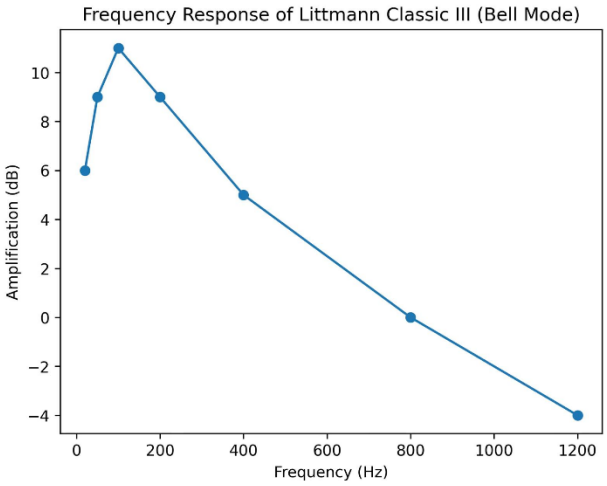


Figure 1 – Frequency response of the Littmann Classic III stethoscope in diaphragm mode

Conclusions

The Littmann Classic III stethoscope demonstrates frequency-dependent acoustic amplification. Maximum sound amplification was observed within the 100–200 Hz range, corresponding to typical cardiac auscultation frequencies. The bell mode provides improved transmission of low-frequency sounds, while the diaphragm enhances mid-frequency sound detection. The stethoscope functions as an acoustic filtering system optimised for clinically relevant physiological sound frequencies.

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SOFT DRINKS CONSUMPTION AND METABOLIC CONSEQUENCES

Introduction

There has been a big change in eating habits around the world, and this is linked to the rise in non-communicable diseases (NCDs). One of the biggest changes is that people are eating more processed foods and drinks with added sugar. Sodas, fruit juices, and energy drinks are some of the most common sources of extra sugars in the modern diet. Their high glycaemic load and the presence of sweeteners such as high-fructose corn syrup have been associated with various detrimental

metabolic effects [1]. These results include gaining weight, becoming resistant to insulin, having high levels of fat in the blood, having non-alcoholic fatty liver disease (NAFLD), and having a higher chance of getting type 2 diabetes and heart disease [2].

The metabolic effects of drinking a lot of soft drinks are mostly biochemical. When fructose, which is a big part of many soft drinks, is eaten too much, the liver breaks it down through de novo lipogenesis, which is the process of turning carbohydrates into fatty acids. Fatty acid synthase and ATP citrate lyase are two important enzymes in this pathway. They cause fat to build up in the liver and lead to NAFLD [3, 4]. At the same time, the fast absorption of glucose causes insulin levels to rise. Insulin is a peptide hormone that helps fat cells store fat. Over time, this can make insulin receptors on cells less sensitive, which can lead to insulin resistance and problems with pancreatic beta cells [2].

These biochemical disturbances are especially alarming in the South Asian demographic, which is already predisposed to metabolic syndrome and central obesity [3]. Cultural dietary practices, along with a possible genetic predisposition to insulin resistance, may exacerbate the adverse health effects of soft drink consumption in this population. These biochemical pathways are what connect genetic predisposition and environmental factors like eating too much sugar.

Goal

The main goals of this study are: 1) To delineate the soft drink consumption patterns (type, frequency, and context) among a South Asian population sample. 2) To find out how much people know about the link between drinking soft drinks and metabolic diseases like NAFLD, diabetes, and central adiposity. 3) To examine the correlation between reported consumption patterns and self-reported metabolic health indicators, encompassing BMI category, diagnosis of associated diseases, and symptoms such as energy fluctuations and abdominal distension. The ultimate goal is to give information that can help create public health plans that focus on lowering health risks linked to soft drinks.

Material and methods of research

A cross-sectional study utilised a web-based survey (Google Forms) for data collection. The survey questionnaire was created to gather data on demographics, soft drink consumption patterns, health awareness, and self-reported health outcomes. It had questions with multiple choices, Likert scales, and checkboxes.

Keywords like “soft drinks metabolic syndrome,” “sugar-sweetened beverages NAFLD,” “fructose and insulin resistance,” and “South Asian dietary habits” were used to look at scientific literature that was related to the background and discussion

The results of the research and their discussion

The survey had 86 people answer, and most of them were young adults between the ages of 18 and 24. The analysis showed a number of important things about how people drink soft drinks and how it affects their metabolic health. When it came to what people drank, regular sugar sodas and fruit juices were the most popular types of soft drinks. 48% of participants said they drank regular sugar soda most of the time, and 40% said they drank fruit juices most of the time. 62% of the people who took part said they ate 1–3 servings a week, 34% said they ate 4–6 servings, and 4% said they ate 7 or more servings a week.

Seventeen percent of the people who took part said they had been diagnosed with a metabolic condition. The most common one was Non-Alcoholic Fatty Liver Disease (NAFLD/MASLD), which affected 8% of the people. Type 2 Diabetes/Pre-diabetes was the next most common, affecting 6% of the people. Among participants consuming four or more servings of soft drinks weekly, the prevalence of diagnosed metabolic conditions was 24%, in contrast to 13% among those consuming fewer than four servings weekly. The biochemical foundation for this correlation is hepatic de novo lipogenesis, wherein surplus fructose is transformed into fat through enzymes like ATP citrate lyase and fatty acid synthase, resulting in fat accumulation in the liver [4]. This is especially

worrying because fruit juices, which 40% of participants said they liked because they thought they were healthy, have fructose levels similar to those in sodas.

People often reported symptoms that are often linked to metabolic dysregulation. Twenty-eight percent of participants said they had energy crashes "often" or "always." This was more common among people who drank regular sugar soda (34%) than diet soda (18%). This difference is due to the biochemical process of reactive hypoglycemia: soft drinks with a lot of sugar cause pancreatic beta-cells to release too much insulin, which moves glucose into tissues too quickly and causes blood sugar levels to drop sharply, causing sudden fatigue [2]. Forty percent of participants said they had stomach bloating after drinking carbonated drinks, which could mean that the gut microbiota fermented sugars that weren't digested.

There were big gaps in people's knowledge of specific metabolic risks. Only 28% of the people who took part knew that high-fructose corn syrup is linked to liver fat, and only 12% said they always checked "Total Sugars" on nutrition labels before buying drinks. This shows that most people still don't know much about the biochemical processes that control how sugar is broken down. Even with these gaps in knowledge, the average concern rating for long-term metabolic impact was 5.7 on a scale from 1 to 10. Also, 54% of participants said they noticed weight changes when they changed how much soft drink they drank. The main reasons people drank diet soda were to lose weight (45%) and to meet their diabetic needs (30%).

There were cultural factors that affected how people ate, like the fact that 40% of people preferred fruit juices and 45% of people drank soft drinks with meals. This incorporation into conventional dietary patterns, coupled with the increased vulnerability of South Asians to insulin resistance at lower BMI levels [3], engenders a perilous synergy. The disparity between elevated levels of concern and minimal label-checking behaviour indicates that individuals are apprehensive about metabolic health but lack the understanding to associate biochemical mechanisms with their beverage selections. This is an important goal for public health programs that are sensitive to different cultures and explain in simple terms how eating too much sugar affects cellular metabolism and leads to disease.

Conclusion

This study shows that many young adults in South Asia drink soft drinks, with regular sugar sodas and fruit juices being the most popular. It also shows a strong link between drinking more than four servings a week and self-reported metabolic conditions like NAFLD, pre-diabetes, and high blood pressure. There are gaps in critical awareness: most participants didn't know that high-fructose corn syrup is linked to hepatic de novo lipogenesis, which is the process by which the liver turns extra fructose into fat. Also, not many people checked sugar labels. Cultural factors play a role, as people wrongly think that fruit juices are healthy even though they have a lot of fructose and are biochemically similar to sodas when it comes to storing fat in the liver. Reported "energy crashes" have a clear biochemical basis in reactive hypoglycemia following excessive insulin secretion, with higher prevalence among regular sugar consumers (34% vs. 18% for diet soda) reinforcing this mechanism. These results necessitate prompt public health intervention, encompassing culturally attuned education regarding these biochemical processes, enhanced food labelling, and the advocacy of healthier alternatives such as water.

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