

The Effect of Self-Compassion Based Nursing Intervention on Self-Criticism and Psychological Flexibility among Mothers of Children with Cerebral Palsy

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Abstract:

Background: Mothers who have children with cerebral palsy experience negative self-criticism and failure to adapt to their children's disability due to psychological inflexibility, which makes them more vulnerable to mental diseases. So, **the aim of the study** was to examine the effect of a self-compassion based nursing intervention on self-criticism and psychological flexibility among mothers of children with cerebral palsy. **Methods:** A quasi-experimental research design (a pretest-posttest) with a control group was used. **A purposive sample** of 80 mothers of children were randomly assigned to one of two groups: the intervention group (N = 40) and a control group (N = 40). **The study was conducted** at the Al Basma Association for Disabled Children, Shebin al-Kom, Menoufia Governorate, Egypt. **Four tools** were used: (1) a structured interview questionnaire; (2) the self-compassion scale; (3) the forms of self-criticizing and self-reassuring scale; and (4) the acceptance and action questionnaire (AAQ-2). **Results:** After application of self-compassion based intervention and follow up sessions, the total score of psychological flexibility level in the intervention group significantly improved compared to the control group, while the total mean score of self-criticism subscales (inadequate self, hated self) was significantly reduced among the intervention group compared to a control group. **Conclusion:** The self-compassion based nursing intervention was an effective intervention for reducing self-criticism and enhancing the level of psychological flexibility among mothers of children with cerebral palsy. **Recommendations:** Nurses and counselors in physiotherapy and pediatrics departments must undergo comprehensive training in self-compassion to effectively support mothers of children with special need e.g. learning disabilities while they care for their children.

Keywords: Cerebral palsy, psychological flexibility, self-compassion based intervention & self-criticism.

Introduction:

Cerebral palsy (CP) is the most prevalent cause of pediatric motor impairment globally, affecting 2.4 to 3.6 per 1000 children (Abd Elmagid & Magdy, 2021). It is “an umbrella term covering a group of non-progressive but often changing motor impairment syndromes, secondary to lesions or anomalies of the brain, arising in the early stages of their development” (Patel et al., 2020). It is generally a sensorimotor dysfunction involving abnormalities of voluntary movement, posture, and muscle tone. Learning disabilities and behavioral issues appear in addition to language, cognitive, and sensory impairments, which can have a significant impact on the life of the child (Abd Elmagid & Magdy, 2021). Children with cerebral palsy require interdisciplinary medical care due to their disease's varying severity and clinical outcomes. Mothers face anxiety, tension, and constant pressure due to their child's disability. They resort to strategies like running away, denying the disability, and blaming themselves. Studies show mothers suffer from guilt, blame, stigma, social marginalization, financial challenges, and excessive self-criticism (Smith & Blamires, 2022).

Self-criticism is a tendency in which individuals critically evaluate their own beliefs, actions, and thoughts that may lead to dysfunction (Gilbert, 2020). Mothers consider that giving birth to an abnormal child is considered a sin for them. These mothers assume that not being equal or having a disabled child is considered a mistake and that someone is responsible for this mistake (Löw, et al., 2020). Therefore, when these mothers are unable to determine a place for the blame, they shift this blame into themselves. They begin to hold themselves accountable for having a child in this condition; withdraw away from people and social life become harsher and more critical of themselves (Smith & Blamires, 2022).

Self-criticism significantly increases parental stress, mental health difficulties, and maladaptive parenting processes (Werner et al., 2019). Self-critical mothers feel less competent and confident as caregivers, complain of guilt, depression, worthlessness, and failure and report harsh behavior with their children. Additionally, it lessens a mother's enjoyment of life and makes her unhappy with it by impairing her ability to deal with difficulties effectively. (Kirby et al., 2023).

Some mothers of children with cerebral palsy can adjust to their child's impairment well; others find it difficult because of psychological inflexibility. For mothers and their kids, psychological flexibility contributes to improved mental health outcomes and health-related quality of life (Fung, 2018). Otherwise, most mental issues such as drug dependence, post-traumatic stress disorder, and depression, have been associated with psychological inflexibility (Ostergaard et al., 2020).

Recent research illustrated that self-compassion serves as a significant predictor of the psychological flexibility of mothers of individuals with mental disabilities (Khalaj Dolatshahi, & Bagheri, 2020). On the other hand, self-compassion has been shown to improve and negatively correlate with symptoms of depression, self-criticism, and rumination (Neff et al., 2020). Self-compassion, self-criticism, and psychological flexibility are interconnected processes that affect the experience of parenting stress. Targeting psychological inflexibility and challenging negative parenting experiences like self-criticism show promise as effective strategies for improving the mental health of mothers of children with cerebral palsy. (Daks et al., 2020).

Self-compassion can reduce self-criticism by demonstrating kindness, empathy, and understanding one's emotional pain. More specifically, a recent study conducted by Neff et al., (2020) reported that mothers with higher levels of self-compassion reported more meaning in life, were more optimistic about the future, were better able to balance caregiving and self-care, and continued to pursue personal goals. On the other hand, self-compassion also promotes flexibility by effectively regulating emotions and cultivating positive ones to adapt to negative life situations (Sunbul, & Guneri, 2019).

Significance of the study:

In Egypt, the cerebral palsy (CP) is prevalent in two to three per 1,000 live births (World Health Organization, 2019). The presence of a child with cerebral palsy in the family is a strong shock to the family in general and to the mother in particular. The mother often experiences feelings of guilt, blame, or self-criticism. Recent studies found that mothers who are self-critical and have children with CP were more prone to attempt suicide and exhibit greater levels of suicidal intent because of 'internal -psychological pressures' when compared to mothers of healthy developing children. (Gilbert, 2020; Canbaş et al., 2022).

The presence of CP children negatively impacts the comfort and health of husbands and children as well as society as a whole. (Smith & Blamires, 2022). In addition, many studies examine the efficacy of various intervention programs for mothers with

cerebral palsy children and ignore mothers' negative experiences as self-criticism and psychological inflexibility as well as less attention is focused on developing an intervention based on self-compassion among mothers with CP children. Whereas self-compassion intervention was a wonderful and smoothing strategy that could facilitate adaptive cognitive control of emotions, foster mindfulness and acknowledge of unfavorable circumstances, Therefore, this study was designed to assess the effect of a self-compassion based nursing intervention on self-criticism and psychological flexibility among mothers of children with cerebral palsy.

Operational definitions:

Self-compassion-based intervention was described as an extensive intervention intended to train mothers with children of CP on self-compassion exercise as self-compassion break, exploring self-compassion through writing, the criticizer, the criticized, and the compassionate observer, changing your critical self-talk, self-compassion journal exercise, meditation exercise, compassionate body scan exercise, supportive touch exercise, and how would you treat a friend? based on self-compassion exercises provided by (Neff & Germer, 2013; Saulsman, et al., 2017). It aimed to raise psychological flexibility and self-compassion scores while lowering self-criticism. It was evaluated by contrasting the psychological flexibility, self-criticism, and self-compassion scores of the examined mothers group with those of the control group.

Operationally, self-criticism was defined as the mothers' negative self-evaluation, their feelings of inadequacy and self-hatred during difficult situations they encounter while raising their children, as evaluated by the self-criticizing/attacking and self-reassuring scale (Gilbert et al., 2004).

Psychological flexibility in the current research is defined as the ability of a mother to recover and return to a state closer to normal when exposed to adversity and stressful situations. It was measured by the Acceptance and Action Questionnaire developed by (Bond et al., 2011).

Methods:

The aim of the study:

Examine the effect of self-compassion based nursing intervention on self -criticism and psychological flexibility among mothers of children with cerebral palsy.

Research Hypothesis:

H1: Cerebral palsy children's mothers who will attend the self-compassion-based nursing intervention are more likely to have higher scores of self -compassion and psychological flexibility post-intervention compared to mothers who don't attend the intervention.

H2: Cerebral palsy children's mothers who will attend the self-compassion-based nursing intervention are more likely to have lower scores of self-criticism post-intervention compared to mothers who don't attend the intervention.

Design:

A quasi-experimental research design approach with a pretest-posttest (one intervention group and one control group) was employed to accomplish the study's aim.

Setting:

The study took place at the Al Basma Association for Disabled Children, established in Shebin al-Kom, Menoufia Governorate, Egypt. The association operates as a charitable organization. The Association was set up in 2004 as a registered charitable society with the purpose of "caring for our disabled children, people with special needs, and their families." The association building has two floors, with the first floor containing a reception hall, conference hall, physical therapy hall, and library. The second-floor houses various units, including speech and hearing impairment, rehabilitation, physical education, psychological therapy, and learning difficulties units.

These units provide many services, such as medical, social, educational, and psychological services to children with disabilities or developmental delays, (cerebral palsy cases- down syndrome cases), diagnosis and treatment of speech disorders, vocational training, occupational therapy, motor rehabilitation, psychomotor skills, psychological counseling for children and adolescents, educational support for parents, and modifying children's behavior. Additionally, there are training programs designed for children that assist in maximizing their abilities across various domains, including cognitive development, motor skills, self-care, and linguistic communication. It operates in the evening from 2 to 9 pm, while in the morning the building is used as a nursery for children with special needs (e.g. children with mental retardation, autism, learning disabilities). The association offers the best possible care through a multidisciplinary team that consists of social workers, psychologists, speech therapists, dietitians, and psychiatrists. The association received children with cerebral palsy at 2:00 p.m. This setting was chosen as it was the most frequent association that serves many cerebral palsy cases, and permission was given by the association chairman.

Sample size:

According to the previous literature review conducted by **Khoshvagh et al., (2021)** who investigated the identical outcome and identified notable variances, a sample size was determined utilizing the formula: $n = (z^2 \times p \times q) / D^2$ at 80% power and 95% confidence interval, the calculated sample was 80.

Subjects:

A purposive sample of 80 mothers of children with cerebral palsy who referred to the above-mentioned association for the rehabilitation of their children during a period of data collection. After obtaining the mothers' permission, they were randomly divided into two groups by flipping a coin. The intervention group (I) consists of 40 mothers, and the control group (II) consists of 40 mothers. The control group (II) didn't receive any intervention, while the intervention group (I) received a self-compassion-based intervention. They were chosen based on the following inclusion criteria: being approved to join the study, providing the majority of their daily care to children affected by cerebral palsy, having a high score of the self-criticism scale, having psychological inflexibility according to acceptance and action questionnaire as their score range from 29-49, and not having psychiatric illnesses or drug addiction (based on a mother's report). The exclusion criteria were more than two absences from the intervention sessions and reluctance to continue the intervention process.

Tools of Data Collection:

Four tools were utilized to collect data for the study.

Tool (1): Interview questionnaire: It was designed by the research team after reviewing the relevant literature to assess the personal data of mothers and clinical data of their children. It is divided into two parts: Part one: the mothers' personal data, such as age, level of education, and working status, in addition to marital status. Part two: The child's personal and clinical data, such as gender, age, affected side (s) of the body, and type of cerebral palsy.

Tool (2): Self compassion scale: The researcher utilized the Arabic version of the self-compassion scale by **Hanoun, Al- Qarala, (2022)**. It consisted of 33 items, divided into four dimensions: self-kindness – self judgment (8 items) ; common humanity – isolation (8 items); mindfulness - over-identification (8 items) ;wisdom – lack of wisdom (9 items). The scale is comprised of 33 statements, with certain statements being formulated in a negative manner, including items 6, 7, 8, 14, 15, 16, 22, 23, 24, and 33, while others are presented as positive statements. A five-point Likert scale, with values from 1 (indicating strong disagreement) to 5 (indicating strong agreement), was employed to evaluate the responses provided by the mothers. They are corrected respectively if the statement is positive and reversed if the statement is negative.

Scoring systems:

The total score of self-compassion was the sum of the four above dimension ranging from (33-165); from 33 to 77 means mild self-compassion; 78 to 121 means

moderate self-compassion; from 122 to 165 means high self-compassion. The self-compassion scale has demonstrated strong validity in assessing the self-compassion of mothers of children with intellectual disabilities, with adequate Cronbach's alpha coefficients of 0.88 for the scale and from 0.81 to 0.87 for each subscale.

Tool (3): The forms of self-criticizing /attacking and Self -reassuring scale (FSCRS): it was originally developed by Gilbert et al., (2004), translated into Arabic, and validated by researchers. The scale was prepared to evaluate self-criticism and the person's ability to self-reassure in times of adversity. The scale consisted of 22 statements covering three underlying components: two for self-criticism and one for self-reassure. The component underlying the concept of self-criticism is the inadequate self (9 items) which centers around a feeling of personal inadequacy, e.g., I get disappointed easily with myself and the hated self (5 items) which involves a desire to harm or mistreat oneself, e.g., I stop caring about myself. However, there is also a form of self-reassurance (8 items), e.g., I encourage myself for the future. These components are evaluated using a five-point Likert scale ranging from Zero (not at all like me to) to four (extremely like me) for the positive paragraphs, as the direction of criticism and the score were reversed in the self-reassurance items.

Scoring systems:

The total score of the scale ranges from 0 to 88 and classified as follows: high self-criticism: > 75% of the total score (67-88), moderate self-criticism: >50%-75% of the total score (45-66), mild self-criticism: > 25 %-50% of the total score (23-44), no self-criticism: ≤ 25 % of the total score (0-22). The scale was reliable, and the value of Cronbach's alphas for inadequate self, hated self and reassured self-subscale was 0.895, 0.894, and 0.815, respectively.

Tool (4): The Acceptance and Action Questionnaire (AAQ-2): the questionnaire was designed by (Bond et al., 2011). It was translated into Arabic and validated by researchers. It consisted of 7 items that were designed to examine to what extent an individual can apply psychological flexibility skills in their daily life. The participant's response was provided using a 7-point Likert scale that spanned from 1, indicating 'never true', to 7, representing 'always true'.

Scoring systems:

The total score ranged from 7 to 49. Lower total scores mean more psychological flexibility, while higher total scores indicate experiential avoidance, higher psychological inflexibility, and more potential psychological distress. The scores ≤ 57.1%, or from 7-28 indicate an average and healthy level of

psychological flexibility, and scores > 57.1%, or from 29-49 indicate greater psychological inflexibility. The questionnaire was reliable; Cronbach's alpha coefficients for the overall questionnaire were 0.819.

Validity of the translated Tools

A structured interview schedule, tools translated by the researchers, were submitted to five scholastic nursing professors specialists in the fields of psychiatric, community and woman's health and pediatric nursing to evaluate face and content validity. The tool's contents were verified for completeness, relevancy, and clarity. The necessary changes were made based on the professionals' advice.

Ethical considerations:

Ethical approval was obtained from the ethical and rehearsal research committee of the faculty of nursing, Menoufia University (approved number is ERCNMA 1000/12/6/16/23). Informed consent was taken from each mother after they were informed about the study's purpose, benefits, and roles, they were free to stop participating in the study at any time because it was voluntary. Following the administration of the post-tests to the intervention group, the self-compassion based intervention was applied to the control group mothers when desired.

Pilot study:

After translated tools, a pilot study including 8 mothers, or 10% of the total sample, was conducted to evaluate the practicality and comprehensibility of the tool items, as well as to assess the time required for respondents to complete the tools. This group was not included in the main study population.

Procedures of data collection:

A first, the dean of Menoufia University's faculty of nursing sent an official letter to the director of the selected association along with a copy of research equipment and an Arabic booklet to obtain support and permission for data collecting. The study's data collection period ranged from January to May 2024. The current study data collection process includes four stages: assessment, planning, implementation, and evaluation.

Assessment phase:

The researcher asks the director of the association to collect mothers of children with cerebral palsy who accept to participate and prepare a meeting room equipped with chairs, good lights, and a data show for the implementation of the program. Through a structured interview technique, mothers were requested to complete the assessment instruments. The researchers conducted interviews with eligible mothers in the designated meeting room, where they obtained informed consent from each mother after providing necessary information about the study's objectives, as well as details about the meeting date and location. All inquiries from the mothers were

addressed by the researchers. The pre-test data was gathered on Sunday afternoons from 2 to 5 p.m. for the duration of one month in January 2024.

Planning phase:

The researchers prepared the Arabic guide booklet after conducting a review of literature, including electronic books, studies, and periodicals. Subsequently, they reviewed the booklet to ensure it was presented in an accessible and engaging manner tailored to the needs of the mothers. The researchers divided mothers into two groups (intervention and control group) by making a table that consisted of three columns. The first column contains the number and name of participants; the second column represents one of the sides of the coins (picture) and refers to the intervention group. The third column represents the other side of the coin (write) and refers to the control group. The coin was tossed in the air so that it was rotated from edge to edge several times. Each mother from the list was asked in advance or while the coin was in the air to choose one side of the coin when the coin settles on the surface, if the mother's choice was correct a check mark was placed in the picture column in front of her name, if her choice was wrong a check mark was placed in the write column. It was repeated until it was decided who had more in the intervention and control groups.

The intervention group, consisting of 40 mothers, was split into three smaller groups, each comprising approximately thirteen mothers. These groups met once a week for 60 minutes over a period of two months, from February to March 2024, and then had a two-month follow-up from April to May 2024. While the control group (40 mothers) was split into two groups; each group had about twenty mothers. Discussion, lectures, demonstration, re-demonstration, brainstorming, role-playing, modeling, and giving real examples were used as teaching methods. A booklet, data sheet, and pictures were used as media.

Implementation Phase:

To prevent the mothers in the self-compassion based intervention and control groups from affecting each other, the data of the control group was gathered first. Pre and post tests were applied to the mothers in the control group. After the control group's data were collected, the self-compassion based intervention for the intervention groups was implemented in small groups at the meeting room, with each group comprising approximately thirteen mothers. Each group attended eight intervention sessions with one session a week. Every session takes 60 minutes within one day/week on Sunday (two groups per day) from 2 p.m. to 4 or 4.30 p.m. The implementation of the program sessions was achieved within two months from February to March 2024 and two months for follow up from April to May 2024. Before sessions, the

mothers were called by phone, and sessions schedule time was reminded. While the self-compassion based intervention was being implemented, the first ten minutes of each session were utilized to summarize the previous session and review homework to establish a connection between the sessions and remind them of the previous session. The last 40 minutes were dedicated to finishing the task for the session, while the remaining 10 minutes were allocated for feedback, questions, and discussing homework assignments for the next meeting. The self-compassion-based intervention sessions rely on self-compassion exercises provided by (Neff & Germer, 2013; Saulsman, et al., 2017).

Description of self-compassion based intervention sessions:

The first session: building cohesion and increasing mothers' awareness about cerebral palsy. This session aimed to establish a friendly relationship and achieve mutual rapport between researchers and mothers. This session began with an acquaintance card and covered an overview of cerebral palsy including its definition, probable symptoms, complications, etiology, and treatment.

Session 2: Psychoeducation on self-compassion based intervention

This session aimed to enhance mothers' understanding of self-compassion. The researchers provide a simple explanation to the mothers about the concept, benefit, and components of self-compassion through using video. As a homework activity, the mothers were asked to write about painful situations that they experienced and how they dealt with them, whether with mercy or self-criticism.

Session 3: Compassionate or positive self-talk exercise

This session aimed to practice compassionate self-talk to overcome self-criticism. The researchers asked mothers to recall a suffering moment related to having a child with cerebral palsy and the way they treated themselves. After that, mothers were requested to hear inner critical self-talk (e.g., I am the reason for having a disabled child) and notice the tone of voice they used, e.g., aggressive, shouty. The researcher then taught them to replace distorted views with compassionate statements and supportive touch. The mothers were asked to apply these statements out loud, whisper, and without verbal pronouncing as homework activities.

Session 4: The criticizer, the criticized, and the compassionate observer exercise: The session aimed to train mothers on an internal dialogue exercise (the criticizer, the criticized, and the compassionate observer) to help them get a different perspective on how they're feeling. Mothers were divided into groups, the researcher asked them to

occupy different seats and communicate with contradicting parts of themselves using role-playing. As a homework activity, mothers were asked to practice this exercise twice a week.

Session 5: Exploring self-compassion through writing exercises.

This session aimed to train mothers on this exercise to assist them in redirecting their focus on being nurturing, and caring towards themselves, while diminishing any negative thoughts and emotions. The researchers directed mothers to compose a letter to themselves as if they were a compassionate imaginary friend, discussing a parenting incident from the previous week that evoked feelings of guilt, self-criticism, or emotional pain. In response to this painful experience, they wrote down a message of common humanity e.g., "All humans make mistakes, and finally wrote down some kind and comforting words about themselves e.g., "It's okay. I made a mistake, but it wasn't the end of the world. As a homework activity, the researcher instructed mothers to read it aloud to themselves as needed at times of diversity.

Session 6: How Would You Treat a Friend?

This session aimed to teach mothers how to treat themselves like a friend. The researcher asked mothers to write down what they typically do, say and note the tone in which they typically talk to their friends. Then the researcher asked mothers to cradle their faces in their hands, gently rub their chests, or use circular movements.

Session 7: Mindfulness (Body scanning and Meditation exercise)

This session aimed to train mothers on how to focus on the present moment rather than evaluative judgments on circumstances. This session included body scanning and meditation. Mothers were asked to practice the exercise of performing body scanning and 10-minute meditation in a single day during the following week.

Session 8: Final session.

Mothers were encouraged to practice what they were trained on in their daily lives, thanked them for their commitment and participation in the program.

Evaluation phase:

The researchers distribute the four study instruments (post-test) at the end of sessions to collect data post intervention then analyze data and formulate the results and after two month they collect the follow up test. After completing the research, control group mothers were informed that they could be given self-compassion intervention training if they wished to.

Statistical analysis

The collected data organized, tabulated and statistically analyzed using Statistical Package for Social Science (SPSS) version 25 for windows, running on IBM compatible computer. Descriptive statistics were applied (e.g. frequency, percentages, mean and standard deviation). Test of significance, qualitative variables were compared using chi square test (χ^2), independent samples T test (t) used to compare between means of quantitative variables and Analysis of variance (ANOVA test) used for comparison of means more than two categories. Correlation coefficient test (r) was used to test the correlation between studied variables. A significant level value was considered when $p < 0.05$ and a highly significant level value was considered when $p < 0.01$. No statistical significance difference was considered when $p \geq 0.05$

Results

Table (1): Distribution of the Studied Subjects According to Their Personal and Child Clinical Data (N=80)

Personal and child clinical data	Intervention group (n=40)		Control group (n=40)		X2	P-Value
	No	%	No	%		
Mothers age (Years)						
20-<30	6	15.0	6	15.0	0.159	0.923
30-<40	30	75.0	31	77.5		
≥40	4	10.0	3	7.5		
Mean ± SD	33.77±4.17		33.32±3.93		t=0.496	0.621
Educational level						
Basic education	3	7.5	6	15.0	1.350	0.509
Secondary education	30	75.0	29	72.5		
High education	7	17.5	5	12.5		
Marital Status						
Married	34	85.0	31	77.5	2.281	0.320
Divorced	5	12.5	9	22.5		
Widow	1	2.5	0	0.0		
Occupation:						
Working	5	12.5	9	22.5	0.378	0.189
Housewife	35	87.5	31	77.5		
Childs age (Year)						
4-<7	7	17.5	6	15.0	0.221	0.896
7-<10	25	62.5	27	67.5		
10-12	8	20.0	7	17.5		
Mean ± SD	8.30±1.75		8.25±1.56		t=0.134	0.893
Child gender:						
Male	31	77.5	27	67.5	1.003	0.317
Female	9	22.5	13	32.5		
Type of cerebral palsy						
Spastic	35	87.5	30	75.0	2.051	0.359
Dyskinetic	4	10.0	8	20.0		
Mixed	1	2.5	2	5.0		
The affected site of the body						
Unilateral	7	17.5	10	25.0	1.953	0.377
Bilateral	32	80.0	27	76.5		
Not reported	1	2.5	3	7.5		

Note. X²: Chi-square test.
SD= Standard deviation.

t: Independent samples T test.
No statistically significant at p > 0.05.

Table (2): The Mean and Standard Deviation of Self-Compassion Dimensions among Studied Subjects at Pre - Post and Follow Up Intervention (N=80).

Self-compassion dimensions		Intervention group (n=40)	Control group(n=40)	T test	P value
		Mean ± SD	Mean ± SD		
Self-kindness	Pre	16.45±3.99	15.92±3.84	0.599	0.551
	Post	29.32±4.91	16.10±4.31	12.79	0.000**
	Follow-up	28.52±5.66	16.0±4.33	11.10	0.000**
Common humanity	Pre	19.10±2.82	18.77±2.80	0.516	0.607
	Post	30.0±3.14	19.02±3.38	15.01	0.000**
	Follow-up	29.37±4.84	18.9±3.31	11.28	0.000**
Mindfulness	Pre	18.12±3.10	17.90±3.21	0.318	0.751
	Post	29.25±5.07	18.10±3.71	11.21	0.000**
	Follow up	28.70±6.17	18.0±3.58	9.478	0.000**
Wisdom	Pre	21.45±2.98	21.40±2.98	0.075	0.940
	Post	33.42±4.64	21.67±3.53	12.74	0.000**
	Follow-up	32.40±5.58	21.45±3.94	10.13	0.000**
Total self compassion score	Pre	75.12±8.49	74.0±8.68	0.586	0.560
	Post	122.0±16.37	74.62±10.95	15.20	0.000**
	Follow up	119.02±19.8	74.35±10.54	12.59	0.000**

Note. T: Independent samples T test.
No statistically significant at p > 0.05.

SD= Standard deviation.
**: Highly statistically significant at p < 0.01.

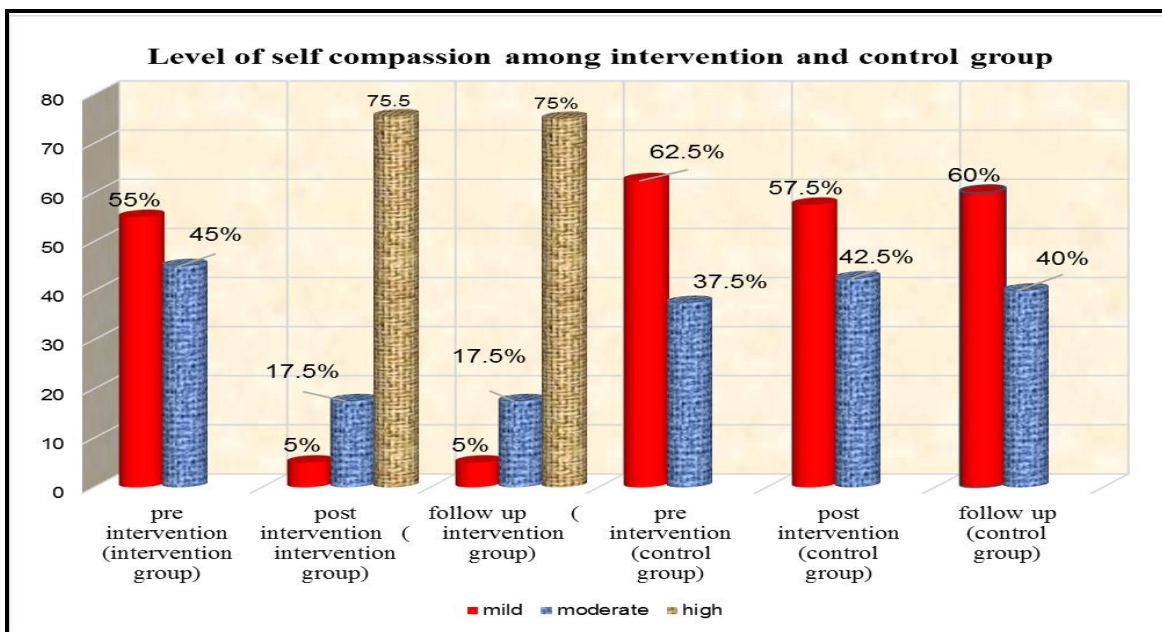


Figure (1): Distribution of the studied groups regarding total self -compassion at pre, post and follow up self-compassion intervention (N= 80)

Table (3): The Mean and Standard Deviation of Forms of Self-Criticizing /Attacking and Self-Reassuring Subscale among Studied Subjects at Pre-Post and Follow up Intervention. (N=80)

Self-criticizing /attacking and self-reassuring subscale		Intervention group (n=40)	Control group (n=40)	T test	P Value
self-criticizing subscale	Pre	27.45±5.20	26.80±5.08	0.565	0.574
	Post	11.95± 4.68	26.57± 6.03	12.10	0.000**
	Follow-up	10.97± 4.24	27.4± 4.64	16.50	0.000**
Inadequate self	Pre	11.40±3.78	11.25±3.71	0.179	0.859
	Post	3.97± 2.55	11.22± 3.92	9.788	0.000**
	Follow-up	3.50 ± 2.18	11.32± 3.64	11.64	0.000**
Hated self	Pre	9.07±3.76	9.82±3.78	0.888	0.377
	Post	22.22± 3.21	10.30 ± 5.05	12.59	0.000**
	Follow-up	23.30± 2.88	9.97± 4.26	16.35	0.000**

Note. t: Independent samples T test.

No statistically significant at $p > 0.05$.

SD= Standard deviation.

** : Highly statistically significant at $p < 0.01$.

Table (4): The Mean and Standard Deviation of Total Psychological Flexibility among Studied Subjects at Pre-, Post-and Follow up Intervention (N=80).

Psychological flexibility		Intervention Group (n=40)	Control Group (n=40)	T test	P-Value
Total psychological flexibility score	Pre	34.85± 4.86	33.97± 4.38	0.845	0.401
	Post	18.70± 6.57	33.67± 4.83	11.60	0.000**
	Follow-up	17.37±6.82	33.77± 4.88	12.36	0.000**

Note. t: Independent samples T test.

No statistically significant at $p > 0.05$.

SD= Standard deviation.

** : Highly statistically significant at $p < 0.01$.

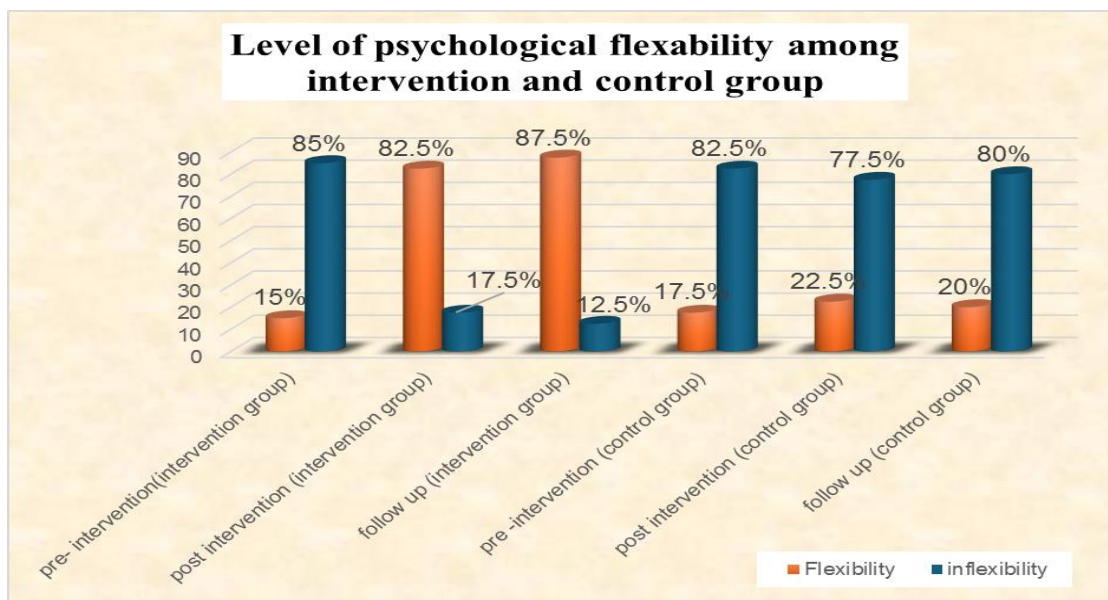


Figure (2): Distribution of the studied groups regarding to total psychological flexibility at pre, post and follow up self-compassion intervention (N= 80).

Table(5): Correlation Between Total Self -Compassion Score, Psychological Flexibility and Inadequate Self, Hated Self, Self-Reassurance Score Pre, Post and Follow Up Self-Compassion Intervention Among Studied Subjects.

Group	Variables		Total self -compassion score			Total psychological flexibility score		
			Pre	Post	Follow - up	Pre	Post	Follow - up
Intervention group	Total self -compassion score	r				0.335	0.493	0.524
		p				0.035*	0.000**	0.000**
	Total inadequate self-score	r	-0.412-	-0.418-	-0.415-	-0.516-	-0.457-	-0.426-
		p	0.008**	0.005**	0.005**	0.001**	0.002**	0.005**
Control group	Total hated self-score	r	-0.410-	-0.438-	-0.424-	-0.610-	-0.368-	-0.353-
		p	0.009**	0.004**	0.005**	0.000**	0.007**	0.009**
	Total self-reassurance score	r	0.437	0.498	0.456	0.344	0.223	0.268
		p	0.005**	0.000**	0.000**	0.007**	0.037*	0.032*
Intervention group	Total self -compassion score	r				0.262	0.159	0.109
		p				0.103	0.328	0.502
	Total inadequate self-score	r	-0.361-	-0.223-	0.001	-0.476-	-0.233-	-0.258-
		p	0.022*	0.167	0.993	0.000**	0.148	0.109
Control group	Total hated self-score	r	-0.351-	-0.196-	-0.191-	-0.564-	-0.071-	-0.050
		p	0.026*	0.225	0.237	0.000**	0.663	0.761
	Total self-reassurance score	r	0.358	0.108	-0.207-	0.060	-0.107	0.067
		p	0.023*	0.508	0.199	0.711	0.509	0.681

Note. r= coefficient correlation test.
* Significant at p < 0.05.

No significant at p > 0.05.
**highly significant at p < 0.01.

Table (1): Reflects that there was no significant difference between the intervention and control groups regarding all aspects of personal and child clinical data with p>0.05. As regards age, three quarters of mothers (75%, 77.5 %) of both groups respectively, were of the same age from 30-< 40 with a mean age of (33.77±4.17, 33.32±3.93). Concerning the level of education, 75.0 % and 72.5 % of mothers of both groups respectively had secondary education level, while the majority of them (85.0%, 77.5%) respectively were married and housewives. Regarding demographic and clinical characteristics of their

children, more than two-thirds (62.5%, 67.5%) of mothers of both groups respectively, had children aged 7 ≤10 years and more than three-quarters (77.5%, 67.5 %) of them were male. Meanwhile, most mothers in both groups had children with spastic cerebral palsy and bilaterally affected sides of the body (87.5%, 75.0%, 80.0%, 67.5%) respectively
Table (2): Indicates that there was a highly statistically significant difference in post intervention and 2 months after intervention (follow up) between the intervention and control groups in all dimensions and the total score of self-compassion (p < 0.001).

Among the intervention group, the total self-compassion mean score was increased from 75.12 ± 8.49 pre-interventions to 122.0 ± 16.37 (post-intervention) and to 119.02 ± 19.8 on (follow up) sessions and comparing this mean with that of the control group (74.62 ± 10.95 , 74.35 ± 10.54).

Figure (1): Showed that there was statistically significant improvement in self-compassion level among the intervention group post intervention and 2 months after intervention (follow up) than pre intervention compared to control group; the moderate level of self-compassion among the intervention group increased from 45% before intervention to a high level of self-compassion (77.5 %) after intervention and to (75%) at follow-up session where p value ($p = 0.001$). It was observed also that no mothers in the control group on post and follow-up intervention sessions respectively had a high level of self-compassion compared to (77.5 %, 75%) in the intervention group.

Table (3): Illustrates that there was a highly significant reduction in the total mean score of self-criticism subscales (inadequate self, hated self) on post intervention and (follow-up) sessions between the intervention and control group ($p < 0.001$). Where the total mean score for inadequate self and hated self for intervention group in post intervention and (follow-up) sessions respectively were reduced from (27.45 ± 5.20 , 11.40 ± 3.78) to become 11.95 ± 4.68 , 3.97 ± 2.55 and 10.97 ± 4.24 , 3.50 ± 2.18 compared with the mean of that control group. While the total mean score of self-reassuring subscale (self-reassurance) was a highly significant increase in the intervention group on post intervention and (follow-up) session, from 9.07 ± 3.76 to become 22.22 ± 3.21 and 23.30 ± 2.88 respectively and comparing this mean with that of the control group.

Table (4): Clarifies that the total mean score of psychological flexibility is significantly lower in the intervention group than the control group on post intervention and (follow-up) sessions, as the total mean score was reduced from 34.85 ± 4.86 to 18.70 ± 6.57 and becomes 17.37 ± 6.82 where ($p < 0.001$) and comparing this mean with that of the control group (33.67 ± 4.83 , 33.77 ± 4.88) which indicates a greater psychological flexibility.

Figure (2): Reveals that there was a statistically significant difference between both groups (intervention group and control group) regarding psychological flexibility level post intervention and (follow-up) sessions than pre intervention; the intervention group showed increased psychological flexibility from 15% to 82.5% post-intervention and to become 87.5% after 2 months post intervention (follow-up), while the control group had only 22.5% and 20% of the same level.

Table (5): Illustrates that there was a highly statistically significant negative correlation between the self-criticism subscale as inadequate self, hated self-scores and both self-compassion and psychological flexibility scores pre, post and follow up self-compassion intervention sessions at $P = 0.005$ among the intervention group. This means that when mothers have high self-compassion and psychological flexibility, their self-criticism as an inadequate self-, hated self will be decreased. While self-reassurance scores positively correlated with both self-compassion and psychological flexibility scores ($P = 0.000$). Also, there was a highly statistically significant positive correlation between self-compassion and psychological flexibility.

Discussion:

Raising a cerebral palsy child can be challenging, especially for mothers who may experience shock, worthlessness, and self-criticism. This can lead to negative emotions, hindering their psychological flexibility and mental health. (Al-Sahma, 2020). Self-compassion can help reduce these feelings and enhance the psychological empowerment and mental wellbeing of parents of disabled children (Khoshvaght 2021). As a result, the aim of study to examine the effect of a self-compassion-based nursing intervention on self-criticism and psychological flexibility among mothers of children with cerebral palsy.

Concerning the effect of self-compassion-based nursing intervention on self-compassion (see table 2, figure 1). The finding of current study reflected that there was a highly statistically significant difference in post intervention and follow up sessions between the intervention and control groups ($p < 0.001$) in the total score and all self-compassion dimensions. Furthermore, the findings revealed that over three-quarters of the intervention group exhibited a moderate level of self-compassion following the intervention and subsequent follow-up sessions, in contrast to the control group.

This effect can be related to the intervention's exercises were based on helping the mother to be kind to herself, compassionate, understand herself positively, and work to discover and develop the positive aspects. Besides, role-play, group activities and mindfulness also helped with self-awareness and avoiding immersion in the problems of the past or anxiety about the future. The researcher also stressed the importance of continuing to practice and use these exercises as a lifestyle when she faces any problem.

This finding was congruent with Ahmed & Raj, (2023) who discovered that mothers of children with developmental disabilities who completed self-compassion modules reported significantly higher

levels of self-compassion before intervention compared to after intervention. In the same vein, **Abu Hashish, (2022)** noted that differences had existed in the total mean scores and dimension of self-compassion among mothers of autistic children in the experimental groups of their study after 8 weeks and one month of follow-up.

Regarding the effect of self-compassion-based nursing intervention on self-criticism (see table 3), the current study showed that there was a highly significant reduction in the total mean score of self-criticism subscales (inadequate self, hated self) post intervention and follow-up session between the intervention and control group ($p < 0.001$). While the total mean score of the self-reassuring was a highly significant increase. The results indicated that self-compassion-based intervention effectively helps mothers to handle painful situations, become kinder, cope with responsibility and acknowledging hardships as part of human experiences. Additionally, it assisted mothers in recognizing self-critical thoughts as unreal beliefs. They experience inner serenity and self-reconciliation as a result, which lessens their tendency to criticize themselves.

This could be as a result of the self-compassion based intervention's activities, which included supportive touch, compassionate or positive self-talk exercise, the criticized, and the compassionate observer exercise, treat themselves like a friend exercise, as well as mindfulness exercise. This point of view was supported by **Saleh Abadi & Naemi, (2020)** who claim that self-compassion training can teach people how to recognize irrational and unreasonable evaluations so that they can find the ability to deal with problems in a healthy way by having a proper way of thinking. This result was comparable to **Brenjestanaki, Abbasi, & Mirzaian, (2020)** who revealed that the mean score of self-criticisms of mothers with mentally retarded children in the experimental group significantly reduced after the self-compassion session and on follow-up compared to the control group. Additionally, **Farzi, et al., (2021)** concluded that significant differences were observed in the levels of self-criticism of mothers of children with disabilities between the two groups of their study after 8 sessions compassionate training. Also, they stated that the mothers of these children often have negative self-criticism. Self-compassion training helps them accept the disorder as an event, focus on upcoming changes, and tolerate difficult situations.

Regarding the effect of self-compassion-based nursing intervention on psychological flexibility (see table 3, figure 2). The current research indicated that the total mean score of psychological flexibility was significantly lower in the intervention group than

the control group post intervention and at (follow-up) session which indicates a greater psychological flexibility. Additionally, the current result showed that the majority of the intervention group had a high level of psychological flexibility post-intervention and at follow up sessions compared that of control group.

The interpretation that could give for the obtained result, the components of self-compassion based intervention which include mindfulness, a way of controlling breathing, paying conscious attention to inner experiences, offering oneself with the same kindness, care, and support that one would provide to a good friend, and providing a supportive and caring inner voice that can comfort them in times of distress rather than being overly self-critical. All these assist mothers in managing their negative emotions more skillfully, helping them feel more accepting and patient with themselves, even when they make mistakes, and helping them to concentrate on the present rather than evaluating judgments on situations. Therefore, mothers can better control their emotions and develop greater psychological flexibility.

The justification for this finding was provided by **Khalajzadeh & Hashemi (2019)**, who suggested that self-compassion training can improve psychological flexibility because self-compassion teaches individual to forgive one's own faults and weaknesses and to respect oneself as a person. Additionally, **Salgado-Pascual, Martín-Antón, and Carbonero, (2020)** reported that studied mothers who applied mindfulness and self-compensate were found to have a greater level of psychological flexibility compared to those who did not apply it.

Concerning the correlation between self-criticism and self-compassion, the present result illustrated that there was a highly statistically significant negative correlation between self-criticism subscale (inadequate self-, hated self-scores) and self-compassion scores pre, post and follow up self-compassion intervention at $P = 0.005$ among the intervention group. This implies that when the mother has self-compassion the self-criticism will decrease. while a positive correlation was observed between self-reassurance and self-compassion scores where p value ($p = 0.023$). This could be because individuals with high self-compassion regulate emotions, treat themselves with kindness, counter harsh self-talk, and recognizing failure as part of life can lessen over-identification resulting in lessened self-criticism. Self-compassion theory can explain this outcome, which holds that people who are self-compassionate are better able to handle difficult situations because their negative feelings are not heightened by severe self-judgment (**Neff, 2003**).

This result was identical with the result outcome of **Harshitha & Sasi, (2019), & Kauser, et al.,(2022)**, they reflected that there was a strong positive relationship between self-compassion and reassuring self and a strong negative relationship between self-compassion and self-criticism. Also, **Saleh Abadi & Naemi, (2020)** who illustrated that people who have higher self-compassion, they judge themselves less harshly, and they accept negative life events more easily.

According to the result of the present research, there was a highly statistically significant negative correlation between self-criticism subscale as inadequate self-, hated self-scores and psychological flexibility at $P = 0.005$ among intervention group. This could be due to self-critical individuals having a negative self-evaluation which result from comparing themselves with personal and internal standards. Since these standards are quite high, they cannot be met. This lack of fulfillment is regarded by a self-critical person as a weakness and defect. In these people, failure lead to absolute worthlessness because they do not accept their weakness in certain areas. Therefore, they have a state of rigidity and inflexibility in relation to their standards and view failure or success negatively. This finding was like that of **Ariyazangane, et al., (2022)** they discovered a negative relationship between psychological flexibility and self-criticism ($\beta=-0.17$; $P=0.012$).

The finding of current study indicated that self-reassurance scores positively correlated with psychological flexibility. This could be due to when a person has psychological flexibility in the face of life pressures, this leads to psychological and social harmony, which in turn leads to psychological health, through which the person feels happy and self-assured. This result aligned with the conclusions drawn by **Alsheikh, (2017), Jackson et al., (2023)** they illustrated that there was a positive and significant relationship between psychological flexibility and reassurance ($p < 0.06$).

Furthermore, the present research demonstrated that, a highly statistically significant positive correlation between self-compassion and psychological flexibility scores with $P = 0.000$ among the intervention group. Individuals with self-compassion exhibit wisdom, rationality, and awareness, addressing problems without exaggeration. They plan well, overcome obstacles, and seek support from others. They are kind to themselves during crises and motivate themselves to work, demonstrating their adaptability. These are the characteristics of those with psychological flexibility. This result was in the same line with **Alnajjar, & Al-Mahdi, (2021), & Fares, (2018)** they concluded that there was a positive correlation with statistical significance

between the total score of self-compassion and the total score of psychological flexibility. So, they recommended training on self-compassion to raise the level of psychological flexibility among mothers of children with disabilities.

Also, this finding was following **Belhaj, et al., (2022)** who found that there was a close relationship between self-compassion and psychological flexibility among mothers of children with special needs. This result was incongruity with **Sabir, et al., (2018)** they showed that there was no association between self-compassion and psychological flexibility.

Limitations of this study

The small sample size and only one setting for data collection were used in this study; therefore, the generalization of the results should be done with caution.

Conclusion:

The self-compassion based nursing intervention was a successful intervention in reducing the level of self-criticism and improving the level of self-compassion and psychological flexibility among mothers of children with cerebral palsy.

Recommendations:

- Incorporate self-compassion based nursing intervention within the preventative services provided by the association.
- Preparation and implementation of comprehensive self-compassion training courses for nurses and counselors working in physiotherapy, outpatient, and pediatrics departments. These courses will enable them to support mothers of children who require special assistance, such as those who are blind, deaf, or have learning disabilities.
- Replication of the research employing a higher number of participants from other regions to confirm the findings and ensure their generalizability.

Implications for practice

The self-compassion based intervention appears to be a tool for life in helping mothers of children with cerebral palsy to minimize self-criticism and enhancing psychological flexibility. As the compassion exercises' foundation is simple, comprehensible, and allows for its use by all parents with children who need special help, including those with blindness, deafness, and learning disabilities.

Conflicts of Interest Disclosure: The authors announce that there is no conflict of interest.

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