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# **“A STUDY TO EVALUATE THE EFFECTIVENESS OF SELF INSTRUCTIONAL MODULE ON KNOWLEDGE REGARDING THE PREVENTION OF IRRITABLE BOWEL SYNDROME AMONG COLLEGE STUDENTS AT SELECTED DEGREE COLLEGES, BANGALORE”**

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## ABSTRACT

### BACKGROUND

Irritable bowel syndrome (IBS) is one of the most common gastrointestinal (GI) problems, characterized by altered bowel habits in association with abdominal discomfort or pain in the absence of detectable structural and biochemical abnormalities. Irritable bowel syndrome (IBS) is common functional bowel disorder that generates a significant health care burden and can severely impair quality of life. The study was aimed to assess the effectiveness of self instructional module on knowledge regarding the prevention of irritable bowel syndrome among college students at selected degree colleges, Bangalore.

### STATEMENT OF THE PROBLEM

“A study to evaluate the effectiveness of self-instructional module on knowledge regarding prevention of Irritable bowel syndrome among college students at selected degree colleges, Bangalore.”

### OBJECTIVES OF THE STUDY

- To assess the level of knowledge of degree college student regarding prevention of irritable bowel syndrome.
- To find out the difference between the mean pre-test and post-test knowledge scores of degree college students regarding prevention of irritable bowel syndrome.
- To determine the association between the mean pre-test knowledge level of degree college students regarding prevention of irritable bowel syndrome and their selected socio- demographic variables.

### METHODS

The pre experimental one group pre-test post-test design was used for the study. The study was conducted in selected degree colleges, Bangalore. Sample of 100 degree college students based on inclusion criteria were chosen by means of non probability convenient sampling technique. The data collection tool were validated

by experts, the reliability and feasibility were determined by the pilot study. The data for the study was collected by structured knowledge questionnaire following which samples were subjected to Self Instructional Module (SIM) for the duration of 45 minutes. Post-test was done on 7<sup>th</sup> day following intervention. The same tool used to conduct the post-test. The data was analyzed by using descriptive and inferential statistics.

## RESULTS

A total of 100 degree college students were recruited as a sample. The findings showed that the mean post-test knowledge score of the subjects was  $33.51 \pm 3.24$ , higher than the mean pre-test score of  $16.08 \pm 2.33$ . The 't' value obtained from paired 't' test was 24.83, which was higher than the critical value of 2.6 at  $p < 0.05$  level showing that the improvement in knowledge score was significant. The chi-square test was applied to determine the association of demographic variables with knowledge scores of degree college students. Results showed that the year of study, area of residence, food pattern, personal habits and source of information were significant. It means there is significant difference between pre-test and post test level of knowledge of college students regarding prevention of irritable bowel syndrome.

## INTERPRETATION AND CONCLUSION

The result of the study showed there was a significant improvement obtained following SIM on regarding prevention of irritable bowel syndrome among degree college students. This study enlightens that there is an immense need for educational programme in hospital or community to improve the knowledge regarding prevention of irritable bowel syndrome. And also this study motivates other researchers to conduct further studies to evaluate the attitudes and practices of degree college students regarding prevention of irritable bowel syndrome.

**Key words:** Self Instructional Module, Degree college students, Irritable bowel syndrome, Knowledge scores.

# Chapter-I

# Introduction

## I. INTRODUCTION

**“Health of body and mind is a great blessing, if we can bear it.”**

**-John Henry Cardinal Newman**

The gastrointestinal (GI) system, also termed as the digestive system and alimentary canal consists of the GI tract and its accessory organs. Its principle function is to provide the body with fluid, nutrients and electrolyte which is accomplished through the process of ingestion, digestion and absorption. Another important function of the GI system is the storage and elimination. Proper functioning of the GI system is essential to the maintenance of proper nutrition and health. Lack of any of these functions leads to GI disorders. However, physical, psychological or emotional factors influence GI functioning in many people.<sup>1</sup>

Irritable bowel syndrome (IBS) is one of the most common gastrointestinal (GI) problems. It is a gastrointestinal disorder characterized by altered bowel habits in association with abdominal discomfort or pain in the absence of detectable structural and biochemical abnormalities.<sup>1</sup> Irritable bowel syndrome (IBS) is common functional bowel disorder that generates a significant health care burden and can severely impair quality of life and is the most commonly diagnosed gastrointestinal condition. IBS affects quality of life of individuals and many efforts to determine its causes have been made.<sup>2</sup>

Altered gastrointestinal motility, visceral hypersensitivity, post infectious reactivity, brain-gut interactions, alteration in fecal micro flora, bacterial overgrowth, food sensitivity, carbohydrate malabsorption and intestinal inflammation all have been implicated in the pathogenesis of IBS.<sup>2</sup>

The perceived symptoms consist of abdominal pain or discomfort, bloating, diarrhea, and constipation. Not all symptoms are gastrointestinal, for instance, fatigue is very common.<sup>2</sup> Psychological stress exacerbates gastrointestinal symptoms magnifying the severity of diarrhea, abdominal discomfort etc. Psychological and psychiatric co- morbidity is often represented among IBS patients. Based on symptoms irritable bowel syndrome can be diagnosed with various tests such as blood test for celiac disease, CBC, Sedimentation rate, which checks for inflammation in the body, stool analysis and other tests, such as colonoscopy are sometimes done. Symptom-based criteria for IBS have been standardized and are referred to as the Rome criteria.<sup>3</sup> The Manning criteria are another diagnostic algorithm used in the diagnosis of irritable bowel syndrome (IBS).

Management of irritable bowel syndrome consists primarily of providing psychological support and recommending dietary measures. Adding fiber to diet slowly, by 2 to 3 grams a day, may help prevent gas and bloating. Health care providers have prescribed a diet containing at least 22-34 grams daily of dietary fiber. Soluble fiber is more helpful in relieving IBS symptoms. Pharmacologic treatment is adjunctive and should be directed at symptoms, such as modulation of persistent visceral hyperalgesia.<sup>3</sup> Antispasmodic agents (e.g., dicyclomine) before meals alleviate the pain associated with ingestion of food. Loperamide and alosetron are found to be effective for IBS patients with diarrhea.<sup>4</sup> Tegaserod is effective for patients whose primary bowel symptom is constipation. Successful management relies on a strong patient-provider relationship. Reassuring the patient that the absence of an organic pathology indicates a normal life expectancy.<sup>3</sup>

Proper self-care may help to ease symptoms and may extend the time between episodes. Self-care includes quitting smoking, avoiding caffeine and foods that make symptoms worse, and getting regular exercise.<sup>4</sup>

## **NEED FOR THE STUDY**

A functional gastrointestinal disorder comprises symptoms arising in the mid or lower gastrointestinal tract that are not attributable to anatomic or biochemical defects. The symptoms include abdominal pain, early satiety, nausea, bloating and various symptoms of disordered defecation. The most common functional

bowel disorders are irritable bowel syndrome (IBS) and functional dyspepsia.<sup>5</sup> IBS is the most common functional GI disorder. It is very common among the age group of 14-60 years.<sup>6</sup>

It is a chronic and debilitating functional gastrointestinal disorder that affects 9%-23% of the population across the world (World Gastroenterology Organization, 2009).<sup>7</sup> About 10 to 15% of people in the developed countries are believed to be affected by IBS.<sup>8</sup> The global prevalence of IBS has been estimated to be 11.2%.<sup>9</sup>

Recent European and American epidemiological investigations do validate that there is increased prevalence of IBS in women and confirm the significant impact of the disorder on the functional status and quality of life. Up to 1 in 5 people in Europe develop IBS at some stage of their life. Recent studies suggest that the incidence of IBS in America is 10% and its prevalence 20%.<sup>10</sup> The prevalence of irritable bowel syndrome in Singapore 8.6% and Japan 9.8% are comparable to that in Australia 6.9% and Europe 9.6%. Comparatively prevalence of IBS is high in Canada and the UK 12%.<sup>11</sup> The prevalence of IBS both in the community and even in the outpatient clinics varies and depends on the criteria used such as Manning criteria or Rome criteria.<sup>12</sup> These numbers are dependent on the diagnostic criteria used as well as on the population studied. Approximately 70% of patients who meet the diagnostic criteria for IBS do not seek medical care; the remaining patients account for 12% of primary care visits. Community-based estimates suggest that up to 30% of patients with a gastrointestinal complaint will have IBS, but only a minority of patients are diagnosed by a gastroenterologist.<sup>10</sup>

Population-based studies estimate the prevalence of IBS at 10–20% per year. Prevalence of IBS varies from 7.7%-12.9% and 11%-14% in Bangladesh and Malaysia, respectively.<sup>10</sup> Across Haryana 4%, Uttar Pradesh 6.8%, Mumbai 4%, Karnataka 8% IBS prevalence rate was reported.<sup>10</sup>

Of people with IBS, approximately 10–20% seek medical care. An estimated 20–50% of gastroenterology referrals relate to this symptom complex.<sup>13</sup> IBS poses a significant burden on the adults.<sup>14</sup>

A cross-sectional study was conducted, to determine the prevalence and predictors of IBS among medical students and interns. A sample size of 597 medical students and interns were selected by multistage stratified random sampling method. A confidential, anonymous, and self-administered questionnaire was used to

collect personal and socio demographic data, level of emotional stress, standardized hospital anxiety and depression scale were also used. The results showed that, the prevalence of IBS was 31.8%. Multiple logistic regression analysis revealed that, the first predictor of IBS was female gender (OR=2.89; 95.0% CI: 1.65–5.05). The second predictor was presence of morbid anxiety (OR=2.44; 95.0% CI: 1.30–4.55). Living in a school dormitory, emotional stress during 6 months preceding the exam were the next predictors. Thus, the study concluded that, prevalence of IBS among medical students and interns is high. Female gender, morbid anxiety, living in school dormitory, emotional stress, and higher educational level (grade) were the predictors of IBS. Screening of medical students for IBS, psychological problems, and reducing stress by stress management are recommended.<sup>15</sup>

A study was conducted on prevalence of irritable bowel syndrome, influence of lifestyle factors and bowel habits in college students. A sample size of 1,717 (747 men and 970 women) were included in the study who were asked to complete a self-reported questionnaire. The results showed that, the prevalence of IBS was 5.7% of the subjects. The proportion of women (70.7%) was significantly higher than men in the IBS group as compared to that in the non-IBS group (odds ratio 2.07, 95% CI 1.2-3.7). Residential type (odds ratio 1.27, 95% 1.06-1.5) and frequency of meals (odds ratio 1.69, 95% CI 1.2-2.5) significantly differed between the IBS group and non-IBS group. There was a trend towards the higher prevalence of IBS with fewer hours of exercise (odds ratio 0.99, 95% CI 0.95-1.04). Characteristics of defecation differed significantly between men and women ( $p < 0.05$ , to  $p < 0.0001$ ). Thus, the study concluded that, proportionately more women suffered from IBS than men. The dietary factors and lifestyle were significantly related to IBS. Multifaceted nursing aspects are required to reduce symptoms, such as dietary education and encouragement to change lifestyle aimed at controlling stress.<sup>16</sup>

A study was conducted to identify the information needs, levels of knowledge and associated factors in IBS. A sample size of 70 adult IBS patients was prospectively recruited in a Gastroenterology out-patient clinic. Demographic data, clinical data, anxiety and depression scores (HAD scale) were recorded. Patients rated their perceived levels of disease knowledge and satisfaction with their knowledge level on visual analogue scales. Qualitative data on disease information needs were obtained by an open-ended question. The results

showed that, the majority of IBS patients (77%; n = 54) required further information about their disease. The primary issues for IBS patients were bowel cancer risk and diet. The perceived level of knowledge in IBS was significantly negatively associated with length of hospital consulting ( $P = 0.04$ ). Thus, the study concluded that, IBS patients feel insufficiently informed, particularly in relation to risk of serious disease and role of diet. Educating IBS patients about their disorder may play a role in reducing healthcare use.<sup>17</sup>

In the light of above facts, the researcher felt that there is a need for education regarding prevention of irritable bowel syndrome to students by developing a self instructional module. Hence the researcher chose to conduct study on effectiveness of self instructional module on knowledge regarding the prevention of irritable bowel syndrome among college students at selected colleges, Bangalore.

# Chapter-II

## Objectives of the Study

### II. OBJECTIVES

Research objectives are what the investigator proposes to accomplish in research. That is specific measurable short term goals to be met.

This chapter deals with statement of the problem, objectives of the study, assumptions, hypothesis, operational definition of terms, delimitations of the study and conceptual framework which provides a frame of reference. The explicit description of objectives is essential to come out with a meaningful research. The statement of the problem and the objectives for the current study are as follows:

#### STATEMENT OF THE PROBLEM

“A study to evaluate the effectiveness of self-instructional module on knowledge regarding prevention of Irritable bowel syndrome among college students at selected degree colleges, Bangalore.”

#### OBJECTIVES OF THE STUDY

The objectives of the study are to:



- assess the level of knowledge of degree college student regarding prevention of irritable bowel syndrome.
- find out the difference between the mean pre-test and post-test knowledge scores of degree college students regarding prevention of irritable bowel syndrome.
- determine the association between the mean pre-test knowledge level of degree college students regarding prevention of irritable bowel syndrome and their selected socio-demographic variables.

## RESEARCH HYPOTHESIS

**H<sub>1</sub>:** There will be significant difference between the mean pre-test and post-test knowledge level of degree college students regarding prevention of irritable bowel syndrome.

**H<sub>2</sub>:** There will be significant association between mean pre-test knowledge scores of degree college students on prevention of irritable bowel syndrome and their selected socio demographic variables.

## OPERATIONAL DEFINITIONS OF THE TERMS

In this study it refers to

1. **Evaluate:** the method of estimating and interpreting the effectiveness of instructional module on prevention of irritable bowel syndrome.
2. **Effectiveness:** the significant increase in the level of knowledge among degree college students regarding the prevention of irritable bowel syndrome as measured by the correct responses to the item given in the questionnaires compared with pre-test and post-test. The level of knowledge is interpreted as adequate, moderately adequate and in-adequate knowledge.
3. **Self-instructional module:** a systematic organized teaching strategy prepared by the investigator and validated by experts containing information about various aspects of irritable bowel syndrome.
4. **Knowledge:** the awareness of degree college students regarding prevention of irritable bowel syndrome.
5. **Prevention:** the action intended to stop irritable bowel syndrome from happening or arising.
6. **Irritable bowel syndrome:** an intestinal disorder causing recurrent abdominal pain and diarrhea or constipation, often associated with stress, depression, anxiety, or previous intestinal infection.

7. **College students:** pupils studying for commerce at selected degree colleges, Bangalore and ranging between the age group of 19-28 years.

8. **Socio demographic variable:** an element of a group within a society. In this study it includes age, sex, education, religion, marital status, type of family, life style, dietary pattern, personal habit and source of information.

## **ASSUMPTION**

The study is based on the following assumptions

- Degree college students may have some knowledge regarding prevention of irritable bowel syndrome.
- Education may help to enhance the knowledge level of degree college students regarding prevention of irritable bowel syndrome.
- Socio demographic variables may influence the knowledge of degree college students regarding prevention of irritable bowel syndrome.

## **DELIMITATION**

This study is delimited to:

- Assessment of knowledge will be based only on the correct responses given to the items in the knowledge questionnaire.
- Collection of data is only from degree college students between the age group of 19-28 years at selected degree colleges.

## **CONCEPTUAL FRAMEWORK OF THE STUDY**

Conceptual framework means an interrelated concepts or abstractions that are assembled together in some rational scheme by virtue of their relevance to a common theme. This is a device that helps to stimulate research and the extension of knowledge by providing both direction and impetus. A frame work may serve as a spring for a scientific advancement and the overall purpose is to make scientific findings meaningful and generalizable.<sup>18</sup>

A conceptual framework is a group of concepts and set of proportions that spell out the relationship between them. Conceptual framework plays several interrelated roles in the progress of science.<sup>18</sup>

The present study aims at evaluating the effectiveness of SIM for college students on knowledge regarding prevention of irritable bowel syndrome at selected degree colleges, Bangalore.

The conceptual framework is a general amalgam of all the related concepts in the present situation. The conceptual framework of the present study is based on general systems model of theory approach with input, throughput, output and feedback which was first introduced by Ludwig Von Bertalanffy.<sup>19</sup> This study is done particularly to prepare a self instructional module to evaluate its effectiveness on prevention of irritable bowel syndrome among degree college students, Bangalore.

According to systems theory, a system is a group of elements that interacts with one another in order to achieve the goal. The component interacts within a boundary and filters the type and rate of exchange with the environment. An individual is a system because they receive input from the environment. All living systems are open, in that, there is a continual exchange of matter, energy and information.<sup>19</sup>

Each system may be viewed as having one (or) more supra systems and subsystems. In open system, there are varying degree of interaction with the environment from which the system receives input and gives back output in the form of matter, energy and information.<sup>20</sup>

In this study, degree college students are considered as open system. All systems must receive varying type and amount of information from the environment.

- **Input** - In this study input includes assessment of pre-test knowledge scores of degree college students regarding prevention of irritable bowel syndrome by using structured knowledge questionnaire and administration of SIM.

- **Throughput** – It is the process used by the system to convert raw materials or energy from the environment into products that are usable by either the system or the environment, for example, thinking, planning, constructing and sharing information.<sup>21</sup> In this study, the following process is adopted. The degree college students understand the SIM given and interpret.

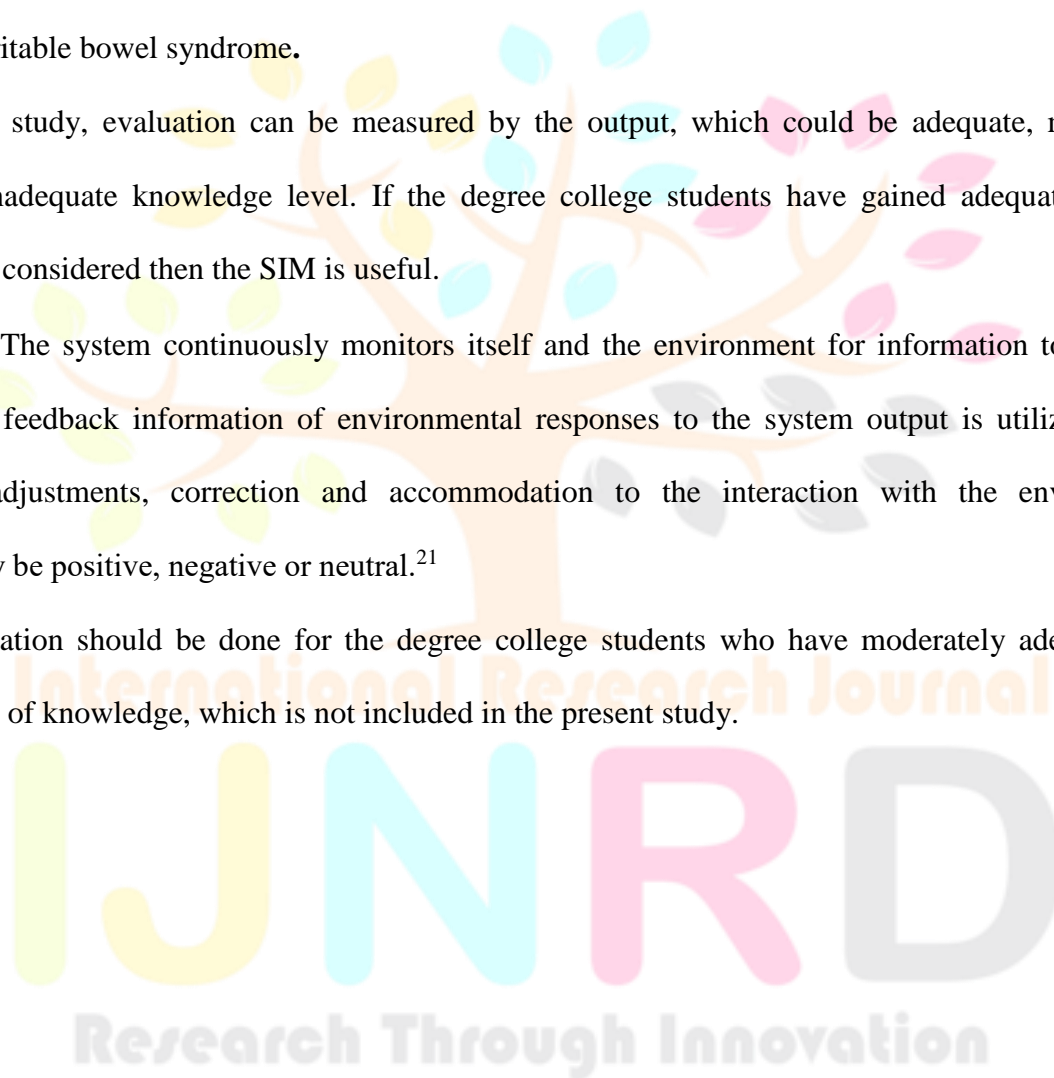
- **Output** – After processing, the system returns output to the environment in an altered state, affecting the environment.<sup>21</sup> In this study, the “output” refers to the knowledge gain of degree college students regarding prevention of irritable bowel syndrome after administration of SIM which will be assessed by a post-test.

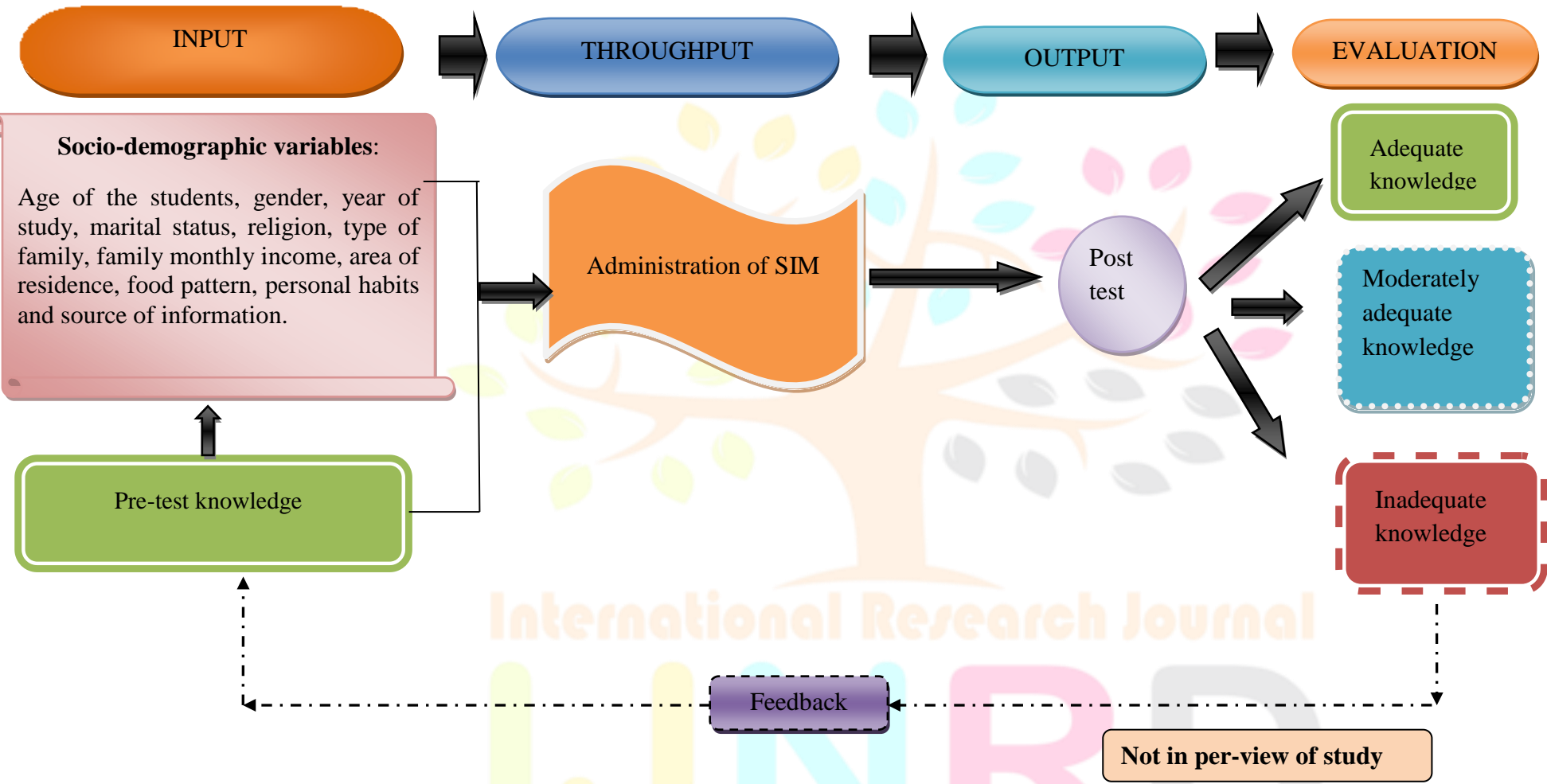
- **Evaluation** – Evaluation is the information about some aspects of data or energy processing that can be used, to evaluate and monitor the system and guide it to more effective performance<sup>21</sup>. In the present study, the evaluation measures the success or failure of the output. This is accomplished by meaningful outcome criteria established to measure the level of knowledge acquired by the degree college students regarding prevention of irritable bowel syndrome.

In this study, evaluation can be measured by the output, which could be adequate, moderately adequate and inadequate knowledge level. If the degree college students have gained adequate level of knowledge, it is considered then the SIM is useful.

- **Feedback** – The system continuously monitors itself and the environment for information to guide its operation. This feedback information of environmental responses to the system output is utilized by the individual in adjustments, correction and accommodation to the interaction with the environment- “Feedback” may be positive, negative or neutral.<sup>21</sup>

Further investigation should be done for the degree college students who have moderately adequate and inadequate level of knowledge, which is not included in the present study.





**Fig: 1 CONCEPTUAL FRAME WORK BASED ON MODIFIED LUDWIG VON BERTALANFFY GENERAL SYSTEM MODEL**

# Chapter-III

## III. REVIEW OF LITERATURE

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This chapter gives an account of the literature reviewed by the investigator for the purpose of assessing the effectiveness of self instructional module on knowledge regarding the prevention of irritable bowel syndrome among college students at selected colleges, Bangalore.

Research is systematic inquiry that uses disciplined methods to answer questions or solve problems. The ultimate goal of research is to develop, refine and expand a body of knowledge. Nursing research is systematic inquiry designed to develop trustworthy evidence about issues of importance to the nursing profession including nursing practice, education, administration and informatics. Clinical or field nursing research is designed to guide nursing practice and improve the health and quality of life of individual, family and community.<sup>22</sup>

A review of related literature is an essential aspect of scientific research. It involves the systematic identification, location, scrutiny and summary of written material that contain information on the research problems. Conducting a review of literature is a challenging and enlightening experience. Through a literature review, the researcher generates what is known about a particular situation and the knowledge gap that exists between the statement and reality, which lays a foundation for the research plan.<sup>22</sup>

A literature review was based on an extensive survey of books and regional, national and international journals of Nursing.

Here the review of literature related to the purpose of the present study has been divided under the following areas.

Part A: Review of literature related to epidemiology and prevalence of IBS.

Part B: Review of literature related to risk factors, clinical manifestation, diagnostic evaluation associated with IBS.

Part C: Review of literature related to knowledge, prevention and management of IBS.

## I. Review of literature related to epidemiology and prevalence of IBS

A study was conducted to estimate the prevalence of IBS in a rural community of Ballabgarh block, located in Haryana state. A structured questionnaire based on Rome III module was used to collect symptoms related to IBS from all the participants in a door to door survey. There were 4,767 participants (mean age  $34.6 \pm 10.8$ , males 50%). Overall, 555 (11.6%) had constipation, 542 (11.4%) diarrhea and 823 (17.3%) abdominal pain. The overall prevalence of IBS was 4% (95% CI, 3.5-4.6). The prevalence of constipation predominant IBS was 0.3%, diarrhea predominant IBS (1.5%), mixed IBS (1.7%) and unsubtyped IBS (0.5%). The prevalence of IBS was significantly higher in females compared with males (4.8% vs 3.2%,  $P = 0.008$ ). Thus the study concluded that, the prevalence of IBS in a Northern Indian community is 4% and the predominant subtype of IBS in this community is IBS-M.<sup>23</sup>

A cross-sectional study was conducted to assess the epidemiological factors related to IBS in an urban slum population of Mumbai using systematic random sampling with a predesigned, pretested, semi-structured questionnaire as a study tool. The prevalence of IBS was 12.27%, of which 56% were males and 44% were females. Majority were aged between 25 and 44 years (66%) and married (64%). Most common symptoms were relief of pain after bowel movement (68%), change in frequency of stools (65%) with 51.52% showing diarrhea-predominant subtype, and only 15.15% had visited a gastroenterologist. Thus the study concluded that, psychiatric disorders, sexual function, work absenteeism, pelvic pain, and gastroesophageal reflux diseases were significantly associated with IBS.<sup>24</sup>

A study was conducted to evaluate the prevalence of functional constipation (FC) and irritable bowel syndrome-constipation (IBS-C) in patients with constipation and assess their demographic/socio-economic/clinical characteristics. All participants completed semi-structured questionnaires. Out of 925 constipated patients, 75.6% were diagnosed with FC against 24.4% with IBS-C ( $P < 0.0001$ ). Hypertension (16%) and diabetes (10%) in patients with FC while acid peptic disorders (21.7%) amongst IBS-C patients were the most common comorbid conditions observed. Laxatives were the most commonly used medication. However, about 1/5th patients of FC were using home remedies. Thus the study concluded that, there was a higher prevalence of FC over IBS-C in Indian constipated patients; both subtypes had high frequency and severity of constipation-related symptoms and poor QoL.<sup>25</sup>

A cross-sectional study was conducted to investigate the prevalence and some related factors about irritable bowel syndrome (IBS) among 767 medical students. All participants were asked to complete self-administered questionnaires. The prevalence of IBS was 33.3%, with a high prevalence in women (36.1%). Among the IBS patients, 112 cases were IBS-M (43.9%) and 77.6% had moderately severe IBS. There were no statistical differences between control group and IBS patients in anxiety and depression scores ( $P > 0.05$ ). Sex and sleep disorder were independently associated with IBS (OR, 1.914, 95%CI, 1.281–2.860; OR, 1.143, 95%CI, 1.074–1.216). Thus the study concluded that, the findings may provide many valuable suggestions for the necessary intervention and treatment measures towards medical students.<sup>26</sup>

A cross-sectional study was conducted to assess the prevalence of irritable bowel syndrome in 133 medical students from January to February. Data was collected using validated tools Rome IV criteria. Results showed that, 18% of the participants have been diagnosed with IBS and 28.5% fit Rome IV criteria for the diagnosis of IBS. Stress with a percentage of 69.2% and lack of exercise 75.9% being the highest risk factors of IBS. Thus the study concluded that, more community awareness and education is required and internal medicine doctors are advised to have an active role in the health education and awareness about IBS problem among medical students.<sup>27</sup>

An observational case-control study was carried out to investigate the prevalence and the pattern of anxiety related IBS symptoms among medical students of Karachi. Random sampling was done on 360 medical students. Data was collected using validated tools "Rome III Criteria" and "Generalized Anxiety Disorder Questionnaire". The apparent prevalence of IBS was found to be 28.3%, with a predominance of 87(85.29%) females (85.29%) over males (14.71%). The psychological symptoms of anxiety were encountered in 57 (55.8%) participants with IBS, among which males were 15.7% and females 84.2% respectively. Thus the study concluded that, students who more frequently suffer with mental stress and anxiety are more associated with IBS.<sup>28</sup>

A study was conducted to determine the prevalence of IBS among adolescents with self-reported poor sleep. Junior middle school and senior high school students ( $n = 1,362$ ) were recruited from schools. All participants completed self administered questionnaires. The prevalence of poor sleep was 34.29% and there was no significant difference between genders ( $P = 0.991$ ). The tendency towards poor sleep



increased with age, with age group yielding a significant effect ( $P = 0.001$ ). In junior middle school and senior high school students, the propensity towards poor sleep was 30.10% and 42.11%, respectively. Among students with poor sleep, the prevalence of IBS was 19.70%. IBS was significantly more common in students with poor sleep ( $OR = 1.92$ ). Thus the study concluded that, IBS is prevalent in students with poor sleep.<sup>29</sup>

A study was conducted to determine the prevalence rates and factors associated with functional gastrointestinal disorders. A stratified, randomized study based on cross-sectional data was performed using cluster sampling, which recruited 3671 students. All of the students were requested to complete a questionnaire. Overall,  $88.05\% \pm 0.28\%$  of students had a bowel movement frequency of between 1 of 2 times per day and once every 2 days. Female students were found to have a lower bowel frequency than boys ( $P < 0.01$ ). The prevalence of irritable bowel syndrome (IBS), functional constipation, and functional diarrhea were 19.89%, 24.93%, and 5.42%, respectively. Certain factors adjusted for age and sex were significantly associated with IBS ( $P < 0.05$ ), including gastrointestinal tract infection (odds ratio [OR] 2.26), abuse of analgesics (OR 1.25), air swallowing to terminate hiccups (OR 1.28), fatigue (OR 1.15), and depression (OR 1.36). Thus the study concluded that, in IBS, functional constipation, and diarrhea are common disorders among adolescent group.<sup>30</sup>

A cross-sectional study was conducted to determine the prevalence of IBS among Japanese adolescents and the factors associated with it using Rome III Diagnostic Criteria for Functional Gastrointestinal Disorders. Among 99416 questionnaires that were collected, data from 98411 valid responses were analyzed. The results showed that the prevalence of IBS was 18.6%. The prevalence of diarrhea-predominant IBS was higher among boys than among girls, and the prevalence of constipation-predominant IBS was higher among girls than among boys. The prevalence of IBS increased with progression of the school grade, and there were the significant relationships between IBS and sleep-phase delay and insomnia symptoms. Thus the study concluded that, IBS is common among junior and senior high school students, and associated with lifestyle and mental health.<sup>31</sup>

A study was conducted to estimate the prevalence and associated factors involved in IBS in Chinese college and university students using the Rome III criteria. A total of 5000 students were asked the Rome III questionnaire. Based on the 4638 students who completed the questionnaire, the prevalence of

functional dyspepsia, irritable bowel syndrome and functional constipation among college were found to be 9.25%, 8.34% and 5.45% respectively. IBS was more frequent in female students. The factors of anxiety (OR 1.07) and depression (OR 0.55) indicated a high risk of causing irritable bowel syndrome. Thus the study concluded that, psychological disorders such as anxiety and depression provide significant risk factors for irritable bowel syndrome patients.<sup>32</sup>

A study was conducted to estimate the prevalence of irritable bowel syndrome (IBS) and certain related factors for IBS. A total of 2500 college students were asked the Rome III questionnaire. Among the 2126 students with complete data, the prevalence of IBS was 7.85% according to the Rome III criteria, with a female/male ratio of 1.78:1. Most students had the IBS-constipation subtype (36.5%), followed by IBS-diarrhea subtype (31.1%) and IBS-mixed subtype (23.9%). The students with IBS had a higher anxiety and depression score than those without IBS. Thus the study concluded that, low exercise level and anxiety indicated a high risk for IBS.<sup>33</sup>

A cross-sectional study was conducted to determine the prevalence of irritable bowel syndrome (IBS) among university students. Using a convenience sample, a total of 813 students aged 18 years old and above participated in this study. The ROME III criteria were used as a tool to ascertain IBS. An overall prevalence of IBS of 20% was recorded among university students. The bivariate analysis showed that females were significantly more likely to report having IBS than males ( $P < 0.01$ ). Those living at the school dormitory or in a private residence (39.5%) were more likely to have IBS than those living with their families (16.3%). The multivariate analysis showed that those who had a relatively high family income level were almost 6 times more likely to report having IBS than their counterparts. Thus the study concluded that, the prevalence of IBS among university students was higher.<sup>34</sup>

A cross-sectional analytical study was made during the 2014 school year of college students studying medicine at a public university in Guadalajara, Mexico on academic stress with IBS. The ROMA III criteria were used for the IBS and the Academic Stress Inventory for academic stress. The total population consisted of 1,101 students (48% males and 52% females). The results showed that students with academic overload and lack of time are at risk for developing the IBS. Thus the study concluded that, the academic stress situations of academic overload and lack of time are predictive for having IBS.

In addition, diarrhea is more common than constipation and mixed bowel habits in the medical students of a public university in Mexico.<sup>35</sup>

## **II. Review of literature related to risk factors, clinical manifestation, diagnostic evaluation associated with IBS.**

A cross-sectional study was conducted to determine the risk factors of IBS in children in Suzhou city. A study was conducted on children in grades 1 through 6 in public elementary schools. Rome II criteria were used to confirm IBS and their risk factors were analyzed. Of 8,000 questionnaires 7,472 responded satisfactorily for a response rate of 93.4%. IBS was diagnosed in 10.81%. The significant risk factors for IBS included young age (OR = 0.94), food allergy (OR = 1.53), gastroenteritis during childhood (OR = 1.29), eating fried food (OR = 1.62), anxiety (OR = 1.49), psychological insults in early childhood (OR = 1.47), and parental history of constipation (OR = 1.81; all). IBS prevalence of 10.81% in study population warrants preventive measures such as encouraging dietary changes, preventing gastroenteritis and childhood psychological insults. Thus the study concluded that, IBS is a common disease in elementary school children.<sup>36</sup>

An observational population-based study was conducted to assess the risk factors of IBS among Lebanese adult individuals. The study participants completed an anonymous self-administered questionnaire. Data was collected from 553 individuals and consisted of 52.8% females and 47.2% males. The participants aged less than 30 years old were at a higher risk of having IBS ( $P < 0.01$ ). Those who ever smoked waterpipe were 1.63 times more likely to have IBS than those who never smoked waterpipe ( $P < 0.05$ ). Those who were ever alcohol drinkers were twice as likely to have IBS as never-drinkers ( $P < 0.01$ ). Thus the study concluded that, IBS is associated with lifestyle risk factors (physical activity, waterpipe smoking and alcohol consumption) in an adult subset of the Lebanese population.<sup>37</sup>

A cohort study was conducted in Sweden to examine the perinatal and familial risk factors for IBS. There were 24,633 IBS cases in 46,784,296 person-years of follow-up. After adjusting for potential confounders, significant risk factors for IBS included caesarean, low birth weight ( $< 2500\text{g}$ ), being second in birth order, young maternal age ( $< 20$  years), maternal marital status (divorced/widowed), maternal education and parental history of anxiety and parental history of depression. Protective factors were male sex and old maternal at delivery ( $\geq 35$  years). Thus the study concluded that, several perinatal and familial

factors were associated with an increased risk of IBS independently, suggesting that perinatal and familial factors may play an important long-term role in the aetiology of IBS.<sup>38</sup>

A population-based cohort study was conducted to assess the association between IBS and the subsequent development of dementia. Using the Taiwan National Health Insurance Research Database (NHIRD) to obtain medical claims data from 2000 to 2011, a random sampling method was employed to enrol 32298 adult patients with IBS and frequency-matched them according to sex, age, and baseline year with 129192 patients without IBS. IBS was associated with an increased risk of dementia in patients older than 50 years in both male and female, and in those with comorbidity or without comorbidity. After adjustment for age, sex, and comorbidity, patients with IBS were also more likely to develop either non-Alzheimer's disease (AD) dementia. Thus the study concluded that, IBS is associated with an increased risk of dementia, and this effect is obvious only in patients who are  $\geq 50$  years old.<sup>39</sup>

A study was conducted to examine rates of irritable bowel syndrome (IBS) over 10 years of prospective follow-up among recovered and non-recovered patients with borderline personality disorder (BPD). Subsequently, risk factors for IBS were examined in female BPD patients. Semi-structured interviews were used to assess both IBS outcome variable and baseline and time-varying predictor variables. A significant difference in IBS rates was found between recovered and non-recovered female BPD patients, with the latter reporting significantly higher rates. The rates of IBS in women with BPD were found to be significantly predicted by a family history of IBS and a childhood history of verbal, emotional and/or physical abuse. Thus the study concluded that, both biological/social learning factors and childhood adversity may be risk factors for IBS in women with BPD.<sup>40</sup>

A cross-sectional study was conducted to assess the effect of diet on prevention of IBS among a rural Indian population. Subjects participating in the study completed a questionnaire (N=41,682). Anthropometrics, socio-demographical and lifestyle data, including vegetarian diets (VD), were collected prior to the completion of questionnaire via self-administered questionnaires. The results showed that, the included subjects were mainly women (78.0%) and the mean age was  $49.8 \pm 14.3$  years. Among these individuals, 2,264 (5.4%) presented an IBS, and 805 (1.9%) reported a VD. A stable VD (i.e. self-declared at least three times) was associated with IBS (aOR 2.60 95%CI [1.37-4.91]), IBS mixed (aOR 2.97 95% CI [1.20-7.36]) and IBS diarrhea (aOR 2.77 95%CI [1.01-7.59]). Thus, the study concluded

that, mixed dietary pattern can prevent the incidence of IBS and a long term VD could be associated with IBS.<sup>41</sup>

A cross-sectional study was conducted to investigate the factors associated with IBS in both males and females in Inner Mongolia Medical University. Participants were administered a self-administered questionnaire. Multivariate logistic regression models were used to assess the factors associated with IBS in male and female students. The overall prevalence of IBS was 29.5%. Logistic regression results showed that attempting to lose weight and anxiety were both associated with increasing odds of IBS, while exercise was not associated with IBS in either male or female students. In female students, snack consumption and depression were also both associated with increasing odds of IBS. Thus the study concluded that, the factors associated with IBS among students can be improved by adequate education and counseling to improve their mental health and lifestyle, especially female students in higher grades.<sup>42</sup>

A study was conducted to assess the relationship between IBS and stress, lifestyle, and dietary habits among nursing and medical school students. A blank self-administrated questionnaire was used to survey 2,639 students studying nursing or medicine. The questionnaires were collected from 2,365 students and prevalence of IBS was 35.5% as a whole, 25.2% in males and 41.5% in females. Significantly higher stress scores and life events were found in the IBS group than in the non-IBS group. Sleep disorders and the time spent sitting were also higher in males with IBS. In the IBS group, females ate less fish, fruit, milk, and green-yellow vegetables, and more processed food products than the non-IBS group ( $p < 0.001$ ). Thus the study concluded that, the prevalence of IBS was higher among nursing and medical students, and further interventional studies are needed to improve IBS symptoms.<sup>43</sup>

### **III. Review of literature related to Knowledge, prevention and management on IBS**

A study was conducted to determine the nurses' knowledge on IBS. One hundred practicing registered nurses were randomly selected and then interviewed by telephone using a questionnaire. The majority of registered nurses interviewed (75%) felt that nurses played a moderate-to-major role in counseling patients with irritable bowel syndrome. Only 13%, however, were aware of the diagnostic criteria for irritable bowel syndrome. The majority of nurse subjects felt the current therapies for irritable bowel syndrome had limited effectiveness varying from 6-21% depending on the symptom being treated.

Almost half of the nurses felt they had an important role in management of irritable bowel syndrome and that both they and their patients needed more education about irritable bowel syndrome.<sup>44</sup>

A descriptive research was conducted to assess the knowledge, perceptions and beliefs about caring for patients with irritable bowel syndrome (IBS) among Taiwanese nurses. A 46-item questionnaire was completed voluntarily by 120 registered nurses from a large tertiary acute care facility in Taiwan. The questionnaire consisted of six categories: demographic information; nurses' sources of IBS information; nurses' knowledge about IBS; nurses' perceptions about patients with IBS; nurses' beliefs about IBS; and learning requirements for nurses. Overall, the results indicated that Taiwanese nurses who participated in this study had little specific knowledge of IBS. The researchers developed a booklet containing information on the condition of IBS that may be used by the participants in this study to fill the knowledge gaps about this condition and provide useful information.<sup>45</sup>

A cross sectional study was conducted to evaluate the knowledge, attitude and practice (KAP) of the Saudi community toward the signs and risk factors of IBD in Kingdom of Saudi Arabia (KSA). Total 977 subjects from both genders aged from 20-60 years old were selected. The prevalence of IBS was 10.8%. The majority of the subjects have proper awareness regarding the IBS and its risk factors (81.1%) while only 18.9% had poor knowledge about the syndrome. Most of the subjects had positive attitude toward using diet, medications and counselling as the proper management of IBS. The level of knowledge showed a significant association with the higher level of education. Thus the study concluded that, majority of subjects had proper knowledge about the nature, prognosis and risk factors of the IBS.<sup>46</sup>

A cross-sectional survey was conducted to assess the knowledge and beliefs regarding IBS among Alahsa population, Saudi Arabia. Questionnaire was distributed electronically in conjugation with individual interviews. The result of 325 randomly selected participants was included, 54.2% were males and 45.8% were females. Their age ranged from 18 years to more than 65 years. Most of the questions were answered correctly. IBS was more prevalent in young adults. Attitude and beliefs regarding IBS also showed the acceptable rate of correct answers. Nearly, 51.8% of the participants thought surgery could alleviate the symptoms of IBS. Thus the study concluded that, there should be programs regarding IBS awareness to increase the knowledge and decrease functional disabilities and impact on life.<sup>47</sup>

A cross-sectional study was conducted to assess knowledge, attitudes, and practices of primary care physicians about IBS. Total 70 practitioners aged  $36 \pm 10.25$  years were participated in the study. A response rate of 92.9% yielded 65 questionnaires for analysis. Majority of physicians surveyed (83.1%) considered IBS as a common health problem in Saudi Arabia, and (55.4%) believed it is underestimated. There was a significant association between physicians' qualifications and using diagnostic tools to facilitate IBS diagnosis (14.3% vs 35.5%;  $P < 0.05$ ), while utilization of "Rome or Manning criteria" was more frequent by physicians with master's degree (35.5%) compared to residents (14.3%). Thus the study concluded that, there are inappropriate practices, and lack of knowledge among primary health care physicians toward IBS, that could interfere with patient care.<sup>48</sup>

A cross-sectional study was conducted to evaluate the knowledge of interns regarding IBS. 200 study subjects included interns working across all departments. Semi-structured interview of the interns was conducted by a trained researcher using a pretested questionnaire related to IBS. The salient feature of this study was that the overall knowledge about IBS among interns was good. Even though  $>50\%$  of interns had good knowledge about IBS, there was still a lack of better minutiae of IBS. The interns of the present study also emphasize the establishment of "Indian guidelines for the diagnosis and management of IBS" and feel that the most useful way to help learn more about IBS was to continue the medical education programs which would improve their knowledge, attitude, and awareness about IBS. Thus the study concluded that, there was a lack of finer details of IBS among interns, which could be improved on.<sup>49</sup>

## Chapter-IV

# Material and Methods

### IV. RESEARCH METHODOLOGY

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Research methodology involves the systematic procedure by which the researcher starts from the time of initial identification of the problem to the final conclusion. Methodology of research organizes all the

component of the study in a way that is most likely to lead to valid answer to the problems that have been posed.<sup>50</sup>

This chapter deals with the methodology adopted for the present study such as research approach, research design, setting, variables, population, sample, sampling technique, sampling criteria, development of tool, content validity, reliability, pilot study, method of data collection, plan for data analysis . The present study is aimed to evaluate the effectiveness of self instructional module regarding prevention of irritable bowel syndrome among college students at selected degree colleges, Bangalore.

## RESEARCH APPROACH

The selection of research approach is the basic procedure for conducting a research enquiry. It tells the researcher what data to collect and how to analyze it and also suggests possible conclusions to be drawn from the data.<sup>51</sup>

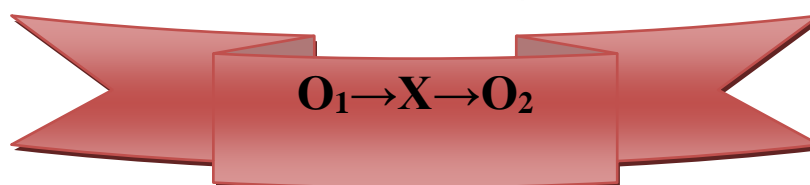
An evaluative research approach was adopted for this study in order to accomplish the objectives.

In the present study the investigator aimed at evaluating the effectiveness of SIM regarding prevention of irritable bowel syndrome among college students at selected degree colleges, Bangalore.

## RESEARCH DESIGN

The research design refers to the researcher's overall plan for obtaining answer to the research questions and it spells out strategies that the researcher adopted to develop information that is accurate, objective and interpretable. The research design provides an overall or blue print to carry out the study.<sup>52</sup>

In the view of the nature of the problem and to accomplish the objectives of the study pre-experimental one group pre-test and post-test design was used to evaluate the effectiveness of SIM regarding prevention of irritable bowel syndrome among college students at selected degree colleges, Bangalore.



**Fig: 2 Schematic Representation of Research Design**

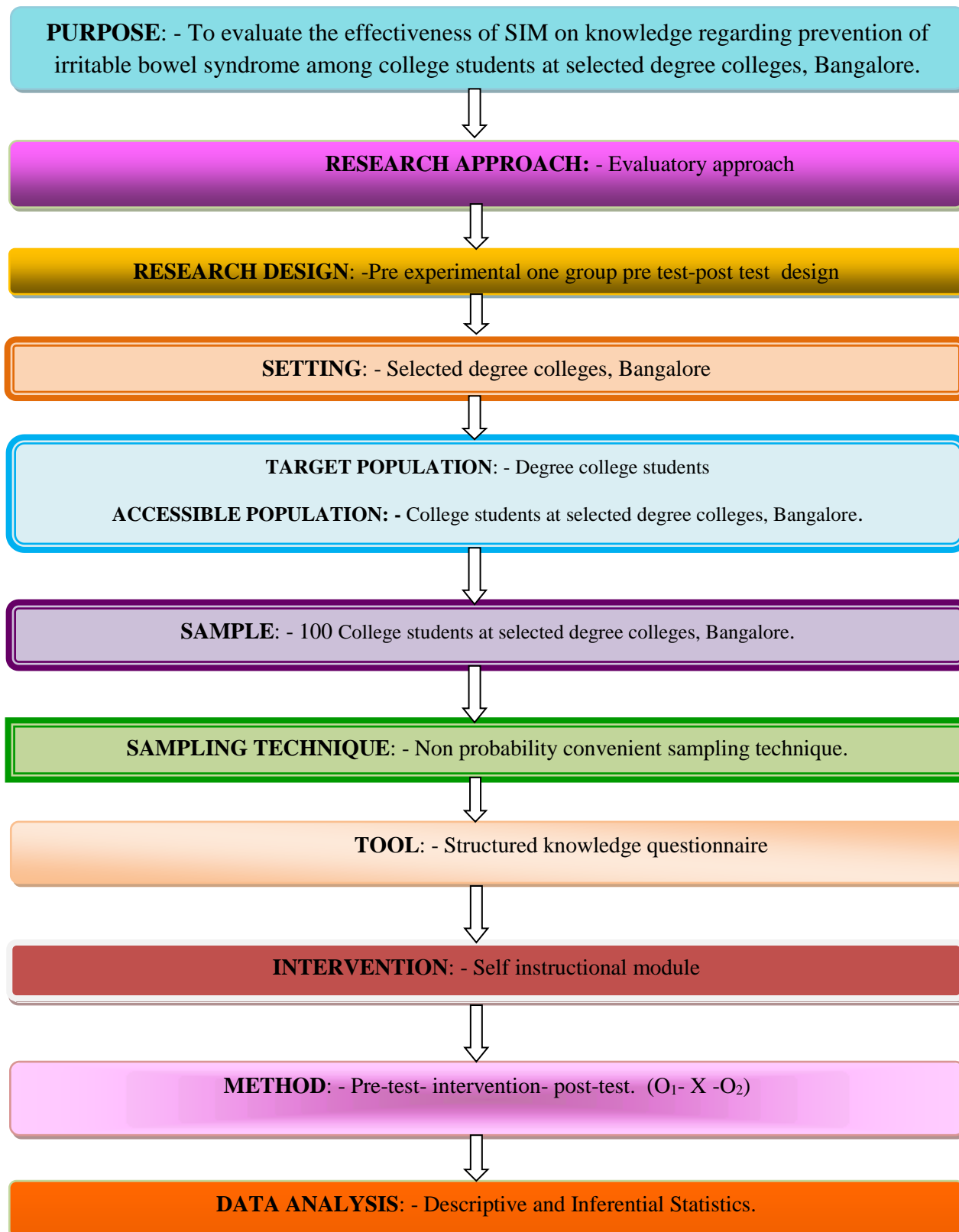
**The symbols used are described below:**



**O<sub>1</sub>**: Pre-test-Assessment of knowledge regarding prevention of irritable bowel syndrome among degree college students.

**X**: Intervention (Self instructional module).

**O<sub>2</sub>**: Post-test assessment of knowledge regarding prevention of irritable bowel syndrome among degree college students. .



**Figure 3:**

## Schematic representation of research methodology

### VARIABLES UNDER STUDY

Variables are quantities, properties or characteristics of persons, things, or situations that change or vary. The variables mainly included in this study are independent variable, dependent variable and attribute variables.<sup>53</sup>

#### **Independent variable:**

An independent variable is that which is believed to cause or influence the dependent variable, in experimental research by the manipulated (treatment) variable.<sup>53</sup> In the present study the independent variable refers to self instructional module on prevention of irritable bowel syndrome.

#### **Dependent Variable:**

Dependent Variable is a response, behavior or outcome that the researcher wants to predict. Changes in the dependent variable are presumed to be caused by the independent variable. It is otherwise called as effect variable or a criterion measure.<sup>53</sup>

In the present study it refers to knowledge of degree college students regarding prevention of irritable bowel syndrome.

#### **Attribute Variables:**

An uncontrolled variable that greatly influences the result of the study is called as attributed variable.<sup>53</sup>

The attribute variables in this study were selected socio-demographic variables of degree college students such as age of the students, gender, year of study, marital status, religion, type of family, family monthly income, area of residence, food pattern, personal habits and source of information.

## **SETTING OF THE STUDY**

Setting refers to the area where the study is conducted. It is the physical location and condition in which data collection takes place in a study.<sup>54</sup> Based on the geographical proximity, feasibility and familiarity with the setting, the investigator selected CMR degree college, Bangalore.

## **POPULATION**

The population referred to as the target population, which represents the entire group or all the elements like individuals or objects that meet certain criteria for inclusion in the study.<sup>55</sup> The target population of the present study comprises of college students. The accessible population represents students of selected degree colleges, Bangalore.

## **SAMPLE**

Sample refers to the subset of a population that is selected to participate in a particular study.<sup>55</sup> Sample size of the present study consists of 100 students of CMR degree college, Bangalore.

## **SAMPLING TECHNIQUE**

Sampling defines the process of selecting a group of people or other elements with which to conduct a study.<sup>55</sup> Non-probability convenient sampling technique was adopted to select the samples for the present study based on inclusion criteria.

## **SAMPLING CRITERIA**

In sampling criteria the researcher specifies the characteristics of the population under the study by detailing the inclusion and exclusion criteria.<sup>55</sup>

### **Inclusion criteria**

The study includes college students who are:

- from selected degree colleges at Bangalore.
- aged between 19-28 yrs.
- who are willing to participate in the study.

### **Exclusion criteria**

The study excludes college students:

- who have attended any awareness programme regarding prevention of irritable bowel syndrome within last six month.
- who are with treatment of IBS from 6 months and above.
- whose either parent is a health personnel.

## **DESCRIPTION OF THE TOOL AND SELF INSTRUCTIONAL MODULE TOOL FOR DATA COLLECTION**

The tool used to collect the data was a structured knowledge questionnaire in order to assess the knowledge of the degree college students regarding prevention of irritable bowel syndrome. It consists of two parts. Part I and Part II.

**Part I-** Socio demographic data

**Part II-** Structured knowledge questionnaire to assess the knowledge of the degree college students regarding prevention of irritable bowel syndrome.

### **Part I**

It consists of demographic variables of degree college students such as age, gender, year of study, marital status, religion, type of family, family monthly income, area of residence, food pattern, personal habits and source of information.

### **Part II**

It consists of items on knowledge related to prevention of irritable bowel syndrome. It consists of 37 multiple choice questions having 4 responses with one right answer.

- Knowledge on anatomy and physiology of Gastro Intestinal Tract (GIT).
- Definition, incidence, risk factors, causes, signs & symptoms and diagnostic measures of IBS.
- Prevention and management of IBS.

## SCORING AND INTERPRETATION

The knowledge regarding prevention of irritable bowel syndrome among college students would be measured in terms of knowledge score. Structured knowledge questionnaire would be prepared to assess the knowledge of college students. It consists of four responses each with one right answer. Each correct answer was given a score of one and a wrong answer was given a score of zero. The total attainable score in the knowledge questionnaire is 37.

The total score is converted in to percentage and the resulting score is ranged as follows;

Level of knowledge	Scores	Percentage (%)
Inadequate	<18	< 50
Moderate	19-28	51-75
Adequate	29-37	76-100

## PREPARATION OF SIM

The process of developing SIM include following steps:

- Review of literatures on prevention of irritable bowel syndrome.
- Preparation and organization of the content of instructional module.
- Preparation of final draft of the instructional module.
- Editing the instructional module.

## DEVELOPMENT OF SELF INSTRUCTIONAL MODULE (SIM):

Self instructional module was developed regarding prevention of irritable bowel syndrome. The content was prepared by the investigator on the basis of review of literature and with the guidance of the guide and experts in the field of Medical Surgical Nursing. The SIM included a brief introduction, definition, risk factors, causes, symptoms, diagnostic measures, management and prevention of IBS.

## VALIDITY OF THE TOOL AND INSTRUCTIONAL MODULE

The content validity refers to the degree to which the items in an instrument adequately represent the universal content. It also refers to the degree to which an instrument measures what it is intended to measure.<sup>56</sup> The prepared content (SIM) and the tool along with the problem statement, objectives, blue print and criteria check list were submitted to 2 Gastroenterologist and the 7 experts from the field of

Medical Surgical Nursing and one statistician for establishing the content validity. After validation from experts corrections were made.

Ten experts validated the tool used for the study. The tool was evaluated for appropriateness, adequacy, relevance, and completeness. Comments and suggestions were invited and appropriate modifications were made accordingly. The tool was refined and finalized after establishing validity. The final draft of the tool contained 11 socio-demographic characteristics and 37 knowledge questions regarding prevention of irritable bowel syndrome. The SIM on prevention of irritable bowel syndrome was validated by experts for its appropriateness, organization of content and language.

### **RELIABILITY**

The reliability refers to the accuracy or inaccuracy rate in measurement device. Reliability of the research instrument is defined as the extent to which the instrument yields the same results on repeated measures. It is then concerned with consistency, accuracy, precision, stability, equivalence and homogeneity.<sup>57</sup>

The reliability of the tool was elicited by split half method. The tool was administered to 10 college students who fulfilled the inclusion criteria. The Karl Pearson's coefficient of correlation was computed and the reliability was found to be  $r=0.89$ , which indicates the knowledge questionnaire was positively correlated. The tool was found to be reliable. These samples were excluded from the main study.

### **PILOT STUDY**

The pilot study is a smaller version of the proposed study conducted to refine the methodology. It is developed similar to the proposed study, using similar subjects, settings treatment, method of data collection and analysis technique as it would be used in the main study. Pilot study was done to check the clarity of items in tool and the feasibility in conducting the study.<sup>58</sup>

The pilot study was conducted among 10 college students from Aditya degree college, Bangalore after obtaining formal permission from the authorities.

After obtaining permission, 10 samples who fulfilled the inclusion criteria were selected by non-probability convenient sampling technique. The investigator gave self introduction and explained the purpose of study. The respondent's willingness to participate in the study was ascertained. The respondents were assured for anonymity and confidentiality of the information provided by them and written consent was obtained from them. A pre-test was conducted by using the structured knowledge

questionnaire followed by administration of SIM. After 7<sup>th</sup> day of distribution of SIM, post test was conducted using the same tool. The pilot study samples were excluded from the main study.

The collected data were analyzed by using descriptive and inferential statistics. The significance of difference between pre-test and post-test scores were found by paired 't' test, the difference was found to be significant at  $p \leq 0.05$  level.

**The objectives of the pilot study were to:**

1. Find out the required time for completing the structured knowledge questionnaire.
2. Identify the ambiguity in the wording of the questionnaire.
3. Find out the feasibility of the study.
4. Identify any major flaws in the study design.

**The following were the findings of the pilot study**

➤ The result showed that, among 10 college students, 7(7%) of them were between 20-22 years of age and reside in rural area, 6(60%) of them were male, of them were Hindu, 5(50%) of them were studying in I year, 9(90%) were unmarried, majority 10(100%) of them belonged to nuclear family, 6(60%) of them had Rs 15,001-25,000 monthly family income, 7(70%) of them reside in rural area, majority 8(80%) of them were non-vegetarian and 9(90%) of them were non smoker and non alcoholic.

➤ The overall pre-test knowledge scores of students regarding prevention of irritable bowel syndrome., majority 9(90%) of them had inadequate level of knowledge and only 1(10%) of them had moderate level of knowledge regarding prevention of irritable bowel syndrome, whereas in post-test, 8(80%) of them had adequate level of knowledge followed by, 2(20%) of them had moderate level of knowledge regarding prevention of irritable bowel syndrome..

➤ Paired 't' test was performed to evaluate the effectiveness of SIM on prevention of irritable bowel syndrome among degree college students. It was observed that, in pre-test, the overall mean score was  $13.39 \pm 0.96$ , whereas the mean post-test score was  $34.11 \pm 1.83$ . The obtained 't' value was 17.05, which was higher than the table value 2.6, therefore it is highly significant at  $P \leq 0.05$  level. Hence, the SIM was effective in enhancing the knowledge of college students regarding prevention of irritable bowel syndrome. Thereby,  $H_1$  is accepted for pilot study.

## DATA COLLECTION PROCEDURE

The data was collected from degree college students in Bangalore. Written permission was sought and obtained from the authorities concerned. The period of data collection was 6 weeks. About 100 students were selected as per the above mentioned criteria with prior informed verbal consent to participate in the study. Initially good rapport was maintained with the college students and the purpose of the study was explained to them. College students were made comfortable and the privacy was maintained. Instructions to answer the questionnaire were given. Pre-test was conducted through structured knowledge questionnaire to assess the college student's knowledge on prevention of irritable bowel syndrome. Then SIM was given to all the samples. After 7 days of delivery of SIM, post-test was conducted for the degree college students with the same knowledge questionnaire to assess their knowledge. All the subjects were very cooperative and investigator expressed his gratitude for their cooperation.

## PLAN FOR DATA ANALYSIS

The data analysis is the systematic organization and synthesis of research data and testing hypothesis.<sup>58</sup> It involves the translation of information in the interpretable and managing form. The data obtained was analyzed by using both descriptive and inferential statistics on the basis of objectives and hypothesis of the study.

- Data will be organized in a master sheet.
- Frequency and distribution of socio-demographic data will be analyzed using frequencies and percentage.
- The knowledge scores before and after the administration of the SIM will be calculated by using mean and standard deviation.
- The significant difference between the mean pre-test and post-test score will be analyzed by paired 't' test.
- Associations between pre-test level of knowledge of degree college students regarding prevention of irritable bowel syndrome and their selected socio-demographic variables will be analyzed by using chi square ( $\chi^2$ ) test.
- The level of significance will be set at  $p \leq 0.05$  levels for paired 't' test and chi square test.



# Chapter-V

## RESULTS

### V. RESULTS

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Analysis is the process of organizing and synthesizing data so as to answer research question and test hypothesis. After carefully collecting data, the researcher is faced with the task of organizing the individual pieces of information so that the meaning is clear. Interpretation is the process of making sense of the results and of examining these implications.<sup>59</sup>

This chapter deals with analysis and interpretation of data collected from 100 students from selected degree colleges, Bangalore. The data was collected from the respondents before and after the administration of self instructional module on knowledge regarding the prevention of irritable bowel syndrome. The collected information was organized, tabulated, analyzed, and interpreted using descriptive and inferential statistics. Analysis was done based on the objectives and hypotheses of the study.

### OBJECTIVES

The objectives of the study are to:

- assess the level of knowledge of degree college students regarding prevention of irritable bowel syndrome.
- find out the difference between the mean pre-test and post-test knowledge scores of college students regarding prevention of irritable bowel syndrome.
- determine the association between the mean pre-test knowledge level of degree college students regarding prevention of irritable bowel syndrome and their selected socio demographic variables.

## RESEARCH HYPOTHESIS

**H<sub>1</sub>:** There will be significant difference between the mean pre-test and post-test knowledge level of degree college students regarding prevention of irritable bowel syndrome.

**H<sub>2</sub>:** There will be significant association between mean pre-test knowledge scores of degree college students on prevention of irritable bowel syndrome and their selected socio-demographic variables.

## PART-I

### Description of socio-demographic profile of the sample

This section deals with distribution of participants according to the socio-demographic characteristics. The obtained data on socio-demographic profile are described under the following subheadings which are age of the students, gender, year of study, marital status, religion, type of family, family monthly income, area of residence, food pattern personal habits and source of information. The data was analyzed by using descriptive statistics and are summarized in terms of frequency and percentage distribution.

### SOCIO-DEMOGRAPHIC PROFILE OF SAMPLES

**Table 1: Classification of sample by socio-demographic characteristics**

Characteristics	Category	Respondents (N=100)	
		Frequency (N)	Percentage (%)
Age in Year	17-19 years	37	37
	20-22 years	49	49
	23- 25 Years	9	9
	26-28 Years	5	5
Gender	Male	57	57
	Female	43	43
Year of study	I year	41	41
	II year	39	39
	III year	20	20
Marital status	Married	7	7
	Unmarried	93	93
Religion	Hindu	55	55

	Muslim	28	28
	Christian	13	13
	Others	4	4
Type of family	Nuclear	83	83
	Joint	14	14
	Extended	3	3
Family monthly income (in rupees)	Less than 15,000	14	14
	15,001-25,000	46	46
	25,001-35,000	29	29
	35,001 and above	11	11
Area of residence	Rural	43	43
	Semi-urban	32	32
	Urban	25	25
Food pattern	Vegetarian	23	23
	Eggetarian	16	16
	Non- Vegetarian	61	61
Personal habits (If yeas, how long-)	Nil	82	82
	Smoking	15	15
	Alcoholic	3	3
	Substance use	0	0
Source of Information about IBS	Health workers	47	47
	Mass media	16	16
	Text books	31	31
	Others	06	06

Table-1 shows that, among 100 college students, 49% of them were between 20-22 years of age, 37% of them were between 17-19 years of age, 9% of them were between 23-25 years of age and 5% of them were between 26-28 years of age.

More than half of the degree college students 57% were found to be males, and remaining 43% were females.

It was observed that 41% of degree college students were studying in first year, 39% were studying in second year and 20% were studying in third year.

In the area of religion, 55% of students were Hindus, 28% of them were Muslims, 13% of them were Christians and 4% of them belonged to other group.

Based on the marital status of college students, majority of them 93% were unmarried and only 7% were married.

In concern to type of family, among 100 students, majority 83% of them belonged to nuclear family, 14% of them belonged to joint family and 3% of them belonged to extended family.

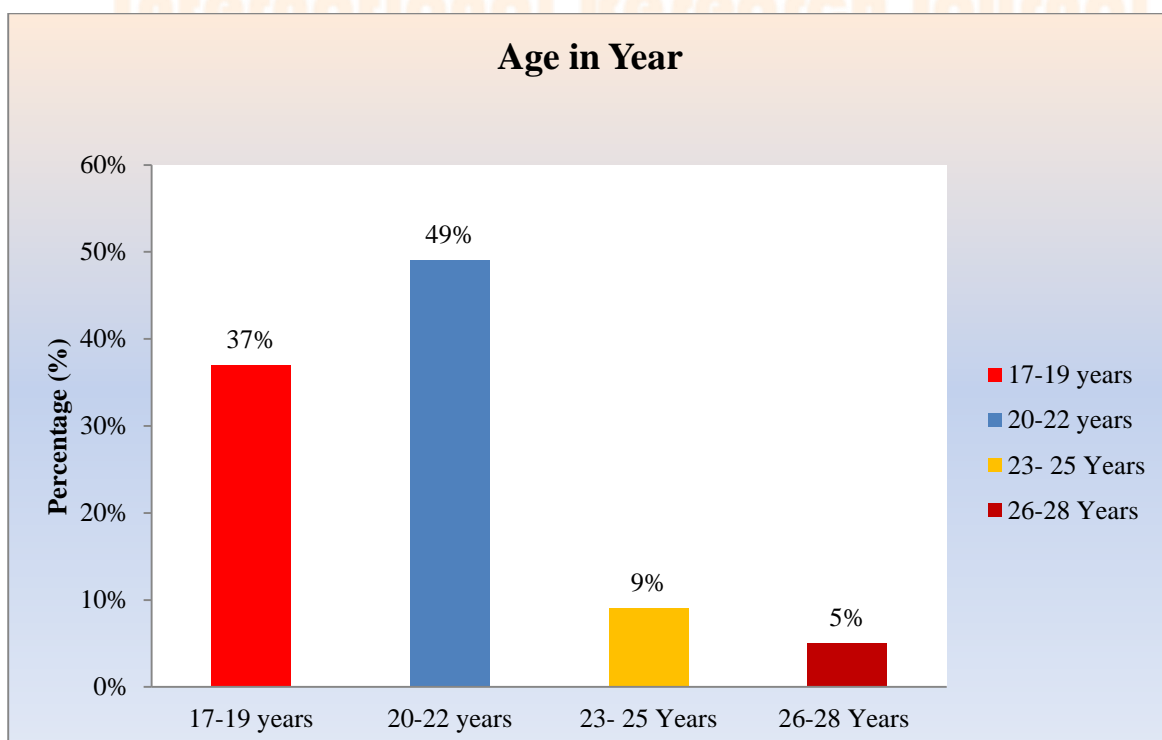
With regard to the family monthly income, 14% of them had less than Rs. 15,001, 46% of them had Rs.15,001-25,000, 29% of them had Rs. 25,001-35,000 and 11% of them had Rs. 35,001 and above of family monthly income.

With regard to the area of residence of degree college students, 43% of them resides in rural area, 32% resides in semi-urban area and 25% resides in urban area.

In relation with food pattern of the degree college students, most of them 61% were non-vegetarians, 23% of them were vegetarians and 16% of them were Eggetarian.

It was observed that, 82% of students had no habits of smoking and consuming alcohol and substance use, 15% of them were smoking, 3% of them were alcoholic.

In relation with source of information about IBS among participants, most of them 47% got information from health workers, 31% of them by text books, 16% of them by mass media and others 6%.



**Figure 4: Classification of samples by age**

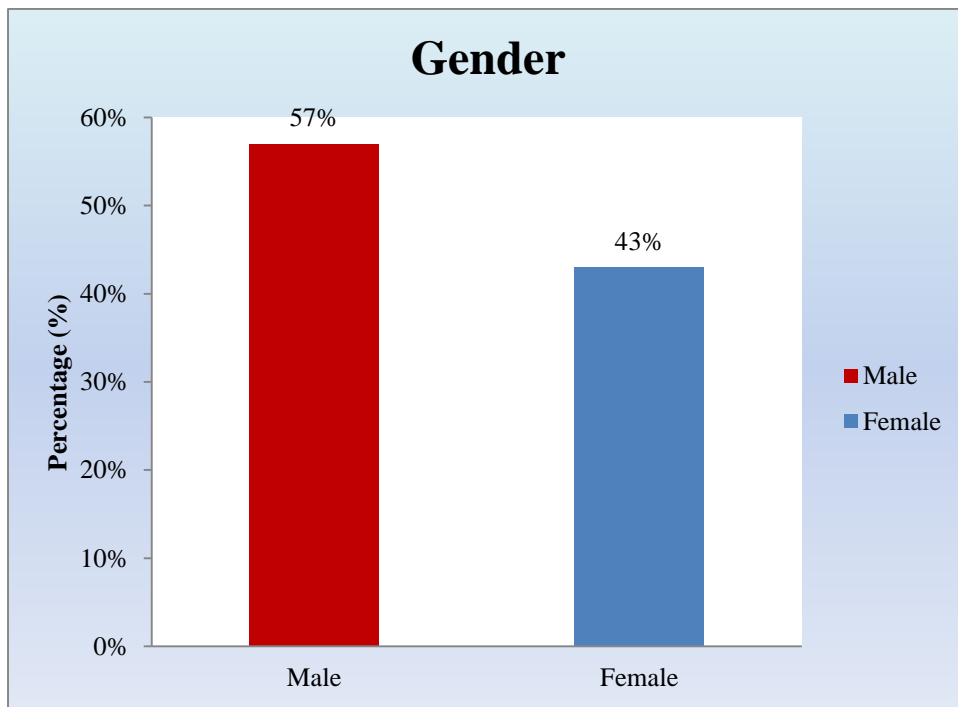


Figure 5: Classification of samples by gender

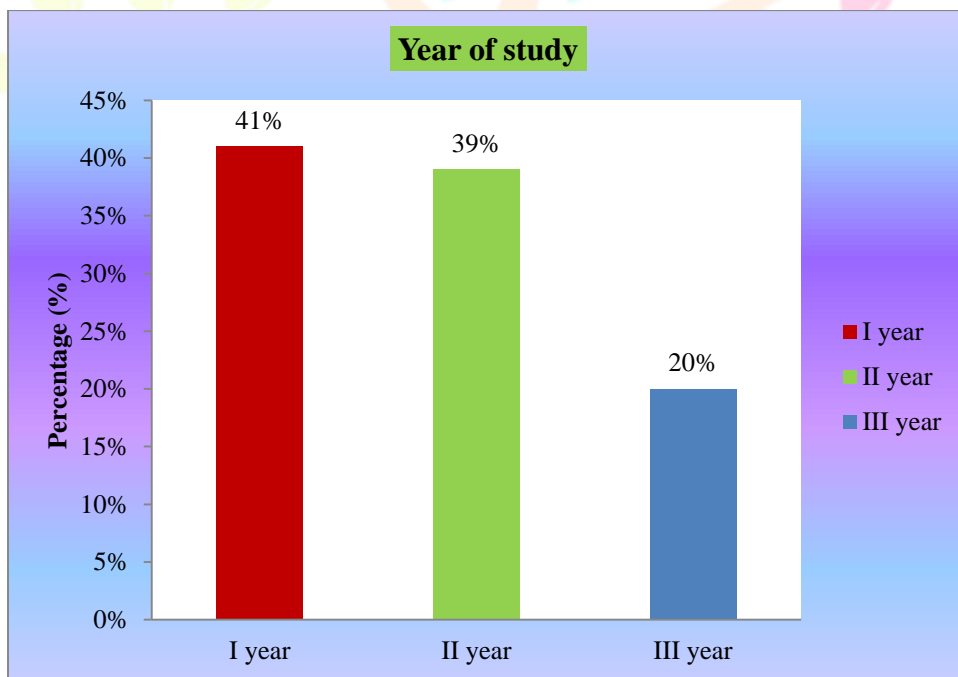


Figure 6: Classification of samples by year of study

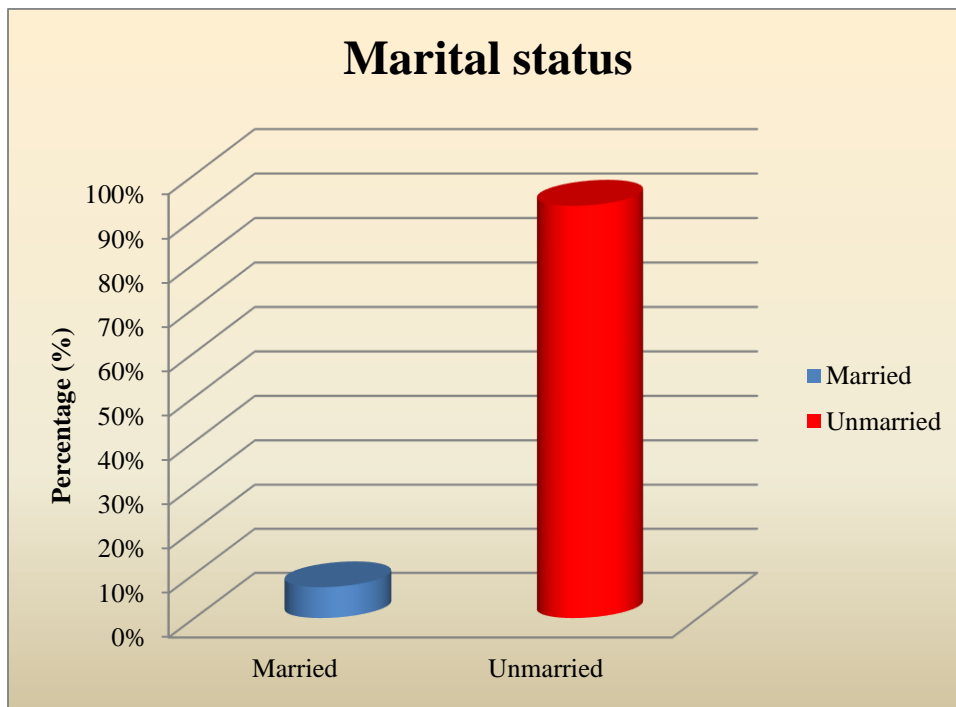


Figure 7: Classification of samples according to marital status

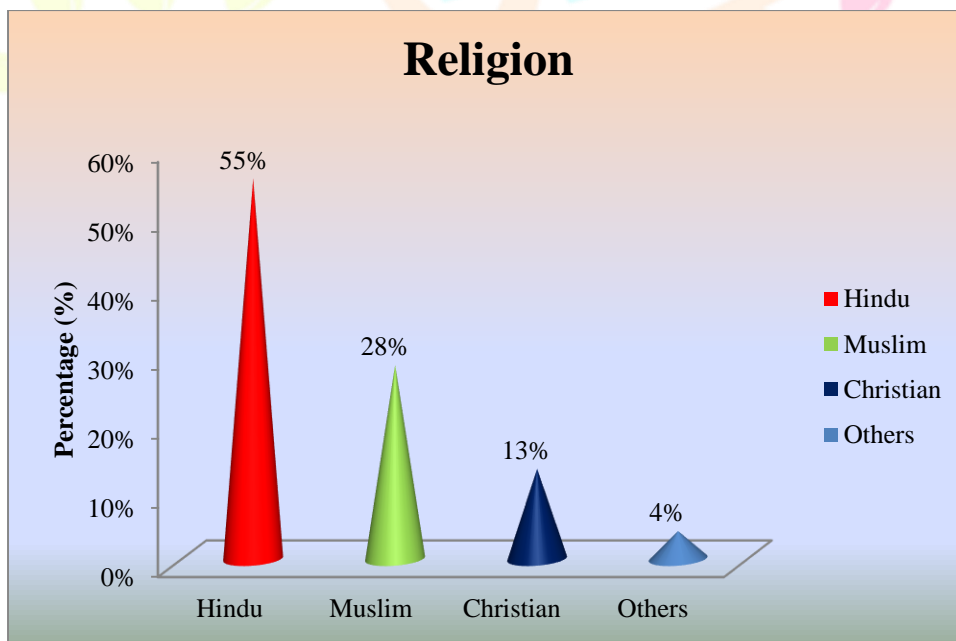


Figure 8: Classification of samples by religion

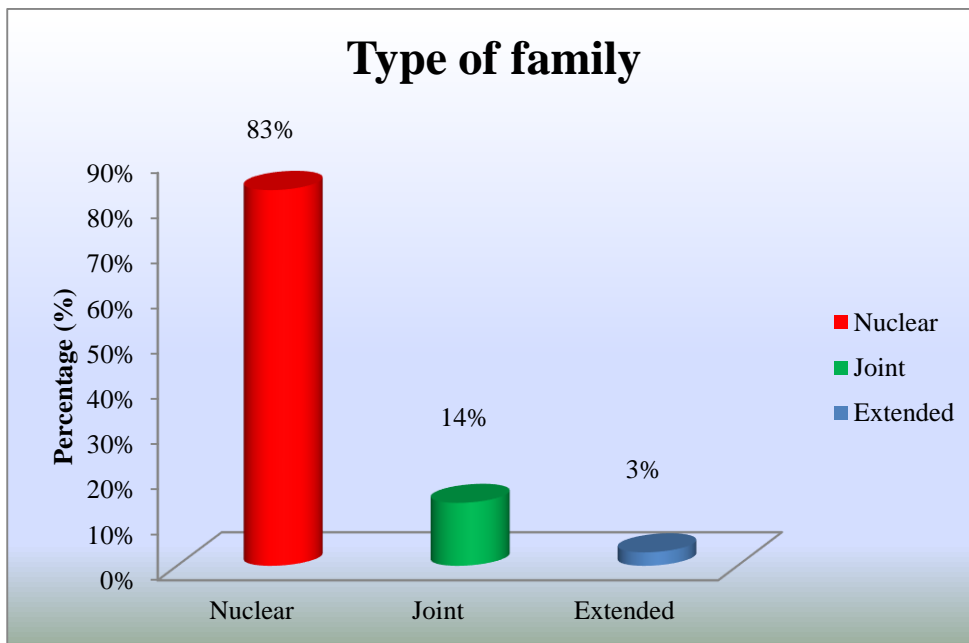


Figure 9: Classification of samples by type of family

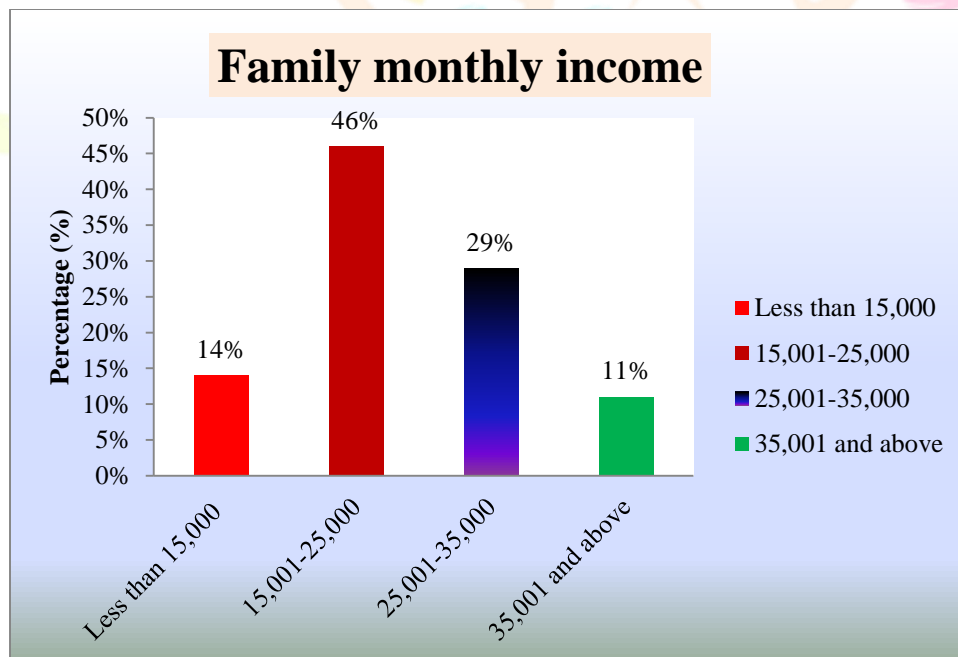


Figure 10: Classification of samples by Family monthly income

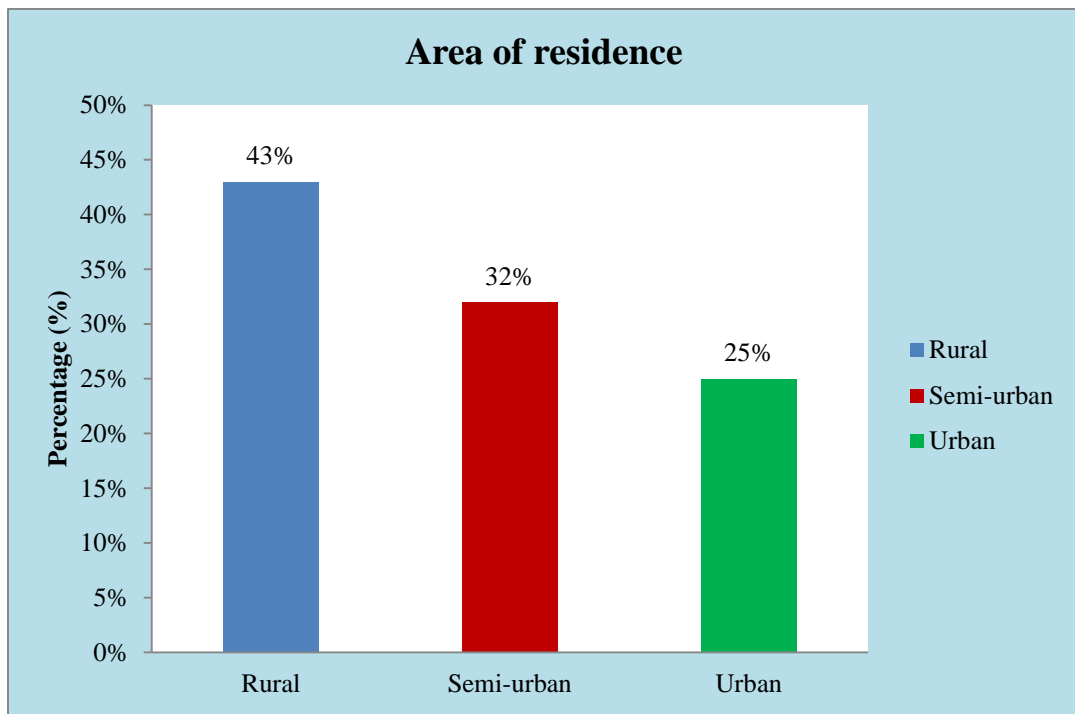


Figure 11: Classification of samples according to Area of residence

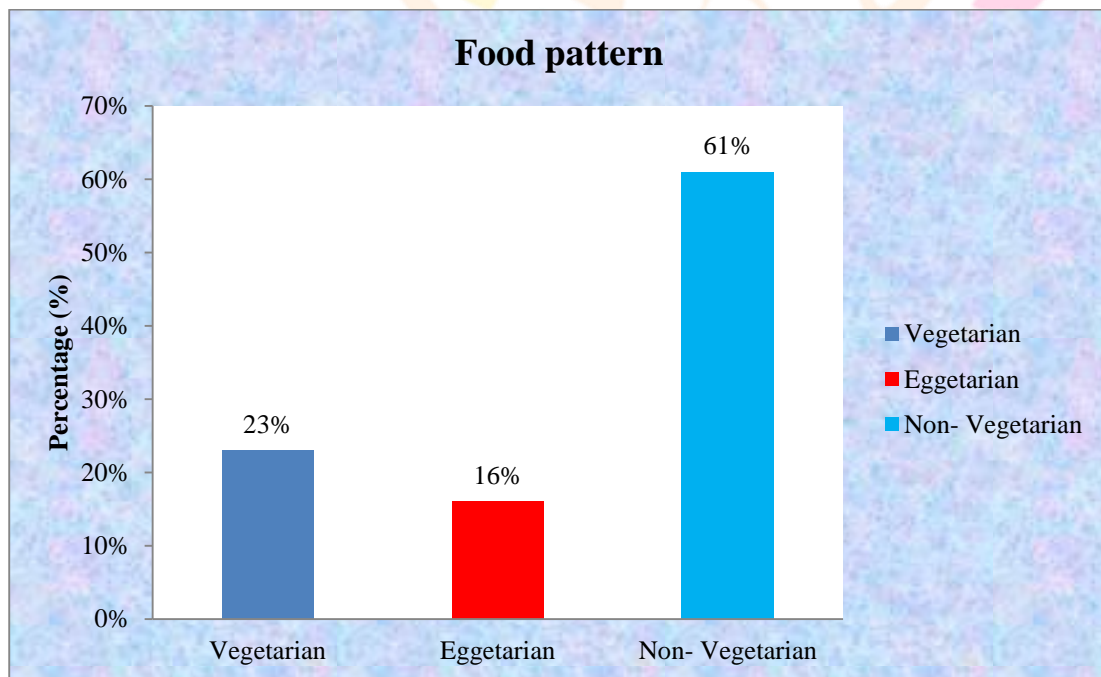
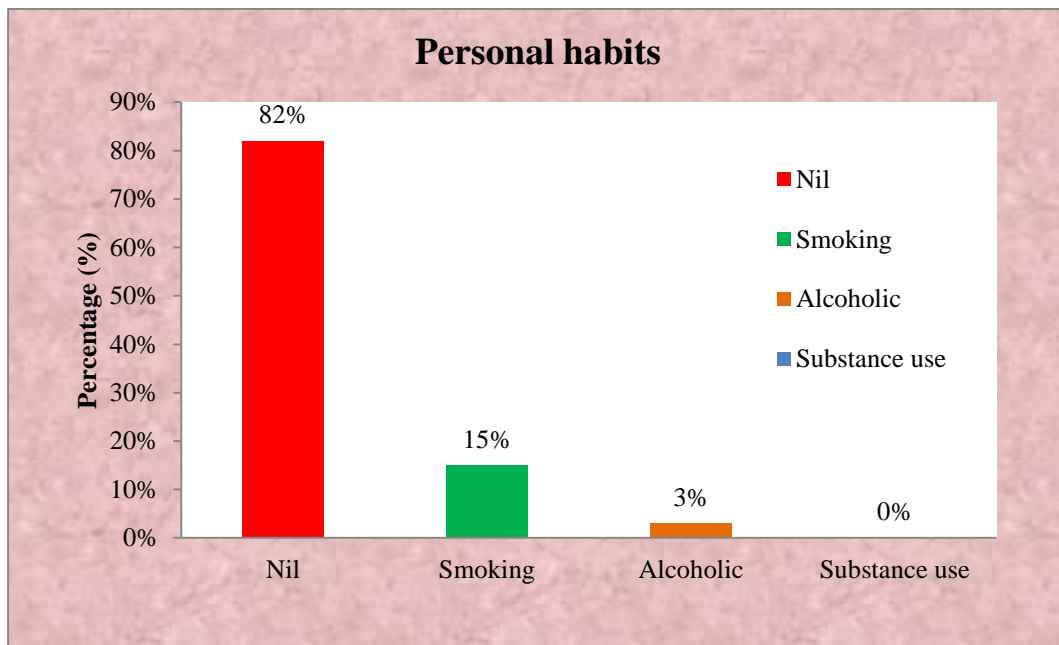
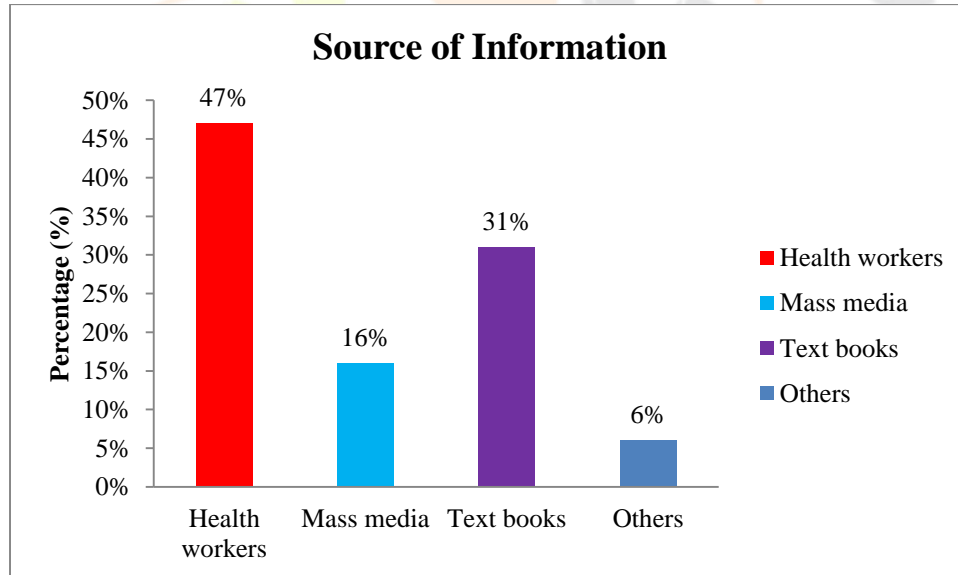


Figure 12: Classification of samples according to food pattern





**Figure 13: Classification of samples according to Personal habits**

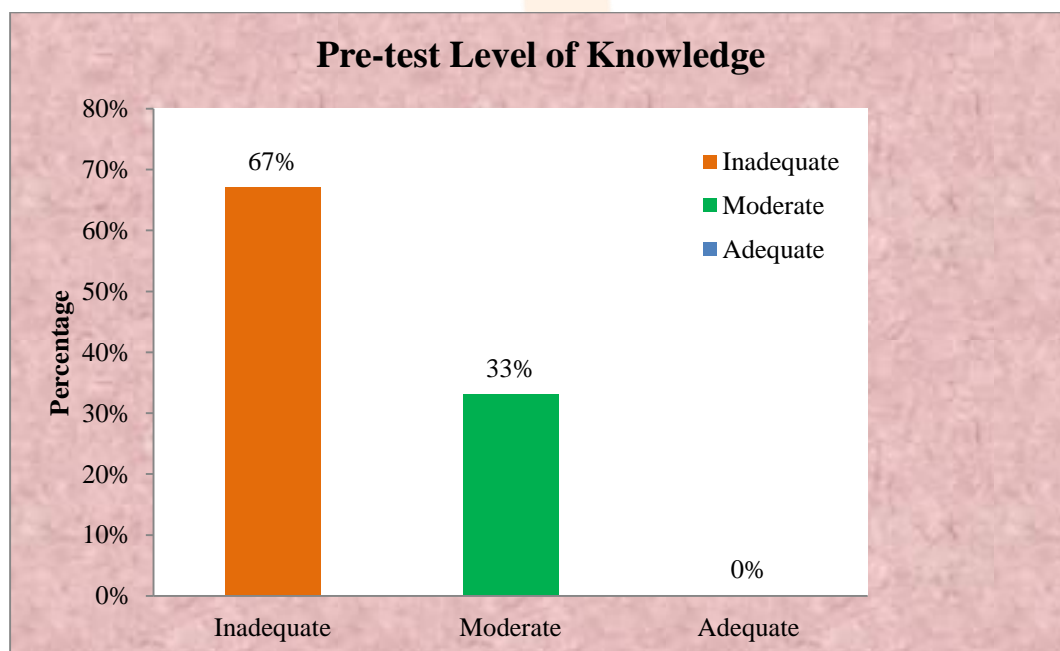


**Figure 14: Classification of samples according to source of information about IBS**

**PART-II (A)****Overall and aspect wise knowledge scores on prevention of irritable bowel syndrome among college students at selected colleges, Bangalore****Table 2: Classification of pre-test knowledge scores of college students regarding prevention of irritable bowel syndrome**

Level of Knowledge	Score	No of Respondents (N=100)	
		Frequency (N)	Percentage (%)
Inadequate	< 50%	67	67
Moderate	51-75%	33	33
Adequate	>75%	0	0
Total		100	100

The above Table-2, shows the classification of college students on pre-test level of knowledge regarding prevention of irritable bowel syndrome. Among 100 students, 67% of them had inadequate level of knowledge, 33% of them had moderate level of knowledge and none of them had adequate level of knowledge regarding prevention of irritable bowel syndrome.

**Figure 15: Classification of samples based on pre-test level of knowledge of students**

**Table 3: Aspect wise pre-test mean knowledge scores of college students on prevention of irritable bowel syndrome**

N=100

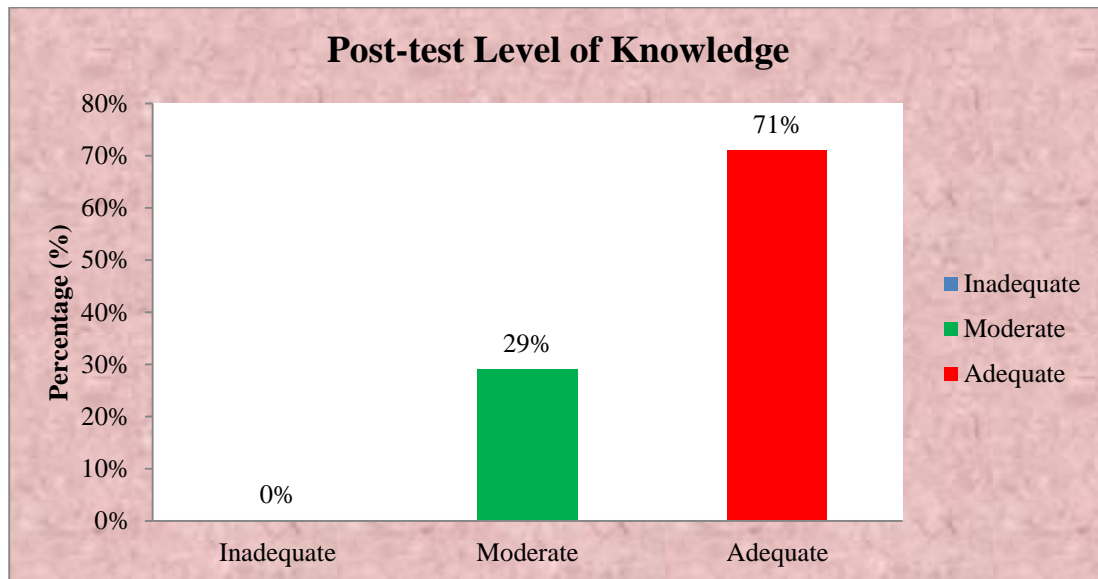
Aspects wise knowledge	Max Statement	Max Score	Range	Mean	SD
Anatomy & Physiology of Gastro Intestinal Tract (GIT)	5	5	0-3	1.86	0.83
Definition, incidence, risk factors, causes, signs & symptoms and diagnostic measures of IBS	16	16	4-10	7.42	1.31
Preventions and management of IBS	16	16	3-8	5.96	1.75
Overall	37	37	9-23	16.08	2.33

The above Table-3 showed that, the aspect wise pre-test mean knowledge scores of degree college students on prevention of irritable bowel syndrome. In general information of anatomy and physiology of Gastro Intestinal Tract (GIT), the mean knowledge score was  $1.86 \pm 0.83$ . In the area of Definition, incidence, risk factors, causes, signs & symptoms and diagnostic measures of IBS, the mean knowledge score was  $7.42 \pm 1.31$ . With regard to the management and prevention of IBS, the mean knowledge score was  $5.93 \pm 1.75$ . The total mean score in pre-test was found to be  $16.08 \pm 2.33$ .

**Table 4: Classification of post-test level of knowledge of college students regarding prevention of irritable bowel syndrome**

Level of Knowledge	Score	No of Respondents (N=100)	
		Frequency (N)	Percentage (%)
Inadequate	< 50%	0	0
Moderate	51-75%	29	29
Adequate	>75%	71	71
<b>Total</b>		<b>100</b>	<b>100</b>

The above Table-4 shows, the classification of post-test level of knowledge of college students regarding prevention of irritable bowel syndrome. Among 100 college students, 71% of them had adequate level of knowledge, 29% of them had moderate level of knowledge regarding prevention of irritable bowel syndrome.



**Figure 16: Classification of samples based on post-test level of knowledge**

**Table 5: Aspect wise post-test mean knowledge scores of students on prevention of IBS**

N=100

Aspects wise knowledge	Max Statement	Max Score	Range	Mean	SD
Anatomy & Physiology of Gastro Intestinal Tract (GIT)	5	5	3-5	4.49	1.25
Definition, incidence, risk factors, causes, signs & symptoms and diagnostic measures of IBS	16	16	11-15	13.51	1.40
Preventions and management of IBS	16	16	10-15	13.07	1.86
Overall	37	37	23-35	33.51	3.24

The above Table-5 showed the aspect wise post-test mean knowledge scores of college students on prevention of irritable bowel syndrome. In general information of anatomy and physiology of GIT, the

mean knowledge score was  $4.49 \pm 1.25$ . In the area of Definition, incidence, risk factors, causes, signs & symptoms and diagnostic measures of IBS, the mean knowledge score was  $13.51 \pm 1.40$ . With regard to the management and prevention of IBS, the mean knowledge score was  $13.07 \pm 1.86$ . The total mean score in post-test was found to be  $33.51 \pm 3.24$ .

## PART-II (B)

### Comparison of mean pre-test and post-test knowledge scores to evaluate the effectiveness of self instructional module.

**Table 6: Overall mean pre-test and post-test knowledge of college students on prevention of irritable bowel syndrome**

N=100

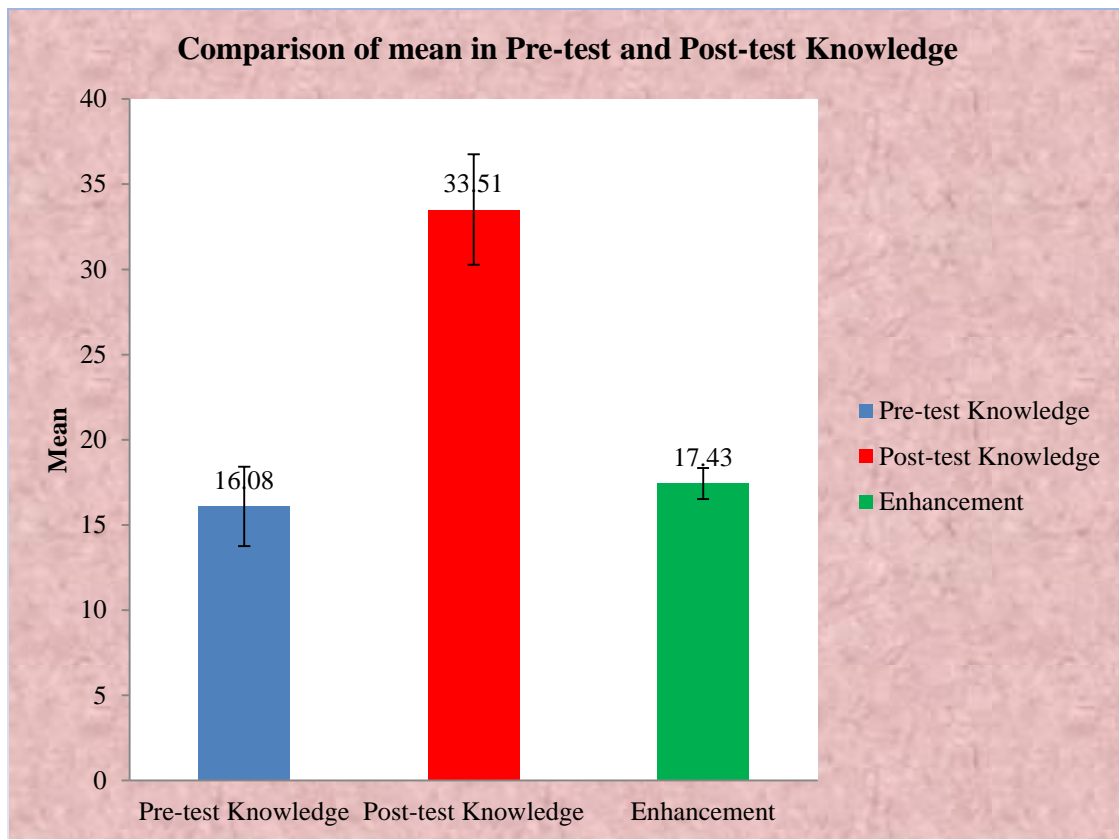
Aspect	Maximum Score	Knowledge of Respondents		Paired 't' test
		Mean	SD	
Pre-test Knowledge	37	16.08	2.33	<b>24.83**</b>
Post-test Knowledge	37	33.51	3.24	
Enhancement	37	17.43	0.91	

*\*\*Significant at  $P < 0.05$  level, df 99, table-value 2.6*

Table-6 depicts the difference of pre-test and post-test knowledge scores of degree college students regarding prevention of irritable bowel syndrome. In pre-test, the overall mean score was  $16.08 \pm 2.33$ , whereas the mean post-test score was  $33.51 \pm 3.24$ . The enhancement mean score was found to be  $17.43 \pm 0.91$ . The obtained 't' value was 24.83, which was higher than the table value 2.6, it is highly significant at  $P \leq 0.05$  level.

### Inference

From the above table, it shows that, the obtained 't' value was 24.83 were significantly higher than the table value 2.6 at  $P \leq 0.05$  level of significance. Hence, the research hypothesis  $H_1$  is accepted.



**Figure 17: Overall mean pre-test and post-test knowledge scores of college students**

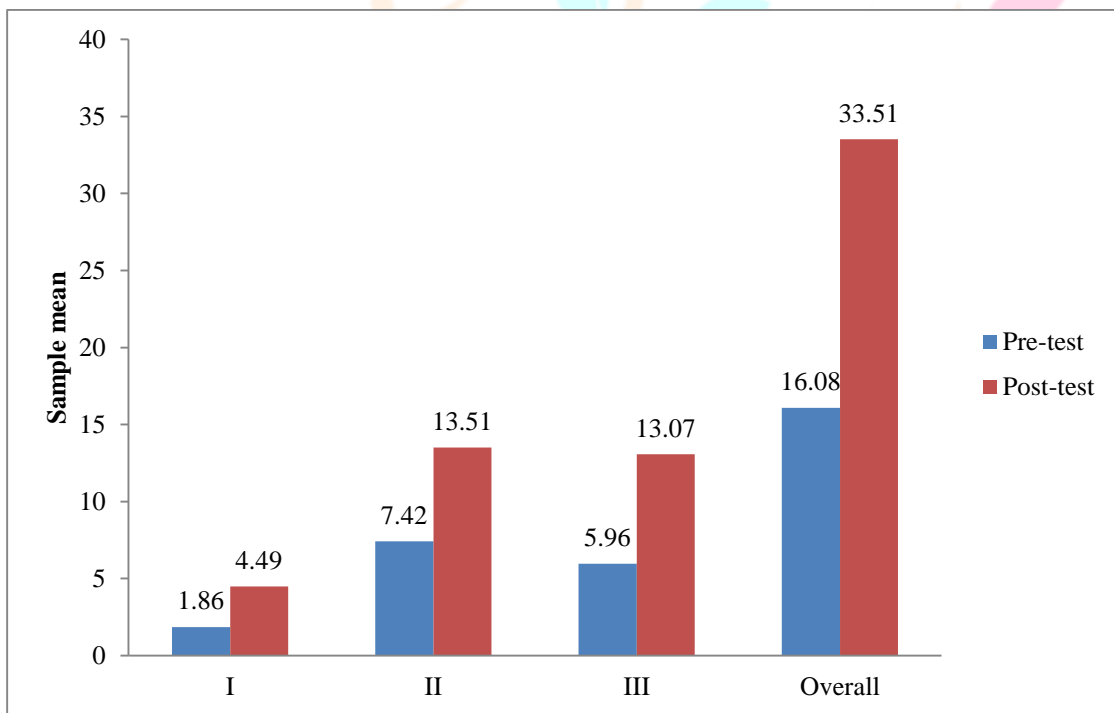
**Table 7: Aspect wise mean pre-test and post-test knowledge scores of college students regarding prevention of irritable bowel syndrome.**

N=100

Sl. No	Aspect wise knowledge	Knowledge of respondents				Paired 't' test
		Pre-test		Post-test		
		Mean	SD	Mean	SD	
I	Anatomy & Physiology of Gastro Intestinal Tract (GIT)	1.86	0.83	4.49	1.25	9.62*
II	Definition, incidence, risk factors, causes, signs & symptoms and diagnostic measures of IBS	7.42	1.31	13.51	1.40	16.70*
III	Preventions and management of IBS	5.96	1.75	13.07	1.86	18.37*
<b>Overall</b>		<b>16.08</b>	<b>2.33</b>	<b>33.51</b>	<b>3.24</b>	<b>24.83*</b>

\*\*Significant at  $P < 0.05$  level,  $df$  99, table-value 2.6

The above Table 7 shows that, the aspect wise mean pre-test and post-test knowledge scores of college students regarding prevention of irritable bowel syndrome. With regard to general knowledge of anatomy & physiology of GIT, the mean scores in pre-test and post test were  $1.86 \pm 0.83$  and  $4.49 \pm 1.25$  respectively. The obtained 't' value was 9.62. In the area of incidence, risk factors, causes, signs & symptoms and diagnostic measures of IBS, mean scores in pre-test was  $7.42 \pm 1.31$  and in post-test was  $13.51 \pm 1.40$ , The obtained 't' value was 16.70. In concern with management and prevention of IBD, mean pre-test and post-test score was  $5.96 \pm 1.75$  and  $13.07 \pm 1.86$  respectively. The obtained 't' value was 18.37. The overall 't' value was found to be 24.83, which was above the table value 2.6 at  $P \leq 0.05$  level of significance.



**Figure 18: Aspect wise mean pre-test and post-test knowledge scores of college students regarding prevention of irritable bowel syndrome**

**PART-III (B)****Table 8: Association between pre-test level of knowledge of college students and their selected socio demographic variables****N=100**

Characteristics	Category	Respondents (N=100)			$\chi^2$
		Frequency (N)	Level of knowledge		
			Inadequate	Moderate	
Age in Year	17-19 years	37	28	9	1.12
	20-22 years	49	31	18	NS
	23- 25 Years	9	6	3	
	26-28 Years	5	2	3	
Gender	Male	57	38	19	0.75
	Female	43	29	14	NS
Year of study	I year	41	32	9	8.22*
	II year	39	26	13	S
	III year	20	9	11	
Marital status	Married	7	6	3	1.89
	Unmarried	93	63	30	NS
Religion	Hindu	55	33	22	2.06
	Muslim	28	21	7	NS
	Christian	13	10	3	
	Others	4	3	1	
Type of family	Nuclear	83	59	24	0.84
	Joint	14	7	7	NS
	Extended	3	1	2	
Family monthly income (in rupees)	Less than 15,000	14	10	4	1.64 NS
	15,001-25,000	46	32	14	
	25,001-35,000	29	19	10	
	35,001 and above	11	6	5	
	Area of residence	Rural	43	38	5
	Semi-urban	32	21	11	S*



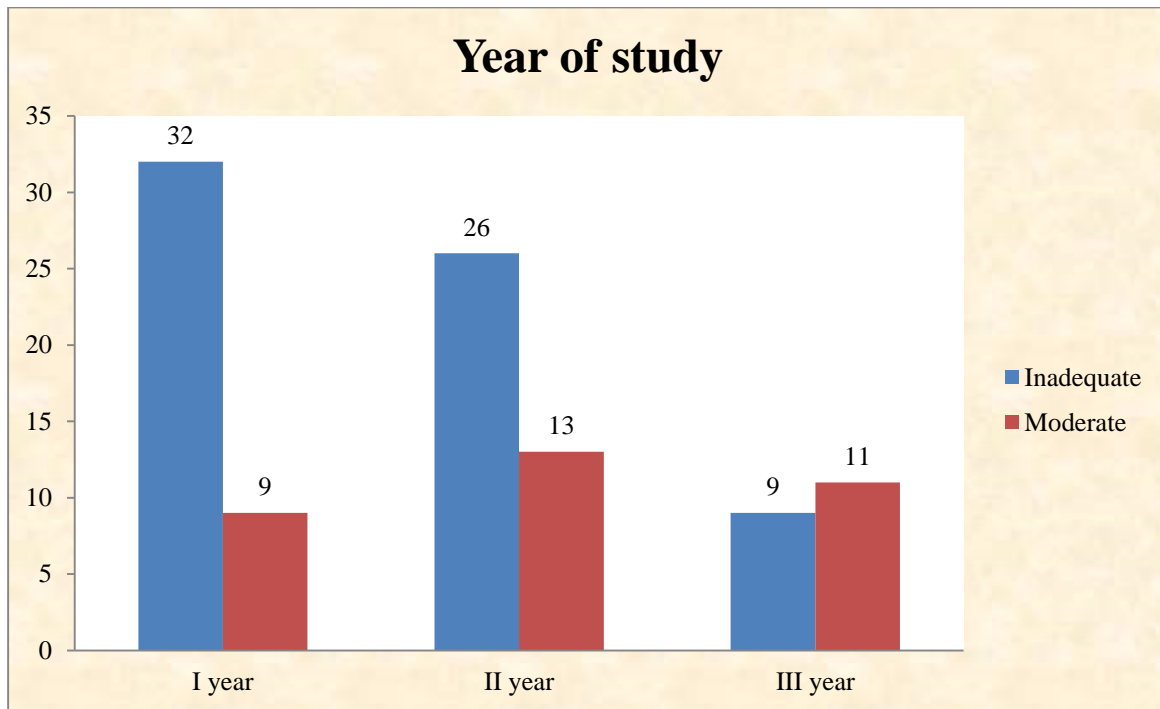
	Urban	25	8	17	
Food pattern	Vegetarian	23	13	10	15.24
	Non-Vegetarian	16	7	9	S*
	Non-Vegetarian	61	47	14	
Personal habits (If yeas, how long-)	Nil	82	52	30	27.97
	Smoking	15	12	3	S*
	Alcoholic	3	3	0	
	Substance use	0	0	0	
Source of Information about IBS	Health workers	47	34	13	1.41
	Mass media	16	10	06	S*
	Text books	31	18	13	
	Others	06	05	01	

The above table-8 revealed that, the association of pre-test level of knowledge of degree college students with their selected socio-demographic variables. The obtained chi square value for year of study, area of residence, food pattern and personal habits were higher values (8.22, 23.89, 15.24 and 27.97 respectively) when compared to the table value 2.6 at  $P \leq 0.05$  level of significance. There was no significant association between socio-demographic variables of degree college students such as age, gender, marital status, religion, type of family, family monthly income and source of information (1.12, 0.72, 1.89, 2.06, 1.76, 0.84, 1.64, 1.41 respectively) with pre-test level of knowledge regarding the prevention of irritable bowel syndrome.

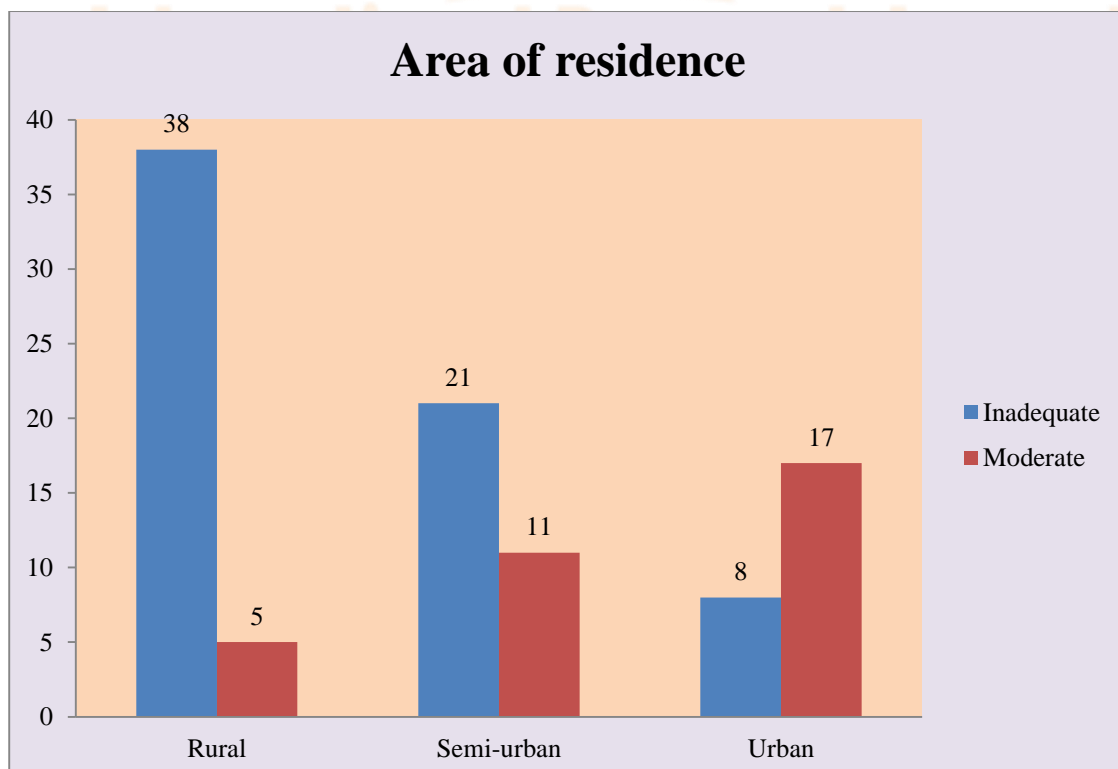
### Inference

In this study the obtained chi square value for year of study, area of residence, food pattern and personal habits were higher when compared to the table value 2.6 at  $P \leq 0.05$  level of significance, hence the research hypothesis  $H_2$  is accepted.

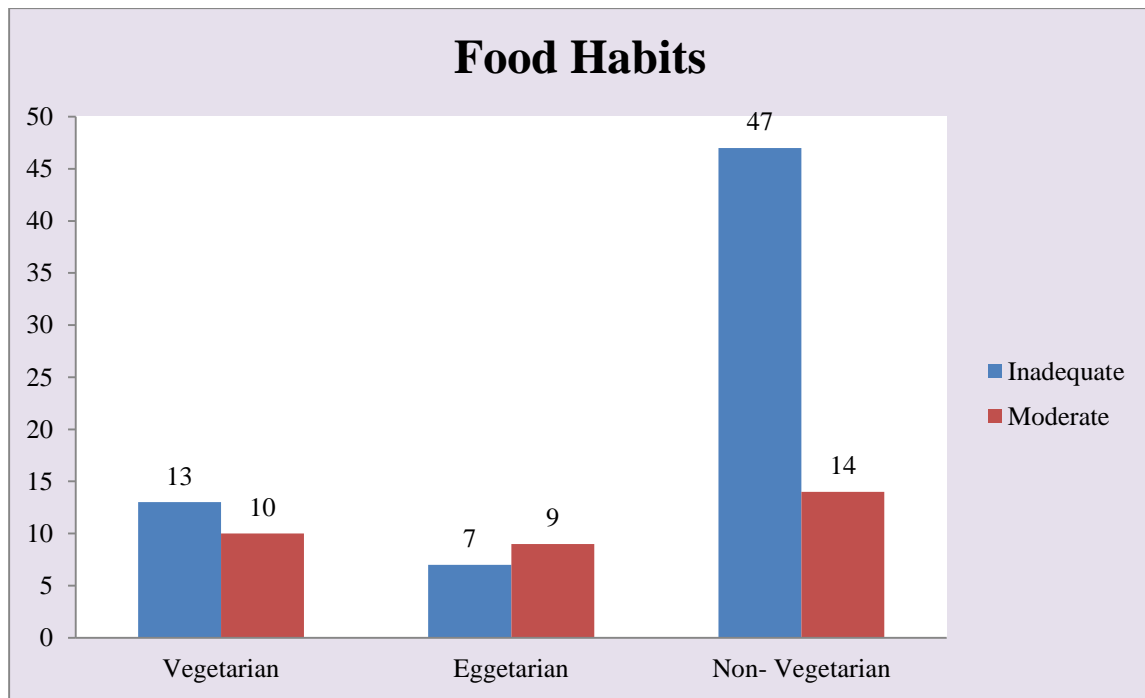
There was no significant association between demographic variables of college students such as age, gender, marital status, religion, type of family, and family monthly income. Hence the research hypothesis H<sub>2</sub> is rejected in these selected variables.



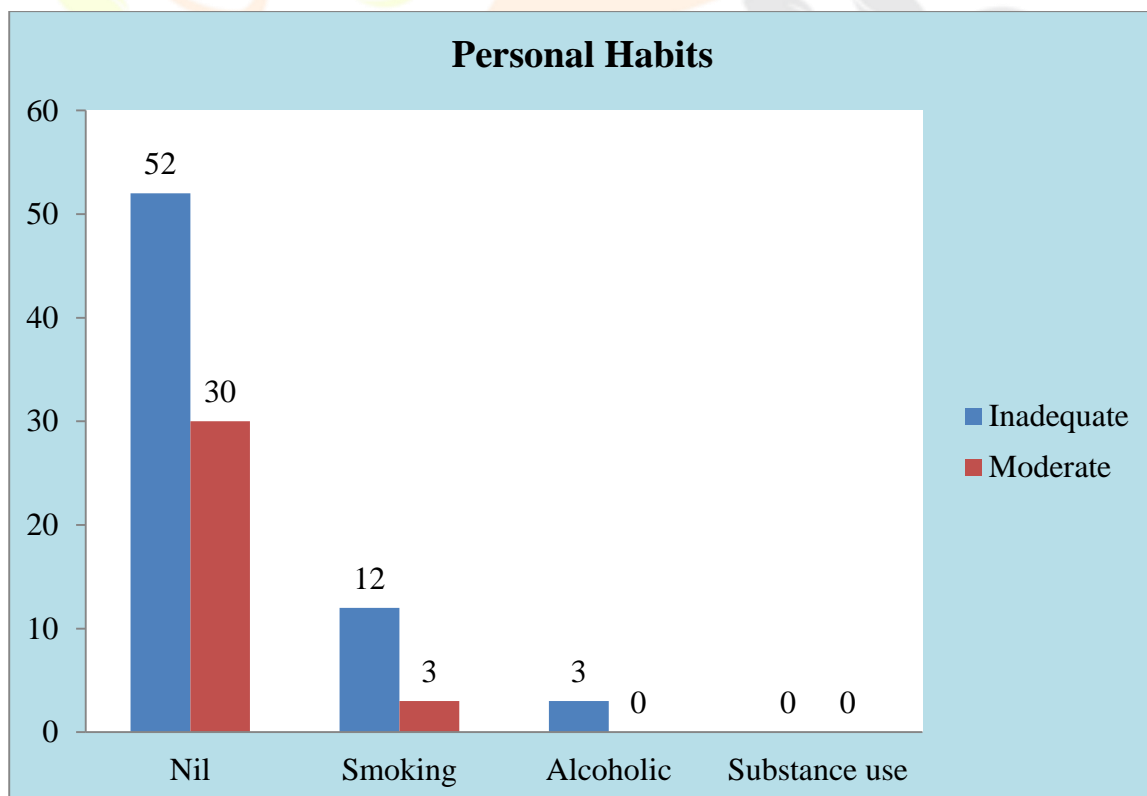
**Figure 19: Association between pre-test level of knowledge and year of study**



**Figure 20: Association between pre-test level of knowledge and area of residence**



**Figure 21: Association between pre-test level of knowledge and food habits**



**Figure 22: Association between pre-test level of knowledge and personal habits**

# Chapter-VI

## Discussion

### VI. DISCUSSION

Irritable bowel syndrome (IBS) is one of the most common gastrointestinal (GI) problems, characterized by altered bowel habits in association with abdominal discomfort or pain in the absence of detectable structural and biochemical abnormalities. It is very common among the age group of 14-60 years. It is common functional bowel disorder that generates a significant health care burden and can severely impair quality of life and is the most commonly diagnosed gastrointestinal condition.

Therefore the present study was undertaken to evaluate the effectiveness of self instructional module on knowledge regarding the prevention of irritable bowel syndrome among degree college students at selected degree colleges, Bangalore. In order to achieve the objective of the study, non-probability convenient sampling technique was used to select the samples and data was collected from 100 college students from selected degree colleges, Bangalore. The structured knowledge questionnaire (pre-test) was administered, followed by the administration of SIM. The post test was conducted after seven days with the same questionnaire to the same group.

The finding of the study was discussed according to the objectives and hypothesis.

#### 1. Socio-demographic characteristics of samples

The study finding demonstrated that, among 100 college students, 49% of them were between 20-22 years of age, 37% of them were between 17-19 years of age, 9% of them were between 23-25 years of age and 5% of them were between 26-28 years of age.

More than half of the degree college students 57% were found to be males, and remaining 43% were females.

It was observed that 41% of degree college students were studying in first year, 39% were studying in second year and 20% were studying in third year.

In the area of religion, 55% of students were Hindus, 28% of them were Muslims, 13% of them were Christians and 4% of them belonged to other group.

Based on the marital status of college students, majority of them 93% were unmarried and only 7% were married.

In concern to type of family, among 100 students, majority 83% of them belonged to nuclear family, 14% of them belonged to joint family and 3% of them belonged to extended family.

With regard to the family monthly income, 14% of them had less than Rs. 15,001, 46% of them had Rs.15,001-25,000, 29% of them had Rs. 25,001-35,000 and 11% of them had Rs. 35,001 and above of family monthly income.

With regard to the area of residence of degree college students, 43% of them resides in rural area, 32% resides in semi-urban area and 25% resides in urban area.

In relation with food pattern of the degree college students, most of them 61% were non-vegetarians, 23% of them were vegetarians and 16% of them were Eggetarian.

It was observed that, 82% of students had no habits of smoking and consuming alcohol and substance use, 15% of them were smoking, 3% of them were alcoholic.

In relation with source of information about IBS among participants, most of them 47% got information from health workers, 31% of them by text books, 16% of them by mass media and others 6%.

## **2. Overall and aspects wise knowledge scores of degree college students regarding the prevention of irritable bowel syndrome**

With regard to overall pre-test knowledge scores of degree college students regarding the prevention of irritable bowel syndrome, 67% of them had inadequate level of knowledge, 33% of them had moderate level of knowledge and none of them has adequate level of knowledge regarding the prevention of irritable bowel syndrome , whereas in post-test, most of them 71% had adequate level of knowledge, 29%

of them had moderate level of knowledge and none of them had inadequate level of knowledge regarding the prevention of irritable bowel syndrome.

Above finding of the present study was supported by a cross sectional study which was conducted to assess the awareness about irritable bowel syndrome among interns of JSS medical College and Hospital, Mysore. About 200 interns working across all departments were selected as samples. Semi-structured interview of the interns was conducted by a trained researcher using a pretested questionnaire related to IBS. The results indicated that, the overall knowledge about IBS among interns was good. About >50% of interns had good knowledge about IBS, there was still a lack of better minutiae of IBS. In conclusion, the present study emphasizes the need to remodel the content to include detection and management of IBS, thereby enriching the knowledge of these young doctors so that ultimately the community at large gets benefited.<sup>52</sup>

### **3. Comparison of pre-test and post-test mean knowledge score of college students in order to evaluate the effectiveness of SIM on the prevention of irritable bowel syndrome**

In this study a comparison was done between the pre-test mean scores and post-test mean scores in order to evaluate the effectiveness of SIM regarding the prevention of irritable bowel syndrome. It was observed that, with regard to anatomy and physiology of GIT, the mean scores in pre-test and post test were  $1.86 \pm 0.83$  and  $4.49 \pm 1.25$  respectively. The obtained 't' value was 9.62. In the area of definition, incidence, risk factors, causes, signs & symptoms and diagnostic measures of IBS, mean scores in pre-test was  $7.42 \pm 1.31$  and in post-test it was  $13.51 \pm 1.40$ . The obtained 't' value was 16.70. In concern with management and prevention of IBS, mean pre-test and post-test score was  $5.96 \pm 1.75$  and  $13.07 \pm 1.86$  respectively. The obtained 't' value was 18.37. The overall 't' value was 24.83, which was above the table value 2.6 at  $P \leq 0.05$  level of significance. Hence, the research hypothesis  $H_1$  is accepted

Above finding of the present study was supported by a study to evaluate the effectiveness of self-instructional module (SIM) on knowledge about Ebola virus disease (EVD) among Nigerian University students in Bangalore, India. A sample size of 60 participants were selected randomly. A pre-experimental study design was employed, and the post-test was conducted after 7 days using the same tool. The results showed that, the majority of the participants 53% were males, studying for the undergraduate degree 85%, 36 participants 60% were in arts/social courses. More than half, 53.3% had

average knowledge but after the administration of the SIM, majority had very good knowledge about EVD. The mean pre-test knowledge score was 16.03 with an SD of 2.951 while the mean post-test knowledge score was 28.22 with SD of 3.273. The calculated t value was 21.432 ( $P < 0.001$ ). Thus, the study concluded that, SIM was very effective in this study and therefore should be adopted by health personnel in order to convey health-related information to the public.<sup>60</sup>

#### **4. Association between pre-test level of knowledge of degree college students and their selected socio demographic variables.**

The association between pre-test level of knowledge of college students and their selected socio demographic variables were analyzed by chi square test. In this study, the obtained chi square value for year of study, area of residence, food pattern and personal habits were higher values (8.22, 23.89, 15.24 and 27.97 respectively) when compared to the table value 2.6 at  $P \leq 0.05$  level of significance. Hence, the research hypothesis  $H_2$  is accepted.

Above finding of the present study was supported by a cross sectional study conducted at 12 different malls from October to December 2017. Among 977 Saudi adult educated subjects from both genders aged from 20-60 years old were the samples. The subjects has poor awareness regarding the IBS and its risk factors (81.1%) while only 18.9% had proper knowledge about the syndrome. Most of the subjects did not had positive attitude toward using diet, medications and counselling as the proper management of IBS. In conclusion, majority of subjects had poor knowledge about the nature, prognosis and risk factors of the disease.<sup>61</sup>

Findings of present study was also supported by another a cross-sectional study which was conducted at primary care centers of Saudi Arabia. Total 70 practitioners aged  $36 \pm 10.25$  years were participated. The physicians were asked to fill a valid questionnaire containing their socio demographic data, and well-modified questions regarding their knowledge, attitudes, and practices about IBS. Majority of physicians surveyed (83.1%) considered IBS as a common health problem in Saudi Arabia, and (55.4%) believed it is underestimated. There was a significant association between physicians' qualifications and using diagnostic tools to facilitate IBS diagnosis (14.3% vs 35.5%;  $P < 0.05$ ), while utilization of "Rome or Manning criteria" was more frequent by physicians with master's degree (35.5%) compared to residents (14.3%). Also, 35.4% of physicians (15 males and 8 females) were not sure how to diagnose IBS.

Finally, this study concluded that Primary health care physicians had a suitable attitude toward IBS, but they lacked knowledge, and their practices toward this condition were inappropriate.<sup>62</sup>

# Chapter-VII

## Conclusion

### VII. CONCLUSION

=====

This chapter deals with the findings of the study and their nursing implications. This study was conducted to evaluate the effectiveness of self instructional module regarding the prevention of irritable bowel syndrome among college students at selected degree colleges, Bangalore. In the present study 100 college students were selected by non-probability convenient sampling technique.

The research approach adopted for this study was evaluatory approach with pre experimental one group pre-test post-test research design with a view to measure the pre-test knowledge level and the effectiveness associated with the post-test knowledge level following administration of SIM regarding the prevention of irritable bowel syndrome among degree college students. A structured knowledge questionnaire was used to assess the knowledge of degree college students. The data was interpreted by using appropriate statistical methods.

**The following findings were drawn from the study:**

➤ Among 100 degree college students selected for the study, 49% of them were between 20-22 years of age, 57% were males, 41% of them were studying in I year, 93% of them were unmarried, 55% of them were Hindus, majority 83% of them belonged to nuclear family, 46% of them had 15,001-25,000 monthly family income, 43% were reside in rural area, 61% of them were non-vegetarian, majority 82% of them did not have habit of smoking, consuming alcohol and most of them 47% got information from health workers.

➤ With regard to overall pre-test knowledge scores of college students regarding the prevention of irritable bowel syndrome, 67% of them had inadequate level of knowledge and 33% of them had



moderate level of knowledge regarding the prevention of irritable bowel syndrome, whereas, in post-test, majority 71% of them had adequate level of knowledge, 29% of them had moderate level of knowledge regarding the prevention of irritable bowel syndrome.

- A comparison was done between the pre-test mean scores and post-test mean scores in order to evaluate the effectiveness of SIM regarding the prevention of irritable bowel syndrome among college students. It was observed that, with regard to anatomy and physiology of GIT, the mean scores in pre-test and post test were  $1.86 \pm 0.83$  and  $4.49 \pm 1.25$  respectively. The obtained 't' value was 9.62. In the area of definition, incidence, risk factors, causes, signs & symptoms and diagnostic measures of IBS, mean scores in pre-test was  $7.42 \pm 1.31$  and in post-test it was  $13.51 \pm 1.40$ , The obtained 't' value was 16.70. In concern with management and prevention of IBM, mean pre-test and post-test score was  $5.96 \pm 1.75$  and  $13.07 \pm 1.86$  respectively, The obtained 't' value was 18.37. The overall 't' value was 24.83, which was above the table value 2.6 at  $P \leq 0.05$  level of significance. Hence, the research hypothesis H1 is accepted.
- The obtained chi square value for year of study, area of residence, food pattern and personal habits were higher values (8.22, 23.89, 15.24 and 27.97 respectively), when compared to the table value 2.6 at  $P \leq 0.05$  level of significance. Hence, the research hypothesis H2 is accepted.

## **NURSING IMPLICATION**

The implications of the findings had been discussed in relation to nursing service, nursing education, nursing administration and nursing research.

### **Implications of study in nursing service**

- ✓ Nurses have great responsibility for giving information through health education regarding the prevention of irritable bowel syndrome among college students.
- ✓ Pamphlets, handouts and booklets should be kept in the hospital ward and outpatients department regarding the prevention of irritable bowel syndrome.
- ✓ Nursing personnel working in various health setting should be given in service education to update their knowledge regarding the prevention of irritable bowel syndrome.

### **Implications of study in nursing education**

- ✓ There should be more emphasis on the nursing curriculum about current concepts of prevention of irritable bowel syndrome

✓ The nursing students may be motivated to give health education at community level in aspects of the prevention of irritable bowel syndrome to the college students.

### **Implications of study in nursing administration**

Nurse administrator can organize staff development programme on the prevention of irritable bowel syndrome for nurses to update their knowledge. The concept of extended role of nurse offers many opportunities for a nurse administrator to improve the quality of life of the public. Nurses as administrators are in key position to organize in service education programme, refresher courses and workshops for nurses and encourage them to participate in these activities.

### **Implications of nursing research**

1. This study will be valuable reference and pathway to further researchers.
2. The findings of the study would help to expand the scientific body of professional knowledge upon which further researchers can be conducted.
3. The learning module developed by the researcher can be used as a blue print for further investigations to develop more effective instructional materials like CD cassettes, and handouts among learning packages.
4. Extensive research can be conducted to create awareness to the college students regarding the prevention of irritable bowel syndrome.

### **DELIMITATION**

This study is delimited to:

- Assessment of knowledge will be based only on the correct responses given to the items in the knowledge questionnaire.
- Collection of data is only from degree college students 19-28 years of age in selected degree college.

### **Suggestions**

The finding of the study suggest

- The nurse educator should give importance for giving information to college students in the community about prevention of irritable bowel syndrome.

- Community health programme should be initiated as to impart knowledge of college students regarding prevention of irritable bowel syndrome.
- Adequate knowledge of college students regarding prevention of irritable bowel syndrome help to prevent and manage of irritable bowel syndrome in their family and friends.

### **Recommendations for further studies**

In the light of the finding of the present study, the researcher puts forward the following recommendation for conducting further research.

- A study can be done on a larger scale in different setting.
- Similar study can be replicated on college students in hospital.
- A cross sectional study can be conducted on knowledge and attitude on prevention of irritable bowel syndrome among college students.
- A comparative study can be done to assess the knowledge level of college students regarding prevention of irritable bowel syndrome among students in urban and rural colleges.



# Chapter-VIII

## VIII. SUMMARY

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This chapter provides the process employed in this study. The primary aim of the study was to evaluate the effectiveness of self instructional module on knowledge regarding prevention of irritable bowel syndrome among degree college students.

### Objectives of the study

The objectives of the study are to:

- assess the level of knowledge of degree college student regarding prevention of irritable bowel syndrome.
- find out the difference between the mean pre-test and post-test knowledge scores of degree college students regarding prevention of irritable bowel syndrome.
- determine the association between the mean pre-test knowledge level of degree college students regarding prevention of irritable bowel syndrome and their selected socio demographic variables.

### Hypothesis of the study

**H<sub>1</sub>:** There will be significant difference between the mean pre-test and post-test knowledge level of degree college students regarding prevention of irritable bowel syndrome.

**H<sub>2</sub>:** There will be significant association between mean pre-test knowledge scores of degree college students on prevention of irritable bowel syndrome and their selected socio demographic variables.

The conceptual framework of the present study is based on general systems model of theory approach with input, throughput, output, evaluation and feedback which was first introduced by Ludwig Von Bertalanffy.

Review of literature enables the investigator to develop the conceptual frame work, methodology for the study and to plan for the data analysis in the most effective and efficient way. The research approach

used for this study was evaluatory approach and research design was Pre-experimental one group pre-test post-test design. The Setting for the study was CMR degree college, Bangalore. The Sample consists of 100 college students in selected degree colleges, Bangalore. Each sample is selected by using non-probability convenient sampling technique.

The variables in the study are as follows;

**a) Independent variables:** Self instructional module regarding prevention of irritable bowel syndrome.

**b) Dependent variables:** Knowledge of degree college students regarding prevention of irritable bowel syndrome.

**c) Socio-demographic variables:** Characteristics of college students such as age of the students, gender, year of study, marital status, religion, type of family, family monthly income, area of residence, food pattern, personal habits and source of information.

The tool used for the study was structured knowledge questionnaire for assessment of degree college student's knowledge regarding prevention of irritable bowel syndrome.

Level of knowledge was assessed in 3 levels inadequate, moderate and adequate.

SIM was developed, which covered the knowledge on all aspects of prevention of irritable bowel syndrome.

The tool and SIM was validated by experts and their suggestions were incorporated.

The split half method was used for determining the reliability of the tool. The reliability coefficient (r) was 0.89 for knowledge questionnaire, which was positive hence the tool was reliable.

Pilot study was conducted among 10 college students and the pilot study was feasible.

Main study was conducted among 100 college students in CMR degree college, Bangalore, within a time period of 6 weeks.

The collected data was analyzed and interpreted by using descriptive and inferential statistical method.

### **Major Finding of the study**

**Finding was presented under the following sections:**

**Section-A:** Analysis of socio-demographic variables of samples

**Section-B:** Overall and aspects wise knowledge scores of degree college students regarding prevention of irritable bowel syndrome.

**Section-C:** Comparison of pre-test and post-test mean knowledge score of degree college students in order to evaluate the effectiveness of SIM on prevention of irritable bowel syndrome.

**Section-D:** Association between pre-test level of knowledge of degree college students and their selected socio demographic variables.

### **Section-A: Analysis of socio-demographic variables of samples**

The finding of the study showed that, among 100 college students selected for the study, 49% of them were between 20-22 years of age, 57% were male, 41% of them were studying in I year, 93% of them were unmarried, 55% of them were Hindus, majority 83% of them belonged to nuclear family, 46% of them had 15,001-25,000 monthly family income, 43% were reside in rural area, 61% of them were non-vegetarian and majority 82% of them did not have habit of smoking, consuming alcohol and most of them 47% got information from health workers.

### **Section-B: Overall and aspect wise knowledge scores of college students regarding prevention of irritable bowel syndrome.**

The overall pre-test knowledge scores of college students regarding the prevention of irritable bowel syndrome, 67% of them had inadequate level of knowledge and 33% of them had moderate level of knowledge regarding the prevention of irritable bowel syndrome whereas in post-test, majority 71% of them had adequate level of knowledge, 29% of them had moderate level of knowledge regarding prevention of irritable bowel syndrome.

### **Section-C: Comparison of pre-test and post-test mean knowledge score of college students in order to evaluate the effectiveness of SIM on prevention of irritable bowel syndrome.**

Paired 't' test was done to evaluate the effectiveness of SIM on knowledge regarding prevention of irritable bowel syndrome among college students. It was observed that, in pre-test, the overall mean score was  $16.08 \pm 2.33$ , whereas the mean post-test score was  $33.51 \pm 3.24$ . The enhancement mean score was  $17.43 \pm 0.91$  The obtained 't' value was 24.83, which was higher than the table value 2.6, it is highly significant at  $P \leq 0.05$  level. Hence, the SIM was effective in enhancing the knowledge of college students regarding prevention of irritable bowel syndrome. Hence, the research hypothesis  $H_1$  is accepted.

### **Section-D: Association between pre-test level of knowledge of college students and their selected socio demographic variables**

The association between pre-test level of knowledge of college students and their selected socio-demographic variables were analyzed by chi square test. The obtained chi square value for year of study, area of residence, food pattern and personal habits were higher values (8.22, 23.89, 15.24 and 27.97 respectively) when compared to the table value 2.6 at  $P \leq 0.05$  level of significance. Hence, the research hypothesis H2 is accepted.

# Chapter-IX

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# Chapter-IX

## X. ANNEXURE

---

### ANNEXURE-1

#### LETTER REQUESTING OPNION AND SUGGESTIONS OF EXPERTS FOR ESTABLISHING CONTENT VALIDITY OF RESEARCH TOOL.

From,  
Mr. Debajyoti Biswas  
Second year M.sc nursing  
Florence college of nursing  
Bangalore-43

To,

Through,  
The principal  
Florence college of nursing  
Bangalore-43

Respected sir/madam

Sub: request for opinion and suggestions of experts for establishing content validity of the research tool.

Myself a post graduate student in medical surgical nursing of the Florence college of nursing, Bangalore have selected the below mentioned topic for my research project to be submitted to Rajiv Gandhi university of health sciences as a partial fulfillment of masters of science in nursing.

**Title:**

**“A study to evaluate the effectiveness of self instructional module on knowledge regarding prevention of irritable bowel syndrome among college students at selected degree colleges, Bangalore.”**

With regard to this, I humbly request you to validate my tool for its appropriateness and relevancy. I am enclosing the objectives of the study, the structured questionnaire and the criteria rating scale for your reference. I would be highly obliged for your kindness in validating my tool.

Thanking you,

**Mr. Debajyoti Biswas**

Enclosures:

Objectives  
Structured questionnaire  
Criteria rating scale and SIM

**ANNEXURE-2**

**ACCEPTANCE LETTER**

**TOPIC**

**“A study to evaluate the effectiveness of self- instructional module on knowledge regarding prevention of irritable bowel syndrome among college students at selected degree colleges, Bangalore”.**

I.....  
...would/would not agree to validate the research tool.

**NAME:**

.....  
.....

**DESIGNATION:**

.....

**SIGNATURE:**

.....

**DATE:**

.....  
.....



ANNEXURE-3

**CONTENT VALIDITY CERTIFICATE**

---

I hereby certify that I have validated the tool of **Mr. Debajyoti Biswas** second year M.Sc nursing, Florence college of nursing, Bangalore, who is under taking study on the topic of “A study to evaluate the effectiveness of self instructional module on knowledge regarding prevention of irritable bowel syndrome among college students at selected degree colleges, Bangalore”.

Name:

Designation:

Signature of expert:

Place:

Date:

---

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## ANNEXURE 4

Kindly go through the evaluation criteria rating scale for validation of tool. There are two columns given for your response and a column for remarks. Kindly please tick in the appropriate column and give your remarks.

S:No:	CONTENT	YES	NO	REMARKS
1.	<p><b>Baseline Data:</b></p> <p>All characteristics necessary for the study are included.</p>			
2.	<p><b>Questionnaire:</b></p> <ul style="list-style-type: none"> <li>❖ Covers the adequate content about prevention of Irritable bowel syndrome.</li> <li>❖ Questions are arranged in logical order</li> <li>❖ Language is simple and easy to follow</li> <li>❖ All items necessary to achieve the objective of the study are included</li> <li>❖ Any technical terms that can be replaced by simple terms.</li> </ul>			



## Respected Madam/Sir

Kindly go through the content and place right mark (✓) against questionnaire in the following columns ranging from relevant to not relevant, when found to be not relevant and needs modification kindly give your opinion in the remarks column.

### PART I: RATING SCALE FOR SOCIO-DEMOGRAPHIC PROFORA

S.NO.	Item	Very Relevant	Relevant	Needs modification	Not Relevant	Remarks
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
11.						

## PART 2: RATING SCALE FOR STRUCTURED KNOWLEDGE QUESTIONNAIRE

Item no.	Very Relevant	Relevant	Needs Specification	Not Relevant	Remarks
1.					
2.					
3.					
4.					
5.					
6.					
7.					
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10.					
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37.					

**Any other Suggestions:**



## ANNEXURE 5

## CRITERIA CHECKLIST FOR VALIDATION OF SELF INSTRUCTIONAL MODULE ON KNOWLEDGE REGARDING PREVENTION OF IRRITABLE BOWEL SYNDROME.

### INSTRUCTION:

The expert is requested to go through following evaluation criteria checklist prepared for validating the SIM on knowledge regarding prevention of irritable bowel syndrome.

There are three columns given for response and a column to facilitate your remarks. Your expert opinion and kind co-operation will be highly appreciated.

sl.no.	Criteria	Meets the criteria	Partially meets the criteria	Does not meet the criteria	remarks
1.	<p><b>Formulation of objective</b></p> <p>a)comprehensive enough for degree college students interms of</p> <ul style="list-style-type: none"> <li>• Knowledge</li> <li>• application</li> </ul> <p>b)realistic to achieve the outcome.</p> <p>c)objectives are in terms of behavioral outcomes</p>				
2.	<p><b>selection of the content</b></p> <p>a) content provided accurate information</p> <p>b) content is adequate</p> <p>c) content coverage is relevant</p>				
3.	<p><b>organization of content</b></p> <p>1.arranged in logical sequence</p> <p>2. integration of content</p>				
4.	<p><b>Language</b></p> <p>Language used in the SIM is simple and clear</p> <p><b>Feasibility</b></p>				

<p><b>5.</b></p>	<p>a)content motivates the participants</p> <p>b)content improves the knowledge of degree college students</p> <p>c)content presented in interesting manner</p> <p>d)content is structured and adheres to provide adequate information</p>				
	<p><b>Any other suggestions:</b></p>				

**ANNEXURE 6**

**LIST OF EXPERTS CONSULTED FOR THE CONTENT VALIDITY OF THE TOOL**

**1 .Mr. Deepak Krishna**

Assistant professor,HOD

CHRISTIAN COLLEGE OF NURSING

BANGALORE

**2 .MS.JENCY MATHEW**

ASSISTANT PROFESSOR

OCEAN COLEGE OF NURSING

BANGALORE

**3. MRS. MUNMUN MUKHERJEE**

ASSISTANT PROFESSOR,HOD

INDIAN ACDEMY COLLEGE OF NURSING

BANGALORE

**4. MS.SHALN I DEVID**

ASSISTANT PROESSOR,HOD

VIJAYNAGAR COLLEGE OF NURSING

BANGALORE

**5. PROF. NICOLAS D SOUZA**

PRINCIPAL, MEDICAL SURGICAL NURSING

MANJHUSHREE COLLEGE OF NURSING

BANGALORE

**6. MRS. PONNARASI P**

HOD, MEDICAL SURGICAL NURSING

ACHAYRA COLLEGE OF NURSING

BANGALORE

**7. MRS. MANJU**

HOD, MEDICAL SURGICAL NURSING

PRAGATHI COLLEGE OF NURSING

**8. Manjhunath Dr. s**

Physician

Cratis hospital bidar

**9. Dr. Ravindra Garshe**

Physician

Baptis hospital Bangalore

**10 .Mr.Shobin Joseh**

Senior statistical; analyst

Zyme solution bangalore



**ANNEXURE-7**

**PERMISSION LETTER FOR CONDUCTING MAIN STUDY**

KNC : 1157-V-III  
INC : 11-83

Off. : 25448311  
41209299  
Fax : 25446379



## FLORENCE COLLEGE OF NURSING

(Affiliated to Rajiv Gandhi University of Health Sciences  
and Recognised by Indian Nursing Council)

# 509, 1'D' Main, 3rd Block, Kalyannagar, HRBR Layout, Bangalore - 560 043.

Ref.

Date :

No: FCN/2019 – 20

To,

Sir/Madam,

Sub: Permission to do Dissertation work reg.


With reference to the above mentioned subject, Mr. Debajyoti Biswas, is a student studying in the II year M.Sc Nursing Course in the above mentioned Institution, for the academic year 2018-19. As a part of his M.Sc Nursing Programme he has to conduct his dissertation work.

**Topic: "A study to Evaluate the effectiveness of self instructional module on knowledge regarding prevention of irritable bowel syndrome among college students at selected college, Bangalore"**

Therefore, kindly permit him to do the same at your esteemed Institution.

Thanking you,

Yours faithfully,

  
ADMINISTRATIVE OFFICER  
CMR GROUP OF INSTITUTIONS  
# 2, 3rd 'C' Cross, 1st 'A' Main,  
2nd Block, HRBR Layout,  
Bangalore - 43.

  
PRINCIPAL  
FLORENCE COLLEGE OF NURSING  
KALYANANAGAR, HRBR LAYOUT  
BANGALORE - 560 043



Web Site : [www.florenceinst.com](http://www.florenceinst.com)  
E-mail ID : [info@florenceinst.com](mailto:info@florenceinst.com), [florenceinstitute@rediffmail.com](mailto:florenceinstitute@rediffmail.com)

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ANNEXURE-8

PERMISSION LETTER FOR CONDUCTING PILOT STUDY

KNC : 1157-V-III  
INC : 11-83

Off. : 25448311  
41209299  
Fax : 25446379



## FLORENCE COLLEGE OF NURSING

(Affiliated to Rajiv Gandhi University of Health Sciences  
and Recognised by Indian Nursing Council)

# 509, 1'D' Main, 3rd Block, Kalyannagar, HRBR Layout, Bangalore - 560 043.

Ref.

Date :

No: FCN/2019 – 20

To,

Sir/Madam,

Sub: Permission to do Dissertation work reg.

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**Topic: "A study to Evaluate the effectiveness of self instructional module on knowledge regarding prevention of irritable bowel syndrome among college students at selected college, Bangalore"**

Therefore, kindly permit him to do the same at your esteemed Institution.

Thanking you,

Yours faithfully,



*[Signature]*

PRINCIPAL

FLORENCE COLLEGE OF NURSING  
KALYANANAGAR, HRBR LAYOUT  
BANGALORE - 560 043

*[Signature]*

HR MANAGER

ADITYA GROUP OF INSTITUTIONS  
Kogilu Main Road, Yelahanka  
Bangalore - 560 064.

Web Site : [www.florenceinst.com](http://www.florenceinst.com)

E-mail ID : [info@florenceinst.com](mailto:info@florenceinst.com), [florenceinstitute@rediffmail.com](mailto:florenceinstitute@rediffmail.com)

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## ANNEXURE 9

### Letter seeking consent of the subjects to participate in research study

**Dear participant,**

I m a post graduate nursing student of the Florence college of nursing, Bangalore. I am conducting a study on “**A study to evaluate the effectiveness of self instructional module on knowledge regarding the prevention of irritable bowel syndrome among college students at selected degree colleges, Bangalore.**”

This study will help to empower the degree college students with the knowledge regarding the prevention of irritable bowel syndrome among college students at selected degree colleges, Bangalore. I have attached a questionnaire along with this and your opinion and experience are very important to the successful completion of the study.

I assure you that the information you provide will be kept confidential and will be used only for study purpose. Kindly sign the consent form given below.

**Mr. Debajyoti Biswas**



**Place:**

**Date:**

## ANNEXURE-10

### Consent form

I am voluntarily willing to participate in the study conducted by **Mr. Debajyoti Biswas**, on **“A study to evaluate the effectiveness of self instructional module on knowledge regarding the prevention of irritable bowel syndrome among college students at selected degree colleges, Bangalore”**. I will cooperate with the researcher in providing necessary information. I understood that all the information will be kept confidential.

**Signature of participant**

**ANNEXURE-11**

### CERTIFICATION OF VALIDATION

This is to certify that questionnaire for demographic variables, structured questionnaire and structured lesson plan, prepared by Mr. Debajyoti Biswas, final year M.Sc. Nursing student of Florence College of Nursing, **“A study to evaluate the effectiveness of self instructional module on knowledge regarding the prevention of irritable bowel syndrome among college students at selected degree colleges, Bangalore.”** has been validated by me.

Seal & Signature:

Name:

Designation:

Date:

## ANNEXURE-12

### LETTER REQUESTING SEEKING PERMISSION TO CONDUCT RESEARCH STUDY

KNC : 1157-V-III  
INC : 11-83

Off. : 25448311  
41200209  
Fax : 25440379



## FLORENCE COLLEGE OF NURSING

(Affiliated to Rajiv Gandhi University of Health Sciences  
and Recognised by Indian Nursing Council)

# 509, 1'D' Main, 3rd Block, Kalyannagar, HRBR Layout, Bangalore - 560 043.

Ref.

Date :

No: FCN/2019 – 20

To,

Sir/Madam,

Sub: Permission to do Dissertation work reg.

With reference to the above mentioned subject, Mr. Debajyoti Biswas, is a student studying in the II year M.Sc Nursing Course in the above mentioned Institution, for the academic year 2018-19. As a part of his M.Sc Nursing Programme he has to conduct his dissertation work.

**Topic: "A study to Evaluate the effectiveness of self instructional module on knowledge regarding prevention of irritable bowel syndrome among college students at selected college, Bangalore"**

Therefore, kindly permit him to do the same at your esteemed Institution.

Thanking you,

Yours faithfully,

PRINCIPAL  
FLORENCE COLLEGE OF NURSING  
KALYANANAGAR, HRBR LAYOUT  
BANGALORE - 560 043

Web Site : [www.florenceinst.com](http://www.florenceinst.com)  
E-mail ID : [info@florenceinst.com](mailto:info@florenceinst.com), [florenceinstitute@rediffmail.com](mailto:florenceinstitute@rediffmail.com)

## ANNEXURE-13

### Questionnaire

#### Section-A: Demographic Data

Please read each item carefully and put a tick in the space provided against the appropriate answer. All the information (response) given by you will be kept confidential and used only for the study purpose. Kindly answer all the questions.

Name:

1) Age in years:

- a) 17-19
- b) 20-22
- c) 23-25
- d) 26-28

2) Gender

- a) Male
- b) Female

3) Year of study

- a) I year
- b) II year
- c) III year

4) Marital status

- a) Married
- b) Un married

5) Religion

- a) Hindu
- b) Muslim
- c) Christian
- d) Others

6) Type of family

- a) Nuclear family
- b) Joint family
- c) Extended family

7) Family monthly income (in rupees)

- a) Less than 15,000
- b) 15,001-25,000
- c) 25,001-35,000



- d) 35,000& above
- 8) Area of residence
  - a) Rural
  - b) Semi-urban
  - c) Urban
- 9) Food pattern
  - a) Vegetarian
  - b) Eggetarian
  - c) Non- Vegetarian
- 10) Personal habits:
  - a) Smoking
  - b) Alcoholic
  - c) Substance use
    - If yeas, how long-
- 11) Source of information:
  - a) Health workers
  - b) Mass media
  - c) Text books
  - d) Others

### **Section-B: Irritable bowel syndrome disease Knowledge Questionnaire**

Instruction:- There are 37 questions in this questionnaire. Please read the following questions carefully and put a tick mark in the space provided, against the most correct answer. Please make sure that you did not leave any of the questions unanswered

#### **Section A. Anatomy & Physiology of Gastro Intestinal Tract (GIT)**

- 1) Total length of gastrointestinal tract is
  - a) 8.0 meter
  - b) 8.5 meter
  - c) 9.0 meter
  - d) 9.5 meter
- 2) Various parts of gastrointestinal tract are
  - a) Mouth, esophagus, stomach, small intestine, and large intestine.
  - b) Trachea, bronchi and bronchioles
  - c) Cerebrum, cerebellum and brainstem
  - d) Sclera, cornea, vitreous humor and retina
- 3) The site of salt and water absorption is
  - a) Small intestine

- b) Large intestine
  - c) Stomach
  - d) Esophagus
- 4) IBS is a long-term or recurrent disorder of
- a) Digestive tract
  - b) Urinary tract
  - c) Respiratory tract
  - d) Reproductive tract
- 5) IBS commonly affects the
- a) Mouth
  - b) Esophagus
  - c) Stomach
  - d) Colon

**Section B. Definition, incidence, risk factors, causes, signs & symptoms and diagnostic measures of IBS**

- 6) Risk of IBS is more among
- a) Below 9 years
  - b) 9-13 years
  - c) 14-60 years
  - d) 70 years & above
- 7) IBS is common among
- a) Male
  - b) Female
  - c) Transgender
- 8) IBS is categorized into
- a) 2 types
  - b) 3 types
  - c) 4 types
  - d) 5 types
- 9) IBS-D is irritable bowel syndrome with
- a) Constipation
  - b) Diarrhea
  - c) Dizziness
  - d) Dementia
- 10) IBS-C is irritable bowel syndrome with
- a) Diarrhea



- b) Cancer
- c) Constipation
- d)Chikungunya

11) The prevalence of IBS in India is

- a) 1.8%-2.7%
- b) 2.8%-4.1%
- c) 4.2%-7.5%
- d) Above 7.5%

12) The duration each episode of IBS may last from

- a) 2-4 days
- b) 1 week
- c) 2 week
- d) 1 month

13) Risk of IBS is higher in

- a) Alcohol consumption
- b) Higher BMI
- c) Waist circumference
- d) Diabetes mellitus

14) Symptoms of IBS-C includes

- a) Diarrhea
- b) Nightmare
- c) Chest pain
- d) Hardened stool

15) Most common symptom of IBS

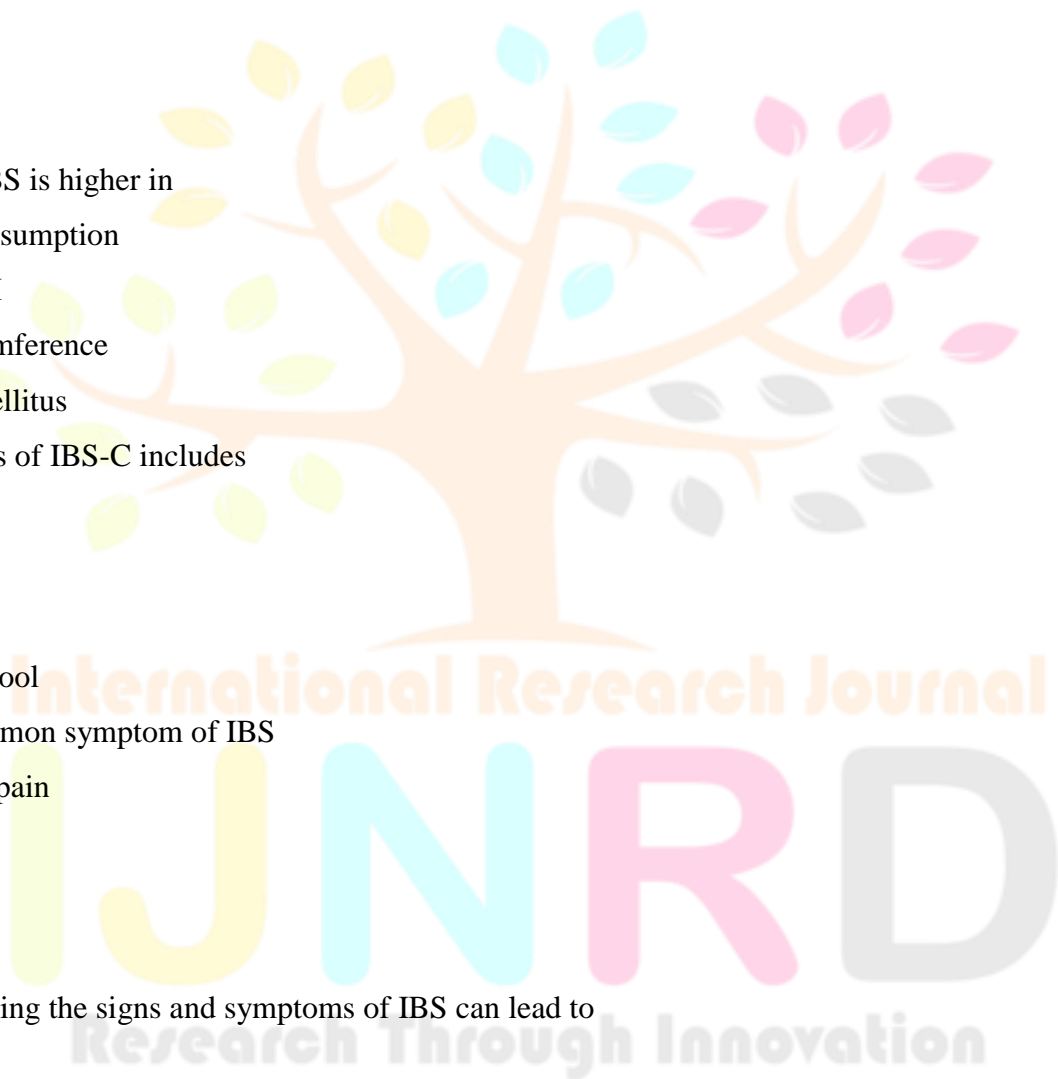
- a) Abdominal pain
- b) Rhinitis
- c) Insomnia
- d) Palpitation

16) Experiencing the signs and symptoms of IBS can lead to

- a) Psoriasis
- b) Depression
- c) Glaucoma
- d) Liver cirrhosis

17) The most-serious signs and symptoms of IBS include

- a)Blured vision
- b) Difficulty breathing
- c)Sneezing
- d)Weight loss



18) IBS can be caused by

- a) Bacteria
- b) Virus
- c) Fungus
- d) Protozoa

19) Drug that causes IBS is

- a) Laxative
- b) SSRIs
- c) NSAIDs
- d) Chloride channel activators

20) Diagnosis for IBS can be done through

- a) Elastography
- b) Flexible sigmoidoscopy
- c) Ultrasound
- d) Electrocardiogram

21) Laboratory test for IBS is

- a) Fibro test
- b) Blood urea nitrogen test
- c) Lactose intolerance test
- d) Complete blood count (CBC) test

**Section C: Preventions and management of IBS:**

22) IBS can be prevented by avoiding

- a) High-fiber foods
- b) High-gas foods
- c) Enough sleep
- d) Regular exercise

23) IBS can be prevent by consuming

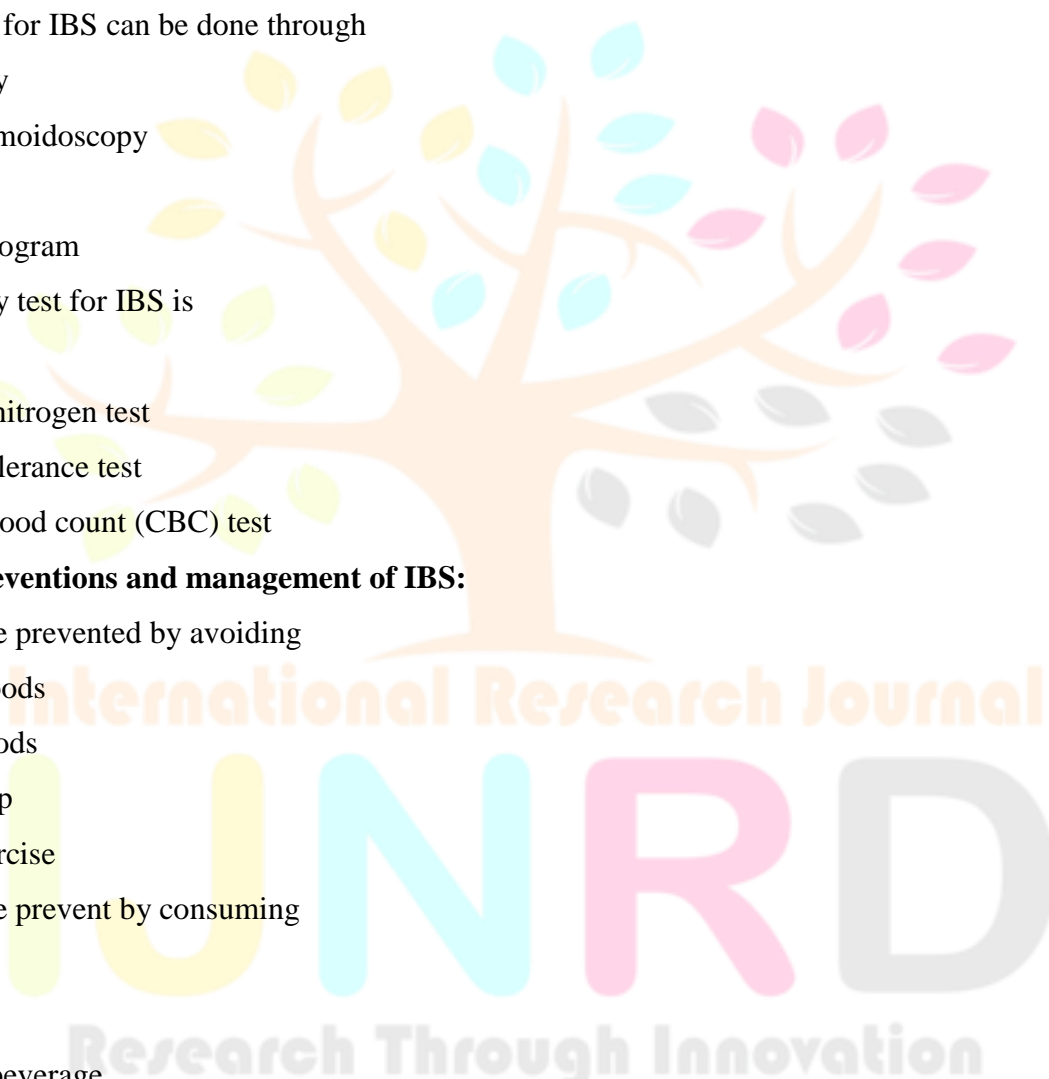
- a) Fresh fruits
- b) Tea
- c) Carbonated beverage
- d) Spicy food

24) Mild signs and symptoms of IBS-C can often be controlled by

- a) Decreased high-fiber foods
- b) Intake of carbonated items
- c) Increased gluten intake
- d) Increased high-fiber foods

25) Drug used in treatment of IBS-C is

- a) Laxatives





- b) Antibiotics
  - c) Anti-motility agents
  - d) Serotonin antagonists
- 26) Drug used in treatment of IBS-D is
- a) Laxatives
  - b) PPIs
  - c) Anti-motility agents
  - d) Chloride channel activators
- 27) Probiotics, dietary supplements that
- a) Contains beneficial bacteria
  - b) Prevents bacterial overgrowth
  - c) Contains beneficial virus
  - d) Prevents viral overgrowth
- 28) Food which can be avoided to reduced risk of IBS is
- a) Meat
  - b) Carbonated drinks
  - c) Fish and chicken
  - d) Bread and pasta
- 29) Food which can be beneficial during IBS is
- a) Apples and citrus fruits
  - b) Food and drinks with chocolate and alcohol
  - c) Rice bread, pasta, and bagels
  - d) Fried and fatty foods
- 30) Foods that help to prevent constipation and should be included in an IBS diet include
- a) Various types of beans
  - b) Apples and citrus fruits
  - c) Fried and fatty foods
  - d) Cabbage, cauliflower and broccoli
- 31) Over the counter drugs in IBS cause
- a) Dry mouth
  - b) Diarrhea
  - c) Fish and chicken
  - d) Bread and pasta
- 32) Probiotics are usually found in
- a) Fermented foods
  - b) Red meat
  - c) Green leafy vegetables



d) Whole grain

33) Relaxation exercise not used in preventing IBS

a) Diaphragmatic breathing

b) Progressive muscle relaxation

c) Visualization/positive imagery

d) Kegel exercise

34) IBS can be prevented by

a) Eating at regular schedule

b) Not eating breakfast

c) Eating late dinner

d) Regularly eating fried foods

35) Fruits can be included in IBS

a) Kiwi

b) Orange

c) Grapes

d) Apple

36) Life style change that helps treat IBS

a) Taking heavy meals

b) Quite Smoking

c) Intake of Caffeine

d) High fat diet

37) Vegetables should be included in IBS

a) Green vegetables

b) Cabbage

c) Cauliflower

d) Broccoli



**ANNEXURE-14****ANSWER KEY FOR KNOWLEDGE QUESTIONNAIRES**

<b>Item. no</b>	<b>Answer</b>	<b>Score</b>
1.	C	1
2.	A	1
3.	B	1
4.	A	1
5.	D	1
6.	C	1
7.	B	1
8.	B	1
9.	B	1
10.	C	1
11.	C	1
12.	A	1
13.	A	1
14.	D	1
15.	A	1
16.	B	1
17.	D	1
18.	A	1
19.	C	1
20.	B	1
21.	C	1
22.	B	1
23.	A	1
24.	D	1
25.	A	1

26.	C	1
27.	A	1
28.	B	1
29.	C	1
30.	A	1
31.	B	1
32.	A	1
33.	D	1
34.	A	1
35.	A	1
36.	B	1
37.	A	1



**ANNEXURE-15****BLUE PRINT OF THE TOOL (STRUCTURED QUESTIONNAIRES)**

Sl. no	Knowledge aspects	Item numbers	Total number of Items	Percentage (%)
1.	Anatomy & Physiology of Gastro Intestinal Tract (GIT)	1, 2, 3, 4, 5	5	13.52
2.	Definition, incidence, risk factors, causes, signs & symptoms and diagnostic measures of IBS	7, 8, 9, 10, 11, 12, 13, 14, 15, 16	16	43.24
3.	Preventions and management of IBS	17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37	16	43.24
		<b>37</b>	<b>37</b>	<b>100</b>

**ANNEXURE-16**

# INFORMATION BOOKLET ON:

## PREVENTION OF IRRITABLE BOWEL SYNDROME (IBS)



BY: DEBAJYOTI BISWAS  
FLORENCE COLLEGE OF NURSING  
BANGALORE, MSC NURSING

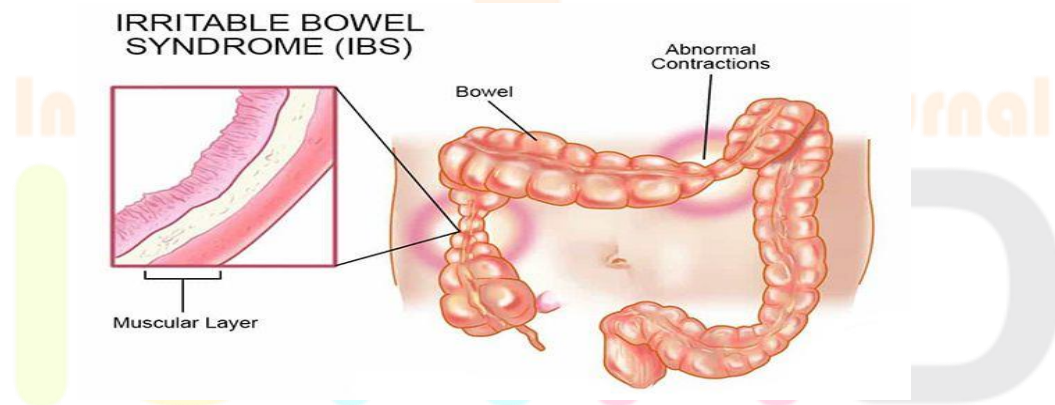
### Gastrointestinal tract

- The gastrointestinal tract or digestive tract is an organ system within humans and other animals which takes in food, digests it to extract and absorb energy and nutrients, and expels the remaining waste as feces.
- The digestive tract is 30 feet (9 meters) in length.

- The digestive tract is a continuous tube with two openings: the mouth and the anus. It includes the mouth, pharynx, esophagus, stomach, small intestine, and large intestine.
- Food passing through the internal cavity, or lumen, of the digestive tract does not technically enter the body until it is absorbed through the walls of the digestive tract and passes into blood or lymphatic vessels.
- The function of the gastrointestinal tract is transportation, digestion and absorption food. Digestion is the breakdown of food into small molecules, which are then absorbed into the body.
- Almost all digestion of protein, fat, and carbohydrate is performed in the small intestine.
- Water, salt of sodium, potassium and chloride, and some of the Vitamin K produced by bacteria are absorbed in the large intestine. It does not absorb Vitamin B12.

### Irritable bowel syndrome

- Irritable bowel syndrome (IBS) is a common functional gastrointestinal disorder, with prevalence rates ranging between 10% to 15% depending on the geographical region and the criteria used for assessment.
- The prevalence of IBS varies from 4.2%-7.5%, 7.7%-12.9% and 11%-14% in India, Bangladesh and Malaysia, respectively.
- Irritable bowel syndrome is a common disorder that affects the large intestine.
- It is also known as spastic colitis, mucus colitis, and nervous colon.
- It is a chronic, or long-term, condition, but symptoms tend to change over the years.
- It is more common in female than male and occurs before the age of 35 years.



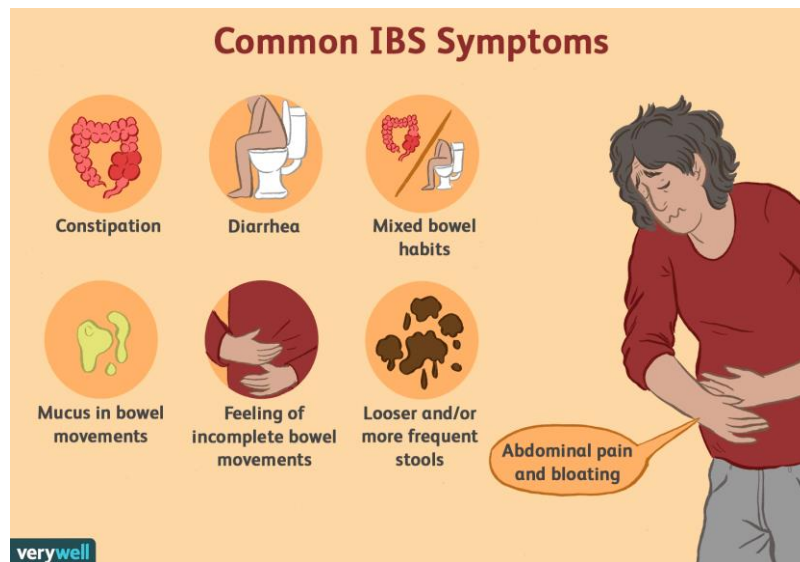
### Types of IBS

There are 3 different forms of IBS:

- **Diarrhea-predominant (IBS-D):** abdominal discomfort or pain, urgency, and diarrhea
- **Constipation-predominant (IBS-C):** abdominal discomfort or pain, bloating and constipation
- **Alternating constipation and diarrhea (IBS-A):** Intermittent symptoms of IBS-D and IBS-C.

### Sign and Symptoms of IBS

- A flare-up may last from 2 to 4 days, and then symptoms may either improve or go away completely.
- Signs and symptoms vary considerably between individuals.



### 1. Pain and Cramping

Experiencing pain and cramps in the lower abdomen are two of the main symptoms of IBS. Excessive gut muscle contractions may lead to lower abdominal pain and cramping.

### 2. Excessive gas

People with IBS may experience excessive gas.

### 3. Bloating

Bloating refers to a collection of gas in the gut, which can cause the abdomen to feel full and appear rounder than usual.

### 4. Diarrhea

Diarrhea is a key symptom of IBS. It happens because the muscles in the gut contract more than they need to. Diarrhea may be accompanied by a feeling of muscle cramps.

### 5. Constipation

Constipation occurs when a person finds it difficult to pass stool. There are many possible causes of constipation, including dehydration, a lack of fiber in the diet, and stress. IBS can also cause constipation by affecting how the muscles in the gut contract.

### 6. Sensitivity to fermentable oligo-, di-, mono-saccharides and polyols

People with IBS may be more sensitive to fermentable oligo-, di-, mono-saccharides and polyols (FODMAP) foods. These are types of carbohydrate that can cause inflammation or irritation in the gut.

### 7. Fatigue

Feeling very tired or fatigued is another common symptom of IBS.

### 8. Joint pain

People with IBS may be more likely to experience joint pain.

### 9. Feeling stressed



Feeling stressed can worsen IBS symptoms, and the physical symptoms of IBS can cause psychological distress and depression.

## 10. Brain fog

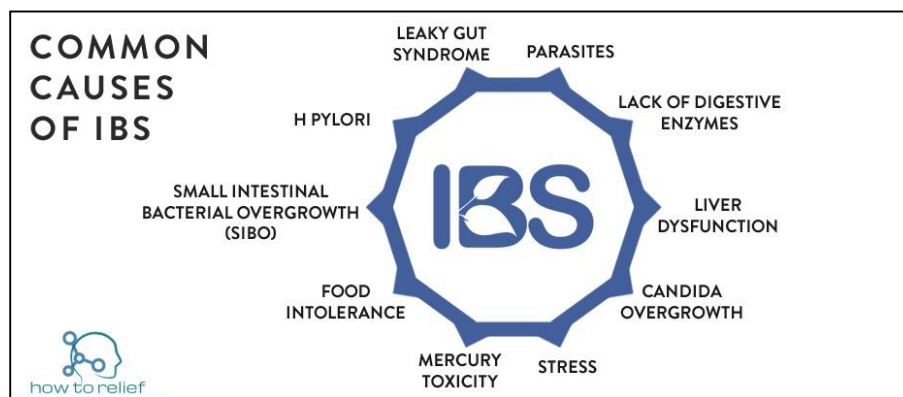
Brain fog, or foggy thinking, describes mental confusion, impaired judgement, and trouble concentrating.

## More-serious signs and symptoms of IBS

- Weight loss
- Difficulty swallowing
- Diarrhea at night
- Rectal bleeding
- Iron deficiency anemia
- Unexplained vomiting
- Persistent pain that isn't relieved by passing gas or a bowel movement

## Causes of IBS

The precise cause of IBS isn't known. Factors that appear to play a role include:



➤ **Bowel Infection:** Only one IBS cause is currently accepted is IBS caused after a bowel infection. Inflammation accompanies a bowel infection alter the way the gut works.

➤ **Gas Gastroenteritis ("stomach flu" or "stomach bug"):** A viral or bacterial infection of the stomach and intestines, may trigger IBS symptoms. Muscle contraction and inflammation in intestine also causes IBS.

➤ **Small intestinal bacterial overgrowth:** An abnormal overgrowth of bacteria in the small intestine feed on the partially undigested food and releases bacterial waste that results in excessive gas, bloating,

abdominal distension & pain, and altered gut motility. Later these wastes are absorbed into the bloodstream trigger immune response with flu like symptoms.

➤ **Analgesic use:** Acetaminophen; a common pain relieving medicine is associated with diarrhea-predominant IBS. This drug known to cause elevated levels of serotonin. People with IBS diarrhea have elevated plasma serotonin level after eating.

➤ **Neurochemical imbalance:** The neurotransmitters such as serotonin, norepinephrine, and acetylcholine can influence bowel motility. An imbalance or misunderstanding between them may leads to IBS. In IBS there is decrease level of Serotonin.

➤ **Antibiotics abuse:** Antibiotics destroys both good and bad bacteria, leaving way for fungus or yeast overgrowth. An overgrowth of yeast irritates intestinal lining causing micro-punctures in small intestine leads to leaky-gut.

➤ **Mercury:** Mercury is a powerful antimicrobial agent that destroys friendly bacteria in the intestine and encourages yeast overgrowth.

### **Risk factors of IBS**

- **Being a woman:** About twice as many women as men have the risks of IBS
- **Age:** IBS can affect people of all ages, but it's more likely for people under age 35 years.
- **Family history:** The condition seems to run in families. Some studies have shown that your genes may play a role.
- **Emotional trouble:** Some people with IBS seem to have trouble with stress, have a mental disorder.
- **Food sensitivities:** Some people may have digestive systems that rumble angrily when they eat dairy, wheat, a sugar in fruits called fructose, or the sugar substitute sorbitol. Fatty foods, carbonated drinks, and alcohol can also upset digestion.
- **Medications:** Studies have shown a link between IBS symptoms and antibiotics, NSAIDs, antidepressants, and drugs made with sorbitol.

### **Prevention of IBS**

#### **Diet Triggers for IBS Constipation**

##### **Some foods to be avoid during IBS-related constipation:**

- Breads and cereals made with refined (not whole) grains
- Processed foods such as chips and cookies
- Coffee, carbonated drinks, and alcohol
- High-protein diets
- Dairy products, especially cheese

## Better Diet Choices for Constipation

- Gradually boost your fiber intake by 2 to 3 grams per day until you're eating 25 (for women) or 38 (for men) grams per day. Good sources include whole-grain bread and cereals, beans, fruits, and vegetables.
- Eat a moderate amount of foods that are higher in the sugar substitute sorbitol, such as dried plums and prune juice.
- Drink plenty of plain water every day.

## Diet Triggers for IBS Diarrhea

### Some foods to be avoid during IBS-related Diarrhea

- Too much fiber, especially the insoluble kind you get in the skin of fruits and vegetables
- Food and drinks with chocolate, alcohol, caffeine, fructose, or sorbitol
- Carbonated drinks
- Large meals
- Fried and fatty foods
- Dairy products, especially in people who can't digest the milk sugar lactose, called lactose intolerance

## Better Diet Choices for Diarrhea

- Eat a moderate amount of soluble fiber. It adds bulk to your stools. Good sources are whole wheat breads, oats, barley, brown rice, whole-grain pasta, the flesh of fruit (not the skin), and dried fruits.
- Don't eat foods at opposite temperatures, such as ice-cold water and steaming hot soup, in the same meal.
- Stay away from broccoli, onions, and cabbage. They cause gas, which can make you feel worse.
- Eat smaller portions.
- Drink water an hour before or after meals, not while you eat.
- Talk with your doctor or a dietitian if you think you may have a wheat allergy.



## Diagnosis of IBS:

- Person who involve in the diagnosis of IBS is known as Gastroenterologist
- **Rome criteria.** These criteria include abdominal pain and discomfort lasting on average at least one day a week in the last three months, associated with at least two of these factors: Pain and discomfort are related to defecation, the frequency of defecation is altered, or stool consistency is altered.
- **Manning criteria.** These criteria focus on pain relieved by passing stool and on having incomplete bowel movements, mucus in the stool and changes in stool consistency. The more symptoms you have, the greater the likelihood of IBS.
- **Type of IBS.** For the purpose of treatment, IBS can be divided into three types, based on your symptoms: constipation-predominant, diarrhea-predominant or mixed.



### **Imaging tests for IBS**

- **Flexible sigmoidoscopy:** Your doctor examines the lower part of the colon (sigmoid) with a flexible, lighted tube (sigmoidoscope).
- **Colonoscopy:** Your doctor uses a small, flexible tube to examine the entire length of the colon.
- **Colonoscopy:** Your doctor uses a small, flexible tube to examine the entire length of the colon.

### **Laboratory tests can include:**

- Lactose intolerance tests
- Breath test for bacterial overgrowth
- Upper endoscopy

➤ Stool tests

## Treatment of IBS

Mild signs and symptoms can often be controlled by managing stress and by making changes in your diet and lifestyle. Try to:

- Avoid foods that trigger your symptoms
- Eat high-fiber foods
- Drink plenty of fluids
- Exercise regularly
- Get enough sleep
- Stop eating gluten (wheat, barley and rye)
- Avoid items such as carbonated and alcoholic beverages, caffeine, raw fruit, and certain vegetables, such as cabbage, broccoli and cauliflower.



## Medications used in treatment of IBS

**Laxatives:** Magnesium hydroxide oral (Phillips' Milk of Magnesia) or polyethylene glycol (Miralax), psyllium. These are used in treatment of IBS-C.

**Anti-motility agents:** Over-the-counter medications, such as loperamide (Imodium), can help control diarrhea. These are used in treatment of IBS-D.

**Anticholinergic medications:** Medications such as dicyclomine (Bentyl) can help relieve painful bowel spasms. They are sometimes prescribed for people who have bouts of diarrhea.

**Tricyclic antidepressants:** This type of medication can help relieve depression as well as inhibit the activity of neurons that control the intestines to help reduce pain. If you have diarrhea and abdominal pain without depression, your doctor may suggest a lower than normal dose of imipramine, desipramine or nortriptyline.

**SSRI antidepressants:** Selective serotonin reuptake inhibitor (SSRI) antidepressants, such as fluoxetine or sertraline paroxetine, may help if you're depressed and have pain and constipation.

**Probiotics:** Probiotics are "good" bacteria that normally live in your intestines and are found in certain foods, such as yogurt, and in dietary supplements.



### Lifestyle and home remedies

**Experiment with fiber:** Fiber helps reduce constipation but also can worsen gas and cramping. Try slowly increasing the amount of fiber in your diet over a period of weeks with foods such as whole grains, fruits, vegetables and beans.

**Avoid problem foods:** Eliminate foods that trigger your symptoms.

**Eat at regular times:** Don't skip meals, and try to eat at about the same time each day to help regulate bowel function.

**Exercise regularly:** Exercise helps relieve depression and stress, stimulates normal contractions of your intestines, and can help you feel better about yourself.

### **Conclusion:**

Adults are high risk of irritable bowel syndrome (IBS), this can be prevented by following personal hygiene, proper food habits and regular exercise.

**Annexure-17****LIST OF FORMULAS USED**

$$\text{Mean } \bar{X} = \frac{\sum x}{n}$$

$$\text{S.D } \sigma = \sqrt{\frac{\sum (x - \bar{x})^2}{n}}$$

$$\text{Mean(\%)} = \frac{\text{Mean}}{\text{Max. possible score}}$$

$$\text{Paired t test } t = \frac{\bar{d}}{\sigma_d / \sqrt{n}}$$

$$\text{Chi square test } \chi^2 = \frac{N(ad - bc)^2}{(a+b)(c+d)(a+c)(b+c)}$$

$$\text{Chi square test (Yates correction) } \chi^2 = \frac{N \left( |ad - bc| - \frac{N}{2} \right)^2}{(a+b)(c+d)(a+c)(b+c)}$$

$$\text{Chi square test } \chi^2 = \sum \frac{(O - E)^2}{E}$$

