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Review Article

Combating the Obesity Crisis: The Role of Community Pharmacists in Addressing the Rising Obesity Numbers

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Abstract

The last decade has seen a significant increase in obesity and overweight cases globally. The World Health Organization estimates that 1 in every 8 people globally were living with overweight and obesity in 2022. This is approximately 2.5 billion who are overweight and 890 million who are obese. The rate at which the obesity prevalence is an indication that it is ending towards being an epidemic. Considering that obesity is multifactorial, isolating the exact causes is a significant problem. As a result, there is a need to dedicate more resources towards addressing the problem. One of the ways that can be used to deal with the rising obesity prevalence is expanding the role of healthcare providers more so community pharmacists to address the problem. Community pharmacists can do more than drug management in managing the growing obesity crisis. They can be involved in weight management, guidance on lifestyle modifications, and counselling on behavior modifications. They can also be involved in community-based interventions that aim to address obesity.

Keywords*:* obesity, obesity crisis, community pharmacists, energy intake, energy expenditure, weight management

Introduction

The last decade has seen a significant increase in obesity and overweight cases with the latest numbers showing that obesity is becoming a global pandemic. According to the World Health Organization (WHO), 1 in every 8 people globally was living with obesity in 2022.[1] The report also noted that of the 2.5 billion adults that were classified as being overweight, 890 million were obese. Obesity prevalence is also growing in children with the report noting that 37 million children under 5 years were classified as overweight.[1] The burden of obesity is growing globally as a result of multifactorial factors and determinants. According to the World Obesity Atlas report, obesity can be attributed to a number of factors including genetics, biology, equity, healthcare access, environmental, and socioeconomic factors.[2] The interaction between these factors accounts for a significant rise in global obesity numbers. Environmental factors such as poor eating and leading a sedentary lifestyle account for a significant rise in the number of obesity cases. Social determinants of health such level of education, physical environment, built environment, income status, and healthcare access are also key determinants in the obesity burden.[3] Medications, immobilization, diseases, and genetics have also been linked to obesity.

Addressing obesity is instrumental. The World Obesity Atlas projects an increase in obesity cases to over 1 billion by the year 2030.[2] 333 million of these cases will be severe obesity (a BMI of 35kg/m2). The report also predicts that 1 in every 5 women and 1 in 7 men will be living with obesity. The projections demonstrate a significant increase in obesity numbers over the last 4 decades. According to a comprehensive global burden of disease (GBD) study carried out in 2013 on global obesity and overweight prevalence between 1980 and 2013, the prevalence of obesity and overweight increased significantly from 27.5% in 1980 to 47.1% in 2013.[4] In 1980, 921 million had obesity and overweight while in 2013, these numbers increased to 2.1 billion.[4] The increasing prevalence is being recorded worldwide necessitating measures that can help to combat the problem.

Addressing obesity is also important because of the impact it has on health and society in general. Obesity increases the risk of other comorbidities. Being a chronic disease, obesity increases the risk of other chronic diseases such as diabetes and cardiovascular disease. Obesity has also been linked to poor health outcomes with individuals who are affected reporting poor mental and physical health.[5,6] Obesity also affects the healthcare system because of significant financial implications. Treating obesity and the associated comorbidities is costly. This informs the need to design measures that are effective in addressing the growing obesity problem.

Healthcare providers are better positioned to help address the obesity crisis because of the constant interaction they have with patients. Primary care physicians and bariatricians are the first line of healthcare providers involved in obesity care and management. Other healthcare providers such as dietitians, nurses, exercise physiologists, and behaviorists also play a key role in obesity care and management.[7] Expanding the role of healthcare providers to include pharmacists in obesity care and management can make

a significant difference in combating the obesity crisis. In obesity management, community pharmacists are mainly involved in drug therapy management.[8] However, the role of pharmacists can be expanded to include roles such as weight loss management, guidance on lifestyle modifications, and counselling on behavior modifications. Weight loss management, lifestyle, and behavior modifications are recognized as instrumental in addressing the obesity crisis.

This review will explore how community pharmacists can help to address the growing obesity crisis by taking up more roles and collaborating with other healthcare providers. The review will also explore the factors contributing to the growing obesity cases, why stakeholders should be worried about these growing numbers and the challenges encountered in addressing the obesity crisis.

Obesity Prevalence

The growing obesity problem across the globe cannot be denied. Findings from epidemiological data show that the number of people affected by obesity is growing at an alarming rate raising fears that obesity may become a global epidemic by 2030. WHO estimates that 1 in every 8 people are living with obesity as of 2022.[1] The number of adults who are reported to be overweight is also growing exponentially with estimates being 2.5 billion as of 2022.[1] Obesity is not only affecting adults but children and adolescents as well. The number of children affected by obesity is growing globally with estimates being as high as 159 million for children and adolescents aged between 5 to 19 years.[2] Based on past trends, the number of obesity cases is projected to rise. The number of obesity cases has been rising steadily in the last four decades with the numbers rising significantly between 2010 and 2020. According to a GBD study conducted in 2013, the obesity and overweight prevalence almost doubled between 1980 and 2013.[4] In 1980, the prevalence of obesity and overweight was estimated to be 27.5% (921 million cases).[4] This number increased significantly to 47.1% in 2013 (2.1 billion).[4] The World Obesity Atlas report also noted that the number of people living with obesity and severe obesity increased from 511m in 2010 to 764m in 2020.[2] The numbers are projected to rise to 892m and 1,025m in 2025 and 2030 respectively.[2]

The United States is one of the countries that is significantly affected by obesity. According to the CDC, 2 in 5 adults and 1 in 5 children in the US live with obesity respectively.[9] Between 2017 and 2020, the obesity prevalence had gone up to approximately 41.9% which was a significant increase from the 30.5% that was reported between 1999 and 2000.[10] The increase in obesity prevalence mirrors what is happening across the nation. Different states and territories have reported increasing obesity cases for the last ten years. In 2022, the Midwest reported the highest obesity prevalence at 35.8%. The South reported an obesity prevalence of 35.6 while the Northeast reported a prevalence of 30.5%. The West reported 29.5%.[11] The highest obesity prevalence was reported in the states of Oklahoma, West Virginia, and Louisiana at 40% and greater.[11] District of Colombia (DC) had the lowest obesity prevalence which was between 20 and 25%. With regard to ethnicity, non-Hispanic Black adults were the most affected with a prevalence being 49.9%. They were followed closely by Hispanics at 45.6% and Whites at 41.4%. Asians had the lowest reported prevalence rates at 16.1%.[10]

Obesity prevalence is not only increasing among adults. It is increasing among children as well. The number of children affected by obesity has been increasing. According to the World Obesity Atlas, the number of children and adolescents between 5 and 19 years who had obesity in 2020 was 103 million for boys and 72 million for girls.[2] These numbers are projected to rise to 140 million for boys and 101 for girls by 2025 and 175 million for boys and 135 million for girls by 2030.[2] In the US, children and adolescents between 2 and 19 years with obesity was 19.7% between 2017 and 2020.[2] Overall, approximately, 14.7 million children and adolescents had obesity which represents about 1 in every 5 children.[12] The increasing prevalence of obesity across the globe can be attributed to a number of factors as discussed in detail below.

Factors that are Contributing to The Rising Obesity Cases

Obesity, just like any other chronic disease, is multifactorial. It is attributed to both genetic and environmental factors, with the most predominant being lack of physical activity, unhealthy eating habits, health conditions, and some medications. The concurrent rise in obesity cases between the 1970s and 1980s supports the fact that some factors such as unhealthy eating behaviors and lack of physical activity are significant contributors to this crisis. According to Koliaki et al., one of the theories that have been used to explain this rise is the energy flipping point hypothesis.[13] This hypothesis makes assumptions that the increase in food supply is the main contributing factor to the weight gain that was experienced between 1970 to 1980. High-income countries experienced a switch in energy balance between the 1960s and 1970s as a result of the reduced energy that was experienced between 1910 and to 1960s as a result of mechanization.[14] Before the 1960s, there was reduced activity-related energy expenditure which pulled down energy intake.[13] As a result, people engaged in physical activity and ate less which explains why obesity rates were relatively stable. However, after the 1960s, the push phase began. The push phase saw a lot of access to cheap and tasty obesogenic foods which saw a significant weight gain and subsequent obesity cases.[14]

The energy intake and energy expenditure hypothesis has been instrumental in explaining the rising cases of obesity. According to this hypothesis, when energy intake exceeds energy expenditure weight gain is likely to happen.[13] Similarly, when energy expenditure exceeds energy intake, it is likely to lead to weight loss.[15] When it comes to obesity, it is imperative to modify both the energy intake and energy expenditure to attain a reduction in obesity cases. Although food restriction is seen as an ideal measure to reduce obesity, Hill et al. note that food restriction alone is not enough if human physiology is biased towards achieving energy balance at a high energy flux.[16] High energy flux in this case refers to a high level of energy intake and expenditure. It is mainly achieved through high levels of physical activity. However, due to leading a sedentary lifestyle, achieving a high energy influx becomes difficult leading to significant weight gain.[17] The role of energy intake and energy expenditure in reducing obesity cases is supported by a study by Bassett et al. on a farming Amish community.[18] According to this study, very few cases of obesity were reported in this community despite high levels of energy intake.[18] However, it is important to note that the high levels of energy intake were accompanied by high levels of work-related physical activity which contributed to lower obesity cases. Therefore, there is a need to match the energy levels rather than restricting food intake to reduce obesity.

An additional factor that has played an instrumental role in contributing to the rise of global obesity prevalence is the changes in food production and supply systems and consumption patterns. The 1980s through to 2000s saw a significant change in global economies and technology which in turn led to changes in the way food is produced, supplied, and consumed.[14] During this time, food production and supply changes towards increased energy availability. Food manufacturing increased towards energy-dense foods which in most cases was unhealthy.[13] People also gained access to these

types of food leading to a reduction in consumption of highly nutritious food. Globalization and expansion of free trade increased the availability of this food globally. The 1980s to 2000s also saw significant growth in the economy which contributed towards changes in food choices.[13] Urbanization also contributed significantly towards a shift in diet patterns. As more people moved towards urban areas, diets changed to energy-dense fast foods leading to overnutrition and an increase in energy uptake. Considering the low levels of energy expenditure that were experienced in urban centers and the subsequent high energy intake obesity cases began to increase.

The increase in obesity cases can also be attributed to a reduction in prices of low-quality foods which have high caloric content. The increase in income made it possible for many people to afford this type of food which explains the increase in consumption. For instance, Malik et al. note that between 1987 to 2002, McDonald's food outlets which specializes in fast foods increased from 951 to 7135 respectively.[19] This significant increase in fast food joints means that they were more available to consumers and with the increasing income and affordability more people resulted to consumption of these foods. Epidemiological research has linked the consumption of fast food and processed foods to weight gain and subsequent rise in obesity cases.[20,21] Highly processed foods are associated with high energy content which explains why they have been linked to weight gain and subsequent increase in obesity. In addition to an increase in general obesity, fast food consumption has led to abdominal obesity more so an increase in Waist-Hip Ratio (WHR).[22] Therefore, fast food consumption and the subsequent increase in availability of this food can be attributed to the rise in obesity cases.

Socioeconomic factors such as income level, education level, and occupation have also been linked to the rise in obesity cases. Research in recent years has shown socioeconomic factors such as income level, education level, and income are significant contributors to disease including chronic diseases such as obesity and diabetes.[23] The increase in income level and the associated economic growth is one of the factors that has been linked to increasing obesity cases more so in low- and middle-income countries. The basis for this is that increase in income levels and the subsequent economic growth increases food affordability and lifestyle changes which are associated with high energy intake and low energy expenditure.[19] The recent statistics by the World Obesity Atlas are a clear indication of how economic growth is linked to an increase in obesity prevalence. The statistics indicate that lower-middle-income countries and upper-middle-income countries such as Mexico, Brazil, and Turkey have experienced an increase in obesity prevalence cases in recent years with cases expected to increase further in the coming years.[2] According to a study by Ezzati et al. countries BMI and cholesterol level cases increased as the national income increased before flattening and then declining.[24] This could explain why obesity prevalence in high-income countries is projected to decrease in the coming years.[2] The increase in obesity prevalence as income increases and economies attain growth can be attributed to a number of behaviors such as the increase in television viewing hours, the increase in the purchase of convenience and fast foods, and the increase in consumption of highly processed foods.[19] With an increase in these behaviors, other behaviors that promote lower obesity cases such as access to healthcare, increase in the number of recreational areas and recreation activities, access to healthy food, and increase in education levels also go down. As a result, energy expenditure becomes low despite the increase in energy intake contributing to high obesity cases.

However, income increase in developed or high-income countries has the opposite effect. Individuals in the lowest income quintile have been shown to have the worst outcome when it comes to obesity although the findings are mixed.[25] According to a study by Ogden et al. obesity prevalence was higher among women in lower income group and lower among women in the highest income group.[26] However, for men the pattern was different with lower obesity cases being reported in low-income groups and high-income groups. The highest prevalence of obesity for men was reported in the middle-income group. Non-Hispanic Black men and Hispanic men with high incomes were also likely to be obese.[26]

When it comes to other socioeconomic factors such as education, lower education levels have been linked to an increase in obesity prevalence. Ogden et al. established that obesity prevalence was lower among men and women who were college graduates compared to those who were high school graduates and less.[26] Higher education attainment has been linked to lower obesity cases because it is a key factor in an individual's income level.[27] As noted earlier, high-income levels are associated with lower obesity cases. Higher education is also associated with other factors such as better access to healthcare, better access to healthy quality food, and the ability to access recreational activities. This could explain why high education levels are associated with lower obesity cases. The fact that individuals who have higher educational levels are more knowledgeable about risk factors for obesity could also explain why they have low obesity prevalence.

Occupation is an additional socioeconomic factor that has been linked to obesity with research showing that some occupations are associated with increased rates of obesity than others. Occupations in health care, health care support, protective services, social assistance, administrative support, and transportation or moving of materials have been associated with high obesity prevalence.[28,29] The highest prevalence of obesity was reported in individuals in the transportation industry despite other factors such as gender.[29] The high prevalence was attributed to leading a sedentary lifestyle and consuming diets low in nutritional value. Workers who have highly demanding occupations report low obesity cases.[30] Additionally, workers who worked for long working hours in stressful working environments were also likely to report high obesity prevalence.[28] This could explain why occupations such as health care and health care support reported high obesity prevalence.

Physical activity is an additional factor that is linked to rising obesity prevalence. Recent research shows that obesity prevalence increases as people lead a more sedentary lifestyle.[31,32] Lack of physical activity is identified as a significant contributing factor to obesity because it is associated with lower energy expenditure. The past three decades have seen a rise in obesity cases as more people lead a sedentary lifestyle. Physical activities related to work, transportation, and household chores have reduced significantly as societies become more urbanized.[19] Obesity prevalence has increased significantly in the last three decades which is coincidental with an increase in urbanization. Besides, obesity prevalence is rising in low-middle-income countries as these nations become more urbanized. The reason why obesity rises as urbanization increases is because of changes in dietary patterns and the built environment.[33,34] The built environment has an impact on physical activity[35,36] A well-designed built environment promotes physical activity. A well-designed environment in this case is one that has green spaces, recreation facilities, bike facilities, walking paths, play areas, and social activity areas. However, with an increase in urbanization, more so unplanned urbanization, access to these spaces becomes limited restricting physical activities and making it difficult to attain the recommended hours of physical activity. CDC recommends at least 150 minutes of physical

activity every week which is the equivalent of 30 minutes or more of moderate physical activity at least 5 days a week but attaining this with limited spaces becomes challenging.[37] This explains why obesity prevalence is high in neighborhoods that do not have adequate green spaces, parks, and walkways.

In addition to urbanization and the built environment, physical activity has decreased in the last decades because of a reduction in energy expenditure. As people move from high-energy expenditure occupations such as farming and mining towards low-energy expenditure occupations such as office-based work and light activity jobs, obesity prevalence is also rising.[19] People are spending less energy despite the high energy intake which is contributing significantly to increasing obesity prevalence. Furthermore, leisure time activities are also becoming more sedentary such as watching television, gaming, and intent use. People are engaging less in outdoor activities such as running and football which is contributing to high obesity prevalence.

Other factors that are contributing to the rising obesity prevalence are stress, not getting enough sleep, some health conditions, and some medications. Long-term stress can trigger hormones such as cortisol which is known to control energy balances leading to increased appetite, increased weight gain, and subsequent obesity.[38] Some health conditions such as metabolic syndrome have also been linked to weight gain and subsequent obesity. Furthermore, medications such as antidepressants, antipsychotics, steroids, and beta-blockers have also been linked to weight gain and the subsequent risk of developing obesity.

Why Addressing Obesity is Important

The rising obesity prevalence raises a lot of concern among stakeholders. Research has shown that obesity has a negative impact on health and healthcare systems including impact on life expectancy, quality of life, risk of other diseases such as diabetes and heart disease, and increased medical costs.[39] Different studies have shown that obesity reduces life expectancy and increases the risk of premature death.[40,41,42] Obesity reduces life expectancy by up to 6 years for men and 7 years for women respectively.[40] In another study, loss in life expectancy was between 5.6 to 7.6 years for men and 8.1 to 10.3 years for women aged between 20 and 29.[42] The reason why obesity reduces life expectancy is because of its associated comorbidities such as coronary heart disease, diabetes, and stroke. These conditions are associated with high mortality rates which could explain why obesity as a risk factor for these conditions reduces life expectancy.

Obesity has a significant impact on quality of life with people living with severe obesity finding it difficult to perform activities of daily living. Individuals who are morbidly obese find it difficult to perform activities such as walking, cleaning, and cooking which compromises their quality of life significantly.[29] Severe obesity limits individuals making it difficult to perform social activities because of issues such as pain. In addition to physical limitations, obesity has also been linked to other chronic conditions and mental health problems.[43,44] Chronic conditions and mental health problems are associated with poor quality of life.

Obesity has a significant impact on healthcare systems. As the number of people who are obese increases, it is becoming a burden on healthcare systems. Obesity is associated with significant medical costs with the US using approximately $173 billion annually to address obesity-related healthcare issues.[10] According to Cawley et al., the average medical care costs of individuals who had obesity in the US went up by $2,505 which is 100% higher than that of individuals who have normal weight.[45] Therefore, addressing obesity is important because of the impact it has on individuals' health and healthcare systems. Putting measures in place that are feasible can help to reduce the rising obesity cases and reduce prevalence significantly. The World Obesity Atlas recognizes the importance of well-trained healthcare professionals in combating the obesity crisis and delivering high-quality care to individuals affected.[2] Healthcare professionals who are equipped with knowledge on prevention, management, and treatment can play a significant role in helping to address the obesity crisis.

Role of Community Pharmacists in Addressing Obesity Crisis

The role of healthcare providers in fighting against the obesity crisis cannot be underestimated. They are equipped with the needed knowledge to help in managing, preventing, and treating obesity. Expanding the role of community pharmacists is one of the measures that can help to address the growing obesity crisis. Community pharmacists are mainly involved in drug therapy management.[8] They are involved in dispensing medications used in managing obesity and other weight-related issues. However, the role of pharmacists can be expanded to include roles such as weight loss management, guidance on lifestyle modifications, and counselling on behavior modifications. Weight loss management, lifestyle, and behavior modifications are recognized as instrumental in addressing the obesity crisis. Research has shown that lifestyle interventions play a key role in preventing obesity.[46] Attaining lifestyle modification is not easy. Patients have to work closely with their healthcare providers to attain success. In lifestyle interventions, community pharmacists can play different roles including providing education and lifestyle counselling to patients. Research has shown that pharmacists-led education and counselling can improve obesity outcomes.[47] With regard to lifestyle counselling, pharmacists can perform different roles including counselling patients about their prescribed medications, diet, and exercise.[48] On medications, counselling patients on appropriate ways to take medications and how to watch out for adverse events can improve their overall outcome. Pharmacists can also counsel patients on appropriate diets and exercises that can help them manage their weight. Providing lifestyle counselling improves patient's knowledge and ability to manage their obesity and prevent the associated comorbidities such as diabetes and heart disease. As such, it improves health outcomes.

Pharmacists-led weight management programs are additional measures that can be used to address the rising obesity prevalence. Research has shown that pharmacists-led weight management programs are effective when it comes to addressing the rising obesity crisis.[8, 49,50,51] Different studies show that these programs are effective in addressing weight issues related to obesity and lead to successful outcomes. A pharmacist-led 6-month weight loss intervention program resulted in a mean weight loss of 5 kgs.[52] There was also a significant reduction in BMI, waist circumference, and visceral fat.[52] Similarly, a study by Morrison et al. showed the effectiveness of a pharmacists-led weight intervention program in addressing weight issues with a majority of the participants losing an average of 4.1 kgs.[53] Additionally, Jordan and Harmon, recommend collaborative weight management programs that involve pharmacists and other healthcare professionals.[8] Such programs have been shown to be effective because they address issues such as lack of time that pharmacists report as a hindering factor to being involved in weight management programs. Malone et al. established that such a program was effective in addressing weight related to obesity.[54] The program involved a multidisciplinary team comprising a physician, a behavioral psychologist, and a pharmacist.

Pharmacists can also be involved in collaborative roles in community-based interventions to address obesity. Research has shown that community-based interventions are effective in preventing chronic diseases and thus can be employed in managing obesity.[19] Community-based interventions on obesity can entail health education campaigns on diet, the importance of leading a healthy lifestyle, and the significance of physical activity. Health education campaigns can also raise awareness of obesity in the community, equipping people with knowledge and skills on how to prevent and manage the disease. Considering that pharmacists are knowledgeable about obesity and prevention measures, they can be involved in these health campaigns. Community pharmacists can also act as advocates for a well-built environment including parks, recreation centres, walkways, and other amenities that can increase people's participation in physical activities.

Pharmacist-led interventions to address the growing obesity crisis can be effective if the existing barriers are identified and addressed. One of the reasons why pharmacists-led interventions are not as effective in addressing obesity is because of the limited knowledge on issues such as effective weight management and obesity.[8] Limited knowledge leads to a lack of comfort and confidence in providing these services. As a result, it can affect the outcome of these interventions. Other barriers that can affect pharmacists-led interventions are lack of time and lack of space to provide counselling.[8,55] As such, it is important to address any existing barriers to improve outcomes of pharmacists-led interventions in addressing the rising obesity cases.

Conclusion

In summary, addressing the rising obesity is important because of the impact it has on obesity and society in general. Obesity is linked to lower life expectancy, increased risk of other comorbidities such as diabetes and heart disease, low quality of life, and economic impact. Obesity also affects the healthcare system because of significant financial implications. The cost of treating obesity and the associated comorbidities is significantly high and costly. Designing effective measures to address the growing obesity crisis is imperative. Expanding the role of healthcare providers to include pharmacists in obesity care and management can make a significant difference in combating the obesity crisis. In addition to drug therapy management, pharmacists can spearhead weight loss management programs, provide guidance on lifestyle modifications, counsel on behavior modifications, and engage in community-based interventions. Pharmacists-led interventions have been proven to be effective in weight management and behavior modifications. Pharmacists can also work collaboratively with other healthcare professionals in different programs to attain positive outcomes.

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