rising levels of obesity and overweight children are found to be the major concerns for the Saudi Arabian population. The current research is aimed at creating evidence regarding the increasing levels of obesity in Saudi Arabia and investigates the current policies and strategies that could help in reducing the levels of obesity across the country. The researcher collected the data from secondary sources under the qualitative research design. The data is collected from authentic resources and analysis is presented in tabular form. The research shows many implications for the Saudi Arabian people mainly as it suggests strategies and preventive measures that could control the levels of obesity in Saudi Arabia and reduce the burden of diseases. Through the increased awareness regarding the control and prevention of obesity and methods of increasing physical activity the levels of obesity can be controlled.

Keywords: Obesity; Saudi Arabia; Physical Activity; Prevention

Introduction

The levels of obesity are rising across the globe (Figure 1) [1] and have raised concerns for the healthcare professionals and policymakers. They are looking forward to strategies and approaches that could successfully reduce the levels of obesity. According to the WHO, obesity is the abnormal accumulation of the fats that impairs the health and well-being of the human [2]. Globally, the level of obesity has tripled since 1975. In accordance with WHO, approximately 1.9 billion adults have become overweight and 650 million individuals are found to be obese during the year 2016 [2]. Therefore, the researcher here is involved in investigating the strategies and measures that could control the increasing levels of obesity.

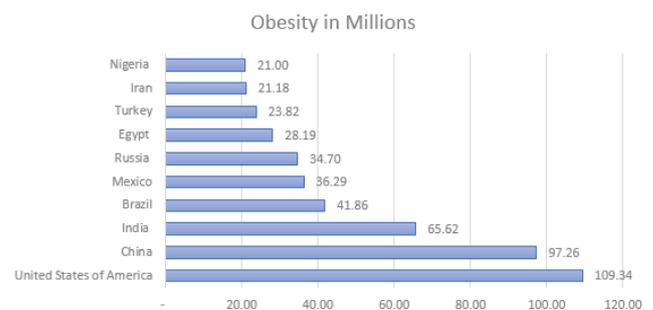


Figure 1: Top most obese nations (2017) [1].

According to the WHO [2], obesity is considered as the leading cause of death in comparison to the death due to malnutrition. Children are now getting obese and the numbers have reached up to 41 million with age group under five years (Figure 2) [3]. However, the children under the age group of 5-19 years are found to be overweight/obese, with greater than 340 million children affected in 2016 [2].

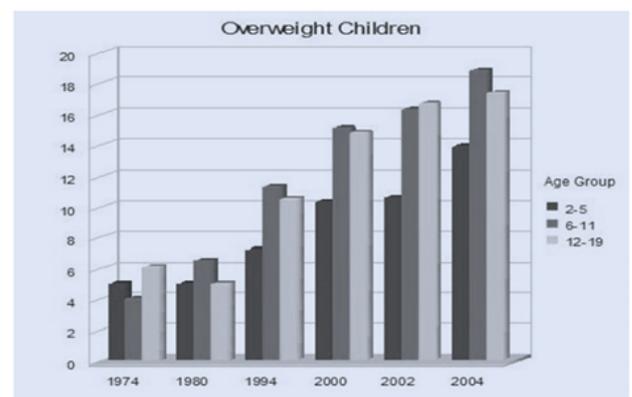


Figure 2: National health examination surveys II (age groups between six to eleven years) and III (age groups twelve to seventeen) [3].

Based on the data of 350 participants within the age groups 6-13 years, Al-Enazy et al. examine the prevalence of overweight and obesity among the primary school going children of Tabuk Saudi Arabia (**Figure 3**) [4]. According to the study, 7.3% of the Male children are overweight and 17.4% are obese. On the other hand, 12.4% of the Female children are overweight and 20.9% are found obese.

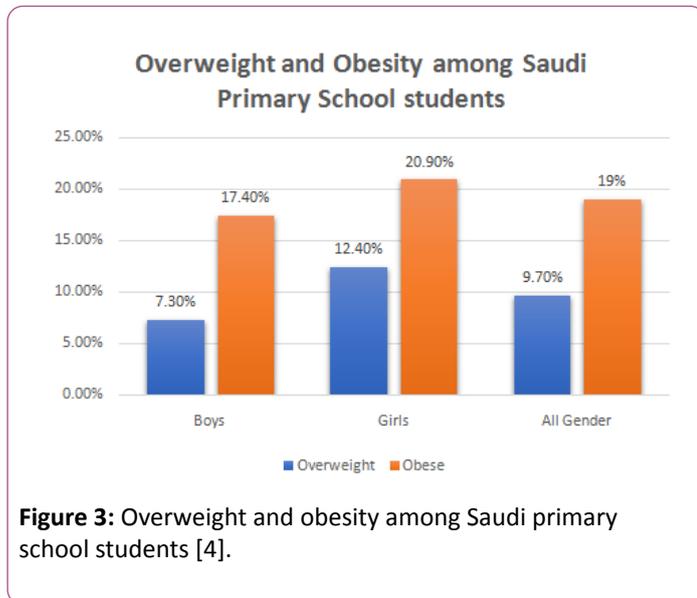


Figure 3: Overweight and obesity among Saudi primary school students [4].

Saudi Arabia is facing a challenge while managing the levels of obesity among the young children aged between <5 to <19 years. According to Al-Shehri et al. obesity has affected both the genders in Saudi Arabia and there is a critical need to design effective policies and strategies to control this health issue [5].

Previous research shows increasing levels of obesity among adults as well in Saudi Arabia. In this regard, Memish et al. reveal that out of the 10,735 participants under study, 28.7% are categorized as obese and the prevalence of obesity levels was higher across women (Obese=33.5% and Overweight=24.1%) [6]. On the other hand, the research conducted by Al-Shehri et al. showed that the obesity levels among the children and adolescents are found to be higher (Obesity=6-9% and Overweight=15-23%) [5].

The rising levels of obesity are grabbing attention across the globe mainly because the levels of obesity are further associated with the non-communicable diseases. The non-communicable diseases include type II diabetes, cardiovascular diseases, dyslipidemia, osteoarthritis, some types of cancers and hypertension [7].

However, obesity is a disease that could be controlled through effective strategies and preventive measures [8]. Through the control of obesity, the non-communicable burden of diseases may be further decreased and controlled [9]. Therefore, the current research is aimed at investigating and developing effective strategies and preventive measures that could help the population of Saudi Arabia to control the levels of the rising obesity and take measures to control the rising healthcare costs and burden of diseases. Under this motivation, the aim of this research is to develop effective strategies and recommend control measures through an evidenced-based research that

could help Saudi Arabia in controlling the levels of obesity. This study specifically focuses on prevention strategies against 'childhood obesity' in Saudi Arabia. The novelty of the study is that it is one of the few researches which have mentioned causes, outcomes and preventions of childhood obesity in Saudi Arabia based on the analysis of the past literature reviews.

Causes of Obesity and Burden of Disease

The prevalence of obesity has massively increased in Saudi Arabia during the period 1988-2005 among the adolescents [10]. In accordance with the National Growth study, the prevalence of obesity in the adolescents and the children, with the age range between 5-12 years, reached up to 11.3%. Females are found to get influenced by the rising levels of obesity as 11.0% and males with an obesity rate of 7.8%. These statistics suggest that the female child aged 5-12 years is more affected in comparison to a male child. On the other hand, the males (13.8%) under the age of 13-18 years are more affected in comparison to females (12.1%) [11,12].

The fundamental cause of obesity and overweight health issues are the imbalances of the internal human body physiology between calories consumed and the calories expended. The reasons behind the rising levels of obesity according to the WHO is the increased consumption of energy-dense foods inclusive of higher amounts of fats, increased urbanization, changing dietary and physical activity patterns, lack of policy implementation in health, agriculture transport, urban planning, processing, and manufacturing of food, distribution, marketing, etc. [2].

The rising levels of obesity could be connected to increase the non-communicable diseases; diabetes and cardiovascular disorders, musculoskeletal disorders and some types of cancer [13]. These diseases are further increasing the levels of mortality across the globe. The risks of the endometrial, ovarian, breast, liver and prostate cancers are also increasing due to the rising levels of obesity [2]. These are responsible to increase the levels of BMI and the obese children experience breathing problems increased the inclination of fractures, hypertension, and cardiovascular disorders.

The increased levels of obesity and as a consequence, the rising levels of non-communicating diseases are further raising the healthcare costs and the burden, in the low to middle-income communities. These increased healthcare costs are further increasing the challenges for the world economies [2]. The children across the low-income to middle-income countries are now more vulnerable to inappropriate pre-natal, infant and the young child nutrition. Poor nutrition along with the lower amounts of physical activity is threatening the health of the children across these economies.

Social Determinants of Children's Obesity in Saudi Arabia

Evidence has shown that the researchers and the practitioners had been involved in investigating the social determinants of obesity across the globe inclusive of Saudi

Arabia. The factors include: dietary habits, globalization, gender, and lifestyle.

Nutritional habits

The food consumption patterns are found to change across the globe with the economic development. For instance, in Saudi Arabia, the daily per capita consumption of fat has increased up to 143% and at the same time, the decline in the energy expenditure has been evidenced in Saudi Arabia [14]. The food has become more affordable for the people. Moreover, an increase in consumption of the unhealthy food has been adopted by the local people as influenced by the social changes experienced in Saudi Arabia [15]. Much evidently, a shift from the conventional to the western fast food products has been obvious in Saudi Arabia. The people are more inclined to consume unhealthy foods and carbonated drinks that are much famous across the young children and adolescents [16]. The children consuming fast food was associated with lower intakes of fruits, vegetables and milk in comparison to the non-obese children living in Saudi Children.

Lifestyle variables

The second variable that serves as the determinant of rising levels of obesity in Saudi Arabia is termed as lifestyle variable. Saudi Arabian people are more habitual to adopt sedentary lifestyles [11]. The socioeconomic status of the Saudi residents is found to improve along which the individuals are more prone to buy cars for the purpose of transportation. The children instead of going out are using more of the indoor games, watch television, and play less in the open fields. Due to such reasons, the level of physical activity is found to decline among the young children and a consequence they gain weight and get obese [17]. Another sub-factor of the lifestyle variable is 'sleeping'. The research by AlHazzaa et al. showed that the odds of normal weight were evidenced in the children who used to sleep more in comparison to those that had shorter duration of sleep [18].

Gender difference

The third determinant of obesity is gender. WHO showed that the obesity levels are comparatively higher in the female children as compared to male children [2]. On the contrary, the levels of the adult obesity are found to be higher in adult men as compared to the adult women [11].

Reducing Children's Obesity in Saudi Arabia

Obesity and overweight health issues are considered as preventive. Communities and the supportive environments are considered to play a critical role in this regard. The normal public needs to be influenced to make choice for the right food and increase the levels of the physical activity. This will further help in managing the health. The description below reviews the literature that promotes the health across Saudi Arabia and other locations across the globe. The review also presents the guidelines developed for the Saudi Arabian Clinical Practices.

Guidelines for healthcare professionals

In Saudi Arabia, the society of Metabolic and Bariatric Surgery is working to establish guidelines that could help Saudi Arabia in controlling the rising levels of obesity through its implementation across the clinical practice [19]. Healthcare professionals at the primary healthcare centres and the family practice centres are considered to have a critical role in managing and preventing disorders as obesity. In order to resolve the health issues, health education programs may be induced at levels including individuals, families, community, organizations and agencies in KSA. The general public should be made aware regarding the risk, adverse consequences and the preventions of obesity [20].

The guidelines by Institute for Clinical System Improvement, the healthcare providers are required to manage the health of child through a series of steps [21]. They are supposed to record the history regarding the physical and mental health of the individual, evaluate the existing and previously occurred health issues including hypertension, blood sugar levels, etc. The health care providers are required to advise the children to maintain a healthy weight through the adoption of the healthy lifestyles. The lifestyle interventions that the children will adapt to maintain the weight includes; healthy behaviours, healthy diet and increased physical activity. The guidelines by Institute for Clinical System Improvement recommend the children to conduct one-hour regular exercise, join gyms, sports clubs, swimming classes and walk across the tracks [21]. The children are recommended to consume nutrient-dense foods in the breakfast, adopt healthy food choices, avoid drinking sugary drinks, and drink more of fresh water. The students are also recommended to limit the activities as watching television and playing indoor games etc. The healthcare providers are required to encourage the students and advised them to adopt these recommendations by Institute for Clinical System Improvement [5].

Health promotion in Saudi Arabia

In order to control the rising levels of the obesity and overweight issues across Saudi Arabia, one approach is to develop health promotional strategies. In accordance with Al-Khaldi et al. [20] the health promotion is considered to be one significant variable of public health practice. The Saudi Arabian governments are aware that the health issues as obesity are rising across the Saudi Arabian population. However, at the same time, the policy and strategy integration is found to be fragile. There is a high need to assure improved execution and implementation of the policies and the health promotion strategies across Saudi Arabia [20]. Physical activity needs to be increased across the Saudi Arabian population [22]. This serves as a barrier for the Saudi Arabian people mostly, because the people have busy lives, lack amenities and face hot weather. These barriers need to be controlled by the people through walking on the floors, in the large rooms they have in their houses and utilization of machines for the physical activity whenever they get time [15].

In order to promote the health and well-being of the Saudi Children, one effective strategy is to promote regular physical activity. Literature has shown that there are myriad of benefits for the adoption of physical activity by the children and young adults [23,24]. Regular physical activity may successfully reduce the levels of obesity and the non-communicable diseases as cardiovascular disease, cancers and diabetes [23]. In accordance with the USA Department of Health and the Health Services [25], the increased levels of obesity further lead to improved mental activity and reduce the levels of depression and anxiety. The students when to receive quality physical education at their schools, their knowledge levels increase and they adopt more physically active lifestyles during their childhood and the adult years [25]. Schools play a critical role in promoting the health and well-being of the students. The school involves the children in the physical activities as sporting events and helps the children to enhance the quality of their physical health [24].

Intersectoral collaboration and participation of community

Community participation is considered as an important driver of resolving the public issues, planning and evaluating the challenges and then designing effective measures to resolve the issues regarding the human health and well-being. Ottawa Charter is considered an essential driver of the community participation and enforces the people to participate in the health and the social system development processes [14,26]. Local people may have the opportunity to work collaboratively with the community participation programs with governments, organizations and the groups. This helps in creating health awareness and helps accomplish the health goals and objectives. The health issues as obesity under the Saudi Arabian context can be resolved by involving the Islamic values and considering the social and cultural norms [14].

Research Methodology

The current research adopted a qualitative research approach and a review design. The data is collected through the secondary sources; namely authentic journals, articles and obesity management guidelines and reports. The preferred resources that are used in this study included the Saudi Journal of Obesity and World Health Organization. The articles and journals are accessed through Google Scholar, databases and peer-reviewed journals. The articles chosen for the analysis are published during the period 2006-2017. The researcher is aimed at presenting the current evidence-based practice and thus has reported the research studies based on Saudi Arabia. The children and adolescents are getting obese and overweight and there is a need to adopt strategies and preventive measures to control obesity and subsequently the burden of diseases. Therefore, the target population chosen for the current research included children and adolescents living in Saudi Arabia.

Data Analysis and Discussion

From the analysis of Al-Shehri et al. [5] it is evaluated that obesity has affected 75% of the population across Saudi Arabia.

All age groups are vulnerable to obesity, however; the research showed that the adults are more affected. The research notified that it is essential to adopt the clinical guidelines that could help the healthcare providers in managing the health and well-being of the people living in Saudi Arabia. The research showed evidence on the Scottish Intercollegiate Guidelines [19] and other to prevent and manage obesity. The research has its implications for the primary, secondary and the tertiary care levels across Saudi Arabia [5]. The analysis showed that the children below the age of 6 months should be fed by mothers; the infants should be introduced solid food along with milk. High fibre foods are not recommended for children under the age of 2 years. The salt intake needs to be adjusted for children under the age of 5 years. The children are advised to consume regular meals in their breakfast. In addition, the children are suggested to avoid sugar-sweetened drinks and consume large amounts of water. It is analyzed from the research that the children above the age of 5 years are required to consume fruits and vegetables on a regular basis.

The levels of obesity are increasing across Saudi Arabia and there is a strong need to develop strategies and control the rising levels of obesity through the development of effective programs. In this regard, Al-Khaldi et al. [20] presented recommendations regarding the roles and responsibilities of the stakeholders (including community youth organizations, local government, state and local public health agencies) in Saudi Arabia to execute effective national control programs to prevent obesity. The study provided recommendations and strategies to control the levels of obesity in Saudi Arabia. The primary healthcare centers are required to introduce the health control programs that could help in identifying the causes and risks associated with obesity and provide control and prevention measures. The researchers and academicians are advised to publish the latest clinical guidelines for the management of obesity. The academic institutes are encouraged to launch postgraduate and specialist programs regarding the prevention of obesity. The Saudi Arabian Ministry of Municipal and Rural Affairs are advised to update the regulations related to license for opening a restaurant and bakeries that provide more hygienic food items [20]. The ministry is also advised to create pedestrian tracks that could provide physical activities. Likewise, the article also presents suggestions for the families to adopt healthy lifestyles.

Through the literature review, it is analyzed that Institute of the Clinical Systems Improvement presents guidelines to manage and prevent the rising levels of obesity among the young children and Adults [21]. The healthcare providers are required to record the history regarding the physical and mental health of the child and adolescent, evaluate the existing and previously occurred health issues including hypertension, blood sugar levels, etc., advice the children and their parents to maintain a healthy weight through the adoption of the healthy lifestyle and to maintain their weight through adoption of healthy behaviours, healthy diet and increased physical activity [21]. In order to increase the levels of physical activity, the students are recommended to conduct the one-hour regular exercise, join gyms, sports clubs, swimming classes, and walk across the tracks. The children are recommended to consume

nutrient-dense foods in the breakfast, adopt healthy food choices, avoid drinking sugary drinks, and consume more fresh water.

There is significant evidence on the growth of obesity levels across the globe [14]. Awareness should be increased across countries such as Saudi Arabia in order to control obesity. Strategies and recommendations are presented in order to control the levels of obesity in Saudi Arabia. An effective strategy to promote positive health outcomes for the children of Saudi Arabia is the promotion of physical activity.

Through the analysis of Alqarni (Figure 4) [27], it is found that the levels of obesity and overweight individuals have increased across the globe. The research showed that Saudi Arabia has a high incidence of obesity among both the genders. Dobbins et al. analysis showed that the positive effects as part of the school-based interventions on the physical activities of the children [23]. The students due to the encouragement from their schools were found to engage highly in the vigorous physical activity, decline the time consumed watching television, and was found to have improved VO_2 max ranging from 1.6 mL/Kg to 3.7 mL/Kg per minute.

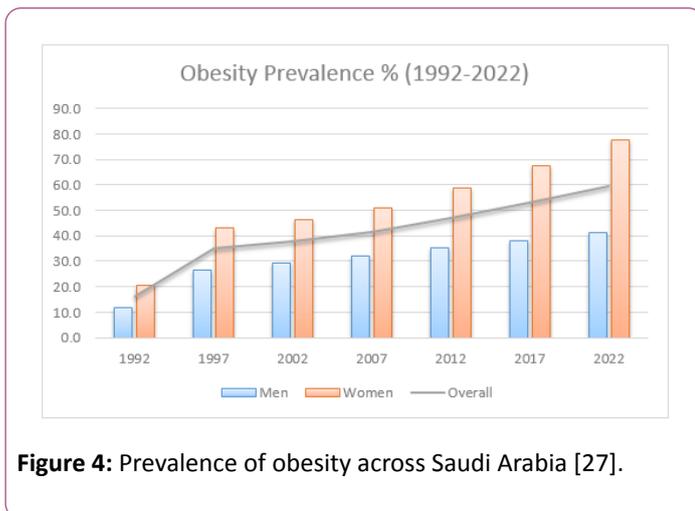


Figure 4: Prevalence of obesity across Saudi Arabia [27].

It is observed that, in Saudi Arabia, the overweight patients are 32% and obesity patients are 41% in the research study [16]. Previous research finds that the high obesity levels are associated with high duration of watching television. In the research, females are found to be higher in the prevalence of obesity in comparison to males. Moreover, it is suggested to control the levels of obesity in the primary health care centers in Saudi Arabia. The primary healthcare centers are further suggested to improve the quality of life with respect to obesity and measure the height, weight, BMI of the adults that attend the PHC's once in a year [16]. The patients in Saudi Arabia that are prone to obesity should be screened for hypertension and diabetes. The physicians and nurses are required to counsel the patients regarding the risks of obesity and influence the patients to adopt healthy lifestyles. The healthcare professionals are also required to promote the health and well-being of the patients through the health programs and provision of health education across the communities.

Another study revealed that overweight individuals living in Saudi Arabia had a prevalence of 14.2% and the obesity was found to be 9.7% across the older age students [15]. The research showed that the students had the habit of skipping breakfast, consuming larger amounts of fast food products and lower consumptions of dairy products, vegetables, and milk per day [15]. The students are more prone to consume carbonated drinks and all of these are the markers of obesity. Research study suggested that through the school obesity control programs, the awareness regarding the consequences of the obesity should be conducted and the students should be advised to prevent obesity through the adoption of healthy lifestyles. The study of AlHazzaa et al. was focused on investigating the association between sleep and obesity [18]. The results showed that the shorter sleep (less than 7 hours per day) duration is closely related to the increased levels of obesity in the students. The researcher suggested that once the duration of sleep is normal, the levels of obesity could be controlled. The individuals are thus recommended to control the levels of sleep.

Research shows that there is a high prevalence of obesity among the preschool and school going children. An action plan needs to be developed in order to demonstrate the prevention and control of the lifestyle habits and should enlighten ways through which the physical activity could be increased [11].

The literature review and data analysis showed that the levels of obesity are increasing across Saudi Arabia. The increased prevalence is found among the female children as compared to the male children. Through the extensive review of the literature, it is analyzed that there is a need to execute effective policies and obesity prevention and control programs.

Practical Steps and Strategies for Preventing Obesity at Kingdom of Saudi Arabia

The levels of obesity are rising massively across the globe. The Mexico Bariatric Centre has presented a statistical report on obesity during the period of 2013-14 and has presented obesity levels in different countries, including Saudi Arabia (71%), UK (62%), USA (66%), Spain (58%), Italy (50%), Russia (57%), France (49%), India (20%) etc. The main causes of obesity include the environment of school, the inheritance and individual life style facets, local community variables, level of policies executed at the national and regional hierarchy. The obesity levels are increasing in Saudi Arabia and the need to develop strategies in preventing obesity is increasing.

Interventions such as controlling diet in the school, childcare centers, community, and home could be helpful in managing the rising levels of obesity. For instance, at the level of school, the health of the child can be monitored by examining the types of food children consume during the lunch. The canteen food needs to be reviewed with an addition of healthy and nutritious food in comparison to the unhealthy or unhygienic food. The food with basic composition of carbohydrate, fat and protein are recommended. At home, parents need to monitor what their children are consuming. Parents need to assure that their child

consumes healthy breakfast, avoid soft drinks and fast foods, make physical activity a routine, and take proper sleep. The healthcare obesity intervention as shown in WAVE study [28] can be found beneficial in preventing obesity. These initiatives can successfully create behavioural changes in the children and families. The pathways described in the WAVE study can be adopted by the primary care at Saudi Arabia and help the government in combating the rising levels of obesity. Another practical strategy is to execute child obesity educational

programs at the schools. Mainly because the children can be best approach at the school and the role of teachers are of utmost significance in developing the children healthy habits. Workshops based on obesity control at the schools are another effective strategy. This strategy can successfully involve the parents of the young children and educate them regarding the healthy and nutritious food and physical activity habits' promotion (**Table 1**).

Table 1: Critical evaluation of strategies and recommendations to control and prevent obesity.

Research Study	Strategies and Recommendations to Control and Prevent Obesity
Al-Shehri et al.	1. Children below the age of 6 months should be fed by mothers.
	2. The children above five years are encouraged to increase physical activity.
Al-Khaldi et al.	1. The primary healthcare centres are required to introduce the health control programs.
	2. The researchers and academicians are advised to publish the latest clinical guidelines for the management of obesity.
	3. The academic institutes are encouraged to launch postgraduate and specialist programs.
	4. The Saudi Arabian Ministry of Municipal and Rural Affairs are advised to update the regulations for obesity control.
Fitch et al.	The healthcare providers are required to:
	1. Record the history regarding the physical and mental health of the child and adolescent.
	2. Evaluate the health issues including hypertension, blood sugar levels, etc.
	3. Advice the children to maintain a healthy weight.
Al Dhaifallah et al.	4. Advice children to adopt the lifestyle interventions.
	1. The schools are recommended to increase the awareness regarding the obesity growth.
Alqarni	2. Through the adoption of the health messages and the socioeconomic values, more people could be influenced to control and prevent obesity.
	1. An effective approach is to involve the stakeholders namely policy makers, educators, healthcare providers and the individuals to combat obesity.
Dobbins et al.	2. It is recommended to increase the physical activity across the school going children.
	1. The primary healthcare centres are suggested to improve the quality of life with respect to obesity.
AlOthaimen	1. The physicians and the healthcare providers are required to conduct regular training sessions to investigate new methods of controlling obesity.
	2. The healthcare professionals are also required to promote the health and well-being of the patients.
	3. The research helps in developing health programs and developing health education messages.
Amin et al.	1. As an obesity control strategy, the students are supposed to be encouraged to consume healthy breakfast.
AlHazzaa et al.	1. Consuming optimum sleep will help to prevent obesity.
Musaiger	1. The development of the effective prevention and control obesity program could help in controlling the rising levels of obesity.

Strengths and Limitations of the Study

The strength of this study is the authenticity of the sources. It has been made sure that the literature is extracted from authentic sources such as journals, articles, obesity management guidelines and reports. Another strength is the detailed data analysis on the research topic considering the fact that very few have written on all three aspects of topic; causes, outcomes, prevention and cure of obesity in Saudi Arabia. This study includes proper recommendations as to how to control obesity in the country.

One major limitation to this study is that the analysis is based on reviews of literature which are published till 2017 and does not evaluate the current situations prevailing in Saudi Arabia which have led to obesity in the country.

Conclusion

The research paper here is aimed at evaluating and investigating the strategies and prevention measures that could control the levels of obesity across Saudi Arabia. People are more inclined towards adopting sedentary lifestyles in Saudi

Arabia. It is also found that these individuals are more prone towards using cars as transportation and children are least enthusiastic about playing outdoors. Rather they prefer to play indoors and avoid walking as much as they can. Another factor that is contributing to the rapid increase in level of obesity in the country is their daily fat intake. Studies showed that the regular per capita consumption of fat by Saudi Arabians have increased to 143%. Moreover, gender is also found as one of the factors of obesity. Researches show that adult males are more obese than adult females. To combat these situations, Saudi Arabia has, however established the Obesity Control Program and the Society of Metabolic and Bariatric Surgery which are responsible for controlling the increasing obesity level by its implementation across the clinical practices.

The research is conducted through the adoption of the qualitative literature review approach. Through the literature review, it is evidenced that the levels of obesity are increasing in Saudi Arabia and is considered to be high among the Saudi Arabian children under the age range of infants to less than 19 years. The researcher investigated and analyzed the research strategies and recommended that; the healthcare providers and the academic institutes have an important role in increasing awareness regarding the consequences of obesity and influencing the students to reduce the consumption of unhealthy foods. They are recommended to create awareness regarding the control and prevention of obesity. It is deduced that the levels of obesity are increasing as the students are spending lower time on the physical activities. Therefore, the students are recommended to invest more time in physical activities by joining health and fitness clubs. Through the analysis, it is found that the Ministry of Municipal and Rural Affairs has a role in regulating the restaurants and providing pedestrian tracks in order to promote healthy lifestyles and increasing physical activity. Therefore, the Ministry of Municipal and Rural Affairs is recommended to take appropriate actions to promote the health and well-being of the Saudi Arabian population and reduce the levels of obesity.

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