
IMPACT OF REGULAR DIETARY FIBER INTAKE ON GENERAL HEALTH AND OVERALL WELL BEING

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ABSTRACT

Dietary fiber is a crucial element of a nutritious diet, contributing to digestive health, bowel regularity, weight control, and overall wellness. consumption of fiber-rich foods aids in preventing constipation, and may lower the risk of various lifestyle-related diseases. This study aimed to evaluate the effects of consistent dietary fiber intake on general health and well-being in adults. A descriptive cross-sectional study was carried out involving 200 participants aged 18 to 40 years, utilizing a structured questionnaire. A convenience sampling method was used for participant selection. Data analysis was performed using IBM SPSS Statistics and, employing descriptive and inferential statistical techniques, including percentages, Chi-square tests, Independent Sample t-tests, and Pearson correlation analysis.

The results indicated that most participants consumed fiber-rich foods and recognized their health advantages. majority of respondents reported enhanced digestion, consistent bowel movements, and decreased constipation linked to regular fiber intake. A significant number also viewed fiber-rich foods as beneficial for weight management and Chi-square analysis revealed significant relationships between dietary fiber intake and constipation, bowel regularity, and body weight status ($p < 0.05$). The Independent Sample t-test indicated notable

differences in fiber consumption patterns among the study groups, while Pearson correlation analysis showed a significant relationship between the frequency of fiber-rich food consumption and body weight status ($r = 0.170$, $p = 0.017$). The findings highlight the importance of regular dietary fiber consumption in supporting digestive health, bowel regularity, and overall well-being. Raising awareness about the importance of adequate dietary fiber consumption may help improve overall health.

KEYWORDS: Dietary Fiber, Digestive Health, Constipation, Bowel Regularity, Weight Management, Wellbeing.

INTRODUCTION

Dietary fiber is an essential component of a healthy diet and plays important role in digestive health, bowel regularity, managing weight, and promoting overall wellness. It is sourced from plant-based foods that remains undigested in the human gastrointestinal system. Dietary fiber is generally categorized into soluble and insoluble fiber, Soluble fiber dissolves in water, creating a gel-like substance that aids in regulating blood glucose and cholesterol levels while fostering beneficial gut microbiota. insoluble fiber enhances bowel regularity by increasing stool bulk and facilitating normal intestinal movement. Found naturally in fruits, vegetables, whole grains, legumes, nuts, and seeds, dietary fiber plays a significant role in digestive health, boosts satiety, aids in healthy weight management, and lowers the risk of various chronic diseases.^{1,2}

Regular intake of dietary fiber provides numerous physiological benefits that are essential for overall health. By increasing stool bulk and its capacity to retain water, dietary fiber facilitates normal bowel movements . Adequate fiber intake is also vital for bowel health, as it promotes beneficial gut microbiota and decreases the chances of diverticular disease and colorectal disorders. Soluble fiber has been demonstrated to lower serum low-density lipoprotein (LDL) cholesterol by reducing its absorption, thereby supporting cardiovascular health. Moreover, dietary fiber slows down gastric emptying and glucose absorption, which aids in enhancing glycaemic control and reducing the risk of type 2 diabetes. High-fiber foods also improve satiety and lower overall energy intake, thus contributing to healthy weight management. Collectively, these benefits emphasize the significant role of dietary fiber in preserving digestive, metabolic, and overall health.^{3,4}

Recent evidence also highlights the role of dietary fiber in maintaining gut microbiota and

overall well-being. Dietary fiber acts as a prebiotic substrate, stimulating the growth of beneficial gut bacteria like Bifidobacteria and Lactobacilli. The fermentation process of fiber results in the formation of short-chain fatty acids, which support gut health, regulate immune and inflammatory responses, and influence the gut–brain axis. These mechanisms contribute to enhanced mental well-being, cognitive function, and thereby emphasizing the significance of sufficient dietary fiber intake for overall health.⁵

Despite the well-established health benefits of dietary fiber, inadequate intake remains a significant public health concern worldwide. The rapid growth of urban areas, shifts in dietary habits, increased consumption of refined and processed foods, busy lifestyles, and limited awareness of nutrition have all contributed to a decrease in fiber intake. Inadequate consumption of dietary fiber is associated with digestive problems, poor glycaemic regulation, and other diseases linked to lifestyle choices. These challenges emphasize the necessity of promoting sufficient dietary fiber intake and healthy eating practices.^{6,7}

Although numerous studies have demonstrated the beneficial effects of dietary fiber on digestive health and chronic disease prevention, further research is needed to understand the relationship between regular dietary fiber intake and overall well-being among adults, further research is needed to understand the relationship between regular dietary fiber intake and overall well-being among adults. Understanding the current dietary fiber intake patterns and their relationship with health outcomes is essential for developing effective nutrition education and public health strategies. Therefore, the present study was undertaken to assess the impact of regular dietary fiber intake on general health and overall well-being among adults.

Based on the existing evidence and the identified need for further research, the current research aims to analyse how regular intake of dietary fiber influences the health and well-being of adults within the age range of 18 to 40 years. The outcomes are expected to provide insights into dietary fiber consumption trends and assist in formulating strategies for promoting healthier dietary choices.

MATERIALS AND METHODS

Study Design

The present study used a descriptive cross-sectional research design to evaluate how regular dietary fiber consumption affects individuals' general health and well-being. The study was

conducted using a structured questionnaire to assess patterns of dietary fiber consumption, digestive health, bowel regularity, weight control, and awareness of dietary fiber intake.

Study Population and Sample Size

The study population included both male and female individuals aged 18 to 40 years. The study includes 200 participants selected using a convenience sample technique. The participants consisted of college students and neighbourhood residents and individuals who were healthy and willing to take part.

Inclusion Criteria

- Both males and females
- Aged between 18 years- 40 years
- Neighbourhood residents, college enrolled students
- Healthy individuals.
- Those who choose to participate voluntarily.

Exclusion Criteria

- Individuals below 18 years or above 40 years of age.
- Individuals diagnosed with chronic gastrointestinal diseases such as IBS, Crohn's disease, ulcerative colitis.
- Pregnant or lactating women.

Sampling Technique

A convenience sampling approach was employed for choosing participants. Individuals who were reachable, healthy, and eager to participate were incorporated into the study. An informed consent was gathered from all respondents before the data collection process began.

Data Collection Tool

Data were collected through a structured questionnaire both online and in printed form. This questionnaire featured sections on demographic details, dietary fiber consumption habits, digestive health, bowel regularity, weight management, and awareness of dietary fiber intake.

Data Collection Procedure

Participants were informed about the objectives of the study before administration of the questionnaire. Data were collected using both online through google forms and offline using printed questionnaires. The study ensured the confidentiality and anonymity of the

participants at all times, and the information collected was used solely for academic and research purposes.

Study Variables

The independent variables consisted of age, gender, how often dietary fiber is consumed, intake of fruits and vegetables, whole grain consumption, knowledge about dietary fiber, and lifestyle-related aspects. The dependent variables included digestive health, regularity of bowel movements, constipation status, management of weight, and general well-being.

Statistical Analysis

The data collected were systematically coded and entered into Microsoft Excel for the purpose of tabulation, and were analysed using IBM SPSS Statistics. Descriptive statistics, including frequencies and percentages, were utilized to summarize the details of participants and their dietary fiber intake patterns. Inferential statistical tests, including the Chi-square test, Independent Sample t-test, and Pearson correlation analysis, were executed to ascertain associations and relationships between dietary fiber intake and selected health outcomes. A p-value of less than 0.05 was regarded as statistically significant.

RESULTS AND DISCUSSION

The study involved 200 participants aged 18-40 years. This group comprised both male and female respondents from college and local communities. The results offer valuable insights into patterns of dietary fiber consumption, awareness of fiber-rich foods, digestive health, bowel regularity, weight management, and overall well-being within the study population.

The demographic analysis indicated that females constituted the majority of participants at 71%, whereas males represented 29%. In terms of occupational categories, college students comprised the largest segment at 41%, followed by working professionals at 28%, homemakers at 14%, other occupations at 10%, and self-employed individuals at 8%.

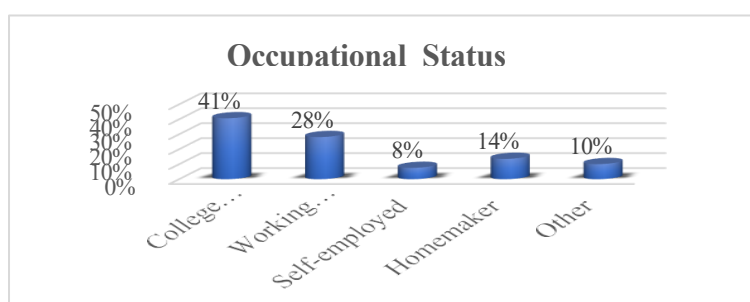


Figure 1: Occupational Status of Respondents.

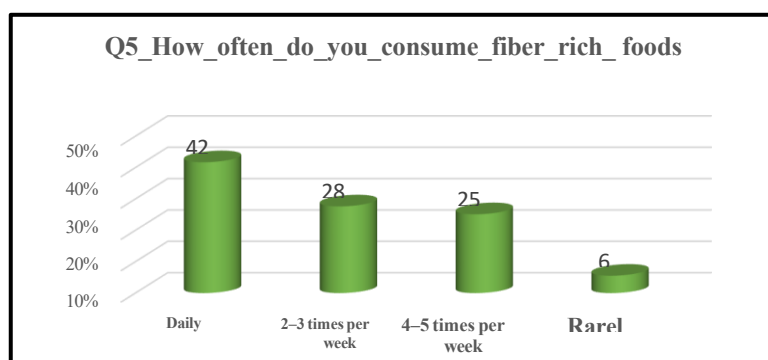


Figure 2: Frequency of Consumption of Fiber-Rich Foods.

Figure 2 shows that 42% of study participants incorporated fiber-rich foods into their daily diet, while 28% did so two to three times weekly and 25% consumed them four to five times per week. These proportions indicate an overall consistent consumption pattern of fiber-rich foods.

The result is supported by prior scientific evidence establishing that greater fiber intake is associated with improved gastrointestinal function. These findings stress the necessity of routinely including fiber-rich foods as part of a balanced diet.

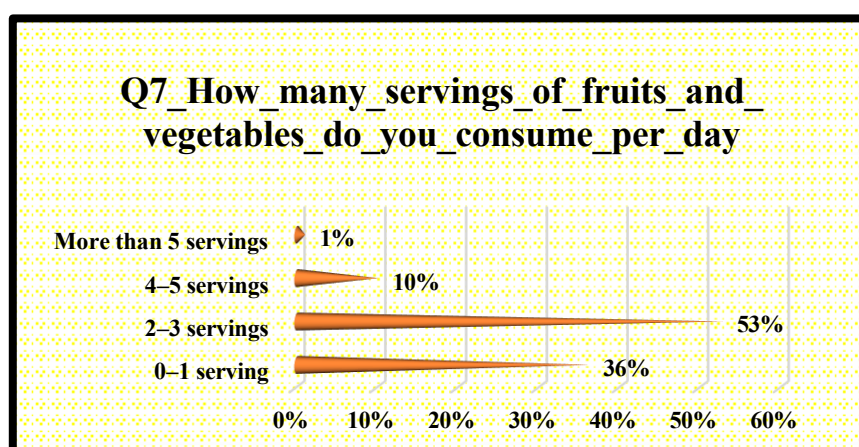


Figure 3: Daily Servings of Fruits and Vegetables Consumption.

Figure 3 shows that 53% of study participants reported daily consumption of 2–3 servings of fruits and vegetables, whereas 36% reported consuming 0–1 serving. These results reveal that a substantial portion of the participant population maintained relatively modest intake levels. Existing literature has documented the advantageous effects of fiber-dense plant-based foods on gastrointestinal function. The results underscore the necessity of promoting increased fruit and vegetable consumption to enhance dietary fiber intake.

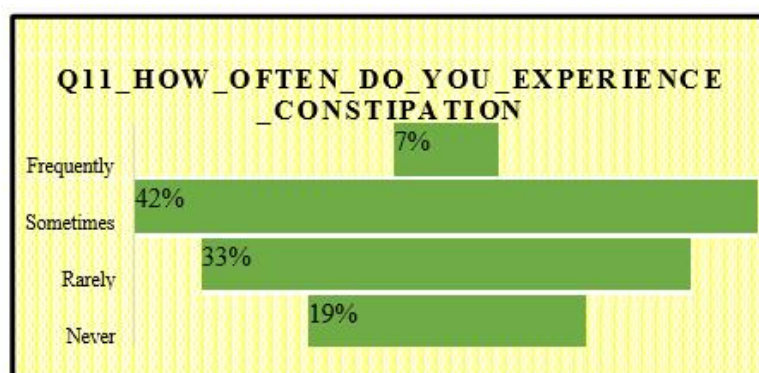


Figure 4: Frequency of Constipation among Respondents.

Figure 4 demonstrates that constipation was reported sometimes by 42% of participants, rarely by 33%, never by 19%, and frequently by 7%. A statistically significant relationship was identified between the consumption of fiber-rich foods and the occurrence of constipation ($P = 0.000$).

This observation aligns with established literature indicating that sufficient fiber intake contributes to improved constipation-related outcomes. The data underscores the importance of consistent fiber consumption in maintaining optimal bowel function.



Figure 5: Regularity of Bowel Movements.

Figure 5 demonstrates that 60% of study participants indicated consistent daily bowel movements, whereas 31% experienced bowel movements every other day and 10% exhibited irregular bowel movement patterns. A statistically significant association was identified between fiber consumption and bowel movement regularity ($p = 0.005$). This observation aligns with existing research demonstrating that elevated fiber intake correlates with enhanced bowel function. The findings indicate that sustained intake of fiber-rich dietary sources may

facilitate improved bowel regularity.

Table 1: Chi square analysis.

Variables Associated	p-value	Significance
Fiber consumption × Constipation	0.000	Significant
Fiber consumption × Bowel movement regularity	0.005	Significant
Fiber consumption × Bowel regularity	0.009	Significant
Fiber consumption × Awareness of digestive health	0.018	Significant
Intentional fiber inclusion × Constipation	0.095	Significant at 10% level

Chi-square analysis demonstrated statistically significant relationships between fiber intake and multiple digestive health-related outcomes. A highly significant relationship emerged between fiber intake and constipation ($p = 0.000$), demonstrating that constipation manifestations varied substantially based on fiber consumption levels. Additional statistically significant relationships were identified between fiber intake and bowel movement frequency ($p = 0.005$), bowel regularity ($p = 0.009$), and participant knowledge regarding the importance of dietary fiber in digestive health ($p = 0.018$). Furthermore, the deliberate incorporation of fiber-rich food sources and constipation demonstrated a marginal association at the 10% significance threshold ($p = 0.095$). Collectively, these results suggest that fiber consumption patterns exhibited statistically significant associations with critical dimensions of digestive health and participant awareness.

Table 2 Independent Sample t-test

	t-value	df	p-value	Mean Difference
Independent Sample t-Test	3.015	197	0.003	0.410

An independent samples t-test revealed a statistically significant difference in fiber consumption between the study groups, $t(197) = 3.015$, $p = 0.003$. Given that the p-value fell below the 0.05 threshold, the observed difference between the groups achieved statistical significance. The mean difference of 0.410 demonstrates a quantifiable variation in fiber consumption patterns across the compared groups. These results indicate that fiber consumption was not consistent throughout the study groups and that variations in consumption patterns were observable among the study participants. In summary, these findings indicate a statistically significant difference in fiber consumption between the study groups.

3. Correlation analysis

A Pearson correlation analysis revealed a statistically significant association between the frequency of fiber-rich food consumption and participants' current body weight status ($r = 0.170$, $p = 0.017$, $N = 199$) at the 0.05 significance level.

This result demonstrates a meaningful relationship between the two variables, suggesting that fluctuations in the consumption of fiber-rich foods correspond to variations in the reported body weight status among the study participants.

CONCLUSION

The current research evaluated patterns of dietary fiber intake and their association with digestive health in adults aged 18 to 40. The results indicated that a significant percentage of participants frequently ate foods high in fiber, especially fruits and vegetables. Many participants reported having regular bowel movements, whereas constipation was less commonly experienced. Significant associations were observed between fiber consumption and constipation, bowel movement regularity, bowel regularity, and awareness regarding digestive health. A notable variation in fiber intake was also noted among the study cohorts. The Pearson correlation revealed a notable connection between the intake of fiber-rich foods and the stated body weight status. The results underscore the significance of frequently eating fiber-rich foods within a balanced diet and stress the need for nutrition education to encourage sufficient fiber consumption, aid digestive health, and improve overall well-being.

Recommendations

- Promoting nutrition education initiatives is essential to enhance public understanding regarding sufficient dietary fiber consumption and its significance for maintaining optimal digestive function.
- Encouraging the regular intake of fiber-abundant foods such as fruits, vegetables, whole grains, pulses, legumes, nuts, and seeds should be integrated into recommendations for a well-rounded eating pattern.
- Additional research involving larger and more representative population samples is needed to comprehensively examine the connection between fiber consumption and digestive wellness.

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