Assessment of Effectiveness of Structured Teaching Program on Knowledge Regarding Pubertal Changes among Pre-Adolescent Girls in Selected Schools, Darjeeling District, West Bengal

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Abstract—**A quasi-experimental study to assess the effectiveness of structured teaching program on knowledge regarding pubertal changes among pre-adolescent girls in selected schools, Darjeeling district, West Bengal. The study's objective to evaluate the effectiveness of structured teaching program regarding pubertal changes among pre-adolescent girls. The investigator adopted one-group pretest -post-test design. Non-probability purposive sampling technique was adopted to select 175 pre-adolescent girls. The selected tools were semi structured questionnaire on demographic variables and structured knowledge questionnaire regarding pubertal changes. The study findings revealed that mean post-test knowledge score (16.22) was higher than mean pre-test knowledge score (6.38) with mean difference of 9.84 which was found statistically significant by 't' value ['t'(df.174) =57.693] p<0.05 level of significance indicating that structured teaching program was effective in increased knowledge score. Study had implications in nursing practice, community settings, nursing education and nursing research. A similar study can also be conducted with larger sample in different setting or as a comparative study between urban and rural community.**

Index Terms—**Assess, effectiveness, structured teaching program, knowledge, pubertal changes, pre-adolescent girls.**

I. INTRODUCTION

Back ground of the study
Pre-adolescent stage 9-12 years children often start to grow quickly. They also begin notice other body changes, including hair growth under the arms and near the genitals area and development in females. They usually start a year or two earlier in girls than boys.

According to APA (2023) puberty is the stage of development when the genital organs reach maturity and secondarysex characteristicsbegin to appear and signaling the start of adolescence.

According to WHO (2021) globally, 10-19 years of children are experiences mental disorder. 13% disease occurs in this stage due to pubertal changes, which becomes a global burden. Depression, behaviour problem and anxiety are main causes of illness and disability in adolescent. The consequences of failing to deal with mental health conditions extend to adulthood, impairing both physical and mental health and limiting opportunities to lead fulfilling lives as adults.

According to UNICEF (2015) data in India about 25% of population constitutes of adolescent girls have poor information about reproductive health among them 12% of adolescent girls suffer from physical and psychological problems.

Puberty is a period of time when a girl becomes sexually mature. It is occurred between the ages of 10 to 14 in girls. First sign of puberty in girls generally development of breast buds then hair growth in pubic area, armpit and menstruation usually happens last. Pubertal growth first starts from the extremities, legs and arms during the early stages of adolescence and changes occur in facial configurations for both genders. Both genders undergo with this change. In females, layer of subcutaneous fat develops which causes the rounding and softening of contours the face and body. Most of the problems begin from ignorance

of body changes and natural process which occur during puberty. It is important for pre-adolescent to understand themselves and the functions of their body so that they can cope up with the changes that are taking place within them and develop healthy attitude to sex, marriage, parenthood and family.

With this background, the study is aimed to assess the effectiveness of structured teaching program on knowledge regarding pubertal changes among pre-adolescent girls in selected schools, Darjeeling district, West Bengal.

II. NEED FOR THE STUDY

Indian girls begin puberty at ages 10–11 years and complete puberty at ages 15–17 years.The foremost landmark of puberty is menarche or onset of menstruation in girls, which occurs aged between 12 and 13.

According to Howkins, the onset of menarche can depend on various factors like heredity, environment, nutrition, stress, childhood illness, exercises, dieting and socio-economic factors. It is a period of social, psychological, economic and biological transitions for many pre-adolescent girls it involves demanding emotional challenges.It is a period of confusion and conflict.It is often difficult for young people to fully comprehend these changes as they are occurring.

The most dramatic changes related to adolescence are physical changes that occur as a part of pubertal process. Puberty includes maturation, hormonal and growth process that occur when the reproductive organs begin to function and secondary sex characteristics develop. During puberty growth is rapid, disorganized and confusing, compared to the relatively stable earlier period of childhood. It is a turbulent period of development, when change of puberty occurs significantly. When pubescent children are not informed of the changes that take place at puberty, it is traumatic to undergo these changes and may develop unfavourable attitudes towards these changes.

According to FOGSI (Federation of Obstetrics and Gynecologists Society of Indian) conducted a survey, age of attaining sexual maturity among girls has dropped from 13 to11years in India. So far we had accepted the global average, approximate13years. More than 80% of girls in cities are reaching puberty around the age of 11 years.

So here as a researcher feel the need to assess the knowledge among pre-adolescent girls in the age group of 9-12years regarding pubertal changes and there by improve the knowledge level of pre-adolescent girls regarding the pubertal changes in the aspects of physical, social and emotional changes. This structured teaching program regarding pubertal changes would help them to acquire adequate knowledge, create positive attitude and healthy practices towards pubertal changes.

Based on the above-mentioned studies, opinions and facts along with researchers own observation, investigator felt need to conduct a study on this topic.

Objectives of the study

1. To develop and validate the structured teaching program on knowledge regarding pubertal changes among pre-adolescent girls in selected schools, Darjeeling district, West Bengal.
2. To assess the level of pre-test knowledge regarding pubertal changes among pre-adolescent girls in selected schools, Darjeeling district, West Bengal.
3. To assess the level of post-test knowledge regarding pubertal changes among pre-adolescent girls in selected schools, Darjeeling district, West Bengal.
4. To evaluate the effectiveness of structured teaching program in terms of change in knowledge score regarding pubertal changes among pre-adolescent girls in selected schools, Darjeeling district, West Bengal.

III. METHODOLOGY

This study followed a quasi-experimental research approach & one-group pre-test -post-test research design. Permission was taken for conducting the final study from the Instituitional Ethics

Committee. Data was collected through semi-structured questionnaire on demographic

variables and structured questionnaire of knowledge on pubertal changes by paper pencil

method from 175 samples of Jyotsnamoyee Girls High School, Siliguri, Dist- Darjeeling.

It took approximate 30 minutes to complete the questionnaires. In the same day structured teaching program given on pubertal changes, it took approximate 45 minutes.

On the 8th day data was collected on demographic variables and knowledge on pubertal changes
by paper pencil method using the same questionnaires.
It took approximate 30 minutes to complete the questionnaires. The information gathered was organized & examined.

IV. DATA ANALYSIS & INTERPRETATION

Table 1 Frequency and percentage wise distribution of sample characteristics of pre-adolescent girls in terms of age in years, educational status, religion, type of family, birth order

N=175

Characteristics	Frequency (f)	Percentage (%)
Age in years		
11 years	132	75.43
12 years	43	24.57
Educational status		
Class VI	175	100
Religion		
Hindu	165	94.29
Christian	3	1.71
Muslim	7	4.0
Others	Nil	--
Type of family		
Joint family	92	52.57
Nuclear family	83	47.43
Birth order		
1st child	108	61.72
2nd child	52	29.71
3rd child	15	8.57
4th child	Nil	--

Table 2 Frequency and percentage wise distribution of sample characteristics of pre-adolescent girls in terms of education of mother, education of father, occupation of mother, occupation of father, area of residence

N=175

Characteristics	Frequency (f)	Percentage (%)
Education of mother		
No formal education	10	5.71
Primary	81	46.29
Secondary	52	29.71
Graduate	32	18.29
Education of father		
No formal education	12	6.86
Primary	62	35.43
Secondary	66	37.71
Graduate	35	20.00
Occupation of mother		
Daily wage earner	46	26.29
Private employee	9	5.14
Government employee	7	4.00
Homemaker	113	64.57
Occupation of father		
Daily wage earner	117	66.86
Private employee	38	21.71
Government employee	20	11.43
Unemployed	Nil	--
Area of residence		
Urban	175	100
Rural	Nil	--

Table 3 Frequency and percentage wise distribution of level of knowledge regarding pubertal changes among pre-adolescent girls in pre-test

N=175

Level of knowledge	Frequency (f)	Percentage (%)
High level (16 - 20)	Nil	--
Moderate level (12-15)	Nil	--
Low level (<12)	175	100

Maximum possible score=20   Minimum possible score=0

Table 4 Range of possible score, range of obtained score, mean, median and standard deviation of knowledge regarding pubertal changes among pre-adolescent girls in pre-test

N=175

Variable	Range of possible score	Range of obtained score	Mean	Median	SD
Knowledge score in pre-test	0-20	1-11	6.38	7	3.13

Table 5 Frequency and percentage wise distribution of level of knowledge regarding pubertal changes among pre-adolescent girls in post-test

N=175

Level of knowledge	Frequency (f)	Percentage (%)
High level (16 - 20)	110	62.86
Moderate level (12-15)	62	35.43
Low level (<12)	03	1.71

Maximum possible score=20   Minimum possible score=0

Table 6 Range of possible score, range of obtained score, mean, median and standard deviation of knowledge regarding pubertal changes among pre-adolescent girls in post-test

N=175

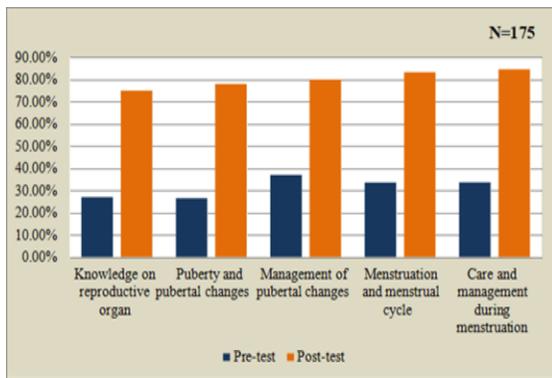| Variable	Range of possible score	Range of obtained score	Mean	Median	SD
Knowledge score in post-test	0-20	9-20	16.22	16	2.32

Figure 1 Bar graph comparing area wise knowledge score of pre-test and post-test on administration of structured teaching program among pre-adolescent girls

The bar graph in figure 4 shows that pre-adolescent girls were having maximum knowledge in pre-test 37% in management of pubertal changes whereas the mean post-test highest score 84.67% was from the care and management during menstruation area. In puberty and pubertal changes, the pre-adolescent scored the lowest 26.50% in pre-test but in post-test the mean score had increased to 78% in this area. So, the mean percentages of post-test knowledge score in all content areas are higher than the mean percentage of pre-test knowledge score.

Table 7 Mean, mean difference, median, standard deviation and 't' value of pre-test and post-test knowledge score of pre-adolescent girls regarding pubertal changes

N = 175

Knowledge score	Mean	Mean Difference	Median	SD	't' value
Pre-test	6.38		7	3.13	
		9.84			57.693*
Post-test	16.22		16	2.32	

't' df (174) = 1.97, p<0.05* Significant

Data presented in table7 showed that the mean post-test knowledge score 16.22 among pre-adolescent girls are higher than the mean pre-test knowledge score 6.38 with a mean difference of 9.84. The median of post-test knowledge score 16 which is higher than median pre-test knowledge score 7 and it also found statistically significant as evident by 't' value 57.693 which is higher than t(174) =1.97 at 0.05 level of significance.

The obtained mean differences between post-test and pre-test knowledge score among pre-adolescent girls are not by chance, it is true difference. So null hypothesis is rejected and research hypothesis is accepted.
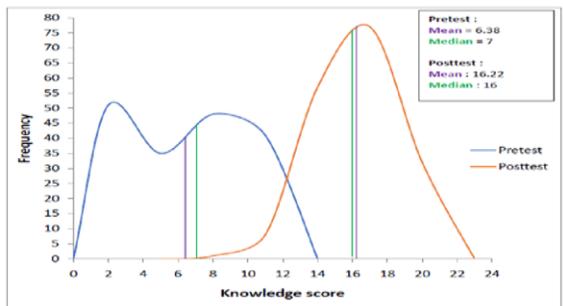

Figure 2 Frequency polygon showing the distribution of pre-test and post-test knowledge of pre-adolescent girls regarding pubertal changes

The frequency polygon in figure 5 shows the distribution of pre-test and post-test knowledge score of pre-adolescent girls regarding pubertal changes. The pre-test knowledge score range was 1-11 with a mean of 6.38 and median of 7, maximum frequency 51 which lies in class interval of 1-3. In the distribution as the mean lies left to the median, so the distribution is negatively skewed and the skewness is -0.594. In the post-test, knowledge score range was 9-20, with the mean of 16.22 and median of 16, maximum frequency of 77 which lies in class interval of 16-18. In this, mean lies right to the median, so the distribution is positively skewed and the skewness is 0.284.

The figure also shows that maximum post-test knowledge scores of participants lie in the right side of pre-test knowledge scores indicating that post-test knowledge score of pre-adolescent girls had increased after administration of the structured teaching program regarding pubertal changes in pre-adolescent girls.

V. DISCUSSION

Knowledge on structured teaching program regarding pubertal changes among pre-adolescent girls

- Frequency and percentage wise distribution of pre-test knowledge score shows that 100% pre-adolescent girls have low level knowledge score (<12) and post-test knowledge score shows that the majority 62.86% pre-adolescent girls have high level knowledge score (16-20).

- The maximum knowledge gain 84.67% of the pre-adolescent girls in the area of care and management during menstruation.

Findings related to effect of structured teaching program

- Mean post-test knowledge score 16.22 are higher than the mean pre-test knowledge score 6.38 with maximum possible score of 20.

- The calculated 't'value 57.693 is more than the table value 1.97 at 0.05 level of significance. This shows that the mean difference between pre-test and post-test knowledge score is a true difference and not by chance. Hence the researcher rejected the null hypothesis and accepted the research hypothesis. So, there was significant gain in knowledge scores among pre-adolescent girls regarding structured teaching program of pubertal changes.

- Hence it could be concluded that the structured teaching program was effective in increasing the knowledge of pre-adolescent girls.

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