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The Forgotten Breakfast: Impact of Skipping Morning Meals on Concentration and Growth in School Children

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Abstract: Breakfast is commonly acknowledged as a crucial meal for preserving health and promoting children's general development. This study investigates important aspects of the forgotten breakfast and looks at how schoolchildren's focus and physical development are affected when they miss breakfast. Missing breakfast on a regular basis might result in low energy, poor memory, a shorter attention span, and worse academic performance. By causing weakness, delayed development, and nutritional deficits, it may also have an impact on physical growth. This abstract highlight the significance of a healthy morning meal while examining important relationships between breakfast consumption, cognitive functioning, and growth outcomes.

The results demonstrate that children who consistently eat breakfast typically exhibit healthier growth trends, more classroom participation, and better attentiveness. Numerous population-based and cross-sectional studies show that missing the breakfast is more common in girls than boys also rises according to the age. The likelihood of skipping breakfast is greatly increased by socioeconomic factors, including food insecurity, single-parent households, poor family income, and low parental education. Breakfast missing was also highly correlated with lifestyle characteristics, such as excessive screen time, sleep deprivation, bad eating habits, and a lack of parental supervision. The study concluded that breakfast skipping is a critical public health problem that negatively impacts a child's cognitive function, academic success, and physical development. Targeted interventions, especially those aimed at low-SEP households and involving parental education, are urgently needed.

Keywords: *Breakfast Consumption, Skipping Breakfast, School Children, Concentration, Attention Span, Academic Performance, Physical Growth, Cognitive Functioning, Nutritional Deficiencies, Child Development.*

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I. INTRODUCTION

For children and teenagers, who are in critical phases of growth and development, breakfast is generally acknowledged as the most significant meal of the day. The body needs to replenish glucose and other vital nutrients after an 8–12 hour overnight fast in order to sustain metabolic processes and recover energy levels. Breakfast plays a vital role in school-age children's physical health and psychological well-being, as well as for improving cognitive abilities including focus, memory, attention span, and problem-solving. Due to a number of social, behavioral, and environmental variables, schoolchildren are increasingly skipping breakfast despite its well-known advantages. Concerns have been expressed by parents, educators, and health professionals about this expanding trend's possible effects on kids' academic and physical development.

Early childhood is a crucial time for psychological development, brain growth, and physical growth. For optimum development at this period, adequate nourishment is crucial. Breakfast makes a substantial contribution to the daily consumption of vital nutrients, including dietary fiber, proteins, carbs, vitamins, and minerals. The maintenance of energy balance, immune system support, tissue growth, and cognitive function all depend on these nutrients. Children who miss breakfast may not get enough nutrients each day, which can have long-term repercussions like stunted growth and nutritional deficits as well as short-term ones like exhaustion, agitation, and diminished focus.

Breakfast skipping is a growing public health issue among children and adolescents worldwide. This habit is suspected to be a key contributor to poor academic outcomes, adverse health, and nutritional deficiencies. The effect that skipping breakfast has on focus and learning capacity is among

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the most important. Glucose is the primary energy source used by the brain. Because of the overnight fast, blood glucose levels are often lower in the morning. Eating breakfast improves mental alertness and cognitive function by restoring glucose levels. According to research, kids who consistently eat breakfast outperform kids who skip breakfast on activities requiring memory, focus, and problem-solving abilities. However, youngsters who go to school without eating could find it harder to concentrate, process information more slowly, participate less, and perform worse academically. This could eventually have a detrimental impact on their confidence and general academic performance.

Apart from the impact on cognition, missing breakfast can also affect physical development and growth. Children in school need enough calories and nutrients to maintain muscle growth, bone formation, hormone balance, and general bodily functions. Breakfast contributes essential nutrients including calcium, iron, and B-complex vitamins and frequently accounts for a significant amount of daily calorie intake. Frequent skipping of breakfast can result in insufficient dietary intake, which can cause weakness, stunted growth, weakened immune, and heightened vulnerability to illnesses. Additionally, erratic eating habits might interfere with metabolism and lead to unhealthful weight fluctuations, such as obesity or undernutrition.

Schoolchildren's breakfast skipping habit is caused by a number of circumstances. These could include hectic morning routines, late wake-up hours, absence of parental supervision, socioeconomic circumstances, peer pressure, teenage diets, and a lack of knowledge about the value of breakfast. Sometimes children's erratic sleep patterns or late-night eating habits prevent them from feeling hungry in the morning. Developing successful interventions and educational initiatives to encourage healthy eating habits requires an understanding of these key elements.

In order to support children's health and academic achievement, it is critical to address the problem of breakfast skipping from the standpoints of public health and nursing. When it comes to teaching parents, teachers, and students the value of a balanced diet, nurses—particularly community health nurses and school health nurses—play a vital role. Children's general health outcomes can be improved and regular breakfast eating encouraged through school-based nutrition programs and awareness initiatives. Better physical and cognitive development can be supported and possible health issues can be avoided with early intervention.

Skipping breakfast almost increased the likelihood of performing poorly in school, according to meta-analytic findings. Frequent breakfast consumption was linked to enhanced emotional and cognitive involvement in school activities, higher IQ scores, and better teacher engagement, especially when it was eaten right before cognitive tests.

Those who skipped breakfast were more likely to have a poorer diet overall, consume more sodium and saturated fats, and consume fewer fruits, vegetables, and dairy items. Furthermore, skipping breakfast was linked to higher risks of anemia, obesity and overweight, high blood pressure, raised fasting glucose, and adverse cardiometabolic profiles. Teenagers who those who regularly skipped breakfast had a much higher chance of be anemic and overweight or obese. Regular breakfast eating significantly increased after structured instructional programs, according to pre-post intervention studies and cluster randomized controlled trials. Particularly successful interventions included school-based feeding programs, peer engagement, and family involvement.

➢ *Research Problem Statement*

A study to assess the impact of skipping morning meals on concentration and growth in school children.

II. RESEARCH OBJECTIVES

➢ *This Review was Conducted to Synthesize Literature to Address the Following Objectives:*

- To assess the prevalence of breakfast skipping among school children.
- To evaluate the effect of skipping breakfast on the concentration levels of school children during class activities.
- To analyze the relationship between breakfast habits and academic performance in school children
- To examine the breakfast skipping's effects on the physical growth (height, body weight, BMI) of school kids.
- To identify potential nutritional deficiencies associated with skipping breakfast in school children and adolescents.
- To explore socio-economic and demographic factors influencing breakfast skipping among school children.
- To recommend strategies for promoting regular breakfast consumption to improve concentration and growth outcomes in children.

III. III. METHODS

This study is a narrative review of existing literature. Key studies were identified from public health and medical databases that directly addressed the seven research objectives. Many significant studies, including large-scale cross-sectional analyses, population-level surveys, and interventional studies, were selected for synthesis. The findings from these studies were consolidated and are presented thematically in the following section to provide a comprehensive overview of the topic.

A. Inclusion Criteria:

- Research articles published from 2018 to the present.
- Original studies focusing on breakfast habits, academic performance, or physical growth among school children.
- Full text articles that are easily available online.
- Studies are written in English language.
- Studies are conducted on school going children

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B. Exclusion Criteria:

- Research articles that don't have an ISSN number.
- Studies where only the abstract is available and the complete article can't be assessed.
- Studies that are not indexed or listed in standard journal database.
- Articles published in low quality or non-recognized journals.

C. Outcome

➢ *Studies Related to Prevalence of Breakfast Skipping Among School Children*

- Huang Z, Zhang Q, Li C, Liu H, Tian K 2026 has conducted a study on "Current status and related factors of breakfast skipping among adolescents aged 12–15 years in Shandong Province, China". Adolescents' health depends on eating breakfast on a regular basis since it provides vital nutrients for development, growth, and cognitive function. Nonetheless, missing breakfast is still common among teenagers worldwide and has been linked to a number of negative behavioral and physiological effects. Stratified random cluster sampling was used in a large-scale cross-sectional investigation that was carried out between February and June 2025. Students from 116 primary schools completed 58,762 valid questionnaires in total. Structured, anonymous questionnaires covering breakfast frequency, demographics, parental characteristics, and health-related activities were used to collect data. Eating breakfast less than five days a week was referred to as breakfast skipping. To find important predictors, multivariable logistic regression analyses and univariate chi-squared tests were used. Six characteristics were substantially correlated with skipping breakfast. Females were more likely than males to forgo breakfast, according to multivariable logistic regression (OR = 1.661, 95% CI: 1.527 ~ 1.807). In comparison to adolescents living with both parents, those living with only one parent (OR = 1.216, 95% CI: 1.131 ~ 1.306) or neither parent (OR = 1.273, 95% CI: 1.183 ~ 1.371) were likewise more likely to skip breakfast. Additionally, the risks of adolescents skipping breakfast were higher when their parents skipped breakfast (OR = 1.137, 95% CI: 1.067 ~ 1.212). Conversely, there was a negative correlation between breakfast skipping and parental education (OR = 0.669, 95% CI: 0.613 ~ 0.730). Exercise length surpassing one hour per session (OR = 0.835, 95% CI: 0.749 ~ 0.931) and more than five weekly sessions (OR = 0.884, 95% CI: 0.786 ~ 0.995) were also protective. Living situations, parental behaviors, physical activity levels, and gender may all have an impact on adolescents in Shandong Province skipping breakfast. These results underline the necessity of gender-sensitive, family-centered initiatives that encourage young people to lead active lifestyles and eat breakfast on a regular basis. Longitudinal designs should be used in future research to better identify causal links.
- Lee JM, Shim J-S 2025 has conducted a study on "Breakfast Skipping among Dormitory-and Home-Residing High School Students: Insights from the Korea Youth Risk Behavior Survey 2018–2024". Teenagers frequently skip breakfast. One possible remedy is to serve breakfast in schools, but its efficacy is still unknown. This study compared high school students who lived at home and in dorms, examined patterns over time, and determined the causes of breakfast skipping. Data from high school students who took part in the Korea Youth Risk Behavior Survey between 2018 and 2024 and who resided at home (n = 164,446) or in dorms (n = 11,394) were examined in this study. Breakfast skipping was defined as skipping breakfast on at least five of the previous seven days, and the frequency of breakfast consumption during that time was examined. Break-fast days were higher for students living in dorms than for those living at home (4.6 ± 0.04 vs. 3.7 ± 0.01, $p < 0.001$). About half as many students who lived in dorms skipped breakfast as those who lived at home. Even after controlling for possible confounders, there was still a significant correlation between breakfast skipping and dwelling type (odds ratio: 0.37; 95% CI: 0.34-0.39). Between 2018 and 2024, students who lived in dorms (15.1-25.0%, annual percent change = 8.7%, $p < 0.05$) were more likely than those who lived at home (35.3-45.3%, annual percent change = 4.0%, $p < 0.05$) to skip breakfast. In 2022, oversleeping (32.2%) and lack of time (39.5%) were the primary causes of breakfast skipping among students living at home and in dorms, respectively. Compared to students who lived at home, those who lived in dorms were less likely to skip breakfast. However, a significant and rising percentage of teenagers miss breakfast even when it is offered. These results imply that efforts are required to increase awareness of the significance of breakfast and that merely establishing a supportive environment is not enough.

- Zelalem Aneley et al. Front Nutr. 2024 has conducted a study on "Breakfast consumption and associated factors and barriers among school-aged children". In Debremarkos, Northwest Ethiopia, a community-based cross-sectional study was carried out with school-age children. To choose 609 research participants, a multistage random sampling procedure was employed. A pretested, standardized questionnaire was used to interview the parents of the children. SPSS version 20 was utilized for the remainder of the analysis. The parameters related to breakfast eating were evaluated using logistic regression analysis. A p value of less than 0.05 was considered statistically significant. A total of 600 respondents, or 98.5% of the sampled youngsters, took part in the study. Of school-age children, 67.5% reported eating breakfast on a regular basis. Female respondents (AOR = 1.72, 95% CI = 0.118-1.773), those from high-income families (AOR = 7.33, 95% CI = 1.036-8.110), and those with an educated family (AOR = 13.05, 95% CI = 0.019-13.1) had higher odds of regularly eating breakfast.

- Alanna Sincovich et al. (2022) has conducted a study on "Prevalence of breakfast skipping among children and adolescents: a cross-sectional population level study". Students in South Australian government (public) schools

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in grades 4–12 (n = 71,390, 8–18 years) participated the 2019 collection on Engagement and Well-Being. For entire sample, the frequency of missing morning meals (never, occasionally, frequently, or consistency) was determined and stratified by gender, socioeconomic position, school grade, and geographic distance. The proportion of relative risk that of occasionally, frequently, Additionally, skippers were always compared to non - skippers was calculated using multinomial logistic regression analysis based on demographic variables.

- Elida Sina et al. Adv Nutr. 2022 has conducted a study on "Social media and Children's and Adolescents' Diets: A Systematic Review of the Underlying Social and Physiological Mechanisms." Not much is understood regarding the connection between social media (SM) additionally the diets of kids and teenagers. Examining the effect of SM in children's and adolescents' diets and associated behaviors while taking the underlying mechanisms into account is the goal of this systematic literature review. For studies evaluating the relationship between SM exposure and food intake, food preference, dietary practices, and the underlying mechanisms (e.g., brain activation to digital food images-as proxy for SM food images) among healthy children and adolescents aged 2-18 years, we searched Medline, Scopus, and CINAHL (2008-December 2021). There were thirty-five items in all.

One study out of four discovered that watching videos of peers eating healthily, but not those of SM influencers, increased vegetable intake. Regardless of age, the majority of research found that SM was linked to reduced consumption of fruits and vegetables, higher consumption of sugar-sweetened beverages and unhealthy snacks, and skipping breakfast. When children and teenagers were shown images of harmful food instead of healthy ones, their reward and attention systems responded more strongly. 1) physiological (appetite state, higher brain response to portion size and energy density of food depicted) and 2) social (food promotion via SM influencers and peers) were the mechanisms behind the aforementioned relationships. Both children and adolescents who are exposed to social media develop unhealthy eating habits. Future health initiatives may benefit from the mechanisms that have been found. Food consumption and the ensuing health effects may be improved by restricting children's and adolescents' exposure to social media and downregulating its advertising.

- Konstantinos D Tambalis et al. Nutr Diet. 2019 has conducted a study on "Breakfast skipping in Greek schoolchildren connected to an unhealthy lifestyle profile". The National Action for Children's Health program's outcomes. observational, cross-sectional research. Population information from a school-based health survey conducted in 2015 of 177,091 Greek children between the ages of 8 and 17. Every anthropometric assessment was carried out by qualified researchers. The Mediterranean Diet Quality Index for children and adolescents was used to measure foregoing breakfast and following the Mediterranean diet (MD). Self-completed questionnaires were used to measure sleeping hours, sedentary behavior, and physical activity status. Nearly one in four kids skipped breakfast (23.1% of girls and 22.4% of boys). The following characteristics of participants were linked to skipping breakfast: being female, older, overweight or obese, having a bad diet, not getting enough sleep, being physically active, and spending more time on screens. Poor eating habits, inadequate sleep (less than 8 to 9 hours per day), and excessive screen time (more than 2 hours per day) were found to increase the odds of skipping breakfast by nearly 80% (95% CI: 1.78-1.82), 23% (95% CI: 1.20-1.26), and 22.5% (95% CI: 1.19-1.26), respectively, according to regression models that controlled for a number of potential confounders.

➢ *Studies Related to Effect of Skipping Breakfast on the Concentration Levels of School Children During Class Activities*

- Seura et al. 2025 has conducted a study on "Meta-Analysis of Observational Studies Academic performance". Examined through assignments and examinations, it has a big impact on long-term results like job, income, and life quality. Academic performance and skipping breakfast have been linked in a number of recent research, although no meta-analysis has been done to investigate this relationship. In order to summarize the relationship between youth academic performance and breakfast skipping, we performed a meta-analysis of observational research. We used PubMed, Science Direct, Springer Link, and Scopus to search the literature published prior to October 2024. Using a random effects model, we computed a pooled odds ratio (OR) with a 95% confidence interval (95% CI). The Newcastle-Ottawa Scale, modified for cross-sectional research, was used to evaluate the study's quality. Two articles were deemed inadequate, five satisfactory, sixteen good, and two very good in terms of the quality of the included studies. Following screening, the meta-analysis contained 24 observational studies with 37 reports. The probability of subpar academic performance was positively correlated with skipping breakfast (pooled OR=2.08, 95% CI=1.82-2.37). Young people's low academic performance is positively connected with skipping breakfast, according to subgroup analyses based on gender, area, sample size, assessment instruments, definition of outcomes, and confounding variables. This meta-analysis concludes that youth academic performance is positively correlated with skipping breakfast.

- Mun & Oh 2025 has conducted a study on "Breakfast Skipping & Health Markers in Children". A global public health concern that contributes to childhood obesity is skipping breakfast. However, there hasn't been a thorough investigation on how missing breakfast negatively impacts children's metabolic health. This study examined the relationships between primary school students' cardiometabolic risk, obesity, and skipping breakfast, as well as how these factors relate to dietary patterns. The Korea National Health and Nutrition Examination Survey

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provided information on 3590 elementary school pupils (2013-2020). A 24-hour recall survey was used to gauge the participants' self-reported weekly breakfast frequency and dietary nutrient intake. A survey multivariate regression analysis technique was applied to examine the relationships in relation to breakfast frequency and nutrient density, obesity, and cardiometabolic risk factors. Compared to the highest frequency group (five to seven times per week), the lowest breakfast frequency group (0–two times per week) had a higher mean body mass index (estimated mean differences; 0.80 kg/m2, 95% CI 0.30–1.31) and waist circumference (2.20 cm, 0.83–3.57). They were also higher than the highest breakfast group in terms of systolic blood pressure (1.68 mmHg, 0.12–3.24), diastolic blood pressure (2.24 mmHg, 1.09–3.39), and fasting glucose (1.58 mg/dL, 0.40–2.75). Moreover, although consuming fewer calories, this group outperformed the highest frequency group in terms of energy from fat (1.96 percent, 0.90-3.02), salt density (10.29 mg/100 kcal, 0.75-19.82), and Na/K ratio (0.25 mmol/mmol, 0.11-0.40). Students in elementary school who skipped breakfast had increased risk factors for obesity and cardiometabolic disorders. Dietary nutrient patterns with higher fat and sodium densities despite lower daily calorie intake may suggest these connections.

- Möller et al. 2021 has conducted a study on “Cognitive Engagement & School Engagement". Studies on the effects of pupils skipping breakfast typically concentrate on academic results rather than the welfare or involvement of students in the classroom. The relationship between skipping breakfast and the emotional and cognitive components of school involvement was examined in this study. One time point study design utilizing information from a population-based survey on the academic engagement and general well-being of kids and teenagers. The impact of skipping breakfast on school participation was estimated using linear regression with confounder adjustment. South Australian public schools, sometimes known as government schools. Students in Grades 4–12 who finished the Wellbeing and Engagement Collection in 2019 participated. There were 61,825 students in the analysis sample. About 9·6% of students said they did not skipped breakfast, 35% said they occasionally skipped, and 55% said they never skipped. After adjusting for Demographic factors including age and gender, health condition, sleep behavior, emotional well-being, parental education, socioeconomic position, and geographic remoteness; children and adolescents who habitually skipped Breakfast. Skipping breakfast was linked to decreased cognitive and emotional involvement, which is in line with our prediction. This could be because of processes including instant energy support and long-term well-being implications. Consequently, reducing the frequency of skipping morning meals may improve student involvement in the classroom.

- Kawabata M., Lee K., Choo H.C., Burns S.F. 2021 has conducted a study on “Breakfast and exercise improve academic and cognitive performance in adolescents”. This study examined the combined effects of breakfast and exercise on short-term academic and cognitive performance in adolescents. Eighty-two adolescents (64 female), aged 14-19 years, were randomized to four groups over a 4-hour morning: (i) a group who fasted and were sedentary (F-S); (ii) a group who ate breakfast but were sedentary (B-S); (iii) a group who fasted but completed a 30-min exercise bout (F-E); and (iv) a group who ate breakfast and completed a 30-min exercise bout (B-E). Individuals completed academic and cognitive tests over the morning. Adolescents in B-E significantly improved their mathematics score (B-E: 15.2% improvement on correct answers, vs. F-S: 6.7% improvement on correct answers; $p = 0.014$) and computation time for correct answers (B-E: 16.7% improvement, vs. F-S: 7.4% improvement; $p = 0.004$) over the morning compared with the F-S group. The B-E group had faster reaction times for congruent, incongruent and control trials of the Stroop Color-Word Task compared with F-S mid-morning (all $p < 0.05$). Morning breakfast and exercise combine to improve short-term mathematical task performance and speed in adolescents.

- Humberto Peña-Jorquera et al. Nutrients. 2021 has conducted a study on “Breakfast: A Crucial Meal for Adolescents' Cognitive Performance According to Their Nutritional Status”. The project called Cogni-Action. In addition to determining whether students who eat a high-quality breakfast, avoid skipping it, and eat it right before a cognitive demand perform better cognitively than those who do not, this study also sought to identify differences based on nutritional status. 1181 Chilean teenagers, ages 10 to 14, took part in this study. The body mass index z-score (BMIz) was determined using a growth reference for school-aged teenagers, and a global cognitive score was derived using eight activities. The breakfast's attributes were self-reported. Finding differences in cognitive performance by BMIz groups adjusted for sex, peak height velocity, physical fitness global score, and school was done by analyses of covariance. When teenagers ate breakfast right before cognitive activities, avoided skipping breakfast on a regular basis, presented at least two breakfast quality components, and consumed dairy products, their cognitive performance improved. The components of breakfast, such as bread and cereal, and fruit and juice, did not differ much. Lastly, compared to their counterparts with normal BMIs, students who reported habitually skipping breakfast and were overweight or obese performed worse cognitively. According to these results, adolescents who routinely eat a high-quality breakfast just before a cognitive demand, as opposed to those who don't, do better cognitively. Nutrition education should be given top priority, particularly for "breakfast skippers" who are overweight or obese.

➢ *Studies Related to the Relationship Between Breakfast Habits and Academic Performance in School Children*

- Feye et al. 2023 has conducted a study on "Ethiopia School-Based Study". Considered "the most important meal of the day," breakfast has been shown to improve

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children's and adolescents' cognitive and academic performance. However, there are few research conducted in LMIC settings, and the results are highly inconsistent. to determine how common breakfast skipping is, its correlates, and how it affects academic achievement in Hidhabu Abote Wereda, North Shewa Zone, Central Ethiopia, among teenagers who are enrolled in school and chosen at random. In 2020, a cross-sectional investigation was carried out between November and December. A total of 422 candidates were chosen at random from Hidhabu Abote Wereda's high schools. Data were exported to SPSS version 24 for analysis after being entered into Epiata version 3.1. Factors that were substantially linked to skipping breakfast were found using bivariate and multivariate binary logistic regression analysis. The degree of statistical significance was established at a p-value of less than 0.05, and the strength of the link was measured using the odds ratio and 95% confidence interval. The percentage of people who skipped breakfast was 41.3% (95% CI (36.6-46.0)). Overall academic performance, mathematics performance and English language performance scores [2.92, 95% CI (1.38-7.58)] were all statistically significantly correlated with skipping breakfast. Breakfast skipping was independently linked to being female [AOR = 1.857, 95% CI (1.05-3.27)], food insecurity in the home [AOR: 2.478, 95%

CI (1.36-4.51)], and lower mother's education level [AOR 1.89, 95% CL (3.38-7.77)]. To determine the degree of statistical significance at a p-value of less than 0.05, the odds ratio and 95% CI were calculated. The percentage of people who skipped breakfast was 41.3% (95% CI (36.6-46.0)). Overall academic achievement [AOR: 5.18, 95% CI (1.54-7.46)], mathematics performance (3.88, 95% CI (1.34-11.22)), and English language performance scores [2.92, 95% CI (1.38-7.58)] were all statistically significantly correlated with skipping breakfast. Breakfast skipping was independently linked to female [AOR = 1.857, 95% CI (1.05-3.27)], insufficient food availability in the home [AOR: 2.478, 95% CI (1.36-4.51)], and lower maternal education [AOR 1.89, 95% CL (3.38-7.77)]. Lack of time, morning hunger, and worries about gaining weight were the main excuses for skipping breakfast. Breakfast was skipped by nearly half of teenagers enrolled in school, and most of the time due to factors other than inadequate access to food. Students who missed breakfast performed worse academically.

- Lulu Abebe et al. BMC Nutr. 2022 has conducted a study on "Breakfast skipping and its relationship with academic performance in Ethiopian school-aged children". This study examined the association between breakfast skipping and academic achievement in elementary school students. 848 elementary school students participated in a cross-sectional study. A two-item questionnaire was utilized to investigate breakfast skipping. Data on kids conduct was gathered using a 19-item measure evaluating social, academic, and emotional components conduct Risk Screening questionnaire. The percentage of people who skip breakfast was 38.1%. The following factors were linked to skipping breakfast: living in a rural area (AOR = 5.2; 95% CI: 3.54, 7.71); parents who were illiterate (AOR = 6.66; 95% CI 3.0, 14.7); parents who had only a basic education (AOR 5.18, 95%

CI: 2.25, 11.94); living with guardians or other relatives (AOR = 4.06; 95% CI: 2.1, 7.9); and having lower academic achievement (AOR = 2.76; 95% CI: 1.44, 5.29). In conclusion, it has been determined that skipping breakfast is a serious public health issue that has to be addressed right now by all parties involved. Intervention is advised in light of the factors that have been identified.

- Gao, Zhao & Shu 2021 has conducted a study on "Moderated Mediation Model". Teenagers' academic performance is significantly impacted by leading a healthy lifestyle, according to studies. Eating breakfast is seen as a key component of a healthy lifestyle and a defining feature of dietary patterns. According to the previous study, students' exposure to militating variables in their families, such as hunger, malnutrition, absenteeism, and poor health, resulted in a lower level of accomplishment motivation at school. The study looked at the relationship between eating morning meals and academic achievement, examining the mediating effect function of achievement motivation with socioeconomic status acting as a moderating factor. A sample of Chinese students aged 15 who took part in the 2015 Program for International Student Assessment (PISA) was used in this study. Male students made up 52.8% of the student body, while female students made up 47.2%. According to the findings, (1) eating breakfast had a positive predictive effect on academic achievement; (2) achievement motivation partially mediated the relationship between eating morning meals and academic achievement; and (3) the SES of the students moderated both the direct and indirect effects, meaning that the impact of eating breakfast on achievement motivation varied depending on the students' socioeconomic status. Furthermore, the benefits were more pronounced for those with greater socioeconomic status. The study's findings offer significant theoretical and in relation to help Chinese parents and teenagers focus more on eating morning meals and leading fit lives.

- Lundqvist, M., Vogel, N., & Levin, L.-Å. 2019 has conducted a study on "Systematic review study to examine the relationship between breakfast consumption and academic performance in children and adolescents". Many people argue that breakfast is the most significant meal of the day. Numerous research has looked into whether breakfast practices have any immediate influence on children's and teenagers' overall health, academic performance, and attendance at school. A longer-term view is necessary to make well-informed decisions on whether or not to encourage breakfast consumption. This study's objective was to do a comprehensive analysis of scientific literature that examined the impacts that were found to be potentially pertinent to the economic assessment of breakfast consumption in children and

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adolescents. A thorough evaluation of the literature was done. The electronic databases PubMed, CINAHL, Web of Science, and PsycINFO were searched from January 2000 to October 2017 in order to find studies. The inclusion criteria were full-text English-language publications from peer-reviewed journals, quantitative studies that collected primary data with school-aged children and adolescents (ages 6 to 18) as participants, and studies conducted entirely or in part in advanced economies (apart from Japan and Taiwan). Studies deemed to be of at least intermediate quality were included in the analysis, and 26 studies met the inclusion criteria. The review of breakfast studies revealed beneficial and conclusive benefits on risk factors for morbidity, academic achievement, quality of life, well-being, and cognitive performance. The research' overall evaluation showed that eating breakfast had benefits. More research is needed to determine how the effects that have been observed affect societal costs and the quality-adjusted life years of an individual.

- Katie Adolphus et al. Front Public Health. 2019 has conducted a study on “Associations Between Habitual School-Day Breakfast Consumption Frequency and Academic Performance in British Adolescents”. Children's learning is positively impacted by breakfast, according to studies. Examining relationships between regular breakfast on school day eating and scholarly achievement as determined by the General Certificate of Secondary Education (GCSE) was the goal of the current study. The majority of British children earn the GCSE, a national academic credential, throughout their secondary school years. Teens between the ages of 16 and 18 (n = 294; 77.2%) filled out a questionnaire to describe their GCSE scores and a retroactive 7-day food diary to record their breakfast consumption. Any food or beverage that contains at least 5% of total energy expenditure (TEE) and is consumed up until 10:00 a.m. on school days was considered breakfast. The frequency of regularly eating breakfast on school days was divided into three categories: infrequent (0–1 school days), infrequent (2–3 school days), and frequent (4-5 school days). Linear regression models were used once GCSE grades were combined into point scores. Ordinal logistic regression was used to examine the participants' GCSE results in English and mathematics. When compared to regular breakfast eaters, adolescents who ate breakfast seldom had a substantially lower mean point score ($\beta = -0.14$, $p < 0.05$) and capped point score ($\beta = -0.13$, $p < 0.05$). Compared to low or middle socioeconomic status adolescents who regularly ate breakfast, those who ate breakfast infrequently had a significantly lower chance of achieving higher mathematics grades 95 percent confidence interval (CI): 0.17-0.72; adjusted cumulative odds ratio (OR): 0.35. This cross-sectional study shows that adolescents' regular breakfast consumption during the school day is a major predictor of their GCSE scores. The findings provide encouraging association evidence that merits more investigation in carefully monitored research.

➢ *Studies Related to the Breakfast Skipping’s Effects on the Physical Growth of School Kids*

- Gutkowska et al. 2025 has conducted a study on "Polish Primary School Study". There is growing concern over the link between lifestyle factors, breakfast eating, and childhood obesity. Evidence suggests that regular breakfast intake may play a crucial role in weight management. The present study investigated the association between breakfast frequency, screen time, sleep duration, physical activity, and weight status in schoolchildren. A cross-sectional survey was carried out across the country with a sample of 7763 Polish schoolchildren aged 10 to 12 (50.8% of whom were girls). The Food Frequency Consumption and Nutritional Knowledge Questionnaire (SF-FFQ4PolishChildren®) was used to gather dietary data. The anthropometric measures were taken by trained researchers and compared to reference values adjusted for age and sex. Data on lifestyle and sociodemographic characteristics were also gathered. The link between eating breakfast regularly and body weight status was investigated applied using multiple logistic regression analysis, and path effects were validated by the mediating effects of lifestyle-related factors. About two-thirds of the kids ate breakfast every day (7 days a week), 24% skipped breakfast (0–3 days a week), and 14% ate breakfast irregularly (4–6 days a week). Breakfast consumption was higher among younger children than among older children (OR = 0.84, 95%CI: 0.74-0.95; p = 0.006). Furthermore, children who ate breakfast every day had lower odds of being overweight or obese than those who did not (OR = 0.73, 95%CI: 0.64-0.83; p < 0.001) and were more physically active than those who did not eat breakfast every day (OR = 1.16, 95%CI:1.05-1.36; p = 0.039). Children who were female were less likely than those who were male to have breakfast every day (OR = 0.74, 95%CI: 0,67-0.82; p < 0.001). Children who slept enough had a higher likelihood of eating breakfast every day than children who slept too little (OR = 2.20, 95%CI: 1.85-2.63; p < 0.001). Additionally, children who spent more than four hours a day on screens were less prone to eat breakfast regularly than kids who spent no more than two hours on screens (OR = 0.72, 95%CI: 0.63-0.82; p < 0.001). Breakfast consumption on a daily basis was linked to better anthropometric results and a decreased risk of becoming overweight. School-aged children's general health and weight control are greatly aided by maintaining a healthy lifestyle, which includes physical activity, getting enough sleep, limiting screen time, and sharing meals with family and at school. Along with other lifestyle-related factors, regular breakfast consumption should be a priority in educational and intervention programs designed to prevent or treat childhood obesity.

- Yeo et al. 2024 has conducted a study on "Adiposity and Nutrient Intake in Primary School Children". Breakfast is a crucial meal that provides vital nutrients for healthy growth and maintenance, yet Malaysian children frequently skip it. Thus, the purpose of this study is to examine the relationships between breakfast skipping and food intake, diet quality, and indications of obesity in

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elementary school students between the ages of 6.0 and 12.9. 1383 youngsters from Malaysia's South East Asian Nutrition Surveys (SEANUTS II) participated in this study. Sociodemographic data and breakfast consumption—defined as the first meal before noon—were gathered via questionnaires. Skipping breakfast at least once a week was defined as breakfast skipping. Height, weight, waist circumference, and body fat percentage were among the anthropometric measurements that were gathered. Waist-to-height ratio and body mass index (BMI) were computed, and BMI-for-age-z-scores were derived using the WHO (2007) growth reference. Dietary consumption was evaluated using a one-day, 24-hour nutritional recall, and the Malaysian Healthy Eating Index was applied to measure the quality of the diet. The impact of skipping breakfast on obesity indices and food quality was investigated using binary logistic regression. Although it had no effect on the overall diet quality score, more than one-third (36.0%) of children skipped breakfast at least once a week, which led to reduced intakes of energy, nutrients, cereals/grains, vegetables, and milk/dairy products. Skipping breakfast was linked to increased risks of central obesity (aOR 1.87, 95%CI 1.34-2.61) and overweight/obesity (aOR 2.04, 95%CI: 1.52-2.76). In conclusion, Peninsular Malaysian primary school students who skipped breakfast tended to consume less nutrients and certain essential food groups and to have higher body fat percentages. With a focus on breakfast intake, this study emphasizes the significance of continuing to teach parents and kids about good eating practices, particularly the necessity of following nutritional recommendations.

- Min-Ji Kim et al. Ann Pediatr Endocrinol Metab. 2024 has conducted a study on “The impacts of COVID-19 on childhood obesity: prevalence, contributing factors, and implications for management”. 3,861 children and adolescents between the ages of 10 and 18 were included in the study, which used data from the Korean National Health and Nutrition Examination Survey for 2016–2021. Age, sex, and income were taken into account while calculating the prevalence of obesity and associated disorders. We also examined the survey's items on physical activity, nutrition, and socioeconomic status. The prevalence of obesity (p=0.02), central obesity (p=0.001), mean body mass index (BMI, p=0.03), and hemoglobin A1c (p=0.005) among children and adolescents aged 10–18 years increased significantly during the COVID-19 pandemic. The normal-weight group had a significant decrease in food and calorie intake (p=0.001 and <0.001), whereas the obese group did not. Regardless of obesity status, eating out reduced and skipping breakfast increased. The shifts in health-related behaviors, however, were not noteworthy. Particularly in the 10–12 age range, there was a substantial linear correlation between the prevalence of central obesity and elevated BMI and the parents. Both the prevalence of central obesity in parents and the percentage of children and adolescents with metabolic disorders clearly rose in the obese group.

- Wang et al. 2023 has conducted a study on "Meta-Analysis on Childhood Obesity Risk". Previous cohort studies have demonstrated that children who miss breakfast are more likely to be overweight or obese. This finding is still debatable, though. This study systematically assessed the impact of skipping breakfast on the prevalence of childhood obesity or overweight by a meta-analysis. To find papers published up until March 19, 2023, we conducted a literature search. utilizing the databases Embase, PubMed, and Cochrane. Observational studies on the association between breakfast skipping and overweight/obesity in children and adolescents were examined based on the inclusion and exclusion criteria. Three researchers independently evaluated the risk of bias, extracted the data, and screened the pertinent literature. The Newcastle-Ottawa Scale (NOS) was used to evaluate the listed studies' quality. It was a random-effects model. The effect size was indicated using the odds ratio (OR) and its 95% confidence interval (CI). This study comprised 323,244 children from 40 retrospective investigations, whose ages ranged from 2 to 20 years. According to the meta-analysis's findings, children and teenagers who skipped breakfast were far more likely to be overweight or obese than those who ate breakfast (OR, 1.59; 95% CI, 1.33-1.90; P < 0.001). Overweight in children and adolescents was strongly correlated with skipping breakfast (OR, 1.37; 95% CI, 1.23-1.54; P < 0.001).

Likewise, there was a positive correlation between childhood and teenage obesity and skipping breakfast (OR, 1.51; 95% CI, 1.30-1.76; P < 0.001). According to this meta-analysis, children and adolescents who miss breakfast are more likely to be overweight or obese. The results lend credence to the idea that breakfast may help prevent toddlers and teenagers from gaining too much weight. Nevertheless, more exacting research designs with consistent and validated measurements of pertinent variables are required.

➢ *Studies Related to Nutritional Deficiencies Associated with Skipping Breakfast in School-Aged Children and Adolescents*

- Fischer et al. 2025 has conducted a study on "Adolescent Nutrition & Anemia Risk". Teenagers frequently report skipping breakfast, despite the fact that this is a crucial time for growth and development. There is a dearth of similar data from low- and middle-income (LMIC) nations, where the negative consequences of poor diets continue to be a significant public health concern. To evaluate the scientific data from LMICs on the relationship between breakfast intake and skipping practices and anthropometry and nutrition-related outcomes in teenagers aged 10 to 19, we carried out a comprehensive review. From the date of database creation until June 28, 2023, electronic searches were performed on MEDLINE, EMBASE, CINAHL, CENTRAL, and Web of Science to find pertinent studies. Gray literature

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and the reference lists of the included papers were also searched. Gray literature and the reference lists of the included papers were also searched. Studies of all kinds that examined the breakfast intake and skipping patterns of adolescents in LMICs between the ages of 10 and 19 were included. Review articles that assessed only lunch or dinner consumption, skipped any other meal besides breakfast, only collected point prevalence data, lacked a breakfast consumer control group, showed inconsistent co-interventions across breakfast habit groups, or whose target population age fell outside the WHO definition of adolescents were among the exclusion criteria. The main results were anemia (defined by hemoglobin (Hb) levels in various age groups for boys and girls) and body mass index (BMI in kg/m2), which can alternatively be classified as underweight, normal weight, overweight, and obese or as BMI-for-age (z-score). Nutrient concentrations or deficits and additional adiposity measurements were secondary results. Data extraction, risk of bias assessment, and title screening were all carried out twice. The NHLBI Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies was used to assess the possibility of bias. Data from the included studies were pooled for each outcome measure using random-effects meta-analysis models. For continuous outcomes, 95% CIs were computed as standardized mean differences, and for dichotomous outcomes, 95% CIs were computed as odds ratios (OR). The Grading of Recommendations Assessment, Development, and Evaluation (GRADE) method was used to evaluate the degree of certainty in the evidence supporting each outcome. Out of the 3604 records our search produced, 41 studies satisfied our inclusion requirements. Of them, two prospective cohort studies and 39 cross-sectional studies were deemed appropriate, and 36 of them provided information for the meta-analysis. Due primarily to the possibility of bias and inconsistency, the overall certainty of the data on the relationship between breakfast consumption patterns and the likelihood of being overweight or obese was very low. The odds of being overweight or obese were twice as high for adolescents who ate breakfast infrequently (0–2 days/week) as for those who ate breakfast regularly (5-7 days/week) (OR: 2.05, 95% CI: 1.61-2.61; I 2 = 85%; n = 15 studies), and 32% higher for adolescents who ate breakfast irregularly (3–4 days/week) (OR: 1.32, 95% CI: 1.16-1.50; I 2 = 59%; n = 9 studies). Adolescents who ate breakfast sporadically had a considerably higher chance of getting anemia than those who ate breakfast regularly (OR: 2.85, 95% CI: 1.71, 4.76; I 2 = 0%). The two trials' extremely small sample size hampered the very high certainty of the findings. The relationship between skipping breakfast and various secondary adiposity outcomes, such as waist circumferences and the waist-to-height ratio, was not well documented in research. We found very little evidence, mostly from cross-sectional research, indicating skipping breakfast raises the risk of being overweight or obese and anemic. Research on breakfast consumption and nutritional consequences among teenagers in LMICs is scarce. To clarify the connection between skipping breakfast and the risk of becoming overweight or obese, as well as other anthropometric and adiposity measures within this population, more cohort or intervention studies are necessary. In order to further influence public health policy and programming best practices for adolescents and to safeguard the health and well-being of the future generation, emphasis should also be focused on analyzing nutritional outcomes as part of these assessments. Including breakfast in school feeding programs may be a good way to address teenage malnutrition in all of its manifestations.

- Romero-Blanco et al. 2025 has conducted a study on "Mediterranean Diet & Poor Dietary Patterns". Teenagers are increasingly skipping breakfast, which has been linked to poor academic and health outcomes. Although the prevalence of breakfast skipping among adolescents varies widely among studies globally, ranging from 1.3 to 74.7%, the average prevalence is approximately 16%. In this study, a stratified sample of Spanish adolescents was used to determine the frequency of breakfast intake and investigate the factors linked to its omission. 547 third-year secondary school students (ages 14 to 15) from Castilla-La Mancha's rural and urban areas participated in a cross-sectional study. Sociodemographic, psychological, and lifestyle information, such as breakfast habits during school hours and adherence to the Mediterranean diet (as measured by the Kidmed questionnaire), were collected by self-reported questionnaires. For boys and girls, independent descriptive, bivariate (Chi-square), and multivariate (binary logistic regression) analyses were performed. The incidence of skipping breakfast one or more days was found to be considerable (33.46%), with girls having a much greater proportion (43.27%) than boys (24.42%). Additionally, breakfast skipping was more common among females than boys (14.18% vs. 6.87%, $p < 0.001$). Skipping breakfast was significantly linked to poor adherence to the Mediterranean diet in both groups, as were increased screen time, shorter sleep duration, and being overweight or obese. Low Mediterranean diet adherence (OR 0.136 (CI 0.06-0.32) $p < 0.001$), not eating industrial pastries (OR 0.413 (CI 0.20-0.88) p 0.022), and OR 2.185 (CI 1.06-4.52) p 0.035 were related variables. Good discriminating power was shown by predictive models (AUC = 0.807 for girls and 0.792 for boys). Teenagers, especially girls, frequently skip breakfast, which is associated with unhealthy eating habits and becoming overweight. These results highlight the necessity of gender-specific nutritional interventions to encourage teenagers to eat breakfast regularly and to develop better eating habits.

- El Ati et al. 2024 has conducted a study on "Inadequate Nutrient Intakes in Tunisian Children". Breakfast is widely acknowledged as a crucial meal of the day, particularly for children, owing to its role in supplying essential nutrients and energy necessary for optimal growth and cognitive function. The purpose of this study is to compare the nutrient intake of children who miss breakfast to those who do not. A representative sample of 1,200 Tunisian preschool and schoolchildren, aged 3-9

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years, was randomly selected from kindergartens and primary schools in the Greater Tunis region which includes four governorates (Tunis, Ariana, Manouba and Ben Arous) using a two-stage cross-sectional design. Stratification was carried out depending on each of the selected governorates and urban/rural areas. The 24-hour recall method and a food history from the week before the survey were used to assess dietary intake. A particular Tunisian food composition database was used to determine the nutritional makeup of the foods. Nutrient intake below age- and sex-specific reference values was considered inadequate. The findings indicate that the daily intake of energy and nutrients was lower among breakfast skippers compared to regular breakfast eaters. After adjusting for energy, gender, age, BMI and household economic proxy, the daily consumption of total sugar, riboflavin, vitamin B-5, phosphorus and calcium was higher among breakfast consumers while saturated fatty acid intake was higher among skippers. Breakfast consumers consumed more milk and dairy products, according to a comparison of the two groups' daily mean food category intake. Regular breakfast consumption is an important part of maintaining a balanced diet and healthy weight.

- Mai Matsumoto et al. J Nutr Sci. 2020 has conducted a study on “Breakfast skipping is related to inadequacy of vitamin and mineral intakes among Japanese female junior high school students: a cross-sectional study”. Skipping breakfast has a negative impact on adolescents' nutrient intake globally and is a public health concern. Few studies, nevertheless, have compared intake and reference values to determine if breakfast eaters and skippers are deficient in certain nutrients. Thus, the purpose of the current study was to investigate the connection between junior high school female students' sufficiency of total habitual nutrient intake and skipping breakfast. 516 female junior high school students from Japan participated. A quick self-administered diet history questionnaire was used to evaluate dietary practices throughout the previous month. The cut-point technique, which was based on the estimated average requirement for fourteen nutrients and the dietary goal values for five nutrients, was utilized to assess the inadequacy of each nutrient consumption. The amount of nutrients consumed that fell short of the dietary reference intakes for the Japanese, 2015 version was used to measure the participants' overall nutritional insufficiency. Based on how frequently they ate breakfast, the participants were divided into two groups: those who ate breakfast seven times a week and those who skipped it 0–6 times a week. Those who ate breakfast had higher levels of adequate levels of vitamin A, vitamin B1 and B2, vitamin C, calcium, iron, zinc, and potassium than those who skipped breakfast. Those that ate breakfast consumed more fruits, vegetables, and dairy items. According to our research, among Japanese female junior high school students, skipping breakfast was associated with poor vitamin and mineral intakes as well as an undesirable eating pattern.

- Natalia Giménez-Legarre et al. Nutrients. 2020 has conducted a study on “Breakfast Characteristics and Its Association with Daily Micronutrients Intake in Children and Adolescents-A Systematic Review and Meta-Analysis Breakfast is an important source of key nutrients in the diet”. Therefore, purpose of the analysis was to examine the relationships between eating breakfast and intake of food daily of micronutrients in kids and teenagers (ages 2-18). In February 2020, A systematic search that was peer-reviewed was carried out in both Spanish and English across three datasets (PubMed, Scopus, and Cochrane Library). 3188 studies were assessed by two independent reviewers using the PRISMA and AXIS critical appraisal procedures. Results were compared by breakfast type (Ready to Eat Cereals (RTEC) breakfast or other forms of breakfast) and breakfast skipping in a meta-analysis. There were seven articles in the meta-analysis and thirty-three in the systematic review (SR). We found that children and adolescents in the SR who typically eat RTEC for breakfast consumed more B-vitamins than those who did not. Compared to those who skipped breakfast, those who ate breakfast consumed more iron, calcium, magnesium, potassium, zinc, and iodine. RTEC customers consumed considerably more vitamin C than those who skipped breakfast, according to the Meta-Analysis (SMD, -4.12; 95% CI: -5.09, -3.16). Additionally, children who typically ate breakfast consumed considerably more calcium each day than those who skipped breakfast (SMD, -7.03; 95%CI: -9.02, -5.04). According to our review, eating breakfast appears to be linked to a higher daily intake of micronutrients than skipping breakfast.

- Samantha A Ramsay et al. Eur J Clin Nutr. 2018 Apr has conducted a study on “Skipping breakfast is associated with lower diet quality in young US children”. NHANES 2005–2012 dietary recall data were evaluated for children aged 2–5 years (n = 3443) and children aged 6–12 years (n = 5147). Means and 95% CIs were used to compare dietary intakes and diet quality scores between skipping breakfast versus eating it. On the day of intake, children who skipped breakfast consumed considerably less energy overall (5911 vs. 6723 kJ), but they consumed more energy from snacks and non-breakfast meals. Snacks accounted for over 40% of the daily intake for children who skipped breakfast (2332 kJ of 5911 kJ), with 586 kJ of added sugars. Additionally, skipping breakfast was linked to noticeably decreased intakes of calcium, iron, fiber, and folate. Children who ate breakfast had significantly higher overall diet quality scores as well as subscale scores for fruit, whole fruit, whole grains, dairy, and empty calories.

➢ *Studies Related to Socio-Economic and Demographic Factors Influencing Breakfast Skipping Among School Children*

- Pengpid et al. 2025 has conducted a study on "Meal (including Breakfast) Skipping and Sociodemographic Factors". Teenagers in Southeast Asia have a poor understanding of meal skipping. The study's objectives

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were to find out how common meal skipping is among school-age adolescents in the Philippines, what factors are linked to it (protective and sociodemographic), and how different types of meal skipping relate to nutritional, mental, and other health risk behavior outcomes. Based on a multistage sampling technique, the study's data came from the 2019 Philippines Global School-based Student Health Survey (GSHS), a nationally representative survey of adolescents between the ages of 11 and 18 (mean age 13.8 years, Standard Deviation-SD = 1.5). The study employed bivariate and multivariable multinomial and binary logistic regression analysis to identify the variables related to meal skipping (breakfast, lunch, dinner, or any meal) and the relationships between meal skipping and six dietary indicators, four mental health indicators, and ten health risk behaviors. In the previous month, 37.1% of people skipped breakfast, 20.1% skipped lunch, 10.8% skipped supper, and 68.1% skipped any meal. The majority of pupils (89.1%) stated they had taken healthy eating classes at school, and 51.7% said they were not allowed to purchase fizzy drinks there. Meal (breakfast, lunch, and/or supper) skipping was linked to female sex, older adolescents, worse socioeconomic level, lack of religious affiliation, no school truancy, and little to no support from peers and/or parents. Fifteen out of seventeen nutritional, mental health, and other health risk behavior outcomes were linked to meal skipping exposure. The findings thus demonstrated the significance of improving a regular eating pattern, especially meal frequency and meal skipping, in order to reduce a number of detrimental health effects in teenagers. To effectively address meal skipping behaviors, interventions that involve peer and family engagement could be reinforced in conjunction with school health education.

- Ingrid Marie Hovdenak et al. Nutr J. 2024 has conducted a study on “Socioeconomic inequality in breakfast skipping among Norwegian adolescents”. 10,000 upper secondary school pupils (ages sixteen to eighteen) from Viken County, Norway, were selected at random, and their data was gathered. A questionnaire evaluating breakfast skipping, the causes of skipping breakfast, and sociodemographic factors was filled out by the students. Differences between the independent groups (gender, parental education, and family affluence scale (FAS)) and skipping breakfast and the reasons for skipping breakfast were evaluated using chi-square testing. According to 22% of teenagers, they typically skipped breakfast on all school days. Female students, older students, students from poorer socioeconomic backgrounds, and students enrolled in vocational school programs were more likely to skip breakfast. Students with low FAS scores skipped breakfast at a rate of 31%, whereas those with high FAS scores skipped breakfast at a rate of 16%. Time (59%) and not wanting to eat breakfast (48%) were the most often stated self-reported reasons for skipping breakfast. In addition, 3% cited financial limitations and 9% cited health concerns as reasons for missing breakfast. Girls were more likely to have health problems, people with lower socioeconomic position were more likely to have financial constraints, and not wanting to eat breakfast was linked to a higher FAS score.

- Kamal Kaoutar et al. Port J Public Health. 2023 has conducted a study on “Breakfast Skipping and Determinant Factors among Moroccan School Adolescents (12-19 Years): The Case of Beni Mellal City”. A cross-sectional investigation was conducted at the school level. The study involved 550 youngsters in all. To determine the factors linked to skipping breakfast, multivariable logistic regression analysis was employed. An odds ratio (OR) with a 95% confidence interval was used to evaluate the relationship between the dependent and independent variables, and a p value of less than 0.05 was deemed statistically significant. Of the 550 Moroccan teenagers surveyed, 25.6% said they didn't eat breakfast every day. Gender (OR = 7.13 [95% CI 1.32-3.84], p = 0.008), mother's low educational attainment (OR = 2.86 [95% CI 1.89-4.71], p = 0.091), mothers who did not work (OR = 13.71 [95% CI 1.16-5.29], p < 0.001), and not eating in between meals (OR = 15.49 [95% CI 2.15-5.49], p < 0.001) were all statistically associated with breakfast consumption. Consuming milk and dairy products 1-3 times per week (OR = 13.88 [95% CI 1.59-5.56], p < 0.001), eating dinner regularly every day (OR = 17.79 [95% CI 2.81-8.01], p = 0.005), eating vegetables 1-3 times per week (OR = 10.21 [95% CI 1.44-4.67], p = 0.001), and never drinking soda or soft drinks during the week (OR = 3.12 [95% CI 1.90-4.50], p = 0.003).

- Poliana Azevedo Santos da Silva et al. Cien Saude Colet. 2022 has conducted a study on “Skipping breakfast associated with socioeconomic and lifestyle factors in Brazilian adolescents”. The objective is to determine the frequency of breakfast skipping among Brazilian adolescent students and assess the relationship between lifestyle and socioeconomic factors and breakfast skipping. Teenage ninth-graders from Brazilian public and private schools who took part in the 2015 National School Health Survey were the subjects of a cross-sectional study. In order to stratify by gender based on demographic, socioeconomic, and lifestyle characteristics, as well as self-perceived body image and attitudes toward weight, breakfast skipping is common (less than five days per week) and its corresponding 95% CIs were calculated. Taking into account the intricate sample design, a three-block hierarchical Poisson regression. Breakfast skipping was more common among girls than boys, with a prevalence of 35.6%. Skipping breakfast was positively correlated in both sexes when the morning school shift is paid, the highest socioeconomic level employment, frequent alcohol use, living with one's mother, father, or neither, consuming school food and meals with parents irregularly, feeling overweight, and attempting to reduce weight. Adolescent students' unhealthy lifestyle choices and socioeconomic circumstances were generally linked to skipping breakfast.

- Reem A Ali et al. J Pediatr Nurs. 2018 has conducted a study on “Maternal Sociodemographic Characteristics and Behaviors as Correlates of Preadolescent's”. Morning

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Routines A self-reported questionnaire was filled out by preadolescent (10–11 years old) students (N=1915) and their mothers (N=1299) from 26 public and private schools using cluster stratified sampling. Skipping breakfast and associated behaviors were explained. Children's breakfast skipping was examined in connection to sociodemographic characteristics and mothers and kids views on regular morning meals consumption. Almost 23% of the moms and children indicated skipping of morning meals, despite the fact that most of them thought it was extremely important. More male pupils than female students skipped breakfast. Skipping breakfast was more common among kids whose mothers were less educated and among students who did not value eating breakfast. Kids increased views of the significance of morning meals eating was directly correlated with mothers' high regard for breakfast and their encouragement of their children to consume it. Mothers' motivation to consume breakfast and the value of morning meals as seen by preadolescents and mothers were important indicators of students' eating breakfast.

- *Studies Related to Recommended Strategies for Promoting Regular Breakfast Consumption to Improve Concentration and Growth Outcomes in Children*

- Asiyeh Pormehr-Yabandeh et al. 2023 has conducted a study on “Impact of the Social Marketing-Based Intervention on Preconception Healthy Behaviors of Women with Sickle Cell Disease”. Between 2021 and 2022, a quasi-experimental study was carried out in Bandar Abbas and Minab, the two biggest cities in Iran's Hormozgan province, which has a high frequency of sickle cell disease. A social marketing-based intervention with the main components (participation in PCHB as a "product," social media and traditional promotional channels as a "promotion," selecting healthcare centers as a "place" for implementing the intervention, and free access to medical experts and specialty as a "price") was designed based on formative research. An estimated 140 people were included in each of the intervention and control groups. The study's main outcome was the level of engagement in PCHB, which was assessed according to the health belief model (HBM). The PCHB scores of the two groups were compared. The intervention group was more likely to use healthful behavior. After the intervention, perceived barriers declined whereas awareness, perceived severity, perceived susceptibility, perceived advantages, and self-efficacy all rose in both groups. The influence of pretest scores was controlled and moderated using an analysis of covariance (ANCOVA). Following the intervention, there were significant differences between the control and intervention groups in terms of awareness, perceived susceptibility, perceived severity, perceived advantages, perceived barriers, self-efficacy, and involvement in the PCHB, as shown by the adjusted averages. According to a multivariate linear regression analysis, PCHB was strongly predicted by self-efficacy, perceived susceptibility, and awareness.

- Rahayu Indriasari et al. Nutr Res Pract. 2021 Oct has conducted a study on “School-based nutrition education improves breakfast-related personal influences and behavior of Indonesian adolescents: a cluster randomized controlled study”. Four senior high schools in Makassar, Indonesia, participated in an intervention study using a cluster randomized controlled trial design. For three months, the multi-strategy NE intervention was implemented. A self-administered questionnaire and a three-day breakfast recall (in-person interview) were used to gather data. To ascertain intra- and intergroup differences, the Wilcoxon, McNemar, and Mann-Whitney tests were employed. In contrast to knowledge, the intervention groups (IGs) showed improvements in attitude and self-efficacy scores ($P< 0.01$); the control group (CG) did not show any discernible changes. Compared to the CG, more students in the IG demonstrated increased motivation ($P > 0.05$). The IG experienced higher changes in breakfast frequency and macronutrient intake than the CG ($P < 0.05$).

- Omnia S Elseifi et al. Int J Public Health. 2020 has conducted a study on “Effect of a nutritional education intervention on breakfast consumption among preparatory school students in Egypt”. 244 children in preparatory school participated in a pre-posttest intervention study using a nutritional education message based on Pender's health promotion model. Questionnaires were used to gather data, and the intervention group's height, weight, and blood pressure were measured both before and after the educational intervention. In the intervention group, the mean breakfast consumption, frequency of non-skipping, and weekly consumption of a healthy breakfast were all significantly improved by the educational intervention ($p < 0.05$). Those who skipped breakfast were considerably more likely to be overweight or obese and to have higher blood pressure.

- Yongqing Gao et al. Iran J Public Health. 2016 has conducted a study on “Nutritional Intervention and Breakfast Behavior of Kindergartens”. In September 2001, eight kindergartens in Hefei, totaling 2,012 children aged 4-6 and their parent pairs, began a kindergarten-based nutrition intervention. As part of the intervention arm, kindergarteners attended monthly nutrition instruction workshops for two semesters. Every kindergarten used the same teaching methodology and the same curriculum for other activities. Breakfast habits were tracked over seven days, including at least one weekend, using a validated questionnaire. At the beginning, middle, and conclusion of the study, the parents documented the breakfast habits of their children, including frequency, time, and food choice. There were no significant differences at the baseline before to intervention, but there were at the end of the intervention. The breakfast choices as well as the frequency of breakfasts changed.

- Chiara Mameli et al. Ital J Pediatr. 2014 has conducted a study on “Psychosocial, behavioral, pedagogical, and nutritional proposals about how to encourage eating a healthy breakfast”. Breakfast is commonly skipped by 10 to 30 percent of children and

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adolescents in the US and Europe, despite mounting evidence that it is crucial for children's growth and development. Therefore, much work needs to be done until eating breakfast every day becomes second nature. The purpose of this research is to attempt to comprehend how psychological, behavioral, pedagogical, and nutritional suggestions can help overcome the actual or perceived challenges related to skipping breakfast. Schools are the ideal setting for implementing healthy interventions because they teach kids the value of being healthy at a time when schooling is still heavily influenced by the school. In recent years, a number of school interventions have been put into place to encourage healthy behaviors like eating more fruits and vegetables and exercising, many of which are founded on sound ideas like behavior analysis and the self-determination theory. In randomized controlled studies, cognitive behavior therapy is the obesity treatment or cure that is most closely observed. Additionally, some organizations, like the National Association of Food Science Specialists, have developed their own strategy to support school food education and highlight the value of prevention. These initiatives could serve as a springboard for breakfast-focused interventions.

IV. CONCLUSION

Schoolchildren frequently skip breakfast, which has grown to be a serious public health issue. After an overnight fast, breakfast gives you the vital nutrients and energy you need. Children who skip breakfast may feel exhausted, agitated, and less awake, which makes it difficult for them to focus during class activities. Consuming breakfast on a regular basis contributes to the maintenance of glucose levels, which are necessary for healthy brain function and learning capacity.

Skipping breakfast can have detrimental effects on physical development in addition to cognitive ones. For their immune systems, muscles, and bones to grow, schoolchildren need enough nutrients. Missing breakfast may lead to nutritional deficiencies, weakness, stunted growth, and increased susceptibility to illness. Irregular eating patterns may also contribute to unhealthy weight changes, including undernutrition or obesity.

Schoolchildren who skip breakfast do so for a variety of reasons. These include busy mornings, inadequate parental monitoring, late sleeping patterns, excessive screen time, and unhealthy eating habits. The probability of missing breakfast is also increased by socioeconomic factors such low family income, food insecurity, and low parental education. These factors emphasize how important it is for families and schools to support healthy eating practices.

All things considered, eating breakfast on a daily basis helps schoolchildren focus better, do better academically, and grow physically. Nutritional deficits, delayed growth, and impaired cognitive function can result from skipping breakfast. In order to enhance children's general health, learning capacity, and development, it is crucial to promote healthy breakfast habits through family education, school-based programs, and awareness campaigns.

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