iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 13 **Issue:** VI **Month of publication:** June 2025

DOI: https://doi.org/10.22214/ijraset.2025.71954

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 13 Issue VI June 2025- Available at www.ijraset.com

Effect of Structured Teaching Programme on Knowledge Regarding Pubertal Changes Among the Early Adolescent Girls in Selected Schools of Guwahati, Assam

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Abstract: ***Background- Puberty is when the child's body begins to develop and change as they transition into adulthood. The stages of puberty follow a definite path with progression of physical changes. The emotional changes of puberty may not progress at the same pace as the physical changes. Both the physical and emotional changes of puberty begin and end at different ages of each child.***
Materials and methods- A quantitative research approach and one group pre-test post-test research design was opted for the study. The study was conducted at 2 conveniently selected schools of Guwahati, Assam i.e. Prachya Bharati Senior Secondary School and Brahmaputra Valley Public School. The investigator uses simple random sampling technique and under that lottery method was used to select 109 early adolescent girls. Structured self administered knowledge questionnaire was used to collect the data.
Result- findings revealed that, in pre-test majority i.e. 93(85.3%) had moderate knowledge, 10 (9.2%) had inadequate knowledge and 6 (5.5%) had adequate knowledge. For post-test majority 109 (100%) had adequate knowledge. In pre-test mean score was 9.11±1.307 and post-test mean score was 15.93±1.88 with mean difference of 6.82. therefore, it shows that there is significant difference between pre-test and post-test knowledge regarding pubertal changes. Findings also showed that there was significant association between the pre-test knowledge score with selected demographic variables such as educational status, type of family and previous source of knowledge on pubertal changes.
Conclusion- keeping in the view of findings of the study, it can be revealed that structured teaching programme on pubertal changes was effective in improving the knowledge of early adolescent girls.

I. INTRODUCTION

The important developmental stage of puberty signifies the passage from childhood to adolescence. The Latin term "Pubertas," which meaning "age of manhood," is where the word puberty originates. When a person reaches sexual maturity and is able to procreate, it refers to the physical rather than behavioral changes that take place. The physical maturation process known as puberty occurs when a teenager reaches sexual maturity and gains the ability to reproduce. Puberty usually starts in girls between the ages of 8 and 13, and in boys between the ages of 9 and 14. Along with physical changes like female breast development, pubic hair development, height gain, and the start of menstruation (menarche), puberty is also linked to emotional and chemical changes. Tanner stages are the five phases that puberty goes through.

WHO (2018) reports that there are more young people in the globe than ever before of the 7.2 billion people on the planet, nearly 3 billion are under 25 years old, or 42% of the total population. Approximately 1.2 billion of these youth are teenagers, ranging in age from age 10 to 19.

In India, there are 243 million teenagers, or roughly one fifth of the population (21.4%), according to NFS (2016). 12.1% of the population as a whole is between the ages of 10 and 14, and 9.7% is between the ages of 15 and 19. Of the overall population, teenagers are divided 46.9% female and 53.1% male. Globally, the time at which puberty begins to set in appears to be accelerating. In Europe, girls typically reach puberty at the same time.

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A cross-sectional study on puberty: a stressful phase of transition for girls among female adolescences was carried out by Rawat R, Sagar R and Khakha D. According to a study, pubertal changes caused mild to severe stress in over 50% of female adolescents. The subject expressed more stress because of their body image and menstruation.

In the Kottayam district of Kerala, Jolly M and Babu M (2018) carried out a descriptive study to evaluate the psychological problems among pre-adolescent girls who had early puberty onset. There were 100 people in the sample. For this investigation, the purposive sampling approach was employed. According to the study's findings, 53% of the pre-adolescent girls had their first menstrual period between the ages of 11 and 12 years old, and the majority of them (69%) lived in rural areas. 41% of the pre adolescent girls had anxiety and 26.4% reported suffering from low self esteem. Adolescent girls in India learn about the changes associated with puberty from peers and their mother. A girl's knowledge of pubertal changes and her level of education determine how much and to what extent she may learn. The researcher felt compelled to evaluate pre-adolescent girls' awareness of pubertal changes in certain schools based on the aforementioned studies and overviews. Therefore, the goal of the current study is to evaluate students' understanding of pubertal changes in a few Guwahati, Assam, schools.

A. Statement of the problem

A study to Assess the Effect of Structured Teaching Programme on Knowledge regarding Pubertal Changes among the Early adolescent girls in selected Schools of Guwahati, Assam.

B. Specific Objectives

1) To assess the pre-test knowledge regarding pubertal changes among the early adolescent girls in selected schools of Guwahati, Assam.
2) To assess the post-test knowledge regarding pubertal changes among the early adolescent girls in selected schools of Guwahati, Assam.
3) To evaluate the effectiveness of structured teaching programme on knowledge regarding pubertal changes among the early adolescent girls in selected schools of Guwahati, Assam.
4) To find out the association between the pre-test knowledge regarding pubertal changes among the early adolescent girls with selected demographic variables.

C. Hypotheses

Following are the research hypotheses

H_1: There is significant difference between the mean pre-test and post-test knowledge regarding pubertal changes among the early adolescent girls in selected schools of Guwahati, Assam as measured by structured self administered knowledge questionnaire at 0.05 level of significance.

H_2: There is significant association between the pre-test knowledge regarding pubertal changes among the early adolescent girls with selected demographic variables as measured by structured self administered knowledge questionnaire at 0.05 level of significance.

II. RESEARCH METHODOLOGY

The research approach adopted for this study is quantitative evaluative research approach. In this study, considering the objectives of Pre-experimental one group pre-test post-test research design will be used to assess the effect of structured teaching programme on knowledge regarding pubertal changes among the early adolescent girls in selected schools of Guwahati, Assam. The total number of schools in Guwahati, Assam is 151 out of which for the present study 2 schools were selected conveniently under Guwahati, Assam namely Prachya Bharati Senior secondary School and Brahmaputra Valley Public School. In this study, target population includes all the early adolescent girls of Guwahati, Assam. In this study, the accessible population is the early adolescent girls of class V, VI, VII, VIII studying in 2 conveniently selected schools of Guwahati, Assam namely Prachya Bharati Senior secondary School and Brahmaputra Valley Public School. The selection of subjects for the 2 schools was done by Simple Random Sampling Technique using Lottery Method in proportionate number. In the present study, the sample consists of early adolescent girls from 2 conveniently selected schools of Guwahati, Assam. The Raosoft sample size calculator was used to calculate the sample size. There were 150 total, of which 109 early adolescent girls with a 5 percent margin of error, 95 percent confidence level and population proportion of 50 percent were selected for the study. The researcher used the probability sampling technique in the present study, and within that, the simple random sampling technique was used to pick students in a proportionate number utilizing the lottery method.

Guwahati, Assam, has 151 schools in total. The schools' list was compiled from online resources. Of the 151 schools, two were arbitrarily chosen. In two well chosen schools in Guwahati, Assam, namely Prachya Bharati Senior Secondary School and Brahmaputra Valley Public School, there were 150 students in total. 109 people, or 50% of the proportionate population, made up the study's sample size according to the Raosoft sample size calculator. Using the lottery method, early adolescent girls who met the requirements were chosen randomly. The early adolescent girls numbers were chosen using the lottery method by obtaining their roll numbers from their attendance register. Every roll number was written on a different sheet of paper that was the same size, and each slip was folded identically. To ensure that every student had an equal chance of being chosen for this study, these slips were then thoroughly jumbled before the numbers were chosen one at a time. In this study the aim of the analysis was to organize and synthesize data for the research questions to be answered and hypotheses to be tested. The data were tabulated analyzed and interpreted using descriptive and inferential statistics. The analysis of the data was done which is based on objectives of the study by using SPSS 24.

III. RESULTS

A. Findings related to demographic variables

Table 1: Frequency and percentage distribution of demographic variables of early adolescent girls

TABLE 1.1
Frequency and percentage distribution of early adolescent girls according to age
n=109

Age in years	Frequency (f)	Percentage (%)
10-11	45	41.3
12-13	64	58.7
Total	109	100

The data presented in table 1.1 shows that out of 109 early adolescent girls majority i.e. 64 (58.7%) were between the age group of 12-13 years followed by 45 (41.3%) were between 10-11 years of age.

TABLE 1.2
Frequency and percentage distribution of early adolescent girls according to educational status
n=109

Educational status	Frequency (f)	Percentage (%)
Class V	31	28.5
Class VI	25	22.9
Class VII	28	25.7
Class VIII	25	22.9
Total	109	100

The data presented in table 1.2 shows that out 109 early adolescent girls majority i.e. 31 (28.5%) belong to class V, 28 (25.7%) belong to class VII, 25 (22.9%) belong to class VI and VIII.

TABLE 1.3
Frequency and percentage distribution of early adolescent girls according to religion
n=109

Religion	Frequency (f)	Percentage (%)
Hinduism	70	64.2
Christianity	0	0
Islam	39	35.8
Others	0	0
Total	109	100

The data presented in table 1.3 shows that out of 109 early adolescent girls majority i.e. 70 (64.2%) belong to Hinduism, 39 (35.8%) belong to Islam religion and none were from Christianity or other religion.

TABLE 1.4
Frequency and percentage distribution of early adolescent girls according to type of family
n=109

Type of family	Frequency (f)	Percentage (%)
Nuclear family	91	83.5
Joint family	18	16.5
Total	109	100

The data presented in table 1.4 shows that out of 109 early adolescent girls majority i.e. 91 (83.5%) were from nuclear family and 18 (16.5%) were from joint family.

TABLE 1.5
Frequency and percentage distribution of early adolescents according to education of mother
n=109

Education of mother	Frequency (f)	Percentage (%)
Professional degree	20	18.4
Graduate	30	27.5
Intermediate/ diploma	25	22.9
High school	20	18.4
Middle school	6	5.5
Primary school	0	0
No formal education	8	7.3
Total	109	100

The data presented in table 2.5 shows the education of mothers, out of 109 early adolescent girls majority i.e. 30 (27.5%) were graduates followed by 25(22.9%) were intermediate/diploma qualified, followed by 20(18.4%) were professional and high school qualified, followed by 8(7.3%) have no formal education, followed by 6(5.5%) were middle school qualified and none were from primary school category.

TABLE 1.6
Frequency and percentage distribution of early adolescents according to education of father
n=109

Education of father	Frequency (f)	Percentage (%)
Professional degree	30	27.5
Graduate	45	41.3
Intermediate/ diploma	18	16.5
High school	16	14.7
Middle school	0	0
Primary school	0	0
No formal education	0	0
Total	109	100

The data presented in table 1.6 shows the education of father, out of 109 early adolescent girls majority i.e. 45 (41.3%) were graduates, followed by 30 (27.5%) professional degree, followed by 18 (16.5%) intermediate/diploma, 16 (14.7%) were high school and none were from middle school, primary school and no formal education category.

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TABLE 1.7
Frequency and percentage distribution of early adolescent girls according to area of residence
n=109

Area of residence	Frequency (f)	Percentage (%)
Urban	109	100
Rural	0	0
Total	109	100

The data presented in table 1.7 shows that 109 (100%) early adolescent girls area of residence was urban and none were from rural area.

TABLE 1.8
Frequency and percentage distribution of early adolescent girls according to previous source of knowledge on pubertal changes
n=109

Previous source of knowledge on pubertal changes	Frequency (f)	Percentage (%)
Yes	26	23.9
No	83	76.1
Total	109	100

The data presented in table 1.8 shows that out of 109 early adolescent girls majority i.e. 83 (76.1%) did not have previous source of knowledge regarding pubertal changes and 26 (23.9%) had previous source of knowledge on pubertal changes.

B. Findings related to Assessment of pre-test and post-test knowledge regarding pubertal changes among the early adolescent girls before and after the administration of structured teaching programme.

This section presents data of pre-test and post-test knowledge regarding pubertal changes among the early adolescent girls. In this study, the level of knowledge has been categorized into three levels i.e., Inadequate, Moderate and Adequate by using the formula Mean ± 1SD.

The assessments of pre-test and post-test knowledge are presented in Figure 1.

This section also presents area wise mean percentage of pre-test and post-test knowledge score, actual gain and modified gain score in table 2.1.

n=109

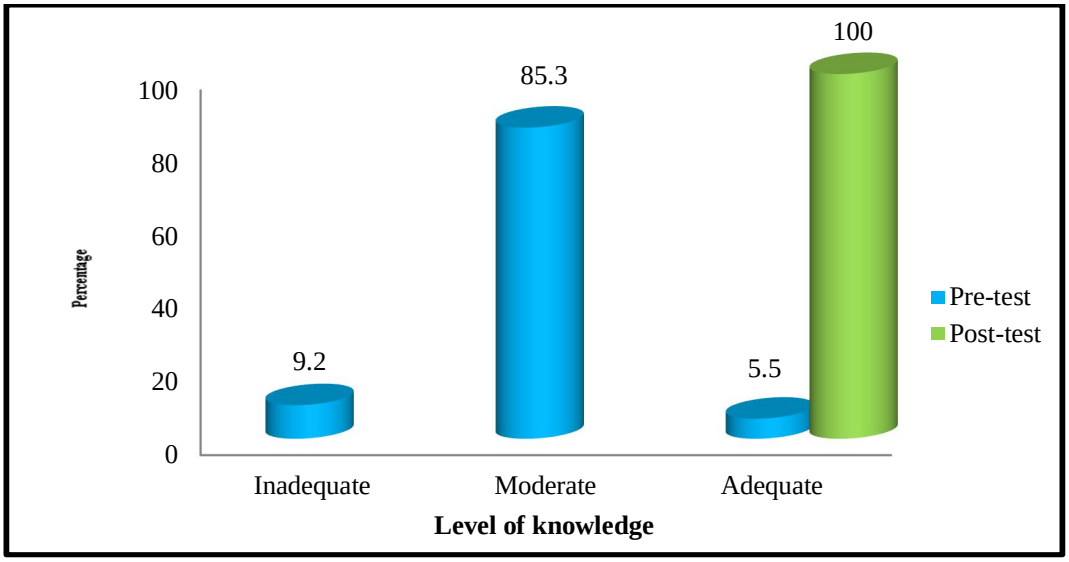


FIGURE 1
Cylindrical bar diagram showing the percentage distribution of pre-test and post-test knowledge regarding pubertal changes among the early adolescent girls before and after administration of structured teaching programme

The data presented in figure 1 shows that out of 109 early adolescent girls in pre-test majority 93(85.3%) of early adolescent girls had moderate knowledge followed by 10(9.2%) early adolescent girls had inadequate knowledge and 6(5.5%) early adolescent girls had adequate knowledge where as in post-test all early adolescent girls i.e. 109(100%) had adequate knowledge regarding pubertal changes keeping no one in inadequate and moderate category of knowledge.

TABLE 2.1

Area wise pre-test and post-test knowledge and gain in score of the early adolescent girls regarding pubertal changes

n=109

Area	Pre-test percentage	Post-test percentage	Gain in Score		
			Actual score	Possible score	Modified score
Area-I	83.18	95.10	11.92	16.82	0.708
Area-II	35.16	75.04	39.88	64.84	**0.615
Area-III	64.67	93.57	28.9	35.33	*0.818

*Areas of maximum modified gain

**Areas of minimum modified gain

The data presented in Table 2.1 showed that the maximum gains score (0.818) was in the area III on management of pubertal changes and minimum gain score (0.615) was in the area II on changes during puberty. Since the modified gain in all areas were higher than 0.05, it can be concluded that there was gain in all areas.

C. Findings related to Effect of structured teaching programme on knowledge regarding pubertal changes among the early adolescent girls

This section presents data of effect of structured teaching programme on knowledge regarding pubertal changes among the early adolescent girls. To establish the effect of structured teaching programme Paired t-test was computed. The Paired t-test was computed on paired data of observations on same subjects before and after the administration of structured teaching programme. The table is presented in Table 3.1 and 3.2.

TABLE 3.1

Effect of structured teaching programme on knowledge regarding pubertal changes among the early adolescent girls in selected schools of Guwahati, Assam

n=109

Level of knowledge	Mean	SD	Mean difference	t- test value	df	'p' value	Inference
Pre-test	9.11	1.307					
			6.82	43.21	108	0.001	*S
Post-test	15.93	1.188					

*p<0.05 level of significance *S= Significant

The data presented in Table 3.1 shows that in post-test mean knowledge score was 15.93±1.188 was higher than pre-test mean knowledge score 9.11±1.307 with mean difference of 6.82. The mean difference between pre-test and post-test knowledge score was tested using paired t test with obtained (t=43.21) at df=108, p=0.001was statistically significant at p<0.01 level of significance.

Findings revealed that there is significant difference in pre-test and post-test knowledge score before and after implementation of structured teaching programme. It depicts that structured teaching programme was effective in increasing the knowledge regarding pubertal changes among the early adolescent girls in selected schools of Guwahati, Assam. Hence null hypothesis H_{01} is rejected and research hypothesis H_1 i.e. there is significant difference between the mean pre-test and post-test knowledge regarding pubertal changes among the early adolescent girls in selected schools of Guwahati, Assam is accepted.

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TABLE 3.2

Area wise pre-test and post-test mean, standard deviation, mean difference and 't' value of the early adolescent girls on knowledge regarding pubertal changes

n=109

Area	Level of knowledge	Mean	SD	Mean difference	't' value	df	'*p*' value	Inference
Area-I	Pre-test	2.494	1.025	0.358	3.3496	108	<0.0010	*S
	Post-test	2.852	0.441					
Area-II	Pre-test	5.267	6.732	5.981	6.7205	108	<0.0001	*S
	Post-test	11.248	6.404					
Area-III	Pre-test	1.293	0.929	0.578	5.8062	108	<0.0001	*S
	Post-test	1.871	0.466					

NS=Non Significant *S= Significant

Table 3.2 illustrates that in Area I, mean post-test knowledge score 2.852±0.441 was higher than pre-test mean knowledge score 2.494±1.025 with mean difference of 0.358 with obtained calculated (t value 3.3496, df= 108, p=0.0010) was found statistically highly significant at 0.05 level of significance.

In Area II, mean post-test knowledge score 11.248±6.404 was higher than pre-test mean knowledge score 5.267±6.732 with mean difference of 5.981 with obtained calculated (t value 6.7205, df= 108, p= 0.0001) was found to be statistically highly significant at 0.05 level of significance.

In Area III, mean post-test knowledge score 1.871±0.466 was higher than pre-test mean knowledge score 1.293±0.929 with mean difference of 0.578 with obtained calculated (t value 5.8062, df= 108, p=0.0001) was found statistically highly significant at 0.05 level of significance.

Findings indicate that structured teaching programme was effective in improving the knowledge regarding pubertal changes among early adolescent girls.

D. Findings related to association between pre-test knowledge regarding pubertal changes among the early adolescent girls with selected demographic variables

This section presents the data of pre-test knowledge regarding pubertal changes among the early adolescent girls with selected demographic variables such as age, educational status, religion, type of family, education of mother, education of father, area of residence and previous source of knowledge on pubertal changes. The chi square value has been compared to determine the association between the pre-test knowledge with selected demographic variables in Table 4.1 to 4.8.

TABLE 4.1

Association between pre-test knowledge regarding pubertal changes among the early adolescent girls with age

n=109

Age in years	Pre-test knowledge			$\chi 2$ value	df	Tabulated value	*p* value	Inference
	Inadequate	Moderate	Adequate					
10-11	5	35	5	5.201	2	5.99	0.074	NS
12-13	5	58	1					
Total	10	93	6					

NS= Non Significant S= Significant

The data presented in Table 4.1 shows that the calculated $\chi 2$ value for df =2 was found to be 5.201 with corresponding '*p*' value 0.074 which is less than the tabulated value 5.99. Thus, the demographic variable i.e. age is found to be non significant at 0.05 level of significance.

TABLE 4.2

Association between pre-test knowledge regarding pubertal changes among the early adolescent girls with educational status

n=109

Educational status	Pre-test knowledge			$\chi 2$ value	df	Tabulated value	*p* value	Inference
	Inadequate	Moderate	Adequate					
Class V	2	24	5					
Class VI	5	20	0					
Class VII	1	26	1	14.36	6	12.59	0.0259	*S
Class VII	2	23	0					
Total	10	93	6					

NS= Non significant *S=Significant

The data presented in Table 4.2 shows that the calculated $\chi 2$ value for df=6 was found to be 14.36 with corresponding tabulated '*p*' value= 0.0259 which is more than the tabulated value 12.59. Thus, demographic variable i.e. educational status is found to be significant at 0.05level of significance.

TABLE 4.3

Association between pre-test knowledge regarding pubertal changes among the early adolescent girls with religion

=109

Religion	Pre-test knowledge			$\chi 2$ value	df	Tabulated value	*p* value	Inference
	Inadequate	Moderate	Adequate					
Hinduism	7	57	6					
Christianity	0	0	0	3.836	6	12.59	0.6989	NS
Islam	3	36	0					
Others	0	0	0					
Total	10	93	6					

NS=Non Significant S= Significant

The data presented in Table 4.3 shows that the calculated $\chi 2$ value for df=6 was found to be 3.836 with corresponding '*p*' value 0.6989 which is less than the tabulated value 12.59. Thus, demographic variable i.e. religion is found to be non significant at 0.05 level of significance.

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Volume 13 Issue VI June 2025- Available at www.ijraset.com

TABLE 4.4
Association between pre-test knowledge regarding pubertal changes among the early adolescent girls with type of family =109

Type of family	Pre-test knowledge			χ2 value	df	Tabulated value	*p* value	Inference
	Inadequate	Moderate	Adequate					
Joint family	2	12	4					
Nuclear family	8	81	2	11.91	2	5.99	0.0026	*S
Total	10	93	6					

NS= Non significant *S= Significant

The data presented in Table 4.4 shows that the calculated χ2 value for df=2 was found to be 11.91 with corresponding *'p'* value 0.0026 which is more than the tabulated value 5.99. Thus, demographic variable i.e. type of family is found to be significant at 0.05 level of significance.

TABLE 4.5
Association between pre-test knowledge regarding pubertal changes among the early adolescent girls with education of mother n=109

Education of mother	Pre-test knowledge			χ2 value	df	Tabulated value	*p* value	Inference
	Inadequate	Moderate	Adequate					
Professional degree	2	14	4					
Graduate	4	25	1					
Intermediate/ Diploma	1	23	1					
High school	2	18	0	12.74	12	21.03	0.3882	NS
Middle school	0	6	0					
Primary school	0	0	0					
No formal education	1	7	0					
Total	10	93	6					

NS=Non Significant S=Significant

The data presented in Table 4.5 shows that χ2 value for df=12 was found to be 12.74 with corresponding '*p*' value 0.3882 which is less than the tabulated value 21.03. Thus, demographic variable i.e. education of mother is found to be non significant at 0.05 level of significance.

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TABLE 4.6

Association between pre-test knowledge regarding pubertal changes among the early adolescent girls with education of father

n=109

Education of father	Pre-test knowledge			χ2 value	df	Tabulated value	*p* value	Inference
	Inadequate	Moderate	Adequate					
Professional degree	2	23	5					
Graduate								
Intermediate/ Diploma	5	39	1					
High school	2	16	0					
Middle school								
Primary school	1	15	0	10.58	12	21.03	0.5652	NS
No formal education	0	0	0					
	0	0	0					
	0	0	0					
Total	10	93	6					

NS=Non Significant S=Significant

The data presented in Table 4.6 shows that χ2 value for df=12 was found to be 10.58 with corresponding '*p*' value 0.5652 which is less than the tabulated value 21.03. Thus, demographic variable i.e. education of father is found to be non significant at 0.05 level of significance.

TABLE 4.7

Association between pre-test knowledge regarding pubertal changes among the early adolescent girls with area of residence

n=109

Area of residence	Pre-test knowledge			χ2 value	df	Tabulated value	*p* value	Inference
	Inadequate	Moderate	Adequate					
Urban	10	93	6					
Rural	0	0	0	0	2	5.99	1.000	NS
Total	10	93	6					

NS=Non Significant S= Significant

The data presented in Table 4.7 shows that χ2 value for df=2 was found to be 0 with corresponding value '*p*' value 1.000 which is less than the tabulated value 5.99. Thus, demographic variable i.e. area of residence is found to be non significant at 0.05 level of significance.

TABLE 4.8

Association between pre-test knowledge regarding pubertal changes among the early adolescent girls with previous source of knowledge on pubertal changes

Previous source of knowledge on pubertal changes	Pre-test knowledge			χ2 Value	df	Tabulated value	*p* value	Inference
	Inadequate	Moderate	Adequate					
Yes	2	20	4	6.419	2	5.99	0.040	*S
No	8	73	2					
Total	10	93	6					

NS=Non Significance *S=Significant

The data presented in Table 4.8 shows that the calculated $\chi 2$ value for df=2 was found to be 6.419 with corresponding '*p*' value 0.040 which is more than the tabulated value 5.99. Thus, demographic variable i.e. previous source of knowledge on pubertal changes is found to be significant at 0.05 level of significance.

The overall statistical findings of data presented in Table 5.1- 5.8 shows that there is significant association between pre-test knowledge regarding pubertal changes among the early adolescent girls with demographic variables in terms of educational status ($\chi 2$ =14.36 and p value=0.0259), type of family ($\chi 2$ =11.91 and p value=0.0026) and previous source of knowledge on pubertal changes ($\chi 2$ = 6.419 and p value=0.040) and there is no significant association between pre-test knowledge with demographic variables in terms of age, religion, education of mother, education of father and area of residence. Hence, the null hypothesis H_{02} is rejected and the research hypothesis H_2 i.e. there is significant association between the pre-test knowledge regarding pubertal changes among the early adolescent girls with selected demographic variables is accepted for the demographic variables in terms of educational status, type of family and previous source of knowledge regarding pubertal changes.

IV. CONCLUSION

The results of this study indicate that a structured teaching programme about pubertal changes in early adolescent girls was successful in raising girls knowledge of these changes. It is crucial that parents and medical professionals take the lead in teaching early adolescent girls about the changes that come with puberty in order to raise awareness and encourage healthy lifestyle choices. Thus, the study concluded that the structured teaching programme was effective in increasing the early adolescent and there was found to be significant association with the demographic variables such as educational status, type of family and previous source of knowledge regarding pubertal changes.

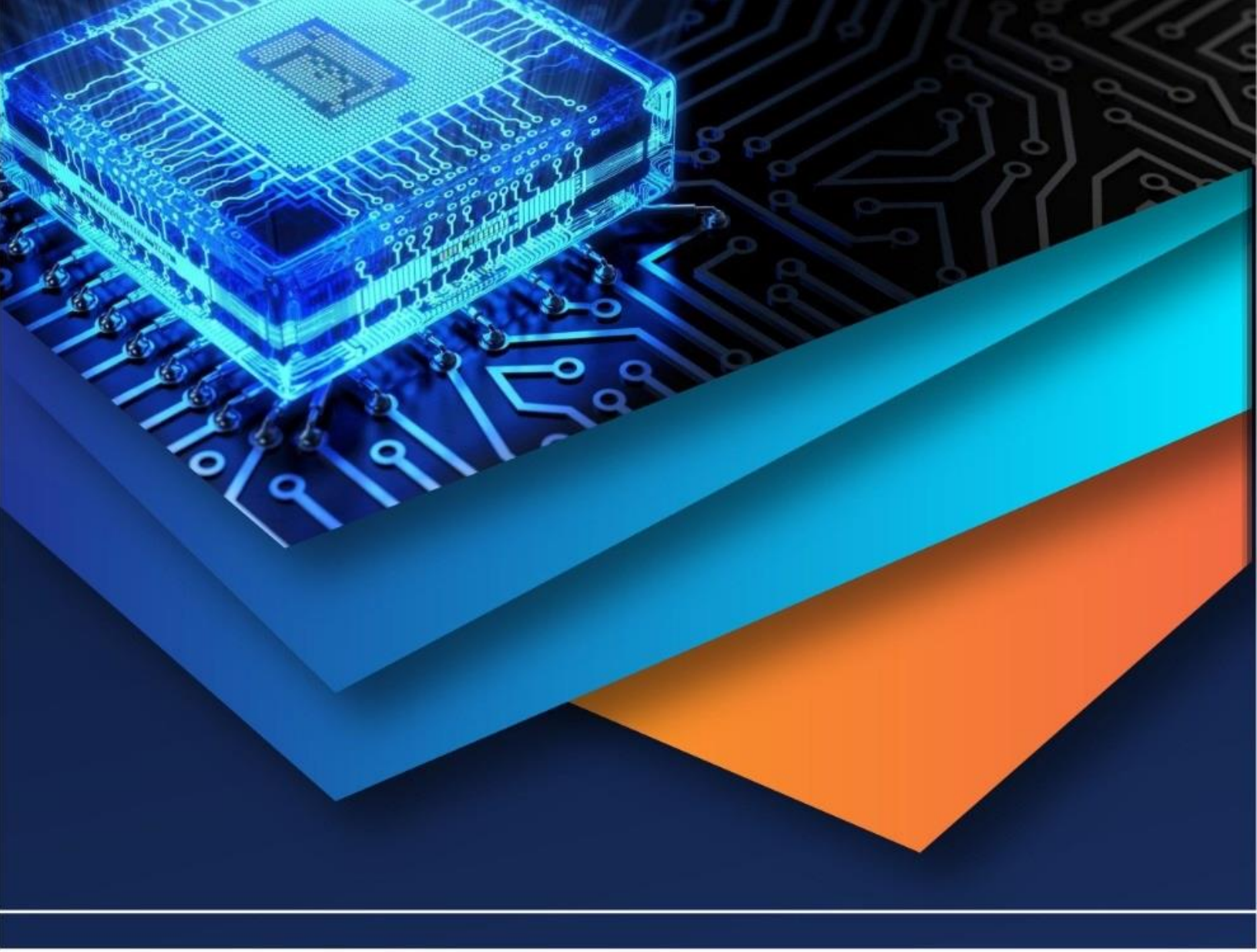
V. RECOMMENDATION

On the basis of the study findings, the following recommendations are made for further study:

1) A similar study can be conducted on a larger sample with different demographic variables.
2) An exploratory study can be conducted to identify the knowledge and practice of early adolescent girls regarding pubertal changes.
3) A follow up study of STP can be carried out to find the effectiveness in terms of retention of knowledge.
4) A comparative study can be done on urban and rural early adolescent girls.
5) A similar study can be conducted using other strategies like booklets and pamphlets

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