PREVALENCE OF H. PYLORI INFECTION AMONG ADULTS ATTENDING MEDICAL SERVICES AT OUR LADY OF CONSOLANTA KISUBI HOSPITAL. A CROSS SECTIONAL STUDY.

Anthony Ssekitolekoa*, Jane Nakiyingi
School of Medical Laboratory Technology, Mildmay Institute of Health Sciences

Abstract

Objectives;
The study's specific objectives were to determine the prevalence of Hp infection among adult female and male patients who attended medical services at Our Lady of Consolanta Kisubi Hospital from March to April 2018 and to as well establish the relationship between gender and Hp infection among adults.

Methodology;
It was a cross-sectional study and data was collected from 100 samples collected from clients aged 18 years and above. The samples were selected using consecutive Sampling techniques and analyzed using H.pylori qualitative antibody rapid test kits. The data and results of the analysis were then collected from the laboratory request forms and reported on the checklist. This was then analyzed using simple Excel data sheet analysis and graphically presented in the form of tables and pie charts

Findings;
The study showed that the prevalence of prevalence of Hp infection among female patients that attended Our Lady of Consolanta Kisubi Hospital was found to be 21.6% and that for male adults was found to be 30.6%. The study has further established that there is no clear relationship between gender and Hp infection since prevalence in males was seen to be 9% higher than that in females which can be easily related to poor feeding time management among men.

Conclusion;
The study showed that the prevalence of Hp infections among adult patients tat attended Our Lady of Consolanta Kisubi Hospital was found to be 26.0%.

Recommendations;
I therefore recommend that Our Lady of Consolanta Kisubi Hospital works with the Ministry of Health to scale up sensitization of the public and healthcare workers about Hp infection and the risks associated with the infection. Also, I recommend that a broader study be carried out on Hp infection to have a broader picture concerning the infection and its management.

Corresponding Authors: Anthony Ssekitoleko*
Email: anthonysaykey@gmail.com;   School of Medical Laboratory Technology, Mildmay Institute of Health Sciences.

Background

Helicobacter pylori (Hp) is a Gram-negative bacterium that lives near the surface of the human gastric mucosa. Hp was established in 1982 by Robin Warren and Barry Marshall as the causative agent of gastritis and peptic ulcers (Ansari, S., *et al* 2016). The infection is usually contracted in the first few years of life and tends to persist indefinitely unless treated(McColl, 2010). Its prevalence increases with older age and with lower socioeconomic status during childhood and thus varies markedly around the world(Barnard et al., 2004). The higher prevalence in older age groups is thought to reflect a cohort effect related to poorer living conditions of children in previous decades (Malnick, S., *et al* 2014).

Today about 50% of the world population carries *Hp (Lim, J. H., et al 2013),* which causes chronic gastritis in all infected humans, and more severe gastric disease in 10–15% of those infected with Hp. Infections commonly occur in early childhood and can persist lifelong in the absence of antimicrobial therapy. (Backert, Selbach., *et al* 2008). Studies

of *Hp* have revealed not only its ability to colonize individual hosts for many decades but also that its bacterium has coexisted with humans for a very long time in history. (Blaser, M. J., *et al* 2001). In the modern world, however, *Hp* infections are responsible for a heavy toll of morbidity and mortality as a consequence of peptic ulcer disease mucosa-associated lymphoid tissue lymphoma and, the most dangerous complication, gastric adenocarcinoma. Therefore, the World Health Organization declared *Hp* the first bacterial class 1 carcinogen in 1994. (Backert, Selbach., *et al* 2008). As reported in most other studies it was found that females were at higher risk for the colonization of Hp than males (Ansari, S., *et al* 2016). Hp is the principal cause of gastric cancer, the second leading cause of cancer mortality worldwide. (Kodaman, Nuri *et al* 2014). In Uganda, as part of an epidemiological study of cancer, the prevalence and determinants of antibodies against *Hp* were investigated among 854 people with different cancer types and benign tumors; 87% (741) were seropositive, 4% (38) were seronegative and 9% (75) had an indeterminate result (Newton R, Ziegler JL., et al 2006).

In Africa, not so much research has been done on Hp but it was observed in Nigeria that one hundred and twenty-five patients, comprising 49 (39.2%) males and 76 (60.8%) females were studied and the prevalence rate of 93.6% for *H. pylori* was found by serology while a rate of 80.0% was found by histology. (Olokoba, A. B., et al 2013).

Objective of the study

To determine the prevalence of Hp infection among adults attending medical services at Our Lady of Consolanta Kisubi Hospital from March to April 2018.

Methodology

Study design

A cross-sectional study was used to determine the prevalence of *H. pylori* in adults attending medical services at Our Lady of Consolata Kisubi Hospital. The study design provided information concerning the occurrence situation of *H.pylori* infection specifically during the study time, and so, the status of individuals concerning the presence or absence of both exposure and disease was assessed at the same point in time.

Study Area

The study was conducted at Our Lady of Consolata Kisubi Hospital from March to April 2018.

Our Lady of Consolata Kisubi Hospital is located in Wakiso District, in the central region of Uganda; 28 kilometers (17 miles), South-West of Kampala. The Hospital operates 24/ 7 for all clients every Monday to Sunday. In total, the Hospital handles over 300 adult clients each day.

Study population

All clients above 18 years that attended medical services at Our Lady of Consolata Kisubi Hospital during the study period of March and April 2018

Inclusion criteria

Patients above 18 years who attended Our Lady of Consolata Kisubi Hospital, Monday to Sunday were accepted to participate in the study.

Exclusion Criteria

All patients below 18 years who sought medical services at Our Lady of Consolata Kisubi Hospital

Sample size estimation

Using the formula; $n = z^2pq /e^2$

n = desired sample size.

z = standard normal deviation usually set at 1.96 which corresponds to 95% confidence level.

p = expected prevalence was assumed to be 13 % (0.13) was used.

q = probability that the researcher would get a certain amount of error. 50% was considered to cater for that.

e = degree of accuracy which ranges from 0.01-0.1

$$n = \frac{1.96^2 x 0.13(1 - 0.5)}{0.05^2}$$

N=

99.9 ~ 100 respondents

➢ **The target population was therefore 100 participants.**

Sampling Technique

A consecutive sampling method was used while sampling. Here every subject that met the criteria of inclusion was selected until the required sample size was achieved. Since all the participants had an equal chance of being selected as samples to be part of the study, bias was reduced.

Sampling procedure

As patients visit the unit, the patients that were sent to the laboratory were received at the phlebotomy unit, their request forms were tracked and blood specimens were collected in plain blood collection containers. These specimens were then sent to the laboratory for analysis. All these specimens were considered for analysis since consecutive sampling was used and there was a predisposing factor that was considered in this research.

Data collection method

Relevant row data was collected from participant's laboratory request forms and tracked in the data collection tool. Also, the data from the results analysis was tracked on the same tool and thereafter analyzed to look out for the prevalence required. The relevant data to be collected included; participants' sex, age, ID number, and the test results after sample analysis.

Data collection tool

Data collection tool as shown in Appendix I was used to collect data. This consisted of provision for the number of participants involved in the study, date of sample collection, participant ID, age and sex of each participant, and their test results. This data was collected from patients' laboratory request forms.

Data collection procedure

- Participants sent to the phlebotomy unit were received; their blood specimens were collected in plain containers.
- These were then labeled and identified as research samples.
- In the laboratory, relevant data i.e. ID number; age, and sex of the participant were tracked in the request collection tool.
- The samples were processed and analyzed.
- Testing of samples was done using the HP Qualitative Antibody Rapid test
- The results were then recorded on the Data collection tool
- The recorded data was then analyzed for interpretation

Quality control

- All the laboratory procedures, and standard operating procedures (SOPs) recommended by WHO and MOH were followed.

- Control tests on negative and positive control blood samples for *H.pylori* were set for comparison reference, alongside the participants' tests.

- All the materials to be used in the entire procedure were checked for their expiry dates before the start of the procedure.

- Test strips with participants' samples were left for a standard time of 10 minutes at room temperature, beyond which results were not interpreted and reported.

- Validity of the test procedure was shown by the appearance of a colored line in the control region (C) of the test strips.

Data analysis and presentation

Data was analyzed manually using tally sheets and entered in a computer using Microsoft Word and Excel computer software programs and presented using tables, pie-charts, and bar graphs.

Ethical considerations

Permission to carry out the study was sought from Our Lady of Consolata Kisubi Hospital, Wakiso District.

Confidentiality was observed throughout the entire research process.

Results

Data presentation, analysis, and interpretation

A total of 100 participants were involved in the study, of which 51% (n=51) were females and 49% (n=49) were males.

The results are presented about the Prevalence of *helicobacter pylori* among adults who attended medical services at Our Lady of Consolata Kisubi Hospital from March to April 2018.

The findings of this research study are presented and interpreted according to the four objectives that guided it.

The objectives of this research study are already presented in chapter one of this research report. However, the objectives that guided this research are recapped below:

To determine the general prevalence of Hp infection among adults who attended medical services at Our Lady of Consolanta Kisubi Hospital from March to April 2018.

To determine the prevalence of Hp infection among adult female patients who attended medical services at Our Lady of Consolanta Kisubi Hospital from March to April 2018.

To determine the prevalence of Hp infection among adult male patients who attended medical services at Our Lady of Consolanta Kisubi Hospital from March to April 2018.

- To establish the relationship between gender and Hp infection among the adults who attended medical services at Our Lady of Consolanta Kisubi Hospital from March to April 2018.

Table 1: Shows the test results for & prevalence of *helicobacter pylori* among all adult participants.

N=100

	Positive	Negative	Prevalence
Adult males (n=49)	15	34	Prevalence = Positive participants x 100 / Total Tested = 26 x 100 / 100 = **26.0%**
Adult females (n=51)	11	40	
Total	**26**	**74**	

Out of the 100 adults that participated in this study, 26 (15 adult males and 11 adult females) of the participants tested positive and 74 (34 adult males and 40 adult females) of them tested negative. According to these study results, the overall prevalence of *helicobacter pylori* among the participants assessed at Our Lady of Consolanta Kisubi Hospital for the study period from March to April 2018 was determined as 26.0% (n=26) as shown in the figure1:

Figure 1: A pie chart showing the general prevalence among the adult participants.
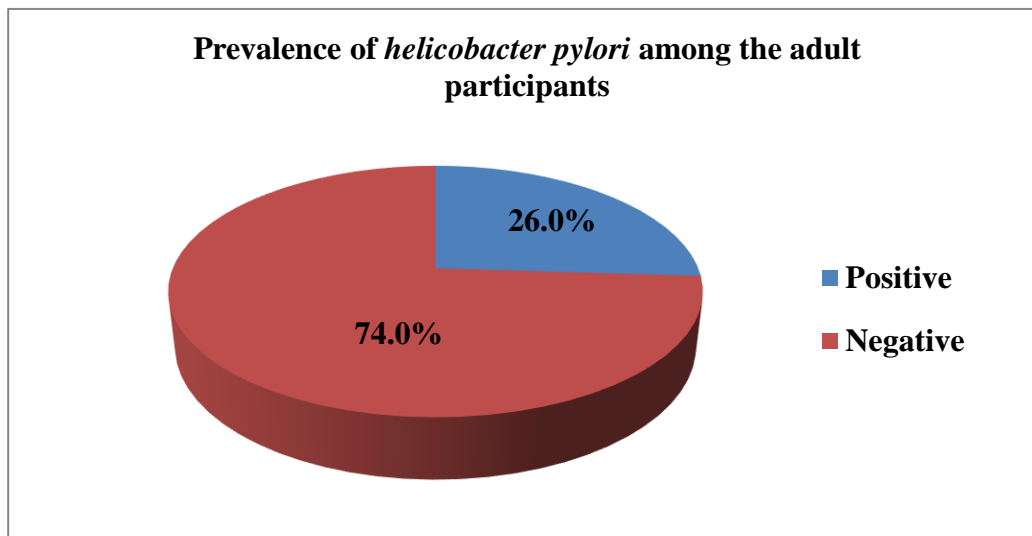

Prevalence of *helicobacter pylori* among the adult participants
- 26.0% Positive
- 74.0% Negative

Table 2: Shows the results for & prevalence of *helicobacter pylori* among the adult female participants

Adult females (n=51)		Prevalence
Positive	**Negative**	Prevalence = Positive participants x 100 / Total Tested = 11 x 100 / 51 = **21.6%**
11	40	

Out of the 51 adult female participants in this study, 11 of them tested positive whereas 40 tested negative. Therefore from these study results, the prevalence of *helicobacter pylori* among the adult female participants assessed at Our Lady of Consolanta Kisubi Hospital for the study period from March to April 2018 was found to be 21.6% (n=11) as shown in the figure 2:

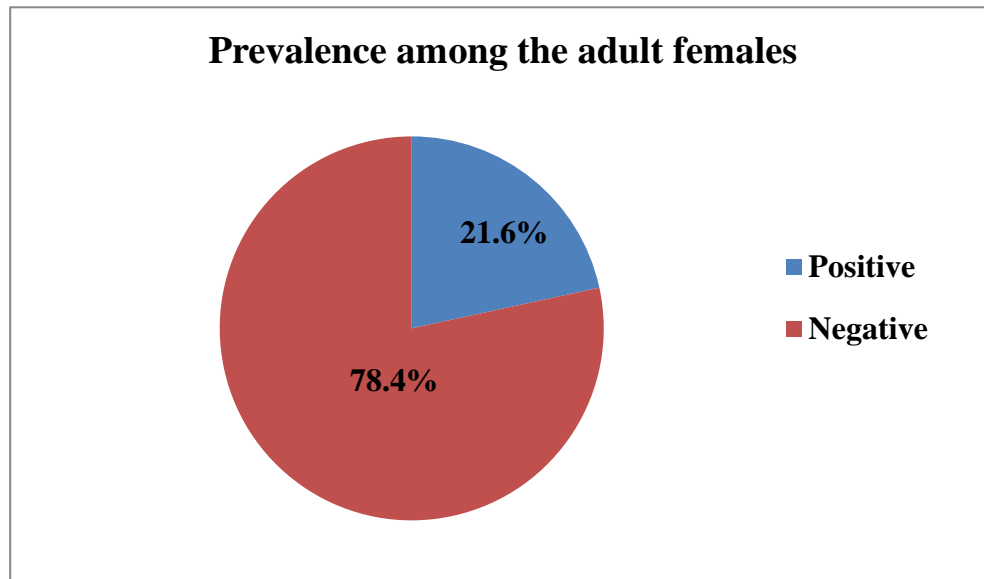**Figure 2: A pie chart showing prevalence of *helicobacter pylori* among the adult female participants**

Table 3: Shows the results for & prevalence of *helicobacter pylori* among the adult male participants

Males (n=49)		Prevalence
Positive	**Negative**	Prevalence = $\frac{\text{Positive participants}}{\text{Total Tested}} \times 100$
15	34	$= \frac{15}{49} \times 100$ = **30.6%**

Out of the 49 adult male participants in this study, 15 of them tested positive whereas 34 tested negative. Therefore from these study results, the prevalence of *helicobacter pylori* among the adult male participants assessed at Our Lady of

:

Consolanta Kisubi Hospital for the study period from March to April 2018 was found to be 30.6% (n=11) as shown in the figure below

Figure 3: A pie chart showing prevalence of *helicobacter pylori* among the adult male participants
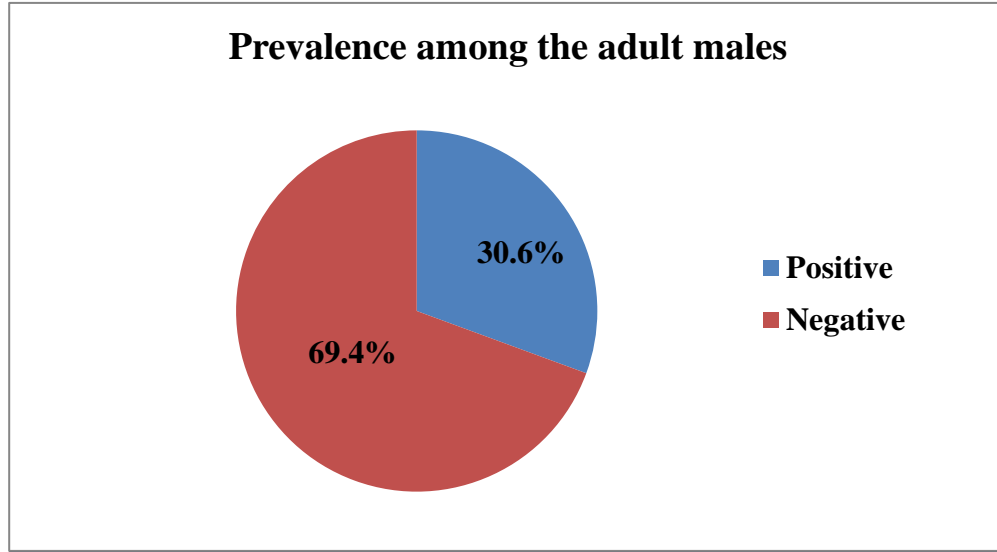
Table 4: Shows the respondents' test results according to gender.

N=100				
Males (n=59)			**Females (n=41)**	
	Negative		**Positive**	**Negative**
15	34		11	40

Prevalence among adult male participants = <u>Positive participants</u> x 100
                                                            Total Tested
                                            = <u>15</u> x 100
                                                49
                                            = 30.6%

Prevalence among adult female participants = <u>Positive participants</u> x 100
                                                            Total Tested
                                            = <u>11</u> x 100
                                                51

                                            = 21.6%

According to these study results, the prevalence of *helicobacter pylori* among the adult male was found to be 30.6% and that of female was found to be 21.6 %. These results show that the prevalence for male is 9% higher than that of females. Relating the number of male (49) and female (51) participants, it doesn't clearly show any relationship between Hp and any of the participants

These study findings are summarized in the figure below:

Figure 4: A bar graph showing the study results for both adult male and female participants
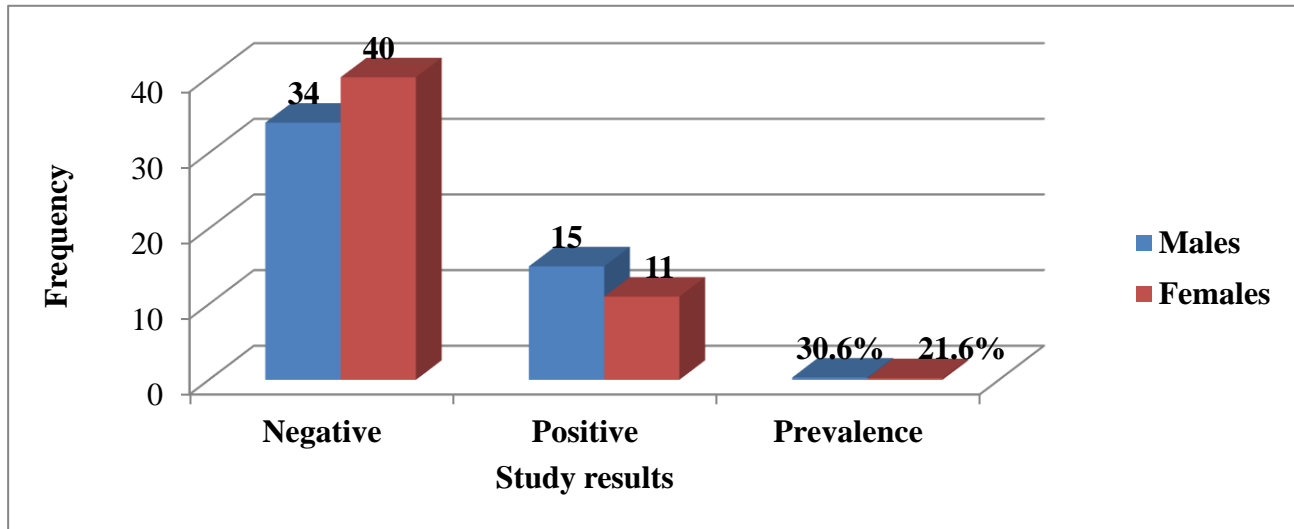
From the study findings therefore, it was found out that the prevalence of *helicobacter pylori* among the adult male participants was 30.6%, whereas the prevalence among the adult female participants was 21.6%. This further showed that the prevalence was higher amongst the adult male participants than in the adult female participants by a percentage difference of 9.0% for this study period from March to April 2018.

Discussion of study findings

Extensive epidemiologic data suggest strong associations between HP infection and non-cardia gastric cancers i.e., those distal to the gastroesophageal junction. The infection is classified as a human carcinogen by the WHO. (McColl, K. E. 2010). This influenced the researcher to take on the research to establish the prevalence of *helicobacter pylori* infection among adults who attended medical services at Our Lady of Consolanta Kisubi Hospital from March to April 2018. The study was done on samples of 100 patients above 18 years, including 51 females and 49 males. These samples were subjected to qualitative HP analysis and their results were analyzed and interpreted as demonstrated in Chapter 4.

According to this study, the prevalence of Hp was seen to be 26% which disagrees with the results of a study done in Nigeria that, involved hundred and twenty-five patients, comprising 49 (39.2%) males and 76 (60.8%) females, and general prevalence rate of 93.6% for *H. pylori* was found by serology (Olokoba, A. B., et al 2013). Also, another study done in developing countries showed that the prevalence of Hp ranges from 25% to 50% (Prescott *et al* 2002) which still doesn't rhyme with the current study. Also, these findings disagree with the anticipated prevalence of 13% which was used as an estimate during Sample size estimation in chapter 3.

In addition, the two specific objectives of the study sought to determine the prevalence of *helicobacter pylori* infection among the female and male adults who attended medical services at Our Lady of Consolanta Kisubi Hospital for the study period from March to April 2018. From the study results, the prevalence among adult females was found to be 21.6%, whereas that among adult males was found to be 30.6%. As opposed to other research findings, it is reported that females were at higher risk for the colonization of Hp than males. (Ansari, S., *et al* 2016). This could be attributed to the male's style of work in Uganda which doesn't provide them good opportunity to take care of their timely nutritional needs.

Conclusions

· The prevalence of *helicobacter pylori* infection among adults who attended medical services at Our Lady of Consolanta Kisubi Hospital from March to April 2018 was found to be 26.0%.

· The prevalence of *helicobacter pylori* infection among adult females who attended medical services at Our Lady of Consolanta Kisubi Hospital was found to be 21.6%.

· The prevalence of *helicobacter pylori* infection among adult males who attended medical services at Our Lady of Consolanta Kisubi Hospital was found to be 30.6%.

· The prevalence of men was seen to be higher than that of females

Study Limitations

I experienced financial constraints since I had to buy test kits to use and also keep moving to and fro the research Centre throughout the research period

Recommendations

1. The researcher recommends that Our Lady of Consolanta Kisubi Hospital works with the MOH to design strategies that will help sensitize the public about the Hp infection and the likely consequences to help curb the infection.
2. The researcher recommends that further research be carried out on a bigger population and establish the predisposing factors to the infection.

REFERENCES

Ansari, S., Gautam, R., Nepal, H. P., Subedi, S. N., Shrestha, S., Mandal, F., ... & Chhetri, M. R. (2016). Helicobacter pylori colonization in Nepal; assessment of prevalence and potential risk factors in a hospital-based patient cohort. *BMC research notes*, *9*(1), 59.

Backert, S., & Selbach, M. (2008). Role of type IV secretion in Helicobacter pylori pathogenesis. *Cellular microbiology*, *10*(8), 1573-1581

Blaser, M. J., & Berg, D. E. (2001). Helicobacter pylori genetic diversity and risk of human disease. *Journal of Clinical Investigation*, *107*(7), 767.

Kodaman, Nuri, Alvaro Pazos, Barbara G. Schneider, M. Blanca Piazuelo, Robertino Mera, Rafal S. Sobota, Liviu A. Sicinschi et al. "Human and Helicobacter pylori coevolution shapes the risk of gastric disease." *Proceedings of the National Academy of Sciences* 111, no. 4 (2014): 1455-1460.

Lim, J. H., Lee, D. H., Choi, C., Lee, S. T., Kim, N., Jeong, S. H., & Shin, C. M. (2013). Clinical Outcomes of Two-Week Sequential and Concomitant Therapies for Helicobacter pylori Eradication: A Randomized Pilot Study. *Helicobacter*, *18*(3), 180-186.

Malnick, S. D. H., Melzer, E., Attali, M., Duek, G., & Yahav, J. (2014). Helicobacter pylori: friend or foe?. *World journal of gastroenterology: WJG*, *20*(27), 8979.

McColl, K. E. (2010). Helicobacter pylori infection. *New England Journal of Medicine*, *362*(17), 1597-1604.

Newton, R., Ziegler, J. L., Casabonne, D., Carpenter, L., Gold, B. D., Owens, M., ... & Mbulaiteye, S. (2006). Helicobacter pylori and cancer among adults in Uganda. *Infectious agents and cancer*, *1*(1), 5.

Olokoba, A. B., Gashau, W., Bwala, S., Adamu, A., & Salawu, F. K. (2013). Helicabacter Pylori Infection in Nigerians with Dyspepsia. *Ghana medical journal*, *47*(2), 79-81.

Prescott, L. M., Harley, J. P. and Klein, D. A. (2002). Microbiology. 5th edition, New York. 918-919, 953-954.

Barnard, F., Loughlin, M., Fainberg, H., Messenger, M., Ussery, D., Williams, P., & Jenks, P. (2004). Global regulation of virulence and the stress response by CsrA in the highly adapted human gastric pathogen Helicobacter pylori. *Molecular Microbiology*, *51*, 15–32. https://doi.org/10.1046/j.1365-2958.2003.03788.x

McColl, K. E. L. (2010). Helicobacter pylori Infection. *New England Journal of Medicine*, *362*(17), 1597–1604. https://doi.org/10.1056/NEJMcp1001110

Publisher details

SJC PUBLISHERS COMPANY LIMITED