


# PAPER PRESENTATION

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# TITLE OF THE STUDY

**“Effectiveness of computer simulated learning module over the traditional lecture method on knowledge regarding ECG and its interpretation”**



# INTRODUCTION


- ▶ Coronary heart disease (CHD), CAD,MI and arrhythmias are the leading cause of death in India and the leading cause of death worldwide
  - ▶ Arrhythmia is a disturbance in regular heart rate and/or rhythm due to change in electrical conduction or automaticity.
  - ▶ An accurate and early identification and interpretation of arrhythmia was observed to be important to begin life saving measures.
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# NEED FOR THE STUDY

- ▶ Cardiac monitors are unworthy when the health care professionals are untrained and unskillful to interpret the ECG and to take prompt action.
- ▶ Studies have shown that many of nurses unable to decipher what the cardiac monitor was displaying.
- ▶ In various aspect of nursing as well as in other disciplines, the computer simulated method of teaching found more effective than the traditional methods.
- ▶ Empowerment of nurses on ECG and its interpretation becomes quiet essential and is the need of the hour. Therefore the investigator felt the need to develop a computer simulated learning module on ECG for the nursing students.

# STATEMENT OF THE PROBLEM

**“An experimental study to assess the effectiveness of computer simulated learning module over the traditional lecture method on knowledge regarding ECG and its interpretation among Nursing students in selected Nursing colleges of, Bangalore”.**



# HYPOTHESIS


- ▶ H1- The mean post-test knowledge scores of nursing students on ECG and its interpretation will be higher than the mean pretest scores at 0.05 level of significance in both groups.
- ▶ H2 –The mean post-test knowledge scores of students learning through computer simulated learning module will be higher than the post-test knowledge score of students learning through traditional lecture method of teaching on ECG and its interpretation at 0.05 level of significance.

# HYPOTHESIS CONT...

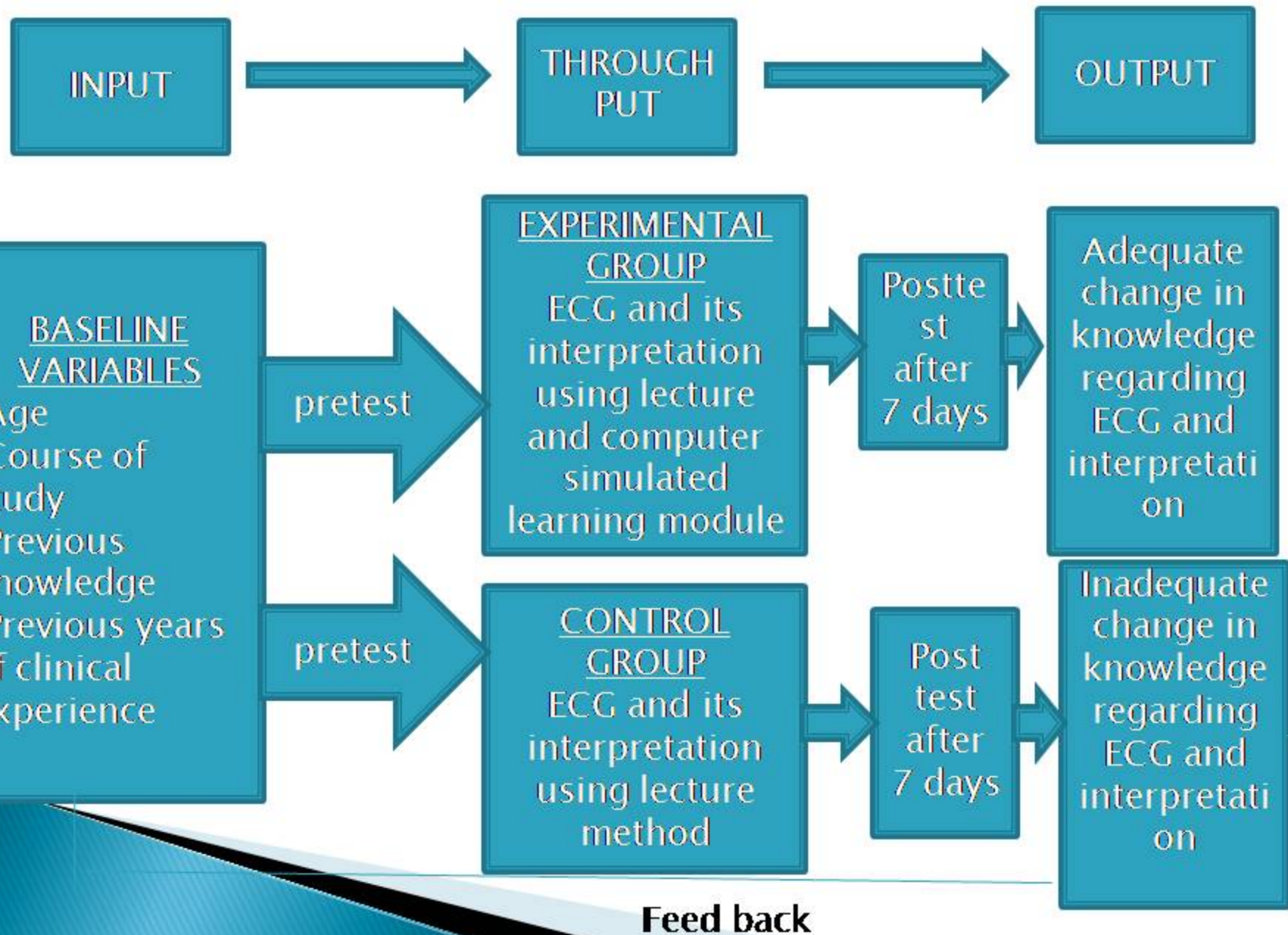
- ▶ H3 – The mean post-test knowledge scores of nursing students on the ECG and its interpretation will be higher when compared to the pretest knowledge scores in the experimental group.
- ▶ H4 -There will be a significant association between the pre-test knowledge score and selected baseline variables at 0.05 level of significance.



# **OBJECTIVES OF THE STUDY**

- 1. To assess the pre intervention knowledge of nursing students on ECG and its interpretation.**
  - 2. To assess the effectiveness of computer simulated learning module on ECG and its interpretation among the nursing students in the experimental group**
  - 3. To compare the effectiveness of the computer simulated learning module over the traditional lecture method on ECG and its interpretation among nursing students**
  - 4. To determine the association between the pretest knowledge score with selected demographic variable.**
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# CONCEPTUAL MODEL – LUDWIG VON BETELANFFY’S GENERAL SYSTEM MODEL



# REVIEW OF LITERATURE

- ▶ SECTION -1 – Knowledge of nurses regarding ECG and its interpretation.
- ▶ SECTION -2 –Advantages of computer simulated teaching module over traditional method of teaching.
- ▶ SECTION -3- Effectiveness of computer simulated learning module in developing nursing skills.

Review

# METHODOLOGY



# STUDY DESIGN

population



Nursing students

Sample



1<sup>st</sup> year PC BSc , 2<sup>nd</sup> year and 3<sup>rd</sup> years BSc nursing students

Sampling technique



60 samples randomly selected and assigned into experimental and control group respectively

Tool



Structured questionnaire on ECG and its interpretation

**Pretest**



**Using structured questionnaire on ECG and its interpretation**

**INTERVENTION**  
Traditional lecture on ECG and its interpretation



**Both control and experimental group**

**INTERVENTION**  
Computer simulated nursing module on ECG and its interpretation



**Experimental group**

**Posttest**



**Using structured questionnaire on ECG and its interpretation**

# Sampling Technique

**Population nursing students- 60**

1<sup>st</sup> year post BSc  
Randomly  
selected by lottery  
method .(20  
students)

2<sup>nd</sup> year BSc  
Randomly  
selected by  
lottery method  
,(20 students)

3<sup>rd</sup> year BSc  
Randomly  
selected by  
lottery method  
,(20 students)

Lottery method  
(10)experimental  
group students

Lottery  
method  
(10)control  
group students

Lottery method (10  
)experimental group  
students

Lottery method  
(10) control group  
students

Lottery method  
(10)experiment  
al group  
students

Lottery method  
(10)control group  
students

## *Plan of intervention*

**Review of literature**

**Topics identified**

**Tentative plan made**

**Consent from college  
authority and  
students obtained.**

**Pre test conducted for both group**





**Traditional lecture method class was  
conducted for both group**

**Computer simulation provided for the  
experimental group**

**Post test was conducted after 7 days**



# DEVELOPMENT OF THE TOOL

- Preparation of the blue print 
- Preparation of items according to the blue print
- Validation of tool by expert 
- Pilot study
- Item analysis
- Reliability testing during pilot study. 
- Final questionnaire was prepared. 

**RESULTS**  
**DATA ANALYSIS AND**  
**INTERPRETATION**



## SECTION – A DESCRIPTION OF DEMOGRAPHIC CHARACTERISTICS

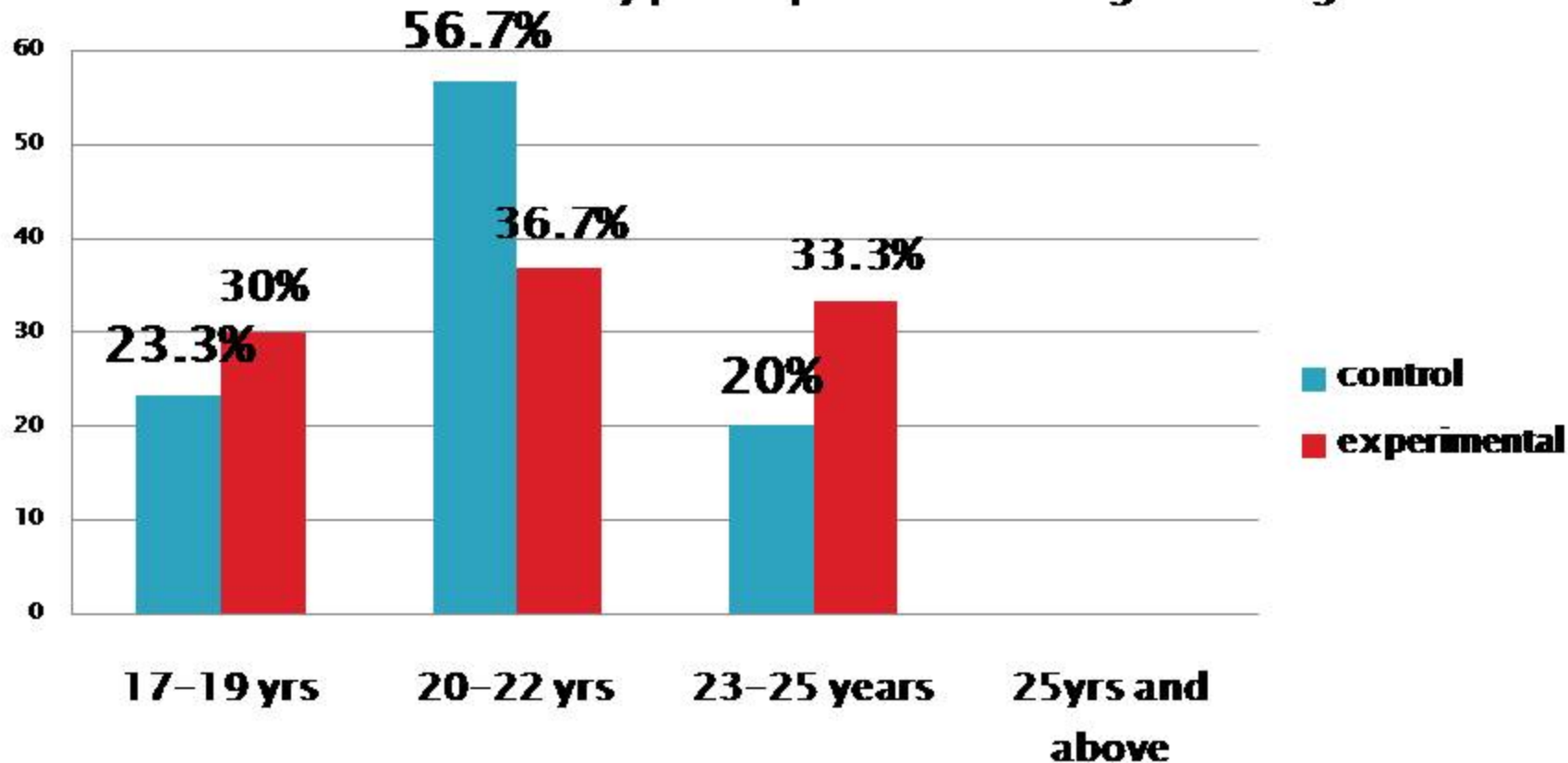
Characteristics	category	Experimental group		Control group	
		F	%	F	%
Age	17–19 years	9	30%	7	23.3%
	20–22yrs	11	36.7%	17	56.7%
	23–25yrs	10	33.3%	6	20%
	Above 25yrs	0	0%	0	0%
Corse of study	2 <sup>nd</sup> year BSc	10	33.3%	10	33.3%
	3 <sup>rd</sup> year BSc	10	33.3%	10	33.3%
	1 <sup>st</sup> year	10	33.3%	10	33.3%

<b>Previous knowledge</b>	<b>Yes</b>	<b>29</b>	<b>96.7%</b>	<b>29</b>	<b>96.7%</b>
	<b>No</b>	<b>1</b>	<b>3.3%</b>	<b>1</b>	<b>3.3%</b>
<b>Syllabus</b>	<b>CBSE</b>	<b>2</b>	<b>6.7%</b>	<b>5</b>	<b>16.7%</b>
	<b>State</b>	<b>28</b>	<b>93.3%</b>	<b>25</b>	<b>83.3%</b>

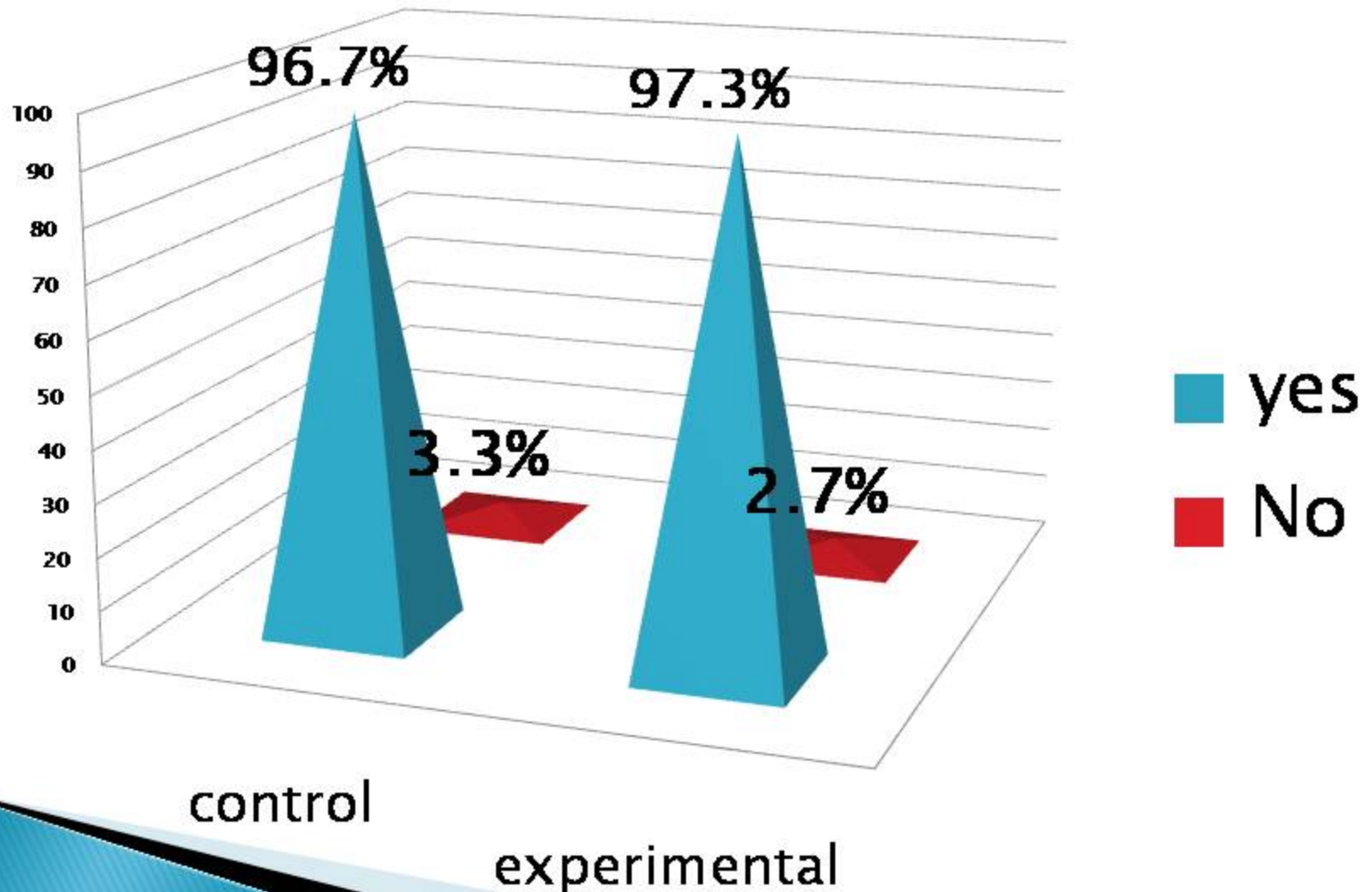
<b>Previous years of experience</b>	<b>No experience</b>	<b>14</b>	<b>46.7%</b>	<b>21</b>	<b>70%</b>
	<b>1 year experience</b>	<b>5</b>	<b>16.7%</b>	<b>7</b>	<b>23.3%</b>
	<b>2 year experience</b>	<b>11</b>	<b>36.7%</b>	<b>2</b>	<b>6.7%</b>
	<b>&gt;2 year experience</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

# DISTRIBUTION OF SUBJECTS BASED ON AGE IN YEARS.

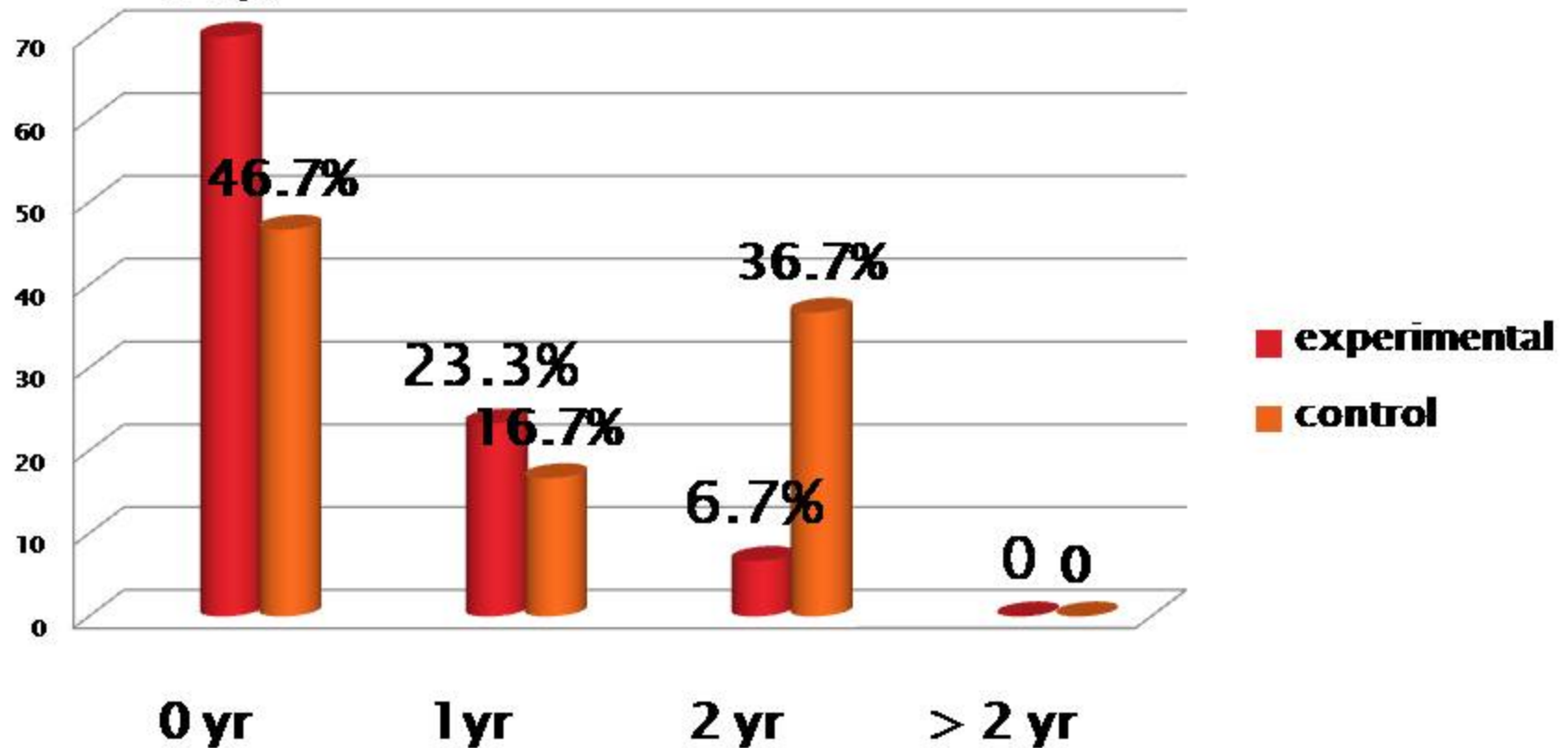
Distributon of study participants according to the age



## Distribution of study participants according to previous knowledge on ECG

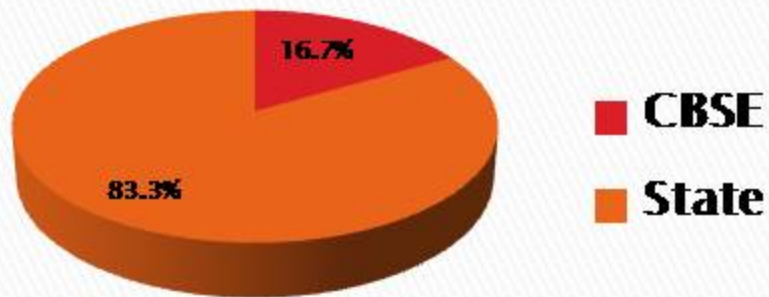


# DISTRIBUTION OF STUDY PARTICIPANTS ACCORDING TO PREVIOUS YEARS OF EXPERIENCE.

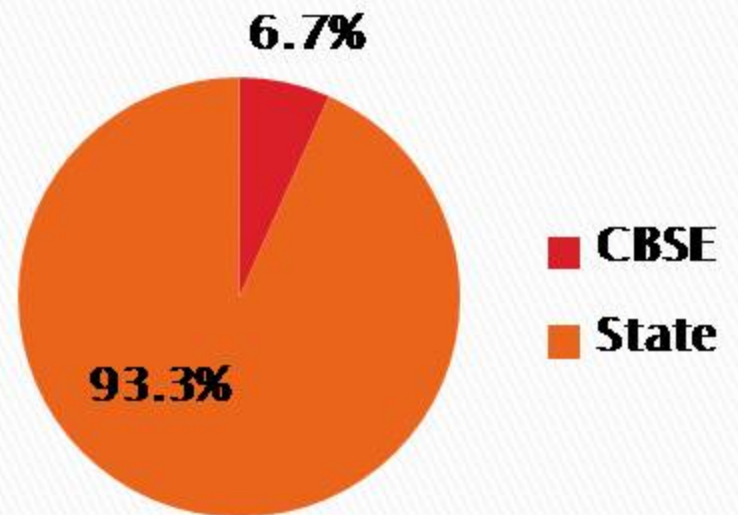




### Distribution of study participants according to the syllabus they studied (control group)



### Distribution of study participants according to the syllabus they studied (experimental)



## SECTION B: ASSESSMENT OF PRE-INTERVENTIONAL KNOWLEDGE

Score	Pre test			
	Experimental group			Control group
MAXIMUM SCORE -40	No of students	%	No of students	%
Inadequate ( $\leq 16$ )	20	66.6%	18	60%
Adequate ( $\geq 17$ )	10	33.3%	12	40%

# Overall pre test area wise knowledge score of Experimental group

Sl. No	Knowledge variables	Maximum possible score (40)	Subjects knowledge		
			Mean	Standard Deviation	Mean Percentage Score
1	Basic knowledge	6	2.73	1.2	45.5
2	Obtaining ECG	9	2.63	0.8	29.25
3	ECG interpretation	25	10.4	2.79	41.6

## Overall pre test area wise knowledge score of Control group

Sl. No	Knowledge variables	Maximum possible score (40)	Subjects knowledge		
			Mean	Standard Deviation	Mean Percentage Score
1	Basic knowledge	6	2.96	1.098	49.4%
2	Obtaining ECG	9	3	1.41	33.3%
3	ECG interpretation	25	7.56	2.96	30.25%

## SECTION C: ASSESSMENT OF EFFECTIVENESS OF COMPUTER SIMULATION ON KNOWLEDGE LEVEL AMONG SUBJECTS

**Pre test and post test knowledge score on ECG and its interpretation among experimental group.**

Knowledge score	Mean	Mean difference	Paired 't' test value	SD	df	Level of significance
Pretest	15.70	9.967	14.792	2.902 ±.674	29	0.001 Sig
Posttest	25.67					

# Pre test and post test knowledge score on ECG and its interpretation among control group.

Knowledge score	Mean	Mean difference	Paired 't' test value	SD	df	Significance
Pretest	15.80	3.23	1.48	2.952 ±.539	29	NS
Posttest	19.0333					

## SECTION D: COMPARISON BETWEEN THE EFFECTIVENESS OF COMPUTER SIMULATED LEARNING AND LECTURE METHOD.

Over all Post test Knowledge Score on ECG and its interpretation among Control and Experimental group.

Aspects	Sample (n)	Max. score	Students knowledge				“t” test	P value
			Mean	Standard error	Mean percentage	D F		
Experimental	30	40	25.67	2.233±.408	<b>64.17%</b>	58	10.122	0.001 sig :
Control	30	40	19.03	2.810±.513	<b>47.583%</b>			

**SECTION E: ASSOCIATION BETWEEN THE LEVEL OF PRE-INTERVENTION KNOWLEDGE SCORE WITH THEIR SELECTED DEMOGRAPHIC VARIABLES N=30**

Demographic variables		Pretest Knowledge score		Experimental group			
		≤40% ≤16 marks	>40 >17 marks	Df	Chi square value	Fishers exact	p value
Age	17-19 years	8	1	2	2.927	-	NS
	20-22yrs	6	5				
	23-25yrs	6	4				
Previous knowledge	Yes	19	10	1	-	.667	NS
	No	1	0				



<b>Course of study</b>	<b>2<sup>nd</sup> year BSc</b>	<b>8</b>	<b>2</b>	<b>2</b>	<b>1.200</b>	<b>-</b>	<b>NS</b>
	<b>3<sup>rd</sup> year BSc</b>	<b>6</b>	<b>4</b>				
	<b>1<sup>st</sup> year PC BSc</b>	<b>6</b>	<b>4</b>				
<b>Syllabus</b>	<b>CBSE</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>-</b>	<b>.437</b>	<b>NS</b>
	<b>State</b>	<b>18</b>	<b>10</b>				
<b>Previous years of experience</b>	<b>No experience</b>	<b>10</b>	<b>4</b>	<b>2</b>	<b>.288</b>	<b>-</b>	<b>NS</b>
	<b>1 year</b>	<b>3</b>	<b>2</b>				
	<b>&gt;1yer of</b>	<b>7</b>	<b>4</b>				

Demographic variables		Pretest Knowledge score		Control group			
		≤40% 16 marks	>40 17 marks	Df	Chi square value	Fishers exact	p value
Age	17–19 years	4	3	2	2.596	–	NS
	20–22yrs	12	5				
	23–25yrs	0	4				
Previous knowledge	Yes	18	11	1	–	.400	NS
	No	0	1				


<b>Course of study</b>	<b>2<sup>nd</sup> year BSc</b>	<b>6</b>	<b>4</b>	<b>2</b>	<b>.000</b>	<b>–</b>	<b>NS</b>
	<b>3<sup>rd</sup> year BSc</b>	<b>6</b>	<b>4</b>				
	<b>1<sup>st</sup> year PC BSc</b>	<b>6</b>	<b>4</b>				
<b>Syllabus</b>	<b>CBSE</b>	<b>3</b>	<b>2</b>	<b>1</b>		<b>.682</b>	<b>NS</b>
	<b>State</b>	<b>15</b>	<b>10</b>				
<b>Previous years of experience</b>	<b>No experience</b>	<b>13</b>	<b>8</b>	<b>2</b>	<b>3.413</b>	<b>–</b>	<b>NS</b>
	<b>1 year</b>	<b>5</b>	<b>2</b>				
	<b>&gt;1yer of exp</b>	<b>0</b>	<b>2</b>				

# **NURSING IMPLICATION**

## **NURSING PRACTICE**

- ▶ Can be used to update the knowledge and for the induction programs .
- ▶ Self assessment of knowledge

## **NURSING EDUCATION**

- ▶ The nursing curriculum can include knowledge simulation methods.
  - ▶ Assessment tool after the theoretical sessions.
  - ▶ Improve skills in a risk free environment
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## **NURSING ADMINISTRATION:**

- ▶ Make guidelines for practice and conducting staff education programs.
- ▶ Periodical appraisal
- ▶ Motivate the staff.
- ▶ Nurse educators can perform a crucial role in maintaining records of assessment.

## **NURSING RESEARCH**

- ▶ Guideline for preparing more advanced computer simulation learning modules in future.
- ▶ Teach students to make them understand the concept of tool preparation.

Stimulate new innovative ideas.




## **RECOMMENDATIONS:**

- ▶ Replicate in different settings with larger samples.
- ▶ Can be done among staff nurses.
- ▶ Various other higher levels of graphics can be used.  
And virtual reality can be incorporated.

## **LIMITATIONS:**

- ▶ The study is limited to students of a particular nursing institution and is limited to the students of 1<sup>st</sup> year PC BSc, 2<sup>nd</sup> year BSc, and 3<sup>rd</sup> year BSc nursing students.

# CONCLUSION

- ▶ The research approach adopted for this study was an evaluative approach.
  - ▶ There were an increase in the knowledge in the experimental group and the gain in knowledge regarding ECG and its interpretation through computer simulated learning module among the experimental group was significant when compared to the knowledge scores of students who were in the control group.
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**THANK YOU**

