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DOI: https://doi.org/10.52461/pjap.v3i1.1213 **Original Research**

Effectiveness of Cognitive Behavioral Therapy on the Depressive Symptomology of Women with Polycystic Ovary Syndrome

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Abstract

The current research aimed to determine the effectiveness of Cognitive Behavioural Therapy to reduce depressive symptoms in women diagnosed with Polycystic Ovary Syndrome. A quantitative pre-test-post-test design was employed and six women with mild to moderate symptoms of depression, aged between 19-40 years were recruited using purposive sampling technique using the Patient Healthcare Questionnaire (PHQ-9) (Spitzer et al., 2001). It was hypothesized there will be a relationship between Polycystic Ovary Syndrome and symptoms of depression and that Cognitive Behavioural Therapy would be effective in ameliorating the effects of depression in women with Polycystic Ovary Syndrome. Quasi research design was used. A total of seven group therapy sessions were conducted and Statistical Package for Social Sciences was used to analyse the results. Result indicated that Cognitive Behavioural Therapy significantly reduced the symptoms of depression in women with Polycystic Ovary Syndrome ($p < 0.05$). This research can aid medical practitioners in creating structured holistic treatment programs to treat the physiological as well as emotional factors of the disorder.

Keywords: *poly cystic ovary syndrome, depressive symptoms, cognitive behavioral therapy.*

Introduction

The term health is referred by World Health Organization is essentially not only the absence of disease but improved social, mental and physical well-being (WHO, 1948). However, some physical health conditions can have a debilitating effect on our mental health such is in the case of Polycystic Ovary Syndrome. Polycystic ovary syndrome or more commonly referred to as, PCO's is a female endocrinal disorder. Akram and Roohi (2015) reported that Polycystic Ovary Syndrome affects nearly 6-20% with the prevalence of the syndrome being significantly higher as compared to women in the UK - 25%. As a multifactorial disorder and one of the causes for infertility, it comprises of irregular periods, hirsutism i.e., excessive body hair, acne, hair loss and excessive weight gain (Khomami et al., 2015). However, the recurring feature of this is the appearance of cysts within the ovaries where a visible enlargement of the ovaries is considered its stark feature. However, a single cause cannot be attributed to its onset. Genetics i.e., first generation, environmental factors and social aspects for instance intermarriages are suggested by Brady et al., (2009) as factors that

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may act as risk markers. Women with Polycystic Ovary Syndrome suffer from complications such as 50-80% women undergo insulin resistance (Legro et al., 2004) and increased beta-cell-dysfunction which has contributed to the onset of diabetes. Studies have therefore shown that women eventually develop glucose intolerance at an earlier stage in life (Pelusi et al., 2004). Additionally, high blood pressure and elevated abdominal adiposity increases the risk of cardiovascular diseases (Carmina et al., 2007).

The effects aren't largely reduced to its physiological manifestation but it's impact on the psychological well-being of an individual as women are also diagnosed with psychological disorders such as depression and anxiety with an impaired quality of life (Hung et al., 2014). The symptoms range from being painful and distressing as the characteristics are attributed to social parameters i.e., unfeminine. Prior studies have shown that women undergo chronic depression which acts as an independent risk factor with quality of life impaired due to growing obesity and infertility concerns (Dokras, 2018).

Alur-Gupta et al. (2019) in his study of women with Polycystic Ovary Syndrome explained that women with Polycystic Ovary Syndrome displayed greater symptoms of depression and anxiety with body image distress increasing with the symptoms. Similarly, greater psychological impairment was witnessed that interrelates with physical dynamics. Women with greater insulin resistance tend to display higher anxiety (Bazarganipour et al., 2013). Additionally, women with Polycystic Ovary Syndrome also have greater body dissatisfaction due to the overall facial features and appearance with generalized and specific negative evaluations with time taken on physical presentation (Himelein & Thatcher, 2006).

A meta-analysis conducted by Veltman- Verhulst et al. (2012) showed that women with Polycystic Ovary Syndrome are likely to experience grater distress with anxiety and depression being common symptoms whereas a study performed by Hollinrake et al. (2007) shed importance on the increase in depressive factors with infertility, high body mass index, broken sleep cycle, exhaustion and appetite changes being some of the common risk factors for depression among women with Polycystic Ovary syndrome. Prior research has focused on more aspects of nutritional and physical aspects of Polycystic Ovary Syndrome i.e., exercise intervention (Wang et al., 2019) or weight management programs (Teede et al., 2011). Thereby completely focusing on the behavioural manifestation of the disorder.

Rationale of the study

Previous literature presented descriptive findings or quality of life impaired by Poly Cystic Ovary Syndrome. Therefore, the current study will shed light on the psychological and behavioural problems of women diagnosed with Polycystic Ovary Syndrome within the context of Karachi, Pakistan using quantitative measures. This study is significant in studying the effectiveness of Cognitive Behavioural Therapy as a mode of intervention in improving the symptomology of women with Polycystic Ovary Syndrome in a country like Pakistan where mental health is still largely ignored.

Objective of Study

The objective of the study was to explore the effectiveness of Cognitive Behavioural Therapy in reducing the depressive symptoms in women with Poly Cystic Ovary Syndrome.

Material and Methods

Participants

The participants for the current pretest-posttest intervention study were recruited through purposive sampling using social media platform such PCOS Support Group Pakistan on Facebook and an Instagram story. An online flyer was created where women diagnosed with Poly Cystic Ovary Syndrome were encouraged to reach out on the email listed on the flyer for

free of cost group therapy sessions. Those who responded were sent a Google Form which included a consent form, demographic questionnaire which asked for details such as age, marital status, educational background, family structure, Poly Cystic Ovary Syndrome diagnosis and PHQ-9 questionnaire. Women who were within the age bracket of 19-40 years, had a valid diagnosis of Poly Cystic Ovary Syndrome and a score within the mild to moderate range on the PHQ-9 questionnaire were recruited. The final group comprised of six females between the ages of 19-40 who were within the reproductive age range and had irregular menstrual cycles.

Instruments

Demographic Information & Psychopathology Questionnaire: The demographic form designed for the study included brief information about the participants' age, marital status, educational level, family structure and income level. The second questionnaire aimed to explore their mental health and was targeted towards uncovering their current medication and prior mental health diagnosis.

Patient Health Questionnaire (PHQ 9): The PHQ-9 is a 9-item 3-point self- report questionnaire to assess the Depression module by incorporating the diagnostic criteria of depression from DSM and is a trademark questionnaire of Pfizer Incorporation (Spitzer et al., 2001). The scale measures symptoms of major Depressive disorder if the client shades a minimum of 5 areas out of 9 including impairment in social, occupational and other domains of functioning. The disorder would not be a cause of any other mental or biological disorder. Moreover, a diagnosis of unspecified Depression would be highlighted if less than 5 items are shaded. The instrument also includes a functional health assessment where the participant would be asked to discuss the emotional, social and work impairment. If the patient responses lie between very difficult to extremely difficult then it can be assumed that the patient's functionality would be impaired. This is considered as the criterion standard however the diagnosis is made based on the clinical interview and mental status examination. Reliability and validity of the tool have indicated it has sound psychometric properties.

Procedure

A sample of nine adult women participants were recruited through online social media platform i.e., PCOS Support Group Pakistan on Facebook and Instagram. An online flyer poster was created and circulated on the social media platform which included the aim of therapy which was to gain insight of subjective experiences and eligibility criteria such as those with a valid diagnosis of the Poly Cystic Ovary Syndrome and between the ages of 19-40. However, after the orientation session, three participants left the study and could not continue due to their previous commitments and the length of the overall study. The sessions were performed at Bahria University Medical & Dental College over a span of seven weeks within one of the larger group therapy rooms. The nature of the sessions was divided into orientation, psychoeducation sessions and therapeutic activities to reduce their depressive symptomology.

It may be discerned that many still oppose therapy due to the stigma attached to it and the overall negative impact Polycystic Ovary Syndrome itself has on most women. Thus, only six participants were part of the intervention who had mild to moderate symptoms of depression could carry forward with the research. All six participants were diagnosed between the ages of 15-25 except one participant who was married and diagnosed at the age of 30 after experiencing frequent missed menstrual cycles. The participants had filled the consent form and demographic questionnaire.

An Intervention plan was customised using the key CBT principles (Beck, 2020) and CBT for Beginners by Jane Simmons and Rachel Griffiths was referred to for additional support. (Simmons & Griffith, 2009).

Intervention Plan

Aim: Orientation session: introduce the participants amongst one another and establish basic rules.

Objective: To introduce participants to confidentiality agreement, boundary settings and the nature of research. During the session, myths regarding Polycystic Ovary Syndrome were probed and discussed.

Outcome: Rapport was established and any questions the participants had regarding the research were clarified and explained in detail. Consent and demographic forms were signed and given to the researcher. There was active participation seen from the participants' end who explained their journey of Polycystic Ovary Syndrome.

Session 1

Aim: Introducing the Antecedents, Behaviour and Consequences (ABC) Model and questions related to their diagnosis

***Objective*:** A 50-minute session that elicited their concerns related to their diagnosis, its duration, severity and emotional impact. It was aided using open ended interviews and uncovering their beliefs, behaviours and consequences of Poly Cystic Ovary Syndrome using the A-B-C Model for cognitive restricting and overall feedback.

Outcome: Participants discussed their diagnosis and the emotional distress they faced on a day-to-day basis.

Session 2

***Aim*:** Incorporated goal setting to identify their negative automatic thoughts and emotions using the body scan method related to Polycystic Ovary Syndrome.

***Objective*:** Within a 50-minute session, participants were psycho-educated about emotions and the body scan method and their depressive thoughts were highlighted. This was to help the participants become cognizant about their thought process and the ability to reconstruct it using positive coping statements.

Outcome: The participants were able to identify their maladaptive thought patterns and given a thought record journal while using the A-B-C model. The negative emotions once invoked by the thoughts were reduced using the body scan method technique. Most of the common thoughts were related to weight which led to anger and sadness and pushed the client to adopt avoidance coping strategies such as binge-eating.

Session 3

Aim: To psycho educate client about the physiology and cognitions commonly found in Polycystic Ovary Syndrome would be discussed while reviewing the thought record journal (using illustrations).

Objective: A 50-minute session which introduced positive self-affirmations and deep breathing technique i.e. shoulder roll breathing. This would allow the participants to practice emotional regulation as women with Polycystic Ovary Syndrome tend to experience more stress compared to those without the disorder.

Outcome: The participants were aware to locate the key areas where they felt stressed and the positive affirmations were helpful in strengthening their self-esteem. The Participants explained their strengths one by one and were grateful for making it this far despite all the obstacles.

Session 4

***Aim*:** Cognitive errors related to Polycystic Ovary Syndrome were uncovered.

***Objective*:** The errors were highlighted using the time projection technique. The time projection technique was where the client had to write positive things that would happen in

one, five and ten years. Whilst highlighting the thought process, the participants were provided with a cognitive errors worksheet to highlight their frequent distortions using examples.

Outcome: Overgeneralization and personalization were common thinking errors. One participant stated, "I thought there was something wrong me, am I even alive?" and another stated, "I thought I am not good enough, all the bad things seem to have happened after my diagnosis." The participants were able to develop insight based on their perspective and assumptions related to the future and especially their overall thoughts patterns pertaining to their diagnosis.

Session 6

Aim: Different coping strategies and their psychological, emotional and physiological impact on the depressive symptoms of Polycystic Ovary Syndrome. Mainly three coping strategies were introduced.

progressive relaxation. Sit in a comfortable position and take a deep breath by diverting all their attention onto the body. Take one muscle group, starting from the toes and feet and focus on relaxing them. Once completed, the relaxation would spread upward to the calves, pelvic area, stomach, arms, shoulder and neck, in a slow progress. This would allow the participant to consciously enter a state of calmness and build resiliency against stressors.

imagery. Imagining another positive alternative through visual imagery. Asking the participants to imagine another outcome using a positive scenario.

Objective: The techniques targeted the depressive symptoms of Polycystic Ovary Syndrome and allow the participants to gain control over their thoughts, emotions and behaviours.

***Outcome*:** Participants were able to exercise greater control and able to alter their opinion towards themselves and their diagnosis. The shift in perspective helped them regain a sense of emotional and physical control.

Termination session

***Objective*:** Subjective accounts were discussed in detail and a follow up session was scheduled after three months after the termination session. PHQ-9 was re-administered after the seventh session to compare the differences, if any, between the scores. Before the end of the session, the participants were encouraged to write a letter of gratitude for their own selves where they would explain their journey with Polycystic Ovary Syndrome, their struggles and their strengths and what they wish for their future to be.

Outcome: The participants felt positive and were able to improve their coping skills. One participant exclaimed that she was able to write her feelings and assess it in order to process her emotions. The common statement said by all was 'I can do it'.

During the course of the sessions, homework was provided after each session to determine the achieved outcomes. Homework included moderate exercise, comparing a depressive idea with a self-acceptance belief against their diagnosis and maintaining routines. Worksheets and illustrations were used during the course of therapy session.

Ethical Considerations

The participants were invited to participate in this study on a voluntary basis. They were explained in detail about the nature of the study, the manner in which data were to be collected and their right to privacy. Informed consent was provided before, during and after the completion of the research. The participants were continually reminded of their right to withdraw during the study and given access to proper environment in case of any harmful event or injury. Thus, there was complete respect for the individual, their privacy and minimized access to any degree of risk or harm.

Results

Table 1

Demographic Characteristics of the Participants of the Study

Variables	*N*	*%*	*M*
Age			
20-25	6	66.7	2.00
31-35		16.7	
40-41		16.7	
Marital Status			
Single	6	66.7	1.33
Married		33.3	
Ethnicity			
Urdu Speaking	6	50.1	3.50
Muhajir		16.7	
Sindhi		16.6	
Pathan		16.6	
Level of Education			
Undergraduate	6	66.7	3.17
Masters		33.3	
Income Group			
Upper Middle	6	33.4	2.50
Middle Class		33.4	
N/A		33.2	
Family Structure			
Nuclear	6	83.3	1.17
Joint		16.7	

This table demonstrates the demographic variables of the current study. The experimental group comprised of six women out of which two were married; one of them had four children and the other participant had recently miscarried. All of them had completed their bachelor's with the exception of two participants who had further completed their postgraduate. Income group was incorporated as it shed light on the access to resources participants had and their willingness to seek medical treatment and make adjustments to their lifestyle

Table 2.

Descriptive Characteristics of the Psychopathology of the Participants

	N	*%*	*M*
Current Medications			
Glucophage XR	6	16.7	3.33
Myofolic		16.7	
Yaz, Myteka		16.7	
Tinositol		16.7	
None		33.3	
Use of Stimulants	6		1.00
None		100.0	
Prior Mental Health Problems & Therapy			
Yes	6	16.7	3.33
Anxiety but no therapy		16.7	
None		66.6	
Family Psychopathology			
Depression	6	33.3	3.33
Anxiety		33.3	
None		33.4	

This table describes the overall emotional and mental health variables of the individual. Except for two participants, four participants were on medication whilst nearly all of them had incorporated some lifestyle modification. Anxiety and depression were common mental illnesses in the family however except for one participant, this was their first interaction within a therapeutic setting.

Table 3.

Paired Sample T-test Highlighting the Comparison of Pretest-Posttest Depressive Symptomology in Experimental Group before and after intervention (N=6)

Variable	Pre-test		Post-test		t(df)	95%CI	
	M	SD	M	SD		UL	LL
Depressive Symptomology	11.33	4.03	5.66	3.38	2.91	10.66	.67

This table presents the value of mean, standard deviation, confidence interval with lower and upper limits of experimental group. Pre-intervention (M=11.333) and post intervention (M=5.66), Paired Sample T Test was performed which showed a significant difference thereby highlighting the efficacy of Cognitive Behavioural Therapy in improving the symptoms of Depression in women with Polycystic Ovary Syndrome. It proves that Cognitive Behavioural Therapy is effective in alleviating the symptoms of women.

Discussion

The objective of the research was to assess the effectiveness of cognitive behavioral therapy as an intervention to alleviate the mild and moderate symptoms of depression. Results yielded a significant difference pre and post intervention at $p<0.05$ (M= 11.33, M=, 5.66) and was thus found to be proved. The significant results establish that Cognitive Behavioral Therapy as one of the key interventions in reducing the depressive effects in women with Polycystic Ovary Syndrome. As mentioned in the previous studies, Polycystic Ovary Syndrome has a debilitating effect on the mental health of women and aids in fatigue, low energy and an overall dissatisfaction with their body and self-esteem. It has been established that women suffering from Polycystic Ovary Disorder undergo high levels of psychological distress with obesity, hirsutism and infertility further exacerbating a women's emotional health.

The difference was significant and proved that women diagnosed with Polycystic Ovary Syndrome will exhibit depressive symptoms although the severity level may differ amongst women. The participants in the study claimed undergoing stress after experiencing trouble in losing weight, facial hair, alopecia and irregular or missed menstrual cycle. The stress was worsened by the cultural and societal mistreatment they experienced around them. However, it is important to note that none of the participants had an official diagnosis of depression prior to the intervention program, except experiencing low mood, anger, and stress. The participants often used the term 'extreme mood swings' to explain their loss of interest in their day-to-day activities. A meta-analysis conducted by Veltman-Verhulst et al. (2012) showed that women with Polycystic Ovary Syndrome are likely to experience grater distress with anxiety and depression being common symptoms.

Moreover, during the intervention, one participant stated experiencing passive suicidal ideation in the past when she was diagnosed with Polycystic Ovary Syndrome and had 'constant suicidal thoughts' after gaining weight. To reiterate, the participant did not have any active suicidal ideation or plan during the therapy but as a precautionary measure, she was introduced to a crisis plan and encouraged to write down emergency numbers and list of

people/persons she could contact. She was asked to perform self-soothing exercises i.e. reading, listening to favorite songs or calling a friend. Additionally, her consent was taken to break confidentiality if the client were to harm herself.

The lack of emotional regulation and control over weight was a common theme among the group members which exacerbated their depressive symptoms resulting in a diminished sense of worth and loss of energy. During the intervention phase, the participants seemed motivated throughout the course of it and were eager to learn and adopt new coping strategies.

All the participants had at some point attempted to modify and incorporate healthier lifestyle changes. From adopting keto diet to enrolling in gym and weight loss programs, the participants acknowledged and tried to improve their symptoms. Study performed by Hollinrake et.al. (2007) shed importance on the increase in depressive factors with infertility, high body mass index, broken sleep cycle, exhaustion and appetite changes being some of the common factors for depression among women with Polycystic Ovary syndrome. For the participants, anxiety and depressive symptoms were explained and used interchangeably so they were psycho-educated about the differences during the therapy sessions.

Towards the termination session, the participants explained how unknowingly they would personalize situations that forced them to ruminate especially towards the thought of being infertile. Moreover, it was observed during the intervention phase that eventually the participants were able to successfully separate their maintaining factors whilst being mindful of their thoughts/feelings and behaviours. After being psycho educated, one of the client expressed how empowered she felt after knowing that she was in control of her thoughts and actions. One misconception people tend to make is assuming that their mind is in greater control over their lives and decisions when in reality, we as humans, exert control over it. Once the participants were empowered to believe in this, there was a significant difference in their perspective towards themselves and Polycystic Ovary Syndrome.

To summarize, there are three important findings in this study. The first, is the involvement and misinformation being spread by gynecologists that is contributing to their depressive symptoms. This was highlighted in the first session when women were asked to report their diagnosis. Participants diagnosis was overlapped with elevated thyroid levels and endometriosis without performing blood tests. Additionally, one participant narrated an incident when she was told by her gynecologist to "prepare for a long battle with cancer" without supporting it with any credible evidence or test result. Women expressed being misunderstood and negatively evaluated by their medical practitioners which made them feel 'unworthy and depressed.' Their concept of femininity was largely challenged as the behavioral manifestations of the disorder made them appear masculine or less 'girly' through the societal and cultural lens as experienced by the participants. Obesity, higher testosterone levels and hirsutism were main contributing factors which made them challenge their self-worth.

Lastly, fear of not losing weight and infertility were the most common and recurring thought patterns that were elicited by the participants. Weight gain is caused by Polycystic Ovary Syndrome, not by the participant which was a common misconception observed during the study. With high levels of insulin and elevated levels of blood sugars, the insulin secretion triggers androgens to become overproduced resulting in weight gain. This added to a sense of worthlessness and during the initial session, one participant cried after realizing the emotional burden she carried. The focus initially of the participants, prior to joining the study, was on the behavioral manifestation of the disorder but after the sessions, they were able to exert greater emotional control over the distressing thoughts and feelings experienced due to Polycystic Ovary Syndrome.

Conclusion

The current study aimed to show the effectiveness of Cognitive Behavioral Therapy in reducing depressive symptoms of women diagnosed with Poly Cystic Ovary Syndrome. A

group of six women were recruited and attended a seven-week intervention program where the PHQ-9 questionnaire was administered before and after the intervention. The results showed that there was a significant difference in the levels of depressive symptoms post intervention. However, all participants had displayed depressive symptoms and had undergone emotional distress after being diagnosed with the endocrinal disorder however varying levels were present.

It can be postulated that if our thoughts remain unchallenged and garner momentum, women with mild or moderate symptoms can easily become severe and may lead to disorders such as depression and anxiety. The study concludes that Cognitive Behavioral Therapy is effective in reducing the symptoms of depression in women with Polycystic Ovary Syndrome as the results highlighted those participants had negative thoughts and maladaptive beliefs related to their self-image which reinforced their symptoms and impacted their mental health. The findings of the study examined the objective of the study and validated it through data collection and results.

Limitations and Suggestions

The current study has some limitations and recommendations such as the sample size. Only six participants were recruited so generalizability can be impacted. Additionally, group therapy sessions may not have catered to all the emotional needs of the participants that could have been easier to establish in an individual therapy setting and the study only recruited those with a score of mild to moderate. Future studies can increase the sample size and replicate the study with those having severe symptoms and a longer intervention plan of 12-16 weeks. Lastly, the study can be replicated on different class levels and unmarried women to incorporate different perspectives.

Implications of the study

The findings of the current study will aid health practitioners incorporate the emotional well-being of their clients while assessing for Poly Cystic Ovary Syndrome and will encourage thorough assessment. Additionally, since most participants had trouble losing weight, weight loss and fertility programs and options may be added to devise a holistic treatment program. Lastly, Cognitive Behavioral Therapy can be utilized as an effective strategy to mitigate depressive symptoms of women diagnosed with Poly Cystic Ovary Syndrome.

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