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Exploring Dietary Habits and Gastrointestinal Issues Among Geriatric People in Long-Term Care Facilities.

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ABSTRACT:

Background:

The gastrointestinal (GI) health of geriatrics in long-term care facilities is a critical concern influenced by dietary habits. Age-related changes in digestion, metabolism, and appetite increase susceptibility to GI issues such as diarrhea, acid reflux, and constipation. This study explores dietary habits and GI issues among geriatrics in long-term care facilities, with primary objective to assess dietary habits, identify prevalent GI issues, and analyze their impact on GI health in elderly individuals.

Materials and methods:

A descriptive cross-sectional study was conducted among 95 geriatrics aged 65 and above in long-term care facilities. Data was collected using self-structured questionnaires, including a 24-hour dietary recall and a food frequency questionnaire.

Results:

Among 95 participants (60% female, 40% male), common GI issues included abdominal pain (96.84%), constipation (93.68%), acid reflux/heartburn (86.31%) and diarrhea (91.57%). Calorie intake for both genders was below recommendations. Lower millet intake significantly increased constipation ($p=0.004$), diarrhea, and bloating occurrences ($p=0.000$). Participants who did not perceive diet as affecting GI health reported more frequent diarrhea and bloating ($p=0.006$). Frequent meals reduced bloating, while daily yogurt intake decreased bloating and diarrhea. Frequent milk consumption increased bloating. Lower raw vegetable intake was associated with increased constipation, diarrhea, and bloating.

Conclusion:

This study highlights the prevalence of GI issues in geriatrics and their association with dietary habits. Customized approaches, including increased fiber intake, hydration, and personalized meal plans, are essential for improving GI health in this population.

Keywords:

Gastrointestinal health, ageing, dietary habits, food frequency questionnaire, long-term care facilities

INTRODUCTION:

Aging results in a gradual decline in physiological function, increasing susceptibility to health issues. In 2022, there were 1.1 billion people aged 60+ globally, making up 13.9% of the population. By 2050, this number is expected to rise to 2.1 billion, or 22% of the world's population (1). In India, the elderly population is 104 million, representing 8.6% of the total population.(2)

According to the World Health Organization, aging is a natural biological process that begins from conception and continues until death, following its own course beyond human control. Recognizing the difference between normal aging and disease onset is essential to preventing unnecessary disability. Aging includes all the changes that occur throughout life, starting with birth. As we grow, develop and mature, aging is often seen positively during youth. However, in middle age, we begin to notice the signs of aging, such as gray hair, wrinkles, and gradual physical decline—changes that no one, even the healthiest, can avoid. These slow and progressive deficiencies eventually lead to greater dependence in old age. (3,4).

GI issues are prevalent in the elderly, due to age-related changes in digestion. As people age increases, their digestion slows down due to weaker muscles in the stomach and intestines. The body also produces less stomach acid and digestive enzymes, making it harder to absorb nutrients. Changes in gut bacteria can further affect digestion and overall gut health. These issues include constipation, diarrhea, GERD, peptic ulcers, nausea, and bloating (5)

A diet low in sugar, salt, and saturated fat, and high in fruits, vegetables, and lean meats is essential for maintaining health in older adults (6). A balanced diet can help reduce cognitive decline, cardiovascular risk, and other age-related health issues (7). Adequate hydration, fiber intake, and micronutrients are crucial for maintaining good gastrointestinal health (8). Elderly residents in long-term care facilities are highly vulnerable to malnutrition, with contributing factors like difficulty chewing, dysphagia, poor food choices, and the lack of regular monitoring of nutritional intake. Financial constraints and limited access to specialized diets tailored to health conditions like diabetes or heart disease may also contribute to inadequate nutritional care (9). Malnutrition in the elderly leads to worsened health outcomes, such as increased hospitalizations, frailty, and weakened immune function, which ultimately impact the quality of life and overall well-being (10). There is limited research on the link between dietary habits and gastrointestinal health issues in long-term care facilities. This study aims to investigate the relationship between diet and common GI issues like constipation, GERD, and peptic ulcers, addressing gaps in care to improve the well-being of elderly individuals in these settings.

MATERIAL AND METHODS

Study Design and Population:

This cross-sectional study was conducted over 90 days at various long-term care facilities in Hyderabad. A total of 95 geriatric individuals were participated. The participants were selected based on inclusion criteria such as age 65 years and above and were resident in long-term care facilities, while those unwilling/unable to provide information were excluded.

Data Collection:

Data collection was conducted with organizational permission and written consent. Structured interviews, physical measurements, and self-administered questionnaires were used, with the principal researcher assisting in the local language for clarity. Dietary habits were assessed through a 24-hour dietary recall and a food frequency questionnaire (FFQ), which captured food intake from the previous day and frequency of specific food consumption in the past month. A comprehensive questionnaire gathered demographic data, GI symptoms over six months, dietary impacts on GI health, and lifestyle factors like physical activity.

Statistical Analysis:

Descriptive analysis was carried out by frequency and proportion for categorical variables. The chi-square test was used to test the statistical significance of cross-tabulation between categorical variables. P value < 0.05 was considered statistically significant. Data was analysed by using CoGuide REAP software version 2.0.(11)

RESULTS:-

The demographic data shows that most residents (50.53%) are aged 65–74 years, followed by 32.63% in the 75–84 age group and 16.84% aged 85 and above. Females (60%) outnumber males (40%). Regarding the duration of stay, 36.84% have been in the facility for 6 months to 1 year, 32.63% for more than 2 years, 22.11% for 1 to 2 years, and 8.42% for less than 6 months, as per table 1.

Table 1: Demographic details of study participants(N=95)

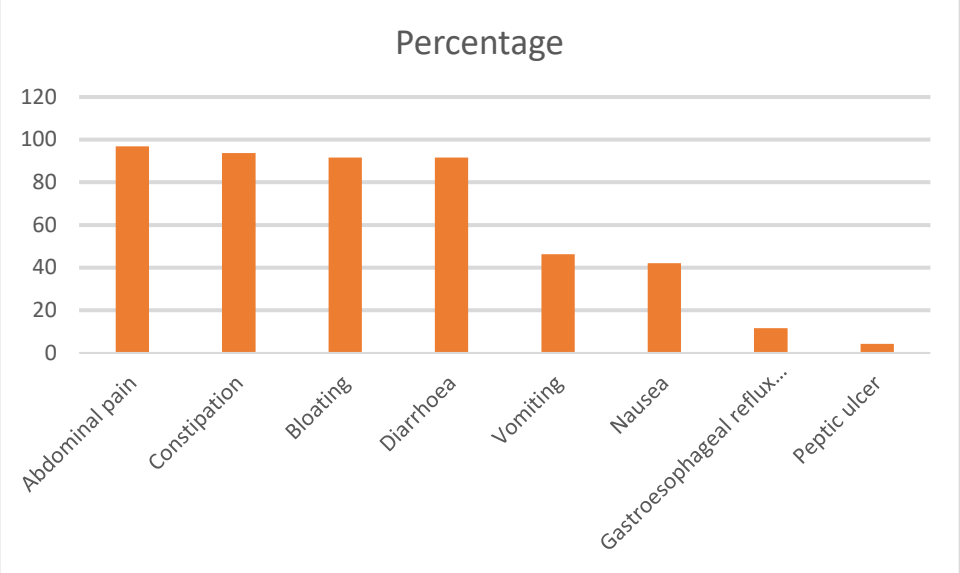
Age	**Frequency**	**Percentage**
65 to 74 years	48	50.53
75 to 84 years	31	32.63
85 years and above	16	16.84
Gender	**Frequency**	**Percentage**
female	57	60
male	38	40
Duration of Stay in Long Term Care Facility	**Frequency**	**Percentage**
6 months to 1 year	35	36.84
More than 2 years	31	32.63
1 to 2 years	21	22.11
Less than 6 months	8	8.42

Table 2 and Figure 2 shows the descriptive analysis of the study population (N=95) regarding gastrointestinal issues experienced in past 6 months reveals that abdominal pain (96.84%), constipation (93.68%), bloating (91.57%) and diarrhoea (91.57%) are the most common problem faced by participants while vomiting (46.31%) and nausea (42.10%) are less common and GERD (11.47%) and peptic ulcer (4.21%) were least experienced problems.

Table 2: Descriptive analysis of Gastrointestinal issues experienced over past 6 months (N=95)

Gastrointestinal issues	**Frequency**	**Percentage**
Abdominal pain	92	96.84
Constipation	89	93.68
Bloating	87	91.57
Diarrhoea	87	91.57
Vomiting	44	46.31
Nausea	40	42.10
Gastroesophageal reflux disease	11	11.57
Peptic ulcer	4	4.21

Figure 2:



IMPACT OF DIETARY HABITS ON GASTROINTESTINAL HEALTH

Table 3 highlights the link between dietary habits and gastrointestinal symptoms. In this consumption of yogurt has shown significant association with diarrhoea (p value=0.048) and bloating or gas (p value=0.011). Consumption of milk has shown significant association with bloating (p value=0.013). Consumption of raw vegetables and millets have shown the significant association with constipation (p values= <0.001and 0.004, respectively), diarrhoea (p values= 0.022 and 0.000, respectively) and bloating or gas (p values= 0.006 and 0.000, respectively). 3 or more than 3 meals are also associated with bloating or gas (p value= <0.001). 64.2% (N=61) participants believe that their current diet affects their gastrointestinal symptoms.

Table 3: Inferential Analysis of GI symptoms with different diets over past month(N=95)

Parameter	**Frequency of GI symptoms**			**P Value**
	Several times a month	**Occasionally**	**Never**	
Yogurt (plain, flavored Greek)	**Diarrhea**			
1 or more servings a day (N=22)	10 (45.45%)	10 (45.45%)	2 (9.09%)	**0.048**
1 to 3 servings a week (N=42)	26 (61.90%)	16 (38.10%)	0 (0.00%)	
4 to 6 servings a week (N=30)	10 (33.33%)	14 (46.67%)	6 (20.00%)	
Never (N=1)	1 (100.00%)	0 (0.00%)	0 (0.00%)	
Yogurt (plain, flavored Greek)	**Bloating or gas**			
1 or more servings a day (N=22)	6 (27.27%)	15 (68.18%)	1 (4.55%)	**0.011**
1 to 3 servings a week (N=42)	29 (69.05%)	11 (26.19%)	2 (4.76%)	
4 to 6 servings a week (N=30)	12 (40.00%)	13 (43.33%)	5 (16.67%)	
Never (N=1)	1 (100.00%)	0 (0.00%)	0 (0.00%)	

Milk (whole, skim, or low-fat)	**Bloating or gas**			
1 or more servings a day (N=75)	34 (45.33%)	37 (49.33%)	4 (5.33%)	**0.013**
4 to 6 servings a week (N=19)	13 (68.42%)	2 (10.53%)	4 (21.05%)	
Never (N=1)	1 (100.00%)	0 (0.00%)	0 (0.00%)	
Raw Vegetables (e.g., salads)	**Constipation**			
1 to 3 servings a week (N=9)	7 (77.78%)	2 (22.22%)	0 (0.00%)	**<0.001**
4 to 6 servings a week (N=15)	3 (20.00%)	8 (53.33%)	4 (26.67%)	
Less than 1 serving a week (N=71)	26 (36.62%)	43 (60.56%)	2 (2.82%)	
Raw Vegetables (e.g., salads)	**Diarrhoea**			
1 to 3 servings a week (N=9)	7 (77.78%)	2 (22.22%)	0 (0.00%)	**0.022**
4 to 6 servings a week (N=15)	2 (13.33%)	11 (73.33%)	2 (13.33%)	
Less than 1 serving a week (N=71)	38 (53.52%)	27 (38.03%)	6 (8.45%)	
Raw Vegetables (e.g., salads)	**Bloating or Gas**			
1 to 3 servings a week (N=9)	5 (55.56%)	3 (33.33%)	1 (11.11%)	**0.006**
4 to 6 servings a week (N=15)	0 (0.00%)	12 (80.00%)	3 (20.00%)	
Less than 1 serving a week (N=71)	43 (60.56%)	24 (33.80%)	4 (5.63%)	
Millets (e.g., ragi, bajra)	**Constipation**			
Less than one serving a week (N=70)	29 (41.43%)	40 (57.14%)	1 (1.43%)	**0.004**
Never (N=25)	7 (28.00%)	13 (52.00%)	5 (20.00%)	
Millets (e.g., ragi, bajra)	**Diarrhoea**			
Less than one serving a week (N=70)	45 (64.29%)	23 (32.86%)	2 (2.86%)	**0.000**
Never (N=25)	2 (8.00%)	17 (68.00%)	6 (24.00%)	
Millets (e.g., ragi, bajra)	**Bloating or gas**			
Less than one serving a week (N=70)	44 (62.86%)	24 (34.29%)	2 (2.86%)	**0.000**
Never (N=25)	4 (16.00%)	15 (60.00%)	6 (24.00%)	
Frequency of Meals per Day	**Bloating or gas**			
3 meals (N=70)	44 (62.86%)	25 (35.71%)	1 (1.43%)	**<0.001**
more than 3 meals (N=25)	4 (16.00%)	14 (56.00%)	7 (28.00%)	
Do you believe that your current diet affects your gastrointestinal symptoms?	**Diarrhoea**			
no (N=61)	36 (59.02%)	22 (36.07%)	3 (4.92%)	**0.029**
yes (N=34)	11 (32.35%)	18 (52.94%)	5 (14.71%)	
Do you believe that your current diet affects your gastrointestinal symptoms?	**Bloating or Gas**			
no (N=61)	33 (54.10%)	27 (44.26%)	1 (1.64%)	**0.006**
yes (N=34)	15 (44.12%)	12 (35.29%)	7 (20.59%)	

DISCUSSION: -

This study we included 95 participants, among which majority of them were female. Majority of the participants were in the age group of 65-74 years. Dietary habits were assessed using 24-hour recalls, revealing that both females (1187.82 kcal/day) and males (1348.57 kcal/day) consumed fewer calories than the estimated energy requirements. The inferential analysis about the impact of dietary habits on GI health revealed that participants who don't believe that their diet affect their GI health had more frequent symptoms of diarrhea and bloating. While lower millet intake showed a significant association with increased constipation, diarrhea and bloating. Meal frequency was associated with bloating, with those eating more than three meals daily reporting fewer bloating episodes while frequent milk consumption was associated with increased bloating. Participants consuming yogurt daily reported fewer instances of bloating and diarrhea compared to those consuming yogurt less frequently. Lower consumption of raw vegetables was associated with an increased incidence of constipation, diarrhea and bloating. This study highlights the prevalence regarding the gastrointestinal issues experienced in past 6 months that reveals that abdominal pain constipation, bloating and diarrhoea and acid reflux/heartburn are the most common problems faced by participants while vomiting and nausea was less common and GERD and peptic ulcer is the least experienced issues.

In the study reported by Biriimoğlu-Okuyan C et al. 2019 among 160 nursing home residents, 51.9% of elderly individuals had constipation (12). While in the study reported by Shobhit Srivastava et al 2017-2018 among (N = 31,464) approximately 15% of older adults reported diarrhea in the past two years (13). As per the study by Sarah Ballou et al 2023, Bloating is a common issue worldwide. Approximately 18% of the general population experiences bloating at least once a week. (14). While in the study reported by Pınar Henden Çam et al 2018., among 336 patients shows that an internal disease was detected in 76.8% of the patients as an origin of abdominal pain. (15). A study reported by Kelly L Moore et al a study involving nearly 20,000 nursing home residents shows that the prevalence of GERD among the elderly is approximately 23%, making it one of the most frequently observed conditions.(16). In the study reported by Mashael Jaza Alshammari et al. 2018 among 217 elderly patients 21.2% of elderly participants were diagnosed with PUD.(17) In this study the prevalence of constipation was 93.68%, diarrhoea was 91.57%, abdominal pain was 96.84%. bloating was 91.57% (n=95), GERD was 11.57%. acid reflux/heartburn was 86.31% (n=95) and peptic ulcer was 4.21%.

There are few limitations of our study, which are limited sample size and geographic focus may reduce the generalizability of findings to other long-term care settings. Additionally, the use of self-reported data could lead to recollection and recall bias, potentially affecting the accuracy of the data. Furthermore, multiple factors beyond diet, such as health conditions and medications, complicated the isolation of dietary effects on gastrointestinal health.

Strength of our study include a comprehensive multi-method approach provided robust data. The use of both 24-hour dietary recall and a food frequency questionnaire enhanced data reliability, and local language support minimized misunderstandings and improved data quality.

CONCLUSION:

In this study common GI issues included constipation, abdominal pain, bloating, diarrhea, and acid reflux, with lower rates of vomiting, nausea, GERD, and peptic ulcers. The 24-hour dietary recall showed participants consumed fewer calories than their estimated energy requirement. According to the study disbelief in diet's impact on GI health correlated with more frequent diarrhea and bloating. Lower millet, raw vegetable intake and frequent milk consumption increased GI issues like constipation, diarrhea, and bloating, while eating more than three meals reduced bloating and daily consumption of yogurt reduced

bloating and diarrhea. The study highlights the need for personalized dietary strategies, including sufficient fiber, hydration, and tailored nutritional advice, to improve GI health in this age group.

Further research should explore the long-term effects of specific dietary modifications on gastrointestinal health in geriatric populations, taking into account variables such as cultural dietary preferences, facility resources, and individual health conditions. Finally, research should consider the psychological and social factors influencing dietary choices in elderly care facilities to create a comprehensive approach to improving dietary habits and gastrointestinal health among the elderly.

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