CHAPTER III

MATERIALS AND METHODS
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## MATERIALS AND METHODS

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3.1. INTRODUCTION

Girls in their teens have many questions and uncertainties regarding their physical maturation. In many cases personal hygiene is insufficient, resulting from lack of information and education in the family. The onset of menarche introduces a new dimension of life to cope with. Competent advice is essential in these habit-forming years to correct misconceptions and lead to proper health care.

Basic knowledge about one's own body is worthwhile for the understanding of advisable attitudes in personal hygiene. Educational points should play their role next to the humanistic value of cyclic bleeding in the female self-assurance. Education for understanding of menstruation should stress that it primarily expresses femininity and should avoid depicting menstrual bleeding as a repetitive nuisance.

In order to accept menstruation as a normal physiological phenomenon the girls must have ideal knowledge about the significance of menstruation and development of secondary sexual characteristics, selection of a sanitary menstrual absorbent and its proper disposal.

By identifying the existing knowledge on menstruation and the problems faced by the adolescents and conducting an educational programme on menstruation for the adolescents it is hoped that the knowledge on menstruation will be improved and the girls will accept menstruation as a normal phenomena.

3.2. RESEARCH APPROACH

The present study is intended to assess the level of knowledge of adolescent girls regarding menstrual problems and menstrual hygiene.

A quasi experimental approach was adopted. The level of knowledge on menstrual hygiene and problems of menstruation was assessed by a pretest using a structured questionnaire and based on that knowledge, an instructional module was prepared and a class room teaching was conducted by the investigator and its effectiveness was tested through a post test.
3.3. RESEARCH DESIGN

The present study is a one group pre test post test design and it has three steps as detailed in Fig. 3.1 as a schematic representation of the research design.

3.3.1. First Step - Descriptive

Knowledge on menstrual problems and menstrual hygiene was assessed by a structured questionnaire. Tolerance of menstrual problems faced by the girls and menstrual hygiene practices followed by them were also assessed from those who attained menarche by a second set of structured questionnaire.

3.3.2. Second Step - Quasi-Experimental

An intervention was administered to all the girls in the form of an instructional module in addition to a teaching session. After two weeks, post test was conducted by a blind rater using the same questionnaire to determine the effect of the teaching programme.

3.3.3. Third Step - Follow up

After two months a survey was again conducted in a sub sample, among 20% of the students who attained menarche in the present study to assess the tolerance of menstrual problems faced by them and to evaluate whether the students had accepted the minor problems as normal.

The diagramatic representation of one group pre-test post-test design is O1 - X - O2

<table>
<thead>
<tr>
<th>O1</th>
<th>Pre-test</th>
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<tr>
<td>X</td>
<td>Teaching and instructional module</td>
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<tr>
<td>O2</td>
<td>Post-test</td>
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3.4. SETTING FOR THE STUDY

The study was conducted at Cotton Hill Girls Higher Secondary School Trivandrum (Urban) and Girls Higher Secondary School, Malayinkil (Rural).

3.5. POPULATION

The population for the study was adolescent girls from 7th to 10th standard.
Fig. 3.1. Schematic Representation of the Research Design

Step 1
Tool
Pretest
Structured questions

Step 2
Tool
Interventional Programme
Classroom teaching – Instructional module
Socio demographic variable
Age, Religion, Domicile, Education of students, Education of parents, Income of family and Availability of media

Step 3
Tool
Post test
Structured questionnaire
Dependent Variable
Awareness regarding menstrual problems and menstrual hygiene
Reduction of minor ailments related to menstruation and improvement in menstrual hygiene practice

Sample Size 1000
Rural and Urban School
Adolescent girls in Trivandrum
3.6. **SAMPLE**

The sample constituted of 1000 adolescent girls studying in 7th to 10th standards. The sample included the students who had and had not attained menarche. Out of the 1000 students, 693 students had attained menarche.

3.7. **DESCRIPTION OF THE SAMPLE**

- Students were selected from 7th to 10th standard.
- Those who had attained menarche as well as those who had not attained menarche were included.
- The sampling technique was multi stage sampling. Two higher secondary schools for girls in Trivandrum were selected in random lottery method. The divisions were selected by random method. The number of students was selected in proportion to the total number of students.

3.8. **DURATION OF THE STUDY**

Seven years 2000 - 2007

3.9. **EXCLUSION CRITERIA**

- Students who were unable to read and write Malayalam.
- Students below 7th and above 10th standard were not included.

3.10. **TOOLS AND TECHNIQUE FOR THE STUDY**

- Structured question
- Instructional module
- Classroom teaching

The structured questionnaire was developed in 10 sections.

**A. Demographic Data**

- Section I A - Demographic data of adolescent girls - 5 questions.
- Section I B - Demographic data of mother - 4 questions.
Section IC - Demographic data of father - 4 questions.
Section ID - Data related to family status - 5 questions.
Section II - Data related to the general history regarding menarche - 8 questions.

B. Knowledge Score
Section III - Data related to adolescence - 4 questions.
Section IVA - Data related to menstruation - 15 questions.
Section IV B - Data related to the knowledge on physical problems of menstruation - 13 questions.
Section IV C - Data related to the knowledge on psychological problems of menstruation - 6 questions.
Section IV D - Data related to the knowledge on social problems of menstruation - 4 questions.
Section IVE - Data related to menstrual hygiene - 6 questions.

C. Tolerance Score
Another set of questions related to the tolerance level of physical and psycho social problems experienced by the girls and the hygienic practices adopted by them during menstruation was also prepared for girls who had attained menarche.

Section I A - Data related to the tolerance level of physical problems experienced by the girls related to menstruation – 20 questions.
Section I B - Data related to the tolerance level of psychological problems of menstruation experienced by the girls – 18 questions.
Sections I C - Data related to the tolerance level of social problems experienced by the girls during menstruation – 8 questions.

D. Menstrual Hygiene Practices
Section II - Data related to the menstrual hygiene practices adopted by the girls during menstruation – 21
An instructional module was prepared and a classroom teaching was conducted after the pre-test.

3.11. PILOT STUDY

After obtaining permission from the concerned authority, a pilot study was conducted in 50 adolescent girls from the 8th standard. Duration of the pilot study was three weeks. The structured questionnaire was scrutinized for its content validity by subject experts and statistician. After necessary modification, the final tool consisted of 18 items in the demographic data (section I), 8 general questions regarding menstrual history (section II), 4 questions regarding adolescence (section III), 15 questions regarding menstruation (section IVA), 13 questions regarding physical problems (section IV B), 6 questions regarding psychological problems (section IV C), 4 questions regarding social problems (section IVD) and 6 questions regarding menstrual hygiene (section IV E).

Another set of questions to assess the tolerance of menstrual problems faced by the girls and menstrual hygiene practices followed by them was also used. 20 questions related to the tolerance of physical problems, 18 related to the tolerance of psychological problems, 8 questions related to the tolerance of social problems and 21 questions related to menstrual hygiene practices.

3.12. DATA COLLECTION PROCESS

The data collection period was 6 months. The investigator obtained prior permission from the authorities of Cotton hill girls HSS and Girls HSS Malayinkizhu. The investigator presented herself in the specified schools and structured questionnaire was distributed. The students themselves gave their response.

The students who had attained menarche were given the menstrual problem tolerance and menstrual hygiene practice identification inventory for their response along with the questionnaire I. In the 2nd phase after the teaching programme, the instructional module was distributed to the students. The post-test
was conducted after two weeks by a blind rater to get the responses from the students to assess the effect of the teaching programme.

After 2 months the menstrual problem tolerance and menstrual hygiene practice identification inventory tool was again distributed to a sub sample of the study group who had attained menarche for their response.

3.13. PREPARATION OF THE INSTRUCTIONAL MODULE

The instructional module for the present study was prepared after assessing the knowledge level of adolescent girls regarding menstrual problems and menstrual hygiene.

The instructional module was prepared with a view to improve the knowledge regarding the problems of menstruation and menstrual hygiene. The information for the module was obtained by extensive literature review and collection of expert opinion from those qualified in this field. The validity of the instructional module was confirmed by professionally qualified experts in this field.

The module covered the following aspects

- Affidavit
- Aims of the instructional module
- Introduction
- Anatomy and Physiology of female reproductive system
- Changes in puberty
- Menstruation
- Facts about menstruation
- Myths about menstruation
- Physiology of menstruation
- Problems associated with menstruation
- Menstrual hygiene.
3.14. ANALYSIS OF DATA

The collected data were transformed into the master sheet and necessary coding was done and the following statistical tests were done.

The kinds of average or statistical measures of central tendency were used - the mode, median and mean.


The standard deviation indicates the average amount of deviation of values from the mean.

\[
SD = \sqrt{\frac{\sum X^2}{N}}
\]

\[
X^2 = (X-X)^2
\]

N = Number of frequencies

3.14.2. Chi-Square Test

Comparison of demographic data of girls and parents was done by using \( X^2 \) test. The Chi-Square statistics was applied to contingency of different proportions. The Chi-Square was computed by comparing two sets of frequencies observed in the data and expected frequencies. Expected frequencies were calculated on the basis of observed total frequencies for the rows and columns of a contingency table (Polit and Hungler, 1999).

\[
X^2 = \frac{\sum (O - E)}{E}
\]

O = Observed frequency

E = Expected frequency

It has been proved that if way of the cell frequency in contingency table of order (2 x 2) is less than 5, the continuity of Chi-square distribution curve is not maintained. So to remove discrepancy, Yates suggested a correction, which is extensively used. He suggested to add 0.5 in the frequency which is lesser than 5 and subtract and add 0.5 to the remaining cell frequency in such a way that
marginal total remains the same. Then calculate the value of $X^2$ by formula. This was applied in this study also.

$$X^2 = \frac{\sum \left[ (0-E) -1/2 \right]^2}{E}$$

### 3.14.3. Student’s ‘t’ Test

In order to compare the scores of two groups Student ‘t’ test was applied.

$$t = \frac{X_1 - X_2}{\sqrt{\frac{S_1^2 + S_2^2}{n}}}$$

- $X_1$ = Mean of Group I
- $X_2$ = Mean of Group II
- $S_1$ = Standard Deviation of Group I
- $S_2$ = Standard Deviation of Group II
- $n$ = Sample size

### 3.14.4. Paired ‘t’ Test

For assessing the effectiveness of intervention the scores before and after the educational programme was analyzed by applying paired ‘t’ test.

$$t = \frac{\bar{d}}{\sigma_d \sqrt{n}}$$

- $\bar{d}$ = Mean of difference between pre test and post test scores
- $\sigma_d$ = Standard deviation of differences.
- $n$ = Sample size

### 3.14.5. Kruskal-Walli’s One Way ANOVA.

The assessment of the difference in knowledge level of the groups was compared statistically by using the Kruskal-Walli’s one way ANOVA.

$$H = \frac{12}{N(N+1)} \left[ \sum_{d=1}^{3} \frac{R_j^2}{n_j} \right] - 3(N+1)$$
3.14.6. Mann - Whitney U Test

To find out the difference in knowledge between the groups Mann – Whitney U test –was applied.

\[ \sum = \frac{U - \frac{n_1 n_2}{2}}{\sqrt{\frac{n_1 x n_2 (n_1+n_2+1)}{12}}} \]

- \( n_j \) = Number of cases in the \( j^{th} \) sample.
- \( N \) = \( \sum n_j \) = Total number of cases in all the groups taken together.
- \( R_j \) = Sum of ranks in the \( j^{th} \) sample.

The diagrams and tables were included wherever necessary.

3.14.7. Duncan's Multiple Range Test

This test was performed to on the pre-test scores of the different groups of girls to see whether any two or more groups of girls obtained a similar range of scores in situations where there was significant variation in the values.

3.15. EPILOGUE

This chapter dealt with the research methodology under different heading viz introduction, research approach, research design, setting for the study, population, sample, description of sample, tool and technique, pilot study, data collection process, preparation of the instructional module and data analysis. In the next chapter the observations were discussed with relevance to the conclusions obtained out of the study.