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Not peer-reviewed version

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Posted Date: 7 October 2024

doi: 10.20944/preprints202410.0498.v1

Keywords: Obesity



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Article

Obesity: The Emerging Epidemic in Nepal

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Abstract: Nepal is witnessing a significant rise in obesity as traditional agrarian lifestyles give way to urbanization and sedentary behaviors. The dissolution of agriculture as a cultural practice has led to a reduction in daily physical activity, contributing to an alarming increase in non-communicable diseases such as cardiovascular diseases, type 2 diabetes, and hypertension. This article explores how Nepal can adopt new health-oriented cultural practices to combat obesity, drawing inspiration from the gym culture in the United States and the cycling culture in Europe. It advocates for the promotion of physical activity through community-based fitness programs, active transportation, and integrating exercise into educational curriculums. Additionally, it emphasizes the importance of reviving traditional dietary practices and supporting mental well-being. The article underscores the need for government support in implementing policies and infrastructure that foster a culture of health, ensuring a healthier future for Nepal's population.

Keywords: obesity

Introduction

Obesity, a condition characterized by excessive accumulation of body fat, has increasingly become a pressing public health concern in Nepal. Historically, Nepal was an agrarian society, where the majority of the population was engaged in agricultural activities, animal husbandry, and other forms of manual labor. This lifestyle naturally involved a high level of physical activity, which, coupled with a diet low in processed foods, helped maintain a healthy body weight across generations. However, over the past few decades, the socioeconomic landscape of Nepal has dramatically shifted, leading to a significant decline in physical activity and a rise in sedentary behaviors—both of which have contributed to the burgeoning obesity epidemic.

The transition from an agriculture-based economy to one where remittances from foreign employment play a crucial role has drastically altered the daily lives of many Nepalese. With the increase in income, there has been a marked shift in lifestyle, characterized by improved living standards, urbanization, and the widespread use of motorized vehicles. In the past, people in Nepal often walked long distances or cycled as their primary means of transportation. This not only kept them physically active but also contributed to their overall well-being. However, with the advent of modern conveniences, walking and cycling have become less common, particularly in urban areas, where the use of motorcycles and cars has become the norm.

Moreover, the dietary patterns in Nepal have also undergone significant changes. Traditional diets, which were rich in grains, vegetables, and minimal processed foods, have been increasingly replaced by diets high in refined sugars, fats, and processed foods. This dietary shift, combined with decreased physical activity, has led to an increase in the prevalence of obesity, particularly among the younger generation. The availability and consumption of fast food and sugary beverages have risen, contributing to the caloric imbalance that underlies the development of obesity.

The health consequences of obesity are well-documented and extensive. Obesity is a major risk factor for a wide range of chronic diseases, including cardiovascular disease, type 2 diabetes, hypertension, dyslipidemia, and certain forms of cancer. Additionally, obesity can lead to psychological issues such as depression, anxiety, and low self-esteem, further exacerbating the overall health burden. In Nepal, the increasing prevalence of obesity has significant implications for

the healthcare system, which may not be adequately prepared to manage the associated chronic conditions. The shift from a population accustomed to physical labor to one that is increasingly sedentary poses a significant public health challenge.

One of the key drivers behind the rising rates of obesity in Nepal is the lack of public awareness and education about the importance of maintaining a healthy lifestyle. While obesity is often seen as a problem associated with developed countries, its emergence in Nepal highlights the need for a comprehensive public health response. This should include campaigns to promote physical activity, healthier dietary choices, and the importance of maintaining a healthy weight. Schools, workplaces, and communities all have a role to play in fostering environments that support healthy lifestyles.

The experience of the United States, where gym culture became prominent in response to the obesity epidemic, offers a potential model for Nepal. However, simply adopting a Western approach may not be sufficient or appropriate given the cultural and socioeconomic differences. Instead, there needs to be a focus on culturally relevant strategies that encourage physical activity and healthy eating. For instance, promoting the use of bicycles and walking as modes of transportation, as seen in many European countries, could help combat obesity in urban areas. Additionally, revitalizing traditional forms of exercise and integrating them into modern fitness regimens could offer a more sustainable and culturally acceptable solution.

In conclusion, the rise of obesity in Nepal is a complex issue that requires a multifaceted approach. It is a stark reminder that as nations develop and lifestyles change, new health challenges emerge. Addressing the obesity epidemic in Nepal will require concerted efforts from individuals, communities, and the government. By promoting awareness, encouraging physical activity, and fostering healthier dietary habits, Nepal can work towards mitigating the impact of this growing public health concern. As the country continues to progress, it is crucial to ensure that the health and well-being of its population are not compromised in the process.

Obesity in Nepal is contributing to a surge in various non-communicable diseases (NCDs), which are becoming increasingly prevalent and, in many cases, fatal. The most common obesity-related diseases in Nepal include cardiovascular diseases (CVDs), type 2 diabetes mellitus, hypertension, dyslipidemia, and certain cancers. Understanding the physiological basis and pathological consequences of these diseases provides insight into how obesity contributes to their development and progression.

1. Cardiovascular Diseases (CVDs)

Obesity is a significant risk factor for various cardiovascular diseases, including coronary artery disease (CAD), heart failure, and stroke. The pathophysiology of obesity-related CVDs begins with excess adipose tissue, particularly visceral fat, which secretes various bioactive substances known as adipokines. These adipokines contribute to chronic inflammation and endothelial dysfunction, which are key factors in the development of atherosclerosis—the buildup of plaques within the arterial walls.

Atherosclerosis leads to narrowing of the arteries, reducing blood flow to the heart muscle and brain. When these plaques rupture, they can cause the formation of blood clots, leading to myocardial infarction (heart attack) or ischemic stroke. Additionally, obesity often leads to hypertension (high blood pressure) due to the increased cardiac output required to perfuse the excess body mass, as well as the increased peripheral resistance caused by the stiffening of blood vessels. Over time, the heart has to work harder, leading to left ventricular hypertrophy and eventually heart failure.

2. Type 2 Diabetes Mellitus

Obesity is the most significant modifiable risk factor for the development of type 2 diabetes. The excessive accumulation of fat, particularly in the abdominal region, leads to insulin resistance—a condition where the body's cells become less responsive to insulin, the hormone responsible for regulating blood sugar levels. In response to insulin resistance, the pancreas compensates by producing more insulin. However, over time, the pancreatic beta cells become dysfunctional, and insulin production declines, leading to hyperglycemia (elevated blood sugar levels).

Chronic hyperglycemia is associated with various complications, including damage to the blood vessels (macrovascular and microvascular complications), nerves (diabetic neuropathy), kidneys

(diabetic nephropathy), and eyes (diabetic retinopathy). The combination of insulin resistance, hyperglycemia, and dyslipidemia (abnormal lipid levels) associated with obesity creates a vicious cycle that exacerbates the risk of cardiovascular diseases and other diabetes-related complications.

3. Hypertension

Hypertension, or high blood pressure, is another common consequence of obesity. The relationship between obesity and hypertension is multifactorial. Increased body mass requires an increase in blood volume and cardiac output, putting extra strain on the heart and blood vessels. Additionally, obesity is associated with increased sympathetic nervous system activity, which raises blood pressure by increasing heart rate and vasoconstriction.

Another factor is the role of the renin-angiotensin-aldosterone system (RAAS), which regulates blood pressure and fluid balance. In obesity, there is often an upregulation of RAAS activity, leading to sodium retention, water retention, and vasoconstriction, all of which contribute to elevated blood pressure. Over time, chronic hypertension can lead to damage to the heart, kidneys, and blood vessels, increasing the risk of heart attack, stroke, and kidney failure.

4. Dyslipidemia

Dyslipidemia, characterized by abnormal levels of lipids in the blood, is frequently observed in obese individuals. This condition typically involves elevated levels of low-density lipoprotein (LDL) cholesterol ("bad" cholesterol), reduced levels of high-density lipoprotein (HDL) cholesterol ("good" cholesterol), and elevated triglycerides. The excess visceral fat in obesity is metabolically active, releasing free fatty acids into the bloodstream, which are taken up by the liver and converted into triglycerides.

The liver, in response to this excess fat, increases the production of very-low-density lipoprotein (VLDL), which is rich in triglycerides and contributes to the development of atherosclerosis. Dyslipidemia further accelerates the process of plaque formation in arteries, leading to an increased risk of cardiovascular diseases, including coronary artery disease and stroke.

5. Certain Cancers

Obesity has been linked to an increased risk of several types of cancer, including breast cancer (particularly in postmenopausal women), colorectal cancer, endometrial cancer, and pancreatic cancer. The underlying mechanisms involve chronic inflammation, insulin resistance, and the production of sex hormones such as estrogen from adipose tissue.

Increased levels of estrogen, particularly in postmenopausal women, promote the proliferation of breast and endometrial cells, which can lead to the development of cancer. Additionally, the chronic low-grade inflammation associated with obesity can lead to DNA damage, promoting carcinogenesis (the formation of cancer). Insulin resistance and hyperinsulinemia can also promote tumor growth by acting as growth factors.

Pathological Consequences and Fatalities

The pathological consequences of these obesity-related diseases often overlap and exacerbate one another, creating a complex web of health issues that significantly increase morbidity and mortality. For instance, an obese individual with type 2 diabetes is at a much higher risk of developing cardiovascular disease, and the presence of hypertension and dyslipidemia further amplifies this risk. Moreover, the complications associated with these diseases, such as heart failure, kidney failure, and cancer metastasis, are often fatal if not managed appropriately.

In Nepal, the rising prevalence of obesity and its associated diseases poses a significant public health challenge. The healthcare system, traditionally focused on infectious diseases, is now increasingly burdened by the growing tide of non-communicable diseases. Without timely intervention, including public health campaigns, lifestyle modifications, and access to medical care, the obesity epidemic could lead to a substantial increase in premature deaths and a decline in the overall health of the population.

Addressing obesity in Nepal requires a multifaceted approach that includes education, prevention, and treatment strategies. Public health initiatives should focus on promoting physical activity, healthier eating habits, and awareness of the risks associated with obesity. Additionally,

healthcare providers need to be equipped with the resources and training necessary to effectively manage obesity and its related diseases, ensuring that the population can lead healthier, longer lives.

The decline of agriculture as a cultural cornerstone in Nepal has led to significant lifestyle changes, contributing to the rise of obesity and related health issues. As Nepal transitions from a predominantly agrarian society to one characterized by urbanization and sedentary lifestyles, it is crucial to establish new cultural practices that promote health and well-being. The examples of the gym culture in the USA and the cycling culture in Europe offer valuable insights into how Nepal can adapt to these changes by fostering new health-oriented traditions.

1. Promoting a Culture of Physical Activity:

One of the most critical steps in addressing the obesity epidemic in Nepal is to cultivate a culture of physical activity. With the decline of agriculture, the daily physical exertion that once kept people fit has diminished. To counteract this, it is essential to promote regular physical activity as a part of daily life, much like how gym culture has taken root in the United States.

However, simply transplanting a Western-style gym culture might not be the most effective approach for Nepal. Instead, a more contextually relevant strategy could involve promoting traditional forms of exercise, such as yoga, martial arts like Taekwondo, or indigenous sports, as well as introducing community-based fitness programs. Public spaces like parks and community centers can be equipped with exercise facilities and organized group activities, making physical activity accessible to everyone, regardless of income or location.

2. Encouraging Active Transportation:

The European cycling culture is an excellent example of how active transportation can be integrated into daily life. In many European cities, cycling is not just a mode of transportation but a deeply ingrained part of the culture that supports both physical health and environmental sustainability. Nepal could benefit greatly from promoting cycling and walking, especially in urban areas where traffic congestion and air pollution are growing concerns.

To foster a cycling culture, Nepal would need to invest in infrastructure that makes cycling safe and convenient. This includes building dedicated bike lanes, providing secure bike parking, and implementing policies that encourage cycling, such as bike-sharing programs and incentives for cyclists. Additionally, public awareness campaigns could highlight the health, environmental, and economic benefits of cycling, encouraging more people to choose bicycles over motorized vehicles for short trips.

3. Integrating Physical Activity into Education:

To ensure that future generations adopt healthy habits, physical activity should be an integral part of the education system. Schools can play a pivotal role by incorporating daily physical exercise into the curriculum, much like physical education classes in Western countries. Beyond traditional sports, schools can introduce activities that are culturally relevant and enjoyable for students, such as traditional Nepali dances, outdoor games, and trekking.

Furthermore, creating opportunities for physical activity outside of school hours, such as after-school sports clubs or community-based competitions, can help reinforce the importance of staying active. Schools can also partner with local organizations to provide resources and support for physical activity, ensuring that children and adolescents develop healthy habits that will last a lifetime.

4. Emphasizing a Balanced Diet:

Alongside physical activity, diet plays a crucial role in combating obesity. As traditional diets give way to more processed and calorie-dense foods, there is a need to revive and promote the consumption of healthy, balanced meals. This could involve celebrating and educating people about traditional Nepali foods that are rich in nutrients and low in unhealthy fats and sugars.

Community-based initiatives, such as cooking classes and nutrition workshops, could help people make informed dietary choices. Public health campaigns that focus on reducing the consumption of junk food and sugary beverages, while encouraging the intake of fruits, vegetables, whole grains, and lean proteins, are essential. Additionally, working with local food producers to make healthy food more accessible and affordable can help shift dietary habits on a larger scale.

5. Supporting Mental and Social Well-being:

As lifestyles change, there is also a growing need to address mental and social well-being. Obesity is often linked to psychological factors such as stress, anxiety, and depression. Therefore, promoting mental health should be a part of the broader strategy to combat obesity. Community support groups, mental health education, and access to counseling services can help individuals manage stress and maintain a healthy lifestyle.

Creating a culture that values social connections and community engagement can also contribute to overall well-being. Organizing community events, such as group hikes, cultural festivals, and neighborhood sports tournaments, can encourage physical activity while strengthening social bonds. These activities can help create a sense of belonging and support, which are vital for mental and emotional health.

6. Government and Policy Support:

Finally, government policies and initiatives are crucial in building and sustaining a culture of health. The government can play a significant role by implementing policies that encourage physical activity, such as providing incentives for active transportation, supporting public health campaigns, and investing in recreational infrastructure. Additionally, policies that regulate the food industry, such as limiting the advertising of unhealthy foods and imposing taxes on sugary drinks, can help shift consumer behavior towards healthier choices.

The government can also collaborate with private sectors, NGOs, and international organizations to promote health and wellness initiatives. Public-private partnerships can be instrumental in funding and implementing programs that reach a wide audience and create lasting cultural change.

Conclusion

As Nepal continues to evolve and modernize, it is essential to establish new cultural practices that promote physical and mental well-being. By drawing inspiration from the gym culture in the USA and the cycling culture in Europe, Nepal can create its own health-oriented traditions that are culturally relevant and sustainable. Through a combination of physical activity, healthy eating, mental well-being, and supportive policies, Nepal can build a healthier future for its population, reducing the burden of obesity and its associated diseases.

References

1. World Health Organization. "Obesity and Overweight." WHO, 2023.
2. Ogden, C.L., Carroll, M.D., Kit, B.K., & Flegal, K.M. "Prevalence of Obesity Among Adults: United States, 2011–2012." NCHS Data Brief, no. 131, 2013.
3. GBD 2015 Obesity Collaborators. "Health Effects of Overweight and Obesity in 195 Countries over 25 Years." New England Journal of Medicine, vol. 377, 2017, pp. 13-27.
4. Popkin, B.M., & Gordon-Larsen, P. "The Nutrition Transition: Worldwide Obesity Dynamics and Their Determinants." International Journal of Obesity, vol. 28, Suppl 3, 2004, pp. S2-S9.
5. Katzmarzyk, P.T., & Mason, C. "The Physical Activity Transition." Journal of Physical Activity and Health, vol. 6, no. 3, 2009, pp. 269-280.
6. Booth, F.W., Roberts, C.K., & Laye, M.J. "Lack of Exercise Is a Major Cause of Chronic Diseases." Comprehensive Physiology, vol. 2, no. 2, 2012, pp. 1143-1211.
7. Knuth, A.G., & Hallal, P.C. "Temporal Trends in Physical Activity: A Systematic Review." Journal of Physical Activity and Health, vol. 6, no. 5, 2009, pp. 548-559.
8. Bauman, A.E., Reis, R.S., Sallis, J.F., Wells, J.C., Loos, R.J.F., & Martin, B.W. "Correlates of Physical Activity: Why Are Some People Physically Active and Others Not?" The Lancet, vol. 380, no. 9838, 2012, pp. 258-271.

9. Hall, K.D., Heymsfield, S.B., Kemnitz, J.W., Klein, S., Schoeller, D.A., & Speakman, J.R. "Energy Balance and Its Components: Implications for Body Weight Regulation." *American Journal of Clinical Nutrition*, vol. 95, no. 4, 2012, pp. 989-994.
10. Pucher, J., & Buehler, R. "Cycling for Everyone: Lessons from Europe." *Transportation Research Record*, vol. 2074, 2008, pp. 58-65.
11. Stubbs, R.J., & Lavin, J.H. "The Obesity Epidemic: Both Energy Intake and Physical Activity Contribute to Obesity, but Sedentary Lifestyles Are More Difficult to Change." *British Medical Journal*, vol. 339, 2009, b804.

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