

Effect Of Computer-Assisted Teaching Programme On Knowledge Regarding Prevention Of Polycystic Ovarian Disease And Its Reproductive Health Implications Among Female Nursing Students

Jolly Joseph^{1*}, Blessy Peter²

¹Thiruhirudaya College of Nursing, Kottayam, Kerala

²TMM College of Nursing, Kerala

ABSTRACT

The present study aimed to assess the effect of a computer-assisted teaching programme on knowledge regarding the causes, prevention, and reproductive health implications of polycystic ovarian disease (PCOD) among female nursing students in a selected nursing college, Kottayam. PCOD is a common endocrine and reproductive disorder affecting women during their reproductive years and may be associated with menstrual irregularities, ovulatory dysfunction, and potential long-term reproductive health consequences. Early awareness regarding PCOD, its prevention, and appropriate reproductive health practices is important for promoting healthy reproductive outcomes. A quantitative experimental approach with a pre-experimental one-group pre-test and post-test design was adopted for the study. The study was conducted among 30 female nursing students selected from a nursing college in Kottayam. A structured knowledge questionnaire was used to assess the students' knowledge regarding the causes, prevention, management, and reproductive health implications of PCOD. Following the pre-test, a computer-assisted teaching programme on PCOD was administered to the participants. A post-test was conducted immediately after the instructional programme using the same structured knowledge questionnaire. The findings revealed that, in the pre-test, 17% of the participants had poor knowledge, 80% had average knowledge, and 3% had good knowledge regarding PCOD. Following the computer-assisted teaching programme, all participants (100%) demonstrated good knowledge in the post-test. The mean knowledge score increased from 13.5 in the pre-test to 21.3 in the post-test, demonstrating a marked improvement in knowledge. The obtained *t* value of 71.07 indicated a statistically significant difference between the pre-test and post-test knowledge scores. The findings demonstrate that the computer-assisted teaching programme was effective in improving knowledge regarding PCOD among female nursing students. Incorporating information on reproductive health implications, including the importance of recognizing menstrual and ovulatory disturbances early, may strengthen reproductive health awareness and encourage timely health-seeking behaviour among young women. The study highlights the importance of structured and technology-assisted reproductive health education in nursing education.

Keywords: Polycystic ovarian disease, PCOD, computer-assisted teaching programme, knowledge, prevention, reproductive health, female nursing students.

INTRODUCTION

Adolescence is a unique period of transition from childhood to adulthood characterized by physical, psychological, social and emotional changes. During this period, individuals attain physical and sexual maturity, while emotional maturity may still be developing. The female reproductive system undergoes important changes during adolescence, and the ovaries play a major role in the production of ova

and reproductive hormones such as estrogen and progesterone.

Polycystic ovarian syndrome (PCOS), also referred to as polycystic ovarian disease (PCOD), is one of the most common endocrine and reproductive disorders affecting women of reproductive age. It is characterized by menstrual irregularities, hyperandrogenism and, in adults, polycystic ovarian morphology, after exclusion of other causes. In

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adolescents, diagnosis requires particular attention because some features may overlap with normal pubertal development (Teede et al., 2023; Peña et al., 2025). PCOS may be associated with menstrual irregularity, excess androgen activity, metabolic abnormalities and difficulties with ovulation.

One of the important reproductive consequences of PCOS is subfertility or infertility, particularly when ovulatory dysfunction persists into the reproductive years. Ovulatory disorders are recognized as important causes of infertility, and PCOS is one of the common conditions associated with ovulatory dysfunction (Goulis et al., 2022). Women with PCOS may experience difficulty in conceiving because irregular or absent ovulation can reduce the opportunity for fertilization. However, PCOS-related infertility should not be considered inevitable, as appropriate lifestyle modification, medical management and fertility treatment can improve reproductive outcomes.

PCOS is therefore not only a menstrual or cosmetic problem but also a condition with potential long-term reproductive, metabolic and psychological implications. Evidence indicates that lifestyle interventions involving healthy diet and physical activity can improve several clinical, metabolic and hormonal characteristics among adolescent girls with PCOS (Abdolahian et al., 2020). Early identification of risk factors and appropriate health education during adolescence may therefore be valuable in promoting reproductive health and reducing future complications.

Health education is particularly important among adolescent girls and young women because knowledge about menstrual abnormalities, PCOS, healthy lifestyle practices and reproductive consequences can encourage timely healthcare-seeking behaviour. Systematic evidence has shown that educational interventions can improve menstrual health knowledge and related practices among adolescent girls (Evans et al., 2022). Recent evidence from India also highlights the importance of targeted counselling and lifestyle management interventions for improving awareness and reducing the long-term burden associated with PCOS (Nallavothu et al., 2024).

The present study was therefore undertaken to assess the effect of a computer-assisted teaching programme on knowledge regarding the causes and prevention of PCOD among female nursing students. The educational programme included information regarding causes, symptoms, diagnosis, management and prevention. Incorporating information about the possible relationship between PCOS, ovulatory dysfunction and future infertility is particularly relevant because nursing students can become important sources of reproductive-health education for adolescent girls and young women.

STATEMENT OF THE PROBLEM

Effect of Computer-Assisted Teaching Programme on Knowledge Regarding Prevention of Polycystic Ovarian Disease and Its Reproductive Health Implications Among Female Nursing Students in a selected nursing college, Kottayam.

OBJECTIVES

- To assess the knowledge of nursing students on prevention of polycystic ovarian disease.
- To evaluate the effect of computer assisted teaching programme on prevention of polycysticovarian disease.
- To find out the association between pre-test knowledge of nursing students on prevention of polycystic ovarian disease, and selected socio personal variables.

OPERATIONAL DEFINITIONS

- **Effect:** It refers to the difference in knowledge regarding polycystic ovarian disease among nursing students after computer assisted teaching programme.
- **Computer assisted teaching programme:** In this study, it refers to planned teaching session with the help of a computer on polycystic ovarian disease for 45 minutes duration which includes cause, symptoms, diagnosis, management and its prevention.
- **Knowledge:** It refer to the awareness of nursing students regarding causes, symptoms, diagnosis, management and its prevention of

polycystic ovarian disease which is assessed by using structured questionnaire.

- **PCOD:** It is a hormonal disorder in which the Graffian follicle fails to develop completely, resulting in the formation of cyst that distends the ovary.
- **Reproductive Health:** In this study, reproductive health refers to the knowledge and awareness of female nursing students regarding menstrual health, ovulatory function, prevention of PCOD, and its potential implications for future reproductive well-being.
- **Female students:** It refers to 1st year BS.c Nursing students of Thiruhirudaya College of Nursing, Kottayam.

HYPOTHESES

H1: There is a significant difference between pre-test and post-test knowledge score of nursing students regarding prevention of polycystic ovarian disease.

H2: There is significant association between the knowledge of nursing students regarding prevention of polycystic ovarian disease and selected socio personal variables

MATERIALS AND METHODS

Research Approach:

Research approach used in this study was quantitative experimental approach

Research Design:

Research design is the plan structure and strategy of investigation on answering the research questions. The design used is pre-experimental one group pre test -post test design. Present study aimed to find out effectiveness of computer assisted teaching programme on prevention of PCOD among female students in selected nursing college, Kottayam

Schematic representation of research design The design can be represented as follows

O1 X O2

O1 -Pre test using structured knowledge questionnaire to assess knowledge of female students regarding prevention of PCOD

X - Computer assisted teaching programme regarding prevention of PCOD among female students.

O2 - Post test using the same questionnaire after the structured teaching programme

Research variable:

Variables are qualities, properties of persons, things or situations that change or vary. Independent variables Computer assisted teaching programme
Dependent variables- Knowledge regarding prevention of PCOD
Demographic variables Includes age, gender, religion, education and occupation of parents.

Setting:

Setting of the study is at Thiruhirudaya College of Nursing, Kottayam.

Population

Sampling technique

Sampling technique used for the present study is non probability convenient sampling.

Sample

The study sample consists of 30 students from 1st year female students studying in Thiruhirudaya College of Nursing who met the inclusion criteria.

CRITERIA FOR SAMPLE SELECTION

Adolescent girls who are willing for the study and present at the time of study.

Tool and techniques

Data collection tools are the procedures or instruments used by the researcher to observe or measure the key variables in the research problem. A structured knowledge questionnaire is used in this study.

Development of tool

Tools are the procedures or instruments used by the researcher to collect data. A structured knowledge

questionnaire, was developed by the investigators for assessing the knowledge regarding prevention of PCOD among adolescent girls. For the development of the tool, research and non-research literature was reviewed, suggestions of 5 experts were sought, and present statistics in PCOD were taken into consideration to determine the areas to be included.

Description of tool

Structured knowledge questionnaire.

The two sections in the tool were

Section 1: Socio-personal Data

Socio-personal data includes age, type of family, educational status of mother, occupation of mother, previous knowledge regarding PCOD, age in which menarche attained and history of PCOD.

Section 2: Structured knowledge questionnaire to assess the knowledge regarding PCOD

A questionnaire regarding PCOD was prepared by the investigators. Knowledge of student adolescent girls regarding PCOD is assessed by the knowledge questionnaire. It consists of 25 multiple choice questions. Questionnaire covered the following aspects of PCOD-Anatomy and physiology (6 questions), definition and introduction (3 questions), risk factors(1 question), signs and symptoms (3 questions), hormonal changes (2 questions), diagnostic measures (2 questions), treatment (3 questions), prevention of PCOD (2 questions) and complications of PCOD (2 questions).

Scoring

Level of knowledge	Score
Good	17-25
Average	9-16
Poor	0-8

Data collection

Data collection is the identification of subjects and precise systematic gathering of information relevant to the research purpose or the specific objectives, questions or hypothesis of the study.

After getting formal permission from the principal of Thiruhirudaya College of Nursing, Kottayam, the data were collected on 24-01-2020. After conveniently selected the settings based on inclusion criteria, the sample were selected. Investigators introduced themselves to the samples and gave an explanation of the study. Confidentiality of the data was ensured and informed consent was taken from the samples.

Pre-test knowledge was assessed and a computer assisted teaching programme was done, on the same day post-test was also conducted. The data collection was concluded by thanking their subjects. The data collected were compiled for data analysis.

Analysis:

Analysis is a process of organizing and synthesizing data in such a way that research questions can be answered and hypothesis tested. This chapter deals with the analysis and interpretation of data collected from 30 female students in Thiruhirudaya College of Nursing.

The data collected through structured knowledge questionnaire were analyzed by using descriptive statistics, which are necessary to provide a substantive summary of results in relation to objectives.

Section -1: Description of sample characteristics

Socio-personal Variable	Frequency	Percentage
1.Age in Years		
a.<18 years	6	20%
b.18-20 years	24	80%
2.Type of family		
a. Nuclear family	26	86.67%
b. Joint family	4	13.33%
3.Educational status of Mother		
a. School level	5	16.65%
b. Higher Secondary	12	40%
c. Degree and above	13	43.35%
4.Occupational status of mother		
a. Housewife	26	80%
b. Governmental employee	3	3.3%
c. private employee	11	16.7%
5.Previous knowledge regarding PCOD		
a. Yes	20	66.7%
b. No	10	33.3%
6.Age at which menarche attained		
a.<12 years	14	46.6%
b.13 years	9	30%
c. >13 years	7	23.4%
7.History of PCOD		
a. Yes	0	0
b. No	30	100%

Table - 1: Distribution of Samples based on Socio - demographic variables (n=30)

Among the 30 participant, 80% belongs to age group of 18-20 years, 20% belong to <18 years and no students belongs to the age of 20-22 years.

86.67% of the students are belongs to nuclear family and 13.33% are from joint family. Regarding the educational status of mother, 43.35% studied up to degree and above and 40% completed higher

secondary and 16.65% have school level education. Considering the occupational status of mother, 80% are house wife, 16.4% are private employee and 3.3% are government employee.

Among the total students, 66.7% of students have previous knowledge regarding PCOD and rest of

33.3% have no knowledge. Regarding the history of PCOD, nobody have the history of PCOD

Section - 2: Effectiveness of computer assisted teaching program on knowledge regarding prevention of PCOD

Knowledge of PCOD	Pretest		Post test	
	Frequency	Percentage	Frequency	Percentage
Good	5	16.7%	30	100%
Average	24	80%	0	0
Poor	1	3.3%	0	0

Table - 2: Frequency and percentage distribution of knowledge level among sample regarding prevention of PCOD (n=30)

Table 2 Shows that, the pre-test 16.7% students have good knowledge and average knowledge 80%, 3.3% has poor knowledge. Post test result shows that 100%

students have good knowledge regarding the prevention of PCOD after the completion of computer assisted teaching program.

Group	Mean	SD	Mean Difference	Paired t value	df
Pre test	13.5	72.6	7.8	0.3147	71.07
Post test	21.3	112.			

Table - 3: Mean, Standard deviation and t value of knowledge regarding prevention of PCOD among female students (n=30)

Table 3 Shows that mean post test score regarding PCOD among female nursing students is significantly higher than the pre test score. It revealed that computer assisted teaching program has significant influence in improving the knowledge of female nursing students regarding prevention of PCOD.

Section 3: Association of pre test knowledge of nursing students on prevention of PCOD with selected socio personal variables

Demographic variables	Knowledge level				
	Good	Average	Poor	Df	X ²
Age in years					
<18 years	0	6	0	2	5.436
18-20 years	4	19	1		
Type of family					
Nuclear	3	21	1	2	1.56
Joint	2	3	0		
Occupational status of mother					
House wife	3	22	1	4	38.133*
Private employee	2	1	0		
Government employee	0	1	0		
Educational Status of mother					
School Level	1	4	0	4	4.788
Higher Secondary	2	9	1		
Degree level and above	3	10	0		
Previous Knowledge of PCOD					
YES	3	17	1	2	4.663
NO	0	9	0		
Age of menarche					
<12years	1	13	1	4	5.663
13 years	2	6	0		
>13years	1	6	0		

*significant at 0.001 level.

Table - 4: Frequency distribution and chi square value of knowledge regarding prevention of PCOD with socio personal variables

The data in table 11 shows that the obtained t value is highly significant at 0.001 level. Hence there is a significant difference of knowledge regarding BSE among college students after VIDEO assisted teaching programme and the null hypothesis is rejected.

Section – 4: Association between pre test knowledge and selected socio- personal variables

Demographic variables	Grade of total knowledge score				
	Good	Average	Poor	Df	X ²
1.Age in years					
19-20	0	8	2	1	0.569
20 and above	0	18	2		
2. Educational status of mother					
School Level	0	4	0	2	1.68
Higher Secondary	0	11	3		
Degree and above	0	11	1		
3. Educational status of father					
School Level	0	10	0	2	4.117
Higher Secondary	0	7	3		
Degree and above	0	9	1		
4.Health care professionals in the family					
Yes	0	8	2	1	0.568
No	0	18	2		
5. Performance of BSE					
Yes	0	4	0	1	0.7
No	0	22	4		
6. Previous exposure to BSE					
Yes	0	10	1	1	0.256
No	0	16	3		
7. history of hormonal treatment					
Yes	0	1	0	1	0.16
No	0	25	4		

Table - 5: Frequency distribution and chi square value of knowledge regarding Breast self Examination of female college students with age (n=30)

After doing the chi-square value it shows that there is association between occupational status of mother and knowledge of students regarding the prevention of PCOD. From chi square table at 5% significance $\alpha=0.005$ and $X^2=38.133>9.49$. Null hypothesis is rejected. Rest of the socio-personal data has no association with the knowledge regarding the prevention of PCOD.

DISCUSSION

An important aspect of PCOD/PCOS that needs emphasis is its relationship with future reproductive health. PCOS is frequently associated with ovulatory dysfunction, which may result in difficulty in conception and infertility during the reproductive years. The FIGO classification of ovulatory disorders recognizes PCOS among the important causes of ovulatory dysfunction associated with infertility (Goulis et al., 2022). Similarly, evidence from a systematic review and meta-analysis indicates that women with PCOS may experience altered pregnancy outcomes, highlighting the importance of appropriate reproductive counselling and clinical management (Chatzakis et al., 2022).

The present study is particularly relevant from a preventive and educational perspective because the participants were young female nursing students. Although none of the participants in the present study reported a history of PCOD, as shown in the demographic findings, awareness during adolescence and early adulthood may support early recognition of menstrual irregularities and encourage timely consultation. The study found that the mean knowledge score increased from 13.5 in the pre-test to 21.3 in the post-test, and all participants achieved a good level of knowledge after the computer-assisted teaching programme.

The improvement in knowledge is consistent with evidence demonstrating the value of educational interventions for adolescent reproductive health. Evans et al. (2022) reported that educational interventions improved menstrual health knowledge and practices among young adolescent girls. In addition, lifestyle interventions involving diet and exercise have been shown to improve menstrual, hormonal and metabolic parameters among adolescent girls with PCOS (Abdollahian et al., 2020). These findings support the inclusion of lifestyle

education, menstrual-health awareness and reproductive-health counselling within preventive PCOS education programmes.

The relationship between PCOS and infertility also strengthens the importance of early health education. Knowledge of menstrual irregularity, ovulatory dysfunction, healthy lifestyle practices and appropriate healthcare-seeking behaviour may help young women recognize potential reproductive-health problems at an earlier stage. The purpose of such education is not to create anxiety about future infertility but to promote informed reproductive-health decisions and timely professional assessment when persistent menstrual or hyperandrogenic symptoms occur.

NURSING IMPLICATIONS

Nursing Practice:

Nurses should provide age-appropriate education regarding PCOD/PCOS, menstrual irregularities, lifestyle modification and reproductive health. Students should be informed that persistent ovulatory dysfunction associated with PCOS may contribute to difficulty in conception and infertility. However, nurses should emphasize that PCOS-associated infertility is manageable and that early assessment and appropriate treatment can improve reproductive outcomes.

Nursing Education:

Nursing curricula should incorporate PCOD/PCOS under reproductive health education, including its causes, symptoms, prevention, lifestyle management, metabolic consequences and relationship with ovulatory dysfunction and infertility. Nursing students should be prepared to provide accurate and non-stigmatizing counselling to adolescents and young women.

Nursing Administration:

Nursing administrators can support reproductive-health education programmes through structured teaching sessions, computer-assisted education, awareness campaigns and screening/referral initiatives for students and young women.

Nursing Research:

Future studies may evaluate the long-term effectiveness of educational interventions on PCOS knowledge, menstrual-health practices, lifestyle modification, healthcare-seeking behaviour and awareness of fertility-related consequences among adolescent girls and young women.

LIMITATIONS OF THE STUDY

Generalization of the study findings could be done with caution because of the small sample size (30 samples)

Recommendations for future study

- A similar study could be replicated on a large sample to increase the validity and generalize the findings.
- Long term effect of intervention programme (computer assisted teaching programme) on prevention of PCOD among adolescent girls may be assessed.
- A descriptive study could be done to find out the prevalence and factors affecting PCOD among adolescent girls

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