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"Evaluate The Effectiveness Of Self Instructional Module On Knowledge Regarding Coronary Angioplasty Among Staff Nurses Working In Cardiac Unit At Selected Hospitals Udaipur City, Rajasthan."

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Abstract: *A pre experimental study to evaluate the effectiveness of self-instructional module on knowledge regarding coronary angioplasty among staff nurses working in cardiac unit at selected hospitals Udaipur city, Rajasthan. The sample consisting of 120 Staff nurses was selected by using convenient sampling technique. The tool comprised of structured self-administered questionnaire. The pre-test was conducted and the self-instructional module was administered. The post-test was conducted after one week. The data obtained were analyzed by using descriptive and inferential statistics. The mean score of post-test knowledge 26.64 (83.26%) was apparently higher than the mean score of pre-test knowledge 12.08 (40.00%), suggesting that the self-instructional module was effective in increasing the knowledge of the Staff nurses regarding coronary angioplasty. The mean difference 13.84 between pre-test and post-test knowledge score of the Staff nurses was found to be significant.*

Key words: *effectiveness, self-instructional module, Staff nurses, coronary angioplasty, one group pre – test post – test, pre experimental study.*

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I. Introduction

From the beginning of our life until death the human heart works tirelessly, the human heart beats more than two and half billion times during average life time without even pausing to rest. The heart pumps with full force and supplies blood and energy to the body to sustain life. If it stops pumping or does not pump with sufficient force life comes to end.[1]

Heart attacks and strokes are usually acute events and are mainly by a blockage that prevents blood from flowing to the heart and brain. The most common reason for this is a builds up of fatty deposits on the inner walls of the blood vessels. That supplies the heart and brain. Strokes can also be caused by bleeding from a blood vessel in the brain or from blood clots. The cause of heart attacks and strokes are usually the presence of a combination of risk factor, such as tobacco use, unhealthy diet and obesity, physical inactivity and harmful use of alcohol, hypertension, diabetes and hyperlipidemia.[1]

The heart supplied by two major coronary arteries and their braches. These are the left main coronary artery and the right coronary artery. The left main coronary artery splits shortly after leaving the aorta into two vessels, the left anterior descending artery and left circumflex artery. The left anterior artery supplies heart tissue and the front, outer side, and the septum of the left ventricle. It does this by branching into smaller arteries-diagonal and septal branches. The left circumflex supplies the back and underneath of the left ventricle. The right coronary artery supplies the right atrium, right ventricle and lower posterior sections of the left ventricle. The right coronary artery also supplies blood to the atrioventricular nood and the sinoatrial nood. The right coronary artery runs in a groove and the back of the heart and the left anterior descending artery runs in a groove at the front.[2]

Atherosclerosis produces discrete (confined) or scattered areas of blockage within a coronary artery. When the blockages are large enough, they reduce blood supply to heart muscle and produce angina. The tests used to make the diagnosis of coronary artery disease and its medical treatment have been discussed elsewhere. Some patients with coronary artery disease may require surgery. Many patients with serious disease or those who fail on medical therapy are treated with a "needle hole" or "percutaneous" (through the skin) procedure that is performed in the cardiac cath laboratory. Angioplasty is one of these procedures. It was introduced to the world by Dr. Andreas Gruentzig in the mid to late 1970's and is widely used today.[3]

Cardiovascular diseases (CVDs) are a group of disorders of the heart and blood vessels and they include:
•coronary heart disease– disease of the blood vessels supplying the heart muscle;
•cerebrovascular disease– disease of the blood vessels supplying the brain;
•peripheral arterial disease– disease of blood vessels supplying the arms and legs;
•rheumatic heart disease– damage to the heart muscle and heart valves from
Rheumatic fever, caused by streptococcal bacteria;
•congenital heart disease– malformations of heart structure existing at birth;
•deep vein thrombosis and pulmonary embolism– blood clots in the leg veins, which can dislodge and move to the heart and lungs.[4]

Coronary artery disease is a condition in which plaque builds up in the coronary arteries. A plaque is made up of fat, cholesterol, calcium and other substances. Its deposits narrow the arteries and reduce blood flow to heart muscle. It also makes it more likely that blood clots will form in arteries. Blood clots can partially or completely block blood flow. When coronary arteries are narrowed or blocked, oxygen rich blood cannot reach the heart muscle which causes Angina or Myocardial Infarction.[1]

Percutaneous Trans luminal coronary angioplasty (PTCA) is one of the invasive interventional procedures to treat coronary artery disease (CAD). A small balloon at the tip of specially designed catheter after placing in the affected coronary artery is inflated to compress the fatty matter into the artery wall and stretch the artery open to increase the blood flow to the heart. It has been used as a treatment modality of coronary artery disease in case of 1/3rd of patients.[5]

Primary angioplasty may be the preferred approach in patients with extensive myocardial infarction who have immediate (less than 120 min) access to cardiac catheterization laboratory with experienced personnel. Patients who have been identified to have any contraindication for thrombolytic therapy, cardiogenic shock, and prior to CABG or with stuttering onset of pain also benefit from primary angioplasty.[6]

Prior to performing PTCA, the location and type of blockage plus the shape and size the coronary arteries have to be defined. This helps the cardiologist decide whether it is appropriate to proceed with angioplasty or to consider other treatment options such as stenting, atherectomy, medications or surgery. Cardiac catheterization (cath) is a specialized study of the heart during which a catheter or thin hollow flexible tube is inserted into the artery of the groin or arm. Under x-ray visualization, the tip of the catheter is guided to the heart. Pressures are measured and an x-ray angiogram (angio) or movie of the heart and blood vessels is obtained while an iodine-containing colorless "dye" or contrast material is injected into the artery through a catheter. The iodinated solution blocks the passage of x-rays and causes the coronary arteries to be visualized in the angios. In other words, coronary arteries are not ordinarily visible on x-ray film. However, they can be made temporarily seem by filling them with a contrast solution that blocks x-ray.[7]

The cardiac cath section, a sheath is introduced in the groin (or occasionally in the arm). Through this sheath, a long, flexible, soft plastic tube or guiding catheter is advanced and the tip positioned into the opening or mouth of the coronary artery. In the picture below, the catheter tip is positioned in the mouth of the left main coronary artery.

The tube measures 2 to 3 mm in diameter. The tip of the catheter is directed or controlled when the cardiologist gently advances and rotates the end of the catheter that sits outside the patient. Once the catheter tip is seated within the opening of the coronary artery, x-ray movie pictures are recorded during the injection of contrast material or "dye."[8]

After evaluating the x-ray movie pictures, the cardiologist estimates the size of the coronary artery and selects the type of balloon catheter and wire that will be used during the case. Heparin (a "blood thinner" or medicine used to prevent the formation of clots) is given. The guide wire which is an extremely thin wire with a flexible tip is inserted into through the catheter and into the coronary artery. The tip of the wire is then guided across the blockage and advanced beyond it. The cardiologist controls the movement and direction of the guide wire by gently manipulating the end that sits outside the patient. This wire now serves as a "guide" or rail over which the balloon catheter can be delivered. The tip of the balloon catheter is then passed over the guide wire and positioned across the lesion or blockage.

A deflated sausage-shaped balloon is located on the tip of the catheter shaft. It is inflated by connecting it to a special handheld syringe pump. A mixture of saline and contrast material is used to inflate the balloon. The contrast material helps to visualize the balloon when it is inflated. The balloon catheter also has metallic markers (either at the center or on either side of the balloon). This helps the cardiologist know the location of the otherwise "invisible" balloon.[9]

II. Research Elaborations

Statement of problem-

"Evaluate the effectiveness of Self Instructional Module on knowledge regarding coronary angioplasty among staff nurses working in cardiac unit at selected hospitals Udaipur city, Rajasthan."

III. Objectives

1. To assess the level of knowledge regarding coronary angioplasty among staff nurses.
2. To evaluate the effectiveness of Self Instructional Module on knowledge regarding coronary angioplasty among staff nurses.
3. To find out the association between pre-test knowledge score with selected socio demographic variables.

IV. Hypothesis

H_1- There is a significant difference between pre-test and post-test knowledge score of staff nurses regarding coronary angioplasty.

H_2- There is a significant association between the pre-test knowledge scores with selected socio-demographic variables.

V. Material and method

Population- staff nurses

Sample- the staff nurses working in selected hospitals in Udaipur city, Rajasthan.

Sample size- 120 staff nurses

Settings- The study was conducted in following selected hospitals at Udaipur: Geetanjali hospital & G.B.H American hospital, Udaipur

Sampling technique- Convenient random sampling technique

The conceptual framework for the study was developed on the based on Imogene modified king's goal attainment theory (1957)

VI. Research design

The research design selected for the present study was a one group per-test post-test research design.

Pre-test (Dependent variable)	**Intervention (Independent variable)**	**Post-test (Dependent variable)**
O1 Knowledge of Staff nurse	**X** self-instructional module	**O2** Knowledge of Staff nurse

Table 1: Pre experimental one group pre-test and post-test research design

The interpretations of the symbol are as below

O1 - Administration of pre-test knowledge Questionnaire
O2 - Administration of post-test knowledge Questionnaire
X - Intervention (self-instructional module)

Ethical Consideration

After obtaining permission from research committee of Geetanjali College of nursing, prior permission was obtained from centers nursing superintendent of Geetanjali hospital & G.B.H American hospital at Udaipur. Consent was taken from each participant who had participated in the study.

Description of the tool

Section A- Demographic Data: consisted of selected socio-demographic variables such as age, gender, habitat, educational qualification, years of experience, area of working, and attended any conference/seminar regarding coronary angioplasty

Section B- Tools and scoring technique: A structured self-administered questionnaires was selected based on the objective of the study as it was considered the based and appropriate instrument to elicit the response from the literate subject.

Scoring

The knowledge of staff nurses regarding the outcomes of coronary angioplasty was scored as follows, one mark for each correct answer and zero marks for incorrect answer. The maximum score was 32, to interpret level of knowledge the score was distributed as follows; Interpretation of knowledge:

Level	Range
Inadequate knowledge	<50 %
Moderate knowledge	51-75 %
Adequate knowledge	>76 %

An answer key was prepared for scoring answer to the structured knowledge questionnaire.

Data Collection and Data Analysis

The data was presented under the following sections

Section-I: Description of socio-demographic variables of the respondents.

Section-II: Distribution of respondents according pre-test and post-test level of knowledge score.

Section-III: Effectiveness of self-instructional module on knowledge of staff nurses regarding coronary angioplasty.

VII. Result

Table 2: frequency and Percentage distribution of respondents to their level of knowledge score.

N=120

Level of knowledge	Score	Frequency		Percentage	
		Pre-test	Post-test	Pre-test	Post-test
Inadequate knowledge (0-50%)	0-11	36	00	30.00	00
Moderately knowledge (51-75%)	12-22	84	02	70.00	01.67
Adequate knowledge (76-100%)	23-32	00	118	00	98.33
Total	**32**	**120**	**120**	**100**	**100**

Table 2: The result showed that, in pre-test 30.00% of the respondents had inadequate knowledge, 70.00 % of the respondents had moderate knowledge and none of the respondents had adequate knowledge and in post-test 98.33% of the respondents had adequate knowledge and 01.67% of the respondents had moderate knowledge and none of the respondents had an inadequate knowledge regarding coronary angioplasty.

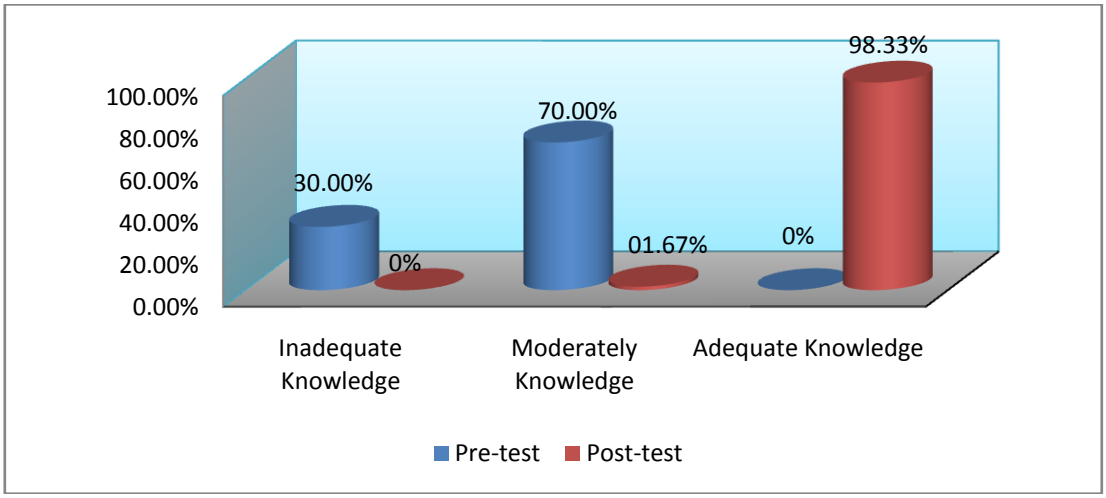

Figure 2: Percentage distribution of respondents to their level of knowledge score

Section: Iii

Effectiveness of self-instructional module on knowledge regarding coronary angioplasty among staff nurses working in cardiac unit.

The paired "z" value was computed to determine the effectiveness of self-instructional module on knowledge of staff nurses regarding coronary angioplasty.

The following research hypothesis was stated

H_1- There is a significant difference between pre-test and post-test knowledge score of staff nurses regarding coronary angioplasty.

H_2- There is a significant association between the pre-test knowledge scores with selected socio-demographic variables.

Table 3: Area wise pre-test and post-test knowledge score

Area	Maximum Score	PRE-TEST			POST-TSET		
		Mean	Mean Percentage	Standard deviation	Mean	Mean Percentage	Standard deviation
Introduction and definition	02	0.89	44.58	0.70	01.98	78.16	0.16
Causes and risk factors	04	01.73	43.33	0.91	03.61	90.21	0.52
Signs and symptoms	04	01.71	42.71	0.93	03.18	79.38	0.74
Diagnosis	04	01.57	39.17	01.06	03.02	80.00	0.76
Management	17	06.46	37.99	02.93	13.81	81.23	01.77
Prevention	01	0.44	44.17	0.50	0.88	87.50	0.33
Total	**32**	**12.8**	**40.00**	**07.03**	**26.66**	**83.31**	**4.28**

Table 3: The result showed that the mean, standard deviation and percentage of pre-test and post-test knowledge score on different areas of coronary angioplasty.

In the area of Introduction of coronary angioplasty, mean score 0.89 and SD 0.70 in pre-test of the respondents and mean score 1.98 and SD 0.16 in post-test of the respondents. In the causes & risk factors, the mean score 1.73 and SD 0.91 in pre-test of the respondents and mean score 3.61 and SD 0.52 in post-test of the respondents. In the area Sign & symptoms, mean score 0.71 and SD 0.93 in pre-test of the respondents and mean score 3.18 and SD 0.74 in post-test of the respondents. In the area of Diagnosis mean score 1.57 and SD 1.06 in pre-test of the respondents and mean score 3.02 and SD 0.76 in post-test of the respondents. In the area of management mean score 6.46 and SD 2.93 in pre-test of the respondents and mean score 13.81 and SD 1.77 in post-test of the respondents. In the area of prevention mean score 0.44 and SD 0.50 in pre-test of the respondents and mean score 0.88 and SD 0.33 in post-test of the respondents. Therefore, the results confirmed that the self-instructional module was highly effective in improving the knowledge of staff nurses regarding coronary angioplasty.

Table 4: Effectiveness of self-instructional module regarding use of self-instructional module on Coronary angioplasty among Cardiac unit staff nurses.

N=120

Knowledge	Mean	Mean Percentage (%)	Sd	Enhancement	Enhancement Percentage (%)	Df	Z Value	Inference (p=0.05)
Pre-test	12.08	40.00	04.15	13.84	43.26	119	32.20	**S**
Post-test	26.64	83.26	02.18					

S=Significant

Table 4 showed that the mean post test knowledge score is 26.64 (83.26%) was greater than the mean pre-test knowledge score 12.8 (40%). The above table also depicts that the enhancement in the knowledge of respondents is 13.84 (43.26%) supporting the post-test knowledge score are higher than the pretest knowledge score. The data further represent that the 'z' value of 32.30 was significantly higher than the table value 1.96 at 0.05 level is significance hence, the H_1 hypothesis was accepted. This indicates that there was difference in pre-test and post-test knowledge score of respondents and self-instructional module is effective in improving the knowledge score of Cardiac unit staff nurses use of self-instructional module on coronary angioplasty.

VIII. Conclusion

This study concluded that there is improvement in the level of knowledge of staff nurses which indicates that the self-instructional module is effective. The demographic variables of patients significantly associated with the pre-test knowledge score. The development of self-instructional module will help the staff nurses to enhance their knowledge regarding coronary angioplasty.

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