CHAPTER V

SUMMARY, CONCLUSIONS AND SUGGESTIONS

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SUMMARY, CONCLUSIONS AND SUGGESTIONS

5.1 The Study in Retrospect

The present study has been designed to understand the facilities given and activities conducted based on the curriculum in teacher education colleges for developing health awareness, and to understand the health awareness of student teachers at secondary level. It is also intended to analyse the health education curriculum at B.Ed. Degree level and to prepare a learning package for developing health awareness among student teachers at secondary level. The details of the study are presented below:

5.1.1 Objectives of the Study

The specific objectives of the study are

1. To analyse the health education curriculum at B.Ed. Degree level.

2. To understand the facilities given and the activities conducted in the teacher education colleges for developing health awareness among student teachers.

3. To find out the health awareness of student teachers at secondary level.

4. To prepare a learning package for developing health awareness among student teachers at secondary level.
5. To compare the effectiveness of the prepared learning package over conventional lecture method with respect to developing health awareness among student teachers at secondary level.

6. To compare the effectiveness of the prepared learning package over the conventional lecture method with respect to achievement of student teachers in different aspects of health science.

5.1.2 Hypotheses of the Study

The hypotheses formulated for the present study are the following:

1. The facilities available and activities conducted in the Teacher Education Colleges for developing health awareness of student teachers at secondary level are very limited.

2. The student teachers at secondary level have low awareness regarding various health aspects and issues.

3. The learning package prepared in the different areas of health science aspects would be effective in developing health awareness among student teachers at secondary level.

4. The learning package prepared would be effective in enhancing the achievement of student teachers with regard to various health science aspects.

5.1.3 Methodology in Brief

Survey and experimental methods were found to be appropriate for the present study.
Major tools and techniques used for the collection of data are the following:

1. Content Analysis
2. Interview Schedule for teacher educators
3. Interview Schedule for student teachers
4. Health Awareness Test
5. Raven’s Standard Progressive Matrices-A, B, C, D, & E.
6. Prepared Learning Package on Health Education
7. Achievement Test

As a preliminary step the investigator made an attempt to analyse the present secondary level teacher education curriculum with regard to different health education aspects. On analysis of the content, it is observed that the main health science aspects like first aid, communicable diseases, food and nutrition, health and hygiene, health examination and health service, effect of exercise on systems of the body are included in the pedagogical theory of secondary level teacher education curriculum. Based on the findings, a Health Awareness Test was prepared on the health education areas mainly included in the B.Ed. curriculum and other socially relevant areas.

Relevant data were collected from the subjects under study, using adequate tools and techniques like Interview Schedule, Standardised Health Awareness Test, Raven’s Progressive Metrices and an Achievement Test on health aspects and issues. The sample of the survey comprised of a total of 21 teacher educators and 1600
students teachers at B.Ed. Degree level, selected on the basis of proportionate random sampling technique. Opinion and views of 21 teacher educators and 220 student teachers about the availability of infrastructural facilities and instructional resources related to health education curriculum in Teacher Education Colleges were collected by conducting personal interview with them. A Standardised Health Awareness Test was administered to measure the awareness of student teachers on various health science aspects.

The data collected thus were analysed. Based on the findings, and the areas mainly included in the secondary level teacher education curriculum, a learning package was prepared on health education.

For the experimental study, one teacher education institution was selected. The sample for the experiment comprised of a total of 200 student teachers, 100 in the experimental group and 100 in the control group. The independent variables and dependent variables of the study are the instructional strategy and the achievement and awareness of student teachers, respectively. Before starting the experiment, Raven’s Progressive Matrices was administered to the experimental and control groups for understanding their intelligence. The achievement test and the awareness test were administered to student teachers in the experimental and control groups as initial-tests in the beginning of the experiment. The experimental group was
taught using the learning package prepared by the investigator and the student teachers in the control group were taught using the conventional lecture method. At the end of the experiment, the same achievement test and awareness test were administered as post-tests.

Appropriate statistical techniques were used for analysing the data for comparing the health awareness and the achievement of experimental and control groups. The major statistical techniques used were ‘t’ test and Analysis of Co-variance.

5.2 Major Findings

The important findings that have emerged from the study are presented under appropriate heads.

5.2.1 Quality of the existing Health Education curriculum at B.Ed. Degree level

The existing secondary level teacher education curriculum covers only a part of theoretical and practical aspects regarding health education areas than what is actually necessary for a future secondary school teacher.

5.2.2 Opinion and views of teacher educators about the Facilities provided and Activities conducted in the Teacher Education colleges for developing health awareness

The views and opinion of teacher educators revealed that the facilities present and the activities conducted for developing health awareness were limited in majority of the teacher education colleges.
Opinions of teacher educators (80%) revealed the fact that the present health education syllabus in the B.Ed. curriculum was not satisfactory and had the opinion that the present health education syllabus in the B.Ed. curriculum was only average in its quality. Many teacher educators (60%) were of the opinion that the syllabus lack proper explanations regarding the details about the important points to be stressed and extent of explanations given for each area.

A good majority of teacher educators (65%) reported that through this syllabus, objectives only up to Comprehension level could be attained.

A good number of teacher educators (60%) under study were not satisfied with the facilities available in the institution for teaching health education classes. They pointed out the inadequacies in facilities such as library books, journals & periodicals, A-V aids like charts, models, films, transparencies and first aid kit. Half (50%) of teacher educators felt lack of time as an obstacle in adopting demonstration classes, which is a must in area like first aid.

Most of the teacher educators (75%) reported that they were using the few available facilities and aids in the institution for teaching health education syllabus. A few of them (15%) said that they were using modern instructional aids like OHP, slide projectors and computers. About 60% of the teacher educators honestly admitted that the main work done in the area of health education was writing a record book including the contents in the syllabus.
Only a few of them reported to use demonstration method for teaching areas like first aid and correction exercises.

Majority of the teacher educators (80%) interviewed haven’t received any in-service training for teaching health education.

Only 30% of the teacher educators arranged experts’ classes in their institution in the areas of personal hygiene, communicable diseases, exercises like Yoga, child care and healthy life style in order to avoid life style diseases.

A good majority of the teacher educators (90%) reported that only one period was allotted for health education syllabus in a week, which was not sufficient for the effective teaching of the content included in the syllabus.

A considerable number of teacher educators (70%) were not satisfied with the awareness of student teachers about the health education aspects.

Most of the teacher educators (75%) honestly admitted that in their institutions, there were no seminars and workshops on health education. Majority of them expressed that these were not conducted because of the lack of time.

Majority of the teacher educators (75%) reported that OHP, Slide projectors and Computers were available in their institutions. They reported that these facilities were not used because of the lack of soft ware in health education and time.
The teacher educators who were interviewed pointed out the following limitations for developing health awareness, from the practical point of view.

* Lack of infrastructural facilities
* Lack of proper instructional resources
* Lack of time
* Lack of adequate preparation and practice from the side of teacher educators and student teachers
* Large number of students to be handled
* The health education curriculum has only theoretical importance and the practical is limited to writing a record book
* Lack of support and co-operation from the authorities as health education has less importance from the examination point of view

Teacher educators proposed the following suggestions in this regard.

× Ensure adequate infrastructural facilities and soft wares
× Reference material and related resources must be made available
× Update the syllabus and resources in proper time
× Provide comprehensive training to teacher educators and student teachers
Proper involvement of student teachers in public health issues

Student teachers must do projects and assignments in the area of health education during their practice teaching session.

5.2.3 Opinion and views of student teacher about the Facilities provided and Activities conducted in the Teacher Education colleges for developing health awareness.

The majority of the student teachers (80%) reported that only one period was allotted for health education in a week. In majority of the institutions it was utilized for dictating the content for the record work. Only (10%) few sample reported that this period is actually used for taking classes on topics of health education.

A vast majority of the student teachers (85%) interviewed reported that teacher educators mainly adopt lecture method for taking health education classes. A few of them (10%) said that they had demonstration classes also.

Majority of those who had witnessed the demonstration classes were of the view that, this method of teaching was very effective especially in the areas of First Aid and Postural Defects. Only a few student teachers (5%) admitted that in their institutions, charts, models, first aid kit and many types of equipments for demonstration of first aid are available.
Very few student teachers (5%) reported that they had attended a class taken by experts in the area of health education, but the number was limited to one. Majority of them (80%) revealed that in their institution there were no seminars and discussions conducted for health education.

A vast majority of student teachers (90%) interviewed expressed their strong need for knowing in depth about various health science aspects like Family planning, Sexually Transmitted Diseases, Lifestyle diseases like Heart diseases, Cancer etc, Food and Nutrition and Child care.

The majority of the student teachers (85%) reported that the work they were doing as a part of their training programme was writing a record book including most of the content areas in the Health education syllabus and taking a health education class during their practice teaching session.

A good number of student teachers (65%) revealed that they had technology laboratory equipments like OHP and Slide Projector, but its use for health education was very rare because of the absence of software. In the case of availability of library books for health education, majority (85%) of them were not satisfied with its number and quality.

Majority of the student teachers (98%) revealed that they did not get any opportunity to participate in public health awareness programmes conducted by Health Department, Govt. of Kerala.
In majorities’ opinion (65%) the present syllabus is more theoretical and this type of learning would not be useful for their future life.

Most of the student teachers (85%) expressed their strong need for a self learning material. Majority of them (80%) hoped that such material would not consume any additional time, as it needs no extra periods and can be used at their own convenience.

Suggestions given by student teachers for more effective understanding of the topics in health education were;

1. More practical classes for topics like First Aid.
2. Strategies like seminars, discussions, surveys and projects must be followed for topics like communicable diseases and present community health issues.
3. Hospital visits should be included in the curriculum.
4. The technology laboratory must be furnished with Charts, Models and Transparencies for taking demonstration classes for health education.
5. More periods should be allotted for health education classes.

5.2.4 Health awareness of Student Teachers at Secondary level

A. Assessment of Health Awareness of student teachers at secondary level-as a whole.

1. It was found out that majority of the student teachers under study had low health awareness (99.4%).
2. Only a very few student teachers (0.6%) under study had medium health awareness.

3. None of the subjects under study had high health awareness.

B. Assessment of Health Awareness of student teachers at secondary level – sub sample.

1. The study found out that all optional subjects like English, Hindi, Malayalam, Mathematics, Physical Science, Social Science and Commerce showed low health awareness (100%) except Natural Science (96.7%). Only a negligible percentage of Natural science students showed medium awareness (3.3%). None of them showed high health awareness.

2. The study also found that among the Aided, Unaided and University Centres of Teacher Education, none of them showed high awareness. Only 1.4% of student teachers in unaided institutions and 0.4% in university centers showed medium health awareness.

C. Assessment of Health Awareness of student teachers at secondary level in various Optional Subjects, about eight different aspects of health education under study.

A majority of student teachers [92.4%] under study had low awareness regarding the area of First Aid. The average awareness showed by only a few [7.5%] and high awareness only 0.1%. When
student teachers of different optional subjects were considered, none of them showed high awareness, except Natural Science optional (0.3%) and medium awareness by all the optional subjects. The highest score showed again by Natural Science student teachers (28.7%) followed by Physical Science (4%) and English (3.3%).

It also revealed that, regarding the awareness in First aid; a great majority (92.4%) of student teachers under study had low awareness irrespective of the institutions they study. Only a limited number (0.2%) of student teachers from unaided institutions showed high awareness in the area of first aid. The medium awareness shown by the student teachers from the unaided (9.4%) and aided institutions (7.1%) were slightly greater than their counterparts in the university centers (6.3%).

From the study it was clear that, 98.9% of student teachers showed low awareness and 1.1% showed medium awareness in the area of Communicable diseases. Among the various optional subjects, Natural Science [5.3%] and Social Science students [0.3%] showed medium awareness. The rest of the sample, irrespective of their optional subjects, showed low awareness.

The analysis also showed that a vast majority of student teachers (98.9%) had only poor awareness about Communicable diseases irrespective of their institutions. Student teachers from unaided institutions showed medium awareness (2%) which was
slightly higher than the aided institutions (0.5%) and university centers (0.7%).

Among the total sample 94.9% showed low awareness and 5.1% showed high awareness in the area of Non-communicable diseases. None of them showed medium awareness. When different optional subjects in the high awareness group were compared, Natural Science student teachers came first [14.7%] followed by commerce [4.6%] and Physical Science [4%]. A few from Mathematics (3.6%), Social Science (2.7%) and Hindi & Malayalam (2%) optional subjects showed high awareness.

It was clear that among the student teachers from various institutions, with high awareness (5.1%) in Non-communicable diseases, the group from university centers showed slightly higher awareness (6.2%) than the student teachers from unaided (4.9%) and aided institutions (3.6%).

A majority of student teachers [90.5%] under study had low awareness regarding the area of Health and Hygiene. The medium awareness showed by 8.7% and high awareness by 0.8%. When different optional subjects were compared, samples from Natural Science show high score [high awareness 3% & medium awareness 22%] followed by English [high awareness 1.3% & medium awareness 9.3%], Commerce [high awareness 0.8% & medium awareness 3.1%] and Physical Science [high awareness 0.4% & medium awareness
6.8%. Samples from Hindi [4%], Malayalam [4.7%], Mathematics [6.8%] and Social science [4%] show only medium awareness.

About the awareness in Health and Hygiene, a great majority (90.5%) of student teachers under study had poor awareness irrespective of the institutions they study. Among the limited number (0.8%) of student teachers who showed high awareness in the area of Health and Hygiene, the samples from aided institutions and university centers had the same level (1%). The medium awareness showed by the student teachers from the unaided institutions (10.6%) was greater than their counter parts in the university centers (8.2%) and aided institution (7.1%).

Analysis of the result showed that 98.8% of the whole sample under study had low awareness regarding the area of Food and Nutrition. The rest 1.2 % showed only medium awareness. Among the different optional subjects, student teachers from Natural Science show slight variation [medium awareness 6.3%].

The study also revealed the fact that among the student teachers at secondary level, none of them had high awareness in the area of food and nutrition. The sample from aided institutions showed slightly higher medium awareness (2%) than the student teachers from aided institutions (1.6%) and university centers (0.4%).

The results of the study revealed that among the whole sample, 96.9% showed low awareness, 2.9% showed medium awareness and 0.3% showed high awareness in the area of Child care. Among the
different optional subjects under study, student teachers from Natural Science showed a high awareness of 1.3% and medium awareness of 11%. The student teachers from Social Science and Commerce showed only low awareness in the area of Child Care. The medium awareness showed by optional subjects like Hindi [2%], Malayalam [2%] and Mathematics [2.3%] was slightly higher than English [0.7%] and Physical science (0.8%).

A great majority (96.9%) of student teachers at secondary level under study had poor awareness in Child Care irrespective of the institutions they study. Among the very limited number (0.3%) of student teachers who showed high awareness in the area of Childcare, the samples from unaided institutions had high awareness level (0.6%) than the university centers (0.1%). The medium awareness shown by the student teachers from the aided institutions (3.3%) was greater than their counterparts in the university centers (2.6%) and unaided institutions (2.9%).

Awareness about Blood Groups among the student teachers at secondary level, 59.1% showed low awareness 38% showed medium awareness and 2.9% showed high awareness. When different optional subjects were compared, student teachers of Natural Science show high awareness [14.7% high awareness & 52.3% medium awareness] followed by Commerce [0.8% high awareness & 39.2% medium awareness], Physical Science [0.4% high awareness & 36% medium awareness] and Mathematics [0.5% high awareness & 34.7% medium awareness].
awareness]. Other optional subjects like English [34.7%], Hindi [26%], Malayalam [33.3%] and Social Science [35.3%] showed only medium level of awareness in the area of Blood Groups.

About the awareness of Blood Groups, majority of the student teachers showed low awareness and among them samples from aided institutions [55.9%] were in a better status when compared to other institutions such as unaided [61.3%] and university centres [59.1%]. Among the limited number of student teachers [2.9%] who showed high awareness in the area of Blood Groups, the samples from unaided institutions [3.9%] showed slight higher level when compared to aided institutions [2.8%] and university centres [2.3%]. The medium awareness shown by the student teachers from the aided institutions (41.3%) was greater than their counter parts in the university centres (38.6%) and unaided institution (34.8%).

About the awareness in Postural Defects and Correction Exercises among student teachers at secondary level, 82.9% showed low awareness, 15.3% medium awareness and 1.8% high awareness. It was also clear that among the different optional subjects, Natural Science student teachers showed high awareness [8% high awareness & 37% medium awareness], followed by student teachers from Commerce [0.8% high awareness &12.3% medium awareness] and Hindi optional [2% high awareness & 9% medium awareness]. The awareness about Postural Defects and Correction Exercises was lowest among student teachers in Social Science [9.3% medium
A majority (82.9 %) of student teachers at secondary level under study had low awareness in Postural Defects and Correction Exercises, irrespective of the institutions they study. Among the very limited number (1.8 %) of student teachers who showed high awareness in this area, the samples from unaided institutions had high awareness level (2.6 %) than the aided institutions [2%] and university centres (1.1%). The medium awareness shown by the student teachers from the aided institutions (16.2 %) was greater than their counter parts in the unaided institutions (15.9 %) and university centres (14.4 %).

5.2.5 Effectiveness of the prepared learning package in developing Health Awareness among student teachers at secondary level

Prepared learning package is more effective than the conventional lecture method in developing health awareness among student teachers at secondary level. The conclusion is substantiated by the following findings.

1. The analysis showed that the average scores for initial health awareness is 16.9 for the control and the experimental groups. The total awareness score increased to 31.8 for the control group and 80.4 for the experimental group due to the learning methods adopted in those groups. The mean scores of experimental group
were much greater than that of the control group. Thus there is significant difference between the experimental group and the control group. The paired ‘t’ statistics (21.21 - control group and 66.80 - experimental group) shows that even if the increase in the awareness score was statistically significant in both the groups, the student teachers of experimental group learned through prepared learning package develop more health awareness than their counter parts in the control group.

2. Analysis of variance proved that the learning package was superior to conventional lecture method in enhancing the health awareness of student teachers at secondary level. The Fy value (1330.41) is greater than the table value (2.61) for df 1/198 and it is significant at 0.01 level.

3. The Analysis of co-variance of the scores of the pre-test and post-test of the experimental and control groups were computed. The obtained Fyx value (1686.175) was greater than the table value (2.61), the difference between the two groups is significant at 0.01 level.

4. When adjusted means were compared the ‘t’ value obtained was 41.063 which was greater than the table value 2.61 at 0.01 level. Hence there is significant difference between the two groups. Thus it is clear that the student teachers learned with the help of learning package attained high health awareness than those who were taught through conventional lecture method.
Comparison of Experimental and Control groups with respect to their Awareness in each of the Health Science Areas

5. The prepared learning package is more effective than the conventional lecture method in enhancing the awareness of student teachers in the area of First aid. The conclusion is substantiated by the following findings.

i. The average score for initial awareness in First aid is only 21.7 for control group and 22.0 for experimental group. The awareness score increased to 37.3 and 84.1 in control group and experimental group respectively due to the learning methods adopted in those groups. The paired ‘t’ statistics (10.83-control group & 36.48- Experimental group) showed that even if the increase in the awareness score was statistically significant in both the groups, student teachers of experimental group learned through prepared learning package develop high awareness in the area of First aid than their counter parts in the control group.

ii. Analysis of variance proved that the learning package was superior to conventional lecture method in enhancing the awareness in First aid among student teachers at secondary level. The Fy value (518.086) is greater than the table value (2.61) for df 1/198 and it is significant at 0.01 level.

iii. The Analysis of co-variance of the scores of the pre-test and post-test of the experimental and control groups were
computed. The obtained Fyx value (562.637) was greater than the table value (2.61), the difference between the two groups is significant at 0.01 level.

iv. While comparing the adjusted means the ‘t’ value obtained (23.722) was greater than the table value (2.61). Hence there was significant difference between the two groups. Thus it was clear that the student teachers in the experimental group who learned with the help of learning package attained high awareness in the area of First aid than those who were taught through conventional lecture method.

6. The prepared learning package is more effective than the conventional lecture method in enhancing the awareness of student teachers in the area of Communicable diseases. The conclusion is substantiated by the following findings.

i. The average score for initial awareness in Communicable diseases was only 13.5 for control group and 13 for experimental group. The awareness score increased to 26.2 and 75.9 in control group and experimental group respectively due to the learning strategies adopted in these groups. The paired ‘t’ statistics (13.69 - control group and 41.35- Experimental group) showed that the increase in the awareness score was statistically significant in both the groups. On further analysis of the ‘t’ values, it was clear that student teachers of experimental group learned
through prepared learning package develop high awareness in the area of Communicable diseases than their counterparts in the control group.

ii. Analysis of variance proved that the learning package was superior to conventional lecture method in enhancing the awareness in the area of Communicable diseases among student teachers at secondary level. The Fy value (729.476) is greater than the table value (2.61) for df 1/198 and it is significant at 0.01 level.

iii. The Analysis of co-variance of the scores of the pre-test and post-test of the experimental and control groups were computed. The obtained Fyx value (808.146) was greater than the table value (2.61), and the difference between the two groups is significant at 0.01 level.

iv. While comparing the adjusted means the' value obtained (28.45) was greater than the table value (2.61). Hence there is significant difference between the two groups. Thus it was clear that the student teachers in the experimental group who learned with the help of learning package attained high awareness in the area of Communicable diseases than those who were taught through conventional lecture method.

7. The prepared learning package is more effective than the conventional lecture method in enhancing the awareness of
student teachers in the area of Non-communicable diseases. The conclusion is substantiated by the following findings.

i. The average score for initial awareness in Non-communicable diseases was only 27 for control group and 27.7 for the experimental group. The awareness score increased to 43 and 82 in control group and experimental group respectively due to the learning methods adopted in those groups. The paired ‘t’ statistics (7.28 -control group & 19.76 - experimental group) showed that, even if the increase in the awareness score was statistically significant in both the groups, student teachers of experimental group learned through prepared learning package develop high awareness in the area of Non-communicable diseases than their counter parts in the control group.

ii. Analysis of variance proved that the learning package was superior to conventional lecture method in enhancing the awareness in Non-communicable diseases among student teachers at secondary level. The Fy value (158.634) is greater than the table value (2.61) for df 1/198 and it is significant at 0.01 level.

iii. The Analysis of co-variance of the scores of the pre-test and post-test of the experimental and control groups were computed. The obtained Fyx value (163.687) was greater than the table value (2.61), the difference between the two groups is significant at 0.01 level.
iv. While comparing the adjusted means the ‘t’ value obtained (12.79) was greater than the table value (2.61). Hence there is significant difference between the two groups. From the above results it is clear that the student teachers in the experimental group who learned with the help of the prepared learning package attained high awareness in the area of Non-communicable diseases than the control group who were taught through conventional lecture method.

8. The prepared learning package is more effective than the conventional lecture method in increasing the awareness of student teachers in the area of Health and Hygiene. The conclusion is substantiated by the following findings.

i. The average score for initial awareness in Health and Hygiene was only 19.3 for control group and 19.8 for experimental group. The awareness score increased to 34.8 and 68.5 in control group and experimental group respectively due to the learning methods adopted in both the groups. The paired ‘t’ statistics (9.139- control group and 20.36- experimental group) showed that the increase in the awareness score was statistically significant in both the groups. From the ‘t’ values, it was clear that student teachers of experimental group learned through prepared learning package develop high awareness in the area of Health and Hygiene than those who were in the control group.
ii. Analysis of variance proved that the learning package was superior to conventional lecture method in increasing the awareness in the area of Health and Hygiene among student teachers at secondary level. The Fy value (133.620) is greater than the table value (2.61) for df 1/198 and it is significant at 0.01 level.

iii. The Analysis of co-variance of the scores of the pre-test and post-test of the experimental and control groups were computed. The obtained Fyx value (147.278) was greater than the table value (2.61), the difference between the two groups was significant at 0.01 level.

iv. While comparing the adjusted means, the ‘t’ value obtained (12.138) was greater than the table value (2.61). Hence there is significant difference between the two groups. Thus it was clear that the student teachers in the experimental group who learned with the help of the prepared learning package attained high awareness in the area of Health and Hygiene than those who were taught through conventional lecture method.

9. The prepared learning package is more effective than the conventional lecture method in increasing the awareness of student teachers in the area of Food and Nutrition. The conclusion is substantiated by the following findings.

i. The average score for initial awareness in Food and Nutrition was only 12.9 for control group and 13.2 for experimental
group. The awareness score increased to 26 and 82.3 in control group and experimental group respectively due to the learning methods adopted in those groups. The paired ‘t’ statistics (14.42-control group and 59.54- experimental group) showed that even if the increase in the awareness score was statistically significant in both the groups, student teachers of experimental group learned through the prepared learning package develop high awareness in the area of Food and Nutrition than the student teachers in the control group.

ii. Analysis of variance proved that the learning package was superior to conventional lecture method in increasing the awareness in the area of Food and Nutrition among student teachers at secondary level. The Fy value (1351.734) is greater than the table value (2.61) for df 1/198 and it is significant at 0.01 level.

iii. The Analysis of co-variance of the scores of the pre-test and post-test of the experimental and control groups were computed. The obtained Fyx value (1487.555) was greater than the table value (2.61), the difference between the two groups was significant at 0.01 level.

iv. When adjusted means were compared the ‘t’ value obtained was 38.581 which is greater than the table value 2.61 at 0.01 level. Hence there is significant difference between the experimental and control groups. Thus it was clear that the student teachers
in the experimental group who learned with the help of learning package attained high awareness in the area of Food and Nutrition than those in the control group who were taught through conventional lecture method.

10. The prepared learning package is more effective than the conventional lecture method in increasing the awareness of student teachers in the area of Child Care. The conclusion is substantiated by the following findings.

i. The analysis showed that the average score for initial health awareness in Child Care was 20.8 for the control group and 20.5 for the experimental group. The total awareness score increased to 36.3 for the control group and 87.7 for the experimental group due to the learning methods adopted in those groups. The mean scores of experimental group were much greater than that of the control group. Thus there was significant difference between the experimental group and the control group. The paired ‘t’ statistics (10.57- control group and 41.6- experimental group) shows that even if the increase in the awareness score is statistically significant in both the groups, the student teachers of experimental group learned through prepared learning package develop high awareness in the area of Child Care than the student teachers in the control group.
ii. Analysis of variance proved that the learning package was superior to conventional lecture method in increasing the awareness in the area of Child Care among student teachers at secondary level. The Fy value (700.861) is greater than the table value (2.61) for df 1/198 and it is significant at 0.01 level.

iii. The Analysis of co-variance of the scores of the pre-test and post-test of the experimental and control groups were computed. The obtained Fyx value (722.877) was greater than the table value (2.61), the difference between the two groups is significant at 0.01 level.

iv. While comparing the adjusted means, the ‘t’ value obtained (26.89) was greater than the table value (2.61). Hence there was significant difference between the two groups. Thus it was clear that the student teachers in the experimental group who learned with the help of the prepared learning package attained high awareness in the area of Child Care than the student teachers in the control group who were taught through conventional lecture method.

11. The prepared learning package is more effective than the conventional lecture method in increasing the awareness of student teachers in the area of Blood Groups. The conclusion is substantiated by the following findings.
i. The average score for initial awareness in Blood Groups was only 26 for both control group and experimental group. The awareness score increased to 51 and 88.5 in control group and experimental group respectively due to the learning strategies adopted in both the groups. The paired ‘t’ statistics (7.96-control group and 19.02 experimental group) showed that the increase in the awareness score was statistically significant in both the groups. From the ‘t’ values, it was clear that student teachers of experimental group who learned through prepared learning package developed high awareness in the area of Blood Groups than those who were in the control group.

ii. Analysis of variance proved that the learning package was superior to conventional lecture method in increasing the awareness in the area of Blood Groups among student teachers at secondary level. The Fy value (121.935) is greater than the table value (2.61) for df 1/198 and it is significant at 0.01 level.

iii. The Analysis of co-variance of the scores of the pre-test and post-test of the experimental and control groups were computed. Since the obtained Fyx value (124.615) was greater than the table value (2.61), the difference between the experimental and control groups was significant at 0.01 level.
iv. When adjusted means were compared the ‘t’ value obtained was 11.163, which was greater than the table value 2.61 at 0.01 level. Hence there was significant difference between the experimental and control groups. Thus it was clear that the student teachers in the experimental group who learned with the help of learning package attained high awareness in the area of Blood Groups than those in the control group who were taught through conventional lecture method.

12. The prepared learning package is more effective than the conventional lecture method in increasing the awareness of student teachers in the area of Postural Defects and Correction Exercises. The conclusion is substantiated by the following findings.

i. The average score for initial awareness in Postural Defects and Correction Exercises is 18.2 for both control group and experimental group. The awareness score increased to 39.2 and 77.4 in control group and experimental group respectively due to the learning strategies adopted in both the groups. The paired ‘t’ statistics (13.63 -control group & 24.73- experimental group) showed that the increase in the awareness score was statistically significant in both the groups. From the ‘t’ values, it was clear that student teachers of experimental group learned through prepared learning package developed high awareness in the area of
Postural Defects and Correction Exercises than the student teachers who were in the control group.

ii. Analysis of variance proved that the learning package was superior to conventional lecture method in increasing the awareness in the area of Postural Defects and Correction Exercises among student teachers at secondary level. The Fy value (267.230) is greater than the table value (2.61) for df 1/198 and it is significant at 0.01 level.

iii. The Analysis of co-variance of the scores of the pre-test and post-test of the experimental and control groups were computed. Since the obtained Fyx value (268.842) was greater than the table value (2.61), the difference between the experimental and control groups was significant at 0.01 level.

iv. While comparing the adjusted means the ‘t’ value obtained (16.396) was greater than the table value (2.61). Hence there was significant difference between the two groups. Thus it was clear that the student teachers in the experimental group who learned with the help of the prepared learning package attained high awareness in the area of Postural Defects and Correction Exercises than those who were taught through conventional lecture method.
5.2.6 Effectiveness of the prepared learning package on Achievement of student teachers at secondary level with regard to various Health Science Areas

1. The prepared learning package is more effective than the conventional lecture method in enhancing the total achievement of student teachers at secondary level with regard to various areas of health science. The conclusion is substantiated by the following findings.

   i. The analysis showed that the average score for initial achievement is 16.5 for the control group and 16.4 for the experimental group. The total score for achievement increased to 24.9 for the control group and 44.8 for the experimental group due to the learning methods adopted in those groups. The mean scores of experimental group were much greater than that of the control group. Thus there was significant difference between the experimental group and the control group. The paired ‘t’ statistics (17.29 - control group and 39.68 - experimental group) showed that the experimental group was in the advantageous position. It could be inferred from the interpretation of the findings that the student teachers of experimental group learned through prepared learning package achieve better in the areas of health science than those who were in the control group.
ii. By using analysis of variance it was proved that the Learning package was superior to Conventional Lecture method in increasing the achievement of student teachers at secondary level in health science areas. The Fy value (455.31) is greater than the table value 2.61 for df 1/198 and hence it is significant at 0.01 level.

iii. The Analysis of co-variance of the scores of the pre-test and post-test of the experimental and control groups were computed. Since the obtained Fyx value (631.79) was greater than the table value (2.61), the difference between the experimental and control groups was significant at 0.01 level.

iv. While comparing the adjusted means the ‘t’ value obtained (25.13) was greater than the table value (2.61). Hence there was significant difference between the two groups. Thus it could be inferred that the student teachers in the experimental group who learned with the help of the prepared learning package achieve better than the student teachers who were taught through conventional lecture method.

2. The prepared learning package is more effective than the conventional lecture method in enhancing the achievement in various health science areas at Knowledge level. The conclusion is substantiated by the following findings.

i. The analysis showed that the average score for initial achievement at Knowledge level is 17.3 for the control group
and 17.2 for the experimental group. The achievement score increased to 31 for the control group and 46 for the experimental group due to the learning methods adopted in those groups. The mean scores of experimental group were much greater than that of the control group. Thus there was significant difference between the experimental group and the control group. The paired ‘t’ statistics (13.81 - control group and 22.61- experimental group) showed that the experimental group was in the advantageous position. It could be inferred from the findings that the achievement of experimental group in the areas of health science at Knowledge level was much better than the control group.

ii. Analysis of variance proved that the learning package was superior to conventional lecture method in enhancing the achievement at Knowledge level among student teachers at secondary level. The Fy value (125.84) is greater than the table value (2.61) for df 1/198 and it is significant at 0.01 level.

iii. The Analysis of co-variance of the scores of the pre-test and post-test of the experimental and control groups were computed. Since the obtained Fyx value (140.05) was greater than the table value (2.61), the difference between the experimental and control groups was significant at 0.01 level.

iv. While comparing the adjusted means the ‘t’ value obtained (11.83) was greater than the table value (2.61). Hence there
was significant difference between the two groups. Thus it could be inferred that the student teachers in the experimental group who learned with the help of the prepared learning package achieve better at Knowledge level than the student teachers who were taught through conventional lecture method in various areas of Health science.

3. The prepared learning package is more effective than the conventional lecture method in enhancing the achievement at Comprehension level in various areas of health science. The conclusion is substantiated by the following findings.

i. The analysis showed that the average score for initial achievement at Comprehension level is 15.2 for the control group and 15.1 for the experimental group. The achievement score increased to 22.2 for the control group and 39.6 for the experimental group due to the learning methods adopted in those groups. The mean score of experimental group was much greater than that of the control group. Thus there was significant difference between the experimental group and the control group. The paired ‘t’ statistics (11.11 - control group and 29.30- experimental group) showed that the experimental group was in the advantageous position. It could be inferred from the findings that the achievement of experimental group at Comprehension level is much better than the control group in the various areas of health science.
ii. Analysis of variance proved that the learning package was superior to conventional lecture method in enhancing the achievement at Comprehension level among student teachers at secondary level. The Fy value (214.58) is greater than the table value (2.61) for df 1/198 and it is significant at 0.01 level.

iii. The Analysis of co-variance of the scores of the pre-test and post-test of the experimental and control groups were computed. Since the obtained Fyx value (299.79) was greater than the table value (2.61), the difference between the experimental and control groups was significant at 0.01 level.

iv. While comparing the adjusted means the ‘t’ value obtained (17.31) was greater than the table value (2.61). Hence there was significant difference between the two groups. Thus it could be inferred that the student teachers in the experimental group who learned with the help of the prepared learning package achieve better at Comprehension level in various areas of Health science than the student teachers who were taught through conventional lecture method.

4. The prepared learning package is more effective than the conventional lecture method in enhancing the achievement in different areas of health science at Application level. The conclusion is substantiated by the following findings.

i. The average score for initial achievement at Application level was 24.7 for the control group and 24.5 for the experimental
group. The achievement score increased to 32.8 for the control group and 64.3 for the experimental group due to the learning strategies adopted in those groups. The mean score of experimental group was much greater than that of the control group. The paired ‘t’ statistics (7.25 - control group and 22.07 - experimental group) showed that the experimental group was in the advantageous position. It could be inferred from the findings that the achievement of experimental group in the areas of health science at Application level is much better than the control group.

ii. Analysis of variance proved that the learning package was superior to conventional lecture method in enhancing the achievement at Application level among student teachers at secondary level. The Fy value (285.005) is greater than the table value (2.61) for df 1/198 and it is significant at 0.01 level.

iii. The Analysis of co-variance of the scores of the pre-test and post-test of the experimental and control groups were computed. Since the obtained Fyx value (303.83) was greater than the table value (2.61), the difference between the experimental and control groups was significant at 0.01 level.

iv. While comparing the adjusted means, the ‘t’ value obtained (17.43) was greater than the table value (2.61). Hence there was significant difference between the two groups. Thus it can be inferred that the student teachers in the experimental group
who learned with the help of the prepared learning package achieve better at Application level in the various areas of Health science than the student teachers in the control group who were taught through conventional lecture method.

5. The prepared learning package is more effective than the conventional lecture method in improving the achievement in various areas of health science at Skill level. The conclusion is substantiated by the following findings.

i. The average score for initial achievement at Skill level was 5 for the control group and 4.8 for the experimental group. The achievement score increased to 10.6 for the control group and 29.4 for the experimental group due to the learning strategies adopted in those groups. The mean score of experimental group was much greater than that of the control group. The paired ‘t’ statistics (4.29- control group and 14.65- experimental group) showed that the experimental group was in the advantageous position. It could be inferred from the findings that the achievement of experimental group in the area of health science at Skill level was much better than the control group.

ii. Analysis of variance proved that the learning package was superior to conventional lecture method in improving the achievement at Skill level among student teachers at secondary level. The Fy value (101.93) is greater than the table value (2.61) for df 1/198 and it is significant at 0.01 level.
iii. The Analysis of co-variance of the scores of the pre-test and post-test of the experimental and control groups were computed. Since the obtained $F_{yx}$ value (103.84) was greater than the table value (2.61), the difference between the experimental and control groups was significant at 0.01 level.

iv. While comparing the adjusted means the ‘t’ value obtained (10.19) was greater than the table value (2.61). Hence there was significant difference between the two groups. Thus it could be inferred that the student teachers in the experimental group who learned with the help of the prepared learning package achieve better at Skill level in the areas of Health science than the student teachers who were taught through conventional lecture method.

5.3 **Tenability of the Hypotheses**

The tenability of the hypotheses are stated below:

**Hypothesis 1**

*The facilities given and the activities conducted in Teacher Education Colleges for developing health awareness among student teachers are very limited.*

The major findings (5.2.2 and 5.2.3) showed that the facilities given and the activities conducted in Teacher Education Colleges for developing health awareness among student teachers were very limited. Hence the first hypothesis is accepted.
Hypothesis 2

*The student teachers at secondary level have low awareness regarding various health science aspects.*

The major findings (5.2.4) showed that the student teachers at secondary level had low awareness regarding various health science aspects. Hence the second hypothesis is accepted.

Hypothesis 3

*The learning package prepared on different health science aspects would be effective in developing health awareness among student teachers at secondary level.*

The major findings (5.2.5) showed that the prepared learning package was very effective in developing health awareness among student teachers at secondary level. Hence the third hypothesis is substantiated.

Hypothesis 4

*The learning package prepared would be more effective in improving the achievement of student teachers at secondary level with regard to various health science aspects.*

The major findings (5.2.6) showed that the prepared learning package was more effective in improving the achievement of student teachers at secondary level with regard to various health science aspects. Hence the fourth hypothesis is substantiated.

Thus all the hypotheses formulated in the study were substantiated.
5.4 Conclusions of the Study

The major conclusions that emerged from the study are given below.

The present study brought to light the crucial findings that, in the present teacher education curriculum at secondary level, sufficient health education topics are not included and due emphasis is not given to each of health education aspects.

The syllabus-oriented approach does not motivate the student teachers but gives only superficial knowledge in the area of health. Most of the lecture classes in the teacher education institutions for health education are not relevant and sufficient in the present social circumstances.

The facilities given and activities conducted for developing health awareness among student teachers at secondary level are very limited. Teachers are also not getting opportunities to take part in health education programmes such as workshops, seminars orientation classes arranged by State Government departments and various voluntary organisations. Lack of time is also a main reason for majority of these drawbacks.

The present study found that the health awareness among student teachers at secondary level was very low irrespective of their optional subjects. A slight higher awareness shown by the student teachers from Natural science optional when compared to other subjects may be due to their previous knowledge in the subject area.
The present study also found that the prepared learning package on different health science areas such as First aid, Communicable diseases, Non-Communicable diseases, Health and Hygiene, Food and Nutrition, Child Care, Blood Groups, Postural Defects and Correction Exercises was very effective in developing health awareness among student teachers at secondary level.

Teacher educators are not using any type of self-learning materials or learning packages for transacting B.Ed. curriculum and the student teachers are not using any innovative materials for their learning or practice teaching purpose. According to majority of the student teachers, ‘lack of training and availability’ is the main reason for not using these materials in teacher education institutions even if they are interested.

The learning package prepared in various aspects of Health education is very effective in enhancing achievement in the specified areas at Knowledge, Comprehension, Application and Skill level among student teachers at secondary level.

5.5 Suggestions of the Study

On the basis of the above conclusions, the following suggestions are made.

1. Effective steps should be taken for revising the present teacher education curriculum with more emphasis on the practical aspects of health education, which are commonly needed for the day to day life in our society
2. Non-availability of reference books and software materials for teacher educators may be assessed as a hurdle in imparting health education in a proper way. So there should be adequate supply of materials in advance.

3. Prior to the implementation of any health education programme, the specific needs of the learners should be identified, so that the learning experience provided will be more relevant to the needs of the specific groups.

4. New teaching strategies and learning materials regarding health education issues and aspects can be provided among student teachers and it will help to develop high health awareness.

5. Facilities have to be provided in the teacher education institutions to organise discussions, seminars, demonstrations, workshops and film shows to develop health awareness. For this purpose various Government and voluntary organisations can be effectively utilized. Efforts should also be made to utilize the active services of experts in this field.

6. There should be co-ordination between medical colleges, state health education department, community medicine department, public health engineering department and various voluntary health organisations in order to build resource units relevant for health education.

7. In service and refresher courses should be organised for teacher educators to make them familiarise with the innovative ways of
teaching health education, and also to prepare self learning strategies in the area of health education.

8. A more systematic effort should be made to supply various audio-visual aids in all teacher education institutions and use them effectively to educate the student teachers about various health education aspects and issues related to their life, surroundings, reasons behind communicable diseases, life style diseases, need for immunisation, hygienic life, proper nutrition and exercise. This will help the student teachers to change their attitude towards health education, instill in them the need for maintaining a healthy environment and develop sensitivity towards health related problems.

9. The teacher educators should be given proper orientation towards development of different types of packages, which will equip them to adopt better teaching learning strategies.

10. Government agencies like UGC, NCTE, NAAC and NCERT should take initiative in supplying instructional modules and packages for teaching Health science in teacher education institutions. They should also provide financial support as and when required to these institutions.

11. Research and experiments in Health education shall be promoted and all the teacher educators and student teachers shall be made aware of the findings of the research.
5.6 Suggestions for Further Research

The findings of this study suggest certain areas for further research.

Similar studies on a wider sample including more areas in health education aspects and issues will be helpful for valid generalisations. Different types of learning packages, modules, programmed instructions in more health science areas may be prepared for teacher educators and student teachers at primary and secondary level.

A survey may be conducted about the attitude of teacher educators and student teachers towards health education and a set of instructional materials and instructional packages may be prepared and tested.

A survey can be conducted to identify the role of various health organisations in developing and fostering health awareness and in giving health education at formal, informal and nonformal levels of education.

Multimedia packages on health education areas can be prepared for student teachers at secondary level and also for primary level and its effectiveness can be tested.

Media based public programmes with respect to health awareness can be studied and media based instructional strategy can be devised to create health awareness among pre service and in-
service teachers at primary, secondary, higher secondary schools and
college level.

A survey study can be conducted to find out the extend of
awareness created by the published articles on various public health
issues and problems and its influence on changing the attitude
towards bad habits and life styles.

A study can be conducted to analyse various public health
issues and problems such as communicable diseases like AIDS, life
style diseases like Diabetics, Heart diseases, Cancer etc, malnutrition, health problems due to stress and over work and its
occurrence due to lack of awareness.