

A STUDY TO ASSESS THE KNOWLEDGE REGARDING ELECTROCARDIOGRAM (ECG) AMONG B.BSC NURSING STUDENTS IN SELECTED NURSING INSTITUTION

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ABSTRACT

A descriptive design was used to assess the knowledge regarding Electrocardiogram among Basic B.Sc. Nursing Students in Selected Nursing Institution, Maharashtra. A purposive sampling was used to select 270 samples. To collect data on demographic variables & Short Answer Question was used among Basic B.Sc Nursing Students. Further, the collected data were analyzed in accordance with the objectives and hypothesis of research question. From the findings, it was observed that the level of knowledge shows that out of 270 Students, majority (136) of them had good knowledge (31.8%) whereas none had poor knowledge on ECG. Further 60 & 50 numbers of Students had very good & excellent knowledge (47.8% & 65.8%) respectively. However, the overall knowledge of Basic B.Sc. Nursing Students 40.8% and overall means score was 16.3±5.9. However, there is a significant association ($p>0.05$) between knowledge scores and age, religion, education, income, type of family, type of diet, sex, are The finding of F value shows that there is no sea of residence, previous knowledge regarding Electrocardiogram (ECG) The finding F value shows that there is no significant association ($p>0.05$) between knowledge score and religion. Findings of study revealed that the Basic B.Sc. Nursing students had good knowledge on ECG. Further, the knowledge of health care workers was more or less similar after at selected nursing institution, Maharashtra.

KEYWORDS: Asses, Knowledge, ECG, Nursing Students, Nursing Institution.

INTRODUCTION AND BACKGROUND

The ECG is a diagnostic tool used in assessing the cardiovascular system. It is a graphic recording of the electrical activity of the heart; an ECG can be recorded with 12, 15, or 18 leads, showing the activity from those different reference points. The ECG in obtained by placing disposable electrodes in standard positions on the skin of the chest wall and extremities. The heart's electrical impulses are recorded as a tracing on special paper.^[1]

The standard 12-lead ECG is the most commonly used tool to diagnose dysrhythmias, conduction abnormalities, enlarged heart chambers, myocardial ischemia or infarction, high or low calcium and potassium levels, and effects of some medications. A 15-lead ECG adds 3 additional chest leads across the right precordium and is a valuable tool for the early diagnosis of right ventricular and posterior left ventricular infarction. The 18-lead ECG adds 3 posterior leads to the 15-lead ECG and is very useful for early detection of myocardial ischemia and injury (Wong & Drew, 1999). To enhance interpretation of the ECG, the patient's age, gender, BP, height, weight, symptoms, and medications (especially

digitalis and antiarrhythmic agents) should be noted on the ECG requisition Cardiovascular disease is the leading cause of death in many regions worldwide, accounting for nearly one third of global deaths.^[2] Electrocardiography is the most commonly used diagnostic procedure in cardiology. If ECG properly interpreted, it contributes significantly to the diagnosis and management of patients with cardiac disorders. Accurate ECG interpretation can make a significant difference in clinical decisions, leading to rapid recognition and treatment of cardiac emergencies.^[3]

Interpretation of ECG is a core clinical skill in the department of emergency medicine. One of the important critical care nursing skills is monitoring ECG. It can provide evidence to support a diagnosis, and it is crucial for patient management by helping in diagnosing the abnormal cardiac rhythm. ECG is an important tool used for the diagnosis and treatment of various cardiac and other related diseases.^[4] The recorded traces of ECG waveform produced by heart can tell you basic information about patient's condition. It is a non-invasive, cheap technique that provides critical information about heart rate and rhythm, and helps assess

for cardiac disease. ECG monitoring is used often in many different healthcare settings, including acute care, cardiac care and preoperative Dutch scientist Willem Einthoven (1895), who won a Nobel Prize (1924) for crafting the medical tech masterwork, was building on a long history of tracking heartbeats that began in the late 1700s. A turning point came in 1872, when Gabriel Lippman came up with a gadget called a capillary electrometer, which could measure the voltage changes on the body's surface produced by the pulses of the heart. A.D. Waller, using Lippman's invention, captured the first actual measurement of a heart's beating in 1887. The things these worthy predecessors didn't account for were inertia and friction inside the capillaries, so their recordings were imperfect at best. Willem Einthoven fixed that beginning in 1901. At first he used mathematical equations to hand-correct imprecisions in the now-familiar valleys and peaks made on photographic paper by the machine's movements. Within a few years, he bettered the process by coming up with the string galvanometer (on table, at center), which automatically did the corrections for him.^[5]

OBJECTIVES

- 1) To assess the knowledge regarding electrocardiogram among B.Sc. nursing students in selected nursing institution.
- 2) To find out the association between the knowledge regarding electrocardiogram with selected demographic variables.

MATERIALS AND METHOD

The methodology of study includes research approach, design, population setting of the study, sample and sampling technique, tool preparation, validity and reliability of the tool, pilot study, and methods of data collection and plan for data analysis. Cross sectional survey approach was used to assess the knowledge regarding electrocardiogram (ECG) among B.Sc nursing students. A descriptive design was used to assess the knowledge regarding electrocardiogram (ECG) among B.Sc nursing students in selected nursing

institution. The study was conducted in selected nursing institutions of Maharashtra state. The selection of setting was considered on the basis of the feasibility of data collection procedure, availability of samples and geographical proximity. The investigator visited to the selected nursing institution among them 1 institution has been selected for the data collection. The total population in this institution was 300 students available for data collection. A purposive sampling technique was used to select the B.Sc nursing students in selected nursing institution. The total population of selected institution was 300 where there were 290 B.Sc nursing Students available for data collection. Out of available B.Sc nursing students, the investigator has selected 27 samples purposively for data collection.

RESULT

Assessment of knowledge on ECG among B.B.Sc nursing students

Table 1: Percentage distribution of knowledge on ECG among B.B.Sc nursing student n=270.

Level of knowledge	f	%
Poor	0	0%
Average	24	23.2%
Good	136	31.8%
Very good	60	47.8%
Excellent	50	65.8%
Overall	270	40.8%

Percentage distribution according to their level of knowledge shows that out of 270 Students, majority (136) of them had good knowledge (31.8%) whereas none had poor knowledge on ECG. Further 60 & 50 numbers of mothers had very good & excellent knowledge (47.8% & 65.8%) respectively. However, the overall knowledge of B.B.Sc nursing student was 40.8% (Table 4.2.1).

Hence, it was interpreted that the Students with B.B.Sc nursing student had an average knowledge on ECG.

Assessment of knowledge on ECG among B.B.Sc nursing students

Table 2: Area wise percentage distribution of knowledge on ECG among B.B.Sc nursing students, n=270.

Area of knowledge	No of items	Knowledge in %
General information on ECG	7	42.9%
Knowledge regarding ECG	6	41.7%
Application of ECG	16	37.5%
Interpretation of ECG	5	42.0%
ECG as a diagnostic test	6	43.3%
Total	40	40.8%

Area wise distribution of knowledge score of B.B.Sc nursing student reveals that for the area of General information on ECG among Students 42.9% of them were correctly responded. 41.7% of them were correctly responded for the area of Knowledge regarding ECG. However, the correct responses for the area of Application of ECG were 37.5%. In addition, 42%

B.B.Sc nursing students have correctly ECG as a diagnostic test responded to the area of Interpretation of ECG & its 43.8% of them had correctly responded to ECG as a diagnostic test (Table - 4.2.3).

Hence, it was interpreted that the B.B.Sc nursing student had more precautions. Further, 43 or less similar knowledge on ECG.

Association of knowledge on ECG among B.B.Sc nursing students and demographic variables

H1: There is a significant association between the knowledge on ECG among B.B.Sc nursing students and demographic variables.

Table No-3: Association of knowledge on ECG among B.B.Sc nursing students with their age in age., n=270.

Age (yrs.)	No. of Students	Mean	SD	F-Value	P-Value
19-20	94	13.8	4.2.	17.13	0.00 S P<0.05
20-21	142	17.2	5.5		
21-22	34	19.8	8.7		
22-23	0	-	-		

df;2,267

p value<0.05

S- Significant

Analysis of variance (F-test) was computed to find out the significant association between the knowledge score and the age of students. The finding of F value shows that there is a significant association ($p>0.05$) between knowledge score and the age of B.B.Sc nursing students.

Hence, it was interpreted that the age of students was associated with the knowledge on ECG.

However, the F value was true difference and not by chance. Therefore, the research hypothesis is accepted. n=270.

Table No. 4: Association of knowledge on ECG among B.B.Sc nursing students with their age in years n=270.

Education	No. of Students	Mean	SD	F-Value	P-Value
1 st B.B.Sc Nursing	50	11.2	2.2	136.4952	0.00 S p<0.05
2 nd B.B.Sc Nursing	106	14.9	3.4		
3 rd B.B.Sc Nursing	51	14.5	4.0		
4 th B.B.Sc Nursing	63	24.4	4.8		

df;3,266,

p value<0.05

S-Significant

Analysis of variance (F-test) was computed to find out the significant association between the knowledge score and the education of students. The finding of F value shows that there is a significant association ($p>0.05$) between knowledge score and the education of B.B.Sc nursing students.

Hence, it was interpreted that the education of students were associated with the knowledge on ECG.

However, the F value was true difference and not by chance. Therefore, the research hypothesis is accepted.

Table No-5: Association of knowledge on ECG among B.B.Sc nursing students and demographic variables with their monthly income of family. n=270

Monthly income of family	No. of Students	Mean	SD	F-Value	P-Value
8000-10000	174	15.2	4.5	17.1037	0.00 S p<0.05
10000-15000	71	16.6	6.6		
15000-20000	23	23.1	7.8		
20000-25000	0	0	0		
250000-500000	2	28	5.6		

df;3,266

p value<0.05

S- Significant

Analysis of variance (F-test) was computed to find out the significant association between the knowledge score and the monthly income of family. The finding of F value shows that there is a significant association ($p>0.05$) between knowledge score and the monthly income of family.

However, the F value was true difference and not by chance. Therefore, the research hypothesis is accepted.

Hence, it was interpreted that the monthly income of family were associated with the knowledge on ECG.

Table No. 6: Association of knowledge on ECG among B.B.Sc nursing students and demographic variables with their Type of family.

n=270

Type of family	No. of Students	Mean	SD	F-Value	P-Value
Nuclear family	102	13.3	3.7	80.985	0.00 S p<0.05
Joint family	152	17.1	5.4		
Compound family	16	29.1	1.5		
Extended family	0	0	0		

df;3,266,

p value<0.05

S- Significant

Analysis of variance (F-test) was computed to find out the significant association between the knowledge score and type of family. The finding of F value shows that there is a significant association ($p>0.05$) between knowledge score and type of family of B.B.Sc nursing students.

Hence, it was interpreted that the occupation of mothers were associated with the knowledge on ECG.

However, the F value was true difference and not by chance. Therefore, the research hypothesis is accepted.

Table No-7- Association of knowledge on ECG among B.B.Sc nursing students and demographic variables with their Type of diet.

n=270

Type of diet	No. of Students	Mean	SD	F-Value	P-Value
Vegetarian	182	15.4	5.6	14.7634	0.0002 S p<0.05
Non-vegetarian	88	18.3	6.1		

df;1,268,

p value<0.05

S- Significant

Analysis of variance (F-test) was computed to find out the significant association between the knowledge score and the Type of diet. The finding of F value shows that there is a significant association ($p>0.05$) between knowledge score and the Type of diet.

Hence, it was interpreted that the Type of family were associated with the knowledge on ECG.

However, the F value was true difference and not by chance. Therefore, the research hypothesis is accepted.

Table No-8 Association of awareness scores on ECG among among B.B.Sc nursing students with their Type of Sex.

n=270

Type of sex	No. of Students	Mean	SD	F-Value	P-Value
Male	93	15.0	6.1	7.0512	0.0084 S p<0.05
Female	177	17.0	5.7		

df;1,268

p value<0.05

S-Significant

Analysis of variance (F-test) was computed to find out the significant association between the knowledge score and the Type of sex. The finding of F value shows that there is a significant association ($p>0.05$) between knowledge score and the Type of sex.

Hence, it was interpreted that the Type of sex were associated with the knowledge on ECG.

However, the F value was true difference and not by chance. Therefore, the research hypothesis is accepted.

Table No-9- Association of knowledge on ECG among B.B.Sc nursing students and demographic variable with their previous knowledge regarding electrocardiogram (ECG).

n=270

Previous knowledge	No. of Students	Mean	SD	F-Value	P-Value
1 st year B.B.Sc Nursing	119	15.1	3.8	19.581	0.00 S p<0.05
2 nd year B.B.Sc Nursing	90	16.6	7.0		
3 rd year B.B.Sc Nursing	23	24.3	6.1		
4 th year B.B.Sc Nursing	38	15.0	4.9		

df;3,266,

p value<0.05

S Significant

Analysis of variance (F-test) was computed to find out the significant association between the knowledge score

and previous knowledge regarding electrocardiogram (ECG).

The finding of F value shows that there is a significant association ($p > 0.05$) between knowledge score and Previous knowledge regarding electrocardiogram (ECG).

Hence, it was interpreted that the Previous knowledge regarding electrocardiogram (ECG).

Were associated with the knowledge on ECG. However, the F value was true difference and not by chance. Therefore, the research hypothesis is accepted.

DISCUSSION

Percentage distribution according to their level of knowledge shows that out of 270 Students, majority (136) of them had good knowledge (31.8%) whereas none had poor knowledge on ECG. Further 60 & 50 numbers of mothers had very good & excellent knowledge (47.8% & 65.8%) respectively. However, the overall knowledge of B.B.Sc nursing student was 40.8%. More or less similar findings were observed from the descriptive study conducted by Patil G R where the 67.7% of final year nursing students had excellent knowledge, 64.4% had good knowledge and 71.1% of the B.B.Sc nursing students had average knowledge. Distribution of mean knowledge scores on ECG shows the 136 B.B.Sc nursing student had good knowledge with a mean score of 12.7 ± 1.5 whereas none of them had poor knowledge on ECG. However, 60 B.B.Sc nursing student had very good knowledge with a mean score of 19.1 ± 1.3 and 50 B.B.Sc nursing student had excellent knowledge with a mean score of 26.3 ± 3.7 . The findings of present study were contradictory to findings of study conducted by snehalata P where mean & S Don knowledge score was average level (12.91 ± 04) and the mean score for good level was 3.11 ± 04 .

The finding of F value shows that there is a significant association ($p > 0.05$) between knowledge scores and age, education, Religion, Monthly income of family, type of family, type of diet, Sex, Area of residence, & age of Previous knowledge regarding electrocardiogram (ECG). The finding of F value shows that there is no significant association ($p > 0.05$) between knowledge score and religion. the finding study reveals conducted by Ms. Sonu Varghese, Ms. Soumya Manuel, It is found that there is no significant association ($p > 0.05$) between knowledge and demographic variables like age, type of family, education, religion, monthly income and nutritional status.

The findings of the study showed that there was majority of the B.B.Sc nursing students have average knowledge regarding the importance of Electrocardiogram (ECG). The results shows that majority of the Students 41% had satisfactory knowledge.

CONCLUSION

From the findings of the present study it was concluded that the most of the B.B.Sc nursing students had 31.8% had good knowledge score and none had poor

knowledge. Further 60 & 50 numbers of Students had very good & excellent knowledge (47.8% & 65.8%) respectively on ECG. However, there is a significant association ($p > 0.05$) between knowledge score and the age, education, Religion, income, type of family, type of diet, Area of residence, Previous knowledge regarding electrocardiogram (ECG). There is no significant association ($p > 0.05$) between knowledge score and religion. Thus, it was concluded that most of the students had good knowledge at selected nursing institution, Maharashtra.

RECOMMENDATIONS

- Similar study with large sample can be undertaken to bring out more generalization of findings.
- Similar study can be undertaken among parents to bring out more generalization of findings.
- Similar type of study can be undertaken in nursing institution.
- An experimental study can be conducted from the results this study
- A study needs to be carried out to assess the attitude along with knowledge on ECG.
- Mass media on ECG to be evaluated and can be modified to increase awareness among parents

ETHICAL CLEARANCE: Institutional research committee clearance obtained, Permission for conducting the research was taken from concerned authorities from where the sample where collected. The participants signed a written consent, after sufficient explanation regarding the purpose and process of the study, sample confidentiality was maintained.

SOURCE OF FUNDINGS: Own Funds.

CONFLICT OF INTREST: Zero.

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