A Quasi-Experimental Study to Assess the Effectiveness of Health Awareness Package on Knowledge Regarding Reproductive Health Among College Going Girls of Selected Colleges of Jabalpur MP in the Year 2021-2023

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***Abstract*—Reproductive health is an essential component of overall health that encompasses physical, mental, and social well-being in all matters related to the reproductive system. It plays a crucial role throughout the life cycle, especially during adolescence, which is a transitional stage from childhood to adulthood marked by significant biological, emotional, and social changes. This period is characterized by the onset of puberty, including menarche in females, development of secondary sexual characteristics, and increased reproductive capability.**

Adolescent girls face various reproductive health challenges such as menstrual problems, lack of awareness regarding menstrual hygiene, reproductive tract infections, and psychosocial issues influenced by cultural myths and taboos. Menarche, being a significant milestone, may have both positive and negative psychological and social impacts, including changes in self-esteem, body image, and emotional well-being.

Despite its importance, reproductive health among adolescent girls remains neglected due to lack of education, awareness, and access to services. Health education, Information Education Communication (IEC) activities, and government programs such as family planning initiatives and Reproductive and Child Health (RCH) programs play a vital role in improving awareness and promoting healthy practices.

A life cycle approach to reproductive health emphasizes care from infancy to post-reproductive age, ensuring continuity of health promotion and disease prevention. Strengthening reproductive health education and services is essential to empower adolescent girls, improve quality of life, and ensure a healthier future generation.

Aim: - The aim of the present study was to assess the effectiveness of Health Awareness Package on knowledge regarding Reproductive Health among college going girls of selected colleges of Jabalpur MP in the year 2021-2023."

Methodology: - In the present study, an evaluative research approach was adopted as it was most appropriate to assess the effectiveness of the Health Awareness Package on the knowledge regarding reproductive health among college-going girls and a pre-experimental one-group pre-test post-test design was used to evaluate the effectiveness of the Health Awareness Package. The study was conducted in selected colleges of Jabalpur, Madhya Pradesh. Pilot study was conducted in Govt. Autonomous MKKB Arts and Commerce College for Women, Jabalpur and Main study was conducted in Government Model Science College, Jabalpur. The target population refers to all college-going girls studying in selected colleges of Jabalpur.

Findings: - The findings of the present study revealed that in the pre-test, majority of the students (62%) had good knowledge scores ranging from 11–20, followed by 23% with very good knowledge (21–30), and 15% with fair knowledge (1–10) regarding reproductive health. In contrast, the post-test results showed a marked improvement in knowledge levels, where 69% of students obtained very good scores (21–30), 12.5% had good scores (11–20), and only 1.5% remained in the fair category (1–10).

The comparison of pre-test and post-test mean knowledge scores indicated that the post-test mean score (21.0 ± 4.24) was significantly higher than the pre-test means score (15.85 ± 5.16). The calculated paired 't'

value (t = 8.17, p ≤ 0.05) was statistically significant, showing a meaningful difference between pre-test and post-test scores. This indicates that the Health Awareness Package was effective in improving the knowledge of college-going girls regarding reproductive health.

Further comparison of grading results also supported these findings, as the percentage of students with very good knowledge increased from 23% in the pre-test to 69% in the post-test, while those with fair knowledge reduced from 15% to 1.5%. Similarly, students with good knowledge decreased from 62% to 12.5%, reflecting overall improvement in knowledge levels after the intervention.

Overall, the study findings clearly demonstrate that the Health Awareness Package was effective in enhancing the reproductive health knowledge among college-going girls.

Conclusion: - The study concluded that the Health Awareness Package was effective in improving the knowledge of college-going girls regarding reproductive health. The post-test knowledge scores were significantly higher than the pre-test scores, showing a clear improvement after the intervention. This indicates that structured health education is an effective method to enhance reproductive health awareness among college students.

***Index Terms*—Quasi-experimental study, effectiveness, Health Awareness Package, reproductive health, knowledge, college-going girls, adolescent health, menstrual hygiene, structured teaching programme, Jabalpur (M.P.), India.**

I. INTRODUCTION

A girl is considered a precious gift of God, who brings love and affection to society. She plays multiple roles throughout her life as a daughter, sister, wife, and mother, and in fulfilling these responsibilities, she often neglects her own health, needs, and well-being. Health is defined by the World Health Organization (WHO, 1948) as a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity. In recent years, this definition has been expanded to include the ability to lead a socially and economically productive life. Adolescent age is a transitional period from childhood to adulthood, marked by rapid physical, emotional, and social changes.

Reproductive health is an essential component of overall health and human development. According to WHO (1994), reproductive health is a state of complete physical, mental, and social well-being in all matters relating to the reproductive system and its functions. It also includes the ability to have a satisfying and safe sexual life and the freedom to decide if, when, and how often to reproduce (Public Health England). It plays a vital role during adolescence as it influences future maternal health and the health of the next generation.

College-going girls, particularly in the age group of 18–23 years, face several reproductive health challenges due to biological changes, social pressures, and lack of awareness. Menarche, which marks the onset of menstruation, is a significant milestone in a girl's life but is often associated with various physical, emotional, and psychological changes. Menstrual problems such as irregular cycles, dysmenorrhea, menorrhagia, and amenorrhea are common among adolescents and may affect their quality of life. In addition, myths, taboos, and lack of proper menstrual hygiene practices further worsen their health status.

Hormonal changes during adolescence significantly influence physical growth, emotional stability, behavior, and mental health. Life cycle approach to reproductive health emphasizes care from infancy to post-reproductive age, highlighting the importance of adolescent health as a critical stage. Reproductive health also includes essential components such as sex education, menstrual hygiene, prevention of reproductive tract infections (RTIs), family planning, maternal health, and prevention of infertility.

Despite government initiatives such as reproductive and child health (RCH) programs and school-based sex education, many college-going girls still lack adequate knowledge about reproductive health due to cultural barriers, lack of communication, and social stigma. Studies show that insufficient knowledge leads to unsafe practices, early pregnancies, reproductive tract infections, and psychological stress.

II. NEED FOR THE STUDY

The need for the present study arises from the fact that reproductive health is essential for ensuring the overall well-being of young women and for improving future generational health. According to WHO, reproductive health is a key aspect of complete physical, mental, and social well-being. However, many young girls lack accurate and adequate information regarding

reproductive health due to social restrictions, cultural taboos, and inadequate education.

Adolescents and college-going girls are particularly vulnerable to reproductive health problems such as sexually transmitted infections, menstrual disorders, anemia, and unintended pregnancies. Lack of awareness often leads to risky behaviors, early marriages, school dropout, and psychological distress. In addition, societal stigma and myths surrounding menstruation and sexuality further prevent open discussion and proper health education.

Research studies and literature suggest that structured health education programs can significantly improve knowledge and promote healthy practices among young girls. However, in many educational settings, reproductive health education is still inadequate or not effectively implemented. Teachers and parents often avoid discussing these issues due to embarrassment or cultural barriers, leading to misinformation among girls.

During the researcher's observation, it was found that many college-going girls, especially those staying away from home, lacked proper knowledge regarding reproductive health and often relied on peers for information, which was incomplete and inaccurate. Therefore, there is a strong need to assess their knowledge and provide structured education.

Hence, the researcher felt the need to conduct the present study to evaluate the knowledge of college-going girls regarding reproductive health and to develop and implement a Health Awareness Package to improve their awareness, promote healthy practices, and empower them to make informed decisions about their reproductive health.

III. OBJECTIVES OF THE STUDY

The objectives of the present study were:

1. To assess the pre-test knowledge regarding reproductive health among college-going girls of selected colleges of Jabalpur, Madhya Pradesh.
2. To assess the post-test knowledge regarding reproductive health among college-going girls of selected colleges of Jabalpur, Madhya Pradesh.
3. To assess the effectiveness of the Health Awareness Package on knowledge regarding reproductive health among college-going girls of selected colleges of Jabalpur, Madhya Pradesh.
4. To find out the association between pre-test knowledge scores and selected socio-demographic variables.

IV. HYPOTHESES

The hypotheses formulated for the study were:

- H_{01}: There will be no significant difference between pre-test and post-test knowledge scores of college-going girls regarding reproductive health.
- H_1: There will be a significant difference between pre-test and post-test knowledge scores of college-going girls regarding reproductive health.
- H_{02}: There will be no significant association between pre-test knowledge scores and selected socio-demographic variables of college-going girls
- H_2: There will be a significant association between pre-test knowledge scores and selected socio-demographic variables of college-going girls.

V. OPERATIONAL DEFINITIONS

- Assess: It refers to the measurement of the knowledge and health status of college-going girls regarding reproductive health using a structured tool developed by the investigator.
- Effectiveness: It refers to the extent to which the Health Awareness Package improves the knowledge of college-going girls regarding reproductive health, as evidenced by gain in knowledge scores.
- Knowledge: It refers to the information gained by college-going girls regarding reproductive health aspects such as menstruation, menstrual hygiene, reproductive tract infections, sexually transmitted infections, polycystic ovarian disorder, abortion, reproductive cancers, and lifestyle modifications.
- Reproductive Health: It refers to a state of complete physical, mental, and social well-being in all matters related to the reproductive system and its functions.
- Health Knowledge Package: It refers to a systematically organized teaching programme including health education sessions, pamphlets, and instructional materials to improve

reproductive health knowledge among college-going girls.

- Health Status: It refers to the physical and clinical parameters of college-going girls such as height, weight, blood pressure, hemoglobin level, age of menarche, breast examination findings, thyroid status, and general physical examination.
- College-Going Girls: It refers to female students belonging to the age group of 18–23 years studying in selected colleges.

VI. MATERIALS AND METHODS

In the present study, an evaluative research approach was adopted as it was most appropriate to assess the effectiveness of the Health Awareness Package on the knowledge regarding reproductive health among college-going girls and a pre-experimental one-group pre-test post-test design was used to evaluate the effectiveness of the Health Awareness Package. The study was conducted in selected colleges of Jabalpur, Madhya Pradesh. Pilot study was conducted in Govt. Autonomous MKKB Arts and Commerce College for Women, Jabalpur and Main study was conducted in Government Model Science College, Jabalpur. The target population refers to all college-going girls studying in selected colleges of Jabalpur.

The sample consisted of 10 college-going girls for the pilot study and 60 college-going girls for the main study. A purposive sampling technique was used to select the participants based on the inclusion criteria. A structured knowledge questionnaire was used to assess knowledge regarding reproductive health, which included objective-type multiple-choice questions. The tool was developed on the basis of extensive review of literature, expert consultation, and the researcher's own experience. It was validated by 10 experts from the field of obstetrics and gynecology nursing and medical sciences, and necessary modifications were made according to their suggestions to ensure clarity and relevance. The reliability of the tool was assessed using the split-half method and Karl Pearson's correlation coefficient. The reliability coefficient was found to be $r = 0.79$, which indicated that the tool was reliable, valid, and feasible for use in the present study.

The tool consisted of three sections. Section I included demographic variables such as age, marital status, family income, education of mother, nutritional status, residence, and source of reproductive health information. Section II included clinical variables such as age of menarche, menstrual cycle details, hemoglobin level, breast health, and exercise habits. Section III consisted of 30 multiple-choice questions to assess knowledge regarding reproductive health. Each correct answer was awarded one mark and incorrect answers were given zero, with the total score ranging from 1 to 30 and categorized as fair (1–10), good (11–20), and very good (21–30).

The Health Awareness Package was developed based on a review of literature, expert opinion, and the researcher's experience. It included topics such as definition of reproductive health, physical and psychological changes during adolescence, menstrual hygiene, reproductive tract infections, balanced diet, nutrition, exercise, anemia prevention, and vulnerability of adolescent girls to reproductive health problems.

The Health Awareness Package was validated by 10 experts from obstetrics and gynecology nursing and medical fields. Based on their suggestions, necessary modifications were made to improve clarity and effectiveness, and the final package was approved for implementation.

The pilot study was conducted from 18/10/2022 to 25/10/2022 on 10 college-going girls in Govt. Autonomous MKKB Arts and Commerce College for Women, Jabalpur. It helped to assess the feasibility of the study and reliability of the tool, which was found to be $r = 0.79$.

The main study was conducted from 18/11/2022 to 25/11/2022 in Government Model Science College, Jabalpur. A pre-test was conducted using the structured questionnaire, followed by administration of the Health Awareness Package, and then a post-test was conducted using the same tool to assess the improvement in knowledge regarding reproductive health.

Data analysis was carried out using descriptive and inferential statistics. Frequency and percentage distribution were used for demographic variables, while mean and standard deviation were used for pre-test and post-test scores. A paired t-test was used to determine the significance of difference between pre-test and post-test knowledge scores, and chi-square test was used to find the association between knowledge scores and selected demographic variables.

VII. RESULT

Findings related to socio demographic variables

The data shows that most of the students were distributed across different age groups, with 21% in the age group of 18–20 years, 37% in 20–22 years, 20% in 22–23 years, and 21% above 23 years. Regarding marital status, 67% of the students were unmarried, 25% were married, and 8% belonged to other categories. In relation to family monthly income, 47% of students belonged to families earning less than ₹20,000 per month, 33% had income between ₹20,000–₹50,000, and 20% had income above ₹50,000.

The findings further show that 21% of students attained menarche at the age of 10–12 years, 21% at 13–15 years, 21% at 16–18 years, while 21% had not yet attained menarche. Regarding menstrual duration, 50% of students reported 4 days, 42% reported 3 days, 5% reported 6 days, and 3% reported more than 7 days. In terms of menstrual cycle interval, 33% had 29 days, 27% had more than 30 days, 33% had less than 15 days, and 5% had 22 days. Regarding menstrual flow, 52% reported normal flow, 30% mild flow, 9% severe flow, and 9% heavy flow.

The BMI distribution shows that 66% of students had normal BMI (18.5–24.9), while 17% were overweight (25.9–29.9) and 17% were in the higher BMI category (30.9–39.9). Hemoglobin status indicated that a majority of students were anemic, with 83% having Hb <10 gm/dl. Regarding breast health, 50% reported symmetry in breast shape and size, while 10% reported asymmetry. Only 30% of students knew how to perform breast self-examination, whereas 70% did not have this knowledge.

The data also shows that 34% of students performed exercise daily, 50% occasionally, and 16% did not exercise. Around 30% reported having reproductive health problems such as menstrual disorders or RTIs, while 70% reported no such problems.

Further, dietary habits revealed that 31% were vegetarian, 35% non-vegetarian, and 34% eggitarian. Regarding residence, 31% belonged to rural areas, 38% to urban areas, and 31% to suburban areas. The source of information on reproductive health was mainly family members and close relatives (45%), followed by books and social media (20%), while only 4% received information from teachers and friends.

Overall, the findings indicate variability in demographic and clinical characteristics and highlight gaps in reproductive health knowledge and practices among college-going girls.

Finding related to the pretest and posttest knowledge score of students regarding reproductive health

The pre-test knowledge score of the participants shows that 15% of the samples had fair knowledge (1–10 score range), 62% had good knowledge (11–20 score range), and 23% had very good knowledge (21–30 score range), indicating that the majority of students had only a moderate level of knowledge regarding reproductive health before the intervention.

The post-test knowledge score reveals a marked improvement, where only 1.5% of the samples had fair knowledge, 12.5% had good knowledge, and the majority, 69%, achieved very good knowledge scores (21–30 range). This indicates a clear increase in knowledge levels after the administration of the Health Awareness Package, demonstrating its effectiveness in improving reproductive health knowledge among college-going girls.

Findings related to effectiveness of health awareness package in terms of gain in knowledge scores

This section deals with the analysis and interpretation of data to evaluate the effectiveness of the Planned Teaching Program in terms of gain in knowledge among college-going girls regarding reproductive health.

The comparison of pre-test and post-test knowledge scores shows that the mean post-test score (21.0) was higher than the mean pre-test score (15.85), indicating an improvement in knowledge after the intervention. The standard deviation of the pre-test scores (SD ± 5.16) was higher than that of the post-test scores (SD ± 4.24), showing reduced variability after the program. The mean difference between pre-test and post-test scores was 5.15. The calculated paired 't' value ($t = 8.17$ at $df = 59$) was greater than the table value, indicating a statistically significant difference at $P \leq 0.05$ level.

Thus, the research hypothesis (H1) is accepted, confirming that there is a highly significant improvement in knowledge scores after the Health Awareness Package, which demonstrates its effectiveness in enhancing reproductive health knowledge among college-going girls.

Finding related to association between pre-test knowledge score with selected demographic variables

The association between pre-test knowledge scores and selected demographic and clinical variables was analyzed using the chi-square test. The findings revealed that there was no statistically significant association between pre-test knowledge scores and demographic variables such as age in years (χ^2 = 0.4907, p = 0.99795), marital status (χ^2 = 1.0708, p = 0.89887), family income (χ^2 = 0.2687, p = 0.99174), education of mother (χ^2 = 2.6433, p = 0.954715), nutritional status (χ^2 = 0.9307, p = 0.920116), area of residence (χ^2 = 0.6607, p = 0.956084), and source of information regarding reproductive health (χ^2 = 1.551, p = 0.817544). Similarly, no statistically significant association was found between pre-test knowledge scores and clinical variables such as age of menarche (χ^2 = 0.7004, p = 0.951276), duration of menstruation cycle (χ^2 = 1.8355, p = 0.765975), interval of menstruation cycle (χ^2 = 2.2527, p = 0.895048), amount of menstrual flow (χ^2 = 1.5013, p = 0.95941), hemoglobin level (χ^2 = 1.8324, p = 0.400028), breast shape and size (χ^2 = 2.3417, p = 0.310104), knowledge regarding breast self-examination (BSF) (χ^2 = 0.4762, p = 0.788128), exercise habit (χ^2 = 0.0964, p = 0.998874), and reproductive health problems such as menstrual disorders and RTI (χ^2 = 1.4017, p > 0.05).

However, BMI showed a statistically significant association with pre-test knowledge score (χ^2 = 6.0271), as the calculated chi-square value was greater than the table value (df = 2, χ^2 = 5.991). Since most calculated chi-square values were less than the table values and p-values were greater than 0.05, the findings were statistically non-significant for the majority of variables. Therefore, the null hypothesis (H02) was accepted for most demographic and clinical variables, while the research hypothesis was accepted only for BMI. Overall, the findings indicate that pre-test knowledge regarding reproductive health among college-going girls was not significantly associated with most selected demographic and clinical variables.

VIII. CONCLUSION

The present study was conducted to assess the effectiveness of a Health Awareness Package on knowledge regarding reproductive health among college-going girls. Based on the findings, it can be concluded that the Health Awareness Package was significantly effective in improving the knowledge of the participants. The post-test results showed a marked improvement in knowledge scores when compared to the pre-test scores, and the difference was found to be statistically significant.

The study revealed that before the intervention, most of the students had only moderate to good knowledge regarding reproductive health, whereas after the administration of the Health Awareness Package, a majority of students attained very good knowledge scores. The increase in mean post-test score compared to pre-test score clearly indicates the positive impact of the educational intervention.

Thus, it can be concluded that structured teaching through a Health Awareness Package is an effective method for enhancing reproductive health knowledge among college-going girls. Strengthening reproductive health education at the college level is essential for promoting healthy practices, preventing reproductive health problems, and empowering young women to make informed decisions regarding their health and well-being.

IX. IMPLICATION

1. Nursing Education

- Include reproductive health education in nursing and college curriculum.
- Conduct seminars, workshops, and awareness programs on reproductive health.
- Provide knowledge regarding menstrual hygiene, RTIs, nutrition, anemia, and breast self-examination (BSE).
- Encourage health education among adolescent and college-going girls.

2. Nursing Practice

- Organize health teaching programs on reproductive health in colleges and communities.
- Provide counseling and guidance regarding menstrual hygiene and reproductive problems.
- Identify reproductive health issues early and refer for appropriate treatment.
- Promote healthy lifestyle practices such as balanced diet and exercise.

3. Nursing Administration

- Organize regular reproductive health awareness programs in educational institutions.

- Develop policies for health education and counseling services for girls.
- Ensure availability of educational materials such as pamphlets, charts, and posters.
- Encourage nurses to participate in adolescent reproductive health programs.

4. Nursing Research
- Conduct similar studies with larger sample sizes.
- Replicate the study in different settings and populations.
- Compare different teaching methods for improving reproductive health knowledge.
- Undertake research on menstrual disorders, RTIs, anemia, and adolescent reproductive health issues.

X. RECOMMENDATIONS

- Similar studies can be conducted on a larger sample to generalize the findings.
- The study can be replicated in different colleges and settings.
- A comparative study can be conducted using control and experimental groups.
- Similar studies can be conducted among adolescent girls in schools and rural areas.
- Health Awareness Packages can be implemented regularly to improve reproductive health knowledge.
- Periodic health education programs on menstrual hygiene, RTIs, nutrition, and anemia prevention should be organized.
- Further studies can be conducted to assess attitude and practice regarding reproductive health among college-going girls.
- Longitudinal studies can be conducted to evaluate long-term retention of knowledge.
- Educational pamphlets, booklets, and audiovisual aids can be developed for awareness.
- Research can be conducted to assess the effectiveness of different teaching strategies regarding reproductive health.

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