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Burden of Helicobacter Pylori (H. Pylori) Disease in a Community in Sokoto State

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Abstract

Pyloric ulcer a public health disease important and is highly implicated with H. pylori hence the research to determine the prevalence of helicobacter pylori (H. pylori), induced peptic ulcer in sokoto metropolis. The sample for the study consisted of 150 (one hundred and fifty) adults' females/males randomly drawn. Data collected were analyzed using descriptive statistic of frequency count, normative percentage and grand mean; as well as inferential statistics of chi-square (χ2). The level of significant was fixed at 0.05. Appropriate degrees of freedom were worked out. The antibody rapid test device (whole blood/serum/plasma) is a qualitative device based on immunoassay for the detection of H. pylori antibodies in the whole Blood, serum or plasma. In this test specimen followed by buffer is added to the specimen well of the test device. The specimen migrates chromatographically along the length of the test strip contained within the device and interacts with the reagents on the test strip.This research showed that prevalence of H.pylori infection is 38(25.3%). Among the 82 male's clients 20(24%) tested positive, while among 68 females 18(26%) tested positive to H. pylori.There was a significance difference of the calculated chi-square (χ2=32.33 is greater than the tabulated χ2=3.841 at df=1, p<0.05). The prevalence of H. pylori induced ulcer among 93 symptomatic clients 21(22.8%) tested positive, while among 57 asymptomatic clients 17(29.8%) tested positive. There was a significance difference of the calculated chi-square (χ2=33.57 is greater than the tabulated χ2=3.841 at df=1, p<0.05). This may explain why the rate of infection is so high in poorer countries and in socio-economic groups since It is potentially spread by fecal contamination, characterized by crowded living conditions, poor sanitary conditions, and lack of clean water (Bujanover, 1996). Poor Personal hygiene is also very important since food preparers who may not perform adequate hand washing may be potential sources of infection (Hunt, 2011).

Keywords: *Helicobacter pylori (H. pylori), symptomatic, asymptomatic*

Introduction

Helicobacter pylori is a type of bacteria that is a major cause of stomach (gastric) and upper small intestine (duodenal) ulcers. Infection with *H. pylori* may also increase the risk of stomach cancer (Warren, etal1983). *H. pylori* bacteria can cause ulcers by growing in the lining of the stomach, producing inflammation and causing the stomach and intestinal lining to be more easily damaged by stomach acid (Parsonnet,1994). But most people infected with *H. pylori* do not develop ulcers. H pylori was discover by warren and marshal (Warren,etal1983).Peptic ulcers are a very common condition in the United States and throughout the world (Pounder,1995). In the United States, about 10% of the population will

develop a duodenal ulcer at some point in their lives. Peptic ulcer disease affects about 4.6 million people annually. The occurrence of peptic ulcer disease is similar in men and women. Approximately 11%-14% of men and 8%-11% of women will develop peptic ulcer disease in their lifetime.The mortality rate of peptic ulcer disease is approximately one death per 10,000 cases. The mortality rate due to ulcer hemorrhage is approximately 5%.While the exact mode of transmission *H. pylori* is not known, it seems to be spread from person to person by saliva, and most people who are infected become infected as children (Mendel, 1992, Jones 1998). It also has the potential to be spread by fecal contamination. This may explain why the rate of infection is so high in poorer countries and in socio-economic groups characterized by crowded living conditions, poor sanitary conditions, and lack of clean water (Bujanover, 1996). Personal hygiene is also very important since food preparers who may not perform adequate hand washing may be potential sources of infection (Hunt, 2011). Ten percent of those infected with H. pylori may develop an ulcer. Also, those infected have an increased risk of stomach cancer and lymphoma (Parsonnet, 1994). The presence of the H pylori bacteria in the stomach may decrease the prevalence of esophagitis by decreasing the amount of stomach acid that refluxes back into the esophagus. This in turn leads to a decreased risk for esophageal cancer in those infected with *H. pylori*. Abdominal pain is usually described as a burning sensation in the central upper abdomen below the ribs (Benjamin, 2016). It may be associated with bloating, burping, and loss of appetite. Often the symptoms occur after eating, and many times patients waken in the early morning hours with abdominal pain. If there is enough inflammation, bleeding is possible from the stomach lining or from an ulcer, a small crater-like area in which the inflammation has caused the protective lining of the stomach to wear away. Symptoms of bleeding include vomiting blood and passing black, tarry stools. The black stools are a result of blood that has been metabolized and partially digested(Benjamin, 2016). The majority of people who are infected with *H. pylori* are symptom and disease free. For those who do have symptoms, gastritis and ulcers are the results of an *H. pylori* infection. These illnesses are characterized by upper abdominal pain, loss of appetite, nausea and vomiting, andif severe enough, bleeding into the gastrointestinal tract (Roussos, 2003). An additional factor—one that cannot always be identified—may be needed to cause an ulcer to form. Such factors may include: the use of certain medicines, such as aspirin or other nonsteroidal anti-inflammatory drugs (NSAIDs), Excessive alcohol use, physical or emotional stress, caffeine, smoking, or radiation therapy (Crowe, 2016). *H. pylori* bacteria can be eliminated by taking certain antibiotics that are specifically directed at this bacterium. People who have had a peptic ulcer and are infected with *H. pylori* need treatment to cure the infection to lower their risk of getting another peptic ulcer. Treatment with a combination of medicines is highly successful at curing an *H. pylori* infection. Sometimes *H. pylori* bacteria are resistant to certain antibiotics, which can keep the medicine from killing the bacterium (Benjamin, 2016). For some people who have taken medicine to treat the *H. pylori* infection, a follow-up test may be needed to make sure the infection is cured. In the digestive system, an ulcer is an area of open sores where tissue has been destroyed by the gastric juices and stomach acid (Benjamin, 2016). Peptic ulcer disease is a general term for ulcers that occur in the lining of the stomach or of the duodenum (upper part of the small intestine). A peptic ulcer is an erosion or sore in the wall of the gastrointestinal tract, the mucous membrane lining, the digestive tract erodes and causes a gradual breakdown of tissue. This breakdown causes a gnawing or burning pain in the upper middle part of the belly (abdomen). Although most peptic ulceris small, they can cause a considerable amount of discomfort(Benjamin, 2016). The bacterium has evolved to survive in the acidic environment of the stomach where enzymes digest food. Stomach ulcers can occur at any age, although they are rare in children and teenagers. Some people may have no symptoms of an ulcer, but common symptoms include abdominal pain, nausea, vomiting, loss of appetite, weight loss, and in severe cases, bleeding in the stomach or duodenum. Treatment for *H. pylori* involves antibiotics to eradicate the infection as well as medications to decrease the amount of stomach acid. Triple therapy of either Levaquin (levofloxacin) or rifabutin in combination with amoxicillin and esomeprazole has resulted in high cure rates(Benjamin, 2016).

Objective of the Study

Determine the prevalence of H.pylori induced peptic ulcer in Sokoto state.

Significance of the Study

Results of the study would reveal the prevalence of peptic ulcer induced by H. Pylori in this part in

Sokoto metropolis. Specifically, result of the study would be significant to Public health officers, health educators, clinicians andmedical allied personnel and researchers in assessing the prevalence H.pyloric peptic ulcerdisease and initiating preventive measures in among inhabitants help prevention and treatment management programs/guideline succeed in the populace in sokoto metropolis.

Research Questions

a. what is prevalence of H.pyloric peptic ulcer case in the facility

b. What is the prevalence of H.pyloric peptic ulcer case among female and male inclients.

c. What is the prevalence of H.pyloric peptic ulcer case among d symptomatic and asymptomatic group.

Hypotheses

There is no case of H. pyloric peptic ulcer case in the study area.

a. There is no case of H. pyloric peptic ulcer case among female and male in general client's significance difference among the gender.

b. There is no case ofH. Pyloric peptic ulcer case among symptomatic and asymptomatic group.

Statement of Problem

Helicobacter pylori (H. pylori) is a type of bacteria responsible for widespread infection with more than 50% of the world's population infected, even though most of those infected have no symptoms (Crowe, 2016). *H. pylori* infection is associated with low grade inflammation of the stomach and duodenum (the first part of the small intestine that empties the stomach) (Benjamin, 2016).Peptic ulcers are a very common condition in the United States and throughout the world.In the United States, about 10% of the population will develop a duodenal ulcer at some point in their lives. Peptic ulcer disease affects about 4.6 million people annually(Crowe, 2016). The occurrence of peptic ulcer disease is similar in men and women. Approximately 11%-14% of men and 8%-11% of women will develop peptic ulcer disease in their lifetime (Crowe, 2016). The mortality rate of peptic ulcer disease is approximately one death per 10,000 cases (Lindkoist,1998). The mortality rate due to ulcer hemorrhage is approximately 5%. The infection rate in the United States is between 20%-30%, however, it is higher in Hispanics, African Americans, and the elderly (Benjamin, 2016).

Area of the Study

Sokoto is one of the seven states that form the North West geopolitical zone of Nigeria. It is bordered to the north by the Republic of Niger, Zamfara State to the east, Kebbi state to the south and west. It is situated in the savannah on the temperature of 44 degree Celsius annually. The city of Sokoto is its capital. Sokoto state traces its origin to the Sokoto Caliphate founded in 1809 by ShehuUsmandanFodio, the leader of the jihadists who overthrew the Hausa state of Gobir, Kano, Katsina and Kanem-Bornu. The empire fell after the British conquest of 1903 and the death of Attahiru, the Sultan of Sokoto, and became part of the Northern Region in the three-region structure of 1954. In 1967, Nigeria, the military administration of General Yakubu Gowon merged Sokoto and Niger provinces to form the North Western state. In 1976, North Western State was spilt into Sokoto and Niger states by the military administration of General MurtalaMuhammed. Sokoto State covers an area of 28,232.37 square kilometers. The state is located between latitudes 40 to 60 north and longitudes 110 to 130 east has a population of 3,702,676 (2006 census figures). It accounts for 2.3 percent of Nigeria's total population. Prior to the establishment of Sokoto as a ribat (military camp or frontier) in 1809, the area that is modern-day Sokoto state was home to Hausa state with large populations. These states eventually fell under the control of UsmandanFodio and the Fulani jihadists and became part of the Sokoto Caliphate. In 1817 when Usman died, his son Muhammed Bello succeede him as the Sultan of Sokoto. Usman's brother Abdullahi was given the western divisions of the caliphate to run; however, supreme authority rested with Bello. At the height of its power, the Sokoto Caliphate extended as far as Ilorin (in modern-day kwara State). The Hausa are the largest ethnic group in Sokoto State while the Fulani are its second largest. Minority include the Zabarmawa, Tuareg and the Dakarkari. The majority of the population is Sunni Muslim. There is a small Shia minority. There are twenty-three local government areas (LGAs) in Sokoto. Each has a chairman as its administrative head. The Islamic community in Nigeria considers the person of the Sultan as 'First among Equals'. He is both the political head of the Fulani as well as the supreme spiritual head of the rough 70

million Muslims in Nigeria. Currently occupying the seat is Sultan MuhammaduSa'adAbubakar III, the twentieth sultan of Sokoto. Agriculture is the mainstay of Sokoto's economy.

The riverine floodplains produce cash crops, including peanuts (groundnuts), cotton and rice. Sorghum, millet, cowpeas and cassava are grown in the upland areas. Much of the land in the state is used for grazing cattle. Cattle hides, goatskin, sheepskins and finished leather products are significant exports, as are cattle, goats and fowl. The state possesses limestone and kaolin deposits and Sokoto City, the state capital, is home to a cement factory, tanneries and a modern abattoir. Festivals includeKalankuwa, Halbi, Sharo, AikinGawa, Shan Gumba-Pap drinking and Remo Fishing Festival. The stress associated with agriculture could increase the incidence of hypertension. The trend of cigarette smoking is very high among adult in sokoto metropolis (Nigeria socio-economic indicator, 2012).

Ethical Approval

Ethical clearance was obtainedfrom the Ethical Committee of the 1Brigade Medical Centre, Ginginya barrack, Sokoto. This study was conducted in accordance with the Declaration of Helsinki, and the protocol was approved by the ethical research committee of the 1Brigade medical centre, Ginginya barrack, Sokoto.

Population of the Study

The accessible population of the study consisted of an estimated one thousand five hundred (1,500) adults (female/male) living in danbuwa area

Sample/sampling technique

The sample for the study consisted of 150 (one hundred and fifty) adults' females/males randomly drawn. Ten percentage (10%) of the accessible population was used as sample size, Nwana (2011) opined that if the population is in few thousand 10% will be appropriate as the sample size.

Method of Data Collection

Principle

The antibody rapid test device (whole blood/serum/plasma) is a qualitative device based on immunoassay for the detection of H. pylori antibodies in the whole Blood, serum or plasma. In this test specimen followed by buffer is added to the specimen well of the test device. The specimen migrates chromatographically along the length of the test strip contained within the device and interacts with the reagents on the test strip. If the specimen contains H.pylori antibodies, a color line will appear in the test line region indicating a positive result, if the specimen does not contain H.pylori antibodies a colored line will not appear in this region indicating a negative result. To serve as a procedural control, a colored line will always appear at the control line region indicating a proper volume of specimen has been added and membrane wicking has occurred.

Procedure

Blood specimen (5 mL) was obtained from each subject by peripheral venipuncture under aseptic conditions into a plain tube. Samples were immediately centrifuged and serum and assayed immediately.

Two drops of serum wasadded in the specimen well with the help of dropper in the test device, then one drop of buffer was added and the timed immediately. The result was read at ten minute.

Method of Data Analysis

Data collected were analyzed using descriptive statistic of frequency count, normative percentage and grand mean; as well as inferential statistics of chi-square ($\chi 2$). The level of significant was fixed at 0.05. Appropriate degrees of freedom were worked out.

Result

Total1. *Prevalence of H. pylori among the respondents*

Total no of subject tested	total tested positive(%)
150	38(25.3%)

The prevalence of H.pylori among the 150 clients tested is 38 (25.3%) whotested positive.

Table2. *Distribution of respondents tested based on gender*

sex	Total tested (%)	Testing Positive (%)
Male	82	20(24%)
Female	68	18(26%)
Total	150	28(60%)

Among the 82 male's clients 20(24%) tested positive, while among 68 females 18(26%) tested positive to H. pylori. There was a significance difference of the

calculated chi-square ($\chi2=32.33$ is greater than the tabulated $\chi2=3.841$ at df=1, $p<0.05$). Therefore, the null hypotheses were rejected and conclusion drawn that there is a significant difference between the different gender.

Table3. *Distribution of subject tested based on symptomatic and asymptomatic*

Clinical evaluation	Total no. tested	Total positive
Symptomatic	93	21(22.8%)
Asymptomatic	57	17(29.8%)

$\chi2=32.33$ is greater than the tabulated $\chi2=3.841$ at df=1, $p<0.05$

The prevalence of H. pylori induced ulcer among 93 symptomatic clients 21(22.8%) tested positive, while among 57 asymptomatic clients 17(29.8%) tested positive.There was a significance difference of the calculated chi-square ($\chi2=33.57$ is greater than the tabulated $\chi2=3.841$ at df=1, $p<0.05$). Therefore, the null hypotheses were rejected and conclusion drawn that there is a significant difference between the symptomatic and asymptomatic clients

Discussion

In this research the prevalence of H.pylori among the 150 clients tested is 38 (25.3%) tested positive lower than Bektayeva, R., Karabayeva, R., Lebedev, A., Akemeyeva, K., Paloheimo, L., and Syrjänen, K (2013) in a cohort of 835 subjects (symptomatic and asymptomatic) cases (473 women and 362 men) reported prevalence of 62.3% (n=519). In another report byAsrat, Nilsson., Mengistu., Ashenafi., Ayenew., Abu Al-Soud., Wadström and Kassa (2004) among 300 clients apparent overall prevalence of *H. pylori* infection varied according to the detection method employed. Culture revealed *H. pylori* in only 69% of the patients but this pathogen appeared more common when rapid urease tests (71%), PCR-denaturating gradient gel electrophoresis (91%), histopathology (81%), silver staining (75%) or stool-antigen tests (81%) were employed. Antibodies to *H. pylori* were detected, both by enzyme immuno-assay (EIA) and immunoblotting, in approximately 80% of the patients even When some of the EIA-positive and EIA-negative sera were cross-absorbed with antigens of *Campylobacter jejuni* and re-tested by EIA, the *H. pylori*-positive sera remained positive and the negative sera remained negative. The prevalence of H.pylori is richly due to high contamination of food and water, in this part of the world where the use of bear hand to eat is a custom, proper cleaning of hand and finger where the parasite will hide is poor hence mechanical and direct infection with H.pylori.

Among the 82 male's clients 20(24%) tested positive, while among 68 females 18(26%) tested positive to H. pylori. There was a significance difference of the calculated chi-square ($\chi2=32.33$ is greater than the tabulated $\chi2=3.841$ at df=1, $p<0.05$). there has been scientific genetic or physiology that could reduce the case of H.pylori except the if one is protective in the predisposing factor which include adhering to WHO hand washing before and after every meal, provision of feacal contaminated free food and water which could only be possible in irregular defecation is avoided and the sewage channel is not close to portable water underground pipe and fixing any form of damage immediately.

The prevalence of H. pylori induced ulcer among 93 symptomatic clients 21(22.8%) tested positive, while among 57 asymptomatic clients 17(29.8%) tested positive. There was a significance difference of the calculated chi-square ($\chi2=33.57$ is greater than the tabulated $\chi2=3.841$ at df=1, $p<0.05$). Benberin. V., Bektayeva, R., Karabayeva, R., Lebedev, A., Akemeyeva, K., Paloheimo, L., and Syrjänen, K (2013) in a cohort of 835 (symptomatic and asymptomatic) cases (473 women and 362 men) reported 62.3% (n=519) prevalenceH.Pylori infection (with no Atrophic Gastritis). In 118 (14.1%) subjects, results were consistent with Atrophic Gastritis; in antrum (n=72), corpus (n=42) or pangastritis (n=4). Prevalence of atrophic gastritis increased with patient's age in both sexes. There was no age-related pattern in biomarker levels, and only slight differences between the genders. Atrophic gastritis a later complication symptoms of the effect of untreatedH.pylori, and also caused by hyper secretion of gastric juice and individual who have had a very long time in fasting predisposing to atrophic gastritis

Conclusion

This research showed that H.pylori infection is present in this area with a prevalence of 38%. Among the 82 male's clients 20(24%) tested positive, while among 68 females 18(26%) tested positive to H. pylori.

Recommendation

1. General free diagnosis of H.pylori as provider initiative to the populace.
2. Government should reduce the cost of drug for treatment or better free for H. pylori.

References

[1] Benjamin W (2016). Helicobacter Pylori. emedicine health expert for everyday emergencies *Healthwise.org*

[2] Crowe, S.E (2016). Patient information: Helicobacter pylori infection and treatment (Beyond the Basics). http://www.uptodate.com/contents/helicobacter-pylori-infection-and-treatment-beyond-the-basics

[3] Chey W.D (2007). American College of Gastroenterology guideline of the management of Helicobacter pylori infection. *American Journal of Gastroenterology* 102(8): 1808–1825.

[4] Warren,J.,and Marshall,B(1993). Unidentified curred bacilli on gastric epithelium inacute chronic gastritis. Lancet 1:1311-1315

[5] Parsonnet,J., Hansen,S., Rodriguez,L., Gello, A.,Warnke,R., and Jellum, E (1994). Helicobacter pylori infection and gastric lymphoma. N Engl J Med 330:267- 271.

[6] Jones,N.L., and Sherman P.M (1998). Helicobacter pylori infection in different children. curropin pediator. 10:19-23

[7] Bujanover,Y., Reif,S., and Yatau,J. (1996). Helicobacter pylori and peptic disease in the pediatric patient. Pediatric ClinicNorth America 43:213-234.

[8] Hunt,R.H., Xiao, S.D., Megraud,F., Leon-barua, R.,Bazzoli,F and Vander-Merve,S. (2011). World gastroenterology organization global guidelines, helicobacter pylori in developing countries. Journal of Digestive Disease;12:319-326

[9] Linkoist,P., Enquselassie,F., Asrat,D., Muhe,L., Nilsson,I and Giesecke,J.(1998). Risk factors for infection with helicobacter pylori. A study of children in rural Ethopia. Sand J Infection Disease.30:371-376.

[10] Pounder, R and Ng,D.(1995). The prevalence of helicobacter infection in different countries. Alimeat PharmacolTher; 9(suppl 2):33

[11] Mendall, M., Groggin,P., Molineaux, N., Levy,J., Toosy,T. and Etrsctian,D.(1992) Childhood living conditions and helicobacter pylori seropositivity in adult life. Lancet 339:896-897

[12] Roussos, A., Philippou,N. and Gourgoulianis,K (2003). Helicobacter ylori infection and respiratory disease: a review. World Journal Gastroentrol. 15:9(1) 5-8

[13] Benberin. V., Bektayeva, R., Karabayeva, R., Lebedev, A., Akemeyeva, K., Paloheimo, L., and Syrjänen, K (2013). Prevalence of H. pylori infection and atrophic gastritis among symptomatic and dyspeptic adults in Kazakhstan. A hospital-based screening study using a panel of serum biomarkers. *Anticancer Res.*33(10):4595-602.

[14] Asrat,D., Nilsson,I., Mengistu,Y., Ashenafi,S., Ayenew, K., Abu Al-Soud,W., Wadström T., and Kassa, E (2004). Prevalence of Helicobacter pylori infection among adult dyspeptic patients in Ethiopia Annal of tropical medicine andparasitology 98(2)181-189

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