

## “A Comparative Study To Assess The Knowledge Regarding Pacemaker And Care Of Patient With Pacemaker Among Nurses Working In Government Hospital And Private Hospital In Maharashtra With View To Prepare Information Booklet”

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<p><b>Keywords</b></p> <p><b>Knowledge, Pacemaker, Government and Private Hospitals Nurses, and</b></p>	<p><b>Abstract</b></p> <p><b>Background of the study:</b> Cardiovascular diseases are the number one cause of death globally. Cardio vascular disease remains a major health problem, causing high mortality and morbidity all over the world. Complete Heart Block (CHB) is a cardiac disease associated with extremely low heart rates and if untreated, results in an average longevity of only 2.5 years. In India there were 140,000 new cases that received treatment. The only effective treatment for CHB is implantation of a cardiac pacemaker.</p> <p><b>Objectives of the study:</b> To assess the level of knowledge regarding pacemaker and care of patient with pacemaker among nurses working in government hospital and private hospital and compare the knowledge of nurses working in government hospital and private hospital.</p> <p><b>Methods:</b> The quantitative research approach was used for the present study. The comparative research design was used and the data was collected from 100 staff nurses were selected by convenient sampling technique from government and private hospitals. The self-administered structured knowledge questionnaire was used. The data was analyzed by descriptive and inferential statistics.</p> <p><b>Results:</b> The levels of knowledge, Among the government staff nurses, 28(56%) were had the average knowledge and 22(44%) were had good knowledge. Whereas among the staff nurses working in private hospitals, 32(64%) were had good knowledge and 18(36%) were had average knowledge. The overall mean and standard deviation of staff nurses was 21.8±5.52 and median was 17. Among the private nurse's the overall mean and standard deviation knowledge of the private staff nurses was 26.9 ±2.66 and median was 27. The independent t test was used to compare the knowledge of staff nurses of government and private hospitals. The t test value was 5.88 and p value was 0.001 found significant. The independent t test as used. In the aspect of knowledge related to pace maker was 3.17 and p=0.002 and for the aspect of care of patient with pacemaker was 6.30, p=0.001 which shown that there was significant difference between the aspect wise knowledge among the staff nurses working in private and government hospitals. The chi square test was used to find the association. Among the government hospital staff nurses, age in years (<math>\chi^2 = 8.57, p=0.047</math>) was found significant with knowledge. Among private hospital staff nurses, professional education (<math>\chi^2= 6.32, p=0.016</math>) and experience was (<math>\chi^2= 9.13, p=0.014,</math>) were found significant. <b>Conclusion:</b> The study concludes that the private hospital staff nurses had the more knowledge compared to government hospital staff nurses.</p>
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### INTRODUCTION

“Start each day with a positive thought and a grateful heart”

-Roy.T. Bennett.

The heart is a consists of cardiac muscle cells and conducting fibers that are specialized for producing impulses and conducting them rapidly through the heart.<sup>1</sup>

The conducting system provides the heart it's automatic rhythmic beat necessary for the heart to pump efficiently and the systemic and pulmonary circulations to operate in synchrony. Irregularities in the normal cardiac-conduction-system can cause cardiac arrhythmias and bradycardia.<sup>2</sup>

A pacemaker is a small, low-voltage, battery-powered, implantable device that monitors and sends electrical pulses to the heart, when it senses an arrhythmia or lack of heartbeat, it establishes a normal rhythm.<sup>3</sup>

Pacemakers are adjustable artificial electrical pulse generators, frequently emitting a pulse with a duration between 0.5 and 25 milliseconds with an output of 0.1 to 15 volts, at a frequency up to 300 times per minute. The implantable type is usually permanent and often, significantly more complex than the temporary, external variety.<sup>4</sup> Pacemaker implantation is very common and there was almost a 50% increase in the rate of cardiovascular implantable electronic devices being fitted, including pacemakers.<sup>5</sup>

Patients with pacemaker constitute a growing segment of the contemporary healthcare practice. There are about 3 million people worldwide with pacemaker and each year 600,000 pacemakers are implanted. Taking care of such a rapidly growing patient population constitutes a challenge for all health care providers working in a cardiology ward, coronary care unit or cath lab.<sup>6</sup>

The nurse's role in the prevention of infection after pacemaker implantation is of great importance and involves all stages concerning the procedure and involves observation for early diagnosis of the symptoms, the precise implementation of basic nursing principles and interventions such as aseptic techniques and the epidemiologic surveillance of incidents. Cardiac conduction disease claims 50% of mortality in each year. In these conditions, implantation of an artificial pacemaker is mandatory. Currently around 8000 pacemakers are being implanted annually in India. Competent management of patients with an invasive pacemaker is an important skill for nurses who provide care for critically ill patients with cardiac disease. Knowledge on pacing physiology, components of pacing system, indications for pacing, post pacemaker implantation care, trouble shooting of pacemaker problems, patient and family teaching and long term follow up are required for providing safe and effective nursing care. So, researcher selected this study for improve nurses knowledge related to pacemaker indication and functions.

#### **STATEMENT OF PROBLEM:**

**“A comparative study to assess the knowledge regarding pacemaker and care of patient with pacemaker among nurses working in government hospital and private hospital in Maharashtra with view to prepare information booklet”**

#### **OBJECTIVES;**

1. To assess the level of knowledge regarding pacemaker and care of patient with pacemaker among nurses working in government hospital and private hospital.
2. To compare the level of knowledge regarding pacemaker and care of patient with pacemaker among nurses working in government hospital and private hospital.
3. To find out the association between the level of knowledge regarding pacemaker and care of patient with pacemaker among nurses working in government hospital and private hospital with their selected demographic variables.

#### **Hypothesis:**

**H<sub>01</sub>:** There will be no significant difference between knowledge regarding pacemaker and care of patient with pacemaker among nurses working in government hospital and private hospital.

**H<sub>02</sub>:** There will be no significant association between knowledge regarding pacemaker and care of patient with pacemaker among nurses working in government hospital and private hospital with their selected demographic variables.

#### **REVIEW OF LITERATURE**

Review of the literature is performed to carry out the present study and is organized and presented in the following headings:

##### **Review of literature related to knowledge of staff nurses on pacemaker.**

A study was done on factors affecting nurses' performance in caring for permanent pacemaker patients. A convenience sample of 60 nurses. Data-collection tools: Study data was collected using two tools: Self-administered questionnaire about researched nurses' demographics, knowledge, and performance factors. Nurse practice observation checklist. Results: Four fifths (80.0%) of studied nurses had unsatisfactory total knowledge, the most (90%) had unsatisfactory total practice, and (91.7%), (63.3%), (91.7%) of nurse, patient, and work factors affected nurses' performance in caring for permanent pacemaker patients. Most nurses evaluated performed poorly in caring for permanent pacemaker patients due to nurse, patient, and work

issues. Training programs for nurses to care for permanent pacemaker patients are recommended by the study.<sup>7</sup>

A study examined Egyptian nurses' implantable cardiac device knowledge and practice. A convenience sample of 40 nurses with at least one year of experience was studied. Data-collection tools: Tool 1: background data on gender, age, education, occupation, and experience. Tool 2: implanted cardiac device knowledge questionnaire for nurses. Tool 3: observational checklist to evaluate nurses' care of implantable cardiac device patients. No significant correlations were found between gender, age, years of experience, and nurses' knowledge and practice scores, except for a negative correlation between practice and implantable cardiac device experience. The study found that critical care nurses lack implantable cardiac device knowledge and practice.<sup>8</sup>

A descriptive study examined nurses' knowledge of permanent pacemaker care for adult cardiac rhythm problem patients. Based on inclusion and exclusion criteria, 185 clinical nurses were selected. This survey found that most participants (77.3%) were 21–30-year-old women, unmarried (57.3%), and diploma-holders (50.8%). 66.5% of nurses had satisfactory understanding of nursing care for adult pacemaker patients, while 33.5% had unsatisfactory knowledge. BSN and POST RN nurses had considerably superior knowledge than diploma nurses ( $p$ -value 0.001). The study also found a correlation between nurses' education and knowledge scores. The study shows that consistent education is needed to improve nurses' knowledge, skills, and competencies in treating permanent pacemaker patients.<sup>9</sup>

#### **Review of literature related to knowledge of staff nurses on car of patient with pacemaker.**

Nurse Performance with Permanent Pacemaker Patients in Intensive Care Unit was described. Arabic-language self-administered questionnaire measuring demographics and nurses' Permanent Pacemaker and Observational check list knowledge. It will be prepared by the researcher from relevant literature. Eighty percent of nurses had unsatisfactory pacemaker knowledge and seventy seven percent had unsatisfactory pacemaker practice. The study found that most cardiac care unit nurses had poor knowledge and practice in managing permanent pacemaker patients.<sup>10</sup>

Assessment of nurses' knowledge and practices for temporary pacemaker care. The study used descriptive research. This study was done in Assuit University Hospital's Coronary Care Unit. A convenience sample of 40 coronary care nurses was studied. The tools used by nurses included a knowledge evaluation instrument for temporary pacing and an observational checklist for patients with temporary pacemakers. Results showed that (77.5%) of nurses had unsatisfactory knowledge and (92.5%) of nurses had bad practices for temporary pacemaker care. Conclusion: Nurses' temporary pacemaker care knowledge and practices were inadequate. The study suggests a temporary pacemaker education program.<sup>11</sup>

A cross sectional study on nurse's knowledge about permanent pacemaker management. In a Kelantan public hospital, all nurses in the critical care unit, intensive care unit, cardiac rehabilitation ward, investigation clinical laboratory, and non-invasive clinical laboratory were purposively sampled. A demographic and nursing knowledge questionnaire was distributed. Descriptive and Pearson correlation tests were performed. From all respondents ( $n=70$ ), 48.6% had moderate knowledge of pacemaker implantation management, 32.9 % had low knowledge, and 13.6% had high knowledge. Knowledge is significantly different from demographic data, such as education ( $p=0.027$ ), age ( $p=0.011$ ), and service time ( $p=0.015$ ). Knowledge does not correlate with gender ( $p=0.481$ ), married status ( $p=0.315$ ), or post-basic ( $p=0.067$ ) data. Pacemaker management expertise among nurses is poor to moderate. Nurses need more training to improve pacemaker implant patient care.<sup>12</sup>

A descriptive study examined nurses' knowledge and practices in temporary pacemaker care at Assuit University Hospital in Egypt. The study aimed to evaluate nurses' knowledge and behaviours for temporary pacemaker care. This study was conducted in Assuit University Hospital's Coronary Care Unit. 40 convenience-sampled nurses. The study found that (77.5%) of nurses had inadequate knowledge and (92.5%) inadequate practices for temporary pacemaker care. The study concluded that nurses' temporary pacemaker care knowledge and practices were inadequate.<sup>13</sup>

An experimental study examined how intervention protocol affected nurses' knowledge and practices for permanent pacemaker patients. The study examined how intervention strategy affected nurses' knowledge and practices for permanent pacemaker patients. The study included 40 Zagazig University Hospital nurses and 40 implanted pacemaker patients. Self-administered questionnaires and observational checklists collect data. This study found that the intervention improved nurses' knowledge and practice and patient outcomes statistically. This study found that implementing a nursing intervention protocol for implantable pacemaker patients improves nurses' knowledge and practice, which improves pacemaker care adherence and independence for daily activities.<sup>15</sup>

## RESEARCH METHODOLOGY

**Research approach:** A quantitative research approach was used for the study.

**Research design:** Comparative research design was selected for the study to compare the knowledge of staff nurses from government and private hospitals.

**Research variable:** In the present study the research variable is knowledge of staff nurses on pacemaker and care of patient with pacemakers.

**Demographic Variable:** The demographic variable is age, gender, professional education level, years of experience, working place, area of presently working, any training program on pacemaker.

### Setting of the study

The study was conducted in selected hospitals Maharashtra.

**The setting for the study was selected on the basis of:**

- Geographic proximity
- Feasibility of conducting the study
- Availability of the sample

### Sample and sample size

The sample of the study were staff nurses from government and private hospitals and who fulfills inclusion criteria.

### Sampling technique

Non-probability convenient sampling technique was used for the study, to select 100 samples among them 50 samples were selected from government and 50 samples were selected form private hospitals.

### Sampling criteria

#### Inclusion criteria

- Nurses working in private hospital who has registered her/his name in state nursing registration council.
- Nurses working in private hospital with having clinical work experience at the time of data collection.
- Nurses working in private hospital who are willing to participate at the time of data collection.
- Nurses working in private hospital who are available at the time of data collection.

#### Exclusion criteria

- Nurses working on administrative post like Head nurse, Incharge nurse, Nursing superintendent etc.
- Nurses working in private hospital who are not available at the time of data collection.
- Nurses working in private hospital who are not willing to participate in data collection.
- Nurses working in private hospital who already attend nursing education program related to knowledge regarding pacemaker and care of patient with pacemaker were not involved in this data collection.

### Tool for data Collection

In this study two types of tools were used by the researcher. Demographic variable and structured knowledge questionnaire on pacemaker and care of patient with pacemaker.

#### The tool is divided into two parts,

**Part I:** demographic variables- This section deals with collection of data demographic variables such as age, gender, professional education level, years of experience, working place, area of presently working, any training program on pacemaker.

**Part II:** structured knowledge questionnaire on pacemaker and care of patient with pacemaker. Total 32 items were used.

### Ethical consideration

Prior permission for the study was obtained from medical superintendent of Hospital. Individual informed written consent was taken from the study subjects before the data collection.

### RESULTS

The findings of the study are as presented in the following headings.

#### Part I: Description of demographic variables of staff nurses.

Table No. 1. Frequency and percentage distribution of samples according demographic variables.

N=100

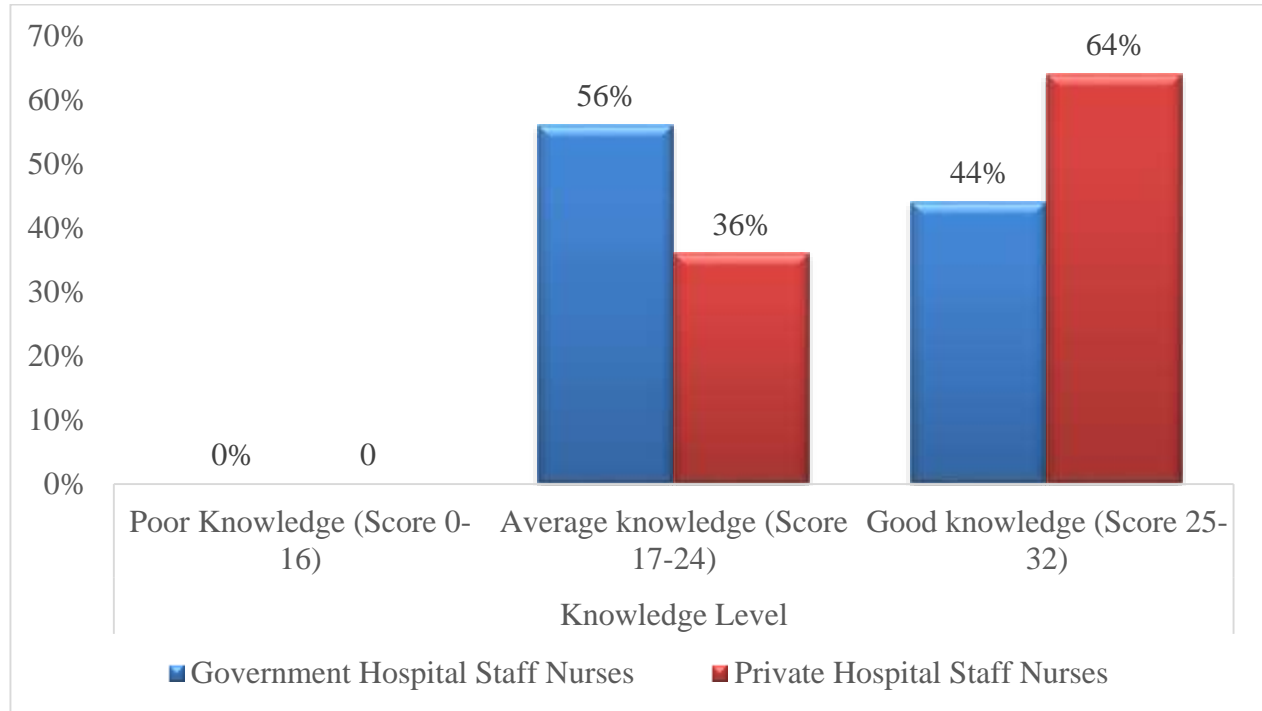
Sr. No	DEMOGRAPHIC VARIABLES		Nurses Working In Government Hospital		Nurses Working In Private Hospital	
			F	%	F	%
1.	Age Group	a.22-25 years	6	12	08	16
		b.26-29 years	16	32	14	28
		c.30-33 years	22	44	20	40
		d. Above 33 years.	6	12	8	12
2.	Gender	a. Male	18	36	22	44
		b. Female	32	64	28	56
3.	Professional Education level	a. Diploma	16	32	16	32
		b. Under graduate	22	44	24	48
		c. Post graduate	12	24	10	20
4.	Years of Experience	a.1 to 5 years	4	08	12	24
		b.6 to 10 years	20	40	8	16
		c.11 to 15 years	12	24	14	28
		d. Above 15 years	14	28	16	32
5.	Working Place	a. Government hospital	50	100	00	00
		b. Private Hospital	00	00	50	100
6.	Area of presently working	a. General ward	16	32	14	28
		b. Cardiac ward	00	00	00	00
		c. Medicine Ward	20	40	16	32
		d. Surgical Ward	14	28	20	40
7.	Received training	a. Yes	00	00	00	00
		b. No	50	100	50	100

#### Part II: Description of the knowledge of staff nurses on pacemaker and care of patient with pacemaker.

Table No. 2. Classification of respondents based on levels of knowledge on pacemaker and care of patient with pacemaker of Government and private hospitals.

N=100

Sr. No	Knowledge	Nurses Working In Government Hospital (50)		Nurses working in private hospital (50)	
		Frequency	Percentage	Frequency	Percentage
1	Poor Knowledge (Score 0-16)	0	0	0	0
2	Average knowledge (Score 17-24)	28	56	18	36
3	Good knowledge (Score 25-32)	22	44	32	64
	<b>Total</b>	<b>50</b>	<b>100</b>	<b>50</b>	<b>100</b>



**Graph No 1. Percentage distribution of samples according to the levels of knowledge.**

The levels of knowledge of staff nurses on pacemaker and care of patients with pacemaker. Among the government staff nurses, 28(56%) were had the average knowledge and 22(44%) were had good knowledge. Whereas among the staff nurses working in private hospitals, 32(64%) were had good knowledge and 18(36%) were had average knowledge.

**Table No 03. Description of Mean, SD and Median of aspect wise knowledge regarding pacemaker and care of patient with pace maker among government and private hospital staff nurses.**

**N=100**

Sr. No	Knowledge of staff nurses	No of Items	Mean	Median	SD
1.	Government hospital				
	Knowledge related pacemaker	09	4.74	4	1.48
	Knowledge related care of patient with pacemaker	23	16.64	13	4.81
	Overall	32	21.8	17	5.52
2.	Private hospital				
	Knowledge related pacemaker	09	5.06	5	1.23
	Knowledge related care of patient with pacemaker	23	21.26	22	1.93
	Overall	32	26.9	27	2.66

The above table describes aspect wise knowledge of the mean, SD and median and mean% knowledge of the staff nurses, In the aspect of knowledge related to pacemaker, the staff nurses working in government hospitals had mean and standard deviation of knowledge was  $4.74 \pm 1.48$  and median was 4. In the aspect of knowledge related to care of patient with pacemaker, mean knowledge was  $16.64 \pm 4.81$  and the median was 13. The overall mean and standard deviation of staff nurses was  $21.8 \pm 5.52$  and median was 17.

Among the private hospitals, in the aspect of knowledge related to pacemaker,  $5.06 \pm 1.23$  and median was 5. In the aspect of knowledge related to care of patients with pacemaker, the mean and standard deviation of knowledge was  $21.26 \pm 1.93$  and median was 22. The overall mean and standard deviation knowledge of the private staff nurses was  $26.9 \pm 2.66$  and median was 27.

**Table No.04 Comparison of knowledge regarding pacemaker and care of patient with pacemaker score among government and private hospital staff nurses.**

N=100					
Sr. No	Knowledge	No of Items	Mean	SD	Independent t test
1	Staff nurses in Government	32	21.8	5.52	5.88, p=0.001, S*
2	Staff nurses in Private Hospital	32	26.9	2.66	

The above table compares the knowledge regarding pacemaker and care of patient with pacemaker. Among the staff nurses in government hospital, the mean and SD was  $21.8 \pm 5.52$  and among the private the nurses the mean and standard deviation was  $26.9 \pm 2.66$ . The independent t test was used to compare the knowledge of staff nurses of government and private hospitals. The t test value was 5.88 and p value was 0.001 found significant.

There was an association between the age in years ( $\chi^2 = 8.57, p=0.047$ ) was found significant with knowledge of staff nurses working in government hospital. There was an association between the professional education ( $\chi^2 = 6.32, p=0.016$ ) and experience was ( $\chi^2 = 9.13, p=0.014$ ) were found significant with knowledge of staff nurses working in private nursing.

## DISCUSSION

The levels of knowledge, Among the government staff nurses, 28(56%) were had the average knowledge and 22(44%) were had good knowledge. Whereas among the staff nurses working in private hospitals, 32(64%) were had good knowledge and 18(36%) were had average knowledge. The study findings were similar to the study conducted by the **Sharma S**. The knowledge score of majority of the nurses were about natural pacemaker of heart (97%), function of pacemaker is to regulate heart rhythm (91%), pacemaker works as fast emergency treatment(82%), care of patient with pacemaker (77.53%), indication of pacemaker is complete heart block (69%), complication of temporary pacemaker is ventricular tachycardia (66%), the difference between single & dual chamber pacemaker (61.20%), evidence of infection and failure of pacemaker implantation (50.72%), discharge teaching of patient(70.53%). Another study finding shown that 48.6 % of the respondents had moderate knowledge about patient management with pacemaker implantation, 32.9 % had a low level of knowledge and only 13.6% had high knowledge regarding management of patient with pacemaker implantation.

## CONCLUSION

The study findings shown that the nurses working in the government and private hospital had average knowledge and there was significant difference between the knowledge level among govt and private hospital staff nurses.

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