Health Care

DEVELOPMENT OF KAP TOOL AND ITS APPLICATION IN ASSESSMENT OF YOUNG FEMALES WITH PCOS.

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ABSTRACT   **BACKGROUND:** Polycystic ovary syndrome (PCOS) is the most common endocrine disorder amongst women of reproductive age associated with various clinical and psychological manifestations. Promoting awareness and lifestyle modifications is essential to empower the female PCOS population to take health care decisions for the treatment and management. **OBJECTIVE:** Assessment of knowledge, attitude and practice(KAP) among PCOS population is significant in behavioral and lifestyle modification. Thus, the present study was undertaken to develop a KAP tool. **METHODS:**An observational, non-controlled study was conducted using random sampling in the age range of 15-25 years. A total of 600 subjects were screened with the help of a standardized screening questionnaire and the presence of PCOS was confirmed using the Rotterdam criteria (2003).A KAP tool validated by an expert panel was given to the subjects confirmed for PCOS to assess knowledge, attitude and practices. The validity was assessed using exploratory factor analysis. The Spearman-Brown correlation coefficients helped to assess reliability for knowledge, attitude and practice domains, which were found to be 0.83, 0.63 and 0.47 respectively. **RESULTS:** Significant knowledge was found among confirmed PCOS subjects, but had low attitudes and their practices did not commensurate with their knowledge about PCOS and Nutrition. **CONCLUSION:** The present research contributes to the understanding of a growing PCOS epidemic in urban India and document the need to screen knowledge, attitude and practice, to develop supportive interventions addressing quality of life issues to reduce the distress among women with PCOS.

KEYWORDS : PCOS; Rotterdam Criteria; glucose tolerance; insulin resistance; KAP; lifestyle modification; development; validation; reliability

INTRODUCTION
Polycystic ovary syndrome (PCOS) is one of the commonest endocrine disorders seen in young women   characterized by three classic symptoms: Irregular menstrual periods ,excessive hair growth and or Polycystic ovaries.[1]

In a survey, it was found to be 9.13% prevalent among south Indian adolescent girls. [2] World Health Organization (WHO) indicated that PCOS affected 116 million (3.4%) of women worldwide.[3]

Women with PCOS are also at an increased risk of psychological implications. Lifestyle management is currently advised as the first line management strategy for PCOS.Therefore, assessment of knowledge, attitude and practice is significant in behavioral and lifestyle modification .

OBJECTIVES
The study aimed at assessing the knowledge, attitude and practices among subjects confirmed for PCOS.

2. MATERIAL AND METHODS
Sample size and Selection of subjects:
Random sampling technique was used to select subjects .Screening questionnaire was distributed to 600 subjects. Responses were received from 521 subjects. Based on the inclusion criteria, 56 subjects were considered for the study. Average age of the selected subjects was 21.5 years.
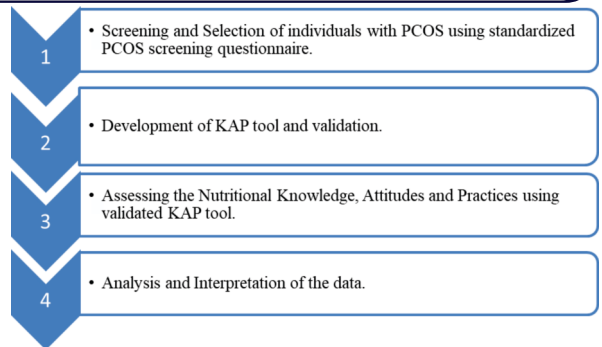
INCLUSION CRITERIA:
Females aged between 15-25 years of age.
- Confirmed cases of PCOS based on Rotterdam Criteria which requires the presence of any two of the following:
- Oligo/anovulation
- Clinical or biochemical signs of hyperandrogenism
- Polycystic Ovaries on Ultrasound
- Subjects willing to be a part of the study.

EXCLUSION CRITERIA:
- Subjects beyond the required age group.
- Individuals with congenital adrenal hyperplasia, androgen secreting tumors, Cushing syndrome, thyroid dysfunction and hyperprolactinemia as mentioned in the Rotterdam criteria of PCOS diagnosis.

Research Design

1. Screening and Selection of individuals with PCOS using standardized PCOS screening questionnaire.
2. Development of KAP tool and validation.
3. Assessing the Nutritional Knowledge, Attitudes and Practices using validated KAP tool.
4. Analysis and Interpretation of the data.

EVALUATION TOOLS
a) SCREENING QUESTIONNAIRE
A pre-developed screening questionnaire was used to screen and identify women with PCOS. The questions were based on Awareness, Diagnosis, symptoms of PCOS and presence of any psychological conditions such as stress, depression, body image issues etc.

b) KAP questionnaire- KAP questionnaire was constructed and validated with the aim of assessing knowledge, attitudes and practice of the subjects.

Knowledge, attitude and practice play main roles in the Knowledge-Attitude-Practice (KAP) model, which proposes that accumulated knowledge in a health aspect initiates changes in attitude, and results in gradual behavior change.[4]

Development - The aim was to develop and examine the validity and reliability of the KAP questionnaire towards the syndrome among PCOS women aged 15-25 years. Various literatures were reviewed using journal databases, existing reports, books, opinion from the experts and inputs from the diagnosed PCOS cases. The retrieved information was included in knowledge, attitude and practice domains.

Validation-Validity has been described as the agreement between a test score or measure and the quality it is believed to measure. [5]

Face validity- The retrieved information was included in knowledge, attitude and practice domains. Following this, a guided self-administered questionnaire was developed which comprised 25

knowledge items, 19 attitude items and 27 practice items. Items were generated with emphasis on features of PCOS.

Content validity- Content validity refers to the extent to which the items on a measure assess the same content .[6] Content Validity is based on the extent to which a measurement reflects the specific intended domain of content.[7]It refers to the conceptualization of the statements for developing the scale for the study. The developed KAP questionnaire was reviewed by a panel of 12 experts including registered dietician, academicians, gynecologist, psychologist and confirmed PCOS cases. The experts reviewed each item of the questionnaire based on content relevance, clarity, simplicity and ambiguity and rated each question on the following scale of 5[8]

• Not necessary
• Less than average
• Average
• Significant
• Most significant

The comments from content and face validation were considered and items were either edited, removed or remain unchanged with the help of factor analysis.

Factor analysis -. It assesses the degree to which the individual items on a scale truly cluster around one or more concepts. Items designed to measure the same concept should load on the same factor. .
Reliability- reliability is the extent to which the instrument yields the same results on repeated measures. It is concerned with consistency, accuracy, precision, stability and homogeneity.

Assessment of knowledge, attitude and practice
In diagnosed and confirmed cases knowledge, attitudes and practices were assessed based on their awareness about the disease, symptoms, consequences, personal experience and concern towards the disease and their adopted lifestyle modifications.
This was followed by Statistical interpretation of the data**.**

Ethical considerations
The protocol was approved by the institutional human ethical committee-Nutri-Explore ethics committee (NEEC BU 012)**.**An approved consent was also obtained from the study participants.

RESULTS
Screening questionnaire
General information of the subjects
It was observed that the 67% of the subjects were in the age group of 15 – 18 years, 30% and 3% of the subjects were between 19 – 22 and 27-30 years of age respectively.

99% of the subjects were single whereas 1% of the population was married.

Table 1. Menstruation related symptoms
Average age of menarche in the study population was found to be 12.7 years.

Occurrence of regular menstruation		Number	Percentage
	Yes	384	74
	No	56	11
	Sometimes	81	15
	Total	521	100
Frequency of occurrence of menstrual cycle		Number	Percentage
	Less than 25 days	58	11
	Every 25th day	200	38
	More than 30 days	110	21
	Variable days	153	30
	Total	521	100
Time of noticing irregular menstrual cycle		Number	Percentage
	No irregularity	189	36
	A year after attaining puberty	178	34
	Two years later	40	8
	After more than two years	114	22
	Total	521	100
Observation during menstruation		Number	Percentage
Heavy bleeding		82	16
Moderate bleeding		373	72
Spotting		11	2
Blood clots		55	10
Total		521	100

It can be observed from the above table that 26% of these subjects showed irregularity in the menstruation. For 11% of the subjects, the duration of menstrual cycle was found to be less than 25 days, 34% of the subjects noticed irregularity in menstruation a year after attaining puberty and 16% of the subjects had heavy bleeding during menstruation.

Table 2 Diagnosis and Clinical signs of PCOS among the subjects.

Subjects diagnosed with PCOS		Number	Percentage
	Yes	56	11
	No	465	89
	Total	521	100
Specific test done by the subjects for the diagnosis of PCOS		Number	Percentage
	Yes	60	12
	No	461	88
	Total	521	100
Excess of hair growth on face		Number	Percentage
	Yes	57	11
	No	464	89
	Total	521	100
Presence of coarse hair growth at 3 or more sites		Number	Percentage
	Yes	86	17
	No	435	83
	Total	521	100

The above table shows that among the study population 11% of the subjects were diagnosed with PCOS. Though from the same study it was found 26% of the study population was at risk of PCOS.

It was also observed that 12% of the subjects got specific test done for the diagnosis of PCOS and 11% of the subjects were found to have excess hair growth on the face whereas 17% of the subjects had coarse hair growth at 3 or more site.

Table 3. Correlation between PCOS and menstruation Irregularity

Undergone tests to confirm PCOS	Notice of irregular Menstrual cycle				Significance of Chi square test
	No irregularity	A year after attaining puberty	Two years later	After more than two years	
Yes(56)	1	24	10	21	18.2345**
No(465)	188	154	30	93	

** Significant at 1% level

The above table suggests that confirmation of PCOS had significantly higher association with irregularity of menstrual cycle with the chi square value being 18.2345.

Table 4 Correlation between PCOS and clinical sign

Undergone tests to confirm PCOS	Excess growth of hair on face		Significance of Chi square test
	Yes	No	
Yes	21	35	21.1607**
No	37	428	
** Significant at 1% level			
Undergone tests to confirm PCOS	Coarse hair growth at 3 or more sites		Significance of Chi square test
	Yes	No	
Yes	20	36	16.3090**
No	67	398	
** Significant at 1% level			

It can be concluded from table 4 that there was a significant association seen between confirmation of PCOS and coarse hair growth at 3 or more sites and the chi square value was found to be 16.3090.

KAP Questionnaire
Content validity
For the content validation, the KAP questionnaire was given to the

expert panel. Several suggestions and feedbacks were received related to the framing of questions and every item in the questionnaire was rated as adequately relevant, clear, simple and non- ambiguous. With this, the tool was made adequate for the present study.

Construct validity
Based on the comments provided by the expert panel, factor analysis was done to assess construct validity which helped to check the importance of each questions. It was found that knowledge section of the instrument had 25 questions initially. Among 25 questions, factor analysis showed 7 components with cumulative percentage variance of 94% which were later plotted on scree plot to derive eigen values. These component matrix were then rotated with the Varimax with Kaiser Normalization method in which question no. 9 and 24 were discarded and rest 23 were selected for the further study.

Attitude section had 19 questions initially among which factor analysis showed 6 components with cumulative percentage variance of 89% which were later plotted on scree plot to derive eigen values. These component matrix were then rotated with the Varimax with Kaiser Normalization method in which question no. 12, 14, 15 and 17 were discarded and rest 15 were selected .

Practice section had 25 questions initially among which factor analysis showed 7 components with cumulative percentage variance of 94.6% which were later plotted on scree plot to derive eigen values. These component matrix were then rotated with the Varimax with Kaiser Normalization method in which question no. 11, 21 and 24 were discarded and rest 23 were selected for the further study.

Reliability
Reliability analysis was done to assess the reliability of the instrument. For this, split of reliability was worked out to find the correlation

Table 5. Reliablity analysis

	Reliability	Cronbach's Alpha I	Cronbach's Alpha II
Knowledge	0.83 (83%)	.712	.301
Attitude	0.63 (63%)	.481	.272
Practice	0.48 (48%)	.630	.810

The Knowledge tool had an association (Correlation) of 83%. Higher the value of reliability coefficient, higher will be the correlation i.e. the instrument was found to be more reliable for further use.

The Cronbach's Alpha for part I and part II gives the strength when the items are divided in two parts. (Split half) The significance of reliability coefficient is not tested.

Assessment of knowledge, attitudes and practices
The analysis of validated KAP questionnaire showed that knowledge scores among the subjects (n=40) was found to be 80.5±15.02, attitude scores was 43.95±6.61 and practice score was found to be 60.10±6.86

Table 6. Correlation between Knowledge, Attitude and Practice among subjects

	Knowledge	Attitude	Practice
Knowledge	1.0000		
Attitude	0.7356**	1.0000	
Practice	0.5249**	0.5693**	1.0000

** Significant at 1% level

The above table shows that there was a significant correlation between Knowledge and Attitude (0.7356). A significant correlation also exists between Knowledge and Practice (0.5249) and Attitude and Practice (0.5693) among the subjects.

DISCUSSION
The conducted study showed that PCOS has a great association with menstrual irregularity and facial hair growth.

In one of the study conducted it was observed that the prevalence of Polycystic Ovaries increased significantly with the irregularity of the menstrual cycle pattern. [9]

Similar findings were reported where it was observed that the excess amount of androgens production in PCOS women prevents ovulation,may cause infertility, acne and abnormal hair growth, such as excess facial hair or male pattern baldness.[10]

In another study conducted in New Delhi to study the clinical manifestations in PCOS women it was found that the prevalence of menstrual irregularities, clinical hyperandrogenism, endometrial hyperplasia (EH), and type 2 diabetes mellitus was significantly higher in the PCOS women.[11]

There is an escalation in the prevalence of PCOS due to the nutritional transitions of developing countries towards obesogenic lifestyle. The rising incidence coupled with the etiological complexity of PCOS calls for the effective management of this condition to improve the quality of life.

The Developed KAP Questionnaire helped in acquiring the information regarding Knowledge, Attitude and Practices of the selected subjects pertaining to Nutrition and PCOS .It was clearly evident that the subjects had low attitude and their practices were not commensurate with the knowledge they had about PCOS and Nutrition. Contrasting results were observed in one of the study conducted by Patel et al ,2018 in young central Indian Population, where among 400 participants, only 41% of the women were aware of the term PCOS and very few young women understood the earliest symptoms that should alarm them to consult a physician.

Another study observed that most of the subjects in the study had poor knowledge regarding polycystic ovarian syndrome. After the educational sessions there was enhancement of knowledge score on polycystic ovarian syndrome. [12]

Similar findings were obtained in one more study where nutrition education improved KAP scores significantly and Ninety-seven per cent of the participants rated the overall intervention and its delivery as 'very good to excellent', reporting that they would recommend this educational intervention to colleagues.[13]

CONCLUSION
The study is helpful in addressing the gaps in knowledge, attitudes and practices and encourage females to consult health professionals for effective management of PCOS .The study also paves the way for the development of nutrition education material and initiation of awareness generation programs for PCOS.

Many studies have shown that Educational program conducted regarding PCOS, Diet and Lifestyle intervention have improved the knowledge, attitudes and practices among women with PCOS. The developed questionnaire can be used to identify the gaps among the target population and would further help in designing the various awareness and educational programs for PCOS population.

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