

# Using 5A's model for lifestyle counseling on psychological symptoms in women with polycystic ovary syndrome: a randomized field trial

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## Article

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## Abstract

Lifestyle modification in women with polycystic ovary syndrome (PCOS) could be associated with an increase in psychological symptoms. The aim of this study was to evaluate the effect of lifestyle modification counseling through using 5As Model on the psychological symptoms of women with PCOS. This double-blind randomized field trial was performed on 70 women with PCOS in two groups of lifestyle modification counseling based on 5A's model and counseling without using the model. The intervention was performed based on five stages of the 5A's model including ask, advise, assess, assist, and arrange during a week, and psychological symptoms were assessed using Symptom Checklist-90-R before the intervention and one and three months after the intervention. The results showed that one and three months after the intervention, the level of psychological symptoms, except obsessive-compulsive, were significantly lower in the intervention group than the control group ( $p < 0.05$ ). Moreover, the level of these symptoms decreased over time in the intervention group ( $p < 0.0001$ ). Using of 5A's model in lifestyle modification counseling is associated with the promotion of mental health in women with PCOS and the 5 A's model is recommended for using lifestyle counseling in women with polycystic ovary syndrome.

## Introduction

Polycystic ovary syndrome (PCOS) is an endocrine disorder in women whose clinical manifestations could be followed by psychological effects such as body image distress<sup>1</sup>, decreased self-esteem<sup>2</sup>, sexual dysfunction<sup>3</sup>, depression and anxiety<sup>4</sup>. Additionally, the high risk of infertility, diabetes<sup>5</sup>, cardiovascular disease<sup>6</sup>, and breast cancer<sup>7</sup> endanger the mental health of patients<sup>8</sup>.

Given the metabolic nature of this disorder, lifestyle modification has been accepted as the first line of treatment in women with PCOS<sup>9,10</sup>. Several studies have shown that lifestyle modifications with the aim of reducing carbohydrate intake<sup>11</sup> together with exercise programs can reduce insulin resistance and androgen level and initiate ovulation<sup>12</sup>.

Although a lifestyle modification approach is very important in the management of PCOS, following dietary and physical activity recommendations requires clients' self-confidence<sup>13</sup> and self-efficacy<sup>14</sup>. However, the chronic nature of the disease and its manifestations such as hirsutism, acne, menstrual disorders and infertility<sup>15</sup> together with the social problems caused by it<sup>16</sup>, will reduce the self-confidence<sup>17</sup> and self-efficacy of patients. Qualitative studies evaluating the experiences of affected women show that this disorder is considered to be a debilitating disease<sup>18</sup> with an uncertain future for patients<sup>19</sup>. Nevertheless, knowing about the disease is associated with an improved sense of disease control in patients and improves their quality of life and mental health<sup>20</sup>.

Therefore, it is necessary for each person to receive lifestyle modification counseling based on psychological conditions and needs; moreover, counseling programs should have the necessary flexibility in this regard. In this regard, it is recommended that treatment programs with a multidisciplinary approach be designed and psychological counseling be included in treatment programs for patients with PCOS<sup>10,21</sup>.

Many studies have shown the effect of counseling on the lifestyle of women with PCOS<sup>22,23</sup>. Cognitive-based psychological counseling, such as Cognitive-behavioral therapy, has also resulted in positive outcomes on the mental health of women with PCOS<sup>24</sup>. However, in order to provide lifestyle counseling services for women with PCOS, an integrated model is required<sup>25</sup>, so that counseling can be provided through taking into account the specific psychological conditions of PCOS patients and promotes their mental health.

5A's model is one of the types of counseling models which focuses on the individual's cognition of the situation and help the client to design operational plans for lifestyle modification based on the cognition they have received from their living conditions.

5A's is a behavior change model with five steps including ask, advise, assess, assist, and arrange<sup>26</sup>, and was used in obesity-related counseling for weight loss<sup>26-28</sup>. However, no study has hitherto investigated the effect of lifestyle modification counseling through using this model on the mental health of clients. Accordingly, the present study was conducted to evaluate the effect of lifestyle modification counseling program based on 5A's model on the mental health of women with PCOS. The study objectives were comparison of the somatization, interpersonal sensitivity, obsessive-compulsive, depression, anxiety and hostility levels in the intervention and control before and one month and three months after the intervention.

## Materials And Methods

This study is the field trial part of a mixed study conducted in a randomized double-blind way with the approval of the ethics committee of Isfahan University of Medical Sciences in Isfahan, Iran. The study was conducted on 70 women with polycystic ovary syndrome based on

Rotterdam criteria [29], from August 2019 to January 2020 in Isfahan, Iran. The sample size was calculated for a 1:1 allocation ratio by considering presumed depression score reduction after the intervention, estimated sample loss and 95% confidence level and 80% test power with two parallel groups of intervention and control sequentially.

Inclusion criteria consisted of the absence of severe psychological disorders and lack of movement restrictions. Additionally, women undergoing assisted reproductive treatment were not included in the study. Eligibility assessment was performed by the Ph.D. candidate in reproductive health. Simple random sampling was performed among women referring to the treatment clinics affiliated to Isfahan University of Medical Sciences.

In this study, psychological symptoms were measured on the scales of somatization, interpersonal sensitivity, obsessive-compulsive, depression, anxiety and hostility levels through using SCL-90-R by one researcher. This checklist is set based on a 5-point Likert scale (0-4) ranging from none (0) to so much (4), and the higher the score, the more would be psychological symptoms<sup>30</sup>. The participants' score of psychological symptoms were measured before the intervention, one month and three months after the intervention in both groups.

Two midwives, who during a session were familiarized with the process, contributed to the sampling process. For sampling, the files of all patients referring every day to Gynecology and Endocrinology Clinic were evaluated. Then, an initial interview was conducted with the women with even file number and the eligible ones were invited to participate in the study. After obtaining informed consent and recording the baseline information, SCL-90-R was completed as a self-report. After completing the questionnaires, the participants were introduced to the second midwife for random allocation to the intervention and control group using 70 cards marked equally A or B. Each participant took a card out of the envelope identifying one of the research groups. Unlike the first midwife, the participant and the midwife performing the random assignment did not know to which group each color belonged. After determining each group, each participant went to the first midwife to receive either intervention or control program.

#### *Intervention program*

Using 5A's model, an intervention program was developed in order to provide lifestyle counseling and was done by one reproductive health specialist. This model included five stages of ask, advise, agree, assist and arrange, which were presented individually during four sessions of 45-60 minutes. With regard to the Assess stage, not only body mass index was calculated, but also knowledge, beliefs and lifestyle were assessed in terms of physical activity and nutritional behaviors. In the advise step, the disease as well as the effect of lifestyle on the course of the disease and its symptoms, and behavioral problems of nutrition and physical activity was explained. Computational skills were also explained to make a balance between the received and consumed calories. In the Agree stage, behavioral goals were identified based on each person's interests and priorities, and an agreement was reached with the participant for changing behavior and implementing a practical plan to achieve the goals. These three steps were performed in three sessions.

During the fourth session and with regard to the assist step, the participant was helped to discuss barriers to the implementation of lifestyle modification practical programs and barrier removal strategies. Moreover, based on the mentioned barriers, every participant was helped to identify the sources of social support related to their problem.

In the arrange step, based on the participants' preference, their progress status in terms of dietary behaviors and physical activity was followed using the telephone call. For the control group, face-to-face nutritional and physical activity recommendations were provided in two sessions with an interval of one week.

Research data were analyzed using SPSS software version 19 and statistical methods of independent t-test, Chi-square, Mann-Whitney and repeated measure analysis of variance. Significance level in data analysis was lower than 0.05. This field trial was registered at Iranian Registry of Clinical Trials on 03/10/2017 (IRCT2017092736445N1).

#### **Ethics approval and consent to participate**

All procedures performed in participants were in accordance with the ethical standards of the Isfahan University of Medical Sciences and informed consent was obtained from all participants.

## **Results**

Of the 75 eligible women invited to the study, 70 women accepted the invitation. One participant of the control group was excluded from the study because of initiating assisted reproductive treatment during the course of the study. Two participants of each group were excluded from the study because of unwillingness to participate and, finally, 33 subjects remained in each group (Figure 1). The baseline

characteristics of the participants of the two groups are given in Table 1. Based on the results, the two groups were not significantly different in terms of baseline characteristics (Table 1).

Additionally, before the intervention, the two groups were not significantly different in terms of the measured psychological symptoms. There was significant difference between the mean scores of somatization, interpersonal sensitivity, anxiety, depression and hostility, one and three months after the intervention. The effect of the group on changes in the mean score of the scores of somatization, interpersonal sensitivity, anxiety, depression, hostility and obsessive-compulsive was significant. So that all psychological symptoms were lower in the intervention group than the control group one and three months after the intervention (Table 2). According to the results, somatization, interpersonal sensitivity, anxiety and hostility decreased in the intervention group one and three months after the intervention. Although depression decreased after one month, the score of it one month after the intervention was not significantly different from three months after the intervention. The level of obsessive-compulsive did not change one and three months after the intervention.

In the control group, the changes of somatization, interpersonal sensitivity, obsessive-compulsive and anxiety were significant and upward during the study's three periods of time. There was no significant difference in the level of depression immediately and one month after the intervention; however, its level increased significantly one month and three months after the intervention. Hostility levels also increased in the control group between the first and second measurement times, but did not change between one and three months after the intervention (Table 3).

## Discussion

The aim of this study was to evaluate the effect of lifestyle modification counseling through using 5A's model on psychological symptoms of women with PCOS. The results showed that using this model for lifestyle modification counseling can reduce psychological symptoms in these women.

Findings showed that one and three months after the intervention, except for the obsessive-compulsive symptom, level of psychological symptoms in the intervention group were lower than the control group. Based on previous studies, the use of 5A's model in weight loss counseling resulted in successful lifestyle modification in different groups<sup>26-28</sup>. The present study showed that using this model with the aim of improving lifestyle can also reduce psychological symptoms in these women. However, it does not affect the obsessive-compulsive level.

In 5A's model, the counselor focuses on the client's knowledge of his or her own circumstances and behaviors. In this model, the client is actively involved in designing his/her lifestyle modification program and agrees with the counselor on behavioral goals<sup>28</sup>. In addition, during the next steps, with the help of a counselor, planning is done to improve the lifestyle.

The positive effect of client participation in the nutrition counseling of chronic patients has been previously reported on counselor-client relationships<sup>31</sup>, and this approach has been accepted as a critical part of evidence-based practice<sup>32</sup>. Moreover, based on the results of a study, it is necessary to include unique psychological considerations of the disease in the behavioral interventions of the lifestyles of women with PCOS in order to encourage them for participation in such studies<sup>10</sup>. The clients' participation in the 5A's-based counseling program provides an opportunity for them to have a plan for lifestyle modification based on their specific psychological conditions and limitations, and not to become anxious after receiving lifestyle modification counseling. This was confirmed by another finding of the research showing an increase in psychological symptoms of the control group.

These results suggest that although lifestyle counseling for the modification of dietary behaviors and physical activity without considering the psychological condition of PCOS patients may lead to lifestyle improvements, it increases psychological symptoms as well. These results show that women with PCOS need to receive not only nutritional advice and physical activity, but also psychological support and increased self-efficacy in order to control the condition. According to Lin et al., many women who were aware of the complications of PCOS believed that some important complications of the disease could not be controlled by diet modification and physical activity<sup>33</sup>. However, during the use of 5A's model, the counselor is provided by an opportunity to correct the misconceptions through identifying these factors. Thus, this research confirmed that using these opportunities can lead to the improvement of the mental health of the participants with PCOS. Assessing experiences in women with PCOS, it has been shown that these women need to be psychologically supported to modify their lifestyle<sup>34</sup>. According to another study, the implementation of supportive programs has been effective in empowering and lifestyle management of PCOS women<sup>35</sup>.

The client's participation in the development of a lifestyle modification program, during multiple stages of designing a counseling model based on 5A's Model is another feature of using this model. Using this model, the client not only gains the necessary knowledge about the

disease and the impact of behavior change programs, but also learns to have a plan for lifestyle modification. The participation of the client in planning can lead to self-confidence for controlling the situation<sup>32,34</sup>. Additionally, the patients' perception of the controllability of the disease can be associated with disease acceptance<sup>14</sup> and subsequent mental health promotion.

According to another finding of the study, unlike the intervention group, the obsessive-compulsive level in the control group was increased during the study. The high risk of obsessive-compulsive in women with PCOS has been reported in previous studies<sup>36</sup>. The present study showed that lifestyle modification counseling in women with PCOS without considering their psychological condition might increase this psychological symptom in them.

The present study did not evaluate changes in lifestyle-related behaviors. The results, thus, have to be interpreted by considering this limitation, because the difference in following the recommendations of lifestyle modification in the two groups may be related to psychological changes which could not be examined in this study.

In conclusion this study showed that using 5A's model for lifestyle modification counseling can lead to positive outcomes with regard to the psychological health of women. Therefore, using this model is recommended in providing lifestyle modification counseling programs.

## Declarations

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### Authors' contributions

F.Z. wrote the main manuscript text. A.K. involved in data collection supervising, acquisition of analysis, interpretation of data, and editing the manuscript. Z.F. and M.S. involved in designing the intervention, interpretation of data, and editing the manuscript. All authors reviewed the manuscript.

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### Data availability

Data and material are available on request from the corresponding author.

### Competing interests

The authors declare that they have no conflict of interest.

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## Tables

**Table 1:** Comparison of baseline characteristics in study groups

	Intervention Group (n=33)	Control Group (n=33)	Sig
	Mean (SD) or Number (%)	Mean (SD) or Number (%)	
Age (Year)	29.15 (6.94)	30.15 (6.48)	ns
Education level (%)			ns
Diploma or less	14 (42.40)	20 (60.7)	
More than Diploma	19 (51.5)	13 (33.3)	
Occupational status (%)			
Employed	10 (30.3)	9 (27.3)	ns
Infertility (%)	7 (21.2)	8 (24.2)	ns
Body mass index (kg/m <sup>2</sup> )	28.15 (5.57)	27.21 (4.02)	ns

Abbreviations: SD: standard deviation; sig: significance; ns.: not significant

**Table 2:** Comparison of psychologic symptoms and self-efficacy scores between two groups by three times

	Mean (SD)		Sig <sup>a</sup>	Time/ Group			
	Int G	Con G		F <sup>b</sup>	Sig <sup>b</sup>	F <sup>c</sup>	Sig <sup>c</sup>
<b>Somatization</b>				255.73	<.0001	173.20	<.0001
At Intake	1.17 (.68)	.80 (.75)	ns				
After 1 month	.55 (.53)	.81 (.74)	<.0001				
After 3 month	.28 (.38)	1.67 (.57)	<.0001				
<b>Interpersonal Sensitivity</b>							<.0001
At Intake	1.29 (.80)	.96 (.68)	ns	10.65	.001	184.40	
After 1 month	.76 (.55)	1.25 (.68)	.002				
After 3 month	.38 (.37)	1.54 (.64)	<.0001				
<b>Obsessive-Compulsive Disorder</b>							
At Intake	1.07 (.73)	.88 (.75)	ns	8.57	.002	8.08	.002
After 1 month	1.07 (.74)	.99 (.95)	ns				
After 3 month	1.09 (.72)	.95 (.93)	ns				
<b>Depression</b>						<.0001	<.0001
At Intake	1.22 (.76)	.91 (.86)	ns	30.03		63.85	
After 1 month	.48 (.28)	.85 (.88)	.009				
After 3 month	.29 (.32)	.86 (.58)	<.0001				
<b>Anxiety</b>							<.0001
At Intake	1.05 (.82)	.88 (.67)	ns	7.20	.005	82.40	
After 1 month	.47 (.50)	1.10 (.64)	<.0001				
After 3 month	.24 (.21)	1.09 (.50)	<.0001				
<b>Hostility</b>						<.0001	<.0001
At Intake	.92 (.72)	.81 (.55)	ns	14.67		43.36	
After 1 month	.37 (.41)	.97 (.58)	<.0001				
After 3 month	.23 (.31)	.98 (.58)	<.0001				

a: Difference between groups; the results of the t test

b: test of within subject effect

c: test of between subject effect

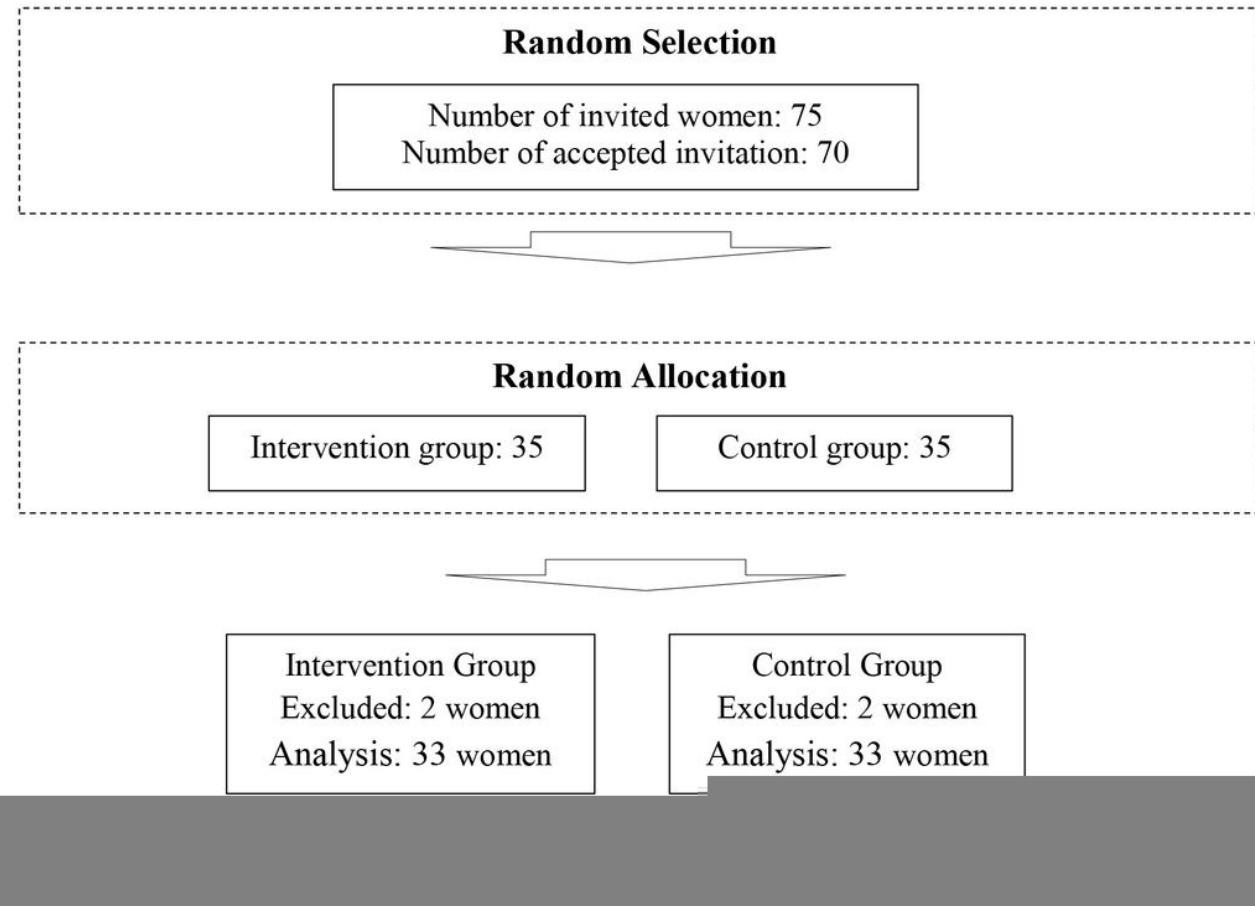
Abbreviations: SD: standard deviation; sig: significance; ns: not significant

**Table 3:** Pairwise comparison of the psychological symptoms in two groups by three times

Psychological Symptoms															
				Somatization		Interpersonal Sensitivity		Obsessive-Compulsive Disorder		Depression		Anxiety		Hostility	
		(I): Time	(J): Time	(I-J)	Sig	(I-J)	Sig	(I-J)	Sig	(I-J)	Sig	(I-J)	Sig	(I-J)	Sig
Intervention Group	At intake	After 1 month	.62	<.0001	.53	<.0001	.000	ns	.74	<.0001	.58	<.0001	.55	<.0001	
		After 3 month	.89	<.0001	.91	<.0001	-.003	ns	.93	<.0001	.81	<.0001	.55	<.0001	
		After 1 month	.27	<.0001	.38	<.0001	.000	ns	.19	.002	.24	<.0001	.14	<.0001	
Control Group	At intake	After 1 month	-.01	ns	-.29	<.0001	-.11	.002	.06	ns	-.22	.03	-.16	.003	
		After 3 month	-.87	<.0001	-.58	<.0001	-.07	ns	.05	ns	-.21	.04	-.17	<.0001	
		After 1 month	-.86	<.0001	-.29	<.0001	-.04	ns	-.01	ns	.01	ns	-.01	ns	

Abbreviations: (I-J): Mean Difference; sig: significance; ns: not significant

## Figures



**Figure 1**

Consort Diagram

## Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [CONSORT2010Checklist.doc](#)
- [protocol.doc](#)