

Survey participants suggested improvements in the educational process such as an increase in the number of practical classes, the introduction of modern technologies and interactive learning. The most common suggestions included the use of video lectures for absent students and an emphasis on hands-on, project-based learning to link theoretical knowledge to practical applications.

Conclusions

This study highlights critical areas for improving Sri Lanka's higher education system, focusing on the integration of modern technology, practical and interactive teaching methods, regular feedback from faculty, and enhanced research opportunities. Addressing these challenges through strategic reforms can significantly improve the quality, relevance, and global competitiveness of Sri Lanka's higher education. Further collaborative efforts by policymakers, teachers and students will be essential to promote these improvements and create a more robust learning environment.

LITERATURE

1. Bandara, W. B. K. Evaluation of Student Dropout Rate in Alternative Higher Education Sector of Sri Lanka: A Case Study / W. B. K. Bandara, B. M. T. Chandike, G. C. Samaraweera // OUSL Journal. – 2023. – Vol. 17, No. 2. – 59 p.
2. Громыко, М. В. Психолого-педагогическая характеристика обучаемого как способ изучения идентичности / М. В. Громыко // Семья в современном мире: междисциплинарный подход : материалы межрегиональной научно-практической конференции, Кемерово, 06 мая 2024 года. – Кемерово : Кемеровский государственный медицинский университет, 2024. – С. 42–48.
3. Формирование компетентности студентов факультета по подготовке специалистов для зарубежных стран по биологической химии / А. И. Грицук, И. А. Никитина, О. С. Логвинович [и др.]. // Мультидисциплинарный подход к диагностике и лечению коморбидной патологии : сборник научных статей Республиканской научно-практической конференции с международным участием, Гомель, 29–30 ноября 2018 года. – Гомель: ГомГМУ, 2018. – С. 125–128.

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GENETIC PREDISPOSITION TO OBESITY: UNRAVELING THE ROLE OF GENETIC FACTORS IN OBESITY DEVELOPMENT AMONG SOUTH ASIAN POPULATION

Introduction

Obesity is more common genetic and life-style disease in both young and adults today. The aim of this study was to investigate the genetic predisposition to obesity in the South Asian population and the interaction between genetic and lifestyle determinants. Obesity is a long term (chronic) health effects that develops slowly which is defined by the accumulation of body fat (adipose tissue) which may lead to other health complications. Obesity in adults is usually defined as a BMI (Body mass index) of 30 or above [1].

Obesity is a multifactorial, genetic disease that is influenced by genes, epigenetic factors, the microbiome, and the environment. With the advancement of technology, many genes responsible for the phenotype have been discovered especially in patients with early onset severe obesity [2]. The causes of obesity can be categorized into: monogenic causes – Those that result from a mutation of a single gene, which affect the leptin-melanocortin pathway. Syndromic obesity – This is a form of obesity that is associated with other symptoms such as mental retardation and other anatomical abnormalities of the organ or system; Polygenic

obesity – It is caused by the combined impact of many genes that act in conjunction with an obesogenic environment [2]. If the obesity is genetically motivated even though people with obesity attend programs to manage weight, they may regain it because of the genetic factor.

Goal

Because many people believe that obesity is brought on by environmental factors, they are partly correct, but obesity also has a genetic basis. By statistical reviews there is evident an increase in the rate of people with obesity in south Asians. Hence, the first purpose of this research is to raise awareness of the genetic influence as a cause of obesity and to develop better prevention strategies for genetically influenced obesity.

Material and methods of research

In order to gather information on genetic factors in obesity and obesity among South Asian population, keywords such as obesity, genetic influence in obesity, treatments for obesity were used. A Google survey was used to collect live data and questions were asked to participate in the study and provide information about obesity and their family history of obesity. The survey questionnaire was designed in both English and the local language (Sinhala) and sent to a wide range of participants in order to eliminate the language barrier and get equal responses from the diverse audience. After data collection, the data was analyzed to reach the final conclusion.

The results of the research and their discussion

The survey results revealed several key insights of genetic and lifestyle factors that are responsible for obesity among South Asians. In this regard, closer to half of the participants (40%) claimed to have first-degree relatives with obesity. Further, 49% of participants stated that their 1st and 2nd degree relatives are diagnosed with obesity, which indicates a family tendency.

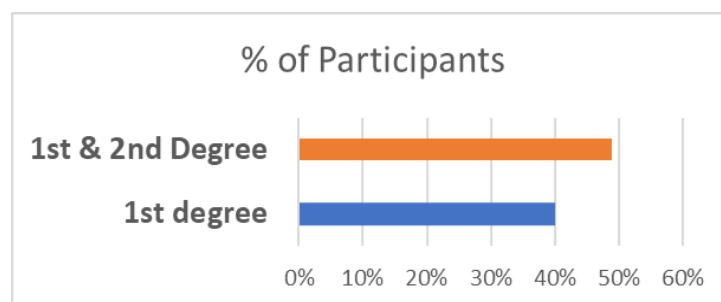


Figure 1 – percentages of 1st and 2nd degree relatives diagnosed with obesity (indicating family tendency)

Among the participants 83% of them agreed that genetics is the main cause of obesity and 79% of them agreed that lifestyle changes can be used to control the genetics. Virtually none of the participants, 11%, reported that a member of their family has gone through genetic testing for obesity or related diseases, suggesting that such testing is not commonly available or known. Most participants (75%) have made an effort to control their weight through dietary changes and exercise, showing the need for lifestyle changes. Some of the common challenges in managing healthy weight include sedentary lifestyle, lack of time for exercise and consumption of calorie dense foods. Among the participants, 43% of participants thought that genetic factors in South Asians could be different from those in other ethnicities.

Cultural factors were mentioned by many participants; these included dietary habits like high carbohydrate intake and societal pressures as significant challenges in weight management. This paper's findings show that genetic predisposition and environmental factors have a complex relationship in the development of obesity among South Asians.

Surveys showed that more than 1/3 of participants (38%) had a positive family history of obesity and the associated conditions were diabetes, heart disease and hypertension. This

is in conformity with previous studies that have established obesity as a hereditary condition, especially in communities with high rates of metabolic diseases Loos and Yeo, 2022 [3].

The involvement of monogenic and polygenic obesity in family members especially parents and siblings points towards the genetic role. Monogenic obesity is explained as obesity caused by mutation in single gene, say in leptin melanocortin pathway, is rare but may be associated with severe early onset obesity (in: Farooqi and O'Rahilly; 2006) [7].

In contrast, polygenic obesity which is the result of the buildup of the effects of many genetic variants is more frequent and can be worsened by environmental factors like diet and lack of physical activity (Loos and Yeo, 2022) [3]. It means that many South Asians may belong to the polygenic group where obesity develops as the result of the genetic predisposition combined with lifestyle factors.

South Asian populations have several cultural and environmental factors that pose unique challenges to achieving healthy weight. The participants often cited high carbohydrate diet (rice-based meals) and sedentary lifestyle as major challenges to weight management in the survey. These findings are in concordance with previous studies that have pointed out dietary patterns and physical inactivity as major contributors to obesity in South Asia (Misra & Khurana 2008) [4]. This has been compounded by the increased availability and access to processed and energy dense foods in many South Asian countries due to urbanization and economic changes (Popkin 2006) [5].

About 43% of participants, however, thought that genetic factors in South Asians could be different from those in other ethnicities and thus, they are prone to obesity. This perception is true by the study which shows that South Asians have a higher percentage of body fat and are at higher risk of developing metabolic disorders at relatively lower BMI than Caucasians (Chandak et al., 2010) [6].

Conclusions

1. This study shows that genetics is a key determinant of obesity among South Asians in addition to the conventional role of lifestyle and environmental factors.

2. The survey findings show a clear hereditary component of obesity as many participants had a family history of obesity and other related diseases. However, there is a clear need for enhanced education and facility to genetic testing to pinpoint those at genetic risk.

Future work should include the creation of specific interventions that take into account the genetic predisposition as well as the cultural characteristics of South Asians. The efforts of public health campaigns should be on encouraging healthy living and also education on genetic testing and counseling services. Both genetic and environmental factors have been shown to be involved in the pathogenesis of obesity and its complications, so it may be possible to prevent or reduce the frequency of obesity in this population through combined intervention.

LITERATURE

1. Definitions, Classification, and Epidemiology of Obesity // National library of medicine. – URL: <https://www.ncbi.nlm.nih.gov/books/NBK279167/> (date of access : 13.03.2025)
2. *Thaker, V. V.* Genetic and epigenetic causes of obesity : monograph / V. V. Thaker // Adolescence Med State Review. – 2017. – 28 p.
3. *Loos, R. J.* The genetics of obesity: from discovery to biology : monography / R. J. F. Loos, G. S. H. Yeo // Nat. Rev. Genetics. – 2022. – 23 p.
4. *Misra, A.* Obesity and tge metabolic syndrome in developing countries : monography / A. Misra, L. Khurana // J Clin Endocrinol Metab. – 2008. – 93 p.
5. Global Nutrition Dynamics: The World Is Shifting Rapidly toward a Diet Linked with Noncommunicable Diseases : monography / B. Popkin. – The American Journal of Clinical Nutrition.– 2006. – 84 p.
6. *Radha, V.* Genetic predisposition to type 2 diabetes among Asian Indians / V. Radha, V. Mohan // Indian Journal of Medical Research, 2007. – Vol. 125, № 3. – P. 259–274.
7. *Farooqi, S.* Genetics of obesity in humans : monography / S. Farooqi, S. O' Rahilly // Endocr Rev. – 2006. – 27 p.