SUMMARY AND CONCLUSIONS
SUMMARY AND CONCLUSIONS

Adolescence is the period between 10 and 19 years of age, which broadly corresponds to the onset of puberty and the legal age for adulthood. This is the phase of life when important changes occur in different dimensions of life, such as physical, biological and emotional growth and maturity (UNICEF, 2002). Adolescence in girls has been recognized as a special period in their life cycle that requires specific and special attention.

In order to have a healthy life, adolescent girls need to be educated on their reproductive and nutritional health. Gupta (2003) views that school going adolescent girls lack knowledge regarding their reproductive health and hence suffer from various reproductive health problems. A lot of misconceptions about reproductive health prevail among them. Their knowledge on nutritional health is also poor. Swaminathan (2006) reports that many school going adolescent girls are malnourished because of their lack of knowledge on their nutritional needs. Most girls are not sufficiently aware of their increased nutritional needs to meet caloric demands of pubertal growth resulting in underweight and short stature.

A review of existing literature pertaining to the study have revealed that there is a need to educate adolescents regarding their reproductive and nutritional health but studies focusing on appropriate content on adolescent reproductive and nutritional health on the basis of their perceived needs is very few. Studies regarding the methodology and the personnel suitable to impart knowledge to the school going adolescent girls on their reproductive and nutritional health relevant to their age also is limited.

Hence, with the view of giving needed information on reproductive and nutritional health and to identify the personnel who can impart the knowledge effectively to the school going adolescents girls with the help of suitable training module, the present study entitled, ‘Educational Intervention programme to Empower school going Adolescent Girls on their Reproductive and Nutritional Health’ was undertaken.
Objectives

The general objective of this research study was to improve knowledge, develop positive attitude and promote healthy practice on Reproductive and Nutritional Health among school going adolescent girls through educational intervention.

Specific objectives were to:

> identify the needs of the adolescent girls related to their Reproductive and Nutritional Health,
> frame a module suitable to meet the identified needs of the respondents related to their Reproductive and Nutritional Health,
> train the selected teachers to develop skill in their methodology to impart knowledge to the respondents on Adolescent Reproductive Health and Adolescent Nutritional Health (ARH and ANH),
> understand the background characteristics of the respondents - age, ordinal position, mother’s education, family type, residence, religion and family income,
> assess the baseline Knowledge, Attitude and Practice (KAP) of the respondents on ARH and ANH for both experimental and control groups,
> assess the influence of background characteristics of the respondents on their baseline KAP on ARH and ANH,
> evaluate the effectiveness of the educational intervention on ARH and ANH given to the respondents,
> compare the impact of educational intervention on ARH and ANH among the respondents by the government and private schools,
> analyze the relationship among the Knowledge, Attitude and Practice of the respondents on ARH and ANH and
> analyze the impact of the educational intervention given to the respondents by the type of the facilitator to their respective groups.
Hypotheses

Based upon the objectives of the present study the following null hypotheses were formulated:

1. Respondents’ background characteristics like age, mother’s education, family type, religion, locale of their residence and family income do not have any impact on baseline KAP of the respondents on ARH and ANH.

2. There is no significant change in the KAP of the respondents on ARH and ANH before and after the intervention.

3. There is no significant difference in the KAP on ARH and ANH among the respondents of government school and private school in the pretest and the posttest.

4. There is no significant relationship among Knowledge, Attitude and Practice on ARH and ANH in the pretest and the posttest.

5. There is no significant difference in the KAP on ARH and ANH among the respondents of Experimental group 1 and Experimental group 2.

Research design

The research design pertaining to the study is discussed below.

Study area

The present study was conducted in private and government schools of Pondicherry, a union territory of India.
Population of the study

School going adolescent girls of eighth and ninth standards from selected six higher secondary schools in Pondicherry constituted the population of the study.

Study design

The present study is an experimental study having two experimental groups and one control group.

Variables of the study

The independent variables were the mode of intervention programme, one by the researcher and the other by the trained teachers. Outcome of the intervention programme among the respondents in their Knowledge, Attitude and Practice [KAP] on ARH and ANH quantified by the scores were the dependent variables.

Sampling

‘Cluster Randomized’ sampling method was followed, the units of Randomization being schools. The schools were first stratified as government and private. Among stratified schools, three government and three private schools were selected randomly. From each selected school among students of eighth and ninth class, based on the preference of the students, three groups - Control, Experimental groups 1 and Experimental group 2 were formed.

Sample Size

There were 198 girls in the Experimental group 1 and 202 girls in the Experimental group 2 and 147 girls in the Control group. Only students interested in the educational intervention programme were included in the Experimental groups and the students not interested in the intervention programme but were interested to be a part of the study came under the Control group.
Situational assessment

A situational assessment was done by using a situational assessment scale from fifty school going adolescent girls to gather their perceived problems, educational needs and preferred mode of intervention on ARH and ANH. These girls were selected from one of the private schools included in the study but were not included either in the Experimental groups or in the Control group of the study.

Module development

Based on the educational needs identified during situational assessment, a module was developed. Contents of the module on ARH included growth and development of adolescents, reproductive system and menstruation, conception and sex determination, RTI/STD/HIV/AIDS. Contents of ANH included balanced diet, nutritional requirements, eating habits, food fads and major nutritional deficiencies during adolescence. Module covers eight sessions and each session consists of information sheets with illustrations followed by related exercises.

Training of teachers

Six teachers of six selected schools [one science teacher from each school] were trained to improve their competency and comfort level in the methodology of teaching the units given in the module.

Tools for data collection

- A questionnaire was constructed by the researcher to collect the information about the background of the respondents.
- Knowledge scale, Attitude scale and Practice scale on ARH and ANH were developed to determine the level of knowledge, the nature of attitude and the mode of practice on ARH and ANH of the respondents before and after intervention.
The content validity and reliability of the tool were established. In order to test the practicability of the tool, a pre test was conducted on 25 school going adolescent girls who were not included either in the Experimental groups or Control group of the study.

**Data Collection**

Data collection was done in two phases using the same tool among the respondents.

i) Baseline survey of KAP on ARH and ANH before the educational intervention (Pretest)

ii) Assessment of KAP on ARH and ANH after the educational intervention (Posttest)

**Educational intervention**

Educational intervention was given to both the Experimental groups and no intervention was given to the Control group. For Experimental group 1, intervention was carried by the researcher and for Experimental group 2, intervention was carried by the trained teachers. Each session of educational intervention was for two hours and hence totally sixteen hours were taken for the completion of eight sessions. Four months were taken for the completion of the educational intervention programme.

**Consolidation and analysis of data**

The mean percentage scores obtained by the respondents before and after intervention on their KAP on ARH and ANH were calculated and treated statistically using Paired‘t’ test, ANOVA, Correlation of Coefficient and Tukey test.
RESULTS AND DISCUSSION

The salient findings of the present study are the followings:

Situational Assessment

- Menstrual disorders and discomfort were expressed by ninety six percent of adolescent girls as their reproductive health related problem.
- Ninety four per cent adolescent girls revealed their ignorance on selection of nutritious food.
- Desire for knowledge on conception and sex determination was expressed by all the selected adolescent girls.
- Desire for knowledge on balanced diet, adolescent nutritional requirement and management of nutritional deficiencies were expressed by all selected adolescent girls.
- Need for school based training programme by the teachers within school system was expressed by sixty per cent of the adolescent girls.

Training of the selected teachers

- Training improved the teachers’ competency level which was reflected in their knowledge and attitude scores. Out of 10, before training mean score obtained for knowledge was 8.8 and for attitude it was 8.1. After training the mean score increased to 9.8 and 9.5 for knowledge and attitude respectively.

- Assessment of teachers’ comfort level in teaching topics on ARH and ANH also showed improvement. Before training only 33 per cent of the teachers were comfortable in teaching reproductive system and menstruation but after training cent per cent of the teachers felt comfortable to take classes in all the topics of ARH. Similarly comfort level to teach certain topics in ANH also improved among all the teachers after training.
Quantum of exposure and source of information

Around three fourth of the respondents were not exposed to the information on ARH and ANH. Among the exposed respondents, around fifty per cent reported school teachers as the main source of information on both ARH and ANH. Mothers as the source of information on ARH were reported only by 22.2 per cent and on ANH by 33.6 per cent of the respondents.

Baseline KAP on ARH and ANH

Baseline findings showed poor score of respondents on both Adolescent Reproductive Health and Adolescent Nutritional Health, thereby indicating their potential vulnerability towards poor reproductive and nutritional health.

Baseline mean percentage score of the respondents for their knowledge, attitude and practice on ARH among the Control group was 19.4, 17.8 and 16.5 respectively; among the Experimental group 1 it was 20.7, 20.1 and 19.0 respectively; among the Experimental group 2 it was 20.9, 20.4 and 20.7 respectively.

Baseline mean percentage score of the respondents for their knowledge, attitude and practice on ANH among the Control group was 10.6, 9.9 and 9.4 respectively; among the Experimental group 1 was 13.3, 13.6 and 13.5 respectively; among the Experimental group 2 was 17.7, 17.6 and 17.8 respectively.

Influence of background characteristics of the respondents on their baseline KAP on ARH and ANH

Influence of background characteristics of the respondents on their baseline KAP on ARH and ANH were examined with the help of ANOVA. Significant influence of respondents’ age, mothers’ education, locale of residence and family income was observed in baseline KAP on ARH and ANH of the respondents. Religion and family type did not show any significant influence on baseline KAP on ARH and ANH.
Effectiveness of the educational intervention given to the respondents on ARH and ANH

Both the Experimental groups showed statistically significant improvement in their knowledge, attitude and practice scores. Among the Control group no significant increase in the scores was noted for their knowledge, attitude and practice.

After giving Intervention on ARH, increase in the mean percentage scores of the respondents in Experimental group 1 and Experimental group 2 for their knowledge was 53.0 and 70.2 respectively, for attitude it was 53.9 and 70.7 respectively and for practice it was 54.6 and 70.6 respectively.

After giving intervention in ANH, increase in mean percentage scores of the respondents in the Experimental group 1 and in the Experimental group 2 for their knowledge was 61.0 and 73.6 respectively, for attitude it was 60.5 and 73.9 respectively and for practice it was 60.34 and 70.2 respectively.

Thus it was found that education intervention was effective as it improved the knowledge, attitude and practice on ARH and ANH among the respondents.

Impact of educational intervention on ARH and ANH among the respondents by the government and by the private schools

ANOVA computed on KAP scores of the respondents on ARH and ANH for all the three groups based on the type of school - government / private schools, showed significant difference. The respondents from the private schools scored higher compared to government schools in all the three groups both in the pre and post test.
Relationship among the Knowledge, Attitude and Practice of the respondents on ARH and ANH

KAP scores of the respondents on ARH and ANH before and after the intervention were subjected to Correlation of Coefficient which has shown that there is positive relationship among their Knowledge, Attitude and Practice both for ARH and ANH. In the present study it is observed that knowledge increment on ARH and ANH did not only improved their existing knowledge but also developed positive attitude and healthy practices regarding ARH and ANH. Thus through educational intervention Knowledge, Attitude and Practice, all the three domains on ARH and ANH improved.

Impact of the educational intervention given to the respondents by the type of the facilitator to their respective groups

Tukey test was done to compare the impact in KAP scores of the respondents on ARH and ANH in the three groups, taking two groups at a time, showed that the gain in KAP on ARH and ANH was more for the group in which intervention was given by the trained teachers compared to the group where intervention was given by researcher. Thus more impact of the educational intervention was found in the group where intervention was given by trained teachers.

Thus in the present study trained teachers have proved to be better facilitator to impart knowledge, attitude and practice on adolescent reproductive and nutritional health to the school going adolescent girls compared to the researcher. Hence teachers can be effective facilitators to empower adolescents on reproductive and nutritional health with the needed training in their teaching methodology.
Testing of the Hypotheses

Based upon objectives of the study, hypotheses were framed which was tested with the help of statistical analysis.

**Hypothesis 1:** Respondents’ background characteristics like age, mother’s education, family type, religion, local of their residence and family income do not have any impact on baseline KAP of the respondents on ARH and ANH.

ANOVA computed on base line scores of the respondents showed that there was impact of age, mothers’ education, locale of residence and family income. Impact of family type and religion was not found. Thus null hypothesis is rejected for background characteristics like age, mother’s education, residence and family income and is accepted for religion and family type.

**Hypothesis 2:** There is no significant change in the KAP of the respondents on ARH and ANH before and after the intervention.

Paired ‘t’ test value showed significant difference in the scores of pretest and posttest of experimental groups and no significant difference was not noted in control group. Hence null hypothesis is rejected for Experimental groups and accepted for control group.

**Hypothesis 3:** There is no significant difference in the KAP on ARH and ANH among the respondents of government school and private school in the pretest and the posttest.

ANOVA computed on KAP scores of the respondents on ARH and ANH for all the three groups based on the type of school - government / private schools, showed significant difference. Hence this hypothesis is rejected.
Hypothesis 4: There is no significant relationship among Knowledge, Attitude and Practice on ARH and ANH in the pretest and the posttest.

Correlation of Coefficient showed that there is positive relationship among their Knowledge, Attitude and Practice both for ARH and ANH. Hence this hypothesis is rejected.

**Hypothesis 5:** There is no significant difference in the KAP on ARH and ANH among the respondents of Experimental group 1 and Experimental Group 2.

Tukey test value reveals that there was significant difference in the KAP scores on ARH and ANH among the respondents of Experimental group 1 and Experimental group 2. Hence this hypothesis is rejected.
CONCLUSIONS

This experimental study with two experimental groups and one control group has brought out certain important findings which have bearing on adolescents’ knowledge, attitude and practice on their reproductive and nutritional health.

The present study revealed that school going adolescent girls were in need of information related to their reproductive and nutritional health. This finding is supported by studies done by Sharma and Gupta (2003), Andrew et al. (2003) and Joseph et al (1997).

Majority of the school going adolescent girls preferred school based educational intervention by the teachers within the school system. WHO (2005) has also recommended school based educational programme with school teachers for an effective educational intervention programme.

Training of teachers improved the competency as well as their perceived comfort level to teach the content of module on ARH and ANH to their students and thus it focuses on the fact that school teachers before imparting intervention to the students on reproductive and nutritional health should be trained. Study findings of Bhasin and Aggarwal [1999], Obasi (2002) and Iyoke [2006] on school teachers are similar to the findings of this research.

The study have revealed that majority of the respondents were not exposed to the information on ARH and ANH. This fact is supported by study findings of Gupta (2003). Major source of information among the exposed respondents were teachers for both adolescent reproductive health and adolescent nutritional health. Bhasin and Aggarwal [1999] also support the findings. Mothers as source of information were quoted only by few. Respondents quoting mothers as source of information on adolescent
reproductive health was relatively less compared to nutritional health. In light of this finding it is clear that many mothers have inhibitions to discuss reproductive health matters with their daughters.

The study highlighted poor baseline scores on knowledge, attitude and practice both on ARH and ANH. This fact that adolescents have poor knowledge on adolescent reproductive and nutritional health is also supported by study findings of Narayan et al (2001), Joseph (1997), Tiwari (2006) and Kumar et al (2000).

Evaluation of the effectiveness of the educational intervention on ARH and ANH given to the respondents showed significant improvement in the scores of respondents compared to their baseline scores. This is also supported by study findings of Tragler (1991), Aggarwal (1999), kumar (2000), Prawei et al (2005) and Rao (2007). Hence, educational intervention should be imparted to school going adolescents girls in order to improve their existing knowledge, attitude and practice on adolescent reproductive and nutritional health. As the educational intervention was easy to conduct and also cost effective it can be carried in all the schools to empower school going adolescent girls on their reproductive and nutritional health.

This study has also proved that there is significant positive relationship among knowledge, attitude and practice. Hence knowledge improvement through educational intervention in the present study also has helped to develop right attitude and healthy practices among the respondents on their reproductive and nutritional health.

The study further revealed that respondents who were taught by the teachers showed more improvement in their KAP on ARH and ANH compared to the respondents who were taught by the researcher. Thus the research findings have shown that teachers with training will be the effective facilitators to empower school going adolescent girls on their reproductive and nutritional health.
Recommendation for action

* Since administrative control of the Schools rests with the Education Department and with the present study establishing beyond doubt the effectiveness of teachers as facilitators, Education Department with the help of health and nutrition experts can conduct periodical teachers training programs to impart the teaching skills necessary for presenting adolescent reproductive and nutritional health issues to adolescents in classrooms.

■ Since Training of Teachers has proved to be very vital in the success of the programme incorporating pre-service training or in-service training to teachers on adolescent reproductive and nutritional health, as a viable option should be looked into.

■ Shorter, doable curriculums on adolescent reproductive and nutritional health that can be specific for different grade levels in schools would be more acceptable and easily integrated with the regular curriculum as it will not overburden the teachers.

* Parents should be involved in reproductive and nutritional health education and home based counseling can be conducted. This could result in path-breaking success in promoting awareness of reproductive and nutritional health among adolescents. This would require that parents be educated, be able to change their perceptions and attitude about reproductive health, and show a willingness to initiate age appropriate dialogue with their children.

Recommendation for future research

• Considering the fact that the present study was conducted only to empower adolescent girls, it is suggested that similar study can be undertaken to impart awareness among school going adolescent boys on adolescent reproductive and nutritional health.

• In the present study only school going adolescent girls were taken hence a suitable intervention programme on reproductive and nutritional health may be designed to empower underprivileged non school going adolescent girls.