A Comparative Study About Lifestyle Between the Sedentary and Control Groups of Selected Healthy Volunteers at Gymnastics in Dhaka

Shamiul Bashir Plabon [1*] iD**, Humayra Kabir Suity** [1]**, Umme Habiba Tanny** [2]**, Arif Chowdhury Apou** [2]

[1] Department of Public Health, Faculty of Health and Life Sciences, Daffodil International University
[2] National Institute of Kidney Diseases and Urology, Dhaka
[3] Sheikh Hasina National Institute of Burn & Plastic Surgery, Dhaka
[4] Green Life Collage of Nursing, Dhaka

Corresponding author*

Shamiul Bashir Plabon

Department of Nutrition and Food Engineering, Daffodil International University, Dhaka-1216, Bangladesh.
Email: samiulbasir017@gmail.com

ABSTRACT

This study aims to compare the lifestyles of two groups of individuals in Dhaka City: the sedentary group, consisting of non-participants in gymnastics, and the control group, comprising active participants in gymnastics. The motivation behind this comparison lies in the elevated risk of non-communicable diseases (NCDs) linked to an unhealthy lifestyle. The research involved 384 participants, divided evenly between the two groups, aged 20 to 50 and all residents of Dhaka City. The findings revealed that among those who refrained from exercise, 48% were categorized as normal weight, 20% were underweight, and 32% were overweight. Conversely, among those engaging in gym activities, approximately 78% maintained normal weight, and notably, none were classified as underweight with a BMI below 18.5. Within the gym-engaged group, a significant majority (84%) did not display signs of depression. Furthermore, 82% demonstrated adeptness in decision-making, and 90% reported freedom from anxiety. These favorable outcomes were attributed to consistent physical activity and healthy habits. In contrast, participants not adopting a healthy lifestyle exhibited different outcomes. Around 48% of this group experienced depressive symptoms due to irregular and unhealthy practices. Moreover, 54% encountered difficulties in decision-making fluency, and 36% reported experiencing anxiety. These issues were likely due to inadequate physical activity and poor dietary choices. This study underscores the importance of motivating individuals to maintain regular exercise routines and adopt nutritious dietary habits. Such strategies are pivotal in promoting overall health and mitigating the risk factors associated with lifestyle-related diseases.

INTRODUCTION

Lifestyle-related disorders are posing an escalating concern on a global scale due to the insufficient attention given to dietary and physical health. This pressing issue has now taken on the status of a significant global public health challenge. Specifically, within the current landscape of Dhaka City Corporation, a noteworthy proportion of the populace fails to adhere to a health-oriented lifestyle, characterized by a propensity for excessive carbohydrate consumption and a lack of regular physical activity aimed at offsetting caloric intake.

This prevailing pattern of lifestyle choices substantially escalates the susceptibility to Non-Communicable Diseases (NCDs), encompassing afflictions like cardiovascular diseases, hypertension, and stroke, depression, and anxiety disorders.

A notable statistical disclosure for Bangladesh underscores the severity of the situation, with a staggering 52% of men identified as smokers, and one out of every five adults

grappling with hypertension (Rahman et al., 2018). Factors like smoking, sedentary habits, alcohol misuse, and poor dietary practices collectively contribute to a heightened risk of NCD-related mortality (McLeary et al., 2022). This alarming trend resonates globally, where unfavorable lifestyle decisions, including insufficient calorie expenditure, consumption of unhealthy diets, smoking, and excessive alcohol consumption, synergistically amplify the vulnerability to NCD development (Khaled, 2015). The repercussions extend beyond compromising general well-being, extending to a substantial escalation in morbidity and mortality rates (Farhud, 2015; Sahu et al., 2024).

The crux of numerous NCDs resides in shared risk factors profoundly shaped by lifestyle choices (Dave, 2024). These factors encompass smoking, hypertension, hyperglycemia, obesity, physical inactivity, and inadequate nutrition, particularly evident in dietary patterns. The adoption of a healthy lifestyle emerges as an imperative strategy for both averting and managing these modifiable risk elements (Arena et al., 2015). Notably, the key to mitigating, controlling, or even reversing the aforementioned risks often lies in the embrace of a health-centric lifestyle.

The nexus between detrimental dietary patterns and the emergence of obesity during childhood and adolescence has been well established. Further exploration of the relationship between metabolic disorders tied to obesity in Asians and their dietary habits reveals the complexity of this issue (Oh et al., 2021). Effectively maintaining a healthy weight necessitates a conscientious commitment to improved eating habits and regular physical activity (Cerf, 2021). As the global landscape experiences economic advancement and increased globalization, there's a simultaneous surge in the prevalence of lifestyle-induced diseases (Balwan & Kour, 2021).

In response, this research proposes a strategic approach: conducting a comprehensive survey to dissect individuals' lifestyles and dietary behaviors, thereby assembling key components that impact their physical and mental well-being. These elements often intertwine with their work-related activities. In essence, those who actively engage in gym activities tend to embrace healthier lifestyles, consequently reducing their susceptibility to developing NCDs in comparison to sedentary counterparts. Noteworthy studies have delved into these dynamics. Fiona et al. examined dietary and lifestyle habits among shift workers, uncovering correlated health risks (Nea et al., 2015). Specific lifestyle practices linked to reduced Alzheimer's disease risk (De la Torre, 2010). Eric et al. demonstrated the mortality-reducing effects of healthy lifestyle habits among overweight and obese individuals (Matheson, King, & Everett, 2012). The significance of physical activity in curbing mortality and non-communicable diseases was substantiated by Marcel Ballin and Peter (Ballin & Nordström, 2021). Additionally, Amy Glynis et al. underscored the efficacy of scientifically tailored rehabilitative exercise prescriptions in managing chronic non-communicable health conditions (Pearce & Longhurst, 2021). The trajectory toward NCD development is further illuminated by several studies (Golestani et al., 2021; Ambakederemo & Chikezie, 2018).

The intricate interplay between lifestyle choices and health outcomes underscores the importance of mindful consideration (Farhud, 2015; Arena et al., 2015). Embracing a health-driven lifestyle considerably diminishes the propensity for life-threatening ailments and premature mortality (Matheson, King, & Everett, 2012). In contrast, unhealthy lifestyles are entwined with metabolic disorders, musculoskeletal issues, cardiovascular diseases, hypertension, obesity, and even violence. The vital role of exercise in averting weight gain and perpetuating weight loss is also evident, underscoring the benefits of heightened daily physical activity levels.

MATERIALS AND METHODS

Study Design & Setting

This study was a cross-sectional study that was carried out in several primary health care center located in Dhaka, the capital city of Bangladesh.

Study Period

The comparative study centered on Dhaka residents. Data was gathered through personal interviews, augmented by a preset questionnaire and occasional phone calls. Data collection was divided into two segments: one involving physically inactive individuals (192), and the other comprising physically active participants engaged in gymnastics (192).

Study Population

The study was based on a sedentary group consisting of individuals mostly not engaged in exercise, often spending time on the couch and a control group comprising selected healthy volunteers from the Gymnastics, Dhaka Municipal Corporation.

Sample Size Calculation

Using the formula for cross-sectional research, we determined the sample size18.

$$n = Z^2 \cdot p \cdot (1 - p)/d^2 \cdots\cdots\cdots\cdots (i)$$

Z is the standard average deviation (1.96 for a 95% tenacity altitude), d is the intended degree precision (0.05 for a 5% surplus of glitch), p is the expected characteristic dimension prompt population (0.5 for tremendous variability), and n is the sample size. Using this algorithm (i), we estimated the sample size to be 384. To account for nonresponse and missing data, we increased the sample size by 10% and obtained a final sample size of 384.

Data Collection

The study employed structured questionnaires to collect information from respondents, evaluating their daily habits and incorporating validated scales to measure anthropometric details and dietary knowledge levels. Additionally, focus group discussions provided deeper insights into contributing factors, while key informant interviews gathered comprehensive data. Prior to data collection, discussions were held with respondents for clarification and improved comprehension. All responses were systematically recorded in a consent-based data form.

Data Analysis

During the study period, data from the selected subjects were recorded using a questionnaire. The gathered data was subjected to statistical analysis using SPSS software to make predictions. The results were compiled using Microsoft Excel. Additionally, the study involved a gym center as a key component. To ensure the successful completion of this research, the required funding and computer resources,

including a PC, were secured through internal sources.

SPSS methods were used for data analysis, and it was later incorporated into IBM Version 26. For the comparative data analysis of the lifestyle study, descriptive test interpretation was taken into account. The dataset was prepared in an Excel sheet and then imported into SPSS, where the data was coded as variables. Furthermore, descriptive statistics were employed to analyze the results.

RESULTS

Participants' ages ranged from 20 to 50 years old, with the majority of both gym-goers and sedentary respondents falling between 20 and 30 years. While the majority of respondents were men, this chart provides a comprehensive overview of participant demographics, encompassing age, gender, and educational background.
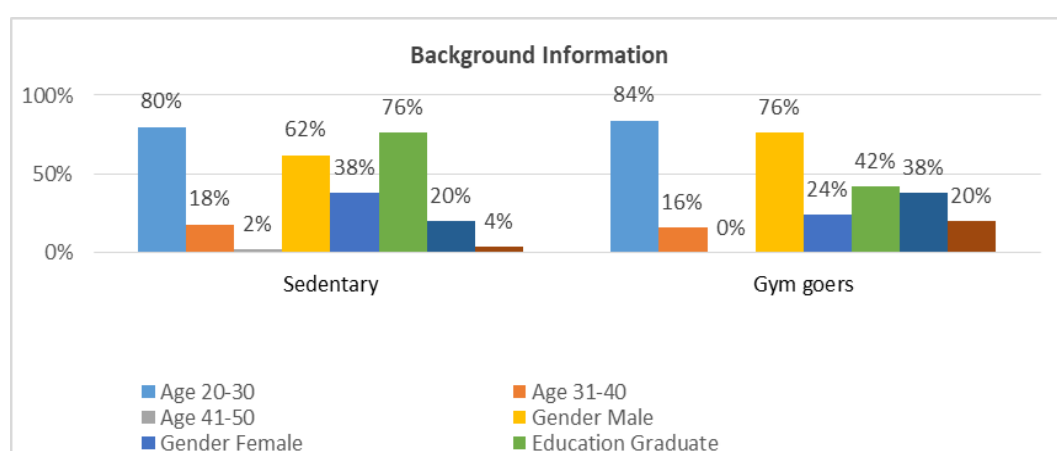

Figure 1: Study participant's background overview

This bar chart (Fig. 1) compares the background and statistical overview of the participant's age, gender, and educational attainment.

Among the 384 respondents, 62% of sedentary participants were men, and 32% were women, while the physical activity group consisted of 76% men and 24% women. A significant portion of respondents (76%) were undergraduates, whereas 20% held degrees, and 4% had SSC, HSC, or graduate qualifications. Within the physically active group, the majority were graduates (42%), followed by undergraduates (38%), and a smaller fraction (20%) had no degree.
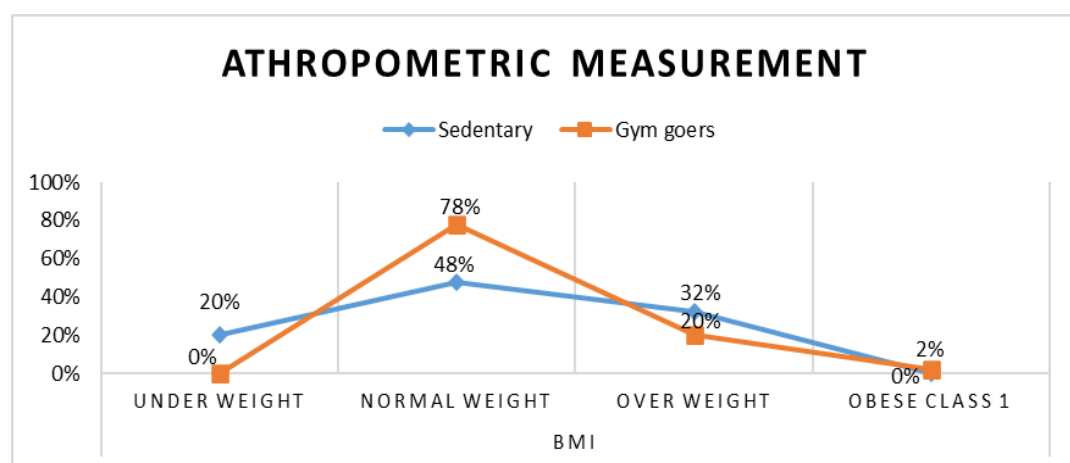

Figure 2: BMI overview

The given line graph (Fig. 2) assimilates the statistical overview of the respondent's body mass index as per their height, weight, and age.

The sedentary group comprises individuals with unhealthy lifestyles. Among them, 20% are underweight, 48% have normal weight, and 32% are overweight. Conversely, most physically active gymnasts are within the normal weight range (78%), while 20% are overweight, and less than 2% are classified as obese class 1. Surprisingly, no gym-goers are underweight due to their consistent practices. Maintaining a healthy weight (BMI 18.5-24.9) is crucial for physical and mental well-being. Underweight individuals weaken their immune system and increase malnutrition risks, while obesity raises non-communicable disease (NCD) risks. Healthy gymnasts are less prone to NCDs compared to inactive, unhealthy sedentary subjects, as indicated by the graph's findings.
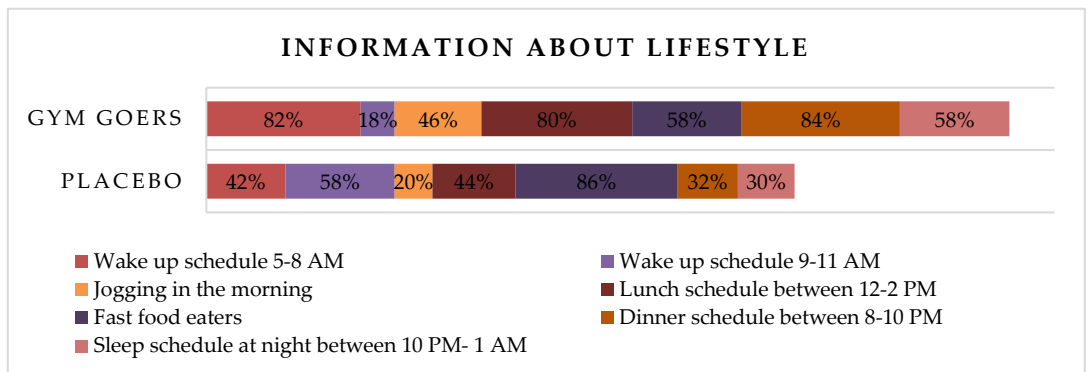

INFORMATION ABOUT LIFESTYLE

GYM GOERS: 82% | 18% | 46% | 80% | 58% | 84% | 58%

PLACEBO: 42% | 58% | 20% | 44% | 86% | 32% | 30%

- ■ Wake up schedule 5-8 AM
- ■ Wake up schedule 9-11 AM
- ■ Jogging in the morning
- ■ Lunch schedule between 12-2 PM
- ■ Fast food eaters
- ■ Dinner schedule between 8-10 PM
- ■ Sleep schedule at night between 10 PM- 1 AM

Figure 3: Participant's lifestyle habits and food consumption pattern's overview

This bar graph (Fig. 3) depicts a summary of respondents' lifestyle habits like wake-up schedule, food consumption pattern, morning walk, and sleep schedule as well.

In the sedentary group, 42% wake up between 5-8 am, but the majority rise between 9 and 11 am, which isn't ideal. Conversely, 82% of those engaged in morning physical activity wake up between 5-8 am, a positive habit. Only 18% of them wake up between 9 and 11 am. Of the 20% in the placebo group (46% of gym goers), a small portion include morning jogging in their routine, aiding calorie burning, blood flow, and body composition. Lunch ideally falls between 12 to 2 pm. Results show 44% of placebo participants adhered to this, compared to a remarkable 80% of gym goers. A majority (86%) of the sedentary group regularly consumed fast or junk food, contrasting with health-conscious gymnasts at 58%. Regarding dinner, 84% of physically active individuals ate between 8 and 10 pm, unlike the sedentary group, where only 32% did so, despite a preference for late meals. Regular meal schedules encourage circadian rhythms. Examining sleep, 58% of gym goers slept early, while only 30% of the sedentary group did, increasing the risk of circadian rhythm issues linked to weight gain, reduced productivity, and NCDs.
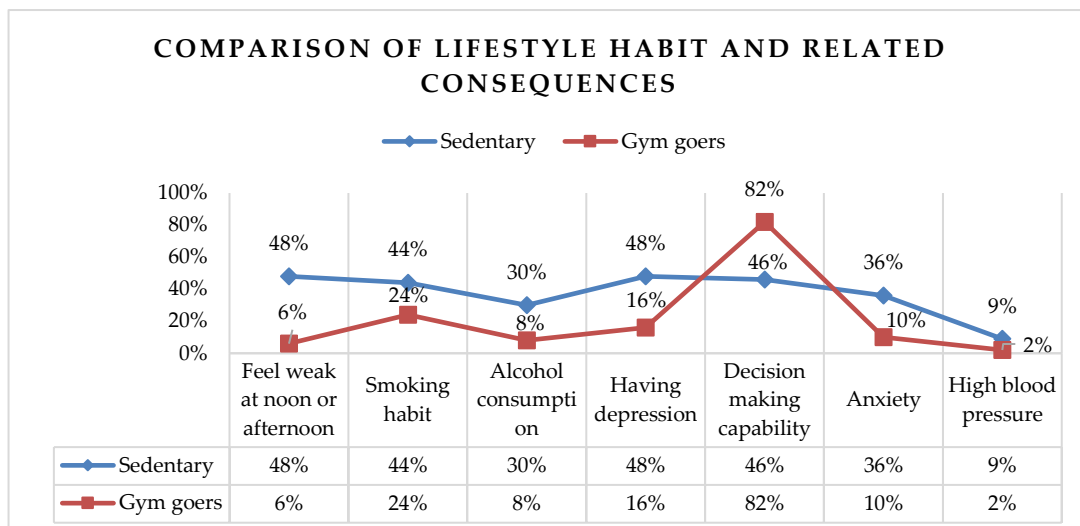
Figure 4: Graphical comparison of lifestyle habits and related consequences overview

The given line graph (Fig. 4) depicts lifestyle consequences related to smoking and alcohol consumption for respondents.

Among the sedentary group, 44% smoke, aligning with a common trend. In contrast, most health-conscious gym goers abstain from smoking (76%), while 24% do smoke—a counterproductive practice. Alcohol consumption shows 30% of sedentary participant's drink, while only 8% of physically active individuals concerned about health consume alcohol. Unhealthy dietary patterns and lifestyles elevate NCD risk, paralleling how excessive alcohol and smoking heighten hypertension and heart disease risks. In the sedentary group, 48% experience related consequences: afternoon fatigue (48%), depression (48%), decision-making difficulty (46%), anxiety (36%), and high blood pressure (9%). Conversely, gym goers practicing healthy habits show fewer weaknesses. Only 24% smoke, and merely 8% drink alcohol. Impressively, 82% make decisions with ease, with just 16% experiencing depression. Anxiety and high blood pressure affect around 10% and 2% respectively. Findings suggest maintaining a healthy lifestyle and exercise reduces NCD risk.
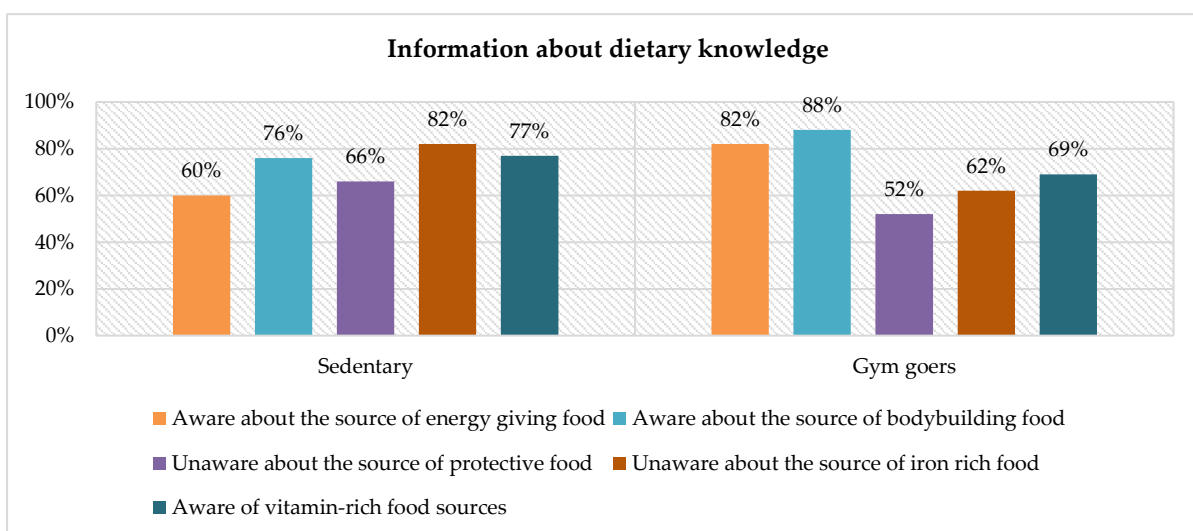

Figure 5: Dietary knowledge overview

This bar graph (Fig. 5) provides an overview and comparison of respondents' dietary knowledge regarding energy-rich foods, protein sources, and key micronutrients.

This scenario applies to both those leading healthy lifestyles and those who are less health-conscious, as well as those lacking general nutrition understanding. In both groups, respondents are familiar with vitamin-rich sources like fruits and vegetables, muscle-building foods like meat, fish, and poultry, and energy providers like rice, bread, and cereals. However, there's widespread unfamiliarity with protective foods like dairy and iron-rich sources such as pulses and legumes. Raising awareness about nutritious sources can help individuals meet daily dietary needs for better health. Given the challenge of estimating daily caloric intake, consulting a nutritionist for BMI-based caloric needs is crucial. Developing a diet plan and understanding nutrient-rich food sources is equally important.

DISCUSSION

The study aimed to determine if exercise lowers the risk of non-communicable diseases (NCDs) and lifestyle-related illnesses, yielding significant findings. The figure illustrates how fast-food consumption, smoking, and alcohol intake are higher among couch-bound and sedentary groups compared to gym goers. Another study underscores fast food's health risks (Monwarul & Abdullah, 2020), including trans-fat-related heart disease. Smoking and alcohol also contribute to negative health effects. Unhealthy lifestyles correlate with higher risk of lifestyle-related diseases. Notably, the sedentary group (48%) experiences afternoon fatigue, tied to circadian rhythm and sleep deprivation. Late-night sleep and nicotine worsen eating habits. Additionally, 48% suffer depression, 36% anxiety, and poor decision-making (Fig. 4). Anxiety's link to diet is supported (Aucoin et al., 2021). Conversely, active gym goers (82%) make better decisions and report lower rates of smoking, depression, and anxiety. Lifestyle predicts depressive symptoms (Holmes, Aryal, & Walters, 2023). Physical activity diverts negative thinking patterns (Petter et al., 2020). The DASH diet curbs NCD risk by tackling hypertension-related consequences (Hossain et al., 2022). This research stands out for probing why people neglect healthy habits and factors influencing poor diets. Physical inactivity elevates chronic disease risk (Miller et al., 2016). Health-conscious, active individuals face fewer NCD risks. Personal health responsibility is vital. Individuals fostering a healthy weight and balanced nutrition, coupled with exercise, can avert NCDs.

CONCLUSION & RECOMMANDATIONS

The intersection of daily habits, dietary choices, and physical activity directly impacts non-communicable diseases (NCDs). Harmful behaviors like smoking and alcohol consumption can trigger cardiovascular disease, diabetes, hypertension, and other lifestyle-related ailments. The study primarily aims to contrast the healthy practices of sedentary urban residents (sedentary) and active gym-goers, as unhealthy lifestyles heighten NCD risk. Research underscores the minimal NCD risk for physically active gym attendees, indicating the value of promoting physical activity, exercise, cycling, sports, and balanced diets for a health-conscious life. Regular moderate-intensity exercise is a recognized preventive and therapeutic approach for various diseases thereby enhancing global public health outcomes. People should be responsible for their own health. When people make the decision to keep a healthy weight, they can promote their own health on an individual basis. To prevent the onset of non-communicable diseases, this can be accomplished through healthy nutrition backed up by regular exercise. Furthermore, authorities should conduct public health initiatives in health education.

Limitations of the study

The research was comparative in nature, so we delved into descriptive analysis by anticipating percentages to make a comparison between both groups for prediction. Consequently, neither randomized clinical trials nor a quasi-experimental design were used in our recommended methodology. However, if any research lab or policymakers take notice of our findings, funding may be provided to complete the entire study at the federal level. At the outset, it was confined to surveying a municipal area. If it had been able to survey more areas, it might have been successful in promoting a community-based lifestyle. This is one of the obstacles to this study. Secondly, it could begin with a survey that is comparable among urban, suburban, and rural populations before moving on to address the latter, which would produce a startling result for the entire community. It turned out that we were unable to complete this comprehensive research due to a deficit in funds. This is a global issue of current culture influencing a poor dietary pattern. Nevertheless, if funding is obtained, this project anticipates being performed alongside additional investigations in the year ahead.

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