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RESEARCH ARTICLE

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## A STUDY TO ASSESS THE EFFECTIVENESS OF SELF INSTRUCTIONAL MODULE ON KNOWLEDGE REGARDING LIFE STYLE MODIFICATION OF PATIENT WITH HEART FAILURE AMONG STAFF NURSES IN SELECTED HOSPITAL MANGALORE

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### ABSTRACT

Heart failure is a common, costly, disabling, and potentially deadly condition, often called congestive heart failure or congestive cardiac failure, occurs when the heart is unable to provide sufficient pump action to maintain blood flow to meet the needs of the body. Healthy lifestyles are an important facet of cardiovascular risk management. The nurses play a vital role in assisting the patient by means of information, education, support, counselling and technical follow-up to control the heart disease. In order to deal with heart failure patients in an adequate manner, it is important for the nurses to acquire an in-depth understanding about the lifestyle modifications which are useful for the patients to keep the disease under control. In order to care for the patients in an evidence based and holistic manner, it is necessary for the nurse involved to have excellent technical knowledge regarding the modifications to be made in the daily routines. The present study was conducted to evaluate the effectiveness of self instructional module on life style modification of patient with heart failure among staff nurses in a selected hospital at Mangalore. **Objectives:** The objectives of the study were: To assess the prior knowledge of staff nurses regarding the life style modification of patient with heart failure. To find out the effectiveness of SIM in terms of gain in post test knowledge score. To associate the pre test knowledge score of staff nurses regarding life style modification of patient with heart failure with selected demographic variables. **Method:** Pre-experimental one group pre-test post-test design was used for this study. The main study was carried out at Athena, Mangalore. The sample comprised of 50 staff nurses who met the inclusion criteria from the selected hospital were chosen by convenience sampling technique. Formal written permission was obtained from the authority to conduct the study. Pre test was conducted using a structured knowledge questionnaire. Self instructional module was administered on the 7th day. Post-test was conducted on 14th day after the pre test by using the same structured knowledge questionnaire. The data was analyzed using descriptive and inferential statistics. Paired 't' test was used to find the effectiveness of self instructional module and Chi-square test was used to find the association of pre-test knowledge score with selected demographic variables. **Result:** The mean post-test knowledge score 25.88 (86.27%) was higher than the mean pre-test knowledge score 12.88 (42.91%). The mean percentage knowledge score of pre-test was maximum in the area of Section - A Anatomy and physiology of Heart (53.2%) and minimum in the area of Section-C Life style modification of patient with heart failure (39.81%) and the mean percentage knowledge score of post-test was also maximum in the area of Section - C Life style modification of patient with heart failure (86.72%) and less in the area of Section- A Anatomy and physiology of Heart (85.6%). The mean difference between post-test and pre-test knowledge score was highly significant. There was no significant association of pre-test knowledge score with selected demographic variables such as age ( $\chi^2=0.57$ ), gender ( $\chi^2=0.025$ ), professional qualification ( $\chi^2=3.78$ ), years of experience ( $\chi^2=5.104$ ), area of experience ( $\chi^2=2.329$ ) and in-service education attended ( $\chi^2=0.126$ ) at 0.05 level of significance. **Interpretation and Conclusion:** The study has shown that majority of the staff nurses had inadequate knowledge on life style modification of patient with heart failure; however the knowledge has significantly improved after the administration of self instructional module. Hence it was concluded that self instructional module was an effective teaching strategy in improving the knowledge of staff nurses regarding life style modification of patient with heart failure.

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## INTRODUCTION

*“Those who cannot change their minds cannot change anything”.*

George Bernard Shaw

The heart is a hollow muscular organ that pumps blood throughout the blood vessels to various parts of the body by repeated, rhythmic contractions. It is really amazing to know that an average human heart, beating at 72 beats per minute, will beat approximately 2.5 billion times during an average 66 year lifespan, and pumps approximately 4.7-5.7 liters of blood per minute. It weighs approximately 250 to 300 grams in females and 300 to 350 grams in males<sup>1</sup>. During the last century, cardiovascular disease has burgeoned from a relatively minor disease worldwide to a leading cause of morbidity and mortality. By 2020 it is projected that heart diseases will surpass infectious disease as the world's leading cause of death and disability. However, a substantial portion of the increasing global impact of heart diseases is attributable to economic, social, and cultural changes that have led to increases in risk factors for heart diseases<sup>2</sup>. These changes are most pronounced in the countries comprising the developing world, because the majority of the world's population lives in the developing world, the increasing rate of heart diseases in these countries is the driving force behind the continuing dramatic worldwide increase in heart diseases. In order to blunt the impact of the global explosion in heart diseases, it will be crucial to attempt to understand and reduce the global increase in risk factors<sup>2</sup>.

Heart failure is a common, costly, disabling, and potentially deadly condition, often called congestive heart failure or congestive cardiac failure, occurs when the heart is unable to provide sufficient pump action to maintain blood flow to meet the needs of the body. As a result, the body does not receive enough oxygen. The kidneys cannot work properly in removing excess fluid from the body and fluid accumulates in parts of the body, particularly the feet and lower legs. Common causes of heart failure include myocardial infarction and other forms of ischemic heart disease, hypertension, valvular heart disease, and cardiomyopathy<sup>2</sup>. Heart failure is the leading cause of hospitalization in people older than 65. More than 20 million people have heart failure worldwide. In developed countries, around 2% of adults suffer from heart failure, but in those over the age of 65, this increases to 6–10%. In a chronic patient already in a stable situation, treatment commonly consists of lifestyle measures such as smoking cessation, light exercise, dietary changes, and medications<sup>2</sup>. Adequate self-care behaviour related to HF reflects the actions that a patient undertakes to maintain healthy functioning and well-being. Such behaviour includes adherence to medication, diet, and exercise, as well as monitoring and self-management of symptoms and daily weighing to assess fluid retention and seeking assistance when symptoms occur. Patients who are actively involved in their own care and treatment and adhere to the regimen have improved survival and decreased readmissions<sup>3</sup>.

Heart diseases can be prevented through healthy diet, regular physical activity and avoiding tobacco smoke. Individuals can reduce their risk of heart diseases by engaging in regular physical activity, avoiding tobacco use, choosing a diet rich in fruit and vegetables and avoiding foods that are high in fat,

sugar and salt, and maintaining a healthy body weight and avoiding the harmful use of alcohol. Patients with heart diseases had to be motivated towards the lifestyle modifications which is very well possible when they are educated about the benefits. Here the nurses and health care team can play the vital role only if they are all equipped with various aspects of lifestyle modifications<sup>4</sup>. Various epidemiologic Studies provide insights into the population burden of heart failure, its prognosis and modifiable risk factors that promote it. In the general population CHF is chiefly the end stage of hypertensive, coronary and valvular cardiovascular disease. It is a major and growing problem in most affluent countries because of aging populations of increased size, and the prolongation of the lives of cardiac patients by modern therapy<sup>5</sup>. Healthy lifestyles are an important facet of cardiovascular risk management. Unfortunately many individuals fail to engage with lifestyle change programmes. There are many factors that patients report as influencing their decisions about initiating lifestyle change. This is challenging for health care professionals who may lack the skills and time to address a broad range of barriers to lifestyle behaviour. Guidance on which factors to focus on during lifestyle consultations may assist healthcare professionals to hone their skills and knowledge leading to more productive patient interactions with ultimately better uptake of lifestyle behaviour change. The aim of our study was to clarify which influences reported by patients predict uptake and completion of formal lifestyle change programmes<sup>6</sup>.

Since nurses are the main providers of patient education in a healthcare setting it is necessary that they, themselves, be knowledgeable regarding the guidelines of heart failure so that they teach heart failure patients about their diagnosis and how to manage their conditions by modifying their life style<sup>6</sup>. Year after year, heart failure affects and kills an increasingly large number of people. It is a diagnosis characterized by increased mortality rates and hospitalizations as well as poor quality of life. Once diagnosed, those afflicted must make multiple lifestyle changes and follow a complex therapeutic regimen in order to maximize quality of life at best, and at worst, survive. Its prevalence, combined with the complexity of treatment, results in increasing hospital admission and readmission rates. Heart failure patients who are educated in their diagnosis and treatment have fewer hospital re-admissions and a better quality of life. For this reason, the importance of heart failure education should not be overlooked<sup>7</sup>.

### Need for the Study

Heart diseases are the number one cause of death globally. more people die annually from heart diseases than from any other cause. An estimated 17.3 million people died from heart diseases in 2008, representing 30% of all global deaths. Of these deaths, an estimated 7.3 million were due to coronary heart disease and 6.2 million were due to stroke. Low- and middle-income countries are disproportionately affected and happened almost equally in men and women. The number of people who die from cardiac diseases will increase to reach 23.3. million by 2030. Most cardiovascular diseases can be prevented by modifying life style and avoiding risk factors such as tobacco use, unhealthy diet and obesity, physical inactivity, high blood pressure, diabetes and raised lipids<sup>4</sup>. Heart failure is a major public health issue, with a prevalence of over 23 million worldwide, and rising. About 5.1 million people in the United States have heart failure.

One in 9 deaths in 2009 included heart failure as contributing cause. About half of people who develop heart failure die within 5 years of diagnosis. Heart failure costs the nation an estimated 32 billion dollars each year.<sup>3</sup> This total includes the cost of health care services, medications to treat heart failure, and missed days of work<sup>8</sup>. In the U.K around 900,000 people suffer from heart failure, and it was estimated that 1.81% of the population aged 45 years or older suffered from heart failure. British Heart Foundation Statistics Database estimated that 13.7% of men and 12.5% of women aged over 75 years in England suffer from the condition<sup>6</sup>. Heart failure is a global problem, including Asia. In India an estimated 2.27 million people died due to heart disease during 2008. The estimated prevalence of heart failure in India is 1.3–4.6 million with an annual incidence of 0.5–1.8 million There were over 8 million persons suffering from heart disease during 2011. The prevalence is reported to be 2-3 times higher in the urban population as compared to the rural population Cardiovascular disease will be the largest cause of death and disability by 2020 in India. It has been forecasted that 2.6 Million people will die from coronary heart disease, which constitutes 54% of all cardiovascular disease deaths. Approximately half of these deaths will occur in young and middle aged individuals, making the impact to society and the economy even more significant<sup>9</sup>. Up to half of patients hospitalized for heart failure are back in the hospital within 6 months. Many people return because of lifestyle factors, such as poor diet, failure to comply with medications, and social isolation<sup>10</sup>.

In people aged over 65 years heart failure is the most common reason for admission to hospital and complicates many more admissions. Data from various populations suggest that up to 50% of patients hospitalized due to heart failure are readmitted within 6 months. Hospitalization accounts for up to 70% of the total health care costs for heart failure. Heart failure is a chronic syndrome with a poor prognosis and deterioration of the disease is not always preventable. However, it has been proposed that up to half of readmissions are preventable. Many of these admissions are caused by the failure of health care providers to target high-risk patients, prescribe optimal treatment, and provide discharge planning, education and follow-up<sup>11</sup>. Readmissions can also be caused by the patients' failure to adhere to medical treatment and diet regimen, inability to perform self-care behaviour, including monitoring symptoms of deterioration and failure to take action in order to prevent further deterioration. The implementation of disease management programmes has been shown to be successful in reducing the number of readmissions. Education, often delivered by nurses, is an important part of all management programmes for patients with heart failure<sup>11</sup>. It is essential to stress the importance of lifestyle advice, although there is little evidence that such recommendations improve symptoms or prognosis. Heart failure patients experience symptoms of different intensities which impair their daily activities and reduce the quality-of-life. To cope with their clinical condition, many patients seek advice about lifestyle and self-management strategies when in contact with medical care providers, particularly direct care services. Self-care management is an important part of heart failure treatment, thus health professionals working with patients have recognized the need for more specific recommendations on lifestyle advice<sup>13</sup>. A descriptive, exploratory study conducted at London to assess nurses knowledge of heart failure self-care and heart failure education in a sample that included 300 nurses who care for patients with heart failure in a large patient care setting. The

majority of the nurses found to be having less knowledge than expected and the samples themselves requested to include this topic for further continuing education programs. The authors concluded that nurses may not be adequately educated in heart failure self management and that should be corrected so that improvements can be made in heart failure patient care and patient outcomes<sup>13</sup>.

In a study which evaluated nurses' knowledge of evidence-based topics for heart failure management in a sample of 94 nurses to identify if differences occurred due to nurses' education, work experiences, or nurses' educational needs. The heart failure knowledge mean score was 78.9%. Out of the three topics no nurses answered all topics correctly. In the other topic themes, there was a great deal of variation regarding depth of knowledge. Level of education made no significant statistical difference. Nurses with more years of nursing experience scored higher than nurses with less work experience but that result was not statistically significant. Nurses requested further information in all five education topics. And the study concluded that nurses had a general knowledge base of heart failure but that there was substantial room for improvement. Educational programs for heart failure management for nurses may be important antecedents for improvements in heart failure patient outcomes<sup>14</sup>. Adequate self-care behaviour related to heart failure reflects the actions that a patient undertakes to maintain healthy functioning and well-being. Such behaviour includes adherence to medication, diet, and exercise, as well as monitoring and self-management of symptoms and daily weighing to assess fluid retention and seeking assistance when symptoms occur. Patients who are actively involved in their own care and treatment and adhere to the regimen have improved survival and decreased readmissions<sup>12</sup>. In a descriptive study to determine nurses knowledge of heart failure self-care, a convenience sample of nurses who worked in the telemetry unit and cardiac care unit of a large, southeastern medical center was obtained. Demographics used in the study were education level, years of experience, work environment, and work status. On questions related to dietary modifications, nurses had scores less than 70%. The authors concluded that the nurses in this study did not possess sufficient knowledge to care for and educate patients with heart failure and request for more information on those topics which are less scored<sup>14</sup>.

A descriptive study assessed nurses' knowledge on evidence-based education topics for heart failure management. Most respondents answered six questions correctly. Questions assessing the need for daily weight monitoring when asymptomatic and the importance of notifying the health care provider of new onset or worsening of symptoms of fatigue were answered correctly by all. Study concluded that nurses working in a small community hospital may not be sufficiently knowledgeable in heart failure self-care management. Disease-specific education in an ongoing manner may improve the quality of patient education<sup>14</sup>. Self-care management is an important part of heart failure treatment. Health professionals should promote non-pharmacological management to all patients with heart failure in an intelligent and individualized fashion. They should also be aware when potential patient limitations to implementation mean that involvement of carers is necessary. By doing so, a significant advance in the quality-of-life may be achieved, with further benefits in terms of decreased burden for health-care providers and health-care

systems. Further research to optimize self-care strategies is required in a number of key areas to derive further benefits<sup>12</sup>. According to the American Heart Association, the education topics include diet and nutrition, activity restrictions and recommendations, smoking cessation, alcoholic intake limitations, medication therapy, and signs and symptoms of worsening heart failure. Because of the complexity and importance of such education, it is vital that the nurses educating heart failure patients know and understand this material well. If the patients fail to understand these guidelines and how to implement such changes, they will not be able to effectively participate in their care when outside a care facility<sup>7</sup>. Studies state that in order for effective education to take place, the nurse-educator needs an optimum knowledge base of fundamental heart failure education guidelines. Many nurses had low levels of knowledge and lacked a clear understanding of heart failure. Educational interventions need to be designed specifically for nurses and need to target barriers to learning such as functional and cognitive limitations, misconceptions, low motivation and self-esteem. Health care professionals need to be skilled in assessing the requirements and level of education given to the individual. New technologies such as computer-based education and tele-monitoring can be used as tools to improve the education. Nurse's knowledge is an important component of heart failure care and should be provided through effective and well-evaluated strategies<sup>11</sup>.

As nurses master their own self-efficacy, they may be more willing to provide heart failure education; and, if these nurses are knowledgeable regarding heart failure education principles, then the education provided by them will be better than those who lack self-efficacy. A number of researches conducted state that nurses' self efficacy can directly relate to their behavior on how they provide heart failure education to patients. Furthermore, research has shown that one's perception of self-efficacy, more specifically, mastering one's self-efficacy, can influence thought patterns and actions<sup>7</sup>. In most healthcare facilities nurses are the key providers of any education the patient may need and will receive in the healthcare setting. As such, it is essential that the nurses providing such information be knowledgeable about what they are teaching. Literatures emphasize this by pointing out that lack of knowledge was designated as a hurdle for adhering to evidenced-based practice. Nurses who are knowledgeable in the topic they are teaching increase the chance that there are no misconceptions regarding that particular topic. Lack of continuing education by healthcare professionals is a barrier to decreasing hospital re-admission rates for heart failure patients. Furthermore, misunderstanding of instructions regarding medications prescribed by healthcare providers contributes to noncompliance with medications<sup>15</sup>. As discussed, the literature suggests that re-admission rates for heart failure are high and that discharge education is effective in reducing repeated hospital admissions. In most hospitals nurses are the key educators when it comes to discharge education and play an important role in giving discharge education to heart failure patients. According to the literature, heart failure education is effective when taught by nurses knowledgeable in the heart failure guidelines. The patients who receive such education have improved compliance, decreased hospital re-admissions, and a lower mortality rate<sup>7</sup>.

It is the major responsibility of the health care member especially nurses to prepare the patient for facing this situation.

Thus educating the patient and family is the primary responsibility of the nurse. The education will be more effective if nurses have very good knowledge regarding heart failure and its lifestyle modifications<sup>17</sup>. Hence the investigator would like to undertake the present study to assess the effectiveness of self instructional module on knowledge regarding lifestyle modification of patient with heart failure among staff nurses working in selected hospital, Mangalore.

## Objectives

The research objective establishes the general direction of the inquiry for researcher. The objectives of the study clearly explains each and every aspect of the study and thereby provides a better idea to the researcher of what is intended to find out. The objectives include obtaining answers to research questions or testing research hypotheses but may also encompass some broader aims like developing recommendations for changes to nursing practice based on the study results<sup>17</sup>. This chapter deals with the main objectives of the study, and the conceptual framework on which the study is based.

**Statement of Problem:** "A study to assess the effectiveness of self instructional module on knowledge regarding lifestyle modification of patient with heart failure among staff nurses working in selected hospital, Mangalore."

## Objectives

The main objectives of this study are

- To assess the prior knowledge of staff nurses regarding lifestyle modification of patient with heart failure.
- To develop a self instructional module (SIM) regarding the lifestyle modification of patient with heart failure.
- To find out the effectiveness of SIM in terms of gain in post test knowledge score regarding life style modification of patient with heart failure.
- To associate the pre test knowledge score with selected demographic variables.

## Operational Definition

- **Assess:** In the present study, assess means judging the status of pretest and post test knowledge of staff nurses on life style modification of patient with heart failure.
- **Knowledge:** In this study knowledge refers to the correct responses to the items on a structured questionnaire on 'life style modification of patient with heart failure' which is measured and expressed in terms of knowledge scores.
- **Effectiveness:** In the present study, effectiveness refers to the extent to which the self instructional module has achieved the desired objectives, that means improvement of post test knowledge scores among staff nurses regarding lifestyle modification of patient with heart failure.
- **Self instructional module:** In the present study SIM is a learning package planned and prepared on lifestyle modification of patient with heart failure

provided to staff nurses with an aim to facilitate self learning.

- **Heart failure:** Heart failure is a physiologic state in which the heart cannot pump enough blood to meet the metabolic needs of the body. It includes left sided failure, right sided failure or both.
- **Lifestyle modification:** In this study lifestyle modification refers to the changes in the activities of daily living for reducing the risk factors of cardiac failure which includes dietary modifications, exercise, behavioral modifications, weight management, symptom management, stress management, medication and follow up.
- **Staff Nurses:** In the present study, staff nurse is a person who is having a diploma or basic degree in nursing from a recognized university or board, registered under a state nursing council and is working in selected hospitals, at Mangalore.
- **Selected Hospital:** In the present study selected hospital refers to the place where the researcher obtains permission & intents to conduct the study.

### Variables

- **Independent variable:** - self instructional module on lifestyle modification of patient with heart failure.
- **Dependent variable:-** staff nurses knowledge on lifestyle modification of patient with heart failure.
- **Extraneous variables:** In this study extraneous variables could be the age, professional qualification, years of experience as staff nurse, area of experience and exposure to any previous in-service educational programs on lifestyle modification of patient with heart failure.

**Assumption :** The study assumes that:

- Staff nurses will have some knowledge on lifestyle modification of patient with heart failure.
- Knowledge may vary from staff nurse to staff nurse.
- SIM may enhance the knowledge score of the staff nurses regarding lifestyle modification of patient with heart failure.

**Delimitation:** The study will be limited to the staff nurses in a selected hospital, Mangalore.

**Hypotheses:** All the following hypotheses will be tested at 0.05 level of significance.

- **H<sub>1</sub>:** The mean post-test knowledge score of staff nurses on lifestyle modification of patient with heart failure will be significantly higher than the mean pre-test knowledge score.
- **H<sub>2</sub> :** There will be significant association between pre-test knowledge score of the staff nurses with selected demographic variable.

### Conceptual frame work

Theory is a systematic, abstract explanation of some aspects of reality. In a theory, the concepts are knitted together into a coherent system to explain the concepts. The researchers use deductive reasoning to develop specific predictions from the general theory that can be tested empirically. The selection, arrangement and classification of the concepts are done in

conceptual framework<sup>18</sup>. Conceptual model conceived for this study provided a frame for the development of learning material for the staff nurses. The conceptual model also provided planning of self instructional module, assessment of knowledge and practices. It further gives direction to research for finding solutions<sup>19</sup>. The conceptual framework of the present study was developed by the researcher based on J. W. Kenny's Open System Model. The systems theory is concerned with changes due to interrelation between various factors in the situation. All living systems are open in which there is a continual exchange matter, energy and information. Open system have varying degrees of input and gives back output in the form of energy, matter and information. The concepts of Kenny's Open System Model are input, throughput, output and feedback. Input refers to matters and information that continuously processed through systems and released as outputs. After processing the input, the system returns the output to the environment in an altered state, affecting the environment for information to guide operations. The feedback is used for the adjustments with the environment. Feedback may be positive or negative<sup>18</sup>. In this study the concepts of Kenny's Open System Model are modified as follows:

**Input:** Subjects are a system and has input within the system itself and acquired from the environment. According to J.W. Kenny's, the input can be energy, matter or information. In the present study the input is given as self instructional module on lifestyle modification of patient with heart failure and may also include staff nurses who are working in the different hospitals of Mangalore, their background like age, gender, educational qualifications, area where they are currently working and years of experience which may or may not affect their knowledge regarding lifestyle modification of patient with heart failure.

**Throughput:** It is the action needed to accomplish the desired task to achieve the desired output, to assess the effectiveness of self instructional module in this study. It is done by determining the knowledge of staff nurses regarding heart failure and life style modification for the patients, preparing and administering the self instructional module on lifestyle modifications for heart failure patients and evaluating the target group after 14<sup>th</sup> day of questionnaire administration.

**Output:** Output was the expected outcomes of the study which is obtained by assessing structured knowledge questionnaire. Output may be positive or negative. If the output is positive there will gain in the knowledge of subjects where as if the output is negative there is no gain in the knowledge of staff nurses.

**Feed back:** It refers to the process by which information is received at each stage of the system and helps to guide or direct the evaluation. For present study feedback is considered as the effectiveness of self instructional module on lifestyle modification of patient with heart failure in terms of gain in knowledge score. Effectiveness is assessed by testing the hypothesis that is, relationship between pre-test and post test knowledge score which was tested by  $E = Y - X$ .

### REVIEW OF LITERATURE

Review of literature is a key step in research process. It refers to an extensive, exhaustive and systematic examination of publications relevant to a research project<sup>19</sup>.

- Section 1 – Literature related to incidence and prevalence of heart failure.
- Section 2 – Literature related to lifestyle modification of patient with heart failure
- Section 3 – Literature related to knowledge of staff nurses on lifestyle modification for heart failure patient.
- Section 4 - Literature related to SIM as an effective teaching module.

### **Section 1 – Literature related to incidence and prevalence of heart failure**

A population based study was conducted to determine the incidence and etiology of heart failure in general population. New cases of heart failure were identified from the population 151000 served by 82 general practitioner. The result of the study showed that incident rate increased from 0.02 cases per 1000 population per year in those aged 25 to 35 years to 11.6 in those aged 85 years and over. The incidence was higher in male than female. The medium age at presentation was 76 years. The primary etiology were coronary artery disease 36%, unknown 34%, hyper tension 14%, valve disease 7%, atrial fibrillation 5% and other 5%. The study concluded that within the general population new cases of heart failure occur in elderly and incidence is higher in men than women<sup>19</sup>. A population based study was conducted to determine the prevalence of heart failure and left ventricular systolic dysfunction in the general population. 5540 participants belongs to 55 to 95 years, were selected as samples. The presence of heart failure was determined by assessment of symptoms and sign and use of heart failure medications. The overall prevalence of heart failure was 3.9% and did not differ between men and women. The prevalence increased with age. The prevalence of left ventricular systolic dysfunction was approximately 2.5 times higher in men than women. The study concluded that the prevalence of heart failure is appreciable and does not differ between men and women<sup>20</sup>.

### **Section 2 – Literature related to lifestyle modification of patient with heart failure**

An experimental study was conducted to determine how an exercise adherence intervention affects the physiological, functional, and quality of life outcomes of patients with heart failure. Sixteen heart failure patients were randomly assigned to an exercise-only group or to an exercise-with-adherence group. Two of the 16 people died from no exercise related causes during the study and were not included in the analysis. The intervention was tested over a 24-week period in which patients participated in a 12-week supervised exercise program followed by 12 weeks of unsupervised home exercise. The intervention format was one of individualized graphic feedback on exercise goals and participation and problem-solving support by nurses. Results indicated that patients who received the intervention exercised more frequently and experienced improved outcomes during both phases. The adherence intervention may encourage heart failure patients to continue to exercise and thereby maintain the health benefits gained in both phases of an exercise program<sup>21</sup>. A longitudinal study was conducted to ascertain the safety and effectiveness of a lifestyle modification program in patients with systolic heart failure and metabolic syndrome. 20 patients with systolic heart failure (ejection fraction < 50%) and metabolic syndrome were randomized to standard medical therapy (Control) versus

medical therapy and lifestyle modification (Lifestyle) and followed prospectively for 3 months. Lifestyle modification involved a walking program and reduced calorie diet with 2 meal replacement products daily. Data collected at baseline and 3 months and included physical exam, laboratory values, quality of life questionnaire, 6 minute walk, and brachial ultrasound revealed that 3 months, 5 patients in each group had lost  $-0.84 \pm 3.82$  and  $-0.50 \pm 3.64$  kg on an average and no significant differences in the defined endpoints were noted. None of the patients had an adverse event that was related to weight loss or exercise. And the results pointed out that lifestyle modification in patients with systolic heart failure and metabolic syndrome was well tolerated, but did not result in significant weight loss<sup>22</sup>.

### **Section 3 – Literature related to knowledge of staff nurses on lifestyle modification for heart failure patients**

A cross sectional study was conducted to evaluate the home care nurses knowledge about lifestyle modifications for heart failure patient. 92 home care nurses were recruited from 4 home care agencies. A previously published 20 item heart failure life style modification knowledge questionnaire was administered to participants. The result of the study has shown that the nurses had lowest on knowledge related to asymptomatic hypotension and weight monitoring. The study concluded that home care nurse may not be sufficiently knowledgeable in evidence based education topic for managing heart failure using modified routines. The result confirmed the need to develop educational programmes for home care nurses in managing heart failure which may lead to improve quality of patient education<sup>23</sup>. A study was conducted regarding Validation of self assessment life style modification knowledge questionnaire. The aim of the study was to test 10-item knowledge questionnaire. The knowledge questionnaire was administered to 82 nursing staff including the interns from Heart failure clinic. The results has shows that Overall score of the knowledge questionnaire had the strongest correlation to the question about regular weighing ( $r = 0.69$ ) and the weakest to the question about presence of heart disease ( $r = 0.33$ ) and the researcher concluded that knowledge questionnaire is a valid and reliable tool to measure knowledge of staff nurses giving care to the heart failure patients<sup>25</sup>.

### **Section 4 - Literature related to SIM as an effective teaching module**

A study was conducted to assess the effectiveness of Self Instructional Module regarding quality of life among patients following cardiac surgeries in the elderly .A total number of 63 patients were selected by convenience sampling technique. A detailed questionnaire was used to collect data about quality of life and improvement in lifestyle after heart surgery . The study result showed that a high proportion of the patients experienced improvement in life style modifications, while a substantial number had exacerbations in cognitive function, lack of confidence and dependence. The study concluded that an important step is needed to improve the quality of life, might be through the institution of a structured multidisciplinary rehabilitation program, also the life style modification with focus on emotional support<sup>24</sup>. A study was conducted to assess the effectiveness of Self Instructional Module on patient knowledge and compliance of Quality of Life among 30 patients who had underwent valve replacement surgery and 18

patients who had had coronary artery bypass surgery were included in this study. Among them 25 patients were taught by masters-prepared clinical specialists and 23 by nurses with less than master's preparation. Measurements of knowledge and compliance were obtained preoperatively. The study revealed that the patients who are received teaching from masters-prepared nurses had significantly higher test scores at discharge than the teaching received by nurses with less than master's degree. So there was an effectiveness of teaching programme by the nurses with masters in degree regarding Quality of life after valve replacement surgery<sup>26</sup>.

## METHODOLOGY

The research methodology is a way of systematically solving a research problem. It is a science of studying how research is done scientifically. The methodology of research indicates the general pattern of organizing the procedure for gathering valid and reliable data for the purpose of investigation. The methodology of this study includes the choice of the research approach and research design. The design of the study describes about the setting of the study population, sampling and sampling techniques, the data collection procedures, content validity and reliability of tool, pilot study and method of analysis based on the statement and objectives of the study<sup>27</sup>.

**Research Approach:** Research approach refers to the approach or the methodology that has been adopted to conduct the research. It basically involves the selection of research questions and the selection of appropriate research method such as primary research, secondary research etc<sup>50</sup>. In the present study an evaluative approach was used to assess the effectiveness of Self Instructional Module (SIM) on life style modification of patient with heart failure among staff nurses in selected hospitals at Mangalore.

**Research design:** The research design selected for this study was pre experimental one group pre-test - post-test design. In one group pre-test –post-test design the investigator introduce base measure before and after planned exposure, which is depicted in O<sub>1</sub> and O<sub>2</sub> respectively. In this study the base measure was questionnaire on life style modifications of patients with heart failure. The administration of SIM is depicted as 'X'.

### The study design as follows:

1. **O<sub>1</sub>:** The pre-test, carried out for the assessment of the knowledge of staff nurses regarding life style modification of patient with heart failure using structured knowledge questionnaire on day one.
2. **X:** Administration of Self Instructional Module to the staff nurses on day seven.
3. **O<sub>2</sub>:** The post-test, carried out for the assessment of the knowledge of staff nurses regarding life style modification of patient with heart failure by administering the same structured knowledge questionnaire after the administration of Self Instructional Module on fourteenth day.

**Setting of the study:** The setting is the place or type of surroundings where something is positioned or where an event takes place. The setting is where the population or the portion of that is being studied, is located and where the study is

carried out. The pretesting, reliability of tool and pilot study was conducted in District Government Wenlock hospital, Mangalore. The main study was conducted in Athena hospital, Mangalore.

## Variables

Variable is defined as an attribute of person or objects that varies, that takes on different values<sup>17</sup>.

Three types of variables are identified in this study.

- Independent variable
- Dependent variable
- Extraneous variable

**Independent variable:** The variable that is believed to cause or influence the dependent variable is an independent variable<sup>17</sup>. In the present study the independent variable refers to Self Instructional Module on life style modification of patient with heart failure.

**Dependent variable:** Dependent variable is the outcome variable, the variable that is hypothesized to depend on or caused by another variable<sup>17</sup>. In this study dependent variable refers to the knowledge of the staff nurses on life style modification of patient with heart failure.

**Extraneous variable:** Any uncontrolled variable that greatly influences the result of the study is an extraneous variable<sup>17</sup>. In this study extraneous variables were the age, professional qualification, years of experience as staff nurse, area of experience and exposure to any previous in- service educational programs on lifestyle modification of patient with heart failure.

**Population:** The term population refers to the aggregate or totality of all the objects, subjects or members that conform to a set of specifications<sup>19</sup>. In the present study the population comprised of staff nurses working in a selected hospital, Mangalore.

**Sample:** Sample refers to the subset of a population selected to participate in a research study<sup>19</sup>. In the present study, the samples were 50 staff nurses working at Athena hospital, Mangalore, during the time of data collection.

**Sampling technique:** Non probability sampling involves deliberate selection of particular units of the population for constituting a sample<sup>19</sup>. Convenience sampling is a type of non probability sampling in which the population elements are selected for inclusion in the sample based on the ease of access<sup>17</sup>. In the present study 50 staff nurses working in Athena hospital, Mangalore were selected as samples using convenience sampling technique.

**Sample size:** In this study the sample size was 50 staff nurses working in Athena hospital, Mangalore.

### Sampling criteria

**Inclusion criteria:** Staff nurses who are:

- Registered nurses who had completed General nursing and midwifery, BSc nursing, Post certificate BSc nursing or MSc nursing.

- Able to speak and understand English.
- Willing to participate in the study.
- Available at the time of study.

**Exclusion criteria:** Staff nurses who are not:

- Available during the period of data collection.
- Willing to participate in the study.

**Selection and development of tool:** Tools are the procedures or instruments used by the researcher to collect data<sup>19</sup>. The tool was prepared on the basis of the objectives of the study.

**Preparation of blueprint:** An extensive review of literature and discussion with guide were carried out. The distribution of items in structured knowledge questionnaire on life style modifications of patients with heart failure was categorized based on three domains were as follows:- Knowledge 19(63.33%), comprehension 5(16.67%) and application 6(20%) out of 30 items.

**Preparation of the first draft of the structured knowledge questionnaire:** The first draft of the structured knowledge questionnaire was prepared on the basis of study objectives, extensive review of literature and discussion with the guide. The developed structured knowledge questionnaire was given to seven subject experts to establish content validity and was asked to give their opinion and suggestions about the content of structured knowledge questionnaire.

**Development of a criteria checklist:** Criteria checklist for validation of the tool was prepared, comprising knowledge questionnaire with Agree, Disagree, and remarks columns for the valuator to place a [ √ ] mark depending on the appropriateness and relevance of each item.

**Content validity:** Content validity refers to the degree to which an instrument measures what it is supposed to measure<sup>19</sup>. The prepared tool along with the objectives, blue print and check list criteria was submitted to nine experts. After the scrutiny they were found to be adequate and relevant. The tool consisted of 30 items, based on the expert suggestions given by the nine subject experts; modification and rearrangement of items were made. Thus the final draft of 30 items was made. Content validity of the structured knowledge questionnaire was established by submitting it along with the objectives and blue print to eight experts in the field of nursing and medicine. They were requested to give their opinion on accuracy, relevance, and appropriateness of the items in the tool. After getting the corrections and suggestions from the experts, the tool was modified and validated with the help of the guide.

**Pre-testing of the tool:** Pre-testing is the trial administration of a newly developed instrument to identify flaws and assess time requirement. Pre-testing of the tool was carried out in District Government Wenlock hospital, Mangalore. Five subjects who fulfilled the inclusion criteria were selected, in order to assess the clarity of the items in the tool, almost all items were clearly understood and the responses were found appropriate. The time taken by the staff nurses to complete the tool was approximately 20 minutes.

**Reliability of the tool:** Reliability is defined as the extent to which the instrument yields the same result on repeated

measures. It is then concerned with consistency, accuracy, stability and homogeneity<sup>19</sup>. The reliability of the instrument was established by administering the tool to five staff nurses in District Government Wenlock hospital, Mangalore. A split-half method was used to measure the internal consistency of the tool. Spearman Brown prophecy formula was used to find out the reliability of the tool. The reliability found be 0.87 hence the tool was found to be reliable.

### Description of the final tool

**Tool I: Baseline proforma:** Structured knowledge questionnaire was used to collect the demographic data. It consists of identification data such as age in years, professional qualification, years of experience as staff nurse, area of experience and exposure to any previous in- service educational programs on life style modification of patient with heart failure.

**Tool II: Structured knowledge questionnaire to assess the knowledge of staff nurses:** The maximum score was 30. The items were developed as to cover 4 different areas, namely.

- **Section A-** Anatomy and physiology of heart [5 items]
- **Section B-**Heart failure knowledge [14 items]
- **Section C-** Life style modification of patient with heart failure [11 items]

**Pilot study:** The pilot study was conducted in District Government Wenlock Hospital Hospital, Mangalore from 3-10-2013 to 16-10-2013. The study was conducted on five staff nurses after obtaining the permission from the concerned authority. The samples were chosen by convenience who met the inclusion criteria. The purpose of the study was explained to the staff nurses. Confidentiality was assured to all the subjects. On the first day, the pre-test was conducted. After the Self Instructional Module was developed based on the pre test knowledge score, it was administered on the seventh day and the post test was conducted on the fourteenth day by using the same tool. The results of the pilot study has shown that the effectiveness in the mean knowledge score on Section A (Anatomy and physiology of heart) was 60.32%, Section B (Heart failure knowledge) was 38.72%, Section C (Life style modifications of patient with heart failure) was 45.64%. The overall mean knowledge score was 49.36%. Thus the tool was found to be feasible, practicable and acceptable. No modifications were made in the tool.

**Development of Self Instructional Module :** A Self Instructional Module was developed for the staff nurses. It was prepared based on pre-test knowledge score, review of literature and discussion with the guide and other experts. The steps involved in the development of Self Instructional Module are:

- Analysis of pre-test knowledge score of staff nurses.
- Review of literature and discussion with guide.
- Preparation of the first draft of Self Instructional Module.
- Development of criteria checklist.
- Content validity of Self Instructional Module.
- Preparation of final draft of Self Instructional Module.



**Preparation of the first draft of Self Instructional Module:**

The first draft of Self Instructional Module was prepared on the basis of pre-test knowledge score, criteria checklist, extensive review of literature, opinion of the guide. The developed Self Instructional Module was presented to experts in the field of nursing and medicine to establish content validity and was asked to give their opinion and suggestions about the content of Self Instructional Module. Their suggestions were incorporated in the final draft.

The Self Instructional Module covered under the following content areas:

- Anatomy and physiology of heart.
- Heart failure knowledge.
- Life style modification of patient with heart failure.

**Development of criteria checklist:** A criteria checklist was prepared as a third step towards the development of Self Instructional Module. The areas included in the criteria checklist were formulation of objectives, selection of content, and organization of the contents, language and practicability. The criteria checklist included major criteria and sub criteria for which experts were asked to give their rating as “strongly agree”, “Agree”, “Disagree”, and “Remarks” and accordingly corrections were made.

**Content validation of Self Instructional Module:** The content of the Self Instructional Module along with the objectives, tool, acceptance form and criteria rating scale was sent to same experts that of the tool for validation. Some suggestions were given by the experts on the content of Self Instructional Module. Only few of the experts asked to add content on life style modification of patient with heart failure. The needed corrections were made after consulting the guide.

**Preparation of the final draft of the Self Instructional Module:** Some suggestions were given on the content of self instructional module. The suggestions received through validation were accepted and necessary corrections were made after consulting the guide.

**Process of data collection:** The investigator obtained written permission from the medical superintendent of Athena hospital Mangalore prior to data collection. The investigator had assured the confidentiality to the nurses regarding their responses and consent was obtained from them. The pre-test and SIM was given individually to 50 staff nurses in the hospital. The data collection period extended from 27-11-13 to 12-12-13. The time taken for each member was 20 mts. After 14 days of pre-test, the post test was conducted for the staff nurses using the same structured knowledge questionnaire to assess the effectiveness of self instructional module. The average time taken for the post test was 20 minute. The data collection was terminated by thanking the staff nurses for their participation and co operation. The collected data was compiled for the data analysis.

**Plan for data analysis:** Data analysis is a systematic organization and synthesis of the research data and testing of research hypothesis using data<sup>17</sup>. The data obtained was planned to analyze by both descriptive and inferential statistics on the basis of objectives and hypothesis of the study. Demographic data containing sample characteristics were analyzed by using frequency and percentage. The association

of the knowledge score on life style modifications of patients with heart failure with selected demographic variables were analyzed by using Chi-square test. The knowledge of staff nurses before and after the administration of the individual Self Instructional Module was calculated by using frequency, mean, median, percentage, standard deviation and cumulative percentage. The data analyzed were presented under the following headings.

**Section I:** Sample characteristics.

**Section II:** Knowledge scores of staff nurses regarding lifestyle modification of patient with heart failure.

**Section III:** Effectiveness of a Self Instructional Module on lifestyle modification of patient with heart failure in terms of gain in knowledge scores of staff nurses.

**Section IV:** Hypothesis testing.

**H<sub>1</sub>:** The mean post test knowledge score of staff nurses will be significantly higher than the mean pre test knowledge score.

**H<sub>2</sub>:** There will be significant association between pre test knowledge score of the staff nurses on life style modification of patient with heart failure with selected demographic variables.

## RESULTS

Analysis and interpretation of data is the most important phase of the research process, which involves organizing and synthesizing the data so as to answer research questions and test hypothesis. This phase includes completion, editing, coding, classification, and presentation of data. The complex data is broken into smaller parts to gain better understanding of content. The purpose of analysing data collected in a study is to describe the data in meaningful terms, as the data collected does not answer research questions or test research hypothesis. This process is also defined as the systemic application of statistical and logical techniques to describe, summarize and compare data. This chapter describes about the analysis and interpretation of data collected to assess the effectiveness of self instructional module on lifestyle modification of patient with heart failure among staff nurses at selected hospital, Mangalore. The analysis and interpretation of data of this study was carried out by using descriptive and inferential statistics based on the objectives of the study.

### Objectives of the Study

- To assess the prior knowledge of staff nurses regarding lifestyle modification of patient with heart failure
- To find out the effectiveness of self instructional module in terms of gain in post test knowledge score.
- To associate the pre test knowledge score with the selected demographic variables.

### Organization of findings

The organisation involves gathering together all the collected data in a manner that a process of analysis can be initiated. The collected information was organized and presented in four parts.

- **PART I:** Description of the demographic variables of the staff nurses.

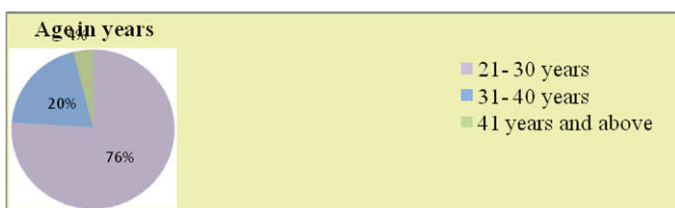
- **PART II:** Analysis of pre-test and post-test knowledge scores of staff nurses regarding lifestyle modification of patient with heart failure.
- **PART III:** Evaluation of effectiveness of the Self Instructional Module on lifestyle modification of patient with heart failure.
- **Section A:** Quartile distribution of the pre-test and the post-test knowledge scores of staff nurses regarding lifestyle modification of patient with heart failure.
- **Section B:** 1. Comparison of pre-test and post-test knowledge scores of staff nurses regarding lifestyle modification of patient with heart failure.
  - Area wise effectiveness of SIM on lifestyle modification of patient with heart failure.
  - Item wise effectiveness of SIM on lifestyle modification of patient with heart failure.
  - Testing of hypothesis, H<sub>1</sub>.
- **PART IV:** Association of the pre-test knowledge scores with the selected demographic variables.
- **Section A:** Overall association of pre – test knowledge scores with the selected demographic variables.
- **Section B:** Testing of Hypothesis, H<sub>2</sub>.

**PART I: Description of the demographic variables of the staff nurses**

**Table 1. Frequency and percentage distribution of demographic variables of staff nurses**

Sl.No	Variables	Frequency	Percentage
1	Age in years		
	i) 21 - 30	38	76
	ii) 31 - 40	10	20
2	Gender		
	i) Male	8	16
	ii) Female	42	84
3	Professional Qualification		
	i) General nursing and Midwifery	09	18
	ii) Post certificate BSc(N)	07	14
4	Years of experience		
	i) < 1 year	05	10
	ii) 1-2 years	40	80
5	Current area of experience		
	i) Intensive care unit	6	12
	ii) General ward	23	46
6	Inservice education attended.		
	a) Yes	6	12
	b) No	44	88

**1. Percentage distribution of staff nurses according to their age in year**



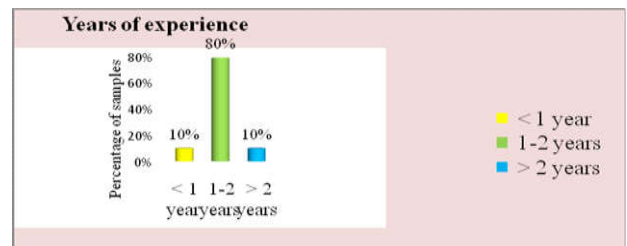
**Pie diagram showing the percentage distribution of staff nurses according to their age in years**

The percentage distribution of subjects according to their age shows that majority 38(76%) of the subjects were young comes in the age group of 21-30 years, 20% belonged to age group between 31- 40 years and least 2(4%) of them were in the age group above 41 years. The result indicates that majority of the subjects belongs to younger age group.

**Percentage distribution of staff nurses according to gender:** The percentage distribution of subjects according to gender has shown that maximum number of subjects participated in the study were females 42 (84 %) as compared to males.8 (16 %).

**Percentage distribution of staff nurses according to their professional qualification:** The percentage distribution of the subjects with respect to their professional qualification shows that majority 34(68%) of them were BSc Nursing degree qualified least 7 (14%) of them had post basic BSc Nursing degree and 9 (18 %) of samples had general nursing and midwifery as their qualification. The result depicts that there is need of higher professional qualification for most of the subjects.

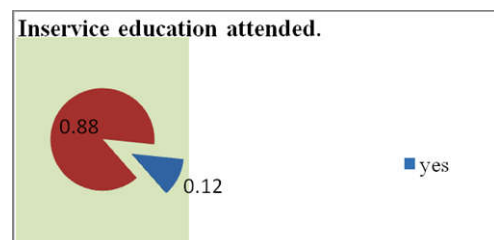
**Percentage distribution of staff nurses according to their years of experience**



**Cylindrical bar diagram showing the percentage distribution of staff nurses according to their years of experience:** The percentage distribution of subjects according to their year of experience has shown that most of the subjects 40 (80%) participated in the study had 1-2 years of experience indicating no much experienced staffs available in the hospital and 5 (10 %) of them had either less than one year of experience or more than 2 years of experience each. The findings of the data reveal that most of the subjects lack adequate experience hence their knowledge may be less.

**Percentage distribution of staff nurses according to their area of experience:** The percentage distribution of subjects according to their area of experience has shown that majority of the subjects 23 (46%) participated in the study were working in the general ward, 6 (12%) of them are working in ICUs and 21(42 %) of the subjects were working in other areas. It indicates that majority of the samples are working in general ward.

**Percentage distribution of staff nurses on the basis of their exposure to any in-service education**



**Figure 8. Pie diagram showing the percentage distribution of staff nurses on the basis of their exposure to in-service education**

**PART II: Analysis of pre-test and post-test knowledge scores of staff nurses regarding life style modification of patient with heart failure:** In order to find out the level of the knowledge score of the staff nurses regarding life style modification of patient with heart failure, a five-point scale was used in the study.

post-test median score is 26. The plotted Ogives has shown that the first quartile score of the post-test is higher than the third quartile score of the pre-test and there is a gap between all the quartiles of pre-test and post-test score. It has revealed that, there is a significant increase in the knowledge of the staff nurses after administration of Self Instructional Module, hence

**Table 2. Assessment of Pre-test and Post-test knowledge level on lifestyle modification of patient with heart failure**

N=50  
Maximum score = 30

Level of knowledge	Score levels	Number of respondents		Percentage	
		Pretest	Post test	Pretest	Post test
Very poor	0-6	0	0	0	0
Poor	7-12	23	0	46	0
Average	13-18	27	0	54	0
Good	19 -24	0	12	-	24
Very good	25-30	0	38	-	76
Total	30	50	50	100	100

### Section B:

#### a) Comparison of pre-test and post-test knowledge scores of staff nurses regarding lifestyle modification of patient with heart failure

**Table 3. Pre-test and post-test knowledge scores regarding life style modification of patient with heart failure**

n=50

Area	Maximum score	Respondents knowledge			Paired 't' test
		Mean	Mean%	SD	
Pre-test(X)	30	12.88	42.9	2.29	30.07
Post-test(Y)	30	25.88	86.27	1.72	
Effectiveness(Y-X)		13	43.37	0.57	

't' table value = 1.6766 at  $p < 0.05$ ,  $df=49$

#### b) Area wise effectiveness of SIM on lifestyle modification of patient with heart failure

**Table 4. Area wise mean, SD and Mean percentage of pre-test and post-test knowledge scores of staff nurses regarding lifestyle modification of patient with heart failure**

n= 50

Sl.no	Area	Statements	Respondents knowledge level				't' value		
			Pre-test(X)		Post-test (Y)			Effectiveness (Y-X)	
			Mean±SD	Mean%	Mea±SD	Mean%	Mean±SD	Mean%	
1	SECTION-A (Anatomy and physiology of heart)	5	2.66 ± 1.04	53.2	4.28± 0.67	85.6	1.62±0.37	32.4	9.24
2	SECTION-B (Heart failure knowledge)	14	5.84± 1.75	41.71	12.06± 1.23	86.14	6.22± 0.52	44.42	20.50
4	SECTION-C (Life style modifications of patient with heart failure)	11	4.38±1.56	39.81	9.54±1.12	86.72	5.16±0.44	46.90	18.96
Total		30	12.88±4.35	42.93	25.88± 3.02	86.26	13± 1.33	43.33	30.07

Table value =1.6766 ,  $P<0.05$

The categorization of the knowledge levels were as follows; scores between 0-6 shows very poor knowledge level, scores between 7-12 shows poor knowledge level, scores between 13-18 shows average knowledge level, scores between 19-24 shows good knowledge level, scores between 25-30 shows knowledge level was very good.

### PART III: Evaluation of effectiveness of the sim regarding life style modification of patient with heart failure

#### Section A: Quartile distribution of the pre-test and post-test knowledge scores of staff nurses regarding life style modification of patient with heart failure.

**Ogive representing pre-test and post-test knowledge scores of staff nurses regarding lifestyle modification of patient with heart failure:** The pre-test median score is 13; whereas

the finding has shown that the Self Instructional Module was effective in enhancing the knowledge of the staff nurses on life style modification of patient with heart failure.

**Effectiveness of SIM on item wise correct response of staff nurses in pre test and post test with regard to knowledge regarding anatomy and physiology of heart:** The data presented has revealed that the highest percentage 56% of effectiveness is observed for the item No.1 "The heart is situated in Posterior to the sternum". The least percentage 14% was observed for item No.3 "The normal human heart weighs up to 300gms". The data presented in the table 6 has revealed that the highest percentage 62% of effectiveness was observed for the item No. 15 "The common site to look for edema in a patient with heart failure is feet". The least percentage 6% was

observed for item No. 16 “Coronary catheterization helps in detecting narrowed arteries”.

### **Effectiveness of SIM on item wise correct response of staff nurses in pre test and post test with regard to knowledge regarding life style modifications of patient with heart failure**

**n=50**

The findings has shown that the highest percentage of 70% of effectiveness was obtained for the item No.29 “Stress management in cardiac failure consists of yoga”. The least effectiveness 24% was found for the item No. 22 “Daily recommended salt intake for a heart failure patient is1500mg t.”

#### **Testing of hypothesis : H<sub>1</sub>**

**H<sub>1</sub>**: The mean post test knowledge score of staff nurses will be significantly higher than the mean pre test knowledge score regarding life style modifications of patient with heart failure.

**H<sub>01</sub>**: There will be no significant difference between mean pre-test and post- test knowledge scores of staff nurses regarding life style modifications of patient with heart failure at 0.05 level of significance.

**Paired ‘t’ test showing the significance of mean difference between pre-test and post-test knowledge scores of staff nurses after the administration of SIM:** Data depicts that the mean post-test knowledge score (86.27%) was higher than the mean pre-test knowledge score (42.9%), with a mean difference of (43.37%). The calculated ‘t’ value 30.07 was greater than the table value 1.6766 at 0.05 level of significance. Therefore the null hypothesis rejected and research hypothesis was accepted indicating that the gain in knowledge was not by chance. Hence the research hypothesis accepted and concluded that there was significant gain in knowledge after implementation of self instructional module.

From the above findings it was concluded that the Self Instructional Module is an effective teaching strategy to improve the knowledge scores of staff nurses regarding life style modifications of patient with heart failure.

#### **PART IV: Association of the pre-test knowledge scores with the selected demographic variables**

**Section A: Overall association of pre–test knowledge scores with the selected demographic variables:** Chi-Square test’ was done to analyze the significant association of pre test knowledge scores with selected demographic variables.

#### **Association of the pre-test knowledge scores with selected demographic variable**

Chi-Square test was carried out to analyze the significant association between the pre-test knowledge scores and the selected demographic variables. The study findings has shown that, there was no significant association of pre-test knowledge score with any of the selected demographic variables.

**Section B: Testing of Hypothesis; H<sub>2</sub>:** To evaluate the association of knowledge score with selected demographic variables, a research hypothesis and null hypothesis is formulated.

**H<sub>2</sub>**: There will be significant association of the pre test knowledge scores of staff nurses with selected demographic variables.

**H<sub>02</sub>**: There will be no significant association between pre test knowledge score of the staff nurses on lifestyle modification of patient with heart failure with selected demographic variables at 0.05 level of significance.

## **DISCUSSION**

This chapter presents the major findings of the study and discusses them in relation to the findings of other research studies. The study intended to assess the effectiveness of self instructional module on lifestyle modification of patient with heart failure among staff nurses in selected hospital, Mangalore. Data was collected from 50 staff nurses selected by convenience sampling before administering self instructional module data were collected using structured knowledge questionnaire. Then staff nurses were asked to complete same questionnaire one week after the educational intervention. The collected data was tabulated, analyzed and interpreted by using descriptive and inferential statistics. The findings of the study have been discussed with reference to the objectives and hypotheses stated. The data findings have been organized and finalized according to the plan for data analysis and are presented under the following sections.

- **Part I:** Description of the demographic characteristics of the staff nurses.
- **Part II:** Analysis of knowledge scores of staff nurses regarding the lifestyle modification of patient with heart failure
- **Part III:** Effectiveness of the Self Instructional Module on lifestyle modification of patient with heart failure.
- **Part IV:** Association of pre test knowledge scores of staff nurses with selected demographic variables.

**Part I: Description of the demographic characteristics of staff nurses:** The percentage distribution of subjects shows that majority 38(76%) of the staff nurses were in the age group of 21-30 years, maximum number of subjects were females 42 (84 %), majority 34(68%) of nurses were B Sc Nursing degree qualified most of the subjects 40 (80%) had 1-2 years of experience, majority of the subjects 23 (46%) participated in the study were working in the general ward and 44 (88 %) had not attended any in-service program on lifestyle modification of patient with heart failure<sup>14</sup>.

**Part II: Analysis of knowledge scores of staff nurses regarding the lifestyle modification of patient with heart failure:** Assessment of the level of pre test knowledge score among staff nurses depicts that, majority 27 (54%) of respondents had average knowledge scores and 23 (46%) of them had poor knowledge scores and none of the respondents possessed very poor, good or very good knowledge score category. The finding of the study has revealed that there is an urgent need to educate the staff nurses regarding lifestyle modification of patient with heart failure<sup>53</sup>.

**Part III: Evaluation of effectiveness of the SIM on lifestyle modification of patient with heart failure:** The knowledge scores of staff nurses regarding lifestyle modification of

patient with heart failure has revealed that, post-test mean knowledge score was found higher 25.88 (86.26%) and SD of 1.72 when compared with pre-test mean knowledge score which was 12.88 (42.93%) with SD of 2.29. The mean effectiveness score was 13 (43.33%) with SD of 0.57. The results of the study depicts that the self instructional module was very effective in improving the knowledge of the staff nurses regarding lifestyle modification of patient with heart failure. The above findings were supported by a study conducted on the effectiveness of self instructional module on supra ventricular tachycardia among staff nurses. 120 nurses from general medical wards participated in the study. The pre-test mean percentage knowledge of nurses was found to be less than 40% (39.77%). A self instructional module was administered to the staff nurses on supra ventricular tachycardia. Findings of the study indicated that nurses do not have sufficient knowledge regarding supra ventricular tachycardia. The result has shown that the mean post test knowledge score was significantly higher than mean pre test knowledge score after the administration of self instructional module<sup>48</sup>.

#### Part IV: Testing of Hypotheses

**Testing of hypothesis, H<sub>1</sub> :** The hypothesis was tested using paired 't' test. The 't' value was calculated and compared with table value to analyze the difference in knowledge of staff nurses regarding lifestyle modification of patient with heart failure. The result revealed that the mean post-test knowledge score (86.27%) was higher than the mean pre-test knowledge score (42.9%), with a mean difference of (43.37%). The calculated 't' value 30.07 was greater than the table value 1.6766 at 0.05 level of significance. Therefore the null hypothesis rejected and research hypothesis was accepted indicating that the gain in knowledge was not by chance. Hence the research hypothesis accepted and concluded that there was significant gain in knowledge after implementation of self instructional module. From the above findings it was concluded that the Self Instructional Module is an effective teaching strategy to improve the knowledge scores of staff nurses regarding life style modifications of patient with heart failure. The above findings were supported by a study conducted to know the effectiveness of self instructional module on knowledge and attitude regarding management of patients with cardio myopathy. A total of 391 critical care nurses practicing in various critical care specialties were invited to participate in the study. The response rate was 66.7% (n = 261). The participants were asked to complete a 40-item and total scores ranged from 11.1% to 61.1%. The self instructional module was administered. Nurses' knowledge on management of patients with cardio myopathy is limited, but after administration of SIM the knowledge of staff nurses improved. The finding of the study has shown that their mean post test knowledge score was significantly higher than their mean pre-test knowledge score ( $t_{49}=36.29$ ;  $p < 0.01$ )<sup>51</sup>.

**Testing of hypothesis, H<sub>2</sub> :** Chi-Square test was carried out to analyze the significant association between the pre-test knowledge scores and the selected demographic variables. The study findings has shown that, there is no significant association of pre-test knowledge score with any of the selected demographic variables Age in years, Gender, Professional Qualification, Years of experience, Current area of experience and In-service education attended<sup>52</sup>.

#### Summary

This chapter has discussed the significant findings of the study in relation to other studies. This study along with other studies have shown that the self instructional module were effective in increasing the knowledge of the staff nurses and their demographic variables had no significant affect on the knowledge level regarding lifestyle modification of patient with heart failure.

#### Conclusion

The main aim of the study was to assess the knowledge of staff nurses regarding lifestyle modification of patient with heart failure and to improve their knowledge about lifestyle modification of patient with heart failure. The knowledge of staff nurses was improved by a self instructional module. The following conclusions were drawn based on the findings of the study. Assessment of the level of pre test knowledge score among staff nurses depicts that, majority 27 (54%) of respondents had average knowledge scores and 23 (46%) of them had poor knowledge scores and none of the respondents possessed very poor, good or very good knowledge score category. The knowledge scores of staff nurses regarding lifestyle modification of patient with heart failure has revealed that, post-test mean knowledge score was found higher 25.88 (86.26%) and SD of 1.72 when compared with pre-test mean knowledge score which was 12.88 (42.93%) with SD of 2.29. The mean effectiveness score was 13 (43.33%) with SD of 0.57. The results of the study depicted that the self instructional module was very effective in improving the knowledge of the staff nurses regarding lifestyle modification of patient with heart failure. Association of demographic variables with pre test scores was computed using chi-square test. Analysis has shown that, there was no association between the pre test knowledge score and demographic knowledge. Thus, the finding indicates that there is lack of knowledge among staff nurses regarding lifestyle modification of patient with heart failure and information through various means like self instructional module is a useful source for improving the knowledge.

#### Nursing implications

- Professional nursing practice is a commitment to compassion, caring and strong ethical values; continuous development of self and others; accountability and responsibility for insightful practice; demonstrating a spirit of collaboration and flexibility.
- The evolution of advanced nursing has been long and complex. This process has led to innovation in nursing, but also to confusion about what advanced nursing was and is. Because of advances in medication, new devices to improve heart function like interventional procedures are introduced and so deaths from heart disease have shown a significant decline over the past 10-15 years.
- Nurses working in cardiac area must possess specialized skills and has to perform care these patients. It challenge the staff nurse's skills to be up-to-date with knowledge and competence.
- Staff development programmes through continuous education and training, teaching and learning

materials like self instructional module are major factors in shaping the future of the nursing profession.

- The findings of the study have several implications in the field of nursing practice, nursing education, nursing administration and nursing research.

### Nursing Practice

- The healthcare professionals play a vital role in providing educational information, support, and technical follow-up of the device.
- The study has shown various degrees of deficiency in the knowledge among staff nurses regarding lifestyle modification of patient with heart failure. It highlights the need for special attention to train the staff nurses on care of patient with heart failure.
- The self instructional module used in the present study is one of the means to improve the skills through appropriate knowledge. The self instructional module can be a means to orient and conduct in-service education programmes for the staff nurses.
- The staff nurses could be trained on cardiovascular nursing courses in their work appointment. The important aspect in care of patient with heart failure could be highlighted by continuing education to staff nurses.

### Nursing Education

- The staff nurses should be encouraged to participate in specialized courses regarding lifestyle modification of patient with heart failure.
- There should be individualized teaching and ongoing feedback on their performance.
- Special classes and in-service education programmes should be conducted.
- The self instructional module can act as a good teaching and learning material. More emphasis should be given to periodic development and updating of the self instructional module.
- The curriculum of undergraduate and postgraduate nursing should deal in detail about the lifestyle modification of patient with heart failure.

### Nursing Administration

- In order to support the patients' transition after an heart failure and to help them have trust, adaptability and empowerment there is a need for team-based clinics with a structured follow-up programme.
- The staff nurses could provide time to verbalise and allow discussions of holistic care face to face or in support groups.
- Educational information material consisting of brochures, videos, websites and other computer-based tools including a holistic perspective needs to be further developed.
- As the number of hospitals caring for heart diseases increases, there is a need for an organised forum for the staff nurses aiming to discuss best clinical practise, educational strategies and support programmes to ensure that the patients receive equal care regardless of where they live and have their treatment and follow-up.

- Finally, different multidisciplinary interventions should be highlighted in the clinical guidelines for the healthy heart friendly lifestyles.
- The findings of the study have shown that there is improvement in nurse's knowledge regarding lifestyle modification of patient with heart failure.

### Nursing Research

- Nursing practice needs to be based on scientific inquiry to build up nursing profession. One of the aims of nursing research is to expand and broaden the scope of nursing. There is a need for evaluation of intervention programmes that include a holistic perspective of educational information.
- Although much research has been done on the heart failure knowledge in nursing, the effectiveness of self instructional module on lifestyle modifications is least explored area. There is lot of scope for exploring this area.
- The use of the research findings should become part of the quality assurance evaluation to enhance the nursing profession as a whole.
- The findings of the present study can be utilized by nurse researchers to contribute to the nursing profession to accumulate new knowledge regarding lifestyle modification of patient with heart failure.

### Limitations

The limitations of the present study were:

1. The study was confined to a small sample selected by convenience sampling technique which restricts the generalizability.
2. The study lacked control group to allow testing for an increase in knowledge without self instructional module.
3. No attempt was made to do the follow-up to measure the retention of knowledge of the staff nurses
4. The observation of self instructional module with all its components could not be assessed in the live situation due to lack of time.

### Suggestions

1. Continuing nursing education cell could be established.
2. Continuing education helps the nurses to update necessary knowledge with regard to lifestyle modification of patient with heart failure.
3. An orientation programme on lifestyle modification of patient with heart failure could be beneficial and it could ensure effective performance.
4. The cardiologists, cardiovascular technicians and the nursing staff should meet together to update the knowledge and skills, and to discuss the possibilities of improvement in the care of patients with heart failure.

### Recommendations

Keeping in view the findings of the present study, the following recommendations are made for further study:

- A similar study can be conducted on a larger sample which may help to draw more definite conclusions and make generalizations.
- An experimental study can be undertaken with a control group.
- A follow-up study of the self instructional module can be carried out to find the effectiveness in terms of retention of knowledge.
- A study can be conducted at private and government hospitals and the results of the study may be compared to find out the knowledge on lifestyle modification of patient with heart failure.

**Summary:** This chapter has dealt with the conclusion drawn based on the findings of the study and implication for nursing practice, nursing education, nursing administration and nursing research, limitations, suggestions and recommendations of the study.

## SUMMARY

As health professionals, our practice is constantly becoming more complex and diverse. We are also engulfed in technology in the pursuit of improving quality of life for our patients. Care of patients with heart failure constitutes a growing segment of the contemporary healthcare practice. The recent advances demand the nurse to become more updated with the knowledge on lifestyle modification of patient with heart failure. The main aim of the study was to evaluate the effectiveness of self instructional module on lifestyle modification of patient with heart failure. This chapter presents a brief summary of entire research study.

## Objectives of the study

The objectives of the study were:

1. To assess the knowledge of staff nurses regarding lifestyle modification of patient with heart failure
2. To find out the effectiveness of SIM in terms of gain in post test knowledge score.
3. To associate the pre test knowledge score of staff nurses regarding lifestyle modification of patient with heart failure with selected demographic variables.

## Hypotheses

In order to assess the effectiveness of the self instructional module in terms of gain in knowledge on lifestyle modification of patient with heart failure, the following hypotheses were formulated and tested at 0.05 level of significance.

- H<sub>1</sub>:** The mean post-test knowledge score of staff nurses on lifestyle modification of patient with heart failure will be significantly higher than the mean pre-test knowledge score.
- H<sub>2</sub>:** There will be significant association between pre-test knowledge score of the staff nurses with selected demographic variable.

**Assumption:** This study assumes that,

- Staff nurses will have some knowledge regarding the lifestyle modification of patient with heart failure.
- Knowledge may vary from staff nurse to staff nurse.

- SIM may enhance the knowledge of staff nurses regarding the lifestyle modification of patient with heart failure.

## Variables

- **Independent Variable:** SIM on lifestyle modification of patient with heart failure.
- **Dependent Variables:** staff nurses knowledge on lifestyle modification of patient with heart failure.
- **Extraneous variables:** In this study extraneous variables were the age, professional qualification, years of experience as staff nurse, area of experience and exposure to any previous in-service educational programs on nursing care of heart failure patients.

## Conceptual framework adopted for the study

The conceptual framework of the present study was developed by the researcher based on J. W. Kenny's Open System Model. The concepts of Model are input, throughput, output and feedback. Input refers to matters and information that continuously processed through systems and released as outputs. The input can be energy, matter or information. In the present study the input is given as self instructional module on lifestyle modification of patient with heart failure. Throughput was the processing of information that is given in the SIM on lifestyle modification of patient with heart failure. Output was the expected outcomes of the study which is obtained by assessing structured knowledge questionnaire. If the output is positive there will gain in the knowledge of subjects where as if the output is negative there is no gain in the knowledge of staff nurses. Feedback refers to the process by which information is received at each stage of the system and helps to guide or direct the evaluation. For present study feedback is considered as the effectiveness of self instructional module on lifestyle modification of patient with heart failure in terms of gain in knowledge.

**Research methodology of the study:** Pre-experimental, one-group, pre-test post-test design (O<sub>1</sub> X O<sub>2</sub>) was adopted for the study. The sample comprised of 50 staff nurses who fulfilled the inclusion criteria, selected by convenience sampling technique. The researcher prepared a structured knowledge questionnaire on lifestyle modification of patient with heart failure with 30 questions and a self instructional module was developed based on pre test knowledge score. The preparation of the questionnaire and self instructional module was carried out after review of literature, discussion with guide and nine subject experts. A pilot study was conducted on 5 staff nurses at District Government Wenlock hospital, Mangalore from 3-10-2013 to 16-10-2013. The validity of the tool and self instructional module was carried out by using Spearman Brown Prophecy formula and the tool was found reliable (r = 0.87). The main study was conducted with 50 subjects from 27-11-13 to 12-12-13 at Athena hospital, Mangalore. The data was analyzed with descriptive and inferential statistics (paired 't' test and Chi Square test). The significance of the self instructional module was proved in post-test score and a mean of 25.88 in comparison to the mean of 12.88 in pre-test. It was also evident from the paired 't' test (t=30.07; P < 0.05). This suggested that the self instructional module was highly effective in improving the knowledge of the staff nurses on lifestyle modification of patient with heart failure. No significant association was found between pre-test knowledge score and the selected demographic variables. The findings of

the present study had great implications for nursing education, nursing practice, nursing administration, and nursing research. Further research studies are recommended to produce more reliable result. The overall experience of conducting the study was satisfying. The constant encouragement and guidance of the guide, cooperation and interest of the hospital authorities and the respondents to participate in the study contributed to the successful completion of the study. The respondents were satisfied and happy with the information they received. The study was a new learning experience for researcher. The present study identified a great need for the staff nurses to update their knowledge regarding lifestyle modification of patient with heart failure. The study revealed that self instructional module can be used as an effective teaching strategy.

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