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Polycystic ovarian syndrome (PCOS) awareness among young women in Tobruk, Libya

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Abstract

Background: Polycystic Ovarian Syndrome (PCOs) is a common chronic multisystem endocrine disorder in young reproductive aged women, PCOS is often associated with chronic anovulation, obesity and impairs reproductive health, it increased risk of adverse pregnancy and birth outcomes, and it's one of the leading causes of infertility, if it's not treated can develop serious health problems, especially if they are overweight: As type 2 DM, Heart disease, endometrial carcinoma and psychological features and worsened quality of life. Not all women who have PCOS receive a formal diagnosis or if they do, it may take years and several different doctors before diagnosis is made. This may be attributable to both a lack of awareness and educational material available at the correct level for individuals and healthcare providers so, this study was aiming to assess the level of awareness regarding Polycystic Ovarian Syndrome among young women of age group between 18-30 years in Tobruk , Libya. Methods: cross sectional research analysis, using an online link of the web-based multiple-choice questionnaire "Google Forms", the questionnaire link was distributed randomly mainly using the social media and messengers. The study was conducted on the month of September 2021 after ethical clearance from the Research Ethics Committee of Tobruk University. Results: We had a total of 373 sample size for analysis, the distribution of the samples on demographic characteristics revealed that about 50% of the sample were in the age group between 25-30 years, 92.8% of the studied females were university graduates, 327(87.7%) had moderately adequate knowledge and there is a strong relation between the level of education and level of knowledge about PCOS, also there is a statistical significant between the age and the level of knowledge where the age group between 20-24 had a moderately adequate knowledge. 58% of them received information's about PCOS from Health Personal, and There is a large number of participants have a poor life style where 84.7% of participant like junk foods which is a risk factor for obesity and other metabolic issues related to PCOS. Conclusion: There is a good level of awareness of PCOS among majority of young women in Tobruk. The Health Personal and Social Media were the prevalent source of information.

Key words: PCOS, obesity, endocrine disorder, young women, reproductive age, Infertility, Libya.

Introduction

Polycystic Ovarian Syndrome (PCOS) is a common chronic multisystem endocrine disorder, it is increase among adolescent girls and young women, with prevalence of 5%-10% in different ethnic populations and as much as 22% of women in general population, It is a problem in which a woman's hormones are out of balance leading to menstrual disturbance as well as multiple abnormal cysts in enlarged ovaries, the real causes of the syndrome have not been yet identified exactly and clinical presentation of it with a wide range of symptoms including: Irregular menstrual cycle, obesity, infertility, hirsutism, insulin resistance, and it can develop serious health problems, especially if they are overweight: Such as type ll DM, Heart disease, endometrial carcinoma and psychological features such as depression and worsened quality of life[1,2,3,4,5]. PCOS should be diagnosed according to the Rotterdam consensus criteria, with two out of three of the following: 1.polycystic ovaries, 2.oligo-ovulation or anovulation, 3.clinical and/or biochemical signs of hyperandrogenism. [5.] Globally, PCOS prevalence estimates range between 2.2% and 26%. [6] The high prevalence was attributed to PCOS association with obesity, sedentary lifestyle, and genetic predisposing factors. [7.] Lack of awareness regarding PCOS leads to delayed diagnosis and delayed treatment which causes many problems as PCOS increases the risk of adverse pregnancy and birth outcomes As increased risk of gestational diabetes, increased prevalence of early pregnancy loss (EPL), strongly associated with pre-eclampsia, preterm birth and birth of small-for-gestational-age (SGA) babies [8;9] also, PCOs is one of the leading causes of infertility, and many women with PCOS are also overweight or obese, and Obesity is responsible for an increased risk of sub-fecundity and infertility[10] moreover, women with PCOS have a 3 times more risk than other women to develop endometrial cancer[11] therefore, early detection and therapy of this disorder would decrease it's associated long-term adverse effects. Although is no cure for PCOS, but there are several ways to treat and manage the condition, therefore education of women with PCOS about food habits, exercise and weight loss all of these can restore hormones level to normal, and because hyperinsulinemia and insulin resistance play an important role in the pathogenesis of PCOS therefore, Insulin-sensitising agents such as, Metformin has been widely used to improve ovarian function, glucose metabolism and hyperinsulinemia in women with PCOS, as well as metformin decrease the hyperandrogenism, and significantly decreased abdominal obesity[12], moreover use of metformin combined with thiazolidinediones appear superior to metformin alone in improving insulin resistance and decreasing total testosterone, also use of Myo-inositol combined with d-chiro-inositol is particularly efficacious in menstrual recovery[13.] Studies had been carried out on PCOS which emphasizes only on the diagnostic modalities and clinical categorization but studies focusing on awareness of the condition is very sparse which subsequently results in increase in case load. The studies that had been conducted to analyze the problem of PCOS, states that only one-third of affected females has gained some awareness of the condition and its complications and rest of the study population are unaware of either sequelae or morbidities.[14] Another Studies have found that there was a gap in the knowledge of students about PCOS and its symptoms and signs, and that lifestyle preferences may predispose to PCOS. [15.] Not all women who have PCOS receive a formal diagnosis or if they do, it may take years and several different doctors before diagnosis is made. This may be attributable to both a lack of awareness and educational material available at the correct level for individuals and healthcare providers. A recent study showed that over one-third of women with PCOS had to wait over 2 years and visit with at least three different health professionals before their diagnosis was established.[16]

Furthermore, when these women were finally diagnosed, they receive little information regarding long term complications for PCOS, treatment options, or emotional support and counseling. Instead, women reported seeking information about PCOS from online resources, where the information quality is variable.[16]
Healthy lifestyle and adequate reproductive health knowledge are important for maintenance of physical and mental well-being of women to avoid major fertility problems so, there is a need to increase awareness of PCOS symptoms and complications for early treatment and to prevent further serious complications of it, so that our study aiming to assess the level of awareness regarding Polycystic Ovarian Syndrome, clinical presentation, risk factors and complications among young women in Tobruk in age group between 18-30 years, and its relation to some common socio-demographic factors.

Methods

Study Design and sitting

An observational cross-sectional descriptive study was carried out using a self-administered structured online multiple-choice questionnaire was developed using "Google Forms" used for data collection during September 2021. The data collected included the demographic variables as age, marital status, educational level and type of work, life style characteristics, some clinical parameters and Source of Informations and knowledge regarding Polycystic Ovarian Syndrome. The questionnaire was posted in Arabic language with minor modifications to Anjana Devi, G. questions. Ethical approval was obtained from Research ethical Committee of Tobruk University. The questionnaire link was distributed randomly mainly using the social media and messengers. The Participation in this study was not restricted to PCOS patients; it is for all females within the age group consistent with the pre-defined criteria.

Study population

The inclusion criteria were all individuals who agreed to participate in the study, young women in Tobruk of age group 18-30 years who are willing to participate in the study and who able to read and write, there were no restrictions on educational level, occupation, or socioeconomic level of the participants. The exclusion criteria were women of age group of less than 18 years and more than 30 years or those who refused to take part in the study.
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Statistical analysis

We had a total of 373 sample size for analysis. Data were entered using (IBM SPSS Statistics for Windows, Version 23.0. Armonk, NY: IBM Corp2015.). Quantitative data were expressed as the mean ± SD & (range), and qualitative data were expressed as absolute frequencies (number) & relative frequencies (percentage). Percent of categorical variables were compared using Chi-square test. All tests were two sided, p-value < 0.05 was considered statistically significant (S), p-value < 0.001 was considered highly statistically significant (HS), and p-value ≥ 0.05 was considered statistically insignificant (NS).

Results

This study was conducted on 373 Young females, scanning the period during September 2021. Table (1) shows the distribution of females' demographic characteristics. Out of 373 respondents, about 50% were over 24 years old while 43.4% and 6.2% were between 20-24 years old and 18-19 years old, respectively. The mean age was 24.75±3.49, with range from 18 to 30 years. Regarding to marital status, 60.3% were single, and 36.7% were married. Concerning the educational level, 92.8 % were Post Graduate, and 5.6% were graduated from Secondary school. Health care provider represented 60.6%.

Variables		n.	percent
Age	18-19 years	23	6.2
	20-24 years	162	43.4
	>24 years	188	50.4
	Mean± SD		24.75±3.49
	range		18-30
Marital Status	Divorced	10	2.7
	Married	137	36.7
	Single	225	60.3
	Widow	1	0.3
Educational Status	No Formal Education		0.3
	Primary Education		1.3
	Secondary Education		5.6
	Graduate		92.8
health care provider	No	147	39.4
	Yes	226	60.6

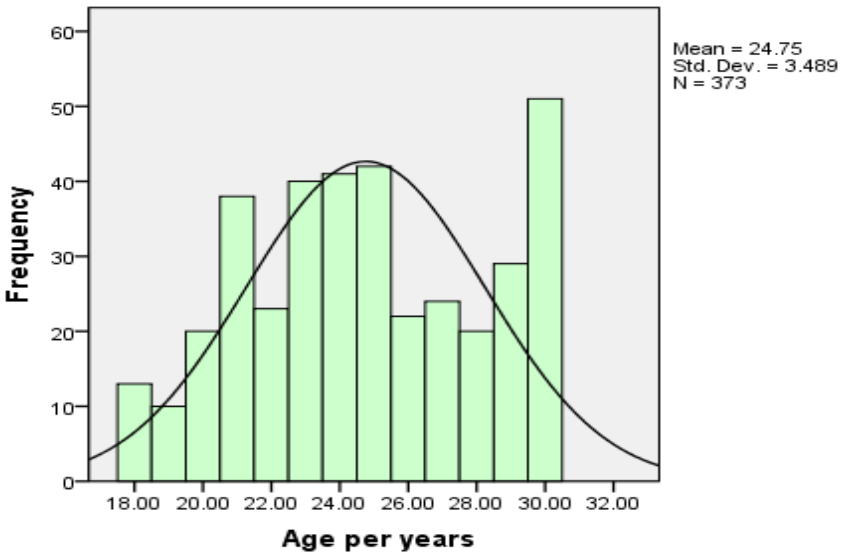

Figure 1: Histogram define age frequency per years of studied females

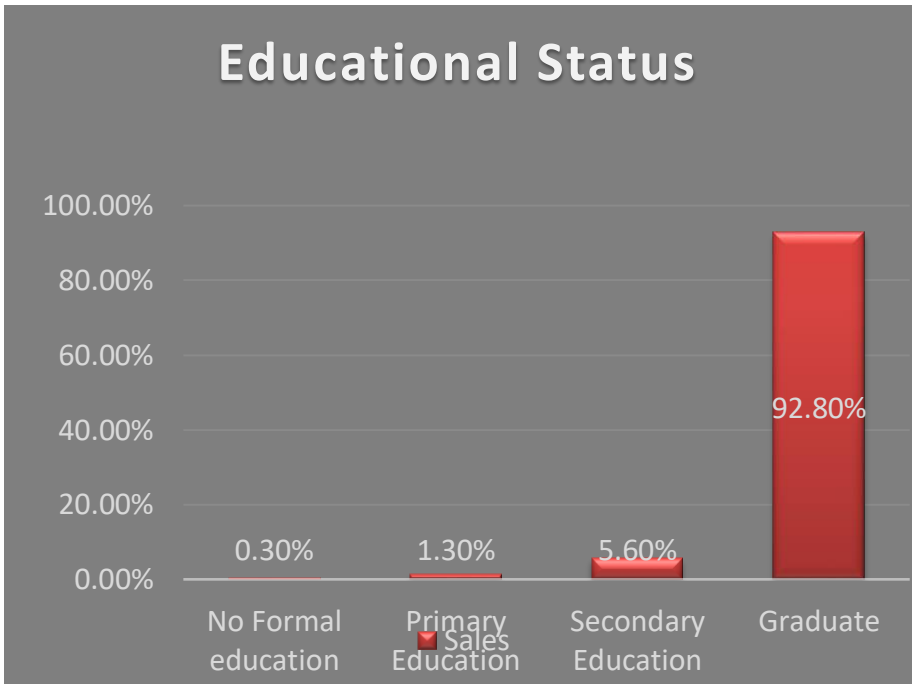

Figure2: Education level of studied females

Variables		n.	percent
Dietary Pattern	Non-Vegetarian	350	93.8
	Vegetarian	23	6.2
Do you like junk foods	No	57	15.3
	Yes	316	84.7
Amount of water intake per day	> 2000 ml	30	8.0
	1000 – 2000 ml	124	33.3
	500 – 1000 ml	219	58.7
BMI	underweight	43	11.5
	Normal weight	179	48.0
	overweight	92	24.7
	obese	59	15.8
Number of Children	No Children	251	67.3
	One	44	11.8
	Two	31	8.3
	Above Two	47	12.6
Do you have any associated disease	No	339	90.9
	Yes	34	9.1
Menstrual Cycle	Irregular	120	32.2
	Regular	253	67.8
Do you have any menstrual disorder?	No	219	58.7
	Yes	154	41.3
Have you ever heard of PCOS?	No	53	14.2
	Yes	320	85.8

Table 2: Lifestyle characteristics and Clinical parameters of studied females (n=373)

About 98.3% of females are Non-Vegetarian, 84.7 % like junk foods. Concerning Amount of water intake per day, 33.3 % were drink one – two liter per days while 58.7% drink between 500-1000 ml. Normal weight females represented 48% while 24.7% were overweight. Regarding associated diseases, it revealed that only 9.1% of them had chronic diseases. More than 50% of participants have regular cycle 67.8%, and irregular menses complaint of 32.2 % females, and menstrual disorder mention by 41.3% of them. Majority of studied females heard about PCOS.

	Frequency/373	%
Source of information		
Health Personal	215	58%
Social Media (Facebook, what's app ...etc	183	49%
Friends, family, neighbors	94	25%

Table3: Frequency of Source of Information's about polycystic ovaries Syndrome on Selection by studied females

Regarding the source of knowledge 58% of participant received information from Health Personal while 49% by social media.

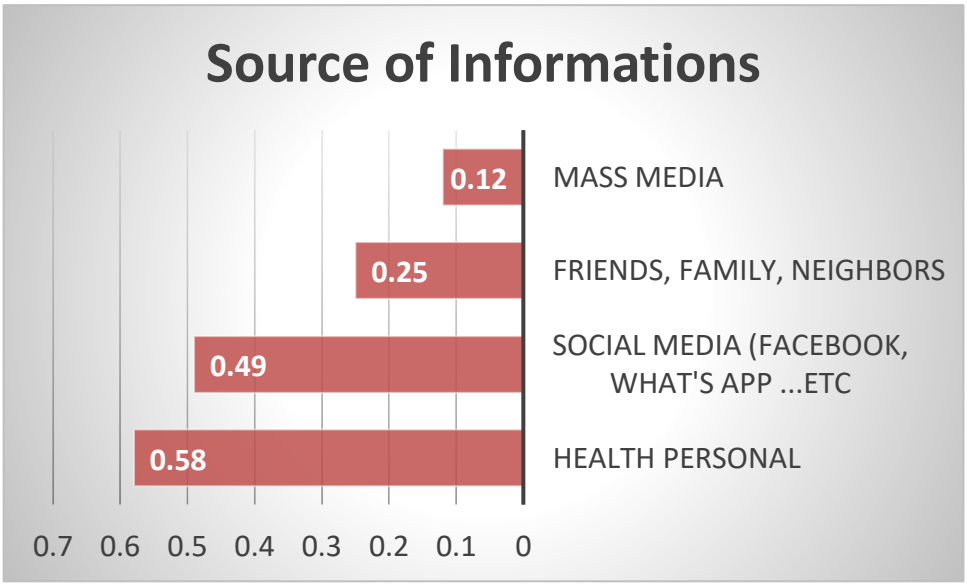

Figure3: This Pie chart showing Source of Information's about polycystic ovaries Syndrome of studied females

	Frequency	Percent
Young women knowledge level about polycystic ovaries syndrome		
Adequate knowledge	25	6.7
moderately adequate knowledge	327	87.7
Inadequate knowledge	21	5.6
Mean± SD range	16.44± 3.19 6-23	

Table 4: Frequency of knowledge level about polycystic ovarian syndrome

Table 4 reveals that among 373 young women, most of them 327(87.7%) had moderately adequate knowledge, 25 (6.7%) had adequate knowledge and only 21 (5.6%) had Inadequate Knowledge. with mean± SD (16.44± 3.19) and range from 6 to 23.

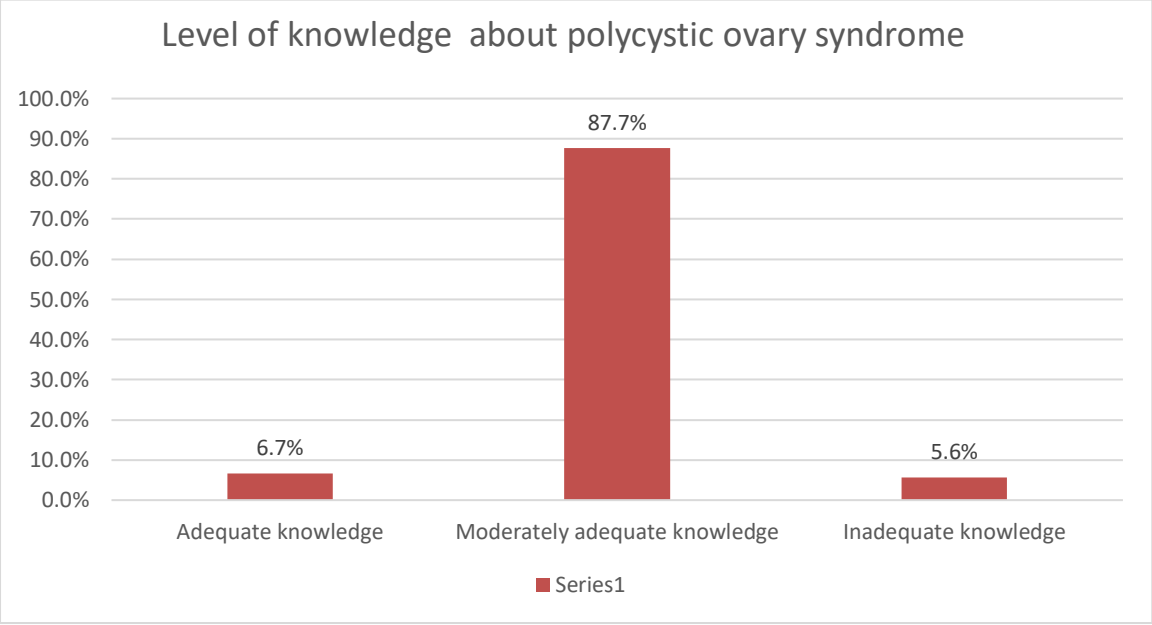

Figure 4: Pie chart illustrated young Libyan women knowledge level about polycystic ovaries syndrome

Variables	Women Knowledge level about polycystic ovary						n.	χ^2	P. value
	Adequate knowledge		moderately adequate knowledge		Inadequate knowledge				
	No.	%	No.	%	No.	%			
18-19 years	2	8.7	17	73.9	4	17.4	23	14.92	0.005
20-24 years	4	2.5	149	92.0	9	5.6	162		(S)
>24 years	19	10.1	161	85.6	8	4.3	188		
Primary Education	0	.0	0	.0	1	100.0	1		
Secondary Education	0	.0	2	40.0	3	60.0	5	50.58	0.0001
Higher Education	0	.0	18	85.7	3	14.3	21		(HS)
Post Graduate	25	7.2	307	88.7	14	4.0	346		
No	6	4.1	131	89.1	10	6.8	147	1.14	0.21
Yes	19	8.4	196	86.7	11	4.9	226		

Table5: Relation between young women Knowledge level about polycystic ovary and their age, Education level, job (n= 373)

There were significant relation between the age of participants and the level of knowledge especially in the age groups between 20-24 years and >24 years where the level of knowledge was moderately adequate with 92% and 85.6% respectively, also there was statistically highly significant relation between Knowledge level about PCOS with educational level ($p<0.0001$) where the post graduate and participant with higher education have moderately adequate knowledge with 88.7% and 85.7% respectively. The type of work between participant either a health care provider or not have no statistically significant.

Discussion

This study is the first study to evaluate the level of awareness of PCOS among females in Tobruk, Libya. The source of knowledge was mostly from Health Personal, followed by Social Media and Friends, family, neighbors, these results is similar to study done in Sudan which revealed that the main source of information was medical professionals (gynecologists)[17], and also complies with another study was done in Saudi Arabia where women did get information from medical doctors [18,] the source of knowledge is important to gives us an impression about preferred method of gaining knowledge in Libyan community. The present study revealed that (87.7%) of the studied women had moderately adequate knowledge level and (5.6%) had inadequate knowledge. This result was higher than result of similar study was conducted in India (2017) which revealed that (13.3%) had moderate knowledge, (86.7%) had inadequate knowledge, and no one had adequate knowledge [10], this is can be explained by that: the Indian study was done on adolescent girls aged between (18-20 years) while the age group in present study was between (18-30 years), in addition to the women more than 24 years old are more likely to have adequate knowledge level than younger women like in previous Indian study, this explanation is supported with the another Indian study in 2016 conducted on higher age group between (21-25 years) , showed that (76.0%) had moderate knowledge, (13.3%) had inadequate knowledge, and (10.7%) had adequate knowledge [1] , also supported by another study conducted in Jordan which revealed that age groups differed significantly in their PCOS awareness scores ($p < 0.001$), and the highest scoring group was among those aged between 22 and 23 years old [19], the study concluded that there was lack of knowledge of teenage girls regarding PCOS, it could be due to a lack of education and discussions regarding reproductive health in their schools and families, the administration of information booklet, or information through social media may have help the teenage girls to understand more about PCOS.

One of objectives of this study was to determine the relation between educational level and knowledge level regarding PCOS, the current study showed statistically highly significant relation between young women knowledge level about PCOS with education level ($p<0.0001$) , It is obvious that females who are university graduates are more likely to have adequate knowledge level, these results were similar to results of study was done in Saudi Arabia (2017) which revealed that the level of awareness of PCOS was significantly related to educational levels, it increased with higher education level ($P < 0.001$) [20], also similar to results of Jordanian study which showed significant associations between the level of knowledge and education level [19] , this may be explained by the fact that women with higher educational levels have better access to information, this makes us direct our interest in educating people to raise awareness among them.
This study also found that, the large number of participants have poor life style such as the majority of females (84.7%) were preference junk (fast) foods, and (58.7%) were inadequate water intake per day, these results were similar to results of study done in Emirates which revealed that 85.4% of students reported consuming fast food at least 1-5 times a week, and nearly 12% consumed fast food 5-10 times a week [21] these poor life style habits increase risk factors such as obesity, cardiovascular diseases , type 2 diabetes and aggravated PCOS and other metabolic issues, also our study reveals nearly 25% of participants were overweight, and 16% were obese that's could be due to majority of them preferred fast food, and usually fast food consumption associated with high BMI (Body Mass Index) Therefore, spreading awareness and knowledge among young women about the dangers of these bad habits will help them adopt a healthy lifestyle.

Conclusion

There is a good level of awareness of PCOS among majority of young Libyan women in Tobruk and the higher educational level was associated with higher level of awareness, the health personal and social media were the prevalent source of information. It would be desired to increase knowledge about PCOS among Libyan women to increase awareness and promote health seeking behavior for early treatment to avoid complications.

Declaration of competing interests

The authors declare that they have no conflict of interest.

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References

1. Sunanda B, Nayak S. A Study to Assess the Knowledge Regarding PCOS (Polycystic Ovarian Syndrome) among Nursing Students at NUINS. Journal of Health and Allied Sciences NU. 2016 Sep;6(03):24-6.
2. Mohamed HA. Effect of educational program on the level of knowledge regarding polycystic ovarian syndrome among adolescent girls. Journal of Nursing Education and Practice. 2016 May 23;6(10).
3. Sills ES, Perloe M, Palermo GD. Correction of hyperinsulinemia in oligoovulatory women with clomiphene-resistant polycystic ovary syndrome: A review of therapeutic rationale and reproductive outcomes. Eur J Obstet Gynecol Reprod Biol. 2000;91(2):135-41.
4. Teede H, Deeks A, Moran L. Polycystic ovary syndrome: a complex condition with psychological, reproductive and metabolic manifestations that impacts on health across the lifespan. BMC medicine. 2010 Dec;8(1):1-0.
5. Royal College of Obstetricians & Gynaecologists. Long-term consequences of polycystic ovary syndrome: green-top guideline No 33. Royal College of Obstetricians and Gynaecologists. 2014.
6. Bharathi, R. V., Neerajaa, J., Madhavica, J. V., et al. (2017). An epidemiological survey: Effect of predisposing factors for PCOS in Indian urban and rural population. Middle East Fertility Society Journal, vol. 22, no. 4, pp. 313–316.
7. Dias, D. (2015). A descriptive study to assess the knowledge and warningsigns ofthe polycystic ovarian syndrome among girls of selected colleges of Belagavi Karnataka. KLE University Journal, vol. 89, no. 2, pp. 142–156.
8. Roos N, Kieler H, Sahlin L, Ekman-Ordeberg G, Falconer H, Stephansson O. Risk of

adverse pregnancy outcomes in women with polycystic ovary syndrome: population based cohort study. Bmj. 2011 Oct 13;343.
9. Cronin L, Guyatt G, Griffith L, Wong E, Azziz R, Futterweit W, et al. Development of a health-related quality-of-life questionnaire (PCOSQ) for women with polycystic ovary syndrome (PCOS). J Clin Endocrinol Metab. 1998;83(6):1976-87.
10. Anjana Devi G. A study to assess the Effectiveness of Information Education Communication on Knowledge regarding Polycystic Ovarian Syndrome among Adolescent Girls in a selected college at Theni (Doctoral dissertation, Annai Meenakshi College of Nursing, Coimbatore).
11. Haoula Z, Salman M, Atiomo W. Evaluating the association between endometrial cancer and polycystic ovary syndrome. Human reproduction. 2012 May 1;27(5):1327-31.
12. Morin-Papunen LC, Vauhkonen I, Koivunen RM, Ruokonen A, Martikainen HK, Tapanainen JS. Endocrine and metabolic effects of metformin versus ethinyl estradiol-cyproterone acetate in obese women with polycystic ovary syndrome: a randomized study. The Journal of Clinical Endocrinology & Metabolism. 2000 Sep 1;85(9):3161-8.
13. Zhao H, Xing C, Zhang J, He B. Comparative efficacy of oral insulin sensitizers metformin, thiazolidinediones, inositol, and berberine in improving endocrine and metabolic profiles in women with PCOS: a network meta-analysis. Reproductive health. 2021 Dec;18(1):1-2.
14. G Begum R Rathod H Panchal Genetics of PCOS: A systematic bioinformatics approach to unveil the proteins responsible for PCOSGenomics Data201685260
15. S. Pramodh, Exploration of lifestyle choices, reproductive health knowledge, and polycystic ovary syndrome (PCOS) awareness among female Emirati university students, Int J Womens Health 12 (2020) 927–938, https://doi.org/10.2147/ IJWH.S272867.
16. Gibson-Helm M, Teede H, Dunaif A, et al. Delayed diagnosis and a lack of information associated with dissatisfaction in women with polycystic ovary syndrome. J Clin Endocrinol Metab. 2017;102:604–612.
17. Alfanob ZO, Ahmed MH, Ahmed M, Badi S, Elkheir HK. Knowledge, Prevalence and Practice of Polycystic Ovary Syndrome among Sudanese women in Khartoum State, Sudan: The need for health education. Sudan Journal of Medical Sciences. 2022 Jun 30;17(2):204-17.
18. AlSinan, A. and Shaman, A. (2017). A study to measure the health awareness of polycystic ovarian syndrome in Saudi Arabia. Global Journal of Health Science, vol. 9, no. 8, p. 130.
19. Alshdaifat E, Sindiani A, Amarin Z, Absy N, AlOsta N, Abuhayyeh HA, Alwani M. Awareness of polycystic ovary syndrome: A university students' perspective. Annals of Medicine and Surgery. 2021 Dec 1;72:103123.
20. Alessa A, Aleid D, Almutairi S, AlGhamdi R, Huaidi N, Almansour E, Youns S. Awareness of polycystic ovarian syndrome among Saudi females. International Journal of Medical Science and Public Health. 2017 Jun 1;6(6):1013-20.
21. Pramodh S. Exploration of lifestyle choices, reproductive health knowledge, and polycystic ovary syndrome (Pcos) awareness among female Emirati University students. International Journal of Women's Health. 2020;12:927.