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Pattern and Epidemiological factors associated with Uninvestigated Dyspepsia among Adults of a Sub-urban Community of Ekiti State, Nigeria

Authors
Olusoji Abidemi SOLOMON[1], Felix Olukayode AINA[1], Tosin Anthony AGBESANWA[1], John Ayodeji OWOYEMI[1], Akande Oladimeji AJAYI.[2]
[1]Department of Family Medicine, College of Medicine, Ekiti State University, Ado Ekiti, Ekiti State
[2]Department of Medicine, College of Medicine, Ekiti State University, Ado Ekiti, Ekiti State
Corresponding Author
Olusoji Abidemi SOLOMON

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Abstract

Introduction: *Uninvestigated dyspepsia is dyspepsia that has not been investigated and those present in the community are different from those in the hospital setting which are seen mostly after different self-attempts at treatment. Considering the pattern and burden of uninvestigated dyspepsia in the rural and suburban settings with associated epidemiological factors, may stimulate the need for prevention promotion and efforts at adaptability of the available management guidelines in resource poor settings.*

Materials and Methods: *A population based cross sectional study conducted within a suburban town of Ekiti State, Nigeria. A total of 510 questionnaires were self-administered by randomly selected respondents. The prevalence of uninvestigated dyspepsia, most troublesome symptoms and severity of dyspepsia based on SF-LDQ were determined. Association between dyspeptic and non-dyspeptic groups with epidemiological factors was determined with Chi Square and logistic regression.*

Results: *The overall prevalence of uninvestigated dyspepsia in this study was found to be 68.0% (347/510). The most troublesome dyspeptic symptoms were indigestion at 22.5%, heartburn at 18.0%, nausea at 17.5%, and regurgitation at 10.0%. Multivariate analysis of significant epidemiological factors showed that younger age group, regular use of NSAIDs, regular use of much pepper and inadequate exercise were predictive of uninvestigated dyspepsia.*

Conclusion: *This study shows a high prevalence of uninvestigated dyspepsia, with indigestion identified as the most troublesome symptom while regurgitation is the most frequent and heartburn has the greatest impact on lifestyle. Use of NSAIDs, excessive consumption of pepper, older age, and inadequate exercise were associated with increased risk of developing uninvestigated dyspepsia.*

Introduction

Uninvestigated dyspepsia is a group of dyspepsia where the cause has not been investigated. They are predominantly present in the community and are seen in hospital settings either freshly or with acute exacerbation,[1] especially at the first point of care like the emergency department or primary care clinic. The overall global prevalence of uninvestigated dyspepsia is about 21% and the values range from 1.8% - 57.0% depending on the definition used and geographical location.[2]

Prevalence of dyspepsia in rural settings has been found to range between 6% and 57.9% depending on the definition adopted and population studied, with 57.9% from Eastern Uganda,[3] 26% amongst adults and 6% amongst teenagers in Northeastern Nigeria.[4]

Different population-based studies have attempted to identify common epidemiological factors for dyspepsia[5] which in this study is a combination of sociodemographic and risk factors. This knowledge might be useful in its prevention and management. Some of the risk factors of dyspepsia that have been documented include but not limited to the use of coffee, alcohol, smoking, stress, spicy foods, use of unclean water sources, age and gender.[6]

This study sought to determine the burden and pattern of uninvestigated dyspepsia in a rural and suburban setting with its associated epidemiological factors, to promote prevention activities more so, that available management guidelines which are based on findings from resource-rich communities may not be readily attainable within rural and suburban communities.[3]

Materials and Methods

Study Design and Participants

This was a descriptive and cross-sectional study that was carried out within Iworoko Ekiti. The study was approved by the ethics and research committee of Ekiti State University Teaching Hospital with approval number EKSUTH/A67/2024/11/036. Iworoko Ekiti is mostly populated by students of the state-owned university, Ekiti State University (EKSU) which is a non-residential institution that is about 1km to the town and 15km to the state capital.[13]

Consenting individuals 16 years and above who were not acutely or chronically ill were recruited into the study while those pregnant and those with yellowness of eyes signifying hepatic and/or pancreatic diseases were excluded.

Data Collection

Sample size was calculated using the formula; $n= (Z\alpha)^2 p\ q/d^2$, where p=50% (being the median of possible proportions that can be used for estimated proportion[14] to determine rural population prevalence of uninvestigated dyspepsia where no previous prevalence exists. A minimum sample size of 385 was arrived at, and given a 10% non-responder rate, the total sample size was estimated to be 424. The questionnaires were distributed to those that met inclusion criteria using simple random technique.

The instrument used for this study was a questionnaire that was self-administered by respondents and comprised of 3 sections:

Section 1: Sociodemographic data.

Section 2: Short Form-Leeds Dyspepsia Questionnaire (SF-LDQ) is an abridged and revised version of Leeds Dyspepsia Questionnaire (LDQ). It is an internationally validated instrument that contained four questions from the LDQ and one question about the most troublesome symptom for the patient.[15] (Appendix A)

Each of the four questions in SF-LDQ has two stems to assess for the presence and severity of dyspepsia by measuring the frequency and severity of upper abdominal pain/discomfort (indigestion), heartburn, regurgitation and nausea during the last 2 months. The severity of symptoms was measured by how they interfere with daily activities over last 2 months with scores of '0' which is 'no interference', 'less than once a

month interference', 'between once a month and once a week interference' , 'between once a week and once a day' and 'once a day or more' being '1', '2', '3'and '4' respectively.

Possible scores range from 0 to 32 with higher values corresponding to increasing severity of dyspepsia. The developers of the SF-LDQ have defined a score of 0 as 'no dyspepsia' a score of 1 - 4 as 'very mild dyspepsia', a score of 5 - 8 as 'mild dyspepsia', a score of 9 - 15 as 'moderate dyspepsia' and a score >15 as indicative of 'severe/significant dyspepsia'.[15,16,17]

Additionally, this study assessed the pattern of uninvestigated dyspepsia by dichotomising the total SF-LDQ score into non-dyspeptic (i.e., those with an SF-LDQ score of <5) and dyspeptic group (those with a score equal or greater than 5).[16]

Section 3: This contained questions relating to history of risk factors.

Epidemiological Factors were those socio-demographic factors and risk factors considered in this study

Outcome Measures

Main outcome measures in this study were the prevalence of uninvestigated dyspepsia, most troublesome symptoms base on SFLDQ; severity of dyspepsia by SF-LDQ.

Statistical Analysis

Data was analysed using IBM SPSS version 26. The epidemiological characteristics of the respondents was analysed using descriptive statistics, categorical variables were reported as frequency distribution and proportions with 95% confidence intervals and compared using the Chi-square test.

Bivariate analysis of dyspeptic and non-dyspeptic groups association with epidemiological factors of dyspepsia was determined with Chi Square and subsequently multivariate analysis.

Logistic regression was used to determine the predictors of uninvestigated dyspepsia.

Incompletely filled questionnaires were those questionnaires where the respondent did not attempt the SF LDQ section.

Results

Total of 537 respondents were enrolled into this study, 27 of the questionnaires were invalidated on account of incompleteness. This was defined as any questionnaire where the respondent did not attempt the SF LDQ section. Most of the participants in the study were ≤ 30 years of age, 427 (83.8%) while 19 (3.7%) were above 50 years. There were more females than males in the studied population with M: F ratio being 1:1.3. Majority of the respondents were students 367(72%) followed by traders, civil servants, unemployed, and artisans with 9.2%,7.1%,6.5%and 3.1% respectively. Two hundred and thirty-nine (46.9%) participants reported earning less than ₦30,000 monthly. *Table 1* depicts the detailed sociodemographic characteristics of respondents.

Table 1: Socio- demographic characteristics of Study Respondents

Variable	*Frequency*	*Percentage*
Age		
< 20 years	149	29.2
21-30 years	278	54.6
31-40 years	43	8.4
41 -50 years	21	4.1
> 50 years	19	3.7
Gender		
Male	226	44.3
Female	284	55.7
Occupation		
Civil Servant	36	7.1
Artisan	16	3.1
Trader	47	9.2
Farmer	11	2.2
Student	367	72.0
Unemployed	33	6.5
Water Supply		
Public Well	193	37.8
Private well	150	29.4
Borehole	113	22.2
Public Tap	37	7.3
Water Tanker	15	2.9
Stream	2	0.4
Toilet Facility		
Water Closet	388	76.1
Pit Latrine	104	20.4
Open Defecation	18	3.5
Average Monthly Income		
<₦30,000	239	46.9
₦30,000 - ₦65,000	159	31.2
₦65,000 -₦149,999	59	11.6
₦150,000 –₦300,000	31	6.1
>₦300,000	22	4.3

Pattern of Dyspepsia

Prevalence of Dyspepsia

The overall prevalence of dyspepsia in this study was found to be 68.0% (347/510) while the prevalence of significant/severe dyspepsia based on SF-LDQ score >15 was 11.6% in the suburban community of Iworoko Ekiti. The most troublesome dyspeptic symptoms were indigestion 115 (22.5%), heartburn 92(18.0%), nausea 89(17.5%), and regurgitation 51 (10.0%). (Fig. 1). When scoring based on SF-LDQ was dichotomised not considering those with very mild dyspepsia, the prevalence of dyspepsia with score ≥5 was 51.7% (Fig. 2).

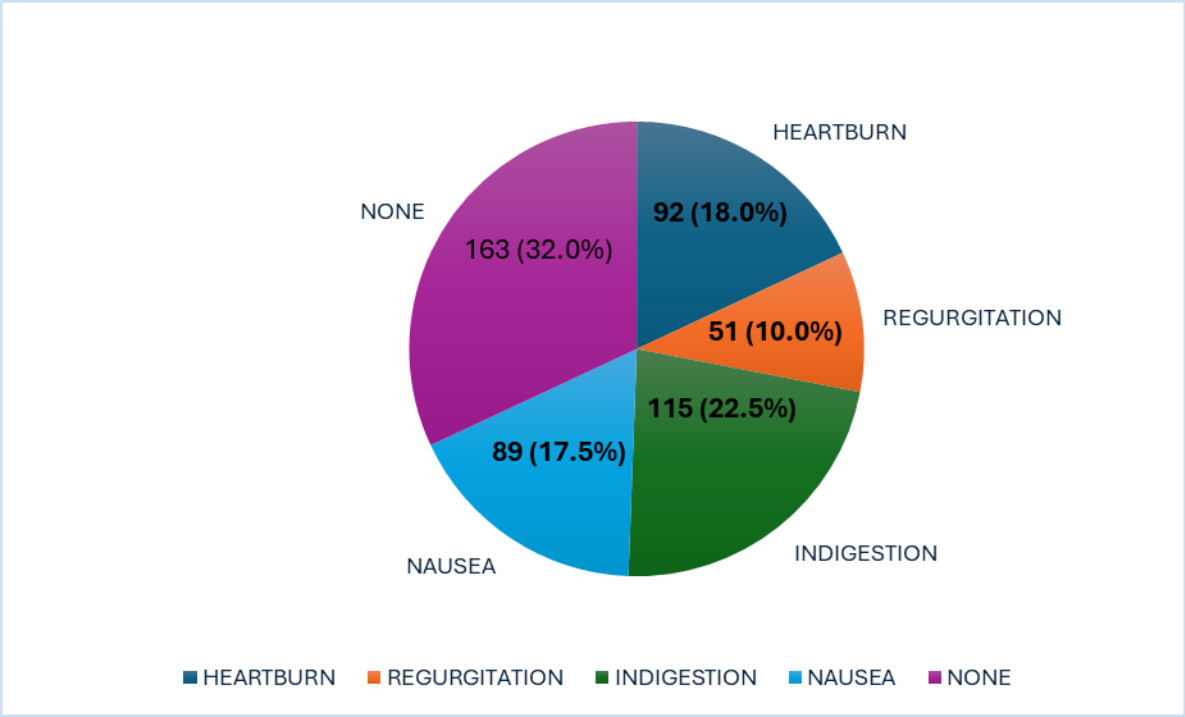

Figure 1: Most troublesome Dyspepsia symptoms by LDQ

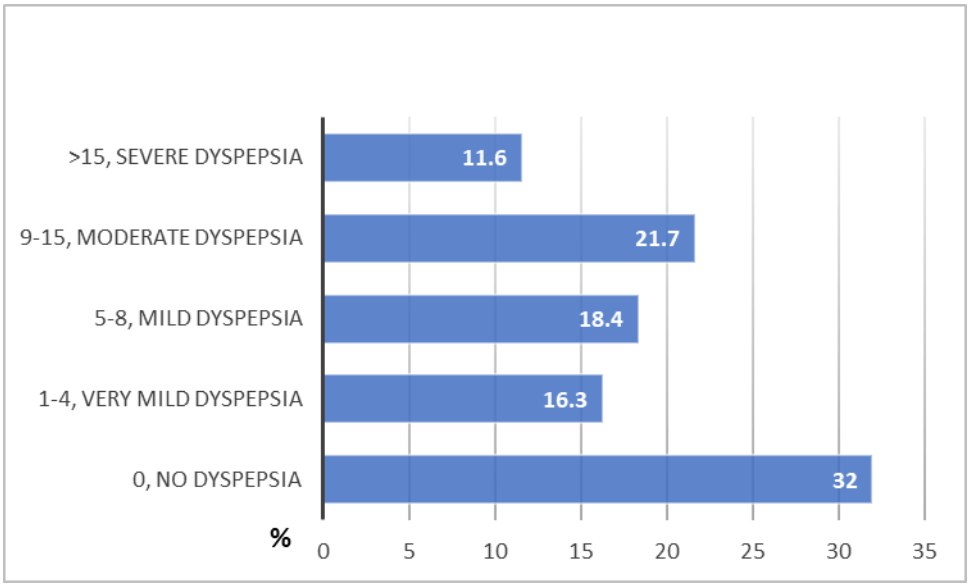

Figure 2: Dyspepsia classification by LDQ Scoring

Table 2: SF-LDQ Scoring in Dyspeptics and Non- Dyspeptics

Total	Symptom frequency (n, %)					Interference with lifestyle (n, %)				
	Non-Dyspeptic		Dyspeptic		P value	Non-Dyspeptic		Dyspeptic		P value
	250	100%	260	100%		250	100%	260	100%	
Indigestion										
Never	226	90.4%	83	31.9%		209	83.6%	66	25.4%	
< Monthly	23	9.2%	71	27.3%		33	13.2%	67	25.8%	
Monthly - Weekly	0	0.0%	59	22.7%	**0.00***	8	3.2%	69	26.5%	**0.00***
Weekly – Daily	1	0.4%	27	10.4%		0	0.0%	34	13.1%	
More than 1ce daily	0	0.0%	20	7.7%		0	0.0%	24	9.2%	
Heartburn										
Never	237	94.8%	88	33.8%		226	90.4%	54	20.8%	
< Monthly	11	4.4%	69	26.5%		16	6.4%	79	30.4%	
Monthly - Weekly	2	0.8%	48	18.5%	**0.00***	5	2.0%	75	%28.8 %	**0.00***
Weekly – Daily	0	0.0%	32	12.3%		2	0.8%	25	9.6%	
More than 1ce daily	0	0.0%	23	8.9%		1	0.4%	27	10.4%	
Regurgitation										
Never	239	95.6%	100	38.5%		224	89.6%	75	28.8%	
< Monthly	9	3.6%	58	22.3%		19	7.6%	71	27.3%	
Monthly - Weekly	2	0.8%	47	18.1%	**0.00***	5	2.0%	55	21.2%	**0.00***
Weekly – Daily	0	0.0%	27	10.3%		0	0.0%	34	13.1%	
More than 1ce daily	0	0.0%	28	10.8%		2	0.8%	25	9.6%	
Nausea										
Never	217	86.8%	92	35.4%		206	82.4%	56	21.5%	
< Monthly	28	11.2%	47	18.1%		33	13.2%	59	22.7%	
Monthly - Weekly	5	2.0%	61	23.5%	**0.00***	11	4.4%	85	32.7%	**0.00***
Weekly – Daily	0	0.0%	37	14.2%		0	0.0%	35	13.5%	
More than 1ce daily	0	0.0%	23	8.8%		0	0.0%	25	9.6%	

**Significant P value*

In this study, the most severe dyspepsia symptom based on frequency was regurgitation 10.8%, followed by heartburn 8.9%, nausea 8.8%, and indigestion 7.7%; the most severe dyspepsia symptom based on interference with lifestyle is heartburn, 10.4% followed by regurgitation 9.6%, nausea 9.6% and indigestion 9.2% (Table 2).

Table 3: Risk Factors among Respondents

Variable	*Frequency*	*Percentage*
Smoking (Total = 493)		
Yes	38	7.7
No	455	92.3
Alcohol (Total 490)		
Yes	44	9.0
No	446	91.0
Regular Use of NSAIDs (Total = 478)		
Yes	94	19.7
No	384	80.3
No of Meals (Total = 425)		
1 Meal	57	13.4
2 Meals	202	47.5
3 Meals	151	35.5
>3 Meals	15	3.5
Regular Use of Kolanuts (Total = 331)		
Yes	51	15.4
No	280	84.6
Regular Use of Coffee (Total = 339)		
Yes	82	24.2
No	257	75.8
Regular Use of Tea (Total =335)		
Yes	85	25.4
No	250	74.6
Inadequate Physical Activity (Total = 433)		
Yes	221	51.0
No	212	49.0
Regular Much Use of Pepper (Total = 432)		
Yes	196	45.4
No	236	54.6

Epidemiological Factors

Univariate analysis of risk factors among respondents considered were adequate physical activity 212(49.0%), regular use of much pepper 196 (45.4%), use of NSAIDs 94 (19.7%) and regular use of tea 85 (25.4%) (Table 3)

Bivariate analysis of some epidemiological factors revealed that increase in age of the respondents is directly proportional to higher prevalence of uninvestigated dyspepsia. (p = 0.00).

Table 4: Association of Sociodemographic factors with Uninvestigated Dyspepsia

Variables	Non-Dyspeptics		Dyspeptics		P value
	Frequency	Percentage	Frequency	Percentage	
Age	(Total respondent = 510)				
< 20 Years	88	58.7%	62	41.3%	
21 – 30 Years	137	48.8%	144	51.2%	
31 – 40 Years	18	45.0%	22	55.0%	0.00*
41 – 50 Years	5	22.7%	17	77.3%	
>50 Years	2	11.8%	15	88.2%	
Sex	(Total respondent = 510)				
Male	116	51.3%	110	48.7%	0.35
Female	134	47.2%	150	52.8%	
Water Source	(Total respondent = 510)				
Borehole	36	31.9%	77	68.1%	0.00*
Private Well	90	60.0%	60	40.0%	
Public Tap	18	48.6%	19	51.4%	
Public Well	99	50.8%	96	49.2%	
Water Tanker	7	46.7%	8	53.3%	
Toilet Facility	(Total respondent = 510)				
Water Closet	186	47.9%	202	52.1%	
Pit Latrine	56	53.8%	48	46.2%	0.52
Open Defecation	8	44.4%	10	55.6%	
Occupation	(Total respondent = 510)				
Civil Servant	10	27.8%	26	72.2%	
Artisan	11	68.8%	5	31.3%	
Trader	17	36.2%	30	63.8%	
Farmer	5	45.5%	6	54.5%	0.003*
Student	196	53.4%	171	46.6%	
Unemployed	11	33.3%	22	66.7%	
Educational Level	(Total respondent = 510)				
None - Primary	9	47.4%	10	52.6%	
Secondary	1	8.3%	11	91.7%	
Undergraduate	187	55.3%	151	44.7%	0.00*
Graduate	49	39.5%	75	60.5%	
Postgraduate	4	23.5%	13	76.5%	
Monthly Income	(Total respondent = 510)				
< ₦30,000	128	53.6%	111	46.4%	
₦ 30,000 – ₦64,999	74	46.5%	85	53.5%	
₦ 65, 000 - ₦ 149, 999	21	35.6%	38	64.4%	0.10
₦ 150, 000 - ₦ 300, 000	14	45.2%	17	54.8%	
>₦ 300, 000	13	59.1%	9	40.9%	

*Significance

Use of borehole water source was observed to be associated with higher prevalence of uninvestigated dyspepsia (68.1%, p = 0.00), higher prevalence of dyspepsia was observed amongst those who are civil servants by occupation (72.2%, p = 0.003). Respondents with higher level educational level (postgraduate) were observed to have higher prevalence of uninvestigated dyspepsia (76.5%, p = 0.00) significantly contributed to the development of dyspepsia, (Table 4).

Regular use of NSAIDS (p = 0.00), regular use of much pepper (p = 0.00), inadequate physical activity (p = 0.00) (Table 5) respectively were all significant contributors to development of dyspeptic symptoms.

These were further subjected to multivariate analysis, and it showed that the odd of developing dyspepsia is less with decrease in age, this is evidence OR of 0.103 among respondents with age less than 20 years and this is statistically significant. As shown in table 6, respondents using NSAIDs regularly, using much pepper and not having adequate physical activity were more at risk of developing dyspepsia with OR of 2.5, 1.8 and 2.4 respectively. These are all statistically significant with p value < 0.05. (Table 6)

Table 5: Association of Risk factors with Uninvestigated Dyspepsia

Variables	Non-Dyspeptics		Dyspeptics		P value
	Frequency	Percentage	Frequency	Percentage	
Regular Smoking	(Total respondent =493)				
Yes	18	47.4	20	52.6%	0.96
No	217	47.7%	238	52.3%	
Regular Use of Alcohol	(Total respondent =490)				
Yes	21	47.7%	23	52.3%	0.96
No	211	47.3%	235	52.7%	
Regular Use of NSAIDs					
Yes	28	29.8%	66	70.2%	0.00*
No	199	51.8%	185	48.2%	
No. of Meals	(Total respondent = 425)				
1 Meal	25	43.9%	32	56.1%	
2 Meals	91	45.0%	111	55.0%	
3 Meals	74	49.0%	77	51.0%	0.82
>3 Meals	6	40.0%	9.0	60.0%	
Regular Use of Kolanuts	(Total respondent = 331)				
Yes	19	37.3%	32	62.7%	0.14
No	136	48.6%	176	53.2%	
Regular Use of Coffee	(Total respondent = 339)				
Yes	33	40.2%	49	59.8%	0.23
No	123	47.9%	134	52.1%	
Regular Use of Tea					
Yes	37	43.5%	48	56.5%	0.48
No	120	48.0%	130	52.0%	
Regular Use of Much Pepper	(Total respondent = 432)				
Yes	72	36.7%	124	63.3%	0.00*
No	130	55.1%	106	44.9%	
Inadequate Physical Activity	(Total respondent = 433)				
Yes	124	56.1%	97	43.9%	0.00*
No	77	36.3%	135	63.7%	

**Significant P value*

Table 6: Logistic Regression of association of Epidemiological Factors and Uninvestigated Dyspepsia

Variables	AOR	CI (95% CI)	P value
Age			
≤ 20 Years	0.103	0.015 – 0.699	0.020*
21 – 30 Years	0.191	0.029 – 1.268	0.087
31 – 40 Years	0.205	0.031 – 1.345	0.99
41 – 50 Years	0.496	0.066 – 3.739	0.496
>50 Years	1		
Occupation			
Civil Servant	0.620	0.153 – 2.508	0.503
Artisan	0.344	0.070 – 1.687	0.188
Trader	0.642	0.188 – 2.193	0.480
Farmer	0.229	0.033 – 1.597	0.137
Student	0.734	0.235 – 2.290	0.594
Unemployed	1		
Educational Level			
None - Primary	2.412	0.321 – 18.136	0.392
Secondary	1.140	0.253 – 5.127	0.865
Undergraduate	0.765	0.148 – 3.959	0.750
Graduate	1.422	0.192 – 10.559	0.731
Postgraduate	1		
Water Source			
Borehole	1.570	0.379 – 6.495	0.534
Private Well	0.552	0.139 – 2.198	0.399
Public Tap	0.869	0.185 – 4.089	0.869
Public Well	0.872	0.219 – 3.462	0.872
Water Tanker	1		
Regular Use of NSAIDs			
Yes	2.512	1.397 – 4.514	0.002*
No	1		
Regular Use of Much Pepper			
Yes	1.791	1.140 – 2.815	0.011*
No	1		
Inadequate Physical Activity			
Yes	2.357	1.503 – 3.698	0.000*
No	1		

**Significant P value*

Discussion

The 11.6% prevalence of significant uninvestigated dyspepsia in this study, is lower than prevalence observed in previous Nigerian population-based studies with 26%, six-month prevalence among dwellers of rural north eastern community[4] and 45%, six-month prevalence among dwellers of 5 highland Local Government Areas.[7] The observed difference between our study and these studies could be as a result of these studies being more than 3 decades old with probable epidemiological shift coupled with the 6 months prevalence considered while our study was over 2 month duration. This prevalence is

comparable to that of 14.2% observed by Bangamwabo et al in a Rwandan based study where SF LDQ was used like in this study.[8] Comparable prevalence of uninvestigated dyspepsia were observed, in population-based studies from Asia with prevalence ranging from 9.5% to 14.6%.[9-11] This is in contrast to studies that used broader definitions for dyspepsia like abdominal fullness, upper abdominal pain and upper GI symptoms with higher prevalence of 30.4% recorded in India.[12] These studies were however, observed to be old compared to others and the differences might be due to possible change in the epidemiological pattern over the years.

In this study, the most troublesome dyspepsia symptoms were indigestion (22.5%), heartburn (18%), nausea (17.5%) and regurgitation (10.0%) this is like the finding by Bitwayiki et al among Rwandan health care workers using the same SF-LDQ, how be it the least troublesome symptom in their study was nausea (9%).[14]

The most severe dyspepsia symptom base on frequency was regurgitation by SF-LDQ, (10.8%), followed by heartburn (8.9%), while the most severe dyspepsia symptom based on interference with lifestyle was heartburn (10.4%) followed by regurgitation (9.6%). This contrasts with the finding by Bangamwabo et al[8] where most frequent symptom was indigestion and heartburn (42.4%) each, followed by nausea (33.6%) then regurgitation (27.2%).

Significant sociodemographic and risk factors during bivariate and multivariate analysis showed that those within the younger age group ≤ 20 years were less likely to have dyspepsia compared with those within the age group >50 years ($p = 0.02$) in our study group. This observation was similar to the observation among Indians in Mumbai where increased prevalence of uninvestigated dyspepsia was found amongst those aged greater than 40 years in Mumbai India.[15] This contrasted with findings among British respondents where increased age was observed to be associated with reduction in prevalence of uninvestigated dyspepsia.[16]

The global association between use of NSAID and uninvestigated dyspepsia had been established in a pooled meta-analysis.[17] Regular use of NSAIDs was observed to contribute to the risk of uninvestigated dyspepsia with bivariate and multivariate analysis in this study, this is similar to finding in previous studies among patients within clinical setting of Northern Nigeria,[5] and population-based study in Rwanda.[9]

Regular use of much pepper was predictive of uninvestigated dyspepsia like findings in studies within clinical settings of Northern Nigeria[5] and Mandiya district of India.[18]

This study showed that inadequate exercise was predictive of uninvestigated dyspepsia, this finding seems tallied with the general belief that adequate physical exercise promotes gastrointestinal well-being.[19] This was similar to the finding among patients in Indonesia where lack of exercise was observed to contribute to development of uninvestigated dyspepsia.[20]

Conclusion

This study shows there is a high prevalence of dyspepsia within rural and sub urban community of Nigeria with the most troublesome symptom being indigestion. Most frequent symptom of uninvestigated dyspepsia base on frequency is regurgitation and heartburn base on interference with lifestyle. NSAID, much pepper usage, older age group and inadequate exercise were found to predispose to development of uninvestigated dyspepsia.

Strength and limitations

This study as we are aware is the first population-based study in the Southwest of Nigeria to characterize the burden of the disease, the most troublesome dyspeptic symptom and the severity of symptoms based on frequency and interference with lifestyle and predisposing sociodemographic and risk factors. The study's focus on population

within a suburban community further strengthened the study as this group may not have access to all facilities required to manage their dyspepsia based on guidelines majorly driven by resource endowed communities, hence intensifying effort toward prevention will be important.

The use of a validated SF-LDQ questionnaire further added more strength to the study as it is based on standardized stricter definitions with pictorial illustration and uniform scoring system. This totally removed bias either from researchers or the subjects.

Limitation of this study is the lack of 100% completion of the questionnaire as some respondents did not attempt the SF-LDQ component and hence their questionnaires were invalidated. This could be prevented in future studies if research assistants supervised the respondents while they filled in the questionnaire. However, this limitation has no significance in this study since the sample taken was far more than minimum sample size.

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Appendix A: Short Form Leeds Dyspepsia Questionnaire (SF-LDQ)

Please answer both parts of each question

Patient ID: Date:	**A** **How often have you *had* this symptom over the last 2 months?** Tick only one box per question.	**B** **How often *has this symptom interfered with your normal activities (eating, sleeping, work, leisure)* over the last 2 months?** Tick only one box per question
1. Indigestion Indigestion is a pain or discomfort in the upper abdomen. 	☐ Not at all ☐ Less than once a month ☐ Between once a month and once a week ☐ Between once a week and once a day ☐ Once a day or more	☐ Not at all ☐ Less than once a month ☐ Between once a month and once a week ☐ Between once a week and once a day ☐ Once a day or more
2. Heartburn Heartburn is a burning feeling behind the breastbone. 	☐ Not at all ☐ Less than once a month ☐ Between once a month and once a week ☐ Between once a week and once a day ☐ Once a day or more	☐ Not at all ☐ Less than once a month ☐ Between once a month and once a week ☐ Between once a week and once a day ☐ Once a day or more
3. Regurgitation Regurgitation is an acid taste coming up into your mouth from your stomach.	☐ Not at all ☐ Less than once a month ☐ Between once a month and once a week ☐ Between once a week and once a day ☐ Once a day or more	☐ Not at all ☐ Less than once a month ☐ Between once a month and once a week ☐ Between once a week and once a day ☐ Once a day or more
4. Nausea Nausea is a feeling of sickness without actually being sick.	☐ Not at all ☐ Less than once a month ☐ Between once a month and once a week ☐ Between once a week and once a day ☐ Once a day or more	☐ Not at all ☐ Less than once a month ☐ Between once a month and once a week ☐ Between once a week and once a day ☐ Once a day or more
5. Which, if any, of these symptoms has been the most troublesome to you in the last 2 months? **Please tick one box only**	☐ Heartburn ☐ Regurgitation ☐ Indigestion ☐ Nausea ☐ None of these have troubled me	

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