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Research Article

Prevalence of gastrointestinal symptoms and related drug use among pregnant women of South-Western Nigeria

Abiodun Christopher Jemilohun[1]*, Adeniyi Olanipekun Fasanu[2], Aramide Mikhail Tijani[3], Olayinka Gbenga Stanley[1]

[1]Department of Medicine, Gastroenterology Unit, Ladoke Akintola University of Technology Teaching Hospital, Ogbomoso, Oyo State, Nigeria
[2]Department of Obstetrics & Gynaecology, Ladoke Akintola University of Technology Teaching Hospital, Osogbo, Osun State, Nigeria
[3]Department of Obstetrics, Gynaecology & Perinatology, Ladoke Akintola University of Technology Teaching Hospital, Ogbomoso, Oyo State, Nigeria

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***Correspondence:**
Dr. Abiodun Christopher Jemilohun,
E-mail: chrislohun2010@hotmail.com

ABSTRACT

Background: Gastrointestinal (GI) symptoms are quite common in pregnancy but there is paucity of data in regard to their frequencies in the south-western part of Nigeria. This study was conducted to determine the prevalence of various gastrointestinal symptoms and related drug use among south-western Nigerian women.
Methods: A cross-sectional multicenter study involving three centers in two states of south-western Nigeria from March to August 2014. A composite questionnaire consisting of demographic data, anthropometric indices, obstetrics information, a list of gastrointestinal symptoms and drug usage was administered to 420 consecutive healthy pregnant women at various gestational ages. Data were analysed and presented as means ±S.D, frequencies and percentages. Relationships between categorical variables were explored with chi-square test. A 5% significance level ($p < 0.05$) was considered significant.
Results: Respondents had age range of 18-43years and a mean of 27.26 (±4.98). The commonest gastrointestinal symptom was nausea (46.9%), followed by vomiting (45.0%) and then anorexia (36.2%). Excessive salivation, heart burn, constipation, regurgitation, and bloating had frequencies of 35.5%, 28.3%, 20.7%, 19.0% and 18.3% respectively. Epigastric pain was the least frequent among the symptoms (16.9%).The association between the parity of respondents and each of the GI symptoms was not statistically significant. But associations between educational status and excessive salivation and anorexia were statistically significant (P-value of 0.018 and 0.023 respectively). Subjects with heartburn had the highest drug usage (23.5%), followed by those with vomiting (22.8%). Subjects with excessive salivation (2%) had the least drug intake.
Conclusions: Gastrointestinal symptoms are common among pregnant women of south-western Nigeria. There is need for the physician to be abreast with the prevalence of the common pregnancy related GI problems in the particular locality of practice and the appropriate way to manage them.

Keywords: Pregnancy, Gastrointestinal symptoms, Vomiting, Excessive salivation

INTRODUCTION

Pregnancy is a physiological phenomenon but it is associated with bodily changes that often present with symptoms of diseases which involve nearly all the systems of the body, including the gastrointestinal (GI) system.[1] Although, most of the disorders experienced during pregnancy are often referred to as 'minor' because they are not life threatening, some of them, like hyperemesis gravidarum, can be life threatening.[2,3]

Common GI symptoms with varying prevalence at different stages of pregnancy include- nausea and vomiting occurring in 50–90% of all patients, excessive salivation (26%), heartburn and regurgitation (30 to 80%), and constipation (11% to 40%) among others.[4-11] These symptoms are majorly a manifestation of pregnancy associated hormonal alterations which result in anatomical and functional changes in the body of the pregnant woman.[10,12-14] The changes may cause new symptoms or worsen pre-existing diseases like gastroesophageal reflux disease (GERD) and inflammatory bowel disease.[15,16]

Gastrointestinal symptoms in pregnancy have varying impact on the quality of life of pregnant women depending on the severity and duration of the symptoms; hence, understanding their prevalence and presentation is necessary to optimize care.[17-19] The prognosis for the mother and child is generally good for most GI disorders associated with pregnancy.[10] While first trimester vomiting is not generally deleterious to the mother or the foetus, it could impacts negatively on the mother and foetus when prolonged and intractable causing electrolyte abnormalities, acid–base disturbances and weight loss which may require hospitalization (hyperemesis gravidarum).[2,3]

Generally, the severity of symptoms determines the approach to management of patients. Mild symptoms can be managed by reassurance, avoidance of precipitating factors, changes in diet and life style. However, severe and intractable symptoms generally require pharmacotherapy with or without laboratory investigations.[10] A combination of lack of prospective drug trials in pregnancy and physician inexperience makes the choice of medication during pregnancy an anxiety-provoking task. If possible, all medications should be avoided, especially during organogenesis (first 16 weeks), because all medications are potentially harmful to the foetus. The benefits must be adequately weighed against the risk and some treatment can be postponed while patient is being carefully observed until a more appropriate time when the intervention is less risky to the foetus.

This study, which was a multicenter study, sought to determine the prevalence of the common GI symptoms of pregnancy and the various therapeutic measures being taken to ameliorate them among pregnant women of south-western Nigeria origin.

Objectives

The objectives of the study were to determine the prevalence of various GI symptoms in pregnancy among south-western Nigerian women, to determine the association between some of the symptoms and probable risk factors, and to highlight the various therapeutic measures taken by the women to ameliorate the symptoms.

METHODS

The cross-sectional study was conducted between March and August 2014. The study population consisted of 420 healthy pregnant women aged 18 and above at various gestational ages attending the antenatal clinics of the LAUTECH Teaching Hospitals Ogbomosho, Oyo State, the LAUTECH Teaching Hospital Oshogbo, Osun State and the Primary Health Center, Oja-Igbo, Ogbomoso, Oyo State.

A composite questionnaire consisting of demographic data, anthropometric indices, obstetrics information, a list of GI symptoms and drug usage was administered to each of the participants after obtaining informed consent. Each participant was asked whether she had experienced each of the GI symptoms since the beginning of gestation till the time the questionnaire was administered. Data were analysed with the Statistical Package for the Social Sciences (SPSS), version 16 (SPSS Inc., Chicago, IL, U.S.A.) and presented as means ± S.D, frequencies and percentages. Relationships between categorical variables were explored with chi-square test. A 5% significance level ($p < 0.05$) was considered significant.

Ethical clearance was obtained from the LAUTECH Teaching Hospital, Ogbomosho Ethical Review committee.

RESULTS

Table 1 show the demographic and obstetrics characteristics of respondents. Four hundred and twenty pregnant women were interviewed. The age range of respondents was 18-43years and the mean was 27.26 (±4.98). Subjects' parity ranged from 0-5 with a mean of 1.17(±1.19).

Table 1: Age, educational status, parity, and gestational age.

Variables	Frequency (n=420)
Age	
≤20	44 (10.5%)
21-30	274 (65.2%)
≥31	102 (24.3%)
Educational status	
Nil/Primary	55 (13.1%)
Secondary	177(42.1%)
Tertiary	188 (44.8%)
Parity	
0	158 (37.6%)
1	119 (28.3%)
2-5	143 (34.0%)
Current trimester	
1st	20 (4.8%)
2nd	147 (35.0%)
3rd	253 (60.2%)

Table 2: Gastrointestinal symptoms.

Frequency (n=420)		
Symptoms	**Present**	**Absent**
Nausea	197 (46.9%)	223 (53.1%)
Vomiting	189 (45.0%)	231 (55%)
Excessive salivation	149 (35.5%)	271 (64.5%)
Heartburn	119 (28.3%)	301 (71.7%)
Regurgitation	80 (19.0%)	340 (81%)
Epigastric pain	71 (16.9%)	349 (83.1%)
Bloating	77 (18.3%)	343 (81.7%)
Anorexia	152 (36.2%)	268 (63.8%)
Constipation	87 (20.7%)	333 (79.3%)

Of the 420 subjects 37.6% were nulliparous, 28.3% were primiparous while 34.0% were multiparous. Two hundred and seventy four (65.2%) subjects were in their third decade of life, 102 (24.3%) were aged ≥31years while the remainder, 44 (10.5%) were aged ≤20 years. Majority of subjects were in their third trimester (60.2%), only 4.8% were in their first trimester and the remainder (35.0%) were in their second trimester. Table 2 shows that the commonest gastrointestinal symptom was nausea (46.9%) followed by vomiting (45.0%) and then anorexia (36.2%).

Table 3: Association between parity and GI symptoms.

Symptoms		Parity			
		0	**1**	**2-5**	**Total**
Nausea	Yes	80(50.6%)	59(49.6%)	58(40.6%)	197(46.9%)
	No	78(49.4%)	60(50.4%)	85(59.4%)	223(53.1%)
	Total	158(100%)	119(100%)	143(100%)	420(100%)
		X^2=3.536	**df**=2	**P**=0.171	
Vomiting	Yes	75(47.5%)	59(49.6%)	55(38.5%)	189(45%)
	No	83(52.5%)	60(50.4%)	88(61.5%	231(55%)
	Total	158(100%)	119(100%)	143(100%)	420(100%)
		X^2=3.868	**df**=2	**P**=0.145	
Excessive salivation	Yes	55(34.8%)	38(31.9%)	56(39.2%)	149(35.5%)
	No	103(65.2%)	81(68.1%)	87(60.8%)	271(64.5%)
	Total	158(100%)	119(100%)	143(100%)	420(100%)
		X^2=1.532	**df**=2	**P**=0.465	
Heartburn	Yes	42(26.6%)	41(34.5%)	36(25.2%)	119(28.3%)
	No	116(73.4%)	78(65.5%)	107(74.8%)	301(71.7%)
	Total	158(100%)	119(100%)	143(100%)	420(100%)
		X^2=3.136	**df**=2	**P**=0.208	
Regurgitation	Yes	39(24.7%)	18(15.1%)	23(16.1%)	80(19%)
	No	119(75.3%)	101(84.9%)	120(83.9%)	340(81%)
	Total	158(100%)	119(100%)	143(100%)	420(100%)
		X^2=5.256	**df**=2	**P**=0.072	
Epigastric pain	Yes	29(18.4%)	18(15.1%)	24(16.8%)	71(16.9%)
	No	129(81.6%)	101(84.9%)	119(83.2%)	349(83.1%)
	Total	158(100%)	119(100%)	143(100%)	420(100%)
		X^2=0.506	**df**=2	**P**=0.777	
Bloating	Yes	35(22.2%)	21(17.6%)	21(14.7%)	77(18.3%)
	No	123(77.8%)	98(82.4%)	122(85.3%)	343(81.7%)
	Total	158(100%)	119(100%)	143(100%)	420(100%)
		X^2=2.847	**df**=2	**P**=0.241	
Anorexia	Yes	58(36.7%)	45(37.8%)	49(34.3%)	152(36.2%)
	No	100(63.3%)	74(62.2%)	94(65.7%)	268(63.8%)
	Total	158(100%)	119(100%)	143(100%)	420(100%)
		X^2=0.384	**df**=2	**P**=0.825	
Constipation	Yes	39(24.7%)	22(18.2%)	26(18.2%)	87(20.7%)
	No	119(75.3%)	97(81.5%)	117(81.8%)	333(79.3%)
	Total	158(100%)	119(100%)	143(100%)	420(100%)
		X^2=2.433	**df**=2	**P**=0.296	

Table 4: Association between educational status and GI symptoms.

Symptoms		Educational status			
		Nil/Primary	**Secondary**	**Tertiary**	**Total**
Nausea	Yes	23(41.8%)	76(42.9%)	98(52.1%)	197(46.9%)
	No	32(58.2%)	101(57.1%)	90(47.9%)	223(53.1%)
	Total	55(100%)	177(100%)	188(100%)	420(100%)
		X^2=3.749	**df**=2	**P** = 0.153	
Vomiting	Yes	20(36.4%)	80(45.2%)	89(47.3%)	189(45.0%)
	No	35(63.6%)	97(54.8%)	99(52.7%)	231(55.0%)
	Total	55(100%)	177(100%)	188(100%)	420(100%)
		X^2=2.076	**df**=2	**P**=0.354	
Excessive salivation	Yes	24(43.6%)	72(40.7%)	53(28.2%)	149(35.5%)
	No	31(56.4%)	105(59.3%)	135(71.8%)	271(64.5%)
	Total	55(100%)	177(100%)	188(100%)	420(100%)
		X^2=8.051	**df**=2	**P**=0.018	
Heartburn	Yes	15(27.3%)	52(29.4%)	52(27.7%)	119(28.3%)
	No	40(72.7%)	125(70.6%)	136(72.3%)	301(71.7%)
	Total	55(100%)	177(100%)	188(100%)	420(100%)
		X^2=0.168	**df**=2	**P**=0.920	
Regurgitation	Yes	14(25.5%)	27(15.3%)	39(20.7%)	80(19%)
	No	41(74.5%)	150(84.7%)	149(79.3%)	340(81%)
	Total	55(100%)	177(100%)	188(100%)	420(100%)
		X^2=3.467	**df**=2	**P**=0.177	
Epigastric pain	Yes	11(20%)	33(18.6%)	27(14.4%)	71(16.9%)
	No	44(80%)	144(81.4%)	161(85.6%)	349(83.1%)
	Total	55(100%)	177(100%)	188(100%)	420(100%)
		X^2=1.622	**df**=2	**P**=0.444	
Bloating	Yes	5(9.1%)	31(17.5%)	41(21.8%)	77(18.3%)
	No	50(90.9%)	146(82.5%)	147(78.2%)	343(81.7%)
	Total	55(100%)	177(100%)	188(100%)	420(100%)
		X^2=4.734	**df**=2	**P**=0.094	
Anorexia	Yes	28(50.9%)	66(37.3%)	58(30.9%)	152(36.2%)
	No	27(49.1%)	111(62.7%)	130(69.1%)	268(63.8%)
	Total	55(100%)	177(100%)	188(100%)	420(100%)
		X^2=7.573	**df**=2	**P**=0.023	
Constipation	Yes	12(21.8%)	38(21.5%)	37(19.7%)	87(20.7%)
	No	43(78.2%)	139(78.5%)	151(80.3%)	333(79.3%)
	Total	55(100%)	177(100%)	188(100%)	420(100%)
		X^2=0.224	**df**=2	**P**=0.917	

Excessive salivation, heartburn, constipation, regurgitation, and bloating had frequencies of 35.5%, 28.3%, 20.7%, 19.0% and 18.3% respectively. Epigastric pain was the least frequent among the symptoms (16.9%). It is important to note that there was a considerable overlap in the symptoms' manifestations.

Respondents' parity had no statistically significant association with any of the GI symptoms (Table3). But respondents' educational status had significant association with excessive salivation and anorexia (P-value of 0.018 and 0.023 respectively); its association with the other GI symptoms evaluated was however not significant. It was observed that the higher the educational attainment; the lesser the proportion of subjects that had these symptoms (excessive salivation and anorexia). For instance, 43.2%, 40.7% and 28.2% of respondents with nil/primary, secondary and tertiary education respectively had excessive salivation (Table 4).

Table 5 shows the common drugs used by respondents to treat symptoms, which include promethazine, metoclopramide antacids and vitamin supplements. Majority of subjects with symptoms did not use drugs. Several of the subjects used prescribed drugs they could not identify.

Subjects with heartburn had the highest drug use (23.5%), followed by those with vomiting (22.8%). The least drug intake was in subjects with excessive salivation (2%).

Table 5: GI Symptoms and drug usage.

Symptoms	Drug use	Promet.	Meto.	Unknown	Vit.	Antacid	No drug	Total
Nausea	35(17.8%)	10(5.1%)	1(0.5%)	21(10.7%)	-	3(1.5%)	162(82.2%)	197
Vomiting	43(22.8%)	14(7.4%)	1(0.5%)	26(13.7%)	-	2(1.1%)	146(77.2%)	189
Excessive salivation	3(2.0%)	-	-	3(2.0%)	-	-	146(98.0%)	149
Heartburn	28(23.5%)	-	-	2(1.7%)	-	26(21.8%)	91(76.5%)	119
Regurgitation	7(8.8%)	-	1(1.2%)	5(6.2%)	-	1(1.2%)	73(91.2%)	80
Epigastric pain	11(15.5%)	-	-	2(2.8%)	1(1.4%)	8(11.3%)	60(84.5%)	71
Bloating	1(2.6%)	-	-	-	-	1(1.3%)	76(98.7%)	77
Anorexia	12(7.9%)	-	-	-	7(4.6%)	5(3.3%)	140(92.1%)	152
Constipation	2(2.3%)	-	-	2(2.3%)	-	-	85(97.7%)	87

Promet. = Promethazine, Meto. = Metoclopramide, Vit. = Vitamin Supplement, Unknown= Prescribed unknown drugs

DISCUSSION

Gastrointestinal disorders are some of the commonest complaints by pregnant women. Mostly, they are due to pregnancy hormones induced physiological and anatomical changes in the body of the woman, though they could be an expression of underlying ailment.

In our study, nausea was the commonest GI symptom (46.9%) and the next was vomiting (45%). Nausea and vomiting usually occur together in pregnancy, especially during the first trimester, and the condition is often referred to as morning or pregnancy sickness.[9,20] The values obtained in our study is slightly lower than those obtained in previous studies which set the prevalence of nausea and vomiting to be about 50-90%.[1,3,9-11] A study conducted to determine the prevalence of nausea and vomiting of pregnancy (NVP) and its association with race/ethnicity found NVP to be less likely to occur in blacks and Asians (70.27% in blacks) than in white/Caucasians (79.53%).[11] The fact that all the subjects were Black Africans may be responsible for the lower prevalence observed in this study as many of the previously conducted studies in this regard were in the Caucasian population.

Anorexia was the next commonest GI symptom after nausea and vomiting in our study with a prevalence of 36.2%. This is noteworthy because of its negative repercussion on both the foetus and the mother, with only 51% of pregnancies in anorexic mothers free of complication compared to 75% in non-anorexic mothers.[21] Also, maternal underweight in pregnancy which has been associated with anorexia makes the pregnancy high risk. Length at birth of babies of anorexic mothers has also been found to be shorter than that in non-anorexic mothers.[22]

Excessive salivation also called sialorrhea or ptyalism reported in our study with 35.5% prevalence is believed to occur in pregnant women also suffering from nausea and vomiting. It is also reported mainly by pregnant women in the first trimester, although some still experience it beyond the first trimester. Sialorrhoea in pregnancy is usually not related to any systemic disease.[23] The pathophysiology is not exactly known. It is believed that it occurs as an accompaniment of nausea during the first trimester as a result of increase in the levels of estrogen and progesterone.[23,24] Although, this raises the question as to why sialorrhoea is not expressed in as many pregnancies as nausea.

The prevalence of 28.3% for heartburn in our study is slightly less than the generally reported prevalence of 30-80% of pregnant women with the symptom.[4,5,15] Heartburn and regurgitation often occur concomitantly as the cardinal symptoms of gastroesophageal reflux disease (GERD). Pregnancy related GERD may be as a result of reduced lower esophageal sphincter pressure engendered by increased maternal estrogen and progesterone during pregnancy with estrogen having the priming effect, or as a result of increased intra-abdominal pressure due to gravid uterine enlargement.[15] The slightly reduced prevalence in our study compared to that of those in the western world is in agreement with a previous study which showed that pregnancy induced heartburn is commoner in Caucasians than in Nigerians.[25]

Constipation has been reported to be the most common of lower gastrointestinal disorders in pregnancy with prevalence between 11-38%.[1,8,26] The 20.7% prevalence of pregnant women with constipation obtained in this study is in agreement, although we did not investigate any other lower GI symptoms for comparison. Dehydration, decreased physical activity, slowed GI transit, pregnancy related hormonal levels alteration (increased progesterone, increased estrogen, decreased

motilin and increased relaxin), intake of low fiber diet, enlarged gravid uterus, pelvic floor dysfunction and iron supplementation have all been implicated as possible aetiology of constipation in pregnancy.[8,26]

The observed significant association between educational attainment and sialorrhoea/anorexia, though cannot be easily explained, may not be unconnected with the general improvement in sanitation and hygiene practices that often attend higher levels of educational attainment.[27]

The safety of drugs in pregnancy has been categorized by the United States Food and Drug into:

Category A: Adequate, well-controlled studies in pregnant women have not shown an increased risk of fetal abnormalities in any trimester of pregnancy

Category B: Animal studies have revealed no evidence of harm to the fetus; however, there have not been any adequate and well-controlled studies performed in pregnant women. Animal studies have shown an adverse effect, but adequate and well-controlled studies in pregnant women have failed to demonstrate a risk to the fetus in any trimester.

Category C: Animal studies have shown an adverse effect; however, there have not been any adequate and well-controlled studies in pregnant women, or no animal studies have been conducted and there have not been any adequate and well-controlled studies in pregnant women.

Category D: Adequate, well-controlled or observational studies in pregnant women have demonstrated a risk to the fetus. However, the benefits of therapy may outweigh the potential risk. For example, the drug may be acceptable if needed in a life-threatening situation or serious disease for which safer drugs cannot be used or are ineffective

Category X: Adequate, well-controlled or observational studies in animals or pregnant women have demonstrated positive evidence of fetal abnormalities or risks. The use of the product is contraindicated in women who are or may become pregnant.[28]

The common known drugs used by respondents to treat symptoms included promethazine (Category C), metoclopramide (Category B) antacids which often contain magnesium and aluminum (Category C) and vitamin supplements are relatively safe in pregnancy. None of the identified drugs belong to category (D and X).

Although, we did not set out to investigate the severity of the gastrointestinal symptoms in this study, the observation that majority of the respondents with symptoms did not take any drug (Table 5) may be an indication that the symptoms such respondents experienced were not severe enough to induce health seeking behavior. It may also be safe to conclude that heartburn is the most discomforting among all the GI symptoms investigated (23.5%) since it has the highest percentage of respondents that used drugs. In the treatment of heartburn, modification of lifestyle is first recommended and when symptom persists, antacids, the use of histamine-2 receptors antagonists, upper endoscopy and proton pump inhibitors are recommended, progressively.[15]

Generally, there is need for the physician to be abreast with the prevalence of the common pregnancy related GI problems in the particular locality of practice and the appropriate way to manage them. Lack of knowledge on the part of the physician in this regard can impact negatively on the quality of life of the mother and pregnancy outcome. The physician must be able to distinguish whether these symptoms are those of normal pregnancy or a potentially life-threatening complication such as hyperemesis gravidarum and preeclampsia. The physician must also know which medications are harmless as well as which tests are safe to perform during pregnancy. Often, a team approach is necessary to optimize the care of the pregnant patient with gastrointestinal symptoms.

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