

A Health Education Program for El-Minia Nursing Institute's Students Regarding Helicobacter Pylori Disease

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Abstract: Background: Helicobacter pylori (H. pylori) is linked to serious complications like gastric cancer. Health education programs play a crucial role in managing H. pylori infections by increasing awareness about the bacterium and its associated health risks. Aim: This study aimed to evaluate a health education program for El-Minia nursing institute's students regarding helicobacter pylori disease. Research design: A quasi-experimental research design was used in this study. Sample: Convenient sample included 157 nursing institute students. Setting: Minia nursing institute, Minia governorate. Tools for data collection: One tool, Interview questionnaire included five parts, 1st part: Socio-demographic characteristics of nursing students, 2nd part: Past and current medical history of nursing institute, 3rd part: Nursing institute students' knowledge, 4th part: Nursing students' attitude about H. pylori disease and 5th part: Nursing student's reported practice questionnaires. Results: 83.4 % of nursing institute student had poor total knowledge pre apply education program improved and become 4.5 % of them had poor total knowledge post education program, 60.5 % of them had unsatisfactory total reported practice pre-education program, which improved to 39.5 % of them had unsatisfactory total reported practice post education program and 20.4 % of them had positive total attitude pre-education program, which improve and become 100.0 % of them had positive total attitude post apply health education program. Conclusion: Nursing institute student's total knowledge, total reported practices & total attitude about helicobacter pylori improved post apply health educational program. There is statistical relation between total knowledge, total reported practices & total attitude post applied education program. Recommendations: Apply further research in large sample and other setting for generalization.

Keywords: El-Minia Nursing Institute, Health Educational Program, Helicobacter Pylori Disease, and Students.

I. INTRODUCTION

Helicobacter pylori (H. pylori), are bacteria that can cause an infection in the stomach or duodenum (first part of the small intestine). It's the most common cause of peptic ulcer disease. H. pylori can inflame and irritate the stomach lining (gastritis). Untreated, long-term H. pylori infection can lead to stomach cancer (rarely). It mostly occurs in student. Only 20% of those infected have symptoms. Symptoms include dull or burning stomach pain, unplanned weight loss and bloody vomit. H-pylori-caused ulcers are commonly treated with combinations of antibiotics and proton pump inhibitors (1).

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At the world proximally 54% (over 3, 5 billion) person is known to be infected with *Helicobacter pylori*, mainly in the developing countries. *H. pylori* vary in prevalence widely with over 80% of Japanese and South American adults infected compared with approximately 40% in the United Kingdom (UK) and 20% in Scandinavia. Local differences in prevalence occur where there has been substantial immigration from countries with a higher prevalence (2). In Egypt the rate of infection with *Helicobacter pylori* has increased significantly in recent times, as studies have shown that nearly 70 million people are infected with the disease, most of them are young people, and among the highest governorates in Egypt affected by the disease is Minya Governorate which represent 37 %, then Cairo Governorate (34%) (3).

Knowledge, and practices towards *H. pylori* among students play a crucial role in preventing and managing the infection. Understanding the basics of *H. pylori*, including its transmission routes, symptoms, and potential complications, is essential. Educating students about the bacterium can help them recognize early signs of infection and seek timely medical intervention. Practices such as maintaining good personal hygiene, washing hands regularly, consuming clean and properly prepared food and water, and avoiding sharing eating utensils can significantly reduce the risk of infection (4).

Attitudes towards *H. pylori* are equally important. Promoting a proactive and positive attitude towards health and hygiene can empower students to take responsibility for their well-being and that of others. Reducing stigma associated with the infection encourages open discussion and cooperation in health-promoting activities. By fostering a supportive environment, students are more likely to adhere to preventive measures and treatment protocols if needed (5).

A health education program for *H. pylori* targeting students should aim to raise awareness, promote preventive practices, and encourage a proactive approach to health. The program can include interactive workshops, informative sessions, and engaging activities designed to teach students about the bacterium, its transmission routes, symptoms, and potential complications (6).

Community health nurse (CHN) play an important role in health promoters, community health nurses work to create a supportive environment that encourages healthy behaviors. Nurses collaborate with school administrators to implement policies that promote cleanliness and food safety, and nurses engage with parents and the broader community to reinforce these practices at home (7). Nurses monitor the overall health of the student population, identifying trends and potential outbreaks of *H. pylori* infection. Nurses use this data to inform public health strategies and interventions, ensuring a proactive approach to managing and preventing *H. pylori* infections among students. Through their comprehensive efforts, community health nurses play a critical role in safeguarding student health and fostering a culture of wellness and prevention (8).

Significance of the study:

H. pylori infection can be significant and impact overall health. One of the most common complications is the development of peptic ulcers, which are open sores that form on the stomach lining or the upper part of the small intestine, leading to pain, bleeding, and potential perforation. Chronic gastritis, or long-term inflammation of the stomach lining, is another frequent outcome, which can progress to atrophic gastritis, a condition characterized by the loss of stomach lining cells and reduced stomach acid production. This can impair digestion and nutrient absorption (9).

In 2023, the World Health Organization (WHO) advocated for the eradication of *H. pylori* to reduce the global gastric cancer-causing mortality rate, and in 2022, it identified clarithromycin-resistant *H. pylori* strains as a significant public health threat. In Egypt the rate of infection with *Helicobacter pylori* has increased significantly in recent times, as studies have shown that nearly 70 million people are infected with the disease, most of them are young people, and among the highest governorates in Egypt affected by the disease is Minya Governorate which represent 37%, then Cairo Governorate (34%) (10).

Many risk factors linked to socioeconomic and environmental conditions. Individuals living in crowded or unsanitary conditions, particularly in developing countries, have a higher likelihood of contracting the bacterium. Poor hygiene practices, as inadequate handwashing and consumption of contaminated food or water, increase the risk. Family history plays a role, as the bacterium can spread within households through close personal contact or shared eating utensils (11).

AIM OF THE STUDY

This study aimed to evaluate A health education program for El-Minia nursing institute's students regarding helicobacter pylori disease:

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- 1-Assess student's knowledge, attitude and reported practice about Helicobacter Pylori disease
- 2-Plan health education program in the light of the actual need and assessment of the students
- 3-Implement health education program about Helicobacter Pylori disease.
- 4-Evaluate health education program about Helicobacter Pylori disease.

Research Hypothesis:

El-Minia nursing institute students' knowledge, attitude and reported practice regarding helicobacter pylori disease will be improved after implementation of health education program.

II. SUBJECTS AND METHODS

I. Technical design

The technical item includes (research design, setting, sample and tools for data collection).

Research design:

A quasi-experimental research design was conducted to achieve the study.

Setting:

This study was conducted at Minia Nursing Institute.

Type of Sample:

Convenient sample was used in this study.

Sample size:

Total number was choosing (157) nursing Institute students. From Total number of students at El-Minia nursing Institute which represent (250) students in the previous academic year 2020- 2021.

Sample size was calculated by the following equation:

$$n=N(1+N \times (e))$$

n= sample size

N = population size = 250

E= (, 00025) level of perception

$n = 250(1+250 \times (, 00025)) = (157)$ it is the actual size of sample were institute nursing students.

Tool of data collection:

Data for this study collected by using the following one tool include:

Tool (1): An interview questionnaire: it included five parts:

Part I: Socio- demographic characteristics of nursing institute students consisted of 8 items as: sex, age, marital status, place of residence.... etc.

Part II: Previous and current infected of nursing institute students consisted of 10 items as: suffering from chronic diseases, suffer from an intestinal disease, suffer from a tendency to vomit permanently,etc.

Part III: Nursing institute student's knowledge about helicobacter pylori disease included 11 closed ended questions as (pre – post format): Meaning, causes, mode of transmission, signs and symptoms,etc.

Scoring system, it included 11 questions; the answer score 2 point for correct answer and complete, 1 point for correct answer and not complete and zero point to wrong or no answer.

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The total scores for student's knowledge 22 points regarding helicobacter pylori disease divided into three levels as the following:

- Poor knowledge < 50 % (< 11 score)
- Average knowledge 50 -70 % (11:15 score)
- Good knowledge > 70% (> 15 score).

Part IV: Reported practice of the nursing institute students about helicobacter pylori disease (pre – post format): It divided into 3 sub items as:

1- Nursing institute student's reported practice about dietary practices regarding helicobacter pylori disease included 16 closed ended questions as: Eat well cooked food, cover cooked foods to protect them from insects, eat vegetables and fruits without washing them,etc.

2- Nursing institute student's reported practice about personal hygiene regarding helicobacter pylori disease included 24 closed ended questions as: Wash your hands thoroughly with soap and water before eating, wash your hands well with soap and water after using the toilet, etc.

3- Nursing institute student's reported practice about cleanliness of the bath room regarding helicobacter pylori disease included 8 closed ended questions as: Cleaning the toilet daily, use cleaning chemicals such as Dettol and Phenic, use clean paper towels inside the bathroom, use the municipal bathroom permanently inside the house of worship or public places,etc.

Scoring system: it included 48 questions; 2 points for always, 1 point for sometimes answer and zero point to never answer.

The total score of students 96 points reported practices about helicobacter pylori disease classified into two levels:

- Satisfactory practices $\geq 60\%$ (≥ 67 point).
- Unsatisfactory practices < 60 % (< 67 point).

Part V: Nursing institute student's attitude about helicobacter pylori disease (pre – post format) included 8 closed ended questions as: Think that helicobacter pylori lead to cancer, think you have helicobacter pylori, think that helicobacter pylori are fatal, etc.

Scoring system: The total score of nursing institute students 22 points of attitude about helicobacter pylori disease classified into two levels:

The answers scored as 2 points for agree answer, 1 point for not sure answer and zero point to disagree answer.

The total score of nursing institute students 44 points for attitude about helicobacter pylori disease classified into two levels:

- Negative attitude < 50 % (< 22 point).
- Positive attitude $\geq 50\%$ (≥ 22 point).

Tool validity and Reliability:

A) Content Validity:

The revision of the tool for clarity, relevance, comprehensiveness, understanding and applicability was done by a panel of five experts all of them from Faculty of Nursing from Community Health department to measure the content validity of the tool and the necessary modification was done accordingly.

B) Tool Reliability:

Reliability was applied for testing the internal consistency of the tool, by administration of the same tool to the same subjects under similar conditions two times. Answers from the repeated testing were compared (Test- re- test reliability was 0.89 for knowledge), Cronbach's Alpha reliability was 0.880 for reported practices and reliability was 0.899 for attitude.

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Ethical consideration:

An official permission to conduct the proposed study obtained from the Scientific Research Ethics Committee Faculty of Nursing Helwan University. Participation in the study is voluntary and subjects was given complete full information about the study and their role before signing the informed consent. The ethical considerations included explaining the purpose and nature of the study, stating the possibility to withdraw at any time, confidentiality of the information where it was not be accessed by any other party without taking permission of the participants. Ethics, values, culture and beliefs respected.

II) Operational item:

1) Preparatory phase:

It included reviewing of related literature and theoretical knowledge of various aspect of the study using books, articles, internet and magazines to develop tool for data collection.

2) Pilot study:

A pilot study conducted on 10 % of the student equal 16 students under study to assess the feasibility, practicability, clarity and objectivity of the tools. Based on the results, no modification was done. Students in the pilot study were included in the main study sample because no modifications were done.

Field work:

After attaining the approval to conduct the study, sample collected at Minia Nursing Institute in Minya governorate. After establishing a trustful relation, every student interviewed only by the researcher to explain the study purpose then study tool completed by student. Teaching method used as group discussion, brainstorming, demonstration and re-demonstration, also media picture and handout. Booklet prepared by the researcher.

The study implemented through three phases preparatory, implementation and evaluation item.

An education program conducted in following phases:

Assessment phase: by using pre-testing questionnaire to assess the students' knowledge, reported practices and attitude about helicobacter pylori disease. The researcher first introduced himself and explained the purpose of the study briefly to the student. Every student was met and informed consent for participation was obtained. Students were assured that the obtained information confidentially, and used only for the purpose of the study.

Planning phase:

- Actual field work carried out in the period from beginning of October 2022 up June 2023 years, two days per week Tuesday and Thursday from 9 am -12pm and interview student in Minia Nursing Institute at Minya governorate.
- An education program was improved students' knowledge, reported practices and attitude about helicobacter pylori disease and explained to all participants. Based on the result of the pre-test questionnaire the researcher utilized 5 sessions each session needs from 30 - 45 minutes and the education program conducted through 3 theoretical sessions and 1 practical session.
- Post-test done after applies sessions. The study sample equal 157 students divided the sample to 10 groups each group about 16 students.

Implementation phase:

Based on the result obtained from the assessment phase, the researcher designed the health education program sessions contents according to the student's needs. Detected needs, requirements and were clarified and discussed in the form of booklet. Contents of the booklet were selected on the base of identified needs. The booklet consisted of knowledge about meaning of helicobacter pylori, causes of helicobacter pylori, mode of transmission of helicobacter pylori, signs and symptoms of helicobacter pylori, what to do if symptoms of illness appear of helicobacter pylori, treatment of helicobacter pylori disease is through, pharmacological treatment of helicobacter pylori disease, non-Pharmacological treatment of helicobacter pylori disease, complication of helicobacter pylori disease, and prevention of helicobacter pylori

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disease. Teaching methods used as lecture, open discussion, brain storming, demonstration and re-demonstrations were frequently applied during sessions. Media as PowerPoint, data show, pictures, video and booklet prepared by researcher.

Evaluation phase:

This phase utilized to evaluate the effect of educational program on improving students' knowledge, reported practice, and attitude. It conducted pre-intervention and post intervention after an educational program, utilizing the same format utilized pre intervention.

III) Administrative Item:

After explanation of the study aim and objectives, an approval to carry out this study was obtained from Dean of Faculty of Nursing, Helwan University and official permission was obtained from the director of Minia Nursing Institute at Minya governorate.

IV) Statistical Item:

Upon completion of data collection, data computed and analyzed using Statistical Package for the Social Science (SPSS), version 24 for analysis. The P value set at 0.05. Descriptive statistics tests as numbers, percentage, mean standard deviation (\bar{x} SD), was used to describe the results. Appropriate inferential statistics such as "F" test or "t" test used as well.

- Degrees of Significance of the results were:

- Non-significant (NS) if $p > 0.05$.

- Significant (S) if $p < 0.05$.

- Highly significant (HS) if $p < 0.01$. **Results:**

Table (1): Shows that, 53.3 % of nursing institute student's age between 18 to 19 years. Also, 87.3% of the nursing institute student's marital status was married. Moreover, 80.72 % of the nursing institute students place of residence were in rural area. Moreover, 76.4 % of them family monthly income was not enough.

Figure (1): Shows that, no one of nursing institute student had good total knowledge pre apply education program which improve and become 89.2 % of nursing institute student had good total knowledge post apply education program. Also, 83.4 % of nursing institute student had average total knowledge pre apply health education program which improve and become 4.5 % of nursing institute student had poor total knowledge post applied health education program where P value 0.04 and paired t test =29.54.

Figure (2): Illustrate that, 60.5 % of nursing institute student had unsatisfactory with total reported practices pre apply educational program which improve and become 39.5% of them had unsatisfactory with total reported practices post apply educational program. While, 0 % of nursing institute student had satisfactory with total reported practices pre apply educational program which improve and become 100.0 % of nursing institute student had satisfactory total reported practice post apply educational program where P value 0.000 and paired t test =29.43.

Figure (3): Illustrate that, 79.9 % of nursing institute student had negative total attitude pre apply educational program which improved and become 20.4 % of nursing institute student had negative total attitude post apply educational program. While, 0 % of nursing institute student had positive total attitude pre apply educational program which improved and become 100.0 % of nursing institute student had positive total attitude post apply educational program where P value 0.000 and paired t test =21.19.

Table (2): Shows that, there was high statistically significant relation between nursing institute student's total knowledge about H. pylori post-educational program with sex and age, where p value = 0.005 respectively.

Table (3): Shows that, there was high statistically significant relation between nursing institute student's total reported practices about H. pylori post- educational program with sex and age, where p value = 0.005 respectively.

Table (4): Shows that, there was high statistically significant relation between nursing institute student's total attitude about H. pylori post - educational program with sex and age, where p value = 0.005 respectively.

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III. DISCUSSION

Helicobacter pylori (H. pylori) disease refers to the medical conditions and symptoms caused by the infection of the stomach lining with the bacterium Helicobacter pylori. This spiral-shaped bacterium is known for its ability to survive in the acidic environment of the stomach, where it can weaken the protective mucus layer, leading to inflammation and damage. The presence of H. pylori is a major contributor to the development of peptic ulcers, which are open sores in the stomach or duodenal lining, and chronic gastritis, an ongoing inflammation of the stomach lining. Over time, untreated H. pylori infection can increase the risk of stomach cancer (12).

Community health nurses play a vital role in the management and prevention of Helicobacter pylori (H. pylori) disease. These healthcare professionals are on the front lines of educating the public about H. pylori, its transmission, and its potential health impacts, such as peptic ulcers and stomach cancer. Nurses conduct community outreach programs to raise awareness about the importance of hygiene practices, such as regular handwashing and safe food handling, to prevent infection. Community health nurses also play a critical role in early detection by encouraging students to seek medical attention for symptoms like persistent abdominal pain and nausea (13).

Socio-demographic characteristic of the nursing institute students.

Concerning to nursing institute student's sex, the present revealed that more than two third of nursing institute students were male and this finding was similar with **Alajmi et al., (2023)** who conducted published study at Riyadh, Saudi Arabia under title of " Knowledge and Attitude of Medical Students Towards Helicobacter Pylori Infection and Its Prevention and Management" Reported that 72.1 % of studied subjects were males. From researcher point view, this might be due to the perception of nursing as a female-only profession is evolving. More men are recognizing the diverse opportunities within nursing, including specialized fields, leadership roles, and advanced practice positions. (14).

Regarding to nursing institute student's age, more than half of nursing institute students had 18 to 19 years, and this finding was in agreement with **Shehab et al., (2023)** who conducted published study at Egypt entitled as " Screening and prevention program for Helicobacter pylori infection among students at Damietta University, Egypt " Reported that 52.2 % of studied subjects were 18 to 19 years. From researcher point view, this might be due to in many countries, students graduate from high school around the age of 18. Pursuing higher education immediately after high school is a common progression, with many students entering nursing institutes at this time. (15).

Concerning to nursing institute student's marital status and place of resident the present study revealed that, majority were married and more two third of nursing institute student's place of residence was rural. This result was in accordance with **Ali et al., (2023)** who conducted published study at Egypt entitled as " Health educational program for mothers regarding prevention of Helicobacter pylori infection for their adolescent under 20 years" reported that 85.3 % and 72.7 % of studied subjects were married and place of residence were rural, respectively. From researcher point view, this might be due to in many rural communities, traditional values and cultural norms play a significant role. Early marriage can be a common practice, with societal expectations encouraging young people to marry and start families soon after reaching adulthood. (16).

Regarding to nursing institute student's family monthly income of the present study revealed that more than two third of nursing institute student had not enough monthly income and this finding was in agreement with **Rostam et al., (2024)** who conducted a published study at Iraq entitled as " Prevalence of Helicobacter Pylori Infection among Student in Pediatric Hospital at Sulaimani City, Kurdistan Region of Iraq " Stated that 74.1 % of studied subjects were not enough monthly income. From researcher's point of view, this might be due to in many areas, the cost of living including housing, healthcare, education, and transportation has risen faster than wages. This disparity makes it challenging for individuals and families to afford necessary expenses. (17).

Concerning to nursing institute student's number of family members, present study finding revealed that more than two third of nursing institute students' number of family members were five members. This result was in accordance with **Agwa et al., (2024)** who conducted published study at Al-Baha Region, Saudi Arabia entitled as "Public Awareness and Attitude Towards Helicobacter Pylori Infection among Residents of Al-Baha Region, Saudi Arabia" reported that 70.5 % of studied subjects number of family members were five members. From researcher point view, this might be due to in rural areas, where access to formal social security systems and retirement plans may be limited, having more student can be a way for parents to ensure support in their old age. Student are often expected to take care of their parents as they grow older. (18).

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Nursing institute student's knowledge about the Helicobacter Pylori disease pre & post educational program. (Answered research hypothesis). El-Minia nursing institute students' knowledge, attitude and reported practice regarding helicobacter pylori disease will be improved after implementation of health education program.

Regarding the effective of the program on total knowledge nursing institute students, the present study revealed that their majority of nursing institute students had good total knowledge post apply education program which this finding was in the same line with **Hafiz et al., (2023)** whose conducted published study at Malaysia under title of " The Effectiveness of an Educational Intervention on Helicobacter pylori for University Students " revealed that, their 82.2 % of studied subjects had good total knowledge post apply education program in the knowledge of studied subjects after application of the health education program. From researcher's point of view, this might be due to if educational programs provide structured information about H. pylori, including its biology, transmission, symptoms, and complications. This comprehensive understanding helps students articulate accurate answers. Case studies and practical examples allow students to see the relevance of H. pylori in clinical settings. This contextual learning helps them relate theoretical knowledge to real-world scenarios. (19).

Concerning the program on total knowledge nursing institute students, the present study revealed that their majority of nursing institute students had poor total knowledge pre apply education program which this finding was in the same line with **Sewilam et al., (2024)** whose conducted published study at Iran under title of " Quality of Life among Patients with Helicobacter Pylori Iran " revealed that, their 83.4 % of studied patient had poor total knowledge pre apply education program in the knowledge of studied subjects. From researcher's point of view, this might be due to the knowledge of H. pylori can overlap with those of other gastrointestinal issues, leading to confusion and inaccuracies in responses. Students may lack access to comprehensive and reliable resources, limiting their ability to learn about H. pylori effectively. (20).

Reported practice of the nursing institute student about the Helicobacter Pylori disease pre & post educational program. Answered research hypothesis: El-Minia nursing institute students' knowledge, attitude and reported practice regarding helicobacter pylori disease will be improved after implementation of health education program.

Concerning the program on total reported practices nursing institute students, the present study revealed that less two third of nursing institute students had unsatisfactory with total reported practices pre apply educational program pre apply education program which this finding was in the same line with **Liu & He (2024)** whose conducted published study at Brazil under title of " Education, Prevention, and Treatment of Helicobacter pylori Infection by General Practitioners " revealed that, their 63.2 % of studied sample had unsatisfactory with total reported practices pre apply educational program of studied subjects. From researcher's point of view, this might be due to the symptoms and complications of H. pylori can overlap with those of other gastrointestinal issues, leading to confusion and inaccuracies in responses. Students may lack access to comprehensive and reliable resources, limiting their ability to learn about H. pylori effectively. (21).

Nursing institute student's Attitude about the Helicobacter Pylori disease pre & post educational program. (Answered research hypothesis). El-Minia nursing institute students' knowledge, attitude and reported practice regarding helicobacter pylori disease will be improved after implementation of health education program.

Concerning the program on total attitude nursing institute students, the present study revealed that less than quarter of nursing institute students had negative total attitude pre apply educational program which improved and become all of them had positive total attitude post apply educational program this finding was in the same line with **Alkhawajah et al., (2024)** whose conducted published study at Saudia Arabia, Japan under title of " Public knowledge, attitude, and practice towards Helicobacter pylori infection in Saudi Arabia " revealed that, their 61.1 % of studied sample had negative total attitude pre apply educational program of studied subjects. From researcher's point of view, this might be due to students may lack access to comprehensive and reliable resources, limiting their ability to learn about H. pylori effectively. (22).

Relation between the Studied Variables:

Concerning high statistically significant relation between nursing institute student's total knowledge about H. pylori post-educational program with sex and age, the present study show high statistically significant relation between nursing institute student's total knowledge about H. pylori post-educational program with sex and age this finding was supported with **Zha et al., (2022)**, who published study at China under title of " Effects of enhanced education for patients with the Helicobacter pylori infection " reported that there high statistically significant relation between studied patient total knowledge about H. pylori post-

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educational program with sex and age. From a researcher's point view, this might be due to the level of knowledge about H. pylori was significantly associated with various demographic factors, including the students' university level and prior exposure to information about H. pylori. This indicates that students who are more engaged or have a higher educational background may benefit more from educational programs, leading to a greater increase in knowledge. (23).

Regarding high statistically significant relation between nursing institute student’s total reported practices about H. pylori post-educational program with sex and age, the present study show high statistically significant relation between nursing institute student’s total reported practices about H. pylori post-educational program with sex and age this finding was supported with **El-maghawry et al., (2022)**, who published study at Egypt under title of " The Efficacy of Health Literacy sessions regarding Helicobacter Pylori Infection on University Students’ Knowledge and Practices " reported that there high statistically significant relation between studied patient total reported practices about H. pylori post-educational program with sex and age. From a researcher's point view, this might be due to this heightened awareness encourages students to adopt better practices in screening, prevention, and management of H. pylori. As students become more informed, they are more likely to engage in practices that reflect their enhanced understanding. (24).

Concerning high statistically significant relation between nursing institute student’s total attitude about H. pylori post-educational program with sex and age, the present study show high statistically significant relation between nursing institute student’s total attitude about H. pylori post-educational program with sex and age this finding was supported with **Atef & Mohamed (2021)**, who published study at Egypt under title of " Health awareness package to avert Helicobacter pylori infection among family members" reported that there high statistically significant relation between studied patient total attitude about H. pylori post-educational program with sex and age. From a researcher's point view, this might be due to experiencing the relevance of their education in practice can reinforce positive attitudes, as students see the impact of their learning on patient outcomes. (25).

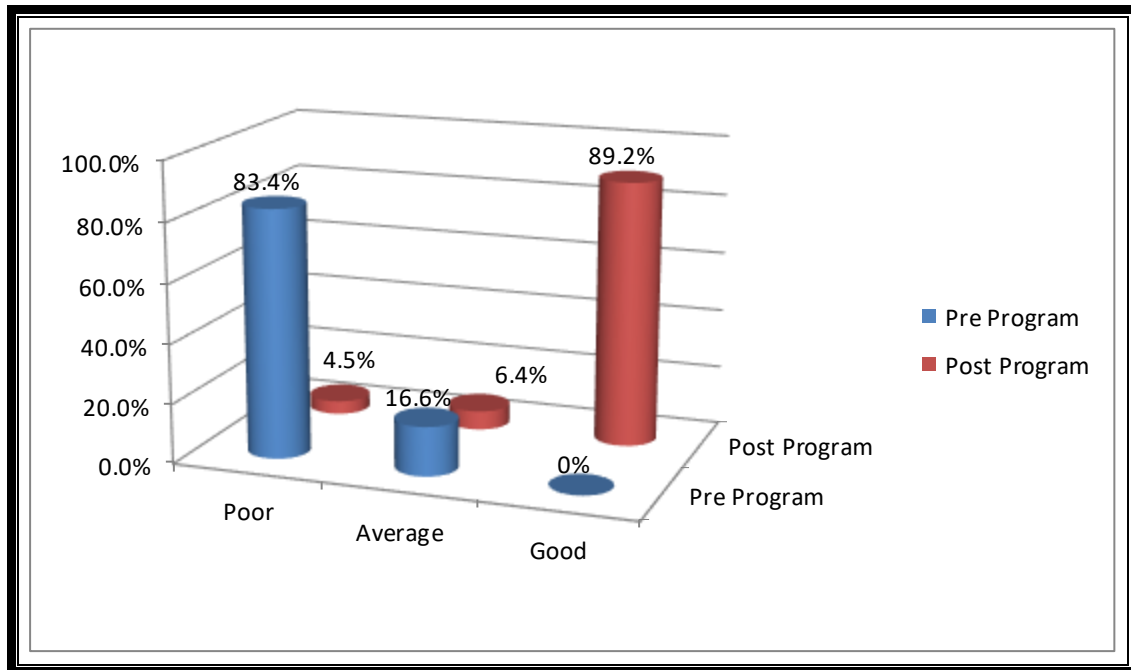
IV. RESULTS

Table (1): Number and Percentage Distribution of the Nursing institute student’s Socio-demographic Characteristics (n=157).

| Socio-demographic data | The nursing institute student | |
|--|-------------------------------|------|
| | No. | % |
| Sex: | | |
| Male | 110 | 70.1 |
| female | 47 | 29.2 |
| Age: | | |
| 16-17 | 73 | 46.5 |
| 18-19 | 84 | 53.5 |
| Marital status: | | |
| Single | 20 | 12.7 |
| Married | 137 | 87.3 |
| Place of Residence | | |
| Rural | 117 | 74.5 |
| Urban | 40 | 25.5 |
| The number of rooms in the house | | |
| Sufficient for the number of individuals | 117 | 74.5 |
| Not sufficient for the number of individuals | 40 | 25.5 |
| Job | | |
| Student | 157 | 100 |
| Family monthly income | | |
| Not enough | 120 | 76.4 |
| Sufficient for basic needs only | 37 | 23.6 |

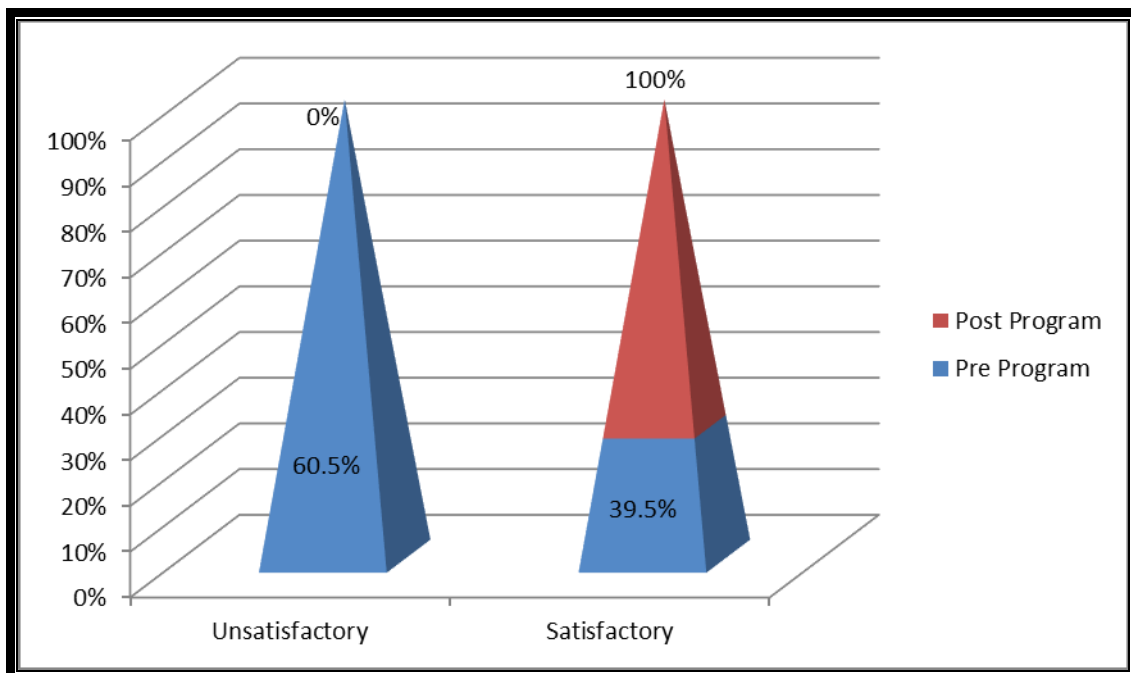
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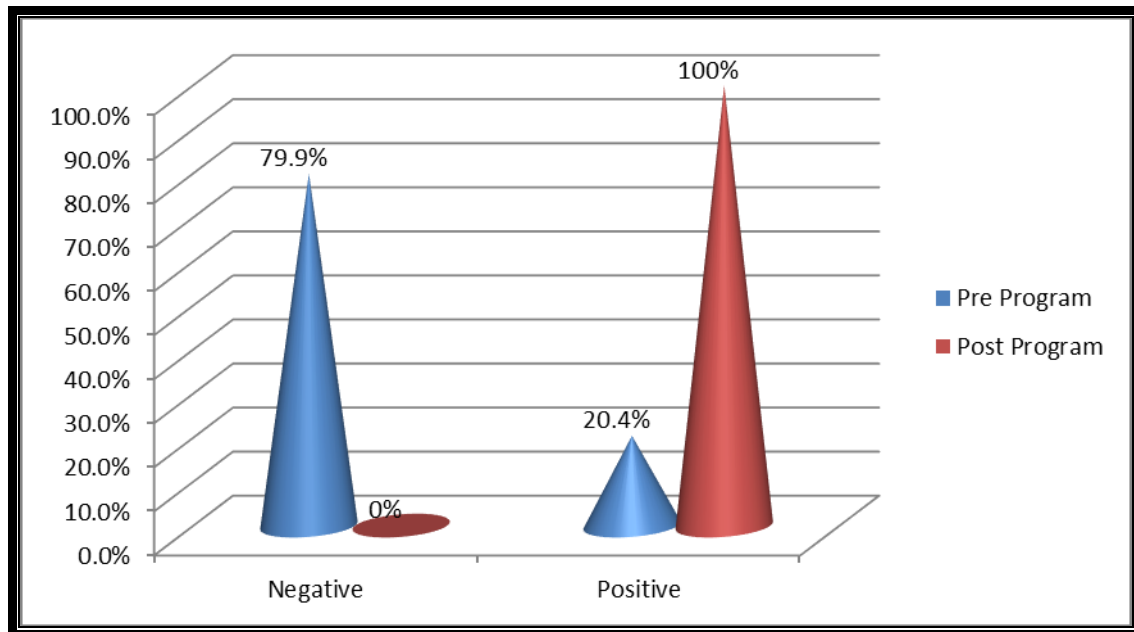
**** $\chi^2=29.54$ **P value=0.000**

Figure (1): Percentage Distribution of Total Knowledge among Nursing Institute Students about Helicobacter Pylori Disease Pre & Post Applying Educational Program (n=157).



**** $\chi^2=29.43$ **P value=0.000**

Figure (2): Percentage Distribution of Total Reported Practices among Nursing Institute Students of El- Minya Nursing Institute about Helicobacter Pylori Disease Pre and Post Applying Program (n=157).



** $\chi^2=21.19$ ***P value=0.000*

Figure (3): Percentage Distribution of Total Attitude among Nursing Institute Students of El- Minya Nursing Institute about Helicobacter Pylori Disease Pre and Post Applying Program (n=157).

Table (2): Relation between Total Knowledge and Nursing Institute Students' Socio-demographic Characteristics Post-Applying Health Education Program (N=157).

| Socio- demographic characteristics | Total Knowledge level among the nursing institute student post-program implementation | | | | | | χ^2 | P |
|-------------------------------------|---|-------|--------------|-------|------------|------|----------|-------|
| | Poor (7) | | Average (10) | | Good (140) | | | |
| | No. | % | No. | % | No. | % | | |
| Sex: | | | | | | | | |
| Male | 5 | 71.4 | 0 | 0.0 | 105 | 75.0 | 1.025 | 0.000 |
| Female | 2 | 28.6 | 10 | 100.0 | 35 | 25.0 | | |
| Age: | | | | | | | | |
| 16-17 | 7 | 100.0 | 8 | 80.0 | 58 | 41.4 | 5.214 | 0.03 |
| 18-19 | 0 | 0.0 | 2 | 20.0 | 82 | | | |
| Marital status: | | | | | | | | |
| Single | 5 | 71.4 | 0 | 0.0 | 15 | 10.7 | 15.001 | 0.000 |
| Married | 2 | 28.6 | 10 | 100.0 | 125 | 89.3 | | |
| Residence | | | | | | | | |
| Rural | 0 | 0.0 | 7 | 70.0 | 110 | 78.6 | 3.124 | 0.196 |
| Urban | 7 | 100.0 | 3 | 30.0 | 30 | 21.4 | | |
| The number of family members | | | | | | | | |
| 4 | 0 | 0.0 | 5 | 50.0 | 4 | 2.9 | 8.145 | 0.04 |
| 5 | 4 | 57.1 | 5 | 50.0 | 100 | 71.4 | | |
| 6 | 3 | 42.9 | 0 | 0.0 | 36 | 25.7 | | |

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| The number of rooms in the house | | | | | | | | |
|--|---|-------|----|-------|-----|------|-------|-------|
| Sufficient for the number of individuals | 4 | 57.1 | 6 | 60.0 | 107 | 76.4 | 4.210 | 0.196 |
| Not sufficient for the number of individuals | 3 | 42.9 | 4 | 40.0 | 33 | 23.6 | | |
| Family monthly income | | | | | | | | |
| Not enough | 0 | 0.0 | 10 | 100.0 | 110 | 78.6 | 3.225 | 0.03 |
| Sufficient for basic needs only | 7 | 100.0 | 0 | 0.0 | 30 | 21.4 | | |

>0.05 Non significant <0.05* significant <0.001

Table (3): Relation between Total Reported Practices Scores and Nursing Institute Students Socio-demographic Characteristics Post-Applying Program (N=157).

| Socio-Demographic characteristics | Total practices level among the nursing institute student post program implementation | | | | χ ² | P |
|--|---|------|--------------------|-----|----------------|-------|
| | Satisfactory (157) | | Unsatisfactory (0) | | | |
| | No. | % | No. | % | | |
| Sex: | | | | | | |
| Male | 110 | 70.1 | 0 | 0.0 | 2.140 | 0.002 |
| female | 47 | 29.2 | 0 | 0.0 | | |
| ● Age: | | | | | | |
| 16-17 | 73 | 46.5 | 0 | 0.0 | 10.669 | 0.001 |
| 18-19 | 84 | 53.5 | 0 | 0.0 | | |
| ● Marital status: | | | | | | |
| Single | 20 | 12.7 | 0 | 0.0 | 29.245 | 0.000 |
| Married | 137 | 87.3 | 0 | 0.0 | | |
| Residence | | | | | | |
| Rural | 117 | 74.5 | 0 | 0.0 | 1.351 | 0.76 |
| Urban | 40 | 25.5 | 0 | 0.0 | | |
| The number of family members | | | | | | |
| 4 | 9 | 5.7 | 0 | 0.0 | 12.254 | 0.04 |
| 5 | 109 | 69.4 | 0 | 0.0 | | |
| 6 | 39 | 24.9 | 0 | 0.0 | | |
| The number of rooms in the house | | | | | | |
| Sufficient for the number of individuals | 117 | 74.5 | 0 | 0.0 | 0.009 | 0.76 |
| Not sufficient for the number of individuals | 40 | 25.5 | 0 | 0.0 | | |
| Family monthly income | | | | | | |
| Not enough | 120 | 76.4 | 0 | 0.0 | 2.00 | 0.315 |
| Sufficient for basic needs only | 37 | 23.6 | 0 | 0.0 | | |

>0.05 Non significant <0.05* significant <0.001

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Table (4): Relation between Total Attitude Scores and Nursing Institute Students Socio-demographic Characteristics Post-Applying Program (N=157).

| Demographic characteristics | Total practices level among the nursing institute student preprogram implementation | | | | χ ² | P |
|--|---|-----|----------------|------|----------------|-------|
| | Negative (0) | | Positive (157) | | | |
| | No. | % | No. | % | | |
| Sex: | | | | | | |
| Male | 0 | 0.0 | 110 | 70.1 | 0.033 | 0.865 |
| female | 0 | 0.0 | 47 | 29.2 | | |
| • Age: | | | | | | |
| 16-17 | 0 | 0.0 | 73 | 46.5 | 8.001 | 0.005 |
| 18-19 | 0 | 0.0 | 84 | 53.5 | | |
| • Marital status: | | | | | | |
| Single | 0 | 0.0 | 20 | 12.7 | 89.5 | 0.000 |
| Married | 0 | 0.0 | 137 | 87.3 | | |
| Residence | | | | | | |
| Rural | 0 | 0.0 | 117 | 74.5 | 5.48 | 0.019 |
| Urban | 0 | 0.0 | 40 | 25.5 | | |
| The number of family members | | | | | | |
| 4 | 0 | 0.0 | 9 | 5.7 | 40.83 | 0.000 |
| 5 | 0 | 0.0 | 109 | 69.4 | | |
| 6 | 0 | 0.0 | 39 | 24.9 | | |
| The number of rooms in the house | | | | | | |
| Sufficient for the number of individuals | 0 | 0.0 | 117 | 74.5 | 5.48 | 0.019 |
| Not sufficient for the number of individuals | 0 | 0.0 | 40 | 25.5 | | |
| Family monthly income | | | | | | |
| Not enough | 0 | 0.0 | 120 | 76.4 | 12.39 | 0.000 |
| Sufficient for basic needs only | 0 | 0.0 | 37 | 23.6 | | |

>0.05 Non significant <0.05* significant <0.001

V. CONCLUSION

Based on the results of the present study and research hypothesis the following conclusion includes:

The results of present study supported the research hypothesis that there is marked an improvement in total knowledge, total reported practices and total attitude regarding helicobacter pylori for nursing institute students after applying of a health education program. There was statistically significant relation between nursing institute students’ socio-demographic data and their total knowledge, total reported practices and attitude regarding helicobacter pylori.

VI. RECOMMENDATIONS

In the light of the findings of this study, the following points are recommended:

- 1- Apply further research in large sample and other setting for generalization.
- 2- Make posters and banners about reported practices of helicobacter pylori disease and put in Minia nursing institute under observation of school health nurse.

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- 3- Wide distribution booklet to students on Minia nursing institute for helicobacter pylori disease that contain about meaning, causes, and signs and symptoms of helicobacter pylori disease then applied in other places to generalize the results.
- 4- Continuous health education program for student about helicobacter pylori disease.
- 5- Community health nurse provides training program for students on how to deal with students with helicobacter pylori disease.

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