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Impact of video-based educational intervention on knowledge and perception of polycystic ovarian syndrome among pharmacy students: a pre-post interventional study

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Abstract

Background Polycystic ovarian syndrome (PCOS) is the leading cause of anovulatory infertility among women of reproductive age. Pharmacy students and other healthcare trainees have been shown to have limited knowledge of PCOS. Therefore, this study aimed to investigate the impact of video-based educational intervention on knowledge and perception of PCOS among final-year undergraduate pharmacy students in a Nigerian public university.

Methods A pre-post video-based interventional study was conducted among all final-year undergraduate pharmacy students in a Nigerian public university. Informed consent was obtained from all eligible participants. Data were collected using a validated self-administered questionnaire before and after administering the intervention. Descriptive statistics, paired t-tests, and independent t-tests were used for data analysis. The level of significance was set as $p < 0.05$.

Results Of the 306 pharmacy students who participated in the study, more than half were female ($n = 168$, 54.9%), aged 20 to 24 years ($n = 166$, 54.2%), and had one to three female siblings ($n = 189$, 61.8%). About 82% of the pharmacy students had heard of PCOS ($n = 250$). Video-based educational intervention significantly improved pharmacy students' knowledge of PCOS (90.42 ± 12.85 vs. 47.51 ± 25.97 , $t = -25.494$, $p = 0.001$). However, there was no significant difference in the students' perception towards PCOS before and after the intervention (18.35 ± 5.50 vs. 18.33 ± 5.36 , $t = 0.045$, $p = 0.965$).

Conclusion Video-based intervention improved the knowledge of pharmacy students about PCOS, but had no significant impact on their perception towards the disorder. Being a female student was associated with a better understanding and a more positive perception towards PCOS.

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Clinical trial number Not applicable.

Keywords Knowledge, PCOS, Perception, Pharmacy student, Video-based interventions

Background

Polycystic ovarian syndrome (PCOS) remains a public health concern for women of reproductive age [1]. PCOS is a leading cause of anovulatory infertility among women of reproductive age [2]. It can lead to long-term mental health challenges and social stigma related to obesity, negative body image perception, and infertility [3]. PCOS is estimated to affect 8–13% of women of reproductive age [3]. It is also projected that one in ten women will experience PCOS before menopause. Still, about 70% of women with PCOS remain undiagnosed and untreated [3]. In Nigeria, the prevalence of PCOS among women of reproductive age ranged from 8.6 to 16.9% [4–6]. PCOS often begins during adolescence, although the symptoms might fluctuate as the individual progresses into adulthood [3]. PCOS is characterized by hormonal imbalances, inconsistent menstrual periods, elevated androgen levels and the formation of cysts in the ovaries [7]. The exact aetiology of PCOS in women is unknown, even though it is associated with metabolic disorders and insulin resistance [8, 9]. Hence, the risk of PCOS is known to be higher in women with a family history of PCOS or type 2 diabetes mellitus (T2DM) [8, 9], thus suggesting that PCOS has a familial predisposition.

PCOS can be diagnosed and symptomatically managed successfully in women [10]. It can only be diagnosed in women of reproductive age based on the presence of at least two of these criteria according to the Rotterdam Consensus: (1) oligo-amenorrhea, (2) hyperandrogenism, and (3) evidence of polycystic ovaries via an ultrasound [11]. Women with PCOS have an increased risk of other health problems including cardiovascular disease, T2DM, obesity, depression, and endometrial cancer [9, 12–14]. Although there is no specific treatment for PCOS, its symptoms are currently managed through lifestyle modifications (e.g., healthy diet, exercise), medications, and fertility treatments. The symptomatic drug therapies include the use of contraceptives, oral antidiabetic drugs, or antiandrogens [15]. These medications are helpful as they stabilize the menstrual cycle and ovulation, regulate blood glucose and lipid metabolism, and reduce high levels of male hormones in women with PCOS.

Pharmacy students are future healthcare providers who could play a vital role in managing and counselling women with PCOS. However, previous studies demonstrated the existence of a knowledge gap in the understanding of PCOS among health sciences students which can potentially affect their capacity to provide optimal care for women with PCOS [16–21]. Traditional teaching methods may not adequately address all pharmacy

students need to know about PCOS and its management. Hence, incorporating innovative approaches such as video-based educational interventions can improve pharmacy students' comprehension of PCOS, its clinical presentations and risk factors, possible complications, and management options. Video-based interventions have reportedly facilitated disease knowledge acquisition and behavioural modifications among pharmacy students [22–24]. It is believed that video-based interventions would help in addressing deeply entrenched biases and misconceptions about PCOS, thus fostering a more comprehensive, empathetic and compassionate care of women with PCOS [22, 25].

Presently, PCOS is included in the undergraduate pharmacy curriculum of Nigeria public universities as part of a two-unit credit course titled “Public Health Pharmacy” for fifth-year students [26]. PCOS is a subtopic under reproductive health and drug use in infertility, scheduled to be covered in two hours classroom lecture [26]. Lectures in pharmacy schools are often delivered following the traditional didactic methods consisting of a combination of chalkboard or whiteboard presentations, PowerPoint slides, and, on some occasions, handouts to convey information. Although the conventional teaching method is efficient in delivering lectures to many students at once, it is often devoid of adequate active engagement, critical thinking opportunities, or hands-on application, which are increasingly emphasized in modern educational approaches. Therefore, this study investigated the impact of video-based educational intervention on knowledge and perception of PCOS among final-year undergraduate pharmacy students in a Nigerian public university.

Methods

Study design, participants and setting

This research adopted a quasi-experimental (pre-test and post-test) study design to evaluate the effect of a video-based educational intervention on knowledge and perceptions toward PCOS among all final-year undergraduate pharmacy students of the Faculty of Pharmaceutical Sciences, University of Nigeria, Nsukka. The study participants were the last batch of students enrolled in the Bachelor of Pharmacy (B.Pharm) degree programme, as the university is currently transitioning from a B.Pharm to a Doctor of Pharmacy (PharmD) degree programme. The B.Pharm curriculum consists of classroom lectures, practical laboratory sessions, industrial field trips, seminars, clinical rotations, research projects and other experiential training. Although many classroom lectures are delivered via in-person PowerPoint

presentations, video-based educational materials are rarely used to facilitate the learning process.

Sample size determination

The sample size was calculated with the aid of Raosoft online sample size calculator [27]. The total population of undergraduate final-year pharmacy students was 409. In the sample size calculation, we assumed a 5% margin of error, a 95% confidence interval, and a 50% response distribution. The calculated sample size required for the study was 199. However, we added 20% of the calculated sample size ($n=40$) to nullify the effect of possible non-responses or dropouts in the study. Therefore, a total of 239 students was the target sample size for the study.

Eligibility criteria

The study participants were recruited based on the following eligibility criteria: (1) Being a final-year undergraduate pharmacy student, (2) Male or female sex, (3) Being willing to follow the study protocol, and (4) Students who provided informed consent to participate in the study.

Outcome measures

The outcome measures in this study include: (1) knowledge of PCOS, and (2) perceptions toward PCOS. Knowledge of PCOS refers to the factual understanding of the condition, including its epidemiology, symptoms, causes, diagnosis, and treatment based on scientifically available evidence. On the other hand, perceptions toward PCOS refer to attitudes, beliefs, and emotions that individuals hold about the medical condition, which are likely influenced by personal experiences, cultural practices, and societal awareness. A key difference between the outcome measures is that knowledge is objective and evidence-based, while perceptions are subjective and marred with misconceptions or stigma.

Study instrument

The study instrument was divided into three sections (sections A to C). Section A contained sociodemographic information of the participants such as age, gender, number of female siblings, and place of residence. Section B contained a 33-item validated questionnaire adapted from previous studies for assessing students' knowledge of PCOS [28, 29]. The knowledge-based questionnaire covered various aspects of PCOS including its aetiology and risk factors, symptoms, complications, methods of diagnosis and management options. The students were to choose a "Yes, No, or Not Sure" response for each of the 33 questions. In scoring of responses, one point was awarded for any correct answer, while zero point was given for each incorrect answer. The correct answers were either "Yes" or "No" across all the questions.

However, all "Not sure" responses were assumed to be incorrect answers and were thus awarded zero points. The total score for each participant was aggregated, ranging from 0–33. The aggregate scores were transformed into per cent knowledge scores by dividing the total correct answers by 33 and then multiplied by 100. Section C contained validated 10 items adapted from a previously published study for use in measuring the perceptions of PCOS among pharmacy students [29]. The 10 items were rated on a 5-point Likert scale (strongly disagree = 0, disagree = 1, neutral = 2, agree = 3, and strongly agree = 4). The total possible score on the instrument ranged from 0 to 40. Therefore, the higher the total score, the more negative the students' perception towards PCOS.

Before starting the study, the questionnaires were subjected to face and content validity by six experts in the fields of reproductive health, pharmacy practice and education, and gynaecology and obstetrics. The experts rated each item on the questionnaire on a Likert scale (1 = not relevant, 2 = somewhat relevant, 3 = quite relevant, and 4 = highly relevant). For the knowledge questionnaire, the six experts rated 29 of the 33 items as "quite relevant" or "highly relevant." The scale-level content validity index (CVI) of the knowledge questionnaire was 0.91. On the other hand, nine items on the perception questionnaire were rated as "quite relevant" or "highly relevant." Hence, the calculated scale-level CVI for the perception questionnaire was 0.95. Necessary adjustments were made to the questionnaires after the face and content validation process. Subsequently, the questionnaire was subjected to pilot testing among 20 eligible pharmacy students whose responses were excluded from the final data analysis of the main work. The responses obtained from the 20 students were used to conduct a reliability test on the questionnaires. The Cronbach's alpha values of the knowledge questionnaire (Section B) and perception questionnaire (Section C) were 0.973 and 0.715, respectively. The Cronbach's alpha values obtained were within a generally acceptable limit ($\alpha \geq 0.7$).

Video-based educational intervention

A 10-minute educational video was developed for the purpose of enhancing pharmacy students' knowledge of PCOS and correcting common misconceptions about PCOS in women of reproductive age. The content of the video was prepared by the research team in collaboration with three experts in reproductive health and pharmacy education. The team ensured that important information on PCOS that pharmacy students needed to know was included in the video. The video content was obtained from the recommendations of the 2023 international evidence-based guideline for the assessment and management of PCOS [30]. The guideline was prepared and published by the American Society for Reproductive

Medicine (ASRM), Australian National Health and Medical Research Council (NHMRC) Centre for Research Excellence, Endocrine Society (ENDO), European Society for Endocrinology (ESE), and European Society of Human Reproduction and Embryology (ESHRE) [30]. The video script was written in English. The written script was simple and easy to understand. The video consists of background audio, simple animations and a pictorial display of concepts to improve practical understanding of PCOS among the students. The information on PCOS covered in the video includes its epidemiology, causes, symptoms, complications, diagnostic techniques and treatment options. The video was displayed on a Television screen in the Patient Demonstration and Simulation Laboratory of the Department of Clinical Pharmacy and Pharmacy Management for the students to watch. The video was also shared on the students' class WhatsApp groups so they could conveniently watch the video at other times.

Data collection procedure

The participants were initially briefed on the study objectives and protocol by the principal investigator. The students who provided consent to participate in the study were enrolled. The participants were recruited following simple random sampling with the assistance of computer-generated random numbers using the official class list. Printed self-administered questionnaires were used for data collection from the same study group before and after administering the video-based educational intervention. Baseline data were collected from the study participants after their usual classes, a week before they received their scheduled lecture on PCOS and its management. On the day of the intervention, the students were quietly seated in the classroom. The lecturer delivered the lecture on PCOS and its management within the scheduled lecture period of one hour. The lecture materials included PowerPoint slides and the 10-minute intervention video. The lecture was interactive, as students were encouraged to ask questions whenever they needed clarification. At the end of the lecture session, PowerPoint and video-based materials were provided for the students. The questionnaires were re-administered to the students to complete some weeks later. The duration between the pre-and post-intervention tests was eight weeks. The questionnaires were coded with unique study identity numbers with the aid of the official class list of final-year pharmacy students. The completed questionnaires were retrieved immediately and stored in a labelled envelope. The data collection process spanned from February to March 2024.

Data analysis

The data collected through the questionnaire was coded into a Microsoft Excel 2016 spreadsheet, checked and cleaned of all errors. The cleaned data was subsequently transferred to the IBM Statistical Package for Social Sciences (SPSS) version 23 for actual data analysis. Descriptive statistics such as mean, frequencies and percentages were used to summarize the socio-demographic characteristics of the students. Age 25 is often considered a common transition point in the educational and professional development of health sciences students, hence the decision to categorize the participants into younger (<25 years) or older (≥ 25 years) in the current study. Additionally, since similar age classifications have been used in the literature, this would allow for easy comparability. The Paired t-test was used to show the impact of the video-based educational intervention on the knowledge and perceptions toward PCOS. Subgroup analyses of differences in knowledge and perceptions toward PCOS-based students' socio-demographic characteristics were performed using an independent t-test. Multivariate linear regression analysis was used to identify the predictors of knowledge and perceptions toward PCOS, while controlling for confounding factors. In this study, the independent variables were categorical data. Hence, prior to running the regression analysis, the independent variables were converted to dummy variables by recoding into "1" and "0", where "0" represented the reference. All analyses were considered statistically significant at $p < 0.05$.

Ethical consideration

The ethical approval was obtained from the Health Research and Ethics Committee of the Department of Clinical Pharmacy and Pharmacy Management at the Faculty of Pharmaceutical Sciences, University of Nigeria, Nsukka with a reference number of CPPM/HREC/24/UG/0005. Written informed consent was obtained from all eligible study participants. The participants were informed that participation in the study was voluntary and that they could withdraw from the study at any time. The students were assured that all responses obtained would be handled with utmost confidentiality. No personally identifiable information about the study participants was collected. Free-of-charge wireless internet connectivity was provided by the investigators to encourage the participants to download and watch the video-based educational file shared on their class WhatsApp groups.

Results

Sociodemographic characteristics of study participants

Table 1 shows the sociodemographic characteristics of the study participants. A total of 306 pharmacy students

Table 1 Sociodemographic characteristics of study participants ($n = 306$)

Variable	Frequency	Percent
Age (years)		
20–24	166	54.2
≥25	140	45.8
Gender		
Male	138	45.1
Female	168	54.9
Number of female siblings		
1–3	189	61.8
≥4	117	38.2
Place of residence		
Hostel	85	27.8
Off-campus	221	72.2
Have heard of PCOS		
No	56	18.3
Yes	250	81.7

Table 2 Impact of video-based educational intervention on knowledge and perception toward PCOS

Variable	Mean ± SD	t value	p-value
Knowledge			
Pre-intervention	47.51 ± 25.97	-25.494	0.001*
Post-intervention	90.42 ± 12.85		
Perception			
Pre-intervention	18.35 ± 5.50	0.045	0.965
Post-intervention	18.33 ± 5.36		

SD: Standard deviation

participated in the study. More than half of the students were female ($n = 168$, 54.9%) and aged 20 to 24 years ($n = 166$, 54.2%). Most participants had female siblings ranging from one to three ($n = 189$, 61.8%) and resided

outside the university hostel ($n = 221$, 72.2%). About 82% of the pharmacy students have heard of PCOS ($n = 250$).

Impact of intervention on knowledge and perception towards PCOS

Table 2 contains the effect of the video-based intervention on pharmacy students' knowledge and perception towards PCOS. The findings demonstrated that the pharmacy students' knowledge of PCOS significantly improved post-intervention (90.42 ± 12.85) compared to the pre-intervention (47.51 ± 25.97), $t = -25.494$, $p = 0.001$. However, there was no significant difference in the student's perception towards PCOS before and after the video-based interventions (18.35 ± 5.50 vs. 18.33 ± 5.36 , $p = 0.965$).

The mean difference in knowledge and perception towards PCOS based on students' sociodemographic characteristics

Table 3 shows the mean difference in students' knowledge and perception towards PCOS pre- and post-interventions. The results revealed gender-based differences in knowledge and perception towards PCOS before and after the intervention. Female students had significantly higher knowledge of PCOS in the pre-intervention (40.68 ± 26.61 vs. 53.12 ± 24.09 , $p = 0.001$) and post-intervention (88.34 ± 15.19 vs. 92.07 ± 10.39 , $p = 0.018$) compared to their male counterparts. Likewise, female students had more positive perception towards PCOS compared to male students before (19.27 ± 5.18 vs. 17.58 ± 5.64 , $p = 0.007$) and after (19.53 ± 5.36 vs. 17.37 ± 5.18 , $p = 0.001$) the intervention. Additionally, pharmacy students who are aware of PCOS had significantly higher knowledge scores before (9.04 ± 16.56

Table 3 Subgroup analysis of the impact of video-based interventions on knowledge and perceptions of PCOS

Variable	Knowledge				Perception			
	Pre-intervention	p-value	Post-intervention	p-value	Pre-intervention	p-value	Post-intervention	p-value
Age (years)								
20–24	46.34 ± 25.91	0.393	91.02 ± 11.98	0.373	18.37 ± 5.32	0.934	18.06 ± 5.20	0.346
≥25	48.89 ± 26.05		89.67 ± 13.87		18.32 ± 5.71		18.66 ± 5.55	
Gender								
Male	40.68 ± 26.61	0.001*	88.34 ± 15.19	0.018*	19.27 ± 5.18	0.007*	19.53 ± 5.36	0.001*
Female	53.12 ± 24.09		92.07 ± 10.39		17.58 ± 5.64		17.37 ± 5.18	
Number of female siblings								
1–3	46.38 ± 25.17	0.173	90.56 ± 11.94	0.392	18.15 ± 5.54	0.927	18.26 ± 5.29	0.535
≥4	51.56 ± 26.31		88.83 ± 16.28		18.08 ± 5.01		18.77 ± 5.64	
Place of residence								
Hostel	49.98 ± 24.62	0.303	90.97 ± 10.94	0.626	17.48 ± 5.10	0.087	17.41 ± 4.96	0.051
Off-campus	46.56 ± 26.45		90.18 ± 13.62		18.68 ± 5.61		18.73 ± 5.48	
Have heard of PCOS								
No	9.04 ± 16.56	0.001*	33.33 ± 39.66	0.001*	19.03 ± 4.22	0.213	19.00 ± 1.41	0.802
Yes	56.13 ± 18.91		91.21 ± 10.26		18.19 ± 5.74		18.32 ± 5.39	

*Mean difference was significant at $p < 0.05$

Table 4 Predictors of knowledge of PCOS

Variable	Knowledge (Pre-Intervention)				Knowledge (Post-Intervention)			
	Beta coefficient	95% CI		P value	Beta coefficient	95% CI		P value
Age (years)	-6.10	-10.94	-1.26	0.014*	-0.96	-10.94	-1.26	0.541
Gender	5.99	0.64	11.35	0.028*	4.16	1.01	7.32	0.010*
Number of female siblings	-2.03	-7.54	3.47	0.468	1.57	-1.98	5.11	0.385
Place of residence	-0.69	-6.39	5.01	0.813	0.24	-3.14	3.62	0.890
Have heard of PCOS	43.73	37.52	49.95	< 0.001*	52.73	39.43	66.03	< 0.001*

*Significant at $p < 0.05$, PCOS: Polycystic ovarian syndrome; CI: Confidence Interval

Table 5 Predictors of perceptions toward PCOS

Variable	Perception (Pre-Intervention)				Perception (Post-Intervention)			
	Beta coefficient	95% CI		P value	Beta coefficient	95% CI		P value
Age (years)	0.59	-0.81	2.01	0.404	-0.31	-1.73	1.11	0.665
Gender	-1.09	-2.65	0.47	0.169	-1.94	-3.39	-0.49	0.009*
Number of female siblings	-0.08	-1.68	1.53	0.923	-0.55	-2.17	1.08	0.509
Place of residence	-1.21	-2.87	0.45	0.152	-0.85	-2.41	0.697	0.279
Have heard of PCOS	-0.18	-1.99	1.63	0.840	0.34	-5.77	6.45	0.912

*Significant at $p < 0.05$, PCOS: Polycystic ovarian syndrome; CI: Confidence Interval

vs. 56.13 ± 18.91 , $p = 0.001$) and after (33.33 ± 39.66 vs. 91.21 ± 10.26 , $p = 0.001$) the intervention.

Predictors of knowledge and perceptions toward PCOS

The independent predictors of knowledge and perceptions toward PCOS among pharmacy students are presented in Tables 4 and 5, respectively. In the pre-intervention phase, older age ($\beta = -6.10$, $p = 0.014$), female gender ($\beta = 5.99$, $p = 0.028$), and prior awareness of PCOS ($\beta = 43.73$, $p < 0.001$) significantly predicted their better knowledge of PCOS. Similarly, female gender ($\beta = 4.16$, $p = 0.010$) and prior awareness of PCOS ($\beta = 39.43$, $p < 0.001$) significantly predicted better knowledge of PCOS among the study participants. In the post-intervention phase, female students were less likely to have negative perceptions toward PCOS compared to their male counterparts ($\beta = -1.94$, $p = 0.009$).

Discussion

The present study investigated the effect of video-based intervention on the knowledge and perception towards PCOS among final-year undergraduate students in a Nigerian public university. The main findings demonstrated that video-based educational intervention improved pharmacy students' knowledge of PCOS. Nevertheless, the intervention had no significant effect on students' perception towards PCOS. Female pharmacy students had better knowledge and more positive perceptions towards PCOS before and after the intervention compared to their male counterparts. Furthermore, pharmacy students who were aware of PCOS had better knowledge of PCOS as opposed to those who were unaware before and after the intervention.

The observation that video-based educational intervention improved the knowledge of pharmacy students about PCOS underscores the effectiveness of digital learning tools in medical and health education. This finding agrees with existing literature that showed that knowledge retention and comprehension of complex topics are enhanced with the use of multimedia tools [31, 32]. For example, Baessler and colleagues observed that knowledge transfer of complex topics such as "delirium" and its retention among medical students was significantly improved with the use of video [33]. Evidently, video-based educational interventions facilitate learning of complex topics such as PCOS that affect the metabolic, reproductive, and psychological functioning of women by promoting flexibility, visual engagement, critical thinking and real-world applications [34]. Additionally, the finding highlights the importance of incorporating the use of multimedia into the current traditional teaching methods as a way of enhancing students' knowledge and competence in providing appropriate counselling for women diagnosed with PCOS.

Students' perception towards PCOS was unaffected by the video-based educational intervention. This finding suggests that the use of multimedia alone may be insufficient in modifying the perception towards complex chronic medical conditions such as PCOS. Incorporating interactive, case-based and experiential learning with the use of video materials could potentially improve students' perception of PCOS [35]. Previous studies reported that actively involving students in the learning process is an effective way of enhancing their understanding and attitudinal changes toward specific diseases [36, 37]. Based on the current study findings, adopting more comprehensive learning methods in addition to the use of

multimedia may adequately modify students' perception of chronic multi-faceted diseases, including PCOS.

Female pharmacy students demonstrated better knowledge and more positive perceptions towards PCOS compared to male students. This finding is consistent with existing literature. According to previous studies, female students were more likely to show interest, empathy and natural inclinations toward conditions that directly affect women's health or conditions that are much more prevalent in women [38–40]. For example, Drokow and colleagues observed that women have better knowledge and more favourable attitudes toward cervical cancer compared to men [38]. PCOS is an example of a feminine disease, as it affects women of reproductive age. Therefore, enhancing male pharmacy students' learning outcomes regarding diseases affecting women's health may require a more gender-sensitive educational strategy that would instill an understanding of the relevance of the topic to their practice.

Baseline familiarity with health-related topics appears to be an important factor influencing the learning outcomes. In this study, pharmacy students with prior awareness of PCOS demonstrated better knowledge before and after the video-based educational intervention. Prior awareness of the health-related subject under consideration may act as a crucial determinant of students' capacity to effectively imbibe new information on the subject [41–43]. The implication of this finding is that there is a need to expose pharmacy students to less often talked about women's health topics like PCOS earlier in the pharmacy programme to enhance students' readiness to care for people with these conditions in their practice. Also, targeted interventions including seminars and workshops to enhance students' awareness of PCOS and other women's health problems during their pre-clinical classes could help bridge the observed knowledge gap.

Study limitations

This study had a few limitations that should be considered while interpreting its findings. First, the study was conducted in a single school of pharmacy in Nigeria, even though the university is among the premier public institutions in the country with a mixed student population from across different ethnic, cultural and geopolitical zones. Second, the present study was unable to determine whether the observed improvement in knowledge of PCOS remains stable over time due to the pre-test and post-test design. Lastly, it would be practically difficult to isolate the effect of the video intervention from other factors that could possibly influence students' knowledge of PCOS since the study had no control group. A future multicenter randomized clinical trial evaluating the effect the video-based educational intervention on the

pharmacy students' knowledge and perception towards PCOS is recommended.

Conclusion

The video-based intervention improved the knowledge of pharmacy students about PCOS but had no significant impact on their perception towards the disorder. Being a female student was associated with better knowledge and a more positive perception towards PCOS. Students who had prior awareness of PCOS demonstrated better knowledge of the disease. Therefore, more inclusive video-based gender-sensitive learning methods and early awareness campaigns targeted at addressing the observed knowledge gap and modifying pharmacy students' perceptions toward PCOS are recommended.

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s12909-025-07373-7>.

Supplementary Material 1

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Author contributions

CA was involved in the conceptualization of the study, project administration, supervision, and drafting of the original manuscript. COO was responsible for the validation of the study instruments, data collection, data curation, implementation of the intervention and development of the study's methodology. NOI participated in the project administration, data analysis, funding, and writing of the original manuscript draft. CGA participated in the data collection, project administration, and conceptualization of the study. EJU was involved in the data collection, data curation, and data analysis. VCO was involved in data collection, implementation of the intervention, and data entry. JPU participated in the data collection and data analysis. MCU was involved in data collection, data entry, and data curation. SAN contributed to data collection, project administration, and funding. OGO was involved in data collection, implementation of the intervention, and project administration. All authors were involved in a critical review of the final manuscript draft.

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Data availability

Data that support the findings of this study would be made available upon reasonable request from the corresponding author via the email address chibueze.anosike@unn.edu.ng.

Declarations

Ethics approval and consent to participate

The ethical approval was obtained from the Health Research and Ethics Committee of the Department of Clinical Pharmacy and Pharmacy Management at the Faculty of Pharmaceutical Sciences, University of Nigeria, Nsukka with a reference number of CPPM/HREC/24/UG/0005. Written informed consent was obtained from all eligible study participants.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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