

Effectiveness of Structured Teaching Programme on Knowledge and Attitude Regarding Pubertal Changes Among Adolescents in Selected Schools of Shimla-HP: A Quasi- Experimental Study

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Abstract: Background: Puberty is a developmental process involving hormonal changes, physical growth, maturation of reproductive organs, and development of secondary sexual characteristics. Adolescence is a crucial period marked by physical, cognitive, and psychosocial changes. Aim: To assess the effectiveness of a Structured Teaching Programme (STP) on knowledge and attitude regarding pubertal changes among adolescents in selected schools of Shimla, Himachal Pradesh. Methodology: A quantitative approach with a quasi-experimental control group pre-test and post-test design was adopted. 80 adolescents aged 10–14 years were selected using non-probability convenient sampling. Data were collected using a self-structured knowledge questionnaire and a five-point Likert attitude scale. The post-test was conducted seven days after the pre-test. Results: In the experimental group, 67.5% of participants had average knowledge before the intervention, while 60% achieved very good knowledge afterward. Positive attitude increased from 27.5% to 90%. Mean knowledge scores increased from 15.60 ± 5.500 to 31.85 ± 4.117 ($t = 15.596$, $p < 0.001$). Mean attitude scores increased from 98.55 ± 18.207 to 128.68 ± 10.016 ($t = 10.868$, $p < 0.001$). The findings demonstrated that the STP significantly improved knowledge and attitude regarding pubertal changes among adolescents.

Keywords: Adolescents, Structured Teaching Programme, Knowledge, Attitude, Pubertal Changes

1. Introduction

Puberty is the process of physical changes by which a body mature into an adult body capable of sexual reproduction to enable fertilization. It is initiated by hormonal signals from the brain to the gonads, the ovaries in a girl and the testes in boys. In response to the signals, the gonads produce hormones that produce & stimulate libido & the growth, function & transformation of the brain, bone, muscles, blood, muscles, blood, skin, hair, breast & sexual organs.[1] It begins when an area of the brain called hypothalamus starts signaling to the rest of the body that is the time to develop adult characteristics. It sends these signals through hormones, which cause reproductive organs the ovaries in female and testes in males to produce a range of other hormones.[2]

Adolescents is a transition period from childhood and characterized by a spurt in physical, emotional and mental growth with a change from complete dependence to relative independence. The journey from childhood to adolescence is very challenging. Between the ages of 10 to 17 years, there are major changes in physical, cognitive, social and moral development. It refers to the maturation, hormonal, and growth process that occur when the reproductive organ begin to function and secondary sex characteristics develop. Puberty is a time when children undergo a series of important, natural, and healthy changes.[3]

Role modelling body acceptance is crucial during puberty because children may compare their bodies to those of their friends and may worry about their own growth, size and shape. Teens should be commended for their hard work, accomplishments and descent conduct.[4] The first sign indicates the child is going through puberty are usually

smaller physical changes. Smaller bodily changes are typically the first indication that a youngster is going through puberty. For boys and girls, they are different. It usually begins earlier for girls than for boys. Menstruation, pubic and armpit hair growth, and breast development are all signs of puberty in girls. Boys often begin puberty a little later than girls. Testicles and penis growth, muscle growth, voice deepening, and facial hair development are all signs of puberty in boys.[5]

Due to lack of proper knowledge regarding pubertal changes, adolescent boys may have increased anxiety, excessive worry, fear, nervousness, restlessness, extreme stress and dreams about future which may lead to many complications such as drug abuse, underage and teenage drinking, drunk driving, smoking, rebellious behavior, peer pressure, bullying, lying, body issues and mental health issues. Knowledge and attitude regarding pubertal changes are essential determinants of how adolescents perceive and cope with this developmental phase. Adequate knowledge promotes positive attitudes, healthy practices and better adjustment, whereas inadequate knowledge can lead to misconceptions, poor hygiene practices, and psychological distress.[7]

2. Objectives

- 1) To assess the knowledge and attitude regarding pubertal changes among adolescents in selected schools of Shimla – HP.
- 2) To evaluate the effectiveness of structured teaching programme on knowledge and attitude regarding pubertal changes among adolescents in selected schools of Shimla –HP.

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- 3) To determine the correlation between knowledge and attitude regarding pubertal changes among adolescents in selected schools of Shimla – HP.
- 4) To find out the association of level of knowledge and attitude regarding pubertal changes among adolescents with their selected demographic variables.

3. Methodology

3.1 Study design and setting

A quantitative approach with a quasi-experimental control group pre-test and post-test design was adopted. Knowledge and Attitude was assessed before the intervention, the structure teaching program was administered, and knowledge was reassessed after one week. The study was conducted at Government Senoir Secondary School, Laalpani and Sanjauli, Shimla HP.

3.2 Participants and Sampling

The target population consisted of adolescents aged 10 – 14 years residing in District Shimla, while the accessible population included adolescents within the same age group enrolled in the selected school. A total of 80 adolescents were selected through non – probability convenient sampling technique. The inclusion criteria comprised adolescents aged 10 – 14 years who were regularly enrolled in the selected school, present at the time of data collection, capable of understanding and answering the questionnaire, and willing to participate with appropriate informed assent and/or consent. Adolescents who were unwilling to participate, withdrew during the study, had documented cognitive, learning, or communication impairments that interfered with their participation, or were unable to complete the data collection procedure were excluded from the study.

3.3 Intervention and Procedure

A structured teaching programme on pubertal changes was administered after the pre – test. the post – test was conducted on the seventh day following the intervention.

3.4 Ethical Consideration

Permission was obtained from the institutional ethics committee of Sister Nivedita Government Nursing College, IGMC, Shimla, and from the concerned school authorities. Written informed consent was obtained from participants. the purpose of the study was explained and confidentiality of responses was maintained.

3.5 Statistical analysis

Descriptive statistics, including frequency, percentage, mean, and standard deviation, were used to summarize the socio-demographic characteristics and knowledge and attitude scores of the participants. The paired t-test was used to compare the pre-test and post-test knowledge and attitude scores within the experimental and control groups. The independent (unpaired) t-test was used to compare the post-test scores between the experimental and control groups. The chi-square test was used to determine the association between knowledge and attitude levels and selected socio-demographic variables. Pearson's correlation coefficient was used to assess the relationship between knowledge and attitude scores. Statistical significance was considered at $p \leq 0.05$.

4. Analysis and Interpretation of Data

Socio-demographic Characteristics of the Participants

Among the 80 adolescents, the majority of participants in both the experimental (65%, $n = 26$) and control (55%, $n = 22$) groups were aged 10–13 years. Females constituted the majority of the experimental group (52.5%, $n = 21$), whereas males predominated in the control group (57.5%, $n = 23$). Most participants belonged to the Hindu religion in both the experimental (90%, $n = 36$) and control (97.5%, $n = 39$) groups. The majority of participants resided in urban areas, accounting for 65% ($n = 26$) of the experimental group and 82.5% ($n = 33$) of the control group. Joint families were the most common family type in both groups, comprising 57.5% ($n = 23$) of the experimental group and 60% ($n = 24$) of the control group. Similarly, most participants followed a vegetarian dietary pattern in the experimental (65%, $n = 26$) and control (70%, $n = 28$) groups. Regarding monthly family income, the largest proportion of participants in the experimental group belonged to the ₹10,001–20,000 income category (37.5%, $n = 15$), whereas in the control group, the largest proportion had a monthly family income below ₹10,000 (42.5%, $n = 17$). Regarding maternal education, primary education was the most common level in the experimental group (32.5%, $n = 13$), while higher education was most common in the control group (27.5%, $n = 11$). Regarding paternal education, higher education was the most common level in both the experimental (30%, $n = 12$) and control (22.5%, $n = 9$) groups. Previous knowledge regarding pubertal changes was absent among 55% ($n = 22$) of participants in the experimental group, whereas 70% ($n = 28$) of participants in the control group reported having previous knowledge. Books were the most frequently reported source of information in both the experimental (22.5%, $n = 9$) and control (35%, $n = 14$) groups.

4.1 Findings related to knowledge and attitude

Table 1: Distribution of Participants according to Knowledge Level Before and After Intervention, $N = 80$

Category	Score	Experimental				Control			
		Pre – Test		Post – Test		Pre – Test		Post – Test	
		(f)	(%)	(f)	(%)	(f)	(%)	(f)	(%)
Very Good	31 – 40	-	-	24	60	4	10	6	15
Good	21 – 30	8	20	16	40	11	27.5	12	30
Average	11 – 20	27	67.5	-	-	15	37.5	16	40
Poor	0 – 10	5	12.5	-	-	10	25	6	15

Maximum = 40

Minimum = 0

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In pre – test experimental group most participants had average (67.5%) and (12.5%) poor knowledge, while after the intervention, the majority (60%) reached very good knowledge and (40%) achieved good knowledge whereas, in control group most participants had average knowledge

(37.5%) while after no intervention, the majority (40%) reached average knowledge and (30%) achieved good knowledge categories, indicating a marked and consistent improvement in knowledge due to teaching intervention.

Table 2: Distribution of participants according to attitude levels before and after intervention, N=80

Category	Score	Experimental				Control			
		Pre – Test		Post – Test		Pre – Test		Post – Test	
		(f)	(%)	(f)	(%)	(f)	(%)	(f)	(%)
Positive	113 – 150	11	27.5	36	90	12	30	17	42.5
Neutral	38 – 112	29	72.5	4	10	28	70	23	57.5
Negative	30 – 37	-	-	-	-	-	-	-	-

Maximum=150

Minimum=30

In pre – test, experimental group the majority of participants had neutral attitude (72.5%) and positive attitude (27.5%). following the intervention, (90%) attained positive attitude and (10%) had neutral attitude with no one remaining in the negative attitude categories whereas, control group the majority of participants had neutral attitude (70%) and positive attitude (30%). following the no intervention, (57.5%) attained neutral attitude and (42.5%) had positive

attitude with no one remaining in the negative attitude categories.

4.2 Findings related to effectiveness of Structured Teaching Programme

Comparison of pre – test post – test scores

Group	N	Pre – test mean $\pm$ SD	Post – test mean $\pm$ SD	Mean difference	Paired 't' test	P – value
Experimental	40	15.60 $\pm$ 5.500	31.85 $\pm$ 4.117	16.25	15.596***	<0.001
Control	40	17.85 $\pm$ 8.678	19.00 $\pm$ 8.838	1.15	1.975	0.0554

The experimental group showed a statistically highly significant increase in knowledge score ($p < 0.001$). The increase in the control group was not statistically significant at the 0.05 level ($p = 0.0554$).

Group	N	Pre – test mean $\pm$ SD	Post – test mean $\pm$ SD	Mean difference	Paired 't' test	P – value
Experimental	40	98.55 $\pm$ 18.207	128.68 $\pm$ 10.016	30.13	10.868***	<0.001
Control	40	104.10 $\pm$ 18.064	108.50 $\pm$ 17.306	4.40	1.510	0.139

The experimental group showed a statistically highly significant increase in attitude score ($p < 0.001$), whereas the change in the control group was not statistically significant ($p = 0.139$).

Post – test comparison between group

Outcome	Experimental Post – test mean $\pm$ SD	Control Post – test mean $\pm$ SD	Unpaired 't' test	P – value
Knowledge	31.85 $\pm$ 4.117	19.00 $\pm$ 8.838	8.336	<0.001
Attitude	128.68 $\pm$ 10.016	108.50 $\pm$ 17.306	6.381	<0.001

Post-test scores were significantly higher in the experimental group than in the control group for both knowledge and attitude ($p < 0.001$).

4.3 Correlation between Knowledge and Attitude Scores

Pearson's correlation analysis revealed a significant positive correlation between pre-test knowledge and post-test attitude scores ($r=0.322$, $p=0.043$), post-test knowledge and post-test attitude scores ($r=0.313$, $p=0.049$), and pre-test and post-test attitude scores ($r=0.341$, $p=0.031$). The remaining correlations were not statistically significant.

4.4 Association between Demographic Variables and Knowledge and Attitude

The analysis of association between demographic variables and knowledge scores revealed that, in the experimental group, pre-test knowledge was significantly associated with age, gender, father's educational qualification, and source of information, whereas no significant association was found between demographic variables and post-test knowledge. In the control group, pre-test knowledge was significantly

associated with age and gender, while post-test knowledge was associated with previous knowledge regarding pubertal changes.

Regarding attitude scores, a significant association was observed between age and pre-test attitude in the experimental group. Post-test attitude was significantly associated with the educational qualifications of the mother and father. However, no significant association was found between demographic variables and pre-test or post-test attitude scores in the control group.

5. Discussion

Objective 1: To assess the knowledge and attitude regarding pubertal changes among adolescents in selected schools of Shimla – HP.

The study results revealed that in pre – test of experimental group 0 (0.0%) had very good knowledge, 8 (20%) had good

knowledge, 27 (67.5%) had average knowledge, 5 (12.5%) had poor knowledge. In control group 4 (10%) had very good knowledge, 11 (27.5%) had good knowledge, 15 (37.5%) had average knowledge, 10 (25%) had poor knowledge. In pre – test of experimental group, 0 (0.0%) had negative attitude, 29 (72.5%) had neutral attitude, 11 (27.5%) had positive attitude. In control group, 0 (0.0%) had negative attitude, 28 (70%) had neutral attitude, 12 (30%) had positive attitude. Thus, it showed that majority of the participants had good knowledge with neutral attitude.

Objective 2: To evaluate the effectiveness of structured teaching programme on knowledge and attitude regarding pubertal changes among adolescents in selected schools of Shimla –HP.

In post – test knowledge score of experimental group 24 (60%) had very good knowledge, 16 (40%) had good knowledge, 0 (0.0%) had average knowledge, 0 (0.0%) had poor knowledge. In control group 6 (15%) had very good knowledge, 12 (30%) had good knowledge, 16 (40%) had average knowledge, 6 (15%) had poor knowledge. In post – test attitude score of experimental group, 0 (0.0%) had negative score, 4 (10%) had neutral score, 36 (90%) had positive score. In control group, 0 (0.0%) had negative score, 23 (57.5%) had neutral score, 17 (42.5%) had positive score.

6. Conclusion

The study concluded that the Structured Teaching Programme was effective in improving knowledge and attitude regarding pubertal changes among adolescents. The experimental group showed a marked improvement in knowledge, with the post-test mean score increasing to 31.85 compared with 19.00 in the control group. Similarly, the mean attitude score increased to 128.68 in the experimental group compared with 108.50 in the control group. The percentage of adolescents with positive attitude increased from 27.5% to 90% after the intervention.

The findings demonstrate that structured teaching is an effective approach for improving adolescents understanding and positive attitude towards pubertal changes.

7. Limitations of the Study

- 1) The study was conducted in selected schools of Shimla, Himachal Pradesh. Therefore, generalization of findings is limited.
- 2) The sample size was limited, which may affect the wider applicability of the findings.
- 3) The study included only adolescents studying in selected schools and excluded adolescents from other educational settings.
- 4) The duration of the study was short, which may have influenced the findings.

8. Implications

The findings of the present study have implications for nursing education, nursing practice, nursing administration, and nursing research. Nursing education should emphasize adolescent development, pubertal changes, reproductive health, and counseling skills. Nurses should conduct school-based health education programmes to improve adolescents'

knowledge and attitudes regarding pubertal changes. Nursing administrators should ensure adequate educational resources, staff training, and coordination between schools and healthcare professionals. Further research should evaluate the effectiveness of educational interventions and explore factors influencing adolescents' knowledge and attitudes. These measures may promote positive attitudes and healthy adjustment to pubertal changes among adolescents.

9. Recommendations

- 1) Similar studies can be replicated on a larger sample size to generalize the findings.
- 2) Comparative studies can be conducted between male and female adolescents regarding knowledge and attitude towards pubertal changes.
- 3) Similar studies can be conducted in rural and urban schools to assess differences in awareness levels.
- 4) Longitudinal studies can be carried out to assess retention of knowledge and attitude among adolescents after educational intervention.
- 5) Similar studies can be conducted among college students and adolescents from different educational backgrounds.

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