

▪ **Basic Research**

Impact of Solution-based Intervention on Psychological Problems and Coping Strategies among Women with Gestational Diabetes

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Abstract

Background: women with gestational diabetes experience psychological problems including depression, anxiety, and stress can have an impact on their coping strategies and quality of life. Therefore, applying solution-based intervention may reduce their psychological problems and enhance their coping strategies. **Aim:** to examine the impact of solution-based intervention on psychological problems and coping strategies among women with gestational diabetes. **Design:** A randomized control trial (pre/post-test) was used. **Sample:** A convenience sample of 100 women with gestational diabetes participated in this study. The participants were randomly assigned to two groups: study (n=50) and control (n=50). The solution-based intervention was conducted in eight sessions each one 50-60 min for two days per week. **Setting:** the study was conducted in the antenatal clinic of the Obstetrics and Gynecology department at the National Medical Institute in Damamhur. **Tools:** Three tools were used for data collection **tool I:** Socio-demographic and clinical data sheet, **tool II:** DASS (Depression, anxiety & stress scale), and **Tool III:** Coping Inventory for Stressful Situations (CISS). **Results:** The current study results revealed a statistically significant difference in depression, anxiety and stress levels in the study group between pre and post-test with p-value=.000. In contrast, there was no statistically significant difference in the control group. Also, there is a statistically significant difference between the study and control group in all DASS-21 and coping dimensions after intervention with p-value=.000. **Conclusion:** The findings revealed that solution-based intervention increased the solution-based coping strategy and decreased level of depression, stress, and anxiety in the study group. **Recommendation:** training for Obstetric nurses and gynecologists in mental health aspects could involve incorporating mental health education into their training programs

Keywords: solution-based intervention, psychological problems, and gestational diabetes

Introduction

According to Bjelica et al. (2018) and Vakilian et al. (2019), Pregnancy is a unique condition that can source major health complications, both physical and mental. Initially identified during pregnancy, gestational diabetes mellitus (GDM) is pregnancy-induced glucose tolerance that typically manifests between the 24th and 28th gestational weeks, though it can manifest earlier or later. Gestational diabetes mellitus (GDM) is linked to complications for the mother and the fetus. Mothers have both psychological and physical Complications. The physical effects include trauma, postpartum hemorrhage, prenatal hypertension, cesarean delivery, type 2 diabetes mellitus during pregnancy, bleeding, sleep disturbance, and weight gain.

Psychological effects involve; an increase in anxiety; depressive symptoms and stress that appeared early in the antepartum or later in the postpartum. One meta-analysis revealed that 29.5 percent of women with GDM reported having anxiety (Lee, Loh, & Chong, 2020). According to a different study, 12.5 percent and 10.6 percent of women with GDM, respectively, had depressive symptoms and stress symptoms (Lee, Ching, & Hoo, 2019). Furthermore, birth trauma (shoulder dystocia), fetal macrosomia (birth weight >90th percentile for gestational age), polycythemia, hyperbilirubinemia, stillbirth, transitory hypoglycemia, and congenital abnormalities are all examples of fetal and neonatal complications (Salameh, Oniya, Chamseddine, & Konje, 2021).

Psychological interventions are recommended in addition to lowering and managing psychological complications to improve coping mechanisms. One suggested method is solving-based therapy. Solution-focused therapy is a type of psychotherapy that emphasizes finding solutions more than diagnosing issues. It also emphasizes life's positive qualities and aspects more than problems and diseases. It helps clients discover solutions for the issues they are currently facing. To help patients with gestational diabetes overcome their negative attention bias and develop hope and emotional resilience, solution-based therapy techniques such as rephrasing, identifying past successes, and creating positive perspectives are included (Ahmadi, Bazzazian, Tajeri & Rajab, 2020).

Instead of focusing on the problem, solution-focused therapy highlights the patient's strengths, objectives, and capacities. Solution-focused therapy's three main therapeutic foundations are: addressing clients' goals; creating new meanings for their current issues and worries; and creating a preferred future based on prior achievements and strengths (Huang, Han, & Hu, 2022). Among the methods employed in solution-focused therapy are scaling, exception, and miracle questions. Exception questions entail examining a client's approach during periods when an issue was not particularly serious or did not arise. This is based on the idea that problems do not occur in every aspect of a person's life. Miracle questions let clients focus on a scenario in which the problems do not exist, which fosters hope in them and helps them believe that change is possible. More opportunities for improvement can also be investigated (Mortazavi & Mehrabadi, 2020).

In solution-focused therapy, scaling serves a purpose beyond only assigning a score to a client's progress; it also helps create practical solutions and client resources. Scaling is defined as a method of evaluating progress toward objectives. Solution-focused therapy operates in a future-oriented mode, which asks clients to imagine a state of non-existence for the current difficulties, to simplify the approaches. Stressed that imagining future modifications helps people practice new behaviors, which leads to improvements in their clients (Sharifzadeh et al, 2018).

Coping strategies are defined as behavioral and cognitive attempts to manage demands from both the outside and the inside that are considered to be greater than one's resources. Coping

strategies are divided into three categories: avoidance-focused coping, emotion-focused coping, and solution-focused coping. The approaches used by people to try and conceptualize or solve the situation causing them distress are known as solution-oriented coping. Emotion-oriented coping is regarded as an intervention whereby people make intentional efforts to control the negative emotion linked to a perceived stressor by engaging in affect regulation-related activities. In conclusion, avoidance-oriented coping is defined as intentional attempts to disengage from stressful situations through the use of activities and/or cognitive methods (Pengju et al, 2018).

Different studies showed that depression, stress and anxiety are between the most common psychological disorders in diabetic patients. Depression was found in diabetic people 1.4 times more than non-diabetic people. Also, stress affects the patients' quality of life. Behavior-induced emotional stress is associated with unhealthy life style behaviors such as bad eating habits and decrease levels of exercise. Emotional stress is associated with prolonged activation of the sympathetic nervous system, leading to depression, anxiety, mood and sleep disorders, and physical complications such as hypertension and cardiovascular disease. On the other side, relaxation can activate the parasympathetic system, causing a decreasing effect of stress-induced diseases. Therefore, the psychological interventions are recommended to be used for mental health as well as reducing the complications resulted from the activation of sympathetic system and chronic increase in adrenaline secretion (Menting et al. 2018). One of the suggested methods to manage psychological-mental problems is using solution-oriented therapy.

Significant of the Study

Pregnant women with gestational diabetes face psychological problems including depression, stress, anxiety, and an inability to handle stressful situations in addition to physical concerns such as pre-eclampsia and prenatal hypertension. Psychological therapy is recommended to improve coping skills and decrease the incidence of psychological disorders. One recommended strategy is solution-based therapy. Emotion-based coping strategies can degrade a person's quality of life and increase their likelihood of acquiring depression and physical weakness, but solution-based treatment has been demonstrated to be protective against these conditions. Solution-focused therapy assists clients in concentrating on their strengths and resilience by placing more emphasis on the present and the future than the past. It assists people with gestational diabetes in overcoming their negative feelings. Also, solution-focused therapy plays a vital role in establishing optimal nursing profession workplace interventions which done to improve gestational diabetic women health outcomes, increasing productivity, and decreasing costs associated with stress and burnout.

Aim of the study

This study aimed to examine the impact of solution-based intervention on psychological problems and coping strategies among women with gestational diabetes.

Research hypotheses

H0: There is no effect of the solution-based intervention on psychological problems and coping strategies among women with gestational diabetes.

H1: Women with gestational diabetes who will participate in the solution-based intervention will have higher scores in solution coping strategies.

H2: Women with gestational diabetes who will participate in the solution-based intervention will have lower scores in depression, stress, and anxiety levels compared to the control group.

Operational definition of solution-based intervention: A solution-focused approach to psychotherapy places more emphasis on finding solutions than on detecting problems and promotes life's positive aspects over problems and illnesses.

Subject and methods

Research design

A randomized controlled trial was used to accomplish this study. The researcher and the patient were blind to whether they were assigned to the control or the study group. Giving a list of the patients' code numbers, a single individual outside the research team picked and randomly assigned the patients. The researcher gave odd numbers to represent the intervention group, while the control group received even numbers.

Research Setting

This study was conducted in the Department of Obstetrics and Gynecology antenatal clinic at the National Medical Institute in Damanhur, connected to the Ministry of Health in the Elbehira Governorate of Egypt. The reason this hospital was chosen in particular is that it's a large facility that serves Damanhur City and the neighboring regions. Additionally, the turnover meets the study's requirements.

Subjects

A convenient sample of (100) women with gestational diabetes was selected using the following criteria. The study group and the control group were allocated to the participants who met the criteria. The inclusion criteria were any pregnant woman willing to participate in the study who is: nulliparous and multiparous women with GDM who use or does not use pharmacological therapy. The participant must be a single mother, have no history of drug or alcohol abuse, be free of high-risk conditions such as pregnancy poisoning, irregular bleeding, or placenta previa, and have never been hospitalized in a psychiatric facility. A woman could be excluded from the study if she refused to participate, missed any training sessions, and experienced any pregnancy complications.

Sample size

The following parameters were entered into the Epi info 7 statistical program to estimate the sample size: population size = 1500/3 months; expected frequency = 50%; 95% confidence level; allowable error = 10%. It is predicted that 80 women will be the minimal sample size. A convenient sample of one hundred women with gestational diabetes was chosen from the aforementioned context. The control group consisted of 50 women with gestational diabetes who got the solution-based intervention and 50 women with GDM who received standard care. The study's patients were assigned equally to each group.

Tools of data collection:

Researchers utilized three tools to collect the required data.

Tool I: A structured interview schedule:

The researchers conducted a thorough literature review before creating this tool. It was divided into three parts:

Part I: included the personal data such as age, level of education, occupation, current residence, marital and family income/month.

Part II: Reproductive history: number of abortions, stillbirths, and live births; gravidity, parity, previous delivery style, prior pregnancy, and labor difficulties.

Part III: past medical history, including hypertension, renal, cardiac, asthma, and other diseases.

Tool II: The DASS (Depression, Anxiety, and Stress Scale)

It was developed By Lee et al., (2019). The DASS is a standardized measurement tool used to measure depressive, anxious, and stressed states of mind. The three self-report measures that make up the DASS include 21 items total—each with seven items. The depression scale assesses symptoms of depression, including anhedonia, dysphoria, hopelessness, life devaluation, and self-deprecation. The autonomic arousal, skeletal muscle effects, and situational awareness are all assessed using the anxiety scale. Anxiety and the person's subjective experience of feeling anxious. The stress scale is useful for quantifying levels of persistent nonspecific arousal. It assesses a person's degree of anxious arousal, inability to relax, and tendency to become angry or agitated easily.

This tool evaluates the degree of experience related to each mood, specifically stress, anxiety, and depression, using a 4-point Likert scale (0 = never, 1 = low, 2 = medium, and 3 = very high). The overall score was between 21 and 63; the higher the number, the more serious the mental disorders. The measure's internal consistency, or reliability, is sufficient (Cronbach's $\alpha = .98$).

Depression

The normal range is from 0 to 9. Mild falls between 10 and 12. Moderate is within the range of 13 to 20. Severe is between 21 and 27, while extremely severe is between 28 and 42.

Anxiety

The normal range is from (0-6), mild (7-9), moderate (10-14), severe is between (15-19), while extremely severe is between (20-42)

Stress

The following ranges are included: normal (0–10), mild (11–18), moderate (19–26), severe (27–34), and extremely severe (35–42).

The version of DASS-21 used in this study was in Persian (Sabour and Kakabraee 2016); this questionnaire had previously been developed and validated in Iran (Lovibond and Lovibond 1995; Samani and Joukar 2007). In the Iranian population, the Cronbach's alpha coefficient was 0.77 for depression, and 0.79, and 0.78, for the anxiety and stress respectively (Sahebi et al. 2005).

Tool III: Coping Inventory for Stressful Situations Intervention (CISS)

It was developed by Endler and Parker in 1990. Coping behaviors are measured using the standardized CISS scale. The 48 items on the scale are divided into three categories: 16 items measure behaviors centered around emotions, 16 things measure problem-solving skills, and 16 items evaluate avoidance tendencies. A five-point Likert scale, with 1 denoting "never" and 5 denoting "very often," was employed to rate every item. The individuals who score highly in a certain coping method are more likely to adopt it. The lowest and maximum scores for each coping strategy are 16 and 80, respectively, according to research by Choi et al. (2017) and Van Horn & Wilpert (2017). The measure's reliability, or internal consistency, is considered sufficient (Cronbach's $\alpha = .86$).

The study was accomplished according to the following steps

1. Approval:

- After outlining the goal of the study, an official letter from the Faculty of Nursing, University of Damanhur was sent to the relevant authorities of the study settings to obtain permission to collect data.

2. Tools:

- Tool II, III was validated for content validity by five jury experts in psychiatric and obstetric and gynecological nursing, and its reliability was assessed using Cronbach's alpha, with a result of (0.86).
- Tools II and III have been adopted and translated into Arabic.

3- Pilot study

The pilot study included ten women who were not part of the sample. The pilot study's main goals were to:

- determine the tools' applicability, clarity, and usefulness.
- Calculate the amount of time required to acquire the data.
- Identify any problem with the statements' order and clarity that may interfere with the data collection process.

Results of the pilot study:

- Following the pilot study, the tools were reconstructed and made ready for use. A few words were modified as a result of the pilot study.
- The phrases of the tools were clear, relevant, and appropriate

4- Work field

Data were obtained during 7 months, beginning in December 2023 and ending in June 2024. To prevent study contamination, the researcher began with the control group before moving on to the study group. The following steps were followed in conducting the study.

Assessment phase

In this phase, using a standardized interviewing questionnaire, each woman was interviewed face to face individually for 30 minutes to assess basic data such as personal history, obstetric history, and pre-test for DASS and CISS were also assessed to obtain pretest psychological state and coping strategy level.

Implementation phase

The mothers were first given an introduction by the researchers, who also explained the nature and goals of the study. The study group and the control group were separated within the sample. Fifty women with gestational diabetes made up each group. The control group was given standard therapy for gestational diabetes during pregnancy. To facilitate the use of the program and interaction, the study group was separated into five subgroups and provided with program sessions about solution-based intervention.

Evaluation phase

- Tool II and III post-tests were used to evaluate the psychological problems and coping strategies of the study and control groups at the hospital. The degree of psychological Problems and coping strategies, compared within each group before and after intervention and the differences between the two study groups were determined.

Content of the program

Sessions No	Content	Teaching methods
1	An initial meeting focused on establishing a connection between the researcher and the women with GDM, outlining the goals of the program and outlining its norms, which include complete confidentiality, respect, and collaboration with others.	Group discussion
2	By highlighting the significance of concentrating on solutions and the future rather than examining the root of the issue or weaknesses the researcher provided an overview of the idea of solution-focused treatment and its significance.	Role-play Homework assignment
3	Assisting women with GDM in recognizing their assets and creating goals based on a solution-focused methodology.	Group discussion Homework assignment
4	Recognizing requirements and expectations such as psychological needs, such as the need for understanding and support during stressful pregnancy situations, and physical needs, like the challenges of the insulin injection technique, pregnancy issues, and care during pregnancy); feeling accountable and seeking to tackle problems in novel ways, highlighting the causes behind customers' inability to resolve issues, and showcasing their issue-solving abilities	Group discussion Homework assignment
5	Supporting patients in using different thinking styles while explaining their feelings and actions about those ways of thinking	Group discussion Homework assignment
6	Highlighting the fact that there are always exceptions to the norm, helping the group understand the problems or perceived barriers to change by using the miracle question and picturing a person in a good or negative situation to help them realize that experiences are a product of their thoughts and actions.	Role-play Homework assignment
7	<p>The scale was developed by the researcher in collaboration with the patients as one of the solution-focused treatment techniques. The scale's guiding principle—adhering to small improvements to achieve greater improvements and progress—is represented by this technique, which the researcher emphasized is crucial to applying in measuring progress and the effect on the snowball and strengthening it for the patients. Scale: This behavior monitoring tool is used to assess improvement and progress.</p> <p>The participants received assistance in realizing that they may change their understanding of issues and that every occurrence could be viewed differently. In addition, they used scaling questions to help students identify their abilities and potential so they could respect one another.</p>	Group discussion Homework assignment
8	<p>considering the idea of a mental map, which is a representation of the concepts that direct patients and influence their emotions and behavior</p> <p>The act of prioritizing, discussing, and visually representing the ideas put forth by the patients using a mental map is indicative of an issue that has been solved. The mental map holds the key to the solution.</p> <p>After the solution-based intervention, the women with GDM were asked to complete a questionnaire that included a summary of the program.</p>	Role-play Homework assignment

5-Statistical Analysis

Data were collected, coded, revised, and entered into the Statistical Package for Social Science (IBM SPSS) version 22. The data were presented as numbers and percentages, mean & standard deviations. The chi-square test, Student's T-Test test, and Mann-Whitney U Test were used to compare the variables between the two groups. Also, Pearson correlation between variables was employed. The confidence interval was set to 95% and the margin of error accepted was set to 5%. So, the p-value was considered significant as the following $P < 0.05$: Significant (S) and $P < 0.01$: Highly significant (HS).

6- Ethical considerations:

The Research and Ethical Committee of Damanhur University Faculty of Nursing officially approved the conduct of this study. In the first section, mothers received a concise description of the goal of the study. The participants were given the option to decline participation and were assured by the researcher that their information would be kept confidential and used only for research before the questionnaire was started. Additionally, they were free to leave the research whenever they wanted and without warning. The signed consents of the women with GDM were revised when data collection was finished.

Table (I): Displays the women's data in both groups. It reveals that the mean age was 30.96 ± 5.367 , and 29.22 ± 5.91 in the study and control groups respectively. In terms of residence, (62%, and 64%) of the women in the study and control group lived in rural areas respectively. Regarding educational level, (60%, and 44%) of the women in the study and control group have a secondary level of education respectively. On the other hand, (66%, and 72%) of women in the study and control group are employed respectively.

Table (II): shows the proportion of gravida and para in the study and control groups was similar, with 68% and 78% of the women in the study and control groups having gravidities between 2-3 and 54% and 64% of them having parities between 2-3. The number of gravidity and parity between the two groups did not differ statistically significantly as a result. Of the women in the study and control group, 42% and 38%, respectively, delivered their babies using cesarean sections.

Table (III): displays the depression levels before and after the intervention in the study groups and the control group. With a p-value of .000, it indicates a statistically significant difference between the pre-and post-tests in the study group. In the control group, however, there was no statistically significant change.

Figure (1): shows the post-intervention depression levels in both groups. It shows that 40% of the study group's female participants had mild depression, while no one in the control group had the same condition. In addition, 16% of the study group's female participants had severe depression, compared to 56% in the control group.

Table (IV): Shows the levels of anxiety in the study groups and control group both before and after the intervention. With a p-value of .000, it indicates a statistically significant difference between the pre-and post-test in the study group. On the other hand, there was no statistically significant difference observed in the control group.

Figure (2): Clarifies the anxiety levels in both groups after the intervention. It reveals that 80% of the women had normal anxiety levels in the study group compared to no one in the control group where no one had severe anxiety levels in the study group compared to 50% in the control group.

Table (V): Display the stress levels both before and after the intervention in the study groups and the control group. With a p-value of.000, it indicates a statistically significant difference between the pre-and post-test in the study group. On the other hand, there was no statistically significant difference observed in the control group.

Figure (3): after the intervention, shows the stress levels in both groups. Findings show that, in the study group, 80% of the women had mild stress, compared to 4% in the control group, and in the study group, no one experienced moderate stress, while in the control group, 96% did.

Table (VI): Displays the coping strategies and DASS-21 dimensions' mean and standard deviation for both groups after the intervention. With a p-value of.000, it shows a statistically significant difference in all DASS-21 and coping dimensions between the study and control group after the intervention.

Table (VII): Shows the correlation between total DASS-21 score and total CISS score and it reveals a negative significant correlation between total DASS-21 score and total CISS score.

Table (I): Distribution of the studied women according to personal data and medical history in the Study and the control group (N=100):

Variable	Study (N=50)		Control (N=50)		p-value
	No.	%	No.	%	
Age					0.127
Mean ± Std	30.96 ±5.367		29.22±5.911		
Residency					.836
• urban	18	36	19	38	
• rural	32	64	31	62	
Education					.027
• Read and write	1	2	1	2	
• Basic education	3	6	15	30	
• Secondary	30	60	22	44	
• University	16	32	17	24	
Working status					.517
• Employed	33	66	36	72	
• Unemployed	17	34	14	28	
Medical history					0.160
• None	41	82	35	70	
• Hypertension	9	18	15	30	

Chi-square test

Table (II): Distribution of the studied women according to obstetrical history in the Study and the control group (N=100):

Variable	Study (N=50)		Control(N=50)		p
	No.	%	No.	%	
Gravidity					0.242
• Primigravida	9	18	6	12	
• 2-3	34	68	39	78	
• More than 3	7	14	5	10	
Gestational age					.99
• Second trimester	2	4	5	10	
• Third trimester	48	96	45	90	
Parity					0.101
• Nulliparous	9	18	6	12	
• Primipara	14	28	12	24	
• 2-3	27	54	32	64	
Abortion					.532
• None	42	84	41	82	
• One time	7	14	9	18	
• Twice	1	2	0	0	
Stillbirth					.766
• None	44	88	43	86	
• One time	6	12	7	14	
Living children					.242
• None	13	26	8	16	
• Less than 3	35	70	42	84	
• More than or equal to 3	2	4	0	0	
Mode of previous delivery					.524
• None	9	18	6	12	
• Normal labor	7	14	10	20	
• Normal labor with episiotomy	1to 3	26	15	30	
• Cesarean section	21	42	19	38	

Chi-square test

Table (III): Depression levels of both groups in pre and post -and post-intervention (N=100):

Variable	Study (N=50)				p	Control(N=50)				P
	pre		post			Pre		post		
	No	%	No	%		No	%	No	%	
Normal	0	0	15	30	.000**	0	0	0	0	.731
Mild	0	0	20	40		0	0	0	0	
Moderate	10	20	7	14		23	46	22	44	
Severe	40	80	8	16		27	54	28	56	

Mann-Whitney U Test

* Significant at P ≤0.05

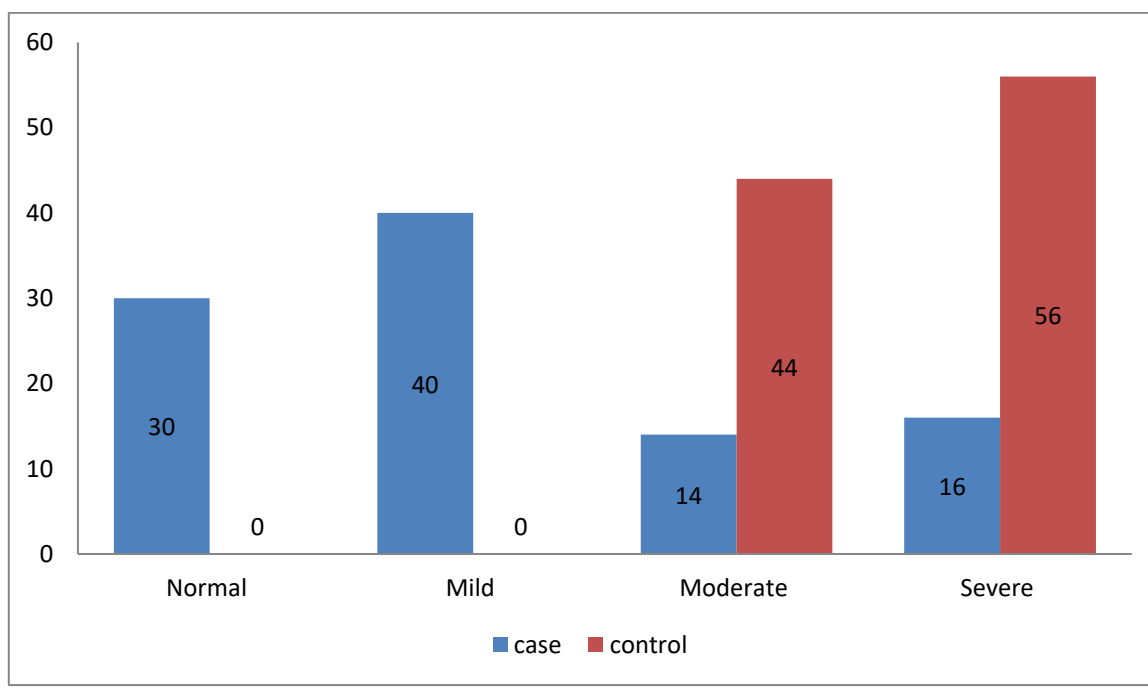


Figure (1): Depression levels in both groups after intervention (N=100)

Table (IV): Anxiety levels of both groups in pre and post-intervention (N=100)

Variable	Study (N=50)				p-value	Control (N=50)				p
	pre		post			pre		post		
	No	%	No	%		No	%	No	%	
Normal	0	0	10	20	.000**	0	0	0	0	.157
Mild	0	0	40	80		0	0	2	4	
Moderate	50	100	0	0		50	100	48	96	

Mann-Whitney U Test

* Significant at P ≤0.05

Table (V): Stress levels of both groups in pre and post-intervention

Variable	Study (N=50)				p-value	Control(N=50)				p
	pre		post			pre		post		
	No	%	No	%		No	%	No	%	
Normal	0	0	40	80	.000**	0	0	0	0	.720
Mild	0	0	8	16		0	0	0	0	
Moderate	0	0	2	4		0	0	0	0	
Severe	41	82	0	0		26	52	25	50	
Extremely severe	9	18	0	0		24	48	25	50	

Mann-Whitney U Test

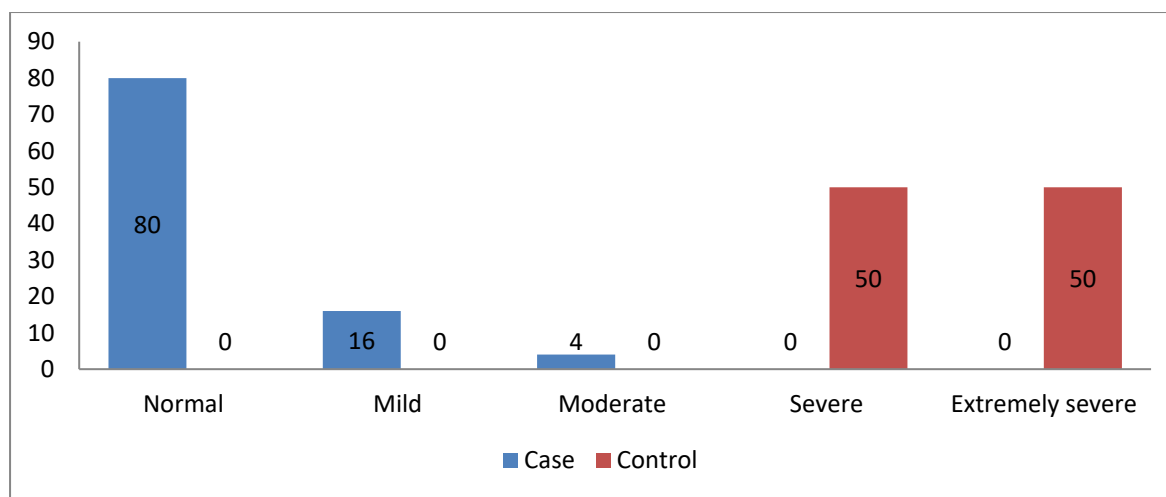
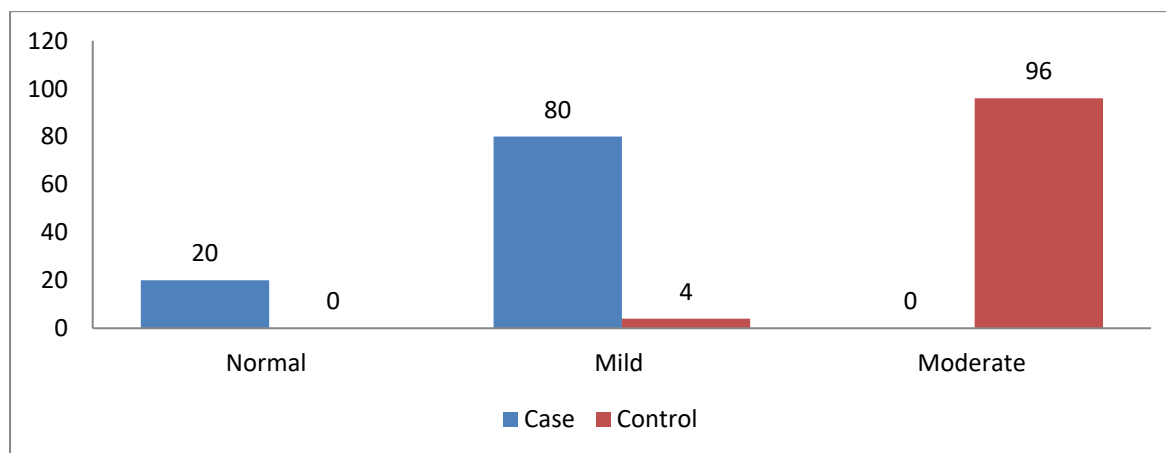
* Significant at $P \leq 0.05$ **Figure (2): Anxiety levels in both groups after intervention (N=100):****Figure (3): Stress levels in both groups after intervention (N=100):**

Table (VI): Mean and standard deviation of DASS-21 dimensions and CISS dimensions of both groups in post-intervention (N=100):

		Study(N=50)	Control (N=50)	p-value
		Mean± Sd	Mean± Sd	
DASS-21	Depression	6.36 ±1.79	20.7±1.14	.000**
	Anxiety	5.94 ±2.132	19.62±2.27	.000**
	Stress	4.32 ± 1.8	20.82±1.20	.000**
Coping styles	Solution	48.14 ±3.1	35.12±3.37	.000**
	Emotion	43.32± 2.95	43.52±3.13	.000**
	Avoidance	52.22±2.86	52.14±3.01	.000**

Student T- Test * Significant at P ≤0.05

Table (VII): Correlation between total DASS-21 score and total CISS score

Correlation	DASS-21	
	R	P
CISS	-.940	.000

****Correlation is significant at the 0.01 level (2-tailed).**

Discussion

The results of the current study support the research hypothesis which said that women with gestational diabetes who will participate in the solution-based intervention will have higher scores in solution coping strategies and indicated that Coping strategies seem to be crucial to the mental well-being of pregnant women with gestational diabetes. They frequently utilize avoidance coping mechanisms and suffer from stress, anxiety, or sadness. This may make it challenging to handle adverse circumstances effectively, which may raise more psychological issues. Therefore, to help women manage their gestational diabetes and reduce the psychological difficulties experienced with it, they need to engage in solution-based intervention. There were several interventions accessible to pregnant women with gestational diabetes. Compared to other forms of therapy, solution-based therapies place greater focus on future orientation strength and success. Participants may have felt more empowered to choose how to respond in difficult circumstances over which they had little control if they had improved their talents. Through solution-based intervention, women are trained to become more aware of their thoughts and emotions. To support women in problem-solving and emotional resilience. The solution-based intervention helps them to accept their skills and the accompanying self-confidence. The study's findings demonstrated that, in contrast to the control group, the study groups' post-test levels of stress, anxiety, and sadness were lower than their pretest levels.

Moreover, the results of the current study supports the research hypothesis which said that Women with gestational diabetes who will participate in the solution-based intervention will have lower scores in depression, stress, and anxiety levels compared to the control group.

After the intervention, there is a statistically significant difference between the study and control groups in the stress, anxiety, and depression levels among women with gestational diabetes. These results showed that the solution-based intervention reduced the participants' symptoms of depression, anxiety, and stress. The study's conclusions showed how effectively solution-based therapies reduced the tension, anxiety, and depressive symptoms that pregnant women with gestational diabetes experienced.

The study's findings were consistent with those of Huang, Han, and Hu (2022), who found that the solution-based intervention was more effective in reducing levels of stress, anxiety, and depression. Women diagnosed with gestational diabetes were able to develop coping mechanisms to manage their stress, worry, and despair with the support of a solution-based intervention. Additionally, it might help pregnant women with gestational diabetes learn how to improve their health and prevent or eliminate mental health issues. The outcomes were consistent with those of Habib et al. (2016), who showed that several studies support the effectiveness of solution-based interventions in raising people's quality of life and overall well-being. Additionally, these treatments have demonstrated effectiveness in reducing levels of gestational diabetes in pregnant women.

After the intervention, the study's results showed a statistically significant difference in all coping style dimensions between the study and the control group. Additionally, solution-coping style levels increased while emotional and avoidance levels decreased in the study group in the post-test. This demonstrated how the study results clearly show the positive impacts of solution-based intervention on coping patterns, especially in women with gestational diabetes. The intervention seems to improve coping strategies, especially the solution-style approach, and diminish psychological problems like anxiety, stress, and sadness.

Furthermore, it appears that women who have gestational diabetes are beginning to understand that overcoming obstacles is a necessary part of living. Not only do persistent rumination and visualization of the stressful features associated with diabetes and pregnancy exacerbate feelings of anxiety and despair, but they also prevent mothers from the prospect of discovering solutions and enjoying the joys of parenting and pregnancy. Through the solution-based intervention, the women diagnosed with gestational diabetes were able to concentrate on variables under their control, striving to implement minor modifications to their behaviors and cognitions by strengthening their capacities. They gained self-assurance in their ability to handle difficulties with self-care and complications brought on by diabetes for both the mother and the child.

The current study results are consistent with Sürücü, et al. (2019), who stated that the solution-coping style encourages expectant mothers with gestational diabetes to take charge of resolving their issues, look for updated and accurate information about their condition, overcome challenges, and put in greater effort to resolve their issues. In addition, the solution-based approach includes activities designed to change or minimize stressful situations.

This result is consistent with the work of Schmidt et al. (2019), who enhance metabolic control, particularly in the treatment of diabetes. A significant reduction in HbA1c and glycemic control is linked to increased self-efficacy and proactive patient involvement in treatment. Further evidence supporting these conclusions came from Vakilian, Zarei, and Majidi's (2019) study, which showed that solution-focused interventions enhance the mental health of women with gestational diabetes while also empowering people by emphasizing a rise in solution-based coping styles to recognize and utilize their abilities in self-care. It's a complete approach that treats the physical aspects of the illness while also fostering a sense of capability and control.

So, the results of the current study rejects the hypothesis which said that there is no effect of the solution-based intervention on psychological problems and coping strategies among women with gestational diabetes.

Conclusion

It's important to address the psychological consequences of gestational diabetes on mothers, and it's encouraging that coping mechanisms like the solution-oriented strategy may be more successful. Giving mothers practical coping mechanisms is one method to help reduce the stress and anxiety that come with gestational diabetes. It highlights how important it is to have a holistic approach to maternal health, one that addresses the illness's physical aspects as well as the enhancement of mental and emotional wellness. Through the solution-based intervention, participants are helped to set clear goals and begin making meaningful changes. When the concepts of solution-based intervention were combined with problem-solving skills, women appeared to have greater confidence in their ability to handle substantial life stressors and the subsequent changes in their bodies, minds, and interpersonal relationships.

Recommendation

- Developing educational materials or online resources could help make these methods accessible to a wider audience.
- Further nursing researches about solution-based intervention and its effect in managing problems should be done.
- Using solution-based intervention in various clinical areas, such as chronic diseases like multiple sclerosis, cancer patients and their families to improve patient's life satisfaction, and self-management ability, and relieve their negative emotions.
- Increasing awareness and training for midwives and gynecologists in mental health aspects by incorporating mental health education into their training programs.

References

1. Ahmadi, Z., Bazzazian, S., Tajeri, B., & Rajab, A. (2020). Effectiveness of Solution-Based Therapy on Self-Compassion and Reducing Blood Glucose in Elderly Patients with Type 2 Diabetes. *Avicenna Journal of Neuro Psycho Physiology*, 7(3), 151-157. <http://dx.doi.org/10.32592/ajnpp.2020.7.3.102>
2. Almeida, V. A. H. D., Costa, R. A. D., Paganoti, C. D. F., Mikami, F. C., Sousa, A. M. D. S., and adverse maternal and perinatal outcome for women with dichorionic twin pregnancies associated with Adequacy of Gestational Weight Gain in Pregnant Women with Gestational
3. Bjelica, A., Cetkovic, N., Trninic-Pjevic, A., & Mladenovic-Segedi, L. (2018). The phenomenon of pregnancy—a psychological view. *Ginekologia polska*, 89(2), 102–106 DOI: 10.5603/GP.a2018.0017
4. Choi, Y., Moon, E., Park, J. M., Lee, B. D., Lee, Y. M., Jeong, H.J., & Chung, Y. I. (2017). Psychometric properties of the coping inventory for stressful situations in Korean adults. *Psychiatry Investigation*, 14(4), 427 <https://doi.org/10.4306/pi.2017.14.4.427>
5. complicated by gestational diabetes mellitus: A retrospective cross sectional study. *Journal of diabetes investigation*, 12(6), 1083-1091. doi: 10.1111/jdi.13441.
6. Diabetes Mellitus. *Nutrients*, 13(6), 1842 doi: 10.3390/nu13061842.
7. Habibi M, Ghaderi K, Abedini S, Jamshidnejad N. The effectiveness of solution-focused brief therapy on reducing depression in women. *Int J Educ Psychol Res* 2016;2:244-9. DOI:10.4103/2395-2296.189671
8. Huang C, Han W, and Hu S (2022).The Effects of the Solution-Focused Model on Anxiety and Postpartum Depression in Nulliparous Pregnant Women Volume 13 - 2022 | <https://doi.org/10.3389/fpsyg.2022.814892>
9. Huang, C., Han, W., & Hu, S. (2022). The Effects of the Solution-Focused Model on Anxiety and Postpartum Depression in Nulliparous Pregnant Women. *Frontiers in Psychology*, 1586. <https://doi.org/10.3389/fpsyg.2022.814892>
10. Hung, T. H., Hsieh, T. S. T. A., Shaw, S. W., Kok Seong, C., & Chen, S. F. (2021). Risk factors
11. Lee, K. W., Ching, S. M., Hoo, F. K., Ramachandran, V., Chong, S.C., Tusimin, M., & Nordin, N. M. (2019). Prevalence and factors associated with depressive, anxiety and stress symptoms among women with gestational diabetes mellitus in tertiary care centers in Malaysia: A cross-sectional study. *BMC Pregnancy and Childbirth*, 19(1), 367. doi: 10.1186/s12884-019-2519-9.
12. Lee, K. W., Ching, S. M., Hoo, F. K., Ramachandran, V., Chong, S. C., Tusimin, M., & Mohd

16. Lee, K. W., Loh, H. C., Chong, S. C., Ching, S. M., Devaraj, N. K., Tusimin, M., & Hoo, F. K. (2020). Prevalence of anxiety among gestational diabetes mellitus patients: A systematic review and meta-analysis. *World Journal of Meta-Analysis*, 8(3), 275-284 doi: 10.13105/wjma.v8.i3.275
17. Lovibond, P. F., & Lovibond, S. H. (1995). The structure of negative emotional states: Comparison of the depression anxiety stress scales (DASS) with the beck depression and anxiety inventories. *Behaviour Research and Therapy*, 33(3), 335-343. doi: 10.1016/0005-7967(94)00075-u.
18. Menting, J., Tack, C. J., Donders, R., & Knoop, H. (2018). Potential mechanisms involved in the effect of cognitive behavioral therapy on fatigue severity in type 1 diabetes. *Journal of Consulting and Clinical Psychology*, 86(4), 330. DOI: 10.1037/ccp0000290
19. Mortazavi, F., & Mehrabadi, M. (2020). Effectiveness of solution-focused counseling therapy on pregnancy anxiety and fear of childbirth: A randomized clinical trial. <https://doi.org/10.18502/npt.v8i3.5939>
20. Nordin, N. (2019). Prevalence and factors associated with depressive, anxiety and stress symptoms among women with gestational diabetes mellitus in tertiary care centers Malaysia: a cross-sectional study. *BMC pregnancy and childbirth*, 19(1), 1-11. doi: 10.1186/s12884-019-2519-9.
21. Pengju, W. A. N. G., Xiong, Z., & Hua, Y. A. N. G. (2018). Relationship of mental health, social support, and coping styles among graduate students: Evidence from Chinese universities. *Iranian Journal of Public Health*, 47(5), 689. PMID: 29922611 , PMCID: PMC6005982
22. Pengju, W. A. N. G., Xiong, Z., & Hua, Y. A. N. G. (2018). Relationship of mental health, social support, and coping styles among graduate students: Evidence from Chinese universities. *Iranian Journal of Public Health*, 47(5), 689 <https://doi.org/10.3390/children9081118>
23. Peres, S. V., ... & Francisco, R. P. V. (2021). Diet Quality Indices and Physical Activity Levels
24. Sabour, S., & Kakabraee, K. (2016). The effectiveness of acceptance and commitment therapy on depression, stress and indicators of pain in women with chronic pain. *Iranian Journal of Rehabilitation Research in Nursing*, 2(4), 1-10. <http://dx.doi.org/10.21859/ijrn-02041>
25. Sahebi, A., Asghari, M. J., & Salari, R. S. (2005). Validation of depression anxiety and stress scale (DASS-21) for an Iranian population. *Iranian Psychologists*, 4(1), 299-313. ((Persian)). orpus ID: 221231200
26. Salameh, M. A., Oniya, O., Chamseddine, R. S., & Konje, J. C. (2021). Maternal Obesity, Gestational Diabetes, and Fetal Macrosomia: An Incidental or a Mechanistic Relationship? *Maternal-Fetal Medicine*, 3, E013-E013. DOI: 10.1097/FM9.0000000000000125
27. Samani, S., & Joukar, B. (2007). A study on the reliability and validity of the short form of the depression anxiety stress scale (DASS- 21). *Journal of Social Sciences and Humanities of Shiraz University*, 26(3), 65-77. (in perssian).
28. Schmidt, C. B., van Loon, B. J. P., Vergouwen, A. C. M., Snoek, F.J., & Honig, A. (2018). Systematic review and meta-analysis of psychological interventions in people with diabetes and elevated diabetes distress. *Diabetic Medicine*, 35(9), 1157-1172. doi: 10.1111/dme.13709. Online ahead of print.
29. Sharifzadeh, M., Haghighi, N. B., Keramat, A., Goli, M., & Motaghi, Z. (2018). Effectiveness of midwifery counseling based on solution-focused approaches on fear of childbirth. *Koomesh*, 20(2), 375-383. DOI:10.21203/rs.3.rs-137775/v1
30. Sürücü, A., Hamdiye, B. B., Dilek, D., Mesude, E., Yeter, E., & Ay, I. (2019). Are levels of coping with stress in pregnancy with gestational diabetes worse than in healthy pregnancy? *Journal of Psychosomatic Obstetrics & Gynecology*, 40(2), 114-122. doi: 10.1080/0167482X.2018.1438404. Epub 2018 Feb 19.
31. Vakilian, K., Zarei, F., & Majidi, A. (2019). Effect of acceptance and commitment therapy (ACT) on anxiety and quality of life during pregnancy: A mental health clinical trial study. *Iranian Red Crescent Medical Journal*, 21(8), e89489. DOI:10.5812/ircmj.89489
32. Vakilian, K., Zarei, F., & Majidi, A. (2019). Effect of acceptance and commitment therapy (ACT) on anxiety and quality of life during pregnancy: A mental health clinical trial study. *Iranian Red Crescent Medical Journal*, 21(8), e89489. doi: 10.5812/ircmj.89489.
33. Van Horn, J. E., & Wilpert, J. (2017). Full and short versions of the coping inventory for stressful situations and social problem-solving inventory-revised: Examining their factor structure in a Dutch . doi: 10.1177/0033294117702362.

الملخص العربي

تأثير التدخل المبني على الحلول على المشكلات النفسية واستراتيجيات المواجهة بين النساء المصابات بسكري الحمل

المقدمة: تعاني النساء المصابات بسكري الحمل من مشاكل نفسية بما في ذلك الاكتئاب والقلق والتوتر يمكن أن يكون لها تأثير على استراتيجيات التكيف ونوعية الحياة. ولذلك، فإن تطبيق التدخل المبني على الحلول قد يقلل من مشاكلهم النفسية ويعزز استراتيجيات التكيف لديهم.

هدف الدراسة: إلى دراسة تأثير التدخل المبني على الحلول على المشكلات النفسية واستراتيجيات المواجهة لدى النساء المصابات بسكري الحمل.

تصميم الدراسة: تم استخدام تجربة مراقبة عشوائية (قبل / بعد الاختبار).

العينات: شاركت في هذه الدراسة عينة ملائمة مكونة من 100 امرأة مصابة بسكري الحمل. تم تقسيم المشاركين بشكل عشوائي إلى مجموعتين: الدراسة (ن = 50) والسيطرة (ن = 50). تم إجراء التدخل المبني على الحلول في ثماني جلسات مدة كل منها 50-60 دقيقة لمدة يومين في الأسبوع.

مكان الدراسة: أجريت الدراسة في عيادة ما قبل الولادة بقسم أمراض النساء والولادة بالمعهد الطبي القومي بدمهور. الأدوات: تم استخدام ثلاث أدوات لجمع البيانات، الأداة الأولى: ورقة البيانات الاجتماعية والديموغرافية والسريية، والأداة الثانية DASS: (مقياس الاكتئاب والقلق والتوتر)، والأداة الثالثة: جرد التعامل مع المواقف العصيب

(CISS) النتائج: الحالية كشفت نتائج الدراسة عن وجود فروق ذات دلالة إحصائية في مجموعة الدراسة بين الاختبار القبلي والبعدي بقيمة $p=0.000$ وفي المقابل، لم يكن هناك فروق ذات دلالة إحصائية في المجموعة الضابطة. كما أن هناك فرق ذو دلالة إحصائية بين مجموعة الدراسة والمجموعة الضابطة في جميع أبعاد DASS-21 والتكيف بعد التدخل بقيمة $p=0.000$.

الاستنتاج: كشفت النتائج أن التدخل المبني على الحلول زاد من استراتيجيات المواجهة القائمة على الحلول و انخفاض مستوى الاكتئاب والتوتر والقلق في مجموعة الدراسة.

التوصية: تدريب القابلات وأطباء أمراض النساء في جوانب الصحة العقلية يمكن أن يشمل دمج التنقيف في مجال الصحة العقلية في برامجهم التدريبية.

الكلمات المفتاحية: التدخل المبني على الحلول، المشكلات النفسية، سكري الحمل