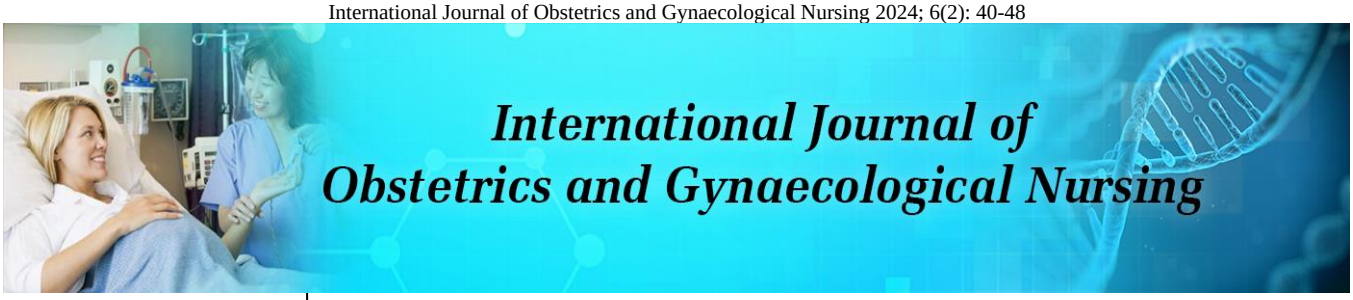

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Bithika Bar
Passed MSc Nursing from College of Nursing Murshidabad Medical College and Hospital, Murshidabad, West Bengal, India

Chaitali Biswas
Principal, College of Nursing, Tata Medical Center, Kolkata, West Bengal, India

Corresponding Author:
Bithika Bar
Passed MSc Nursing from College of Nursing Murshidabad Medical College and Hospital, Murshidabad, West Bengal, India

Effect of teaching programme on knowledge regarding reproductive health problems among school girls in selected Higher Secondary school of Murshidabad, West Bengal

Bithika Bar and Chaitali Biswas

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Abstract
Aim: To assess the pre-test and post-test knowledge score on reproductive health problems among school girls in experimental and control group**;** evaluate the effect of teaching programme on reproductive health problems among school girls between experimental and control group and find out the association of pre-test knowledge score on reproductive health problems with the selected demographic variables among school girls in experimental and control group.
Design: "Pre-test-post-test control group Quasi-experimental research design"
Methods: Ludwig von Bertalanffy General system theory was used to assess the effect of teaching programme on knowledge regarding reproductive health problems among school girls. Probability Disproportional stratified random sampling technique was used to select 287 school girls among which 143 school girls were in experimental group & 144 in control group with the age group between 14-18 years, who were studying in class IX –XI from two selected higher secondary school of Murshidabad, West Bengal one for experimental and another one for control group.Data was collected through valid & reliable demographic proforma & structured knowledge questionnaire.
Results: Majority (59.44%) in experimental group & (62.50%) in control group of the school girls belonged to the 14-15 years age group. Majority (60.84%) in experimental group & (56.25%) in control group of the school girls were belonged from rural community. Majority (58.74%) the school girls in experimental group & (57.64%) the school girls in control group did not received information previously regarding reproductive health problems. Most (38.98%) in experimental group & (42.62%) in control group of the school girls had received information regarding reproductive health problems from their mother and friends respectively. The study findings revealed that (63.7%) in experimental group had poor knowledge & only (36.3%) had average knowledge in pretest whereas after administering teaching programme (67.8%) & (32.2%) had average & excellent knowledge in post-test. There was significant improvement in mean post-test knowledge score 29.4 in experimental group was significantly higher than the mean post-test knowledge score 17.2 in control group. The teaching programme was effective in terms of gain in knowledge as the obtained t value 33.66 at df (285) at 0.05 level of significance was higher than the tabulated t value (1.96). There was no significant association between pretest knowledge score and selected demographic variables.
Conclusions: Teaching programme was effective in terms of gain in knowledge.

Keywords: Effect of teaching programme, reproductive health problems, school girls, higher secondary school

1. Introduction

Adolescence (between the age group of 10 and 19) is a growth developmental stage that occurs in the halfway between childhood and maturity [1].

Reproductive health is defined by the WHO 2022 "as a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity". In 2022, according to United Nations International Children's Emergency Fund (UNICEF) in the world, India has the largest adolescent population, 253million and every single fifth person is between 10 to 19 years [2].

The most common reproductive health problems like menstrual irregularity, any kind of menstrual problems including heavy or irregular bleeding, Scanty bleeding, dysmenorrhea,

reproductive tract infection, urinary tract infection, Itching in private areas, vaginitis that arise among adolescent girls.
In the adolescent age group, menstrual irregularities or disturbances are the most frequently reported presenting complaint, and unhygienic behavior during menstruation can result in pelvic inflammatory disease, reproductive tract infection, and even infertility also.
Many adolescent girls had suffered from various reproductive health problems and sometimes they were not comfortable to share their problem like itching in private area, burning sensation during urination and also there was lack of knowledge regarding reproductive health and its related problems. To prevent long term continuation among adolescence, early detection and prompt treatment of reproductive health problem is necessity today.

2. Background

2.1 Global overview

According to World Health Organization (WHO) in 2019 globally an estimated 1.7 million adolescents age (10- 19) years were living with HIV, in the African region around 90% [3] and globally in 2020 an estimated 1,750,000 number of adolescents were living with HIV according to United Nations International Children's Emergency Fund (UNICEF) [4].
Globally in 2016 there were an estimated 376 million of new cases of curable STI (chlamydia 127 million, gonorrhea 87 million, syphilis 6 million, Trichomoniasis 156 million) found [5]. In 2020, around 28.4 thousand cases of chlamydia were reported in Japan, representing the highest number and most common STD of Japan. In 2019, around 46 female's HIV and 15 female AIDS cases were notified in Japan [6].

2.2 Indian Scenario

In 2019 prevalence of various menstrual problems has been recorded as high as 85%-93.4% in India. In the year of 2015-2016 total female cases treated with RTI /STI in West Bengal was 87077. In the year of 2016 in West Bengal 29 female syphilis and 414 female Gonococcal infection cases was found [7].

3. Aims of the study

This study aims to

- To assess the pre-test level of knowledge on reproductive health problems among school girls in experimental and control group.
- To assess the post-test level of knowledge on reproductive health problems among school girls in experimental and control group.
- To evaluate the effect of teaching programme on reproductive health problems among school girls between experimental and control group.
- To find out the association of pre-test knowledge score on reproductive health problems with the selected demographic characteristics among school girls in experimental and control group.

Hypothesis

H_1: There is a significant difference between mean pre-test and mean post-test knowledge score among school girls in experimental group after administration of structured teaching programme regarding reproductive health problems at 0.05 level of significance.
H_2: There is a significant difference between mean pre-test and mean post-test knowledge score among school girls in control group regarding reproductive health problems at 0.05 level of significance.
H_3: There is a significant difference between mean post-test knowledge score of school girls in experimental and control group regarding reproductive health problems at 0.05 level of significance.
H_4: There is a significant association between pre-test knowledge score on reproductive health problems with selected demographic variables at 0.05 level of significance.

4. Methods

4.1 Research design

"Pre-test-post-test control group Quasi- experimental research design" was chosen for this study and the study was conducted in two selected higher secondary school of Murshidabad, West Bengal over a time period of one month between March 2023 to April 2023. Gorabazar Shilpamandir girls H.S. school was selected for experimental group and Berhampore Girls' Mahakali Pathsala was selected for control group.

4.2 Sampling technique

Probability Disproportional stratified random sampling technique was used to select 287 school girls among which 143 school girls were in experimental group & 144 in control group with the age group between 14-18 years, who were studying in class IX –XI from two selected higher secondary school of Murshidabad, West Bengal one for experimental and another one for control group.

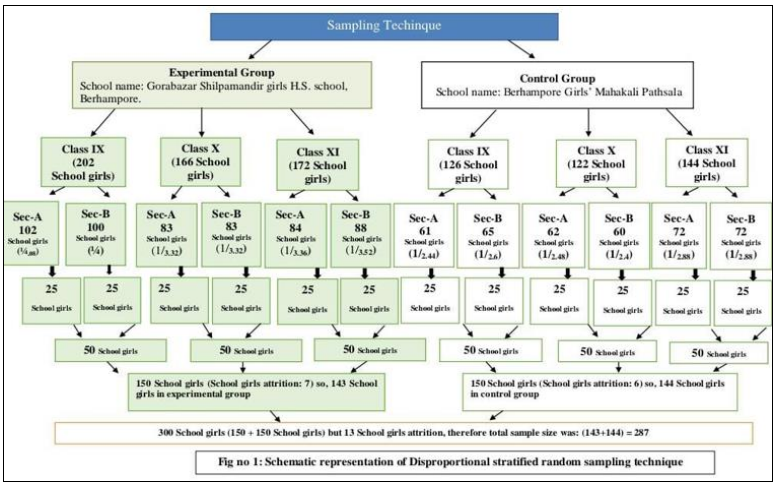

Fig no 1: Schematic representation of Disproportional stratified random sampling technique

5. Results

The collected data were coded, tabulated, analyzed and interpreted in accordance with
the objectives of the study.

5.1 Findings related to description of the demographic characteristics of school girls.

Table 1: Frequency and percentage distribution on demographic characteristics of the school girls n=n_1 + n_2 = 287

Demographic variables	Category	Experimental (n_1=143)		Control (n_2=144)	
		(f)	(%)	(f)	(%)
Age (in years)	14-15	85	59.44	90	62.50
	16-17	58	40.56	54	37.50
Educational status of school girls	Secondary	97	67.83	99	68.75
	Higher Secondary	46	32.17	45	31.25
Mothers educational status	Primary	11	7.69	8	5.56
	Secondary	101	70.63	98	68.05
	Higher secondary	20	13.99	24	16.67
	Above higher secondary	11	7.69	14	9.72
Fathers educational status	Primary	18	12.60	5	3.47
	Secondary	65	45.45	74	51.39
	Higher secondary	33	23.07	31	21.53
	Above higher secondary	27	18.88	34	23.61
Religion	Hindu	95	66.43	105	72.92
	Muslim	48	33.67	39	27.08
Type of family	Joint	54	37.76	57	39.58
	Nuclear	89	62.24	87	60.42
Monthly family Income (In rupees)	6000-17000	86	60.14	101	70.14
	17001-28000	27	18.88	23	15.97
	28001-39000	17	11.89	11	7.64
	39001-50000	13	9.09	9	6.25
Type of community	Urban	56	39.16	63	43.75
	Rural	87	60.84	81	56.25
Pond bathing	No	119	83.22	128	88.89
	Yes	24	16.78	16	11.11
Information received previously Regarding reproductive health problem	No	84	58.74	83	57.64
	Yes	59	41.26	61	42.36
If yes, Source of information	Mother	23	38.98	17	27.87
	Friend	22	37.29	26	42.62
	Mass media	4	6.78	10	16.40
	Elder sister	10	16.95	8	13.11

Data in table 1 represented that majority (59.44%) school girls in experimental group & (62.50%) school girls in control group belonged to the age group between 14-15 years, (40.56%) school girls in experimental group & (37.50%) school girls in control group belonged to the age group between 16-17 years.

Majority (67.83%) school girls in experimental group & (68.75%) school girls in control group had secondary education, (32.17%) school girls in experimental group & (31.25%) school girls in control group had higher secondary education. Majority (70.63%) mothers of the school girls in experimental group & (68.05%) mothers of the school girls in control group had secondary education, (13.99%) in experimental group & (16.67%) in control group had higher secondary education, (7.69%) in experimental group & (5.56%) in control group had primary education, only (7.69%) mothers of the school girls in experimental group & (9.72%) in control group had above higher secondary education.

Most (45.45%) fathers of the school girls in experimental group & and majority (51.39%) fathers of the school girls in control group had secondary education, (23.07%) fathers of the school girls in experimental group & (21.53%) in control group had higher secondary education, 12.60% in experimental & 3.47% in control group had primary education, only (18.88%) fathers of the school girls in experimental group & 23.61% fathers of the school girls in control group had above higher secondary education.

Majority (66.43%) of the school girls in experimental group & (72.92%) school girls in control group were Hindu, rest of the (33.57%) students in experimental group & (27.08%) students in control group were Muslim.

Majority (62.24%) of the school girls in experimental group & (60.42%) school girls in control group were belonged from nuclear family, rest of (37.76%) school girls in experimental group & (39.58%) school girls in control group were belonged from joint family.

Majority (60.14%) of the school girls in experimental group & (70.14%) school girls in control group monthly family incomes were between Rs 6000- Rs17000 , (18.88%) of the school girls in experimental group & (15.97%) of the school girls in control group monthly family incomes were between Rs17001- Rs 28000 , (11.89%) of the school girls in experimental group & (7.64%) of the school girls in control group monthly family income were between Rs 28001- Rs 39000 , rest (9.09%) of the school girls in experimental group & (6.25%) of the school girls in control group monthly family income were between Rs 39001- Rs 50000.

Majority (60.84%) of the school girls in experimental group & (56.25%) school girls in control group were belonged from rural community, rest (39.16%) school girls in experimental group & (43.75%) school girls in control group were belonged from urban community.

Majority (83.22%) of the school girls in experimental group & (88.89%) school girls in control group did not take bath in pond, rest (16.78%) school girls in experimental group and (11.11%) school girls in control group take bath in pond. Majority (58.74%) school girls in experimental group & (57.64%) school girls in control group did not received information previously regarding reproductive health problems, only (41.26%) school girls in experimental group & (42.36%) school girls in control group had received information previously regarding reproductive health problems.

Most of the (38.98%) school girls in experimental group & (27.87%) school girls in control group had received information regarding reproductive health problems from their mother, (37.29%) school girls in experimental group & (42.62%) school girls in control group had received information regarding reproductive health problems from their friends, (6.78%) school girls in experimental group & (16.40%) school girls in control group had received information from mass media, rest of the (16.95%) school girls in experimental group & (13.11%) school girls in control group had received information regarding reproductive health problems from their elder sister.

5.2 Findings related to assessment of pre & post-test knowledge scores on reproductive health problems among school girls in experimental & control group.

Table 2: Frequency and percentage distribution of pre & post-test knowledge scores on reproductive health problems among school girls in experimental & control group n= n_{1+} n_2 =287

Level of knowledge	Range	Experimental group(n_1=143)				Control group(n_2=144)			
		Pre test		Post test		Pre test		Post test	
		(f)	(%)	(f)	(%)	(f)	(%)	(f)	(%)
Excellent	31-40	0	0	46	32.17	0	0	0	0
Average	21-30	52	36.3	97	67.83	15	10.42	23	15.97
Poor	11-20	91	63.7	0	0	129	89.58	120	83.33
Very poor	<1-10	0	0	0	0	0	0	1	0.70

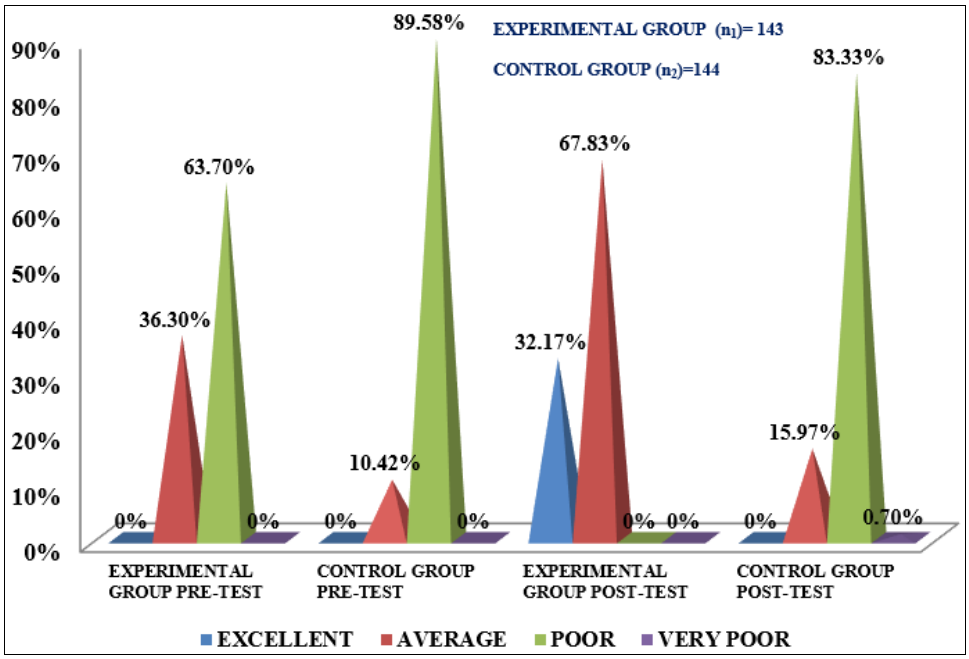

Fig 2: Cone diagram representing pre and posttest knowledge score on reproductive health problems among experimental and control group through percentage.

Table no 2 and Fig.2. depicted that majority (63.7%) of the school girls in experimental group had poor knowledge in pre-test whereas majority (89.58%) of the school girls in control group had also poor knowledge in pre-test. Majority (67.83%) & (32.17%) of the school girls in experimental group had average knowledge in post-test whereas no one school girls in control group had excellent knowledge in post-test, Majority (83.33%) of the school girls in control group had poor knowledge in post-test and least number (0.70%) had very poor knowledge in post-test on reproductive health problems.

Table 3: Mean, Median, Standard deviation of pretest and post-test knowledge score on reproductive health problems among school girls in experimental group and control group n = n_1 + n_2 =287

Assessment	Experimental Group (n_1=143)			Control Group (n_2=144)		
	Mean	Median	Standard Deviation	Mean	Median	Standard Deviation
Pre-test	19.62	20	3.42	17.06	17	2.66
Post-test	29.49	29	3.04	17.29	17	3.09

Table no 3 revealed that the Mean, Median and standard deviation of pretest knowledge score of school girls in experimental group were 19.62, 20 and 3.42 respectively whereas pretest knowledge score of school girls in control group were with a mean of 17.06, median 17 and a standard deviation of 2.66. Mean, Median and standard deviation of Post-test knowledge score of school girls in experimental group were 29.49; 29 and 3.04 respectively whereas post-test knowledge score of school girls in control group regarding reproductive health problems were with a mean of 17.29, median 17 and a standard deviation of 3.09.

5.3 Findings related to Comparison of mean pre and post-test knowledge scores of school girls on Reproductive health problems in experimental group

Table 4: Paired t test to compare mean pre and post -test knowledge score of school girls in experimental group on reproductive health problems n_1 = 143

Group	Knowledge Score	Mean	Mean difference	SD	df	t-value
Experimental	Pre-test	19.62	9.87	5.91	142	32.92
	Post-test	29.49				

Paired t=1.96, df (142); p< 0.05,* level of significance

Data presented in table 4 revealed that mean of pre-test knowledge among experimental group was 19.62 whereas and mean post-test knowledge was 29.49. The mean difference and standard deviation (SD) was 9.87 and 5.91. Paired t test was calculated to find out the statistical significance and the calculated t value was 32.92 at df (142) at 0.05 level of significance which was higher than the table

t value (1.96) at df (142) at 0.05 level of significance.

Hence, null hypothesis (H_{01}) was rejected and research hypothesis (H_1) was accepted.

It indicated that the difference between pre-test and post-test knowledge score among school girls in experimental group was not by chance, but it's a true change.So ,there was a significant difference between mean pre-test and mean post-test knowledge score among school girls in experimental group after administration of structured teaching programme regarding Reproductive health problems at 0.05 level of significance.Hence the findings concluded that the teaching programme has a significant effect in increasing the knowledge of the school girls in the experimental group in the post-test on reproductive health problems.

5.4 Findings related to Comparison of mean pre and post-test knowledge scores of school girls on Reproductive health problems in control group

Table 5: Paired t test to compare mean pre and post -test knowledge score of school girls in control group on reproductive health problems $n_2 = 144$

Group	Knowledge Score	Mean	Mean difference	SD	df	t-value
Control	Pre-test	17.06	0.23	2.88	143	1.876
	Post-test	17.29				

Paired t=1.96, df (143); p < 0.05, * significant

Data presented in table 5 revealed that mean of pre-test knowledge among control group was 17.06 whereas and mean post-test knowledge was 17.29. The mean difference and standard deviation (SD) was 0.23 and 2.88. Paired t test was calculated to find out the statistical significance and the calculated t value was 1.876 at df (143) at 0.05 level of significance which was lower than the table t value (1.96) at df (143) at 0.05 level of significance.

Hence, research hypothesis (H_2) was rejected and null hypothesis (H_{02}) was accepted

It indicated that there was no significant difference between mean pre-test and mean post-test knowledge score among school girls in control at 0.05 level of significance. So, the findings concluded that in control group who had not received teaching programme regarding reproductive health problems there was no improvement in post-test knowledge score.

5.5 Findings related to effect of teaching programme by comparing post-test knowledge score on reproductive health problems among school girls between Experimental and Control group.

Table 6: Unpaired t test to compare post -test knowledge score among school girls in experimental & control group $n = n_1 + n_2 = 287$

Group	Knowledge Score	Mean	SD	df	t-value
Experimental (n_1)=143	Post-test	29.49	3.04	285	33.66
Control (n_2)=144	Post-test	17.29	3.09		

Unpaired t= 1.96, df (285); p<0.05,* significant

Data presented in table6 revealed that mean of post-test knowledge score of school girls in experimental group was 29.49 whereas mean post-test knowledge score of school girls in control group was 17.29. Standard deviation (SD) of post-test knowledge score of school girls in experimental group was 3.04 whereas Standard deviation (SD) of post-test knowledge score of school girls in control group was 3.09. Unpaired t test was calculated to find out the statistical significance and the calculated t value was 33.66 at df (285) at 0.05 level of significance which was higher than the table t value (1.96) at df (285) at 0.05 level of significance.

Hence, null hypothesis (H_{03}) was rejected and research hypothesis (H_3) was accepted

The findings indicated that the difference between post-test knowledge score among school girls in experimental group and control group was not by chance, but it's a true change. The mean post-test knowledge score (29.49) of school girls in experimental group who had received teaching programme regarding reproductive health problems was significantly higher than the mean post-test knowledge score (17.29) of school girls in control group. So, there was a significant difference between mean post-test knowledge score regarding reproductive health problems of school girls in experimental and control group at 0.05 level of significance as the obtained t value is 33.66 at df (285) is higher than the tabulated t value (1.96) at 0.05 level of significance. Hence the findings concluded that the teaching programme had a significant effect in increasing the knowledge of the school girls in the experimental group in the post-test on reproductive health problems.

5.6 Findings related to Association of pre-test knowledge score regarding reproductive health problems with selected demographic variables among school girls in experimental & control group

Table 7: Association of pre-test knowledge score regarding reproductive health problems with selected demographic characteristics among school girls in experimental group $n_1 = 143$

Demographic characteristics	Knowledge score >median	Knowledge score<median	Chi-square value χ^2 calculated	Remarks
Age in years 13-15 16-18	 54 34	 31 24	0.351	NS
Educational status of school girls ≤secondary >secondary	 60 28	 37 18	0.013	NS
Education of mother ≤secondary >secondary	 65 23	 47 8	2.678	NS
Education of father ≤secondary >secondary	 50 38	 33 22	0.141	NS
Religion Hindu	 56 32	 39 16	0.803	NS

Muslim				
Type of family Joint Nuclear	32 56	22 33	0.190	NS
Family income in rupees Above 15000 Below 15000	46 42	32 23	0.477	NS
Type of community Urban Rural	34 54	22 33	0.026	NS
Pond bathing No Yes	77 11	42 13	3.005	NS
Received information previously No Yes	49 39	35 20	0.884	NS

Chi-square (χ^2) = 3.84 at df (1) at 0.05 level of significance ∗∗ NS = Not significant

Data presented in table7 revealed that there were no significant association between pre-test knowledge score of school girls in experimental group on reproductive health problems and selected demographic variables such as age in years, educational status of school girls, educational status of mother and father ,religion, type of family, type of community , pond-bathing ,family income and received information previously as the calculated chi square value was lower than tabulated chi-square value (3.84) with df (1) at 0.05 level of significance.

Hence, research hypothesis (H_4) was rejected and null hypothesis (H_{04}) was accepted

Table 8: Association of pre-test knowledge score regarding reproductive health problems with selected demographic characteristics among school girls in control group n $_2$= 144

Demographic characteristics	Knowledge score >median	Knowledge score<median	Chi-square value χ^2 calculated	Remarks
Age in years 13-15 16-18	55 30	35 24	0.431	NS
Educational status of school girls ≤secondary >secondary	59 26	40 19	0.042	NS
Education of mother ≤secondary >secondary	65 20	41 18	0.873	NS
Education of father ≤secondary >secondary	46 39	33 26	0.046	NS
Religion Hindu Muslim	59 26	46 13	1.290	NS
Type of family Joint Nuclear	37 48	20 39	1.351	NS
Family income in rupees Above 15000 Below 15000	41 44	32 27	0.502	NS
Type of community Urban Rural	38 47	25 34	0.077	NS
Pond bathing No Yes	78 7	50 9	1.737	NS
Received information previously No Yes	48 37	35 24	0.116	NS

Chi-square (χ^2) = 3.84 at df (1) at 0.05 level of significance ∗∗ NS = Not significant

Data presented in table8 revealed that there was no significant association between pre-test knowledge score on reproductive health problems of the school girls in control group and selected demographic variables such as age in years, educational status of school girls, educational status of mother and father ,religion, type of family, type of community , pond-bathing ,family income and received information previously as the calculated chi square value was lower than tabulated chi-square value (3.84) with df (1) at 0.05 level of significance. Hence, research hypothesis (H_4) was rejected and null hypothesis (H_{04}) was accepted.

6. Discussion

6.1 Discussion related to demographic characteristics of the school girls: In the present study, majority (51.39%) fathers in control group of the school girls & most (45.45%)

fathers in experimental group of the school girls had completed secondary education. Most (38.98%) of the school girls in experimental group had received information regarding reproductive health problems from their mother. Majority (62.24%, n= 143) of the school girls in experimental group were belonged from nuclear family.

The present study findings supported by the study findings of Başar fatma, Yavuz Betül; Sağlam Havva Yeşildere (2021) a quasi-experimental study on evaluation of the effectiveness of reproductive health education Program Given to Adolescents. The study findings revealed the majority of adolescents‟ fathers‟ educational status was 72 secondary educations in control group (57.3%) and most of the adolescents‟ fathers‟ educational status was secondary education (42.7%) in experimental group [8].

The present study findings supported by the study findings of Jyoti K, Sunita K, *et al*. (2021) a pre-experimental study on "effectiveness of Intervention on knowledge of reproductive health among adolescent girls in selected school, Rohtak, and Haryana". The study findings revealed the main source of information about reproductive health problems was their family (81.7%, n= 60) and majority (68.3%, n=60) of the students in experimental group belonged to nuclear family [9].

Present study finding supported by another study conducted by Singh Sarita, Kumar Rohitash, and et.al. (2021) a pre-experimental study on "effectiveness of structured teaching programme regarding reproductive health on knowledge among adolescent girls in selected school of Lucknow district, Uttar Pradesh. The study findings revealed (46.25%, n=80) of the students in experimental group had received information regarding reproductive health problems from their family [10].

6.2 Discussion related to pre & post-test level of knowledge on reproductive health problems among school girls in experimental & control group

Pre-test level of knowledge

In present study, Majority (63.7%) and (36.30%) of the school girls in experimental group had poor knowledge and average knowledge in pre-test on reproductive health problems.

The present study findings supported by the study findings of Jyoti K, Sunita K, et.al. (2021) a pre-experimental study on "effectiveness of intervention on knowledge of reproductive health among adolescent girls in selected school, Rohtak, and Haryana". The study findings revealed 43.33% and 41.67% of adolescent girls in experimental group had poor knowledge and average knowledge in pre-test [9].

Post-test level of knowledge:

In present study, majority (67.83%) & (32.17%) of the school girls in experimental group had average knowledge and excellent knowledge in post-test in on reproductive health problems.

The present study findings supported by the study findings of Singh Sarita, Kumar Rohitash, and *et al*. (2021) a Quasi-experimental study on effectiveness of structured teaching programme regarding reproductive health on knowledge among adolescent girls in selected school rural area of Lucknow district, Uttar Pradesh. Study findings revealed majority 80% of the school girls in experimental group had average knowledge and 20% had gained good knowledge in post-test [10].

Mean and Standard Deviation (SD) of pre-test and post-test knowledge score: In present study, post-test knowledge score with mean 29.49 and standard deviation 3.04 of the school girls in experimental group was higher than the pre-test knowledge score with mean (19.62) and standard deviation (3.42) of the school girls in experimental group whereas in control group also post-test knowledge score mean (17.29) and SD (3.09) was little bit higher than the pre-test knowledge score mean (17.06) and SD (2.66) of the school girls.

The present study findings supported by the study findings of Başar fatma, Yavuz Betül; Sağlam Havva Yeşildere (2021) a quasi-experimental study on "evaluation of the effectiveness of reproductive health education program given to adolescents". Study results revealed the same findings as my study. The study findings revealed post-test knowledge score (27.51±3.83) was significantly higher than the pre-test knowledge score (17.97±5.22) of adolescents in experimental group whereas in control group also post-test knowledge score (18.36±5.88) was little bit higher than the pre-test knowledge score (18.18±5.28) of the adolescents. **[8]**

Findings of the present study supported by the study findings of Jyoti K, Sunita K, *et al*. (2021) a pre-experimental study on "effectiveness of intervention on knowledge of reproductive health among adolescent girls in selected school, Rohtak, and Haryana". Post-test knowledge score (29.4+3.0) was higher than the pre-test (19.6 +3.4) knowledge score adolescent girls in experimental group. The mean difference between pre-test and post-test score was 9.8 [9].

6.3 Discussion related to the effect of teaching programme on knowledge regarding reproductive health problems:

In present study, mean post-test knowledge score 29.49 was higher than the mean pre-test knowledge score 19.62 of the school girls in experimental group. The mean difference was 9.87 and calculated t value was 32.92 at df (142) at 0.05 level of significance which was higher than the table t value (1.96) at df (142) at 0.05 level of significance. Teaching programme was effective in experimental group. Whereas mean post-test knowledge score 17.29 was higher than the mean pre-test knowledge score 17.06 of the school girls in control group. Mean difference was 0.23 and the calculated t value was 1.876 at df (143) at 0.05 level of significance which was lower than the table t value (1.96) at df (143) at 0.05 level of significance in control group who had not received teaching programme.

The present study findings supported by the study findings of Jyoti K, Sunita K, *et al*. (2021) a pre-experimental study on "effectiveness of intervention on knowledge of reproductive health among adolescent girls in selected school, Rohtak, and Haryana". Study results revealed mean post-test knowledge 29.17 was higher than the mean pre-test 22.08 knowledge of adolescent girls in experimental group. The mean difference between pre-test and post-test score was 7.09 and the obtained t-value (12.194) was 75 greater than tabulated t-value at df 59 at 0.05 level of significance. The study findings concluded that the teaching programme was effective [9].

Present study a finding is supported by study findings of Singh Sarita, Kumar Rohitash, and *et al*. (2021) a Quasi-experimental study on effectiveness of structured teaching

programme regarding reproductive health on knowledge among adolescent girls in selected school of Lucknow district, Uttar Pradesh. Study results revealed mean post-test knowledge score 18.41 was higher than the mean pre-test 14.06 knowledge of adolescent girls in experimental group. The mean difference between pre-test and post-test score was 4.35 and the obtained t-value (7.39) was greater than tabulated t-value (1.990) at df 79 at 0.05 level of significance. The study findings concluded that the teaching programme was effective. **[10]**

The present study finding supported by the study findings of Başar fatma, Yavuz Betül; Sağlam Havva Yeşildere (2021) a quasi-experimental study on Evaluation of the effectiveness of reproductive health education program given to adolescents. The obtained value t value (0.338) is lower than the tabulated t value (1.96) which was not significant at 0.05 level of significance (p>0.05). There was no improvement in level of knowledge in control group who had not received teaching programme regarding reproductive health problems [8].

6.4 Discussion related to association of pre-test knowledge score regarding reproductive health problems with selected demographic characteristics: In present study, there was no statistical significant association between pre-test knowledge score on reproductive health problems with any demographic characteristics (such as age in years, educational status of the school girls, educational status of mother and father, religion, type of family; type of community, monthly 76 family income, pond-bathing and received information previously) of the school girls in experimental and control group.

Present study a finding was supported by study findings of Singh Sarita, Kumar Rohitash, and *et al*. (2021) a Quasi-experimental study on effectiveness of structured teaching programme regarding reproductive health on knowledge among adolescent girls in selected school of Lucknow district, Uttar Pradesh. There was no significant association between the pre-test level of knowledge and demographic characteristics such as age in years, religion, and type of residence, type of family, education of father, family income and source of information in experimental group [10].

The present study findings supported by the study findings of Jyoti K, Sunita K, *et al*. (2021) a pre-experimental study on "effectiveness of intervention on knowledge of reproductive health among adolescent girls in selected school, Rohtak, and Haryana". There was no significant association between the pre-test level of knowledge and demographic characteristics such as age in years, education of mother [9].

7. Conclusion

The main conclusion from the present study was that majority (63.70%) of the school girls in experimental group had poor knowledge and (36.30%) had average knowledge in pre-test whereas majority (89.58%) school girls in control group had also poor knowledge in pre-test. After administration of teaching program the knowledge level increases, majority (67.83%) of the school girls in experimental group had average knowledge and (32.17%) had excellent knowledge in post-test whereas no one school girls in control group who did not received teaching programme had excellent knowledge in post-test instead majority (83.33%) of the school girls in control group had poor knowledge, (15.97%) had average knowledge, (0.70%) had very poor knowledge in post-test. The significant difference on post-test knowledge between control group and experimental group was established by unpaired' test and found a significant increase in post-test knowledge among the experimental group. Hence it can be concluded that teaching programme on reproductive health problems can increase the level of knowledge among school girls.

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9. Declarations

9.1 Funding: Personal

9.2 Conflict of interest: Not available

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