A Study On Assessment Of Risk Factors For The Development Of Poly Cystic Ovarian Syndrome From Selected Sjm College Students Of Chitradurga

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ABSTRACT: Polycystic ovarian syndrome (PCOS) is a common endocrine system disorder. The term polycystic means many cysts and polycystic ovarian syndrome gets its name because of cluster of small, pearl sized cysts in ovaries. The cysts are fluid filled bubbles that contain eggs that have not yet been released due to hormonal imbalance. It can cause problems with periods and make it difficult to get pregnant. Early diagnosis is necessary for early interventions to minimize the immediate and chronic consequences. The aim of this study is to assess risk factors for the development of polycystic ovarian syndrome from selected S.J.M college students of Chitradurga by conducting a cross-sectional Questionnaire survey using online survey forms among students. The objectives of this study include, risk factors assessment, prevalence assessment and to assess knowledge of the students from different age groups and course stream. A Prospective observational study was carried out among selected S.J.M college students of Chitradurga. To obtain results, Google forms were created and hyperlink was forwarded to Pharmacy, Medical, Dental students of Chitradurga. Among the 205 (n=205) participants, 86 were Pharmacy students and 70 were Medical students and 49 were Dental students. Risk factors assessment among students showed that family history of PCOS (p= 0.0123), lack of physical activity (p=0.0132), insomnia (p=0.0316) and fast food diet habits (p=0.0129) are found to be the pre-disposing factors for the development of PCOS. Course wise distribution showed that most of the participants of survey were from Pharmacy (41.9%). The study showed a correlation of age with knowledge i.e. older students had higher levels of knowledge. Assessment based on the knowledge shows that the mean score of Medical students (2.86) were higher than Dental students (2.76) and Pharmacy students (2.58). Prevalence based assessment shows that 7.31% of students will be affected with PCOS i.e. 1 in every ~28 students. This study can be concluded as, total 205 subjects were included. Our study revealed medical students are having high knowledge on PCOS followed by dental then pharmacy. Based on age groups, students of age group 25-31 are having high knowledge than age group of 18-24. People with PCOS have high clinical features of mood disturbance but menstrual cramps have moderate risk in developing PCOS. The study also revealed that there is a strong relation between PCOS and risk factors.

KEYWORDS: Prevalence, Risk factors, Polycystic ovarian syndrome

I. INTRODUCTION

Poly-Cystic Ovarian Syndrome (PCOS) is a common endocrine system disorder characterized by multiple small ovarian cysts, obesity, hypertension, diabetes, insulin resistance and Hirsutism. Problem arises in menstrual cycle is termed as menstrual disorder or menstrual abnormalities, which is the main characterization for PCOS.[1]

PCOS is a common disorder, often complicated by chronic, an ovulatory infertility and hyperandrogenism with the clinical manifestation of oligomenorrhoea, hirsutism and acne. It is recognized as the most common endocrinopathy in reproductive women, frequently becomes manifest.[2]

Risk factors of PCOS include not only food habits but also the lifestyle which affects the menstrual cycle. Among stress experienced by the individuals, academic stress is one of the risk factors faced by students. Lack of physical activity is one of the reasons which lead to dysmenorrhea.

Obesity is also a common risk factor in women with PCOS. Family history of obesity, diabetes mellitus, thyroid diseases, PCOS strongly supports a genetic susceptibility to this disorder. Environmental exposure to toxins have also contributed to development of PCOS .[3]

PCOS affects 4% - 26% of adolescents and young women all over the globe. Initially this condition is asymptomatic in young girls progressing toward menstrual irregularities, obesity, hyper-androgenism in late puberty and eventually developing insulin resistance, hypertension, type 2 diabetes mellitus, cardio-vascular diseases, and infertility around middle-age. The prevalence of PCOS in the general population has been estimated to be 5- 10% of women of reproductive age. In India 26,626,765 population is affected with poly cystic ovarian syndrome.[4]

Self-medication for primary dysmenorrhea is a very common practice. The most commonly used drug is Meftal Spas (mefinamic acid + diclomine). Self-medication practice in dysmenorrhea was more among in pharmacy students due to knowledge of drugs.[5] Other Pharmacological interventions include NSAIDs and Hormonal contraceptives.[6]

Complications of PCOS can include infertility, gestational diabetes or pregnancy induced high blood pressure, miscarriage or pre-mature birth. Non-alcoholic steato-hepatitis (a severe inflammation caused by fat accumulation in the liver) is also another complication. Other complications of PCOS include metabolic syndrome (a cluster of conditions including high blood pressure, high blood sugar, and abnormal cholesterol that increase risk of cardio-vascular disease), type 2 diabetes or pre-diabetes, sleep apnea, depression, anxiety, eating disorders, abnormal uterine bleeding and endometrial cancer.[7]

Women with a diagnosis of PCOS may probably have better knowledge than those who did not have PCOS. There were no ethnic differences in perceived knowledge of PCOS.[8]

Diagnostic workup should begin with a thorough history and physical examination which includes basic laboratory tests, patient's menstrual history, any fluctuations in patient's weight, cutaneous findings (terminal hair, acne, alopecia, skin tags, acanthosis, nigricans) and ultrasonography or imaging tests. Patients should also be asked about factors related to common comorbidities of PCOS.[9] The lack of consistent and accurate diagnosis of PCOS in young women potentially leads to over diagnosis. This creates unnecessary fears of health complications, particularly infertility.[10]

There will be variation in the prevalence of PCOS among adolescents based on different criteria (Diagnostic criteria, NIH criteria, Rotterdam criteria, AES criteria, Etiopathogenesis).[11]

Research evidence should be translated to knowledge and action among students, healthcare professionals and policy makers. Management should focus on support, education, addressing psychological factors and strongly emphasizing healthy lifestyle with targeted medical therapy as required.[12]

The aim of the study is to assess the risk factors among college students for the development of Poly Cystic Ovarian Syndrome and also involves assessment of knowledge regarding signs and symptoms and possible risk factors associated with PCOS of the students. Thus, this study aims to evaluate and develop the level of knowledge and awareness about PCOS among pharmacy, medical, dental students.

II.   MATERIALS AND METHODS

STUDY DESIGN: This was a questionnaire based descriptive cross-sectional study.

STUDY SITE: This study was conducted at S.J.M. College of Pharmacy, Basaveshwara Medical College, S.J.M. Dental College in Chitradurga.

STUDY PERIOD: Study was conducted for a period of six months.

STUDY SUBJECTS: This study included Students of Pharmacy, Medical, and Dental Colleges of S.J.M, Chitradurga.

INCLUSION CRITERIA:
* Pharmacy, Medical, and Dental students from SJM Vidyapeetha, Chitradurga.
* Female college students.

EXCLUSION CRITERIA:
* Drop out students from S.J.M Vidyapeetha.

ETHICAL APPROVAL:
The study was approved by the Institutional Ethical Committee of Sri Jagadguru Mallikarjuna Murugharajendra College of Pharmacy, Chitradurga.
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SOURCES OF DATA:
* Questionnaire based survey among Pharmacy, Medical and Dental students in Chitradurga district.

STUDY PROCEDURE:
* The study was started after obtaining the consent from Institutional Ethical Committee (IEC). After obtaining informed consent, the

questionnaire was distributed among Pharmacy, Medical, and Dental students in the form of Google forms.

• A self-administered questionnaire on knowledge and awareness regarding PCOS was provided using Google forms. A brief description regarding the study has been given in the Google forms, those who give consent to participate in the study was only included.

• The questionnaire consisted of:
   Part 1. Socio-demographic details.
   Part 2. Basic Knowledge on PCOS.
   Part 3. Attitude of patients towards PCOS

• Data was collected by the investigators and confidentiality was maintained during the data collection process.

• For each correct answer of Knowledge, Prevalence and Risk factors assessment questionnaire was scored '1' and for each wrong answer '0'.

• The knowledge-based questionnaire was assessed and mean knowledge scores were determined and prevalence of PCOS in the women is also determined.

QUESTIONNAIRE:

1.Do you have irregular menstrual periods?			
A. Yes, often.		B. Yes, rarely	
C. No		D. I don't know	
2.Do you have menstrual cramps?			
A. Yes, severe		B. Yes, moderately	
B. Yes, rarely		D. No	
3. Are you diagnosed with PCOS?			
A. Yes			B. No
4.How much weight you gained over the past 3 months?			
A. 3Kg			B. 5Kg
C. 7Kg			D. 12Kg
5. Do you have any habit of eating of junk food?			
A. Yes, occasionally		B. Yes, daily	
C. Yes, most of the days		D. NO	
6.What type of junk food you prefer?			
A. Canned food		B. Soft drinks	
C. Fast-food		D. None of the above	
7. Do you like to have fried food?			
A. yes		B. No	
8. Do you take Red meat?			
A. yes, daily		B. Yes, occasionally	
C. No			
9. Do you eat chocolates?			
A. Yes, all the time		B. Yes, Sometime	
C. Yes, daily		D. NO	
10.Do you have visible and thick facial hair?			
A. Yes	B. No		
11. Are you obese or not?			
A. Yes		B. No	
12.Do you have difficulties for staying at ideal weight?			
A. Yes		B. No	
13.Are you embarrassed of having excess body hair?			
A. Yes			B. No
14.Do you have any family history of diabetes/ insulin resistance?			
A. Yes			B. No
15.Do you have any genetic history of PCOS?			
A. Yes			B. No

16.How often you do your exercise?		
A. Daily		B. Twice, weekly
C. Occasionally		C. Never
17.What type of exercise you prefer most?		
A. Walking		B. Jogging
C. Cycling	D. Swimming	
18. Do you have any type of acne?		
A. Facial acne		B. Body acne
C. No acne		
19. Do you have any treatment for acne?		
A. yes		B. NO
20.What are the menstrual problem do you face during periods?		
A. Headache	B. Back pain	
C. Abdominal Bloating	D. Heavy menstrual Bleeding	
E. All of the above		
21.How many sanitary pads you change daily during heavy bleeding?		
A. 3-4	B. 5-6	
C. 6-7	D. 7-8	
22. Are you suffering from Insomnia?		
A. yes	B. No	
23. Do you have increased appetite?		
A. Yes		B. No
24. Are you irritated by other people?		
A. Yes		B. No
25.Do you feel depressed of having PCOS?		
A. Yes, rarely		B. Yes, Often
C. No		
26. How do you want to improve your quality of life?		
A. By changing diet	B. By following exercise	
C. Modifying sleep pattern	C.By avoiding unhealthy lifestyle habits	
27. Are you scared about the future?		
A. Yes		B. No
28.What is the full form of PCOS?		
A. Poly Cystic Ovarian Symptom	B. Poly Cystic Ovarian Syndrome	
C. Poly Cystic Ovulation Syndrome	D. Poly Cervix Ovarian Symptom	
29.What is the central pathophysiology of PCOS?		
A. Insulin resistance	B. Hyper-androgenism	
C. Poly cystic ovaries on ultrasound	D. Obesity	
30.PCOS is the prominent cause of _____ for women?		
A. Obesity	B. Dyslipidaemia	
C. Insulin resistance	D. Infertility	

ANSWER KEY:
28 (B), 29 (A), 30 (D)

STATISTICAL ANALYSIS:
The data was entered in Microsoft Word-2010 version and the results were analyzed using Statistical Package for Social Services (SPSS 16.0). Descriptive methods was applied to obtain the frequency and percentage, One sample T test is used for knowledge assessment, Point prevalence method is used for prevalence assessment, Odds Ratio, Chi-square analysis, Pearson Correlation

analysis is applied for risk factor assessment, graphs are given for all questions of attitude , prevalence assessment question, risk factors assessment questions and knowledge based questionnaire is analyzed as a whole component and made it to mean score master chart for easy understanding.

III. RESULTS

A total of 205 subjects from selected SJM Colleges, Chitradurga, were enrolled in the study to assess prevalence, risk factors and knowledge on PCOS. Among 49 were dental students, 70 were medical students and 86 were pharmacy students. The age group of subjects which were included in the study are 18-24 Years and 25-31 Years. The questionnaire was prepared based on objectives of our study and the results are collected according to it. Therefore, the following are the study results based on the objectives of the study.

3.1. Prevalence assessment.
Out of 205 subjects only 2% of dental students ,10 % of medical students and 8.2% of pharmacy students were diagnosed with PCOS.
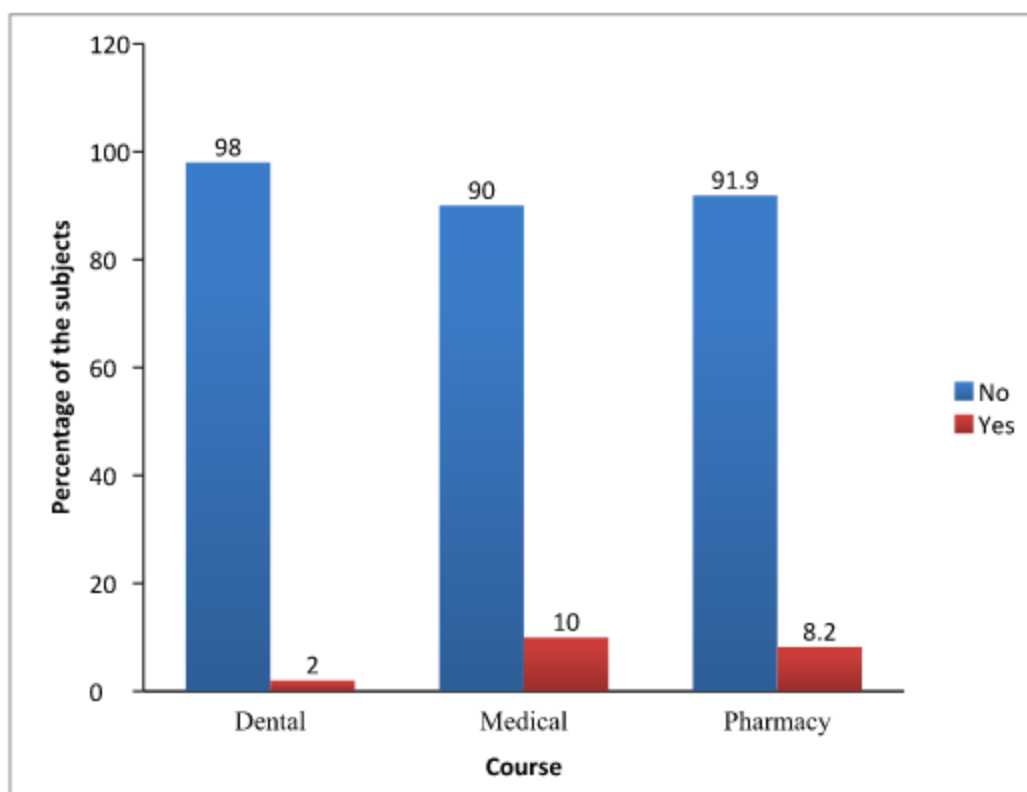

3.2. Knowledge Assessment
3.2.1. Distribution of mean scores of knowledge assessment based on course
        The scores of the test were analysed using suitable statistical parameters such as mean, standard deviation, standard error, One sample t test. In this study the result shows that the mean values of knowledge are 2.58 for pharmacy, 2.75 for dental and 2.85 for medical. Standard deviation values are ±0.583 for pharmacy and ± 0.6301 for dental and ± 0.352 for medical. Standard error mean values are 0.06291 for pharmacy, 0.09002 for dental and 0.04213 for medical.
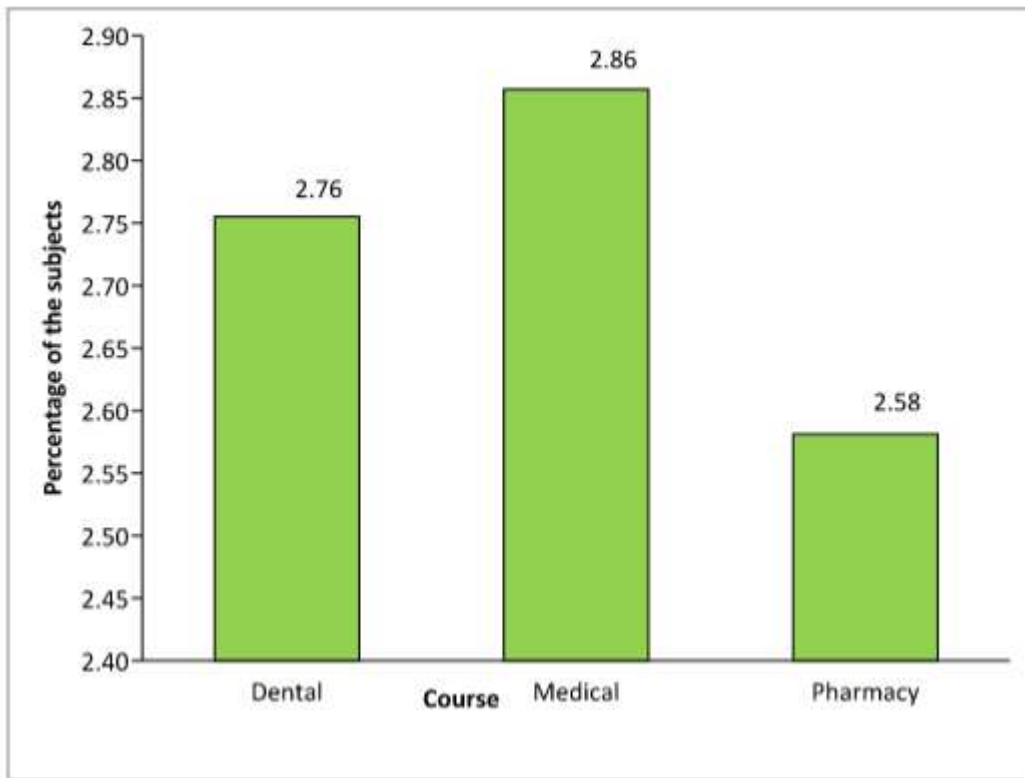
3.2.2. Distribution of Age group V/s Mean knowledge scores

Out of 205 study population the result shows that mean value of knowledge scores are 2.67 for age group 18-24 years and 2.72 for age group 25-31 years. Standard deviation values are $\pm$ 0.599 and $\pm$ 0.53 for age group 18-24 years and 25-31 years respectively. Standard error mean values are 0.1076 for 18-24 years age group and 0.0402 for age group 25-31 years.
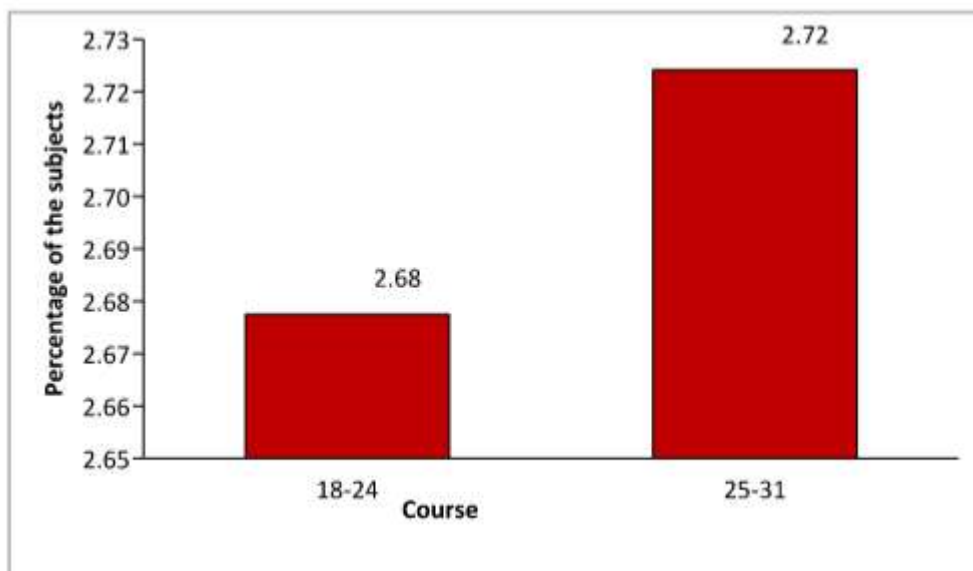
3.3. Assessment of Risk Factors of PCOS

Total number of subjects having family history of PCOS is 10 and in that 3 subjects are at risk and among 183 subjects those who are not having PCOS,12 subjects are risk of developing PCOS. P-value for family history of PCOS if 0.0123 (highly significant) and R.R/OD is 6.5357. Out of 15 subjects, those who follow physical exercise for more than 3 days per week, 11 of them are at risk of developing PCOS. And from 190 subjects, those who are exercising less than 3 days per week, it is found that 170 of them are at risk of developing PCOS. P-value for physical exercise is 0.0132 (highly significant) and R.R/OD is 0.3235.Among 179 subjects who are taking fast food more than 3 days per week, 12 subjects are at risk of developing PCOS and among subjects who are taking fast food less than 3 days per week, 3 subjects are risk of developing PCOS. P-value for fast food is 0.0129(highly significant) and R.R/OD is 0.5509. Among 138 subjects who are having menstrual cramps, 12 subjects are at the risk and out of 67 subjects who are not having menstrual cramps, 3 subjects are risk of developing PCOS. P-value for menstrual cramps is 0.0410 (moderately significant) and R.R/Od is 2.0317. Out of 20 subjects with insomnia, 4 subjects are at risk and out of 174 subjects without insomnia, 11 subjects are at risk of developing PCOS. P- value for menstrual cramps is 0.0316 (highly significant) and R.R/OD is 3.9545.

Variable	Category	PCOS		No of subjects	R.R/OD (95% CI)	p-value	Sig
		Yes	No				
Family history	Yes	03	07	10	6.5357 (1.4979 to 28.5178)	0.0123	H.S
	No	12	183	195			
Physical exercise	>3days/ week	11	04	15	0.3235 (0.0941 to 1.1120)	0.0132	H.S
	<3days/ week	170	20	190			
Fast food diet habit	>3days/ week	12	167	179	0.5509 (0.1445 to 2.1001)	0.0129	H.S
	<3days/ week	03	23	26			
Menstrual cramps	Yes	12	126	138	2.0317 (0.5535 to 7.4585)	0.0410	Mod. Sig
	No	03	64	67			
Insomnia	Yes	04	16	20	3.9545 (1.1288 to 13.8542)	0.0316	H.S
	No	11	174	185			

IV. DISCUSSION

A study on assessment of Risk factors for the development of PCOS was conducted among the Pharmacy, Medical and Dental students of Chitradurga. The current study conducted was a questionnaire based descriptive cross-sectional study. The main objective of study was to assess risk factors associated with PCOS, prevalence of

PCOS in women, knowledge of the students in different age group and in different stream of the course, where subjects belongs. This study included 205 students, among which 49 were Dental students, 70 were Medical students and 86 were Pharmacy students. The study was carried out among female subjects.

The knowledge regarding full form of PCOS was found to be excellent, as 99.5% of the students knew that the answer is Poly-Cystic Ovarian Syndrome. 80.9% of the students knew that, insulin resistance is the central pathophysiology for PCOS, which shows good percentage of knowledge but 11.8% of students thought that the correct answer is Poly Cystic Ovaries on ultra-sound. For the question asked, what PCOS prominently causes, 93.2% of the students knew that the answer is infertility. The level of knowledge regarding these questions was found to be slightly high in Medical students with mean score of (2.86) than Dental students (2.76) than pharmacy students (2.58) out of mean score 3.

Prevalence assessment is carried out using Point Prevalence Method and it is concluded that prevalence of PCOS in the women is 7.31, that is 1 in every 28 members will be affected with PCOS. Similar study was conducted by Soma Aditya B et al in 2020.

The study conducted by Soma Aditya B et al also revealed that approximately 28% of the college students were found to be at high risk of developing PCOS. More than 85% of the PCOS case had oligomenorrhea, 19% were hirsute, 41% had acne, 63% had emotional disturbance, and 22% with a positive family history[7].

The risk factors associated with PCOS are Family history of PCOS, Genetic history of diabetes, Family history of infertility, Lack of physical exercise, Alcohol intake, Obesity, Premature pubarche, Acanthosis nigricans, Atypical central precocious puberty, Intake of junk food. By improving quality of life, the chances for development of PCOS can be reduced, Weight reduction for obese patients with PCOS is beneficial in many ways weight loss helps to decrease androgen, luteinizing hormone (LH), and insulin levels. It also helps to regulate ovulation, thereby improving potential for pregnancy.

Similar study was conducted by Hanan EH et al in 2019, which is a study on impact of polycystic ovary syndrome on women's quality of life. The study concluded that PCOS is a common risk factor for acne, alopecia, hirsutism. Many factors to be associated with its phenotype as: body-mass-index, hirsutism, and average cycle length. It has a negative impact on phenotype characteristics, psychological/social domain and total QOL scale.[16]

Menstrual cramp is common in most of the students, in both PCOS diagnosed and non-PCOS diagnosed subjects. Hence it cannot be taken as major risk factor for the development of PCOS. Around 90-92% of students are having menstrual cramps during their periods. This study also brings into notice that the students who took part in the survey were having a good understanding about life style modification, risk factors and attitude towards PCOS.

Another similar study was conducted by Laura RS et al in 2019 on lifestyle interventions for polycystic ovary syndrome. The aim of the study was to examine diet and lifestyle program preferences among women with PCOS. Half of the 197 respondents expressed strong were interested in programs addressing energy level, anxiety, depression, weight, diabetes prevention, menstrual period regulation and hirsutism. The study concluded that future online and mobile diet and lifestyle programs may be able to capitalize on this information to better target this population's expressed preferences[15].

Also, the current study gives an idea about the correlation of the age with corresponding level of knowledge and correlation of course with corresponding level of knowledge. Students in age group of 24-31 and Medical course stream had higher levels of knowledge regarding PCOS. Overall, this study gives an outline of the amounts of improvements that has to be made in the knowledge, awareness and life style modification, risk factor assessment and percentage of PCOS prevalence among Pharmacy, Dental and Medical students of Chitradurga.

V.   CONCLUSION

- This study draws a sequence of knowledge in terms of the age group, which is found to be 25-31>18-24 Years. That is 25-31 years old subjects are having high knowledge (2.72) compared to 18-24 years old subjects (2.68)
- Prevalence of PCOS in the women is found to be 7.31. That is 1 in every ≈28 members will be affected with PCOS and the inclusion criteria taken in consideration is age group of 18-31.
- People with PCOS have moderate clinical features of Hirsutism (p=0.0453) and Acne (p=0.0415). Hence concluded as, all the individuals who are with PCOS diagnosed are not having the

symptoms of Hirsutism (excess hair growth) and Acne.

• People with PCOS have high clinical features of Mood disturbance (p=0.0120) and lack of self-confidence (p=0.0001) in their day to day life.

• Family history of PCOS (p=0.0123), lack of physical activity (p=0.0132), Insomnia (p=0.0316) and fast food diet habits (p=0.0129) are found to be the predisposing factors for development of PCOS.

• The risk of PCOS increases with presence of one or more identified predisposing factors. This concludes that, by reducing risk factors, chances for the development of PCOS can be decreased.

• Menstrual cramps (p=0.0410) has moderate risk in developing PCOS. Menstrual cramp is common and most of the subjects have menstrual cramps during their periods, so it cannot be considered as major risk factor for the development of PCOS.

VI. ACKNOWLEDGEMENTS

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