

Functional Constipation and Associated Risk Factors in the Elderly Patients Attending the General Outpatient Clinic of Federal Medical Centre, Abeokuta, Ogun State, Nigeria.

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Abstract

Background: Functional constipation (FC), defined as a stool frequency of less than 3 times per week and persisting for at least 3 months, is a common concern in family medicine. Data on FC and its risk factors in elderly Nigerians are limited. This study aimed to determine the prevalence and risk factors of FC among elderly patients at a family medicine clinic in Abeokuta, Nigeria.

Methods: A hospital-based cross-sectional study was conducted among 316 elderly patients (≥ 60 years) attending the family medicine clinic of the Federal Medical Centre, Abeokuta, using systematic random sampling. Data were collected via an interviewer-administered questionnaire. FC was the dependent variable, and socio-demographic factors, lifestyle, and medical history were independent variables. Chi-square tests and logistic regression were used for analysis, with significance set at $p < 0.05$ (95% CI).

Results: The prevalence of FC was 19.3%. The mean age of participants was 68.77 ± 6.76 years. While females were the majority (57.3%), a higher proportion of males had FC (22.2% vs. 17.1%). Logistic regression identified ethnicity (Yoruba: OR 2.348, $p = 0.014$; Hausa: OR 5.586, $p = 0.043$) and lack of fruit (OR 2.672, $p = 0.043$) and vegetable (OR 2.679, $p = 0.012$) consumption as significant predictors of FC.

Conclusion: The prevalence of FC was notable, with higher rates in males and significant associations with Yoruba and Hausa ethnicities, and lower intake of fruits and vegetables. These findings suggest the need for targeted dietary interventions and culturally sensitive management strategies for FC in this elderly Nigerian population.

Keywords: Functional constipation, Elderly, Prevalence, Risk factors

Introduction: Constipation is a significant clinical symptom, broadly categorized as secondary (due to underlying conditions) and functional (FC), where no specific cause is identified¹. Functional constipation is considerably more prevalent. Globally, FC is a common reason for consultation in family medicine, likely due to its negative impact on patients' quality of life. What constitutes "normal" bowel habits varies across populations due to factors like gut transit time and dietary practices. FC is typically defined as a stool frequency of less than three times per week and is considered chronic if symptoms persist for at least three months. Patients may also report hard stools, incomplete evacuation, abdominal discomfort, and other symptoms indicative of defecatory disorders^{2,3}.

The reported prevalence of FC in the general population in Western countries ranges widely from 2% to 27%⁴. Systematic reviews and meta-analyses indicate varying prevalence across different regions, with estimates ranging from 11% in Southeast Asia to 18% in South America^{5,6}. Within the Asian community, prevalence ranges from 11% to 23%, with a noted increase in recent years⁶. A hospital-based study in Egypt reported a prevalence of 24.8%⁷, while a community-based study in southwestern Nigeria found a much lower rate of 1%⁸. Several risk factors have been

associated with FC, including dietary and cultural factors, female sex, older age, low socioeconomic status, physical inactivity, and insufficient fluid and fibre intake^{9,10}.

The World Health Organization defines elderly individuals as those aged 65 years or older¹¹, while the United Nations uses a cut-off of 60 years, which this study adopts¹². While previous research has explored constipation in adolescents and adults in Nigeria^{13,14}, studies specifically focusing on the elderly population using the Rome IV criteria in a hospital setting are limited. Furthermore, prior studies in the Nigerian context may not have consistently accounted for medication histories or excluded potential secondary causes through digital rectal examinations.

The burden of FC in the elderly in West Africa appears to vary, potentially due to differences in study populations, diagnostic criteria, data collection methods, and sampling. FC can negatively impact the quality of life in older adults, potentially leading to lower urinary tract symptoms, faecal impaction, and, rarely, colonic perforation¹⁵. It can also be a sign of underlying neurological or endocrine conditions.

This study aimed to address the gap in knowledge by determining the prevalence and associated risk factors of functional constipation among elderly patients attending the General Outpatient Clinic (GOPC) of the Federal Medical

Centre (FMC), Abeokuta, Ogun State. The findings of this study are relevant to family medicine practice by highlighting the burden of FC in the elderly in a Nigerian hospital setting, which can inform targeted interventions and management strategies.

The primary aim of this study was to determine the prevalence and risk factors for functional constipation among elderly patients attending the GOPC at FMC, Abeokuta, to inform strategies for modifying lifestyle risk factors and reducing the burden of FC.

Methods

This hospital-based cross-sectional study was conducted at the General Outpatient Clinic (GOPC) of the Federal Medical Centre (FMC), Abeokuta, Ogun State, Nigeria. The study population comprised elderly patients aged 60 years and above attending the GOPC.

A systematic random sampling technique was used to recruit 316 participants. The sample size was calculated using the Leslie Kish formula, based on a previous prevalence of 24.8%, a 95% confidence level, and a 5% precision, with a 10% attrition allowance. The sampling interval was approximately 2, and the first participant was selected randomly from the first three eligible patients, followed by every second consenting patient.

Data were collected using an interviewer-administered questionnaire, which was pre-tested on a similar population for clarity and necessary adjustments were made. The questionnaire included sections on socio-demographic characteristics, the Bristol Stool Form Scale (BSFS), the Rome IV diagnostic criteria for functional constipation (FC), lifestyle factors (dietary intake of fruits and vegetables, water intake, physical activity, alcohol intake, and smoking), medical history, and physical examination (weight, height for BMI calculation, and digital rectal examination to exclude secondary causes). FC was defined based on the Rome IV criteria. Patients with clinical features of secondary constipation or who were too ill to participate were excluded. Weight and height were measured using standardized procedures, and BMI was calculated and categorized according to WHO guidelines.

Data were analyzed using IBM SPSS Statistics for window, version 22.0¹⁵. Descriptive statistics (frequencies, percentages, means, and standard deviations) were used to summarize the data. Chi-square tests and Fisher's exact tests were employed to assess the association between FC (dependent variable) and independent variables (socio-demographic, lifestyle, and clinical factors). Logistic regression was used to identify independent predictors of FC. The level of significance was set at $p < 0.05$ with a 95% confidence interval.

Ethical approval was obtained from the ethical committee of the Federal Medical Centre, Abeokuta. Informed consent was

obtained from all participants before data collection, ensuring confidentiality and the right to withdraw from the study at any time.

Results

Socio-Demographic Characteristics: As shown in Table 1, The 316 elderly participants had a mean age of 68.77 ± 6.76 years, with the largest group being 60-64 years old ($n=101, 32\%$) and the smallest being ≥ 85 years ($n=8, 2.5\%$). There were more females ($n=181, 57.3\%$) than males ($n=135, 42.7\%$), with a female-to-male ratio of 1.3:1. The majority were married ($n=168, 53.2\%$) and Christian ($n=208, 65.8\%$). The predominant ethnicity was Yoruba ($n=291, 92.1\%$). Regarding education, the largest proportion had primary education ($n=106, 33.5\%$), followed by tertiary education ($n=86, 27.2\%$). Retirees formed the largest occupational group ($n=127, 40.2\%$). The mean monthly income was $\text{₦}53,617.36 \pm 84,591.65$, with over half ($n=179, 56.6\%$) earning less than $\text{₦}35,000$.

Table 1: Socio-demographic Characteristics of Study Participants

Socio-demographic Variable	Categories	n (316)
Age	60 – 64	101 (32.0)
	65 – 69	88 (27.8)
	70 – 74	59 (18.8)
	75 – 79	39 (12.3)
	80 – 84	21 (6.6)
	≥ 85	8 (2.5)
$\bar{x} \pm SD$	68.77 ± 6.76	
Gender	Male	135 (42.7)
	Female	181 (57.3)
Marital Status	Single	2 (0.6)
	Married	168 (53.2)
	Separated	28 (8.9)
	Divorced	1 (0.3)
	Widowed	117 (37.0)
Religion	Christianity	208 (65.8)
	Islam	105 (33.3)
	Traditional	2 (0.6)
	Others	1 (0.3)
Ethnic Group	Yoruba	291 (92.1)
	Igbo	14 (4.4)
	Hausa	2 (0.6)
	Others	9 (2.9)
Highest Level of Education	None	59 (18.7)
	Primary	106 (33.5)
	Secondary	65 (20.6)
	Tertiary	86 (27.2)
Occupation	Civil Servant	22 (7.0)
	Trader	100 (31.6)
	Artisan	56 (17.7)
	Others	138 (43.7)

Average Monthly Income		
< ₦35000		179 (56.6)
₦35000 – ₦100000		83 (26.3)
₦100000 – ₦200000		35 (11.1)
≥ ₦200000		19 (6.0)
$\bar{x} \pm SD$	₦53617.36 \pm 84591.65	

Clinical Characteristics: As shown in Table 2, the average weight of the participants was 67.80±15.50 kg, and the average height was 1.61±0.09 m. The mean Body Mass Index (BMI) was 26.16±5.59 kg/m². The BMI distribution showed that the largest group had a normal weight (n=118,37.3%), followed by overweight (n=100,31.7%) and obese (n=80,25.3%) individuals. The smallest group was underweight (n=18,5.7%).

Table 2: Clinical Characteristics of Study Participants

Lifestyle Characteristics Variable	$\bar{x} \pm SD$	n (316)
Weight (kg)	67.80 \pm 15.50	
Height (m)	1.61 \pm 0.09	
BMI (kg/m ²)	26.16 \pm 5.59	
< 18.5		18 (5.7)
18.5 – 24.9		118 (37.3)
25.0 – 29.9		100 (31.6)
≥ 30.0		80 (25.3)

Lifestyle Characteristics: As shown in Table 3, approximately half of the participants reported never drinking alcohol (n=160,50.6%), while 13.6% (n=43) were current drinkers. The majority had never smoked (n=266,84.2%), with only 1.27% (n=4) currently smoking. A large proportion engaged in some form of exercise (n=223,70.6%), but only 28.2% (n=89) reported adequate exercise. Fast walking was the most common type of exercise (n=175,55.4%). A high percentage reported regular consumption of fruits (n=274,86.7%) and vegetables (n=306,96.8%), but only a very small number (n=1,0.3% for each) reported adequate consumption. Regarding water intake, 9.6% of males (n=13) and 32.0% of females (n=58) reported adequate intake.

Table 3: Lifestyle Characteristics of Study Participants

Lifestyle Characteristics Variable	Categories	n (316)
Alcohol Consumption	Never Drank	160 (50.6)
	Stopped \leq 6 Months Ago	113 (35.8)
	Currently Drinking	35 (11.1)
	Drinks Occasionally	8 (2.5)
Smoking Practice	Never Smoked	266 (84.2)
	Stopped \geq 6 Months Ago	46 (14.6)
	Currently Smoking	2 (0.6)
	Smokes Occasionally	2 (0.6)
Exercise	Yes	223 (70.5)
	No	93 (29.5)
If Yes, Type of Exercise	None	93 (29.4)
	Cycling	3 (0.9)
	Jogging	10 (3.2)
	Swimming	1 (0.3)
	Soccer	1 (0.3)
	Walking Fast	175 (55.4)
	Others	23 (10.4)

Adequacy of Exercise	Adequate	89 (28.2)
	Inadequate	227 (71.8)
Fruit Consumption	Yes	274 (86.7)
	No	42 (13.3)
Adequacy of Fruit Consumption	Adequate	1 (0.3)
	Inadequate	315 (99.7)
Vegetable Consumption	Yes	306 (96.8)
	No	10 (3.2)
Adequacy of Vegetable Consumption	Adequate	1 (0.3)
	Inadequate	315 (99.7)

Stool Types in Participants:

Based on the Bristol Stool Form Scale, the majority of participants (70.9%) reported having normal stool types. Hard stools were reported by 26.9% of the participants, while watery stools were the least common, reported by 2.2%.

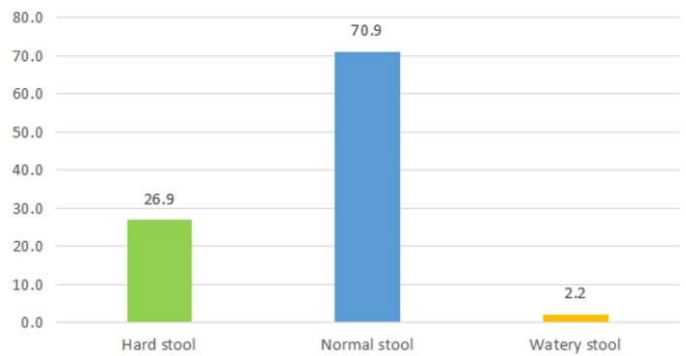


Figure 1: Stool types of participants

Types of Stool and Functional Constipation Status:(Figure 2)

Among participants with functional constipation (FC), 32.8% reported having hard stools, compared to only 8.8% of those without FC who reported hard stools. The majority of participants without FC (39.8%) reported normal stools, which was higher than the proportion of those with FC who reported normal stools (17.2%). A small percentage of participants without FC reported watery stools (1.4%).

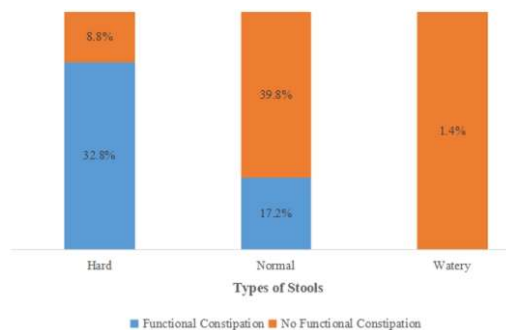


Fig 2: Types of Stools and Functional Constipation Status of the Participants

Prevalence of Functional Constipation:

The prevalence of functional constipation (FC) among the study participants was 19.3% (n=61). The majority of participants (80.7%, n=255) did not have FC.

Relationship between functional constipation (FC) and socio-demographic characteristics:

The relationship between functional constipation (FC) and

socio-demographic characteristics was examined in Table 4. The analysis revealed that age had no significant association with FC ($\chi^2=1.297$, $p=0.935$), with prevalence ranging from 15.4% among individuals aged 75–79 years to 25.0% among those aged 85 years and above. Gender differences were also not statistically significant ($\chi^2=1.289$, $p=0.256$), although males (22.2%) reported a slightly higher prevalence than females (17.1%).

Similarly, marital status showed no significant relationship with FC ($\chi^2=0.830$, $p=0.934$); married individuals had a prevalence of 19.6%, while no cases were recorded among single or divorced participants. Religion was not significantly associated with FC ($\chi^2=5.880$, $p=0.118$), though Muslims (21.0%) exhibited a marginally higher prevalence compared to Christians (17.8%).

Ethnicity, however, demonstrated a statistically significant association with FC ($\chi^2=7.872$, $p=0.049$). The Yoruba ethnic group, which was predominant in the study population, had a prevalence of 17.5%. Educational level was not significantly related to FC ($\chi^2=3.418$, $p=0.332$), although the highest prevalence (25.4%) was observed among participants with no formal education. Occupational status also showed no significant relationship ($\chi^2=3.111$, $p=0.375$), with artisans having the highest prevalence (28.3%). Likewise, income level was not significantly associated with FC ($\chi^2=1.551$, $p=0.670$), as those earning less than ₦35,000 per month had a prevalence of 21.2%.

In summary, ethnicity was the only socio-demographic factor found to have a statistically significant association with functional constipation in this study.

Table 4: The Relationship between Participants' Socio-demographic Characteristics and Functional Constipation

Socio-demographic Characteristics	Functional Constipation Test		χ^2	P-value
	Yes n (%)	No n (%)		
	61 (19.3%)	255 (80.7%)		
Age			1.297	0.935
60 – 64	21 (34.4)	80 (31.4)		
65 – 69	15 (24.6)	73 (28.6)		
70 – 74	12 (19.7)	47 (18.4)		
75 – 79	6 (9.8)	33 (12.9)		
80 – 84	5 (8.2)	16 (6.3)		
≥ 85	2 (3.3)	6 (2.4)		
$\bar{x} \pm SD$	68.16±7.82	68.68±6.49		
Gender			1.289	0.256
Male	30 (49.2)	105 (41.2)		
Female	31 (50.8)	150 (58.8)		
Marital Status			0.830	0.934
Single	0 (0.0)	2 (0.8)		
Married	33 (54.1)	135 (52.9)		
Separated	6 (9.8)	22 (8.6)		
Divorced	0 (0.0)	1 (0.4)		
Widowed	22 (36.1)	95 (37.3)		
Religion			5.880	0.118
Christianity	37 (60.7)	171 (67.1)		
Islam	22 (36.1)	83 (32.5)		
Traditional	1 (1.6)	1 (0.4)		
Others	1 (1.6)	0 (0.0)		
Ethnic Group			7.872	0.049***
Yoruba	51 (83.6)	240 (94.1)		
Igbo	5 (8.2)	9 (3.5)		
Hausa	1 (1.6)	1 (0.4)		
Others	4 (6.6)	5 (2.0)		

Highest Level of Education			3.418	0.332
None	15 (24.6)	44 (17.3)		
Primary	23 (37.7)	83 (32.5)		
Secondary	10 (16.4)	55 (21.6)		
Tertiary	13 (21.3)	73 (28.6)		
Occupation			3.111	0.375
Civil Servant	6 (9.8)	16 (6.3)		
Trader	21 (34.4)	79 (31.0)		
Artisan	13 (21.3)	43 (16.9)		
Others	21 (34.4)	117 (45.9)		
Average Monthly Income			1.551	0.670
$\bar{x} \pm SD$	₦43754.10±56125.06	₦55976.81±90006.67		
<₦35000	38 (62.3)	141 (55.3)		
₦35000 – ₦100000	15 (24.6)	68 (26.7)		
₦100000 – ₦200000	6 (9.8)	29 (11.4)		
≥₦200000	2 (3.3)	17 (6.7)		

***Significance

Relationship between Functional Constipation and Clinical Characteristics:

It is shown in Table 5 that the weight, height, and BMI distribution does not differ significantly with functional constipation [(p-value = 0.630, Chi-square = 0.233), (p-value = 0.247, Chi-square = 1.343) and (p-value = 0.542, Chi-square = 2.147) respectively].

Table 5: The Relationship between Functional Constipation and Clinical Characteristics.

Clinical Characteristics	Functional Constipation Test			
	Yes n=61 (19.3%)	No n= 255 (80.7%)	Test Statistic	p-value
Weight (Kg)	68.66±14.71	67.59±15.70	0.233 ^t	0.630
Height (cm)	162.39±11.11	160.84±8.95	1.343 ^t	0.247
BMI (Kg/m ²)	26.08±5.03	26.18±5.72	0.016 ^t	0.898
< 18.5	3 (16.7)	15 (83.3)	2.147 ^f	0.542
18.5–24.9	21 (17.8)	97 (82.2)		
25.0–29.9	24 (24.0)	76 (76.0)		
≥ 30.0	13 (16.3)	67 (83.8)		

t= Student's T-test, f= Fisher's exact

Relationship between Functional Constipation and Lifestyle Characteristics:

Table 6 explored the relationship between functional constipation (FC) and various lifestyle factors. The analysis revealed no significant association between FC and alcohol consumption ($\chi^2=2.627$, $p=0.453$), smoking ($\chi^2=3.317$, $p=0.345$), or exercise ($\chi^2=2.291$, $p=0.130$).

However, dietary habits showed significant associations with FC. Fruit consumption was notably related to constipation ($\chi^2=12.937$, $p=0.002$), as individuals who did not consume fruits had a much higher prevalence of FC (40.0%) compared to those who did (16.4%). Similarly, vegetable consumption demonstrated a significant association ($\chi^2=13.547$, $p=0.001$), with a markedly higher prevalence among participants who did not consume vegetables (66.7%) compared to those who did (18.0%).

Water intake, on the other hand, showed no significant association with FC for either males ($\chi^2=0.389$, $p=0.533$) or females ($\chi^2=2.766$, $p=0.096$).

In summary, inadequate consumption of fruits and vegetables was significantly associated with a higher prevalence of functional constipation, highlighting the importance of dietary fiber in bowel health.

Table 6: The Relationship between Functional Constipation and Lifestyle Characteristics

Lifestyle Characteristics	Functional Constipation Test		Test Statistic	P-value
	Yes n = 61 (19.3%)	No n = 255 (80.7%)		
Alcohol Consumption			2.627 ^c	0.453
Never Drank	30 (18.8)	130 (81.3)		
Previously Drank	25 (22.1)	88 (77.9)		
Current Drinkers	6 (13.9)	37 (86.1)		
Smoking Practice			3.317 ^f	0.345
Never Smoked	48 (18.0)	218 (82.0)		
Previously Smoked	12 (26.1)	34 (73.9)		
Current Smokers	1 (25.0)	3 (75.0)		
Exercise			2.291 ^c	0.130
Yes	38 (17.1)	185 (82.9)		
No	23 (24.7)	70 (75.3)		
Type of Exercise			7.256 ^f	0.298
None	23 (24.7)	70 (75.3)		
Cycling	0 (0.0)	3 (100)		
Jogging	3 (30.0)	7 (70.0)		
Swimming	0 (0.0)	1 (100.0)		
Soccer	0 (0.0)	1 (100.0)		
Walking Fast	26 (14.9)	149 (85.1)		
Others	9 (27.3)	24 (72.7)		
Adequacy of Exercise			0.477 ^c	0.490
Yes	15 (16.9)	74 (83.1)		
No	46 (20.3)	181 (79.7)		
Fruit Consumption			12.937 ^c	0.002***
Yes	45 (16.4)	229 (83.6)		
No	16 (40.0)	26 (60.0)		
Adequacy of Fruit Consumption			0.240 ^f	0.624
Adequate	0 (0.0)	1 (100.0)		
Inadequate	61 (19.4)	254 (80.6)		
Vegetable Consumption			13.547 ^f	0.001***
Yes	55 (18.0)	251 (82.0)		
No	6 (66.7)	4 (33.3)		
Adequacy of Vegetable Consumption			0.240 ^f	0.624
Adequate	0 (0.0)	1 (100.0)		
Inadequate	61 (19.4)	254 (80.6)		
Adequacy of Water Intake (Male)			0.389 ^f	0.533
Adequate	2 (15.4)	11 (84.6)		
Inadequate	28 (23.0)	94 (77.0)		
Adequacy of Water Intake (Female)			2.766 ^c	0.096
Adequate	6 (10.3)	52 (89.7)		
Inadequate	25 (20.3)	98 (79.7)		

***Significance, c = chi-square, f = Fisher's exact, t = Student's T-test

Logistic Regression Analysis for Independent Predictors of Functional Constipation:

The variables that were found to be statistically significant ($p<0.05$) in the earlier inferential statistical analysis using chi square were selected for logistic regressions analysis.

Table 7 presented the findings from the logistic regression analysis conducted to identify independent predictors of functional constipation (FC). The results showed that ethnicity and dietary habits were significant factors influencing the likelihood of developing FC.

With respect to ethnicity, being Yoruba was identified as an independent predictor of FC, with an odds ratio (OR) of 2.348 ($p=0.014$, CI = 1.086–3.897), indicating that individuals of Yoruba ethnicity were approximately 2.3 times more likely to develop FC compared to other ethnic groups. Similarly, being Hausa was also found to be an independent predictor (OR = 5.586, $p=0.043$, CI= 2.679–11.374), suggesting that members of the Hausa ethnic group were about 5.6 times more likely to experience FC than those from other ethnic backgrounds. In contrast, being Igbo was not identified as an independent predictor ($p=0.395$).

Dietary factors also emerged as significant predictors. Individuals who did not consume fruits were about 2.7 times more likely to develop FC than those who did (OR = 2.672, $p=0.043$, CI = 1.267–6.776). Likewise, not consuming vegetables independently increased the likelihood of FC (OR = 2.679, $p=0.012$, CI = 1.631–9.374), indicating that inadequate intake of vegetables substantially contributed to the risk of developing functional constipation.

In summary, the logistic regression analysis revealed that ethnicity (particularly Yoruba and Hausa) and low consumption of fruits and vegetables were significant independent predictors of functional constipation in the study population.

Table 7: Logistic Regression Analysis for Independent Predictors of Functional Constipation

VARIABLE	P-value	Odds Ratio	95% C.I. for OR	
			Lower	Upper
Ethnic Group				
Others		Ref		
Yoruba	0.014***	2.348		
Igbo	0.395	5.291	1.086	3.897
Hausa	0.043***	5.586	3.725	8.753
Fruit Consumption				
Yes		Ref	2.679	11.374
No	0.043***	2.672		
Vegetable Consumption				
Yes		Ref	1.267	6.776
No	0.012***	2.679		

***Significance

Discussion

This study determined the prevalence of functional constipation (FC) among elderly patients at a Nigerian outpatient clinic and identified associated socio-demographic, clinical, and lifestyle factors. The predominant age group (60–64 years) and mean age were consistent with other FC studies in the elderly^{17,18}. The slightly lower mean age than that reported in a Spanish study¹⁹ highlights the need for targeted interventions for this age group. The higher proportion of females aligns with some studies⁸, possibly reflecting differences in health-seeking behavior.

The majority of participants were married, similar to findings in Egypt⁷ and Bangladesh²⁰. The predominance of Christians

and Yoruba participants reflects the study's geographical setting²¹⁻²². The occupational profile (mostly retirees) and income levels were also consistent with findings from other studies on elderly populations⁷. The 19.3% prevalence of FC observed in this study is comparable to the global average²³. Variations from other Nigerian⁸⁻¹⁴ and international studies⁷⁻²⁴ may be due to differences in study populations, settings, and diagnostic criteria.

The absence of a significant association between FC and age contrasts with findings from some studies⁹⁻⁷ but agrees with others¹⁷. Similarly, the non-significant relationship between gender and FC aligns with some reports⁷⁻²⁵ but differs from others⁹. Marital status, occupation, and education level also showed no significant association with FC, consistent with previous research¹⁸⁻²⁵. The significant association observed with ethnicity, particularly the higher prevalence among the Yoruba group, suggests possible cultural or dietary influences⁷⁻²⁶. This finding supports the known impact of differing dietary patterns on gastrointestinal health.

The lack of association between body mass index (BMI) and FC is in agreement with earlier findings²⁷. However, the significant relationship between low fruit and vegetable consumption and FC supports previous evidence linking dietary fiber intake to bowel regularity⁷⁻⁹⁻²⁸. The non-significant association between water intake and FC contrasts with certain studies^{29,30} but is consistent with others³¹, possibly due to the limitations of self-reported data³².

The logistic regression analysis further identified Yoruba and Hausa ethnicities, along with inadequate fruit⁷ and vegetable⁷ consumption, as independent predictors of FC. The lack of association for the Igbo group may warrant further investigation into regional dietary patterns. The strong predictive value of low fruit and vegetable intake reinforces the well-established link between dietary fiber deficiency and constipation³³⁻³⁴.

In conclusion, FC is prevalent among elderly Nigerians, with ethnicity and inadequate fruit and vegetable consumption emerging as significant independent predictors. These findings underscore the need for culturally sensitive, diet-based interventions to reduce the burden of functional constipation in this population.

Study limitations:

The cross-sectional design limits causality. Reliance on self-reported data introduces potential recall bias. Being a single-center study may limit the generalizability of the findings.

Conclusion and Recommendations:

Functional constipation prevalence was 19.3% among elderly attendees. Ethnicity (Yoruba and Hausa) and inadequate fruit and vegetable intake were independent predictors. We

recommend routine screening for FC in the elderly and education on dietary predictors. Given the high rates of overweight/obesity and inadequate exercise, lifestyle counseling for healthy weight and regular, adequate exercise is also advised.

Authors Contributions

All authors participated in the conduct of the study and wrote up the article with permissible and recommended variability.

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