UNDERSTANDING SALT CONSUMPTION PATTERNS AND HEALTHRISKS: A STUDY AMONG YOUNG ADULTS IN LUCKNOW

Abstract

Salt represents an important component in modest levels for the body's proper functioning. Saltis an inorganic substance composed of sodium and chloride ions. Salt is beneficial tohuman health as it enhances flavour and preserves food, particularly throughout theseason. The purpose of our study was to evaluate young people' knowledge, habits, and salt consumption patterns in Lucknow. In this survey, 200 people took part. The data was collected through convenience sampling technique. this study was a cross section and non-interventional. The results showed that 42% of participants consuming the recommended amount of salt and 10% being unaware of their intake. awareness of the health risks associated with excessive salt intake was high among the participants, with 98% acknowledging the potential health issues. there was variability in perceptions of the importance of reducing salt intake, with 41% deeming it crucial, 13% not considering it important at all, and 7% unaware of how to reduce salt intake. 99.5% acknowledged the risk of high blood pressure, 97% recognized the risk of kidney disease, 96% were aware of the risk of stroke and 95% understood the risk of heart attack. the awareness of the recommended daily salt intake as per the world health organization (who) was less consistent which 57% of participants were aware of the recommended salt intake and 43% were not aware of the who guidelines. Participantstendency to add salt or seasoning in their meals and we can see the result majority ofparticipants, 133 (67%), reported regularly adding salt for seasoning, while 47participants (23%) indicated that they never add extra salt to their meals. participantstendencies to consume processed foods. The majority, 85%, reported consumingprocessed foods occasionally, while only 3% indicated that they never eat processedfoods.

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Keywords- Dietary Salt, Young Adults, Health Effect, Consumption, Salt awareness, percentage of participants, Dietary intake, Reduce salt intake.

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Introduction

Globally, most individuals consume extra salt, primarily from salt, then their bodies demand.Inadequate use of salt can cause or worsen non-cardiac illnesses such as Meniere's syndromeas well as kidney failure, hepatic failure, kidney stone formation, and pre-menstrual disorder.Salt is necessary for our bodies to grow and operate normally. Among healthy people, the World Health Organization suggests consuming no more than 5 grams of salt per day through food. (**Grimes, C., *et al.* (2017))**. Consuming too much salt is a serious public health issue. Excessive salt consumption raises blood pressure, and there is evidence from epidemiology and pathophysiology linking it to a number of harmful health outcomes, including kidney stones, stomach cancer, stroke, coronary heart disease, osteoporosis, and indirectly, obesity. **Claro, *et al.* (2012).** Salt is an inorganic material that is created when sodium and chlorine ions interact. Sodium is a necessary nutrient that the body needs to sustain normal cell activity, maintain the acid-base balance, maintain plasma volume, and send nerve impulses.
(Haron, H., *et al*. (2022)).

Inadequate salt intake can cause blood pressure to rise, which can result in cardiovascular disease (CVD). Reducing salt and/or sodium intake is acknowledged as one of the main objectives in the battle against non-communicable diseases. The knowledge, attitude, and behaviour (KAP) of individuals on salt consumption influenced the amount of salt they consumed. **(Alawwa, *et al*., (2018)).**

People to indulge excessively in salt because they are ignorant of the possibility that a high sodium diet could lead to hypertension**(Land, M., *et al.* (2014))**. Hence, the purpose of this study was to examine the KAP of adult Chinese population about their consumption of salt

and its relationship to blood pressure. Plans for how people should change their eating habits can be developed using the KAP data about salt consumption **(Haron, H. *et al.* (2022)).** Additionally, there is proof that a diet heavy of salt may raise the risk of kidney, bone, and stomach cancer. Enhancing consumer awareness and knowledge via health education initiatives of a fundamental in component in the salt reduction strategy **(Leyvraz, M., *et al.* (2018))** and may contribute to lower population salt intake **(Jessen, N., *et al.* (2018))**. Not many recently published research contests the need for population-wide salt reduction, despite a significant amount of scientific evidence linking high dietary salt intake to elevated blood pressure **(Mente, A., *et al*. (2016))**.

On a global scale, it is recommended that salt iodization programs be conducted in tandem with salt reduction measures. Iodine deficiency disorders (IDD), a group of health problems, are more likely to occur in those who consume insufficient amounts of iodine **(Marakis, G., *et al.* (2021)).** As is already common knowledge, the WHO recommends that adults consume less than 5 grams of salt on average each day. Nonetheless, an examination by McCarron and associates indicates that the minimum typical physiological threshold for average salt consumption would be roughly 6e7 g/day for females and 8e9 g/day for males)**(Peters, R., *et al.* (2019))**. According to one study, people worldwide are consuming more sodium than they require for bodily functions. The World Health Organization (WHO) recommends 2 grams of sodium per day for individuals, which is even greater than the amount of sodium consumed (equal to 5 grams of salt per day) **(Ravi, S., *et al.* (2016).(Bhattacharya, et al (2022)).** As a significant risk to both human health and economic growth, particularly in low- and middleincome nations, noncommunicable diseases (NCDs) are regarded as one of the major health issues of the twenty-first century **(Cheikh, *et al.* (2019)).** Adjusting choices for purchases according to sodium content on labels; attempting to buy food items with reduced salt; and consuming less salt. The consumption of processed, ready-made foods has been repeatedly shown to be the main contributor to salt intake. Three of the salt-related behaviours under investigation are related to this consumption: looking for low-sodium food items; modifying purchase decisions based on label sodium content; and checking for sodium content on food labels. The average daily salt intake was found to be 67% derived from processed foods, with bread and other bread-like goods accounting for the largest share at 25%, processed meats at 12%, and cheese at 10% **(Nasreddine, L., *et al.* (2014)).**

Salt replacements are gaining popularity as a new strategy to salt reduction in a number ofnations. Salt substitutes or low-sodium salts are table or cooking salts that do not

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includesodium chloride or have reduced amounts of sodium chloride due to partial replacement withpotassium chloride, magnesium sulphate, or other minerals. Salt replacements taste identicalto ordinary table salt**.** With an extra dose of potassium, it is an excellent solution for loweringsodium while increasing potassium and other mineral consumption. Salt replacements havebeen found in studies to help manage blood pressure and lower the risk of cardiovasculardisease and mortality.A worldwide atmospheric check of salt alternative products found thatas of September 2020, 87 salt alternatives were available in 47 countries. However, manypeople remain concerned about the possibility of serious reactions to salt substitutes, such ashyperkalaemia.A high-sodium diet was found in 2017 as an additional risk factor affecting thetotal amount of mortality and a proportion of life years adjusted for disabilities in China,accounting for around 1.5 million deaths.**Kong, B., *et al.* (2023).**

In 2017, a high-sodium diet was identified as an additional dangerous factor for both thenumber of deaths and the percentage of disability-adjusted life years in China, accounting forabout 1.5 million fatalities.Pursuant to the Costa Rican National Social Security System(CCSS), the cost of hypertension care exceeded USD $ 80,000 in 2012, accounting for 3.47%of total social security spending.**Vega-Solano,** J., ***et al*. (2023).**

As explained by Liem, a taste for salt preference develops as a result of repeated exposure tosalted foods. Infants gradually acquire a salty taste. They are most likely incapable of tastingsalt before the age of three months. However, when infants begin to recognize saltiness, itbecomes their favouredflavour. Children prefer salt in higher concentrations than adults,similar to their affinity for sweet tastes.Salt (NaCl) is made up of two ions: sodium (Na^+) andchloride (Cl^-). Salt accounts for approximately 90% of all sodium and chloride in the diet.Because salt is regularly added to numerous products and recipes, sodium shortage in the dietis extremely uncommon. Excess salt intake, on the other hand, is a considerably more commonissue, increasing calcium excretion through the urine and increasing the risk of high bloodpressure. **Jachimowicz-Rogowska, K., &Winiarska-Mieczan, A. (2023).**

Recognizing the key the sources of consumption salt in a country can assist guide the choiceof salt-reduction techniques that are most effective, egalitarian, fast, and cost-saving. Theproportion of dietary salt derived via home cooking vs foods prepared outside the home is animportant issue, as treatments aimed at the more typical pattern of salt consumption are likelyto be the highest beneficial.For example, reformulation measures are prone to be beneficial incountries where a substantial amount of dietary salt is derived from packaged

goods and mealsproduced throughout of the dwelling, although salt exchange could prove more effective innations where discretionary salt is widely used.**Bhat, S., *et al.* (2020).**

For millennia, the food sector has widely adopted salt as a preservative due to its economicallyviable antibacterial characteristics and ability to retain nutritional value.Salt reduces wateractivity and inhibits the proliferation of microorganisms that might ruin or diminish the lifespan of a food product. Salt makes it difficult for infections to thrive by lowering the quantityof free water available, which is related to the tendency of both chloride and sodium ions toattach to water molecules. The food sector can effectively protect nourishment from diseasesurvival through pairing salt with other barrier measures. Despite salt's importance in everydaylife and the food business, human excessive intake together with elevated consumption reduceits benefits**. Dabas, T., *et al.* (2023).** initial review of the study features and approximated 24hour salt consumption as stated in the original publications. However, for uniformity, sodiumconsumption data were converted from their native values (e.g., mmol or mEq) to millimetresper day (g/day). To convert sodium consumption to (which includes sodium chloride) used forsalt, multiply sodium intake (in g/day) by 2.54. Second, using an additive effects meta-analysistechnique, we computed the pooled mean 24-hour salt consumption, although we limited thisanalysis to papers published after 2010. Food labelling and imposing limitations for specificfoods (for example, bread) are examples of such measures. A full examination of plans thatdecrease sodium/salt intake in the region of Latin America and the Caribbean is necessary.**Carrillo-Larco, R. M., &Bernabe-Ortiz, A. (2020).**

The greatest number of associations created by sodium were connected to unfavourable healthoutcomes (41%), indicating that individuals were previously aware of the health risksassociated with excessive salt use. A significantly high percentage of individuals indicatedanswers related to the concepts of food and flavour (34% and 31%, however). Such hypothesesgive a foundation for understanding why people conduct (or do not perform) a specificbehaviour while determining the key elements that underpin that behaviour (Glanz and Bishop,2010; Glanz et al., 2008). When designing behaviour change interventions, it is critical to focuson changing characteristics that are major predictors of the patterns of behaviour withininvestigation in the group being targeted community (Institute of Medicine [IOM], 2010).**Antúnez, L., *et al.* (2022).**

Meals outside the residence (FAFH) is a 'eating behaviour' that is commonly performedthroughout nations, with industrialized countries having a higher prevalence. Similarly,developing nations, such as South Africa, India, and Mexico, indicate an increase of

over 50%in FAFH usage.With transitional economies, there is little variation in FAFH between ruraland urban environments, with the divide shrinking. It is well recognized that eating habits areimpacted by interpersonal, bodily, and macroenvironmental factors. The occurrence of cafétypes and numbers in the landscape has been shown to have an impact on FAFH. For proof ofthe causative influence of diet on sickness, epidemiological research may look at dietarypatterns rather than specific food groups or nutrients. Dietary patterns are a thorough pictureof the population's diet and nutrient intake. Despite several efforts to investigate the dietdisease relationship, evidence has yet to be discovered. While different indices and techniquesare used to measure diet quality, diversity, and optimum health, FAFH is less commonlyemployed to investigate dietary choices and their related disease risks.**Godbharle, S.,Jeyakumar, A., Giri, B. R., &Kesa, H. (2022).**

This systematic review and meta-analysis included Ethiopian individuals withoverweight/obesity, high blood pressure, impaired glucose homeostasis, or metabolicsyndrome. Two writers extracted data separately and used the Joanne Briggs Institute'stechnique for quality assessment. Meta-analysis found that the prevalence of metabolic riskfactors ranged from 12% to 24%, with overweight/obesity (23.9%, 95% CI 19.9% to 28.0%)and hypertension (21.1%, 95% CI 18.7% to 23.5%) having the highest prevalence. Metabolicsyndrome (14.7%) (95% CI 9.8% to 19.6%) and impaired glucose tolerance (12.4%, 95% CI
8.7% to 16.1%) followed.

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Objective

This study aims to assess theirknowledge regarding dietary salt and health interrelationship

Methodology

The present study was conducted in the Babasaheb Bhimrao Ambedkar University Lucknow, Uttar Pradesh, India. The target of the study comprises of college going students (graduation, post-graduation, PhD). This is a cross-sectional, study. The sample technique used is convenience sampling technique.

The sample size for the study is 200. This study was conducted from month of February to

April 2024. The information was collected through questionnaire. The inclusion criteria for selecting samples study are young adults' people from 18-25 year of age of gender, education, family annual income and occupation. And also, along with the health-related question.

The data analysis using Microsoft Excel for examining the data by frequency and percentage, offering a clear and comprehensive understanding of the dataset's characteristics. This chapter deals with the analysis and interpretation of the data gathered to assess the knowledge, attitude and consumption pattern of salt intake in young adults in Lucknow City.

Result

The data collected was used to examine the relationships between dietary salt and health issues. A minimum sample size of 200 college-bound students, aged 18 to 25, was chosen for the research.

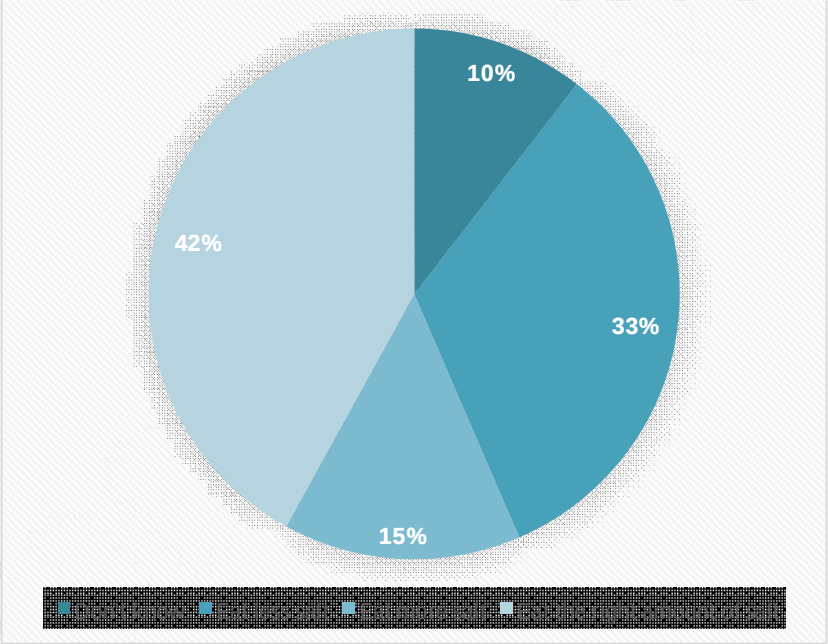

Figure.1 Distribution of the participants according to the daily salt intake

Figure 1 displayed the participants' daily salt intake, showing that 42% of them consume the recommended amount of salt, 33% consume less salt, 15% consume more salt, and 10% are unaware of their salt intake.

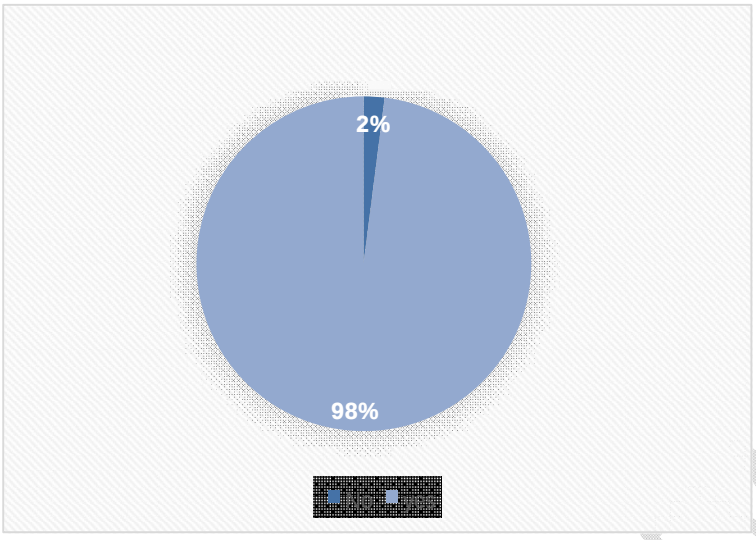

Figure.2 Participants knowledge about eating excess salt related issue on health.

Figure 2 depict the participants knowledge about eating excess salt related issue on health whereas you see that majority of participants are aware about issues which is 98% participants say Yes and only 2% participants say No.

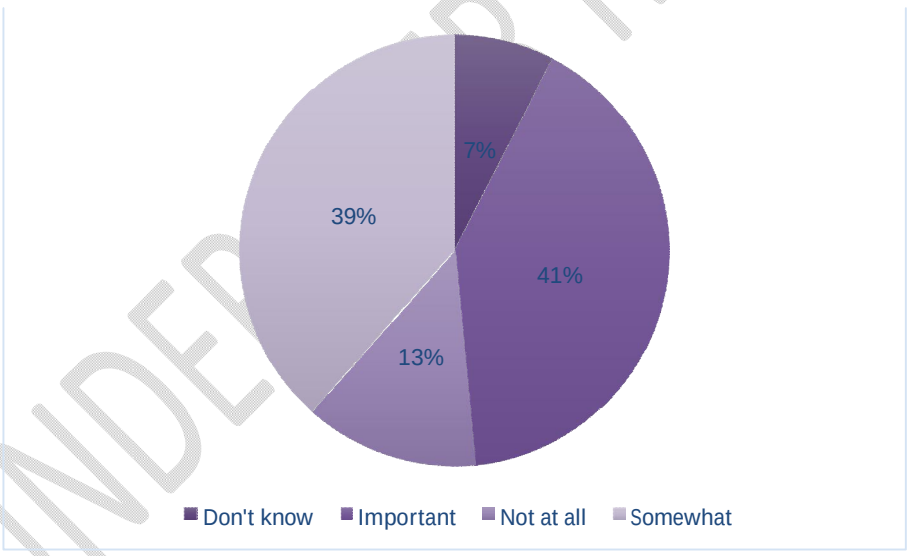

Figure.3 Participants perception about reducing the salt in diet

Figure 3 shows the participants' perceptions of how important they think it is to reduce their intake of salt. Of the participants, 41% believe it to be crucial, 39% somewhat, 13% not at all, and 7% don't know about that cutting salt in diets can be done.

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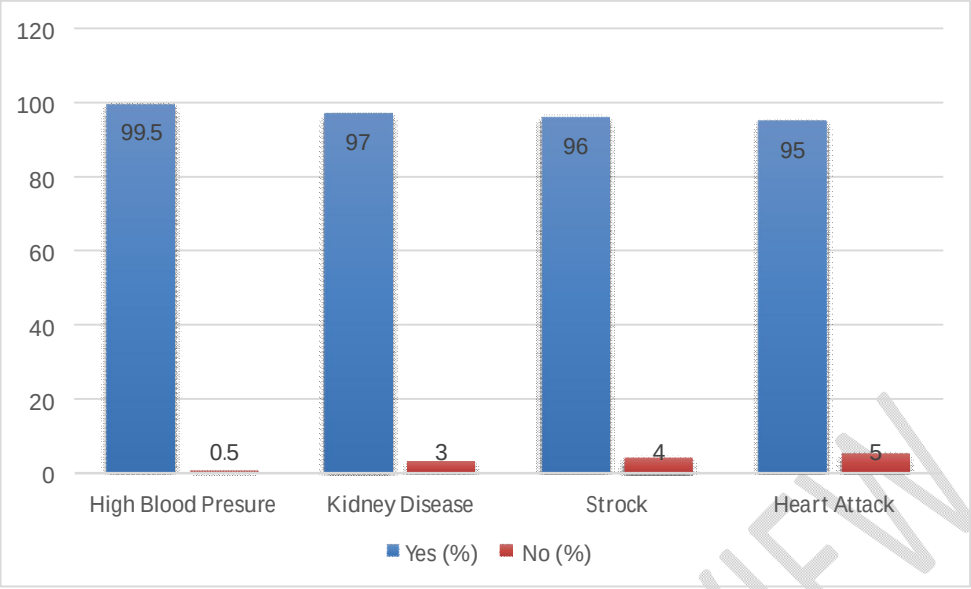

Figure: 4 Knowledge of diseases on eating too much salt

Figure 4 we found that knowledge of diseases on eating too much salt whereas majority of participants says yes and very few participants say no like 99.5% participants chosen yes for high blood pressure, 97% participants are chosen yes for kidney disease, and 96% participants chose yes for stroke, as well as 95% participants pick yes for heart attack.

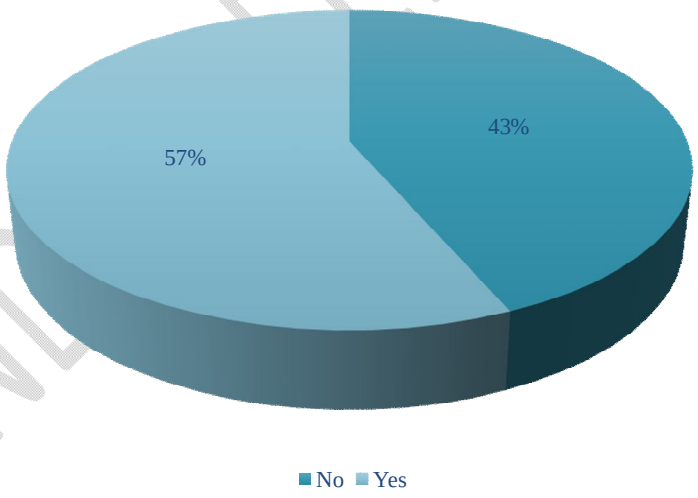

Figure: 5 Participants awareness about recommended salt intake per day

Figure 5 showed that participation awareness about recommended salt intake per day (as per WHO) where we can see that 57% participants are aware about recommended salt and 43% participants are not aware about recommended salt as per WHO.

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Table: 1Participants tendency to add salt or seasoning in their meals

Participants tendency to add salt or seasoning in their meals	Frequency	Percentage %
Always	20	10%
Never	47	23%
Sometime	133	67%

Table 1 illustrates the participants' tendencies to add salt or seasoning to their meals. Themajority of participants, 133 (67%), reported regularly adding salt for seasoning, whilea smaller group, 20 (10%), did so occasionally. Interestingly, 47 participants (23%)indicated that they never add extra salt to their meals.

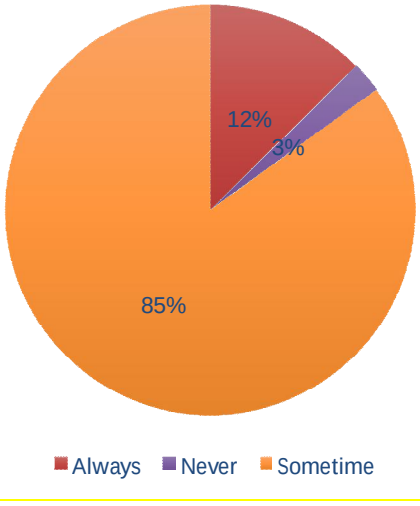

Figure: 6 Participants tendency to consume processed food

Figure 6 reveals participants' tendencies to consume processed foods. The majority, 85%,reported consuming processed foods occasionally, while only 3% indicated that theynever eat processed foods. Meanwhile, 12% of participants stated that they alwaysconsume processed foods.

Discussion

The study's main goal was to investigate the connections between college students' (18 to 25year-old) dietary salt intake and health problems. To get insight into students' salt consumption habits, understanding of linked health risks, and perceptions of the significance of limiting salt intake, a sample size of 200 students was chosen. Participants' daily salt intake is as follows: 42% consume the prescribed amount, 33% consume less than the suggested amount, 15% consume more than the recommended amount, and 10% are unsure about their salt intake. Most participants showed a high degree of awareness about the dangers of consuming too much salt for their health. The fact that eating too much salt can cause health problems was recognized by 98% of participants.

Participants' perceptions of the importance of reducing salt intake varied which41% believe reducing salt intake is crucial, 39% believe it is somewhat important, 13% do not consider it important at all and 7% are unaware of methods to reduce salt intake. Participants' knowledge about specific health risks associated with excessive salt intake was notably high. 99.5% acknowledged the risk of high blood pressure, 97% recognized the risk of kidney disease, 96% were aware of the risk of stroke and 95% understood the risk of heart attack. The awareness of the recommended daily salt intake as per the World Health Organization (WHO) was less consistent which 57% of participants were aware of the recommended salt intake and 43% were not aware of the WHO guidelines. The results revealed that a significant proportion ofparticipants, 67%, regularly added salt for seasoning. This indicates a prevalent habit ofenhancing flavour by adding extra salt, despite well-established links between high salt intakeand adverse health outcomes, such as increased blood pressure and the risk of cardiovasculardiseases. Interestingly, while 10% of participants added salt occasionally, 23% reported thatthey never add extra salt to their meals. This latter group likely possesses a greater awarenessof the risks associated with high sodium consumption or may follow dietary guidelines thatrecommend limiting added salt. However, even those who do not directly add salt to their foodmay still be at risk of high sodium intake through processed foods, which often contain hiddensalts. Regarding processed food consumption, the majority of participants (85%) consumedprocessed foods occasionally, with 12% reporting that they always consume processed foods.Given that processed foods are often high in sodium content, these figures raise concerns aboutpotential cumulative sodium intake, even among those who avoid adding extra salt to theirmeals. Only 3% of participants stated that they never consume processed foods, a remarkablylow percentage, suggesting that processed food is almost ubiquitous in modern diets.

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Conclusion

This study provides an in-depth evaluation overview of college-going students' dietary salt intake, awareness of associated health risks, and perceptions of salt reduction importance. While awareness of health risks is high, gaps remain in knowledge about recommended intake and practical strategies for reduction. This indicates that while a substantial portion of the population adheres to recommended guidelines, a considerable number either exceed or lack awareness of their salt consumption levels. The findings revealed that a majority of participantsregularly add salt to their meals, which may contribute to excessive sodium intake andassociated health risks such as high blood pressure. Additionally, the widespread consumptionof processed foods, which are often high in hidden sodium, further exacerbates the risk ofexcessive salt intake.

Disclaimer (Artificial intelligence)

Option 1:

Author(s) hereby declare that NO generative AI technologies such as Large LanguageModels (ChatGPT, COPILOT, etc.) and text-to-image generators have been used duringthe writing or editing of this manuscript.

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