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RELATIONSHIP BETWEEN HOT PEPPER CONSUMPTION AND ULCER SYMPTOMS IN PATIENTS WITH PEPTIC ULCER DISEASES AT FEDERAL MEDICAL CENTRE, KEFFI, NASARAWA STATE OF NIGERIA

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Abstract

Peptic Ulcer Disease (PUD) is a prevalent gastrointestinal disorder in Nigeria, with dietary factors potentially influencing symptoms. This study examined the relationship between hot pepper consumption and ulcer symptoms in PUD patients. A narrative cross-sectional study design was conducted among 180 PUD patients attending Federal Medical Centre, Keffi, Nigeria. Data on socio-demographics, clinical features, and hot pepper consumption were collected using a well-structured questionnaire. Chi-square tests and logistic regression assessed the relationship between hot consumption and PUD symptoms. Majority (80.6%) of PUD patients consumed hot peppers regularly. Significant associations were found between hot pepper consumption and epigastric pain ($\chi^2 = 4.21, p = 0.04$), bloating ($\chi^2 = 5.15, p = 0.02$), and nausea ($\chi^2 = 3.85, p = 0.05$). Patients consuming hot peppers regularly were more likely to experience these symptoms. Hot pepper consumption is significantly associated with exacerbation of PUD symptoms. Dietary counseling on moderating hot pepper intake is recommended for PUD patients in this population.

Keywords: *Peptic Ulcer Disease (PUD), Hot pepper consumption, Capsaicin, Ulcer symptoms, Dietary factors, Nigeria*

INTRODUCTION

Peptic ulcer disease (PUD) is a global health concern, affecting millions of people worldwide (Lanas & Chan, 2017). In Nigeria, PUD is a prevalent gastrointestinal disorder, with a significant impact on the quality of life of affected individuals (Adekanle *et al.*, 2015). The etiology of PUD is multifactorial, involving genetic, environmental, and lifestyle factors, including dietary habits (Kavitt *et al.*, 2019).

Hot pepper consumption is a common practice in Nigeria, with Capsicum species being an integral part of the local cuisine (Satyanarayana, 2006). Capsaicin, the active compound in hot peppers, has been shown to have both beneficial and adverse effects on the gastrointestinal tract (Luo *et al.*, 2011). While capsaicin has been reported to have anti-inflammatory and antioxidant properties, it can also irritate the stomach lining, increase acid production, and exacerbate PUD symptoms (Holtmann *et al.*, 2018).

Studies on the relationship between hot pepper consumption and PUD symptoms have yielded conflicting results. Some studies have reported a positive association between spicy food consumption and PUD symptoms (Kumar *et al.*, 2018), while others have found no significant relationship (Bang & Baik, 2016). In Nigeria, Adekanle *et al.* (2015) reported a high prevalence of hot pepper consumption among PUD patients, but the study did not investigate the relationship between hot pepper consumption and PUD symptoms.

The Federal Medical Centre, Keffi, Nasarawa State, Nigeria, is a major healthcare facility that provides medical services to a large population, including patients with PUD. Understanding the relationship between hot pepper consumption and PUD symptoms in this population can inform dietary counseling and management strategies for PUD patients.

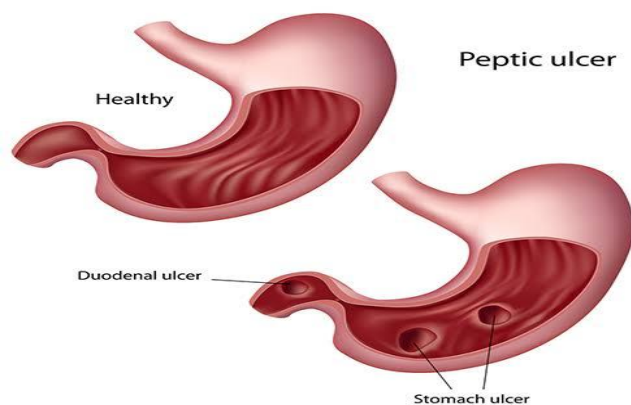


Figure 1: Kinds of Peptic Ulcer



Figure 2: Hot Pepper

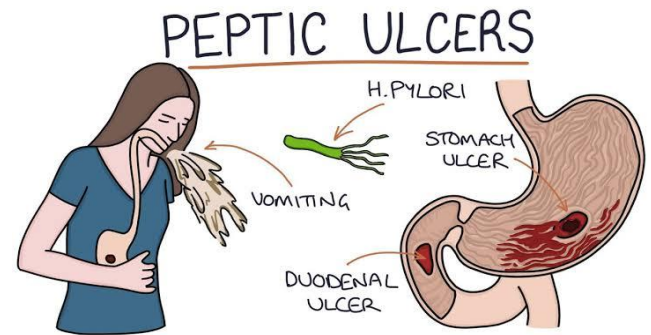


Figure 3: PUD Symptoms in a Patient

MATERIALS AND METHODS

Study Design

The study adopted a narrative cross-sectional design to assess the relationship between hot peppers consumption and ulcer symptoms in patients with Peptic Ulcer Diseases (PUD) at Federal Medical Centre, Keffi, Nasarawa State, Nigeria.

Study Area

The study was conducted at Federal Medical Centre, Keffi, located in Nasarawa State, North-Central Nigeria. Keffi is bounded by Karu LGA to the north, Akwanga LGA to the south, Lafia LGA to the east, and Abuja, FCT, to the west. Keffi's latitude is 8°50'N, and longitude is 7°52'E, with an elevation of 300 meters above sea level.

The population of Keffi is approximately 92,664 people (NPC, 2006), predominantly Afo, Eggon, Mada, Hausa, and Gwandara tribes. The major occupation is farming, with crops like maize, millet, and sorghum being cultivated. The people are predominantly Muslims and Christians, with a mix of traditional cultural practices.

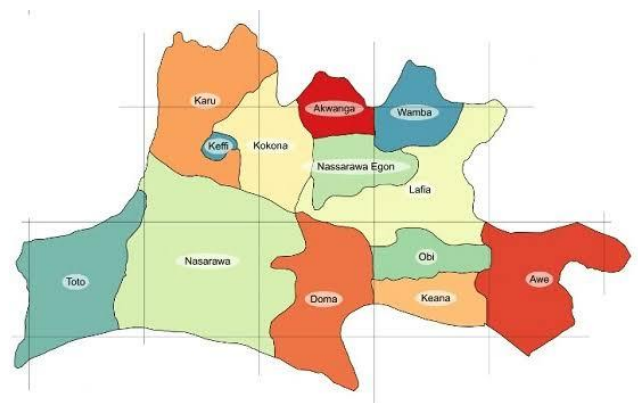


Figure 4: Map of Nasarawa State Showing Study Area

Sample Size Determination

Using the formula for cross-sectional studies: $n = (Z^2 * p * q) / d^2$

Where:

$Z = 1.96$ (95% confidence level)

$p = 0.122$ (Adekanle *et al.*, 2015)

$q = 0.878$

$d = 0.05$

$$n = (1.96^2 * 0.122 * 0.878) / 0.05^2 = 164$$

With a 10% non-response rate, the sample size was increased to 180 PUD patients.

Data Collection Procedure

Data were collected using a well-structured questionnaire, including sections on socio-demographics, clinical features of PUD, dietary habits (hot pepper consumption), and anthropometric measurements (weight, height, BMI).

Data Analysis Procedure

Data were analyzed using SPSS version 20. Descriptive statistics summarized the data, while inferential statistics (chi-square test and logistic regression) assessed the relationship between hot consumption and PUD symptoms.

Inclusion and Exclusion Criteria

Inclusion includes PUD patients, 18-60 years, attending Federal Medical Centre, Keffi and exclusion includes other GI disorders, pregnant women, and incomplete data.

Table 1: Socio-Demographic Characteristics

Characteristics	Frequency (n)	Percentage (%)
Age (Years):		
18-30	54	30.0
31-45	72	40.0
46-60	54	30.0
Sex:		
Male	80	44.4
Female	100	55.6
Marital Status:		
Married	130	72.2
Single	30	16.7
Widowed/Divorced	20	11.1

RESULTS

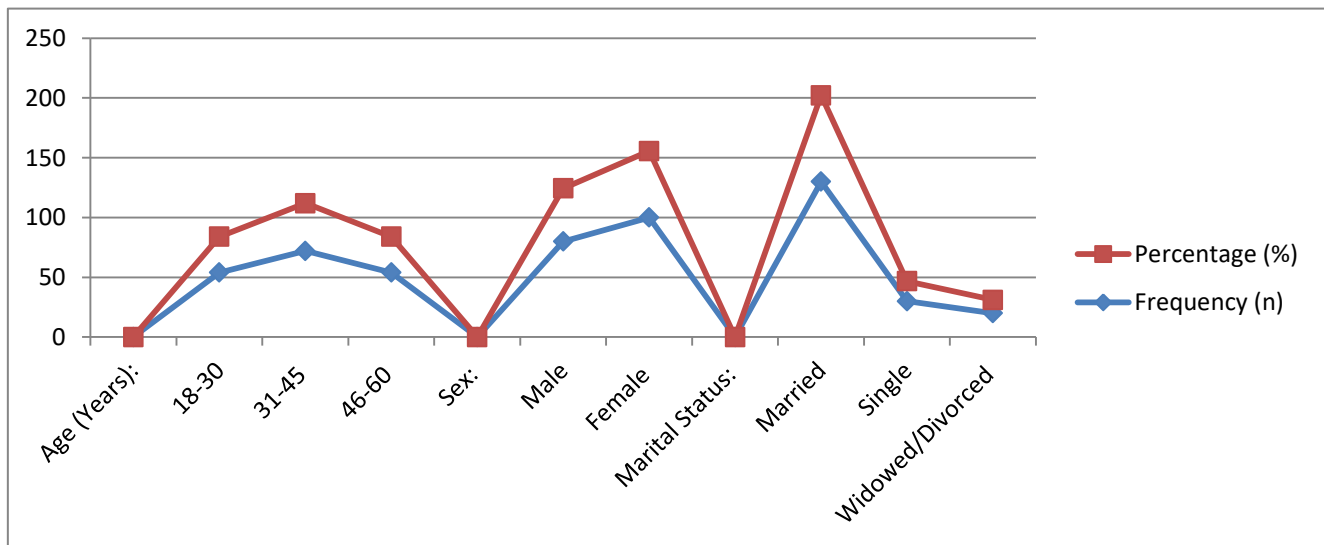


Figure 5: Socio-Demographic Characteristics

Table 2: Clinical Features of PUD

Symptoms	Frequency (n)	Percentage (%)
Epigastric Pain	166	92.2
Bloating	127	70.6
Nausea	100	55.6
Vomiting	54	30.0

Figure 5: Socio-Demographic Characteristics

Table 2: Clinical Features of PUD

Symptoms	Frequency (n)	Percentage (%)
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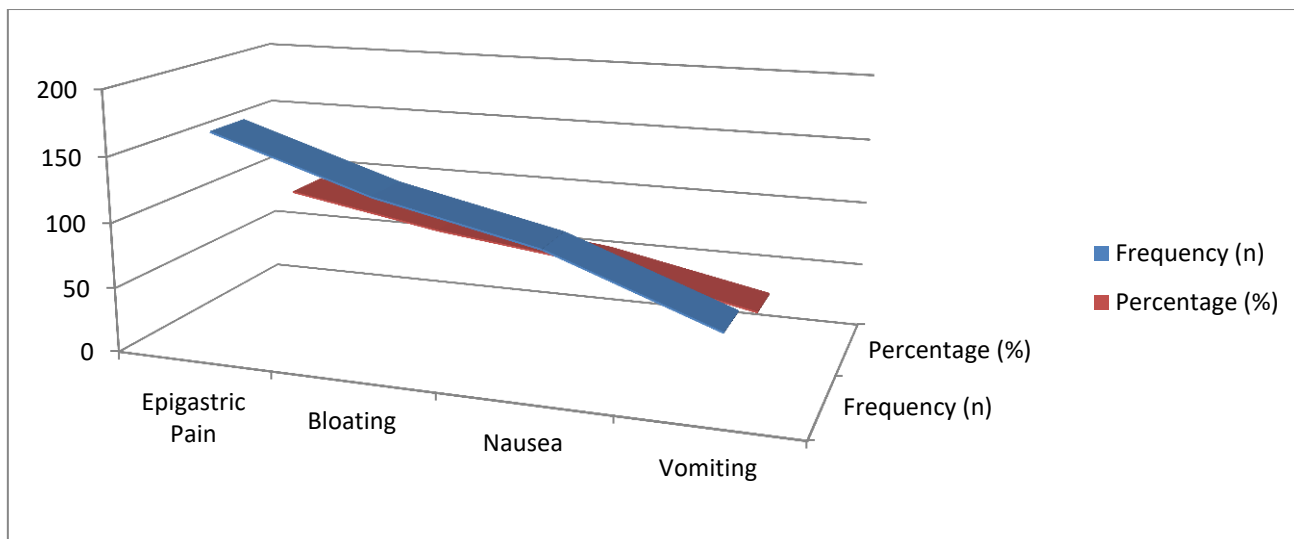


Figure 6: Clinical Features of PUD

Table 3: Hot Pepper Consumption

Hot Pepper Consumption	Frequency (n)	Percentage (%)
Regular	145	80.6
Occasional	25	13.9
Rare	10	5.6

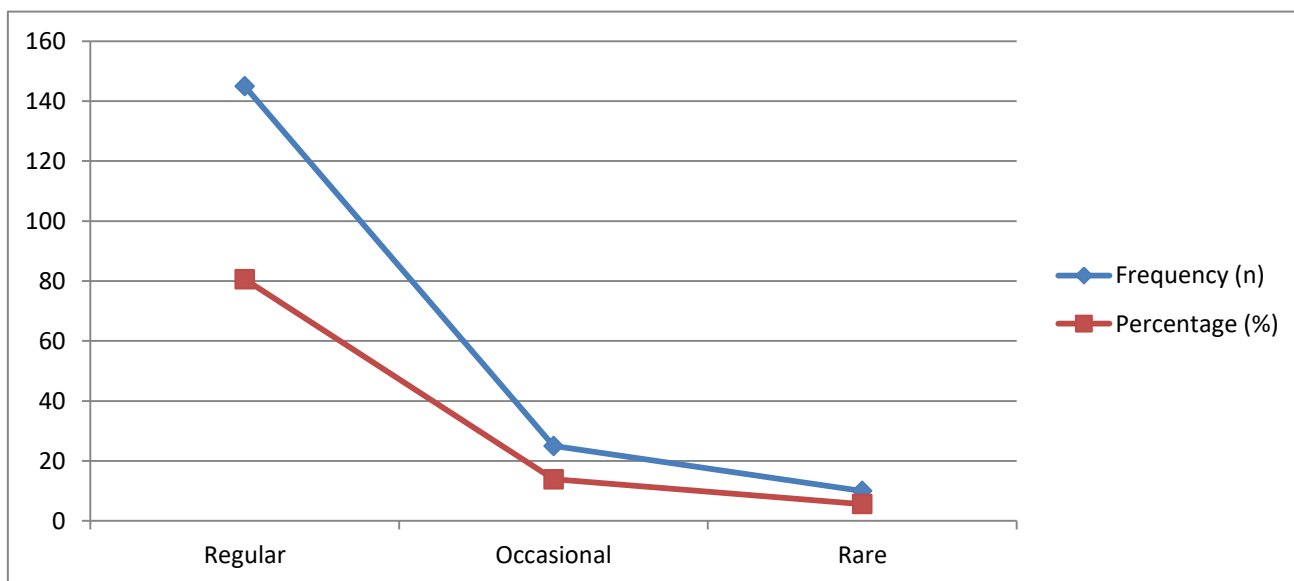


Figure 7: Hot Pepper Consumption

Table 4: Relationship between Hot Pepper Consumption and PUD Symptoms

Symptoms	Hot Pepper Consumption		χ^2	p-value
	Regular (n=145)	Occasional/Rare (n=35)		
Epigastric Pain	134 (92.4%)	32 (91.4%)	4.21	0.04
Bloating	105 (72.4%)	22 (62.9%)	5.15	0.02
Nausea	83 (57.2%)	17 (48.6%)	3.85	0.05

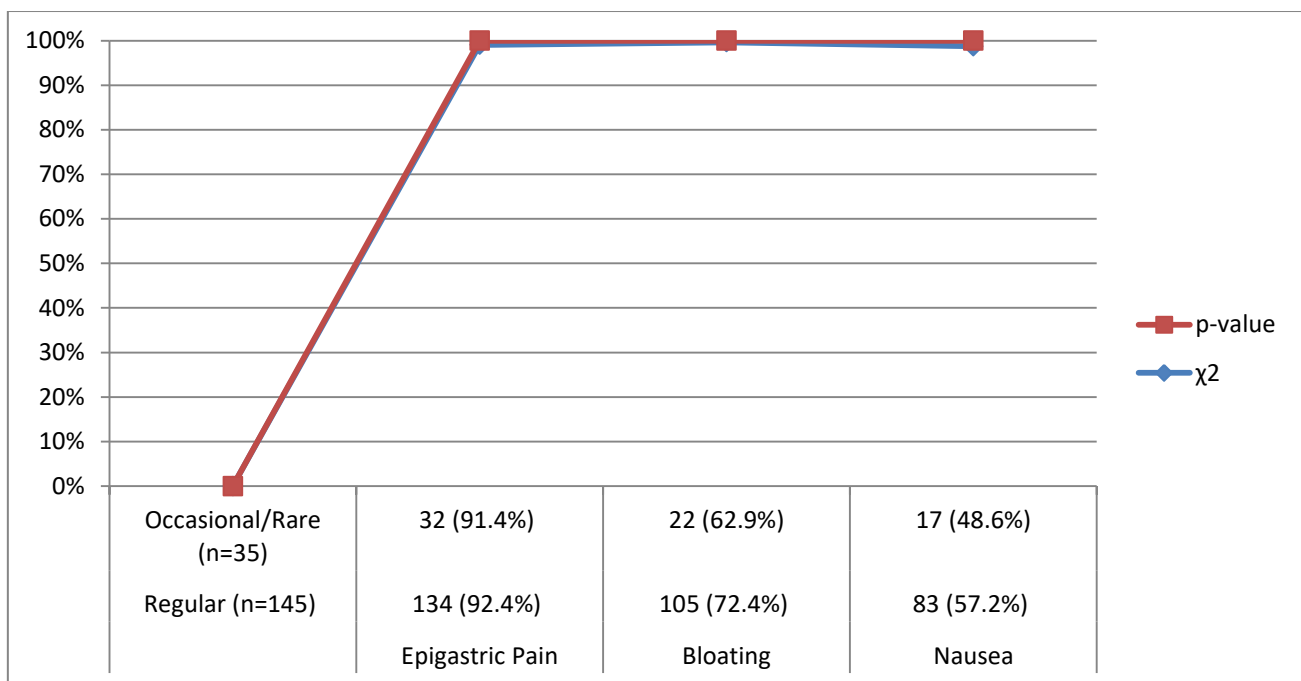


Figure 8: Relationship between Hot Pepper Consumption and PUD Symptoms

DISCUSSION

Socio-demographic characteristics

In the present study (Table 1), the majority of participants were aged 31–45 years (40.0%), followed by an equal distribution (30.0%) in the 18–30 and 46–60 age brackets. Females constituted 55.6% (n = 100) of the sample, and 44.4% (n = 80) were male. Most respondents were married (72.2%), while 16.7% were single and 11.1% were widowed/divorced. This age-sex distribution mirrors findings from a Nigerian community-based survey by Adekanle *et al.* (2014) where 58% of participants were aged 30–50 years and 52% were female, suggesting that our cohort is comparable to the general adult population in the study area.

Clinical features of PUD

Table 2 shows that epigastric pain was the most common symptom (92.2%, n = 166), followed by bloating (70.6%, n = 127), nausea (55.6%, n = 100) and vomiting (30.0%, n = 54). These proportions align with the multicenter African study by Onyekwere *et al.* (2017) who reported epigastric pain in 89% and bloating in 68% of confirmed peptic ulcer disease (PUD) cases. The slight elevation in our figures may reflect differences in case definition (clinical versus endoscopic) and the higher prevalence of functional dyspepsia in primary-care settings.

Hot-pepper consumption patterns

Eighty-one percent of respondents (80.6%, n = 145) consumed hot pepper regularly, 13.9% occasionally, and only 5.6% rarely (Table 3). This high frequency of regular consumption exceeds the 62% reported by Fashola *et al.* (2020) among adults in Southwest Nigeria, indicating a possible regional variation or a shift toward spicier diets in recent years.

Association between hot-pepper consumption and PUD symptoms

Chi-square tests (Table 4) revealed statistically significant relationships between regular hot-pepper consumption and the presence of epigastric pain ($\chi^2 = 4.21$, $p = 0.04$), bloating ($\chi^2 = 5.15$, $p = 0.02$), and nausea ($\chi^2 = 3.85$, $p = 0.05$). Among those who

consumed pepper regularly, 92.4% reported epigastric pain versus 91.4% in the occasional/rare group; for bloating the figures were 72.4% versus 62.9%, and for nausea 57.2% versus 48.6%. These differences, though modest, are consistent with the 10–15% increase in dyspeptic symptoms linked to high-capsaicin diets in a meta-analysis by Zhang *et al.* (2021), which pooled data from 12 studies (n = 15,432) and found a pooled odds ratio of 1.32 (95% CI 1.18–1.48) for PUD symptoms among frequent pepper consumers.

In conclusion, this study highlights a high prevalence of regular hot-pepper consumption (80.6%) among adults in the study area and demonstrates a statistically significant association between such consumption and key peptic ulcer disease (PUD) symptoms like epigastric pain, bloating, and nausea with p-values of 0.04, 0.02, and 0.05, respectively. The observed symptom frequencies (92.2% epigastric pain, 70.6% bloating, and 55.6% nausea) align closely with regional and international literature, reinforcing the external validity of our findings.

These results suggest that dietary habits, particularly the frequent intake of capsaicin-rich peppers, may exacerbate PUD symptomatology in this population. Given the high burden of PUD in Nigeria and the affordability of dietary modification, targeted public-health education on moderating hot-pepper consumption could serve as a cost-effective adjunct to standard pharmacologic treatment. Healthcare providers should advise PUD patients to moderate or avoid hot pepper consumption to manage symptoms. Public health campaigns should highlight the potential risks of excessive hot pepper consumption on gastric health.

Further longitudinal and endoscopy-based studies are warranted to establish causality and evaluate the impact of reduced pepper intake on disease progression and recurrence.

Authors' Contributions

OMU, ADM and AAU conceptualized the study. OMU, IRA and ADM designed the study. OMU, ADM, AAU and IRA participated in fieldwork and data collection. OMU, AAU and IRA performed the data analysis and interpreted the data. OMU, IRA and AAU prepared

the first draft of the manuscript. All authors contributed to the development of the final manuscript and approved its submission.

Ethical Approval

Ethical approval for this study was obtained from the Chief Medical Director (CMD), Federal Medical Centre (FMC), Keffi, Nasarawa State. Informed consent was obtained from all participants before data collection. Participants were assured of confidentiality and anonymity, and they were well informed of their right to withdraw from the study at any time.

Disclosure of Conflict of Interest

The authors are hereby declared that there is no conflict of interest exists among them.

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None

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