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Effect of Mindfulness-Based Stress Reduction Program on Psychological Distress, Attachment, Coping and Caring Behavior of Mothers of Neonates with Congenital Anomalies

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Abstract: Background: For families, especially mothers, the birth of a newborn with congenital defects is frequently difficult and unexpected experience. **Purpose:** To identify the effect of mindfulness-based stress reduction program on psychological distress, attachment, coping and caring behavior of mothers of neonates with congenital anomalies. **Setting**: The study was conducted at neonatal intensive care unit and outpatient pediatric clinics of Tanta University Hospital. **Design**: quasi-experimental (single group pre, post and follow-up). Sampling: 60 mothers of neonates with congenital anomalies were chosen as a convenience sample. **Instruments**: Three instruments were used (Kessler Psychological Distress Scale., Maternal Postnatal Attachment Scale, Coping Health Inventory for Parents questionnaire and Caring behavior). **Results**: There was a reduction in the level of psychological distress among mothers (53.3% had mild distress posttest Vs 75%of them had moderate &sever distress before program). Also, there was an increase in mean score of coping behavior (73.3% helpful coping on posttest Vs 60% not helpful coping on pretest). Besides, there was an improvement in maternal attachment (57.74± 7.92 posttest Vs 24.32±2.53 pretest) and increase in caring behavior (95% good care posttest Vs 91.7% poor pretest) **Conclusion**: Mothers who attended mindfulness-based stress reduction program had lower level of psychological distress, higher level of maternal attachment, higher level of helpful coping and higher level of good caring behavior on post program than before. **Recommendations**: The current program should be involved as a usual routine intervention for all mothers having neonates with congenital anomalies.

Keywords*: Attachment, Caring behavior, Coping, Mindfulness-based stress reduction Program, Psychological distress.*

Introduction

The birth of a neonate is an experience filled with joy and happiness for the most. Having a neonate with congenital anomaly(CA) is a very stressful event, as it affects the whole family due to the critical and permanent needs it might impose (Bockrath et al., 2022). Congenital anomalies are defined as errors in human evolution that occur during the growth and development of the fetus Kasparian etal(2019). Congenital defects account for 8% of the mortality rate for children under the age of five and roughly 5% of neonatal death rates annually, making them one of the top causes of death for children worldwide (WHO, 2020). Congenital defects are regarded as one of the main causes of death, childhood illness, and permanent impairments in developing countries as well. (ElAwady H etal 2021).In Egypt, the prevalence of congenital anomalies in neonates is estimated to be around 2-3% of all live births (Rabah M. S&, Doaa I. S. (2011).

Neonates born with congenital anomalies are typically linked to long-term hospital stays and frequently need substantial surgical procedures as part of their treatment. When the neonate admitted to the neonatal intensive care unit, their mothers may experience psychological distress and a sense of powerlessness (Kazemi A et al (2019);Gerstein, E. D (2019, &Burke SO et al (2016). Psychological distress was described as a- condition of emotional pain and characterized by a variety of physical and mental discomforts as well as symptoms such as depression and anxiety. It could be a reaction to particular life stressors. Numerous studies have documented that mothers who have a birth of newborns with congenital defects experience a range of emotions, including tension, grief, anxiety, and depression. (Cano Giménez E, Sánchez-Luna M. (2015)& Kazemi A etal (2019).

Additionally, the birth of neonates with a congenital anomaly results in disturbance of the maternal-neonatal attachment. It may be because of a resultant distress or in the method to avoid attachment to an neonates with anomalies (Cheung RY, Leung SS, Mak W(2019). Emotional attachment is a reciprocal relationship that encompasses behaviors like intimacy, feeling of belonging and proximity to another person. Maternal-neonatal attachment serves as an unnoticeable bond between the mother and the neonate. (Carlsson T, Mattsson E. (2018)& Kazemi A et al (2019). The health of the neonate with a congenital defect is directly correlated with the mother's ineffective compatibility and lack of positive attachment to her neonate. Studies on the interactions between mothers and neonate with congenital defects, which are necessary for the development of the attachment process, have shown that these mothers' sensitivity and acceptance of the duty to feed and care for them are below average. (Lumsden MR et al (2019) & Kasparian NA etal (2019).

Psychological distress of these mothers may lead to difficulty in understanding

the situation, and wrong practices. It is in turn may create a considerable barrier to the appropriate management and delivery of adequate caring behavior by mothers toward their neonates and delay the appropriate medical intervention (Maleki, M.,etal 2022). The essence of mammalian neonate caring behavior is to be attentive to the distress and needs of another (e.g. neonate), take actions to relieve distress, fulfill appropriate needs to prevent future distress, suffering, and support growth. Routine caring behavior provided by mothers of neonates with CA is essential for maternal attachment with their neonates and early progress of neonate condition. Various studies reported that caring behaviors of mothers of neonates with congenital anomalies are reduced because psychological distress (Naseri N etal(2021)& Kazemi A et al (2019).

When a newborn with CA is born, the mother may experience a psychological crisis and resort to various methods of coping. Coping typically refers to balancing one's internal and external needs in difficult circumstances (Krauss MW (2017) &Malmir, S., etal (2022). Coping behaviors are individual responses to stressful situations with the intention of managing the situation, regulating it, or adjusting to it. Coping behaviors are either emotion-driven or problem motivated (Salehi K, Kohan S, and Taleghani F(2019).

Adaptive coping behaviors refer to a range of traits, including competence, desirability, acceptance, and support seeking (Vernhet .C. etal 2019).While incompatible coping mechanisms are often used to describe other traits including anger, loneliness, and a sense of being different. The method of coping depends on available resources, and psychological supportive assistance offered (Grieb, S etal 2023). Several studies have indicated that a variety of educational and psychologically supporting approaches (i.e. Mindfulness-Based Stress Reduction (MBSR) can lessen these mothers' psychological suffering, assist them in choosing better coping mechanisms, and enhance their maternal bond and loving behavior. (Fernandes, D. V etal (2022). Mindfulness is the state of being aware of all internal and external experiences at the moment. Regardless of other people's opinions, it encourages people to focus on their feelings and thoughts. The three components of mindfulness are "preventing judgment," "promoting awareness," and "focusing on the present moment." Mindfulness can facilitate both cognitive (thinking about the past and the future) and metacognitive (thinking about emotions, thoughts, and behavioral processes) processes that allow one to focus on the present. (Kabat-Zinn, J. (2015)., & Leng, Letal (2023).

Significance of the study

Many studies have shown higher levels of psychological distress in mothers of neonates admitted to the NICU (Rihan, S. H etal 2021& Marshall A etal 2019). Poor emotion regulation of mothers not only reduces parents ‘overall well-

being but also impacts the quality of the parent–child relationship, parents' parenting practices, and infant's social and emotional development (Medeiros, C.etal 2016). Nurse play a significant role in supporting mothers of neonates with CA and providing effective positive psychological intervention for them (Mendelson, T etal 2018). While there are many published reports indicating the presence of psychological problems among parents of neonates with congenital anomalies, there is few researches adopted mindfulness intervention for the reduction of stress among mothers of neonates with CA.

Purpose:

To identify the effect of mindfulness-based stress reduction program on psychological distress, attachment, coping and caring behaviors of mothers of neonates with congenital anomalies .

Research hypotheses:

- **H1**: mothers who attend mindfulness-based stress reduction program are expected to have lower level of psychological distress on posttest than pretest.
- **H2**: mothers who attend mindfulness-based stress reduction program are expected to have higher level of maternal attachment on posttest than pretest.
- **H3**: mothers who attend mindfulness-based stress reduction program are expected to have higher level of helpful coping on posttest than pretest.
- **H4**: mothers who attend mindfulness-based stress reduction program are expected to have higher level of good caring behavior on posttest than pretest.

Methods:

Research design: -

A quasi-experimental (single group pre, post and follow-up) research design was used.

Settings: -

The study was carried out at Neonatal Intensive Care Unit and Out Patient Pediatric Clinics in Tanta Main University Hospital which is affiliated to the higher education and scientific research.

Sampling: -

A convenience sample of 60 mothers of neonates with congenital anomalies that were hospitalized in the neonatal intensive care unit or were among the visitors of clinics of previously mentioned setting. The sample size was determined using the subsequent criteria: With a 5% margin of error, the expected result is 70% with a 95% confidence level. N > 29 should be the sample size based on the previously stated equation.

$$n = \frac{\left(Z_{1-\frac{\alpha}{2}} + Z_{1-\beta}\right)^2 \left(\delta_1^2 + \delta_2^2\right)}{\left(\bar{x}_1 - \bar{x}_2\right)}$$

Inclusion criteria for study subjects

- Read and write
- Having newborns with a clear diagnosis of a non-fatal congenital defect;
- Not having a history of congenital anomalies in children; • Not having cognitive-sensory illnesses (such as blindness or deafness) based on self-disclosure.
- Lack of training in medical or psychological sciences • The child's biological relationship

Instruments:

Four instruments were used to collect data;

Instrument one: Kessler Psychological Distress Scale

It consists of two parts;

- **Part one**: Characteristics of mothers and neonates questionnaire: it includes;
  - ❖ Characteristics of mothers: It included age, residence, educational level, and previous attending of training courses about mindfulness.
  - ❖ Characteristics of neonates: It included age (in days), Gender of neonate, birth weight, and type of delivery.
- **Part two**: Kessler Psychological Distress Scale

It was adopted from Kessler et al., (2003). It is a simple measure of psychological distress. The scale involves 10 items. Each item was scored on a five-point Likert scale; (1) None time, (2) a little, (3) sometimes, (4) most of the time, and (5) all of the time.

Total scoring system:

Total score was ranged from 10 to 50. Likelihood of having psychological disorder or distress was outlined as follow;

- 10 - 19 Likely to be well
- 20 - 24 Likely to have a mild disorder
- 25 - 29 Likely to have a moderate disorder
- 30 - 50 Likely to have a severe disorder

Instrument two: Maternal Postnatal Attachment Scale

Condon and Corkindale (1998) developed it, and the researchers used it. The purpose of the scale is to measure the attachment of mothers to their infants under one year old. It contained 19 items.

It contained three subscales;

- **Quality of attachment**: 3, 4, 5, 6, 7, 10, 14, 18, 19 (e.g "Over the last two weeks I would describe my feelings for the baby")
- **Absence of hostility**: 1, 2, 15, 16, 17 (e.g "When I am caring for the baby, I get feelings of annoyance or irritation")
- **Interaction pleasure**: 8, 9, 11, 12, 13 (e.g 'I try to involve myself as much as I possibly can playing with the baby")

Scoring system:

Scoring system for each item ranged from 1 (lowest score) to 5 (highest score). Items 7, 8, 9, 10, 11, 12, 13 and

14 had reverse score. Total scored ranged from 19 to 95. Each subscale had a separate scoring.

Quality of attachment	Lowest :9<32	Highest 32-45
Nonexistence of hostility	Lowest 5-<18	Highest : 18-25
Interaction Pleasure	Lowest:5-<18	Highest:18-25

Instrument three: Coping Health Inventory for Parents (CHIP)

The scale was adopted from McCubbin et al (1983) to measure a family's coping with the serious or chronic illness of a child. This inventory contains 45 items and three subscales. The first subscale includes 19 items, second subscale consists of 18 items & the third subscale contains 8 items. Items were scored on a four-point Likert scale, ranging from 3= extremely helpful 2= moderately helpful 1= minimally helpful & 0 = Not helpful. Total score was ranged from 45-135, from the perspective of the parent, higher ratings signify better adaption.

This instrument has three subscales that were developed through factor analysis:

1) Maintaining family integration, cooperation, and an optimistic definition of the situation: Items number 1, 3, 6, 8, 11, 13, 23, 26, 28,31, 36, 38, 41, 43, 44, 45
2) Maintaining social support, self-esteem and psychological stability: Items numbers 2, 4, 7, 9, 12, 14,17, 19, 22, 24, 27, 29, 32, 33, 34, 37, 39, 42
3) Understanding the medical situation through communication with other parents and consultation with medical staff: Items numbers; 5, 10, 15, 20, 25, 30, 35, 40

Instrument four: Routine Caring Behavior Structured Interview Questionnaire

It was developed by the researchers after review of related literatures (Fernandes, D. V (2022) & Mendelson, T.2018). It is a self-reported questionnaire. It was developed to asses routine caring behavior provided by mothers to their neonates. It includes the ability of mothers to incorporate routine care for neonates, promote independence in providing care, provide a safe and nurturing home environment during feeding, and support the unique needs of neonates. It is a Likert –type scale that range from strongly agree to disagree. Disagree was scored 1, agree was scored 2 and strongly agree was scored 3. The final total score was categorized into two categories: - good from 70% and more and poor from less than 70%

Validity and reliability:

The study's instruments were translated into Arabic by the researchers and examined for content validity by a group of 5 experts in (three from psychiatric nursing and two from pediatric nursing) to determine the appropriateness of questions all instruments were found to be valid. For the assessment of reliability, Cronbach alpha was used for instruments one (a=0.875), two (a=0.913), three (0.892), four (0.748)

Pilot study:

A pilot study including 10% of the sample (n=6) to evaluate the clarity and applicability of the study instruments. It was conducted to determine potential obstacles throughout the data collection process and estimating the amount of time for collecting data which was 30-35 minutes to complete the study's questionnaire. No changes were and the pilot participants were later excluded from the study sample.

Ethical considerations:

A formal written consent was obtained from all mothers who volunteered to participate in the study. Obtaining ethical approval from the study's ethical committee of the faculty at Tanta University (code No: 683-5-2025). Study subjects were informed about the study's aim. Informing the study subjects on the assurance about confidentiality of any information obtained and used solely for the purpose of the study. Also the study sample had the freedom withdraw from the study at any time. The study's design will not cause harm to the study subjects.

Procedure

- An formal letter was sent from the dean of the Faculty of Nursing, Tanta University to the director of Tanta University hospital explaining the purpose of the study and methods of data collection
- The actual study was carried out through four phases:

Phase one: Assessment phase (pretest): -

- Researchers visited the research environments two to three times a week. Eligible mothers were selected after obtaining consent from all of them.
- Instruments of data collection were distributed between after explaining the purpose of the study through one-on-one interview

Phase two: (Educational program development).

- The researchers developed the study program using the results of phase one as well as a reviewing of recent, related literature (Leng& Letal (2023), Rihan, S. H etal 2021& Fernandes, D. V etal (2022).
- Aim of the program was to reduce psychological distress, and improve attachment, caring and coping behaviors of mothers of neonates with congenital anomalies

Phase three: Implementation phase

- Six sessions were used to deliver the program's content. Study subjects were divided into ten subgroups. Each subgroup was consisted of six mothers.
- For two weeks, the intervention was conducted three days a week. Each session lasted two hours each. Following sample selection and pretest evaluation, an MBSR program-based intervention was offered.
- Mothers were encouraged to participate in the sessions during medical visits of infants when they were not allowed to enter the NICU. The sessions were conducted in

mothers' resting rooms where they stayed during the hospitalization of their neonates in the NICU or outpatient clinics.

- Power point presentations, movies, posters, and handout papers were used as instructional tools. Lecture interwoven with discussion, role paly, demonstration and re-demonstration & sharing experience were used as teaching and training methods.
- All study mothers received the program handout. It was supplemented with pictures to make the information easier for the subjects to understand.
- During implementing the program, the researchers acted as the provider, coordinator, and facilitator of the study for facilitating subject' participation and comfort levels.
- Each session was started with a funny ice break and a quick review of the beforehand session's exercises and homework.
- The researchers used the teach-feedback method during the training session, asking the studied mothers to repeat the knowledge they had gained in their own terms.
- The data gathering period was approximately three months, from the beginning of May to the end of July 2025.

Implementing program was through the following schedule of sessions: -

- **Session (1)**: introductory session. The aim of this session was discussed
- **Session (2)**: overview about nature of congenital anomalies, Psychological distress, coping, caring behavior of mothers with congenital anomalies, importance of attachment of their neonates, concept of mindfulness and its importance
- **Session (3):** Meditation, and body scan for 30 min
- **Session (4)**: Meditation while sitting down a three-minute breathing exercise, and conversation about both positive and negative experiences
- **Session(5)**: Yoga exercises, discussion on both good and bad things, and a three-minute breathing exercise. Yoga and a variety of their favorite meditations were part of the homework for this session.
- **Session (6)**: Exercise using the five senses, discussion on what they have learned, good improvements, and whether they want continue practicing mindfulness and meditation

<u>Phase four</u>: Evaluation phase (Post-test):

- A posttest was conducted post program and follow up tests was conducted after program with one month.

Statistical analysis:

The SPSS statistical software, version 26, was used to organize, tabulate, and statistically analyze the collected data. The mean, standard deviation, and range were used to compute quantitative data. The Chi-square test

was used to compare the qualitative data. The correlation between the variables was evaluated using the Pearson and Spearman's correlation coefficients, r. P0.05 was used as the significance level for interpreting the findings of the significance test. Statistical significant difference was considered if P<0.05A highly statistical significant difference was considered if P<0.001

Results

Table (1) shows the distribution of the studied mothers and their neonates according to their characteristics. It was found that more than half of mothers (55%) were between 40 and 50 years old and 70.0 % had secondary education. It was found that almost three quarters of the mothers (73.3%) had not attended any training program about mindfulness. Regarding characteristics of studied neonates, it was found that more than half of neonates were male (60%), and 66.7% of them were full term.

Table (2) demonstrates levels of psychological distress among study subjects throughout periods of study. Prior to the program, it was founded that, 40% & 35% of studied mothers were experienced extreme and moderate psychological distress respectively, but such level decreased into mild level by nearly half of subjects (48.3%)post program & more than half of them (53.3%) in follow up one month post program implementation

Table (3) clarifies means score of maternal postnatal attachment among study subjects throughout periods of study. It was found that mean score of maternal attachment of studied mother was increased post (59.28±8.38) and one month follow up after program (57.74±7.92) than before (24.32±2.35).

Table (4) illustrates levels of coping behavior of the study subjects throughout phases of the study. Coping behaviors of more than half of studied mothers (61.7%) were not helpful before program. While post and one month follow up after program, coping behavior of three quadrants of studied mothers become helpful (76%&73.3%respectively).

Improvement of program was demonstrated also in all coping behavior subscale , it was found that total level of coping behavior and its subscales were differed between before and after the program with a highly statistically significant difference (p <0.001*).

Table (5) demonstrates total level of studied mothers' reported caring behaviors toward their neonates with congenital anomalies throughout the study. Prior to the program, most of studied mothers (91.7%) reported that their caring behavior regarding their affected neonates was poor care, which changed into good care post in 96.7% of them &in 95% of them one month follow up post program implementation.

Table (6) represents correlations between total score of coping behavior, psychological distress, maternal postnatal attachment & mothers 'reported caring behavior of the studied mothers throughout the study. Presence

of a highly positive statistical significant correlation between coping behavior, maternal postnatal attachment & mothers 'reported caring behavior, while on the opposite side, a negative statistical significant correlation with psychological distress of the studied mothers throughout the study (p <0.001*).Where with increasing in level of coping behavior, there are increase in maternal postnatal attachment & mothers 'reported caring behavior and decrease in psychological distress of the studied mothers.

Table (1): Distribution of Studied Mothers and Neonates according to their Characteristics (n = 60)

Characteristics of Mothers	**No.**	**%**
Age		
<40	20	33.3
40-50	33	55.0
≥50	7	11.7
Mean ± SD.	42.07 ± 5.91	
Educational level		
Diploma	13	21.7
Secondary	42	70.0
BSC	5	8.3
Mean ± SD.	7.73 ± 2.53	
Residence		
Urban	36	60.0
Rural	24	40.0
Previous attendance of any training program about mindfulness		
Yes	16	26.7
No	44	73.3
Characteristics of Neonates		
Gender		
Male	36	60.0
Female	24	40.0
Gestational age		
Full-term	40	66.7
Late preterm	20	33.3
Post- natal or current age(in days)		
1 - <7	39	65.0
7 - <14	21	35.0
14 - <21	0	0.0
Weight (gram)		
1000 - < 1500	0	0.0
1500 - < 2000	4	6.7
2000 - < 2500	26	43.3
2500 - < 3000	28	46.7
≥ 3000	2	3.3
Delivery type		
Normal vaginal delivery	16	26.7
Cesarean section	44	73.3

Table (2): Levels of Psychological distress among studied mothers pre, post and follow up (n=60)

Psychological Distress	Severe		Moderate		Mild		None		Chi-square	
	N	%	N	%	N	%	N	%	X^2	P-value
Pre	24	40.0	21	35.0	10	16.7	5	8.3		
Post	4	6.7	7	11.7	29	48.3	20	33.3	39.542	<0.001**
Follow up (one month)	5	8.3	9	15.0	32	53.3	14	23.3	1.567	0.667

Table (3): Mean Score of Postnatal Attachment among studied mothers on pre, post and follow up (n=60)

Maternal postnatal attachment	Mean	SD	Change		Paired t-test	
			Mean	%	T test	P-value
Pre	24.32	2.35				
Post	59.28	8.38	35.0	58.97	31.115	<0.001**
Follow up (one month)	57.74	7.92	-1.5	-2.67	1.035	0.303

Discussion

Neonates are admitted to the neonatal intensive care unit (NICU) for various reasons particularly congenital anomalies. Admission to the NICU is a stressful experience for the mother and the infant and can be associated with a feeling of helplessness and psychological distress in the mother (Mendelson et al., 2018; Marshall A etal 2019). Moreover, the mother's worries and poor coping with such stressors affect negatively on mother attachment with infants with congenital anomalies (Rihan et al., 2021; Grieb et al., 2023 &Gerstein, E. D (2019).

The current results revealed a significant reduction in psychological distress where majority of studied mothers experienced extreme and moderate psychological distress before program was reduced into mild level 75% and 53.3% of mothers immediately& one month post program implementation. This may return to that current mindfulness exercises (like meditation) are effective in releasing inner negative emotions like tension and distress. Also the studied mothers reported"we start to integrate mindfulness into our daily lives, which make us also more capable of promoting healthy family environments".

This was in line with the findings of Grieb et al. (2023), who demonstrated that mindfulness practices assist new relationships to be formed between mothers and infants. On the contrary, Cheung et.al.,(2022) reported that the mindfulness intervention had no effect on their level of stress as parents.

Negative health outcomes for the newborn, poor maternal-neonatal attachment and postpartum depression in the mother can all result from inadequate stress management. Attachment of studied mothers toward their affected neonates was significantly improved after program than before. Where mean score of maternal attachment of studied mother was increased immediately and one month after mindfulness program than before. This can be explained by the fact that the mother can participate in necessary emotional activities

following the birth of the child once she is no longer subject to stress and its psychological effects. (e.g., attachment to the child).

Also the content of current program (particularly breathing exercise and body scan) was effective management of stress of studied mothers. This make mothers peace enough to face stressful factor (congenital anomalies) and become highly attached with their affected neonates. It was in the line with Neece et al. (2019) who documented the positive impact of mindfulness programs on stress reduction and the psychological well-being of parents of children with developmental delays.

The third dimension was coping behavior. The current results revealed significant change in coping behavior from not helpful coping by more than half of study mothers before program into helpful coping behavior (about three quarters) post program. Current program exercises also produce its positive effect on all coping subscales. It was in agreement with Naseri N et al (2021) who reported an increase in mean score of coping of mother of neonates with congenital anomalies in the study group than control after mindfulness intervention.

The point of view in explaining such result was that the content of the program include certain strategies like observer meditation, may enhance moms' functioning by lowering or eliminating negative feelings and thoughts, and it can promote better adaptability by enhancing coping mechanisms. Additionally, practicing mindfulness can help moms deal with emotional difficulties in a different way and increase their metacognitive awareness. The fourth and last dimension was caring behavior. The current results showed that prior the program, most of studied mothers reported that caring behavior regarding their affected neonates was poor, which changed into good care immediately (& one month post program implementation.

It was consistent with results of Fernandes, D. Vetal(2022) showed that psychological interventions aimed at reducing stress and boosting mothers' self-efficacy can enhance outcomes and their ability to care for their children with long-term health issues. This may be due to mindful mind of studied mothers produced by the current program. Mindful mind produced by five senses exercise which can help to bring awareness of studied mothers to the current moment in a short amount of time including providing adequate care to their affected neonates for becoming better. Additionally, mindfulness increases maternal-neonatal attachment by focusing on the here and now, which in turn enhances the mother's ability to care for her infant.

Positive effect of current mindfulness program was confirmed by presence of negative correlation between psychological distress and other variables; coping behavior attachment and caring behavior of studied mothers. Where current program contribute to decrease of psychological distress and an increase in coping behavior,

maternal attachment& caring behavior of studied mothers. This was consistent with results of Naseri N et al (2021) that MBSR exercises improve the function of mothers by improving methods of coping and strengthening maternal-neonatal attachment by focusing on the here and now, which in turn enhances the mother's ability to care for her child. This return to that practicing mindfulness exercises like meditation and breathing exercise can help studied mothers to experience negative thoughts and emotions with greater balance and acceptance. Moreover, mindfulness techniques can prevent distress and depression by providing opportunities for caring and relaxation.

All current positive results may return to that the researchers observed that the studied enjoyed the current program's material presentation style during the session. Additionally, the program was run in small groups which creates a valuable and engaging environment and gives study participants enough time to understand the program's taught material. The program's content was conducted in an interesting manner using a range of instructional techniques such as sharing experience and role-playing in addition to the use of eye-catching images and videos. Also throughout program session, participants also had time to reflect on their own successful life experiences. Therefore, everyone has the ability to design mindfulness concept that is defined by their own terms.

Conclusion

According to the results and hypotheses of the present study, mothers who attended mindfulness-based stress reduction program had lower level of psychological distress, higher level of maternal postnatal attachment, higher level of helpful coping and higher level of good caring behavior than pretest.

Recommendations

- Educational and training courses should be established for all pediatric nurses working in surgical NIC about mindfulness-based stress reduction program.
- Mindfulness-based stress reduction program should be included as a part of an inclusive psychosocial intervention to all mothers or caregivers of neonates with congenital anomalies.
- Encourage involvement of affected families with support groups. Instead of abandoning mother and child, husbands and other relatives should be encouraged to practice mindfulness intervention so that children with CA and their parents can live normal lives in the presence of health challenge.
- Additional follow-up is necessary to assess mothers of neonates with congenital anomalies for early detection of psychological problems and early intervention.

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