

RESEARCH ARTICLE

The mediating role of coping between Alexithymia and mental health problems among women with PCOS

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ABSTRACT

Polycystic Ovarian Syndrome (PCOS) serves as a challenge for women globally, with a never-ending struggle with Alexithymia and mental health problems. To assess Alexithymia in women diagnosed with PCOS and the mediating effect of coping strategies emotion-focused coping (EFC), problem-focused coping (PFC), and dysfunctional coping (DC) between Alexithymia and mental health problems (anxiety, depression, behavior control, and positive affect) among women diagnosed with PCOS living in Islamabad, Pakistan. This mediation study was conducted in Islamabad. A hundred women with PCOS were approached for this study through various OB/Gynae clinics and fertility groups on social media. Participants completed the Perth Alexithymia Scale, Brief Cope Inventory, and Mental Health Inventory. The results suggest that significant mediation exists of EFC ($p = .09$) between Alexithymia and anxiety, EFC ($p = .02$) between Alexithymia and depression, EFC ($p = .01$) between alexithymia and behavior control in addition, significant mediation of EFC ($p = .04$) exists between Alexithymia and positive affect. Coping (EFC, PFC, and DC) partially mediates between Alexithymia and mental health problems (anxiety, depression, behavior control, and positive affect) among women diagnosed with PCOS. Further analysis suggests that DCS has a negative mediating effect between Alexithymia and mental health problems ($M\text{-anxiety} = -.0465$; $p = .13$, $M\text{-depression} = -.0461$; $p < .01$, $M\text{-behavior control} = -.0431$; $p < .01$ and $M\text{-positive affect} = .0333$; $p = .02$). The mediating result is significant for EFC between alexithymia and mental health problems whereas, PFC partially mediates and DC has a significant negative mediating effect between Alexithymia and mental health problems among women with PCOS.

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INTRODUCTION

Stein and Leventhal (1935) initially explained the condition of Polycystic Ovarian Syndrome (PCOS) condition. Current statistics estimate that this condition affects 6% to 20% of the female population, which reflects females of reproductive age and symptoms may vary (Witchel et al., 2019) and affect 56% of Pakistani women compared to Western women (Akram & Roohi, 2015). This medical condition

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disrupted the menstruation cycle, which indicates the ovaries are not releasing eggs regularly. Besides this, it also includes a high level of androgen, commonly known as the male hormone, which causes out-of-proportion physical appearances such as excess facial or body hair and weight gain (National Health Services, 2017). Insulin resistance in women with PCOS has proven to have an impact on emotion processing in the prefrontal cortex in comparison to those without PCOS. This suggests a possible biological factor affecting emotion regulation among women with PCOS (Marsh et al., 2013).

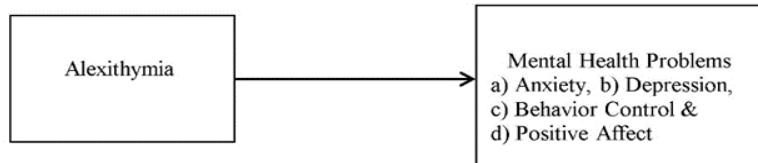
There is some research explaining the presence of Alexithymia in women diagnosed with PCOS. However, the literature is still insufficient compared to the increasing population being diagnosed. In one such study on total participants of 240 infertile women, out of which 120 were women diagnosed with PCOS. The results of this research depicted that sterile females with PCOS experienced higher levels of infertility stress and inability to distinguish and describe their feelings compared with the ones without PCOS (Basirat et al., 2019).

Women living with polycystic ovarian report experiencing more physiological stress than women without PCOS (Farrell & Antoni, 2010), and these women were hospitalized due to stress leading to self-harm (Simon, 2008). A higher level of stress is directly linked with the clinical symptoms of PCOS, such as obesity, acne, and hirsutism (Emeksiz et al., 2018). These factors can also be side effects of PCOS medication (Teede et al., 2014; Abdollahi et al., 2019). The coping mechanism for stress is a significant mediator between stressful experiences and the mental health concerns caused by it (Oginska et al., 2015). Coping plays an essential role in healthy bio-psychosocial functioning. Research has proven that maladaptive coping strategy is a primary cause of “psychological problems” such as “depression,” “anxiety,” “rapid mood fluctuations, and various other minor and major mental health problems.” A study conducted on Pakistani expecting mothers showed that if all maladaptive means are adopted, then it will lead to abnormal behavior since this research concluded a negative association between maladaptive coping and normal human behavior (Rabia et al., 2017).

There are two primary coping strategies (Folkman et al., 1986). These coping strategies combine individual cognitive patterns and behavior changes to adapt to a stressful situation and control the reaction mechanism. Active coping or problem-focused coping (PFC) is based on practical solutions to a problem. In contrast, passive or emotion-focused coping (EFC) requires emotional responsiveness, such as arousal of adverse emotion as a response to a stressful life event (Folkman et al., 2000). Another research illustrates that EFC is a maladaptive strategy and is directly linked with depression and anxiety, which results in deterioration in quality of life (Folkman & Lazarus, 1988). PFC can enhance psychosocial well-being (Lechner et al., 2007). The topic addresses the issue of female mental health. Through numerical data, it will determine the need to implicate mandatory counseling for women dealing with the common reproductive and metabolic case of PCOS. Research on such a robust factor identifies causes of distress and develops evolved methods of programs to increase coping and promote adaptive coping strategies.

This present study aims to answer the following questions: What is the relationship between Alexithymia and mental health problems among women diagnosed with PCOS? What is the mediating role of coping strategies: emotion-focused coping (EFC), problem-focused coping (PFC), and dysfunctional coping (DC) between Alexithymia and mental health problems (anxiety, depression, behavior control, and positive affect) among women diagnosed with POS?

Direct Path



Indirect Path

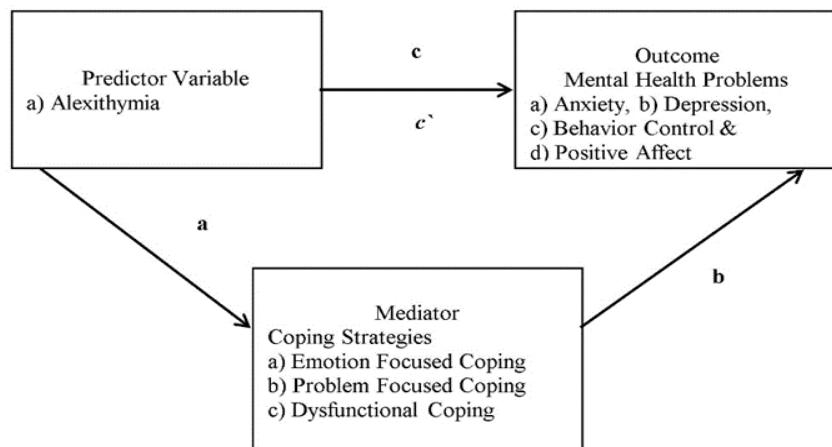


Figure 1. Conceptual framework of the relationship among Alexithymia, mental health problems, and coping strategies

METHOD

This study is quantitative and uses a cross-sectional research design. Since this study explores the direction between variables that enables predictions regarding variables, mediation analysis was used. The study population was women diagnosed with PCOS residing in Islamabad. Purposive sampling and snowball sampling were used to collect data from 100 women residing in Islamabad diagnosed with PCOS through physical means (Clinics and hospitals) and digital means (Facebook communities and social media through Google form). There were several characteristics for participation in this study: females of reproductive age, females residing in Islamabad, diagnosed with PCOS, and the participants should be able to read English, comprehend, and provide an output for efficient application of questionnaires.

There are also sample exclusion criteria: females experiencing PCOS symptoms but not diagnosed, Females residing in other cities, Females who are experiencing menopause symptoms, and Females with other endocrine or reproductive issues besides PCOS. The data was collected using a questionnaire consisting of an Informed Consent Form and a Demographic Form. The consent form included the study title, researcher information, and research affiliation. The demographic record includes age, education, marital status, socioeconomic status, height, weight, and Body Mass Index.

Alexithymia was measured using the Perth alexithymia scale. It assesses all Alexithymia factors that denote positive and negative emotions. The scale has five subscale scores and 6 component scores; high scores indicate a high-level Alexithymia (Preece et al., 2018). A Brief Cope Inventory was used to

measure coping strategies. It is a 28-item four-point Likert scale with fourteen subscales (Carver, 1989). The participants' mental health was measured using the 18-item Mental Health Inventory (Veit & Ware, 1983). It has four subscales that measure anxiety, depression, positive affect, and behavior control.

SPSS 29 was used to analyze. The descriptive method was used to assess age, marital status, socioeconomic status, and Body Mass Index, and the mediation process by Hayes to explain the direction of variables (Preacher & Hayes, 2014). To conduct this research, some ethical considerations were kept in mind. This research was approved by the "Department of Psychology and Human Research and Ethics Committee ZABIST." The study process involved obtaining informed consent from the participants. This was done by briefing about the nature of this study, assuring confidentiality, and the right to withdraw from the study at any time.

RESULT

In this study, we analyzed the frequency distribution of demographics to better understand the sample population's characteristics. The demographic variables examined included age, socioeconomic status, marital status, and Body Mass Index classification.

Table 1. Table showing demographic variation in the sample (n = 100)

Characteristic	n (%)
Age	
Young adulthood	92 (91.1)
Middle adulthood	8 (7.9)
Marital status	
Single	57 (56.4)
Widow	43 (42.6)
Socio-economic status	
Low income	0 (0.0)
Middle income	51 (50.5)
Upper middle income	49 (48.5)
Upper income	0 (0.0)
Body Mass Index (BMI)	
Underweight	11 (10.9)
Normal weight	18 (17.8)
Overweight	55 (54.5)
Obesity	16 (15.8)

Regarding age, the frequency distribution revealed that the youngest participant was 20 and the oldest was 45. For further analysis of the study variables, data regarding age was divided into two groups following the categories of human development given in the psychosocial theory (Erikson, 1980). This category summarized the data into two categories: young adulthood 19 – 40 and middle adulthood 45 – 65. Young adults were calculated to be 92, and middle adults were 8. This shows that the data was diverse since it accurately represents women of reproductive age. Data regarding marital status shows a significantly large number of single women gave responses. Divorce and widow were also included in the demographic category, but the sample did not have any participants for this category. Similarly, socioeconomic status shows more participants belonged to middle and upper middle income. The standard categorization of Body Mass Index was applied to produce groups. A Body Mass Index under 18.5 is underweight, a Body Mass Index between 18.5 – 25 represents average weight, and a Body Mass Index between 25 – 30 is grouped as overweight. In contrast, a Body Mass Index above 30 is grouped as obesity. Overall, the frequency distribution of demographics provides a comprehensive overview of the sample composition. The diverse representation across age, socio economic status, marital status, and Body Mass Index allows for a more nuanced understanding of the population characteristics. These findings contribute to the validity and generalizability of the

study results, as they reflect a broader range of perspectives and experiences within the targeted population.

In this analysis, we have provided an overview of the frequency distribution for each demographic variable, highlighted the key findings, and discussed the implications of the results in terms of sample characteristics and generalizability. It also specifies points to follow through the further analysis discussed below.

Table 2. Table showing common clinical symptoms among women with PCOS (n = 100)

PCOS Clinical Symptoms (NHS, 2017)	n (%)
A disruption in a woman's menstruation cycle that indicates the ovaries are not releasing eggs regularly.	70 (69.3)
PCOS also includes a high level of androgen, commonly known as the male hormone.	17 (16.8)
Out-of-proportion physical appearance can include excessive facial and body hair and weight gain.	87 (86.1)

Table 3. Pearson correlation analysis of the study variables (n = 100)

Variables	MHAS	MHDS	MHBC	MHPA
Alexithymia	.091	.073	-.120	-.300**
Anxiety	-	.785**	.571**	.274**
Depression		-	.603**	.234*
Behavior control			-	.568**
Positive affect				-

MHAS = Mental Health Anxiety Scale; MHDS = Mental Health Depression Scale; MHBC = Mental Health Behavior Scale; MHPA = Mental Health Positive Affect; MHI = Mental Health Inventory

Table 3 shows a strong correlation among all the variables used in this study. Alexithymia is negatively correlated with the variables of behavior control and positive affect, which indicates that women diagnosed with PCOS indeed experience Alexithymia. Hence, Alexithymia is positively associated with anxiety and depression. The significant negative correlation may suggest a higher negative effect, which may exist in Alexithymia. Table 4 shows mediation of EFC, PFC, and dysfunctional coping between Alexithymia and Anxiety.

Table 4. Direct effect of Alexithymia on anxiety

Effect	SE	t	p	LLCI	ULCI
0.0751	.0827	.9080	.3661	-.0890	.2393
Direct Effect					
Pathway	Direct Effect	SE	t	p	LLCI
X → Y	.0812	.0811	1.0012	.3193	-.0798
					.2421

*p > .05

Table 5. Indirect effect through coping strategies mediation

Pathway (Mediation)	Indirect Effect	BootSE	BootLLCI	BootULCI	p
M1 EFC	.0340	.0346	-.0152	.1171	.09*
M2 PFC	.0064	.0208	-.0354	.0519	.7248
M3 DCS	-.0465	.0358	-.1277	.0150	.1386*

*p > .05

EFC = Emotion-focused Coping; PFC = Problem-focused Coping; DCS = Dysfunctional Coping Strategies.

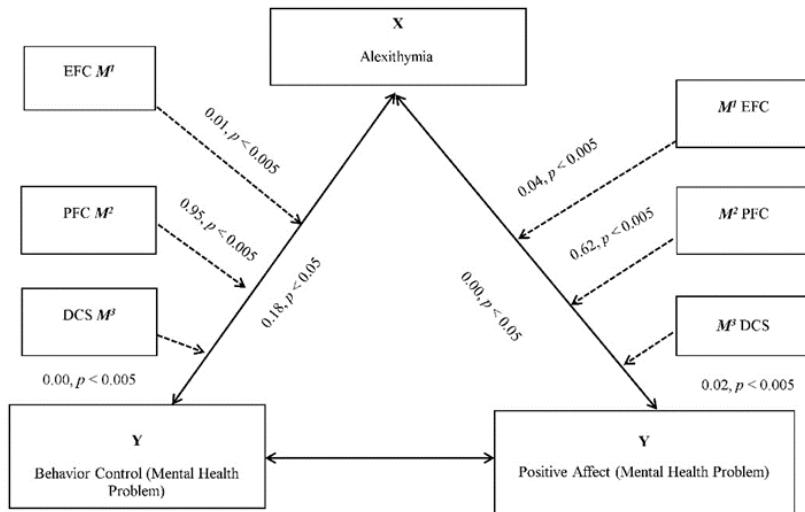


Figure 2. Statistical model based on numeric analysis showing mediation of coping strategies between alexithymia and mental health problems

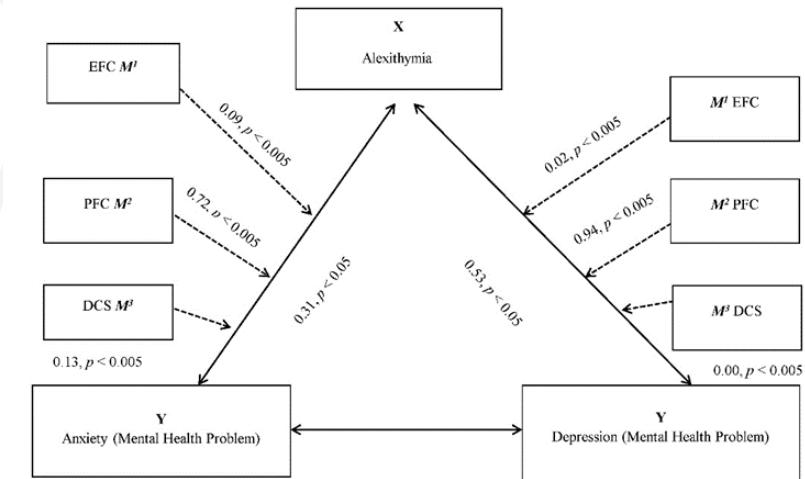


Figure 3. Statistical model based on numeric analysis showing mediation of coping strategies between alexithymia and mental health problems

The link between anxiety (Y) and Alexithymia (X) was investigated using mediation analysis to look at the possible mediating role of coping methods (M1: EFC, M2: PFC, and M3: DC). The findings revealed that through M2 and M3, X had a significant but modest indirect influence on Y, whereas M1 only had a minimal indirect effect. This shows that M1, M2, and M3 partially mediated the X-Y link. However, even after considering the mediator factors, the direct impact between X and Y remained small. In conclusion, the results show that coping mechanisms somewhat regulate the association between X and Y, although the data do not substantially suggest a causal relationship between X and Y. Table 6 leads the mediation of EFC, PFC, and DC between Alexithymia and depression

Table 6. Direct effect of Alexithymia on depression

Effect	SE	t	p	LLCI	ULCI
.0659	.0905	.7284	.4681	-.1136	.2454
Direct Effect					
Pathway	Direct effect	SE	t	p	LLCI
X → Y	.0554	.0899	.6166	.5390	-.1231
* $p > .05$					

Table 7. Indirect effect through coping strategies mediation

Pathway (Mediation)	Indirect effect	BootSE	BootLLCI	BootULCI	p
M1 EFC	.0563	.0447	-.0049	.1658	.02*
M2 PFC	.0003	.0153	-.0401	.0269	.9439
M3 DCS	-.0461	.0394	-.1359	.0144	.0098*

*p > .05

EFC = Emotion-focused Coping; PFC = Problem-focused Coping; DCS = Dysfunctional Coping Strategies.

The mediation analysis was conducted to examine the potential mediating role of the mediator variables of EFC, PFC, and DC in the relationship between (Y) depression and (X) alexithymia. The analysis aimed to determine if M partially or fully mediates the effect of X on Y and to assess the direct and indirect effects. The results of the mediation analysis revealed a significantly low indirect effect of X on Y through the mediator variable M2 (PFC) and M3 (DCS), whereas M1 (EFC) has an indirect partial impact. This suggests that the presence of M1 partially mediates the relationship between X and Y. M2 and M3 also account for a significant portion of the relationship between X and Y. However, an insignificant direct effect between X and Y still does not strongly support the mediation. Table 8 shows the mediation of EFC, PFC, and DC between Alexithymia and behavior control

Table 8. Direct effect of Alexithymia on behavior control

Effect	SE	t	p	LLCI	ULCI
-.0901	.0753	-1.1964	.2344	-.2395	.0593
Direct Effect					
Pathway	Direct effect	SE	t	p	LLCI
X → Y	-.0995	.0739	-1.3469	.1812	-.2463

*p > .05

Table 9. Indirect effect through coping strategies mediation

Pathway (Mediation)	Indirect effect	BootSE	BootLLCI	BootULCI	p
M1 EFC	.0523	.0359	-.0028	.1349	.0105*
M2 PFC	.0002	.0133	-.0322	.0240	.9586
M3 DCS	-.0431	.0338	-.1172	.0148	.0035*

*p > .05

EFC = Emotion-focused Coping; PFC = Problem-focused Coping; DCS = Dysfunctional Coping Strategies

The link between Alexithymia (X) and behavior control (Y) was examined using mediation analysis to explore the possible mediating effect of coping methods (M1: EFC, M2: PFC, and M3: DC). The findings showed that while M2 and M3 had some mediating effects, M1 only partially mediated the link between X and Y. However, even after considering the mediators, the direct impact of X on Y remained minimal. Overall, the data point to M1, M2, and M3 mediating the X-Y link to some extent, although the direct effect does not support this. Table 10 shows the mediation of emotion-focused, problem-focused, and DC between Alexithymia and positive affect.

Table 10. Direct effect of Alexithymia on positive affect

Effect	SE	t	p	LLCI	ULCI
-.2266	.0727	-3.1161	.002*	-.3709	-.0823
Direct Effect					
Pathway	Direct Effect	SE	t	p	LLCI
X → Y	-.2353	.0725	-3.2450	.001*	-.3792

*p > .05

Table 11. Indirect effect through coping strategies mediation

Pathway (Mediation)	Indirect effect	BootSE	BootLLCI	BootULCI	p
M1EFC	.0402	.0326	-.0032	.1186	.0439*
M2PFC	.0018	.0128	-.0233	.0316	.6284
M3DCS	-.0333	.0269	-.0928	.0139	.0203*

*p > .05

EFC = Emotion-focused Coping; PFC = Problem-focused Coping; DCS = Dysfunctional Coping Strategies.

The link between positive affect (Y) and Alexithymia (X) was investigated using mediation analysis to look at the possible mediating roles of coping methods (M1: EFC, M2: PFC, and M3: DC). The findings revealed that while M1 had some indirect effects, M2 and M3 had considerable but modest indirect effects of X on Y. This suggests that M1, M2, and M3 partially mediated the X-Y link. But even after considering the intermediaries, there was still a sizable direct effect between X and Y. This shows that X influences Y in a particular way that the mediators cannot wholly account for. Overall, the results show a robust direct influence and a significant indirect effect through the mediators, offering insights into the mechanisms through which X influences Y.

DISCUSSION

The study was designed to explore the role of coping strategies used by women diagnosed with PCOS. These coping strategies were categorized according to three variable models for analysis purposes. The three-model variable was created by Cooper et al. (2006), which facilitated organizing fourteen scales of Brief Cope Inventory into three broad categories; emotion-focused strategies (Use of emotional support, Positive reframing, Acceptance, Religion and Humor), problem-focused strategies (active coping, planning and use of instrumental support) and dysfunctional coping strategies (venting, denial, substance use, behavioral disengagement, self-distraction and self-blame).

Correlation analysis shows that anxiety and depression have a positive correlation with Alexithymia, which indicates that Alexithymia does affect or is related to mental health problems among women with PCOS. The analysis in this research predicts that coping strategies will mediate Alexithymia and the mental health of women diagnosed with PCOS. These results show the impact of emotions on the mental health of women diagnosed with PCOS. The analysis showed a negative direct effect of Alexithymia on behavior control and positive affect; however, a positive indirect impact exists of EFC and PFC across all variables of mental health problems. The score is low, yet it depicts that the mediation score may increase with many samples.

Similarly, the mediating role of dysfunctional coping strategies between Alexithymia and mental health was significantly negative. This indicates that neither the variables are linked with each other, nor does DC mediate between the Alexithymia and mental health problems of anxiety, depression, behavior control, and positive affect. Previous studies also support emotion-focused and problem-focused mediation results. Research shows that mental health problems such as depression and anxiety are adverse effects of EFC (Benson et al., 2010). This is proven with significant scores of EFC across all mental health variables. Some researchers suggest women use maladaptive coping more than adaptive coping (Benson et al., 2010; Beiraghdar et al., 2015). Some research depicts that women with PCOS use a PFC style (Carron et al., 2017; Basirat et al., 2020).

CONCLUSION

This study concludes that women with PCOS indeed experience Alexithymia, which correlates to mental health problems. Hence, as a result, they choose various coping strategies between emotion-focused, problem-focused, and DC to mediate between their alexithymia and mental health problems.

DECLARATION

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Author contribution statement

Rimsha Khan conducted the survey, distributed the scales, and analyzed the data. Syeda Razia Bukhari monitored the research completion, wrote the discussion, and drew conclusions.

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Data access statement

The data described in this article can be accessed by contacting the author.

Declaration of interest's statement

The authors declare no conflict of interest.

Additional information

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No additional information is available for this paper.

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