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Effect of Using Meditation Techniques for Children with Chronic Kidney Disease on Hemodialysis Therapy

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Abstract: **Mindfulness meditation is a practice that allows one to purposefully pay attention to the present moment without judgment. It helps us to look at things with a new lens and typically change the way to see things. Aim of the study: the aim of the study was to evaluate the effect of the meditation Technique on the psychological and physical body change in children with chronic kidney disease on hemodialysis. Design: A quasi-experimental research design was used to conduct the study. Settings: This study was carried out in pediatric dialysis unit, Benha university Hospital. Sample: A purposive sample of children (47) undergoing hemodialysis therapy through 4 months period in the previously mentioned setting. Tools of data collection: Three tools were used; Tool I:-A structured interviewing questionnaire: Tool II: Pain measurement scale. Tool III: Child and adolescent mindfulness measure. Results of this study revealed that, a highly statistically significant difference of the studied children physiological and psychological change in post application meditation technique. This study concluded that: All children who practice meditation technique experienced significantly less anxiety, depression and experienced decrease in total pain level scores. The study recommended that: Although the effects in this study were not as robust as we had hoped, we still believe mindful meditation to be a promising intervention for children with chronic kidney disease on hemodialysis at different settings.**

Keywords: **Meditation Techniques, Mindfulness, Chronic Kidney Disease and Hemodialysis.**

1. INTRODUCTION

Healthy kidneys keep whole body healthy and growing. Blood flows through the kidneys which clean the blood by filtering excess waste products, water and salt from the blood. Kidneys regulate blood pressure and balance the body's chemicals. They play a very important role in a child's growth by producing hormones that promote red blood cells, regulate the amounts of nutrients from food that are necessary for growth and help to metabolize growth hormones **(National Kidney Foundation of Arizona, 2017).**

Chronic kidney Disease (CKD) is a presence of kidney damage, or a decreased level of kidney function, for a period of three months or more" and often requires psychosocial intervention in addition to medical care. The effects of kidney failure and dialysis treatment are experienced amongst children's, family members, caregivers, and nephrology staff **(Petingola, 2012).**

Hemodialysis is the most common method used to treat advanced and permanent kidney failure. Hemodialysis imposes a variety of physical and psychosocial stressors that challenge not only the children but also the care givers. The number of patient being treated for end stage renal disease (ESRD) globally was estimated to be 2,786,000 with a 6 -7% growth rate continues to increase at a significantly higher rate than the world population. Hemodialysis remained the most common treatment modality, with approximately 1,929,000 patients undergoing hemodialysis (89% of all dialysis patients) **(El-Abbassy etal, 2015).** In Egypt; End stage renal disease (ESRD)is growing by 100% annually; the estimated annual incidence of ESRD is around 74 per million and the total prevalence of patients on dialysis is 264 per million, also there are 90,000 patients die each year because of kidney failure **(El-Abbassy etal, 2015).**

Complementary and alternative medicine (CAM) may provide new therapeutic options for children with ESRD with the goal of improving symptoms and quality of life. The most commonly used CAM modalities include biologically based products (herbs and dietary supplements) and mind-body practices (e.g., yoga, tai chi, deep breathing, and meditation) (**Birdee etal, 2013)**. Mindfulness meditation is the umbrella term for the category of techniques used to create awareness and insight by practice focused attention, observing, and accepting all that arises without judgment (**Eisler, 2015)**

Mindfulness-based approaches (MBSR), may be suitable interventions for anxiety, depression, and/or conduct disorder. Mindfulness-based practices appeal to children because they are self-management techniques and therefore allow them to play a key role in their own growth and development. MBSR utilizes mindfulness-based practices as the primary change agent. These mindfulness practices include mindful eating, body scan, sitting meditation, Hatha Yoga, walking meditation, and mindfulness in everyday living. The MBSR was an effective intervention for reducing the symptoms of anxiety. Children who have participated in a MBSR intervention show improvements in attention, self-regulation, social competence, and general well-being (**Rempel, 2012).**

Significance of the study:

Dialysis is a lifelong treatment for end stage renal disease (ESRD) associated with physical and psychosocial challenges that affect not only the children but also family members who care for them. Hemodialysis is the most common method used to treat advanced and permanent kidney failure. Haemodialysis imposes a variety of physical and psychosocial stressors that challenge not only the children but also the care giver **(Hothi etal, 2016).** Mindfulness meditation is the umbrella term for the category of techniques used to create awareness and insight by practicing focused attention, observing, and accepting all that arises without judgment **(Eisler, 2015).**

Therefore, this study hoping to reduce the psychological and physical body change in children with chronic kidney disease on hemodialysis.

Aim of the study:

The aim of the study was to evaluate the effect of the meditation Technique on the psychological and physical body change in children with chronic kidney disease on hemodialysis.

Research Hypothesis:

There will be a significant reduction in psychological and physical body change after meditation Technique for children undergoing hemodialysis therapy

Research Design:-

A quasi –experimental research design was utilized to conduct the study.

Setting:-

This study was conducted at pediatric hemodialysis unit affiliated to Pediatric Nephrology Department at Benha University Hospital. Pediatric hemodialysis unit at Benha University Hospital contained two rooms with 16 hemodialysis machines. Each room contained 8 hemodialysis machines.

Subjects:

Study subjects was consist of purposive sample of children (47) undergoing hemodialysis therapy through 4 months period in the previously mentioned setting. The children were involved in the study according to inclusion criteria, children from both genders, in the age group 13-18 years, undergoing hemodialysis therapy no medical problem

Tools of the study:

There were three tools utilized to collect the required data. Those tools as the following:

Tool I:-A structured interviewing questionnaire:

It was developed by the researchers after reviewing the related literatures and it was written in Arabic language to suit study sample. It composed of two parts

Part I: Characteristics of the child such as:- age, gender , child ranking and educational stage.

Part II: Medical history of the child which was checked from medical file of the child.

Tool II: Pain measurement scale

This scale was adopted from **Swan and Hamilton (2016)**, to assess and measure pain intensity, quality, and location as well as the impact pain is having on mood or activity. These scales are useful in complex or persistent acute or chronic pain. Each of these categories is scored from0-2. The total pain score was 10. Mean score for the different levels of pain was calculated as no pain (0), mild pain (1-3), moderate pain (4-6), severe pain (7-8) and very sever (9-10).

Physiological pain measurements:

This part consists of vital signs that were measured during dialysis pre and post medication Technique.

Psychological measurements:

This part consists of anxiety and depressed that was measured during dialysis pre and post medication Technique.

1-Beck Anxiety Inventory (BAI)

This scale was adapted from **Beck, et al (1988)**, to assess children anxiety level. The total anxiety score was 60. Mean score for the different levels of anxiety was calculated as not at all (0), mild (1), moderate (2) and severe (3).

The total score for anxiety was classified as the following

-Normal anxiety from 0-20 score

-Mild anxiety from 20- 40 score

-Moderate anxiety 40-60 scor-

-Sever anxiety above 60 degrees

2-Depression self- rating scale for children

This scale was adapted from **Faulstich, et al (1986)**, to assess depression level in children and adolescents. It consist of (16) question, Mean score for the different levels of depression was calculated as not at all (0), a little (1), some (2), a lot (3). The total depression score was 48. The total score for depression was classified as the following

-Normal depression from 1-15 degrees

-Mild depression from 16- 30 degrees

-Moderate depression from 31-40 degrees

-Sever depression above 40 degrees

Tool III: Child and adolescent mindfulness measure (CAMM):

This scale was adapted from **Greco, et al., (2011)**, to assess mindfulness in children and adolescents. It consist of (10) question, the total mindfulness score was 40. Mean score for the different levels of mindfulness was calculated as never true (0), rarely true (1), sometimes (2), often true (3) and always true (4). The total score for mindfulness was classified as the following

-High mindfullness20-40 degrees

-Low mindfulness below 20 degrees

Validity and Reliability:

The researchers reviewed the past, current regional and international related literatures covering all aspects of the study using textbooks, articles, journal and scientific magazines. This helped the researchers to be acquainted with the research problem and guided them in developing the study tools. To measure content validity of the study tools, the researchers assure that items of the tools were adequately represent what are supposed to measure by presented it to three experts including; three in pediatric nursing from the Faculty of Nursing El-Menofia, Benha University, and one Nephrology Medicine from the Faculty of medicine Benha

University, to test the content validity. Modifications of the tools were done according to the experts' judgment on clarity of sentences, appropriateness of contents and sequence of items. The experts' agreed on the content, but recommended minor language changes that would make the information clearer and more precise. The suggested changes were made. Internal consistency reliability of all items of the tools was assessed using Chronbach's Alpha test. It was 0.83 for the structured interviewing schedule, and 0.89 for Pain measurement scale

2. METHOD

Exploratory phase:

Ethical considerations and human rights:

An official permission to conduct the study was obtained from the hospital mangers. Then participation in the study was voluntary; each child was informed about the purpose, procedure, benefits, and nature of the study and each child had the right to withdraw from the study at any time without any rationale, then oral/written consent obtained from them. Subjects were informed that obtained data will not be included in any further researches. Confidentiality and anonymity of each subject was assured through coding of all data and all information has taken was protected.

Pilot Study:

It was conducted on 10 % of the total study sample (5 children) to evaluate the feasibility, reliability, and clarity of the tools .It was conducted to test the applicability of the tools, find out the possible obstacles and problems that might face the researchers and interfere with data collection. Additionally, detect any problems peculiar to the statements as sequence of questions and clarity. It was also helped to estimate the time needed for data collection, as it was 20 minutes. The children included in the pilot study were not excluded from the study as no radical modifications were done in the study tool. During the pilot study it was found that some children prefer listening to Quran during dialysis as they feel with comfort and security and did not like any music at this time and vice versa some children love music.

Field of Work:

Data were collected from the beginning of December 2017 to the end of March 2018. The researchers were available three days/week (Saturday, Monday, and Thursday) from 9am-1pm. The total number of children included in the study 47 child 5 of them weren't excluded in the pilot study. So the final total of study sample was (47) who agree to participate in the study, the study group divided into (9groups), each group consists of (5: 6students). The children who fulfilled the criteria was invited to participate after providing children with a simple and full explanation of the aim and process of the study to obtain her verbal informed consent. The researchers filled children physiological assessment sheet by using sphygmomanometer and thermometer. The time of interviewing each child's ranged between 20–30minutes. During this period the researchers observed each child's practice through pre and post application. The total numbers of sessions were 5. It divided as follows: one session for knowledge, and 4 sessions for the practice. The time of knowledge session ranged between 15 minutes to 20 minutes. The children divided into groups, each group contains (5-6) to acquire the related information. The researcher continued to reinforce the gained information, answered any raised questions and gave feedback. Preparation of the content which covered the reason behind the application of the sessions, breathing exercise, calming exercise, calming count and music. The duration of skills sessions ranged between 30minutes to 45 minutes, and numbers of sessions were 4 sessions in the form of demonstration and re-demonstration for each group. Teaching methods were lecture, role play, demonstration and re-demonstration. Media utilized were handouts, videos

Meditation technique:

At the beginning of the first session an orientation of the meditation program lasted 16 weekly meetings lasting 45 minutes. A noise-free room was used, such as an auditorium, with padded chairs, and a quiet environment. During the first 15 minutes of every session, participants on the meditation technique, explanations of possible benefits and mechanisms of action. During meditation technique if the child becomes agitated or uncomfortable, the researchers stopped the exercise. If the children seems to have difficulty relaxing only part of the body, the researchers slows the progression of the exercise and concentrates on the tensed body part. The child must inform at the beginning the exercise can be stopped at any time. With practice the child can soon perform meditation exercise independently then end meditation techniques by learn the child to take four deep breaths, move hands and legs and open eyes these was made while taped music (or Quran) was played beside the child to provide more relaxation and distraction from pain, earphone was used to avoid disturbing others and help child to concentrate on the sound rather than his discomfort.

Selection of listening to music or Quran was depending on the child choice; finally vital signs were measured post mediation technique. Physiological measures such as temperature, heart rate, respiration and blood pressure were assessed for each child pre-post application meditation techniques. Pain intensity, anxiety and depressed level will be reassessed on discharge. The difference between pre and post pain intensity and anxiety level will be calculated for subject.

Statistical analysis

The collected data were organized, tabulated and analyzed using electronic computer and statistical package for social sciences (SPSS) version 20. Descriptive statistics were calculated for the data in the form of: Mean and standard deviation for quantitative data, and frequency and distribution for qualitative data. Also in analytical statistics, inter-group comparison of categorical data was performed by using chi square test (X^2 -value). Also, Pearson correlation coefficient test was used. P value <0.05 was considered statistically significant (*) while >0.05 statistically insignificant and P value <0.001 was considered highly significant (**) in all analyses.

3. RESULT

Table (1): This table shows the characteristics of the studied children. The mean age of the children was years, more than half of them (61.70%) were males, more than half of them (57.45%) were primary and less than half of them (44.68%) were ranked as the second child in the family.

Table (2): This table reveals the medical history of the studied children. It reveals that almost half of the children (44.68%) the hemodialysis duration were between 1- < 3 years. Regarding number of dialysis 3 sessions per week, most of children (78.72%) and the duration of each dialysis session in hours was reported by more than half of children (61.70%) were 3 hours.

Table (3): Shows that there was a highly statistically significant difference of the studied children anxiety level at post application meditation technique as compared to pre - application meditation technique (P=<0.001).

Figure (1) : Indicate that, more than one third (44.7%) of the studied children had sever anxiety level at pre application meditation technique (P=<0.001). while two third (61.7%) of them had moderate anxiety level at post application Meditation Technique (P=<0.001).

Table (4): Indicate that, more than one third (42.6%) of the studied children had sever pain at pre application meditation technique, while more than half (59.6%) of them had mild pain at post application meditation technique.

Table (5): Shows that there was a highly statistically significant difference of the studied children depression level at post application meditation technique as compared to pre application meditation technique (P=<0.001).

Figure (3): Indicate that, more than one third (44.7%) of the studied children had moderate and sever depression level at pre application meditation technique, while more than one third (46.8%) of them had mild depression level at post application meditation technique.

Table (6): Shows that there was a highly statistically significant difference of the studied children mindfulness level at post application meditation technique as compared to pre application meditation technique (P=<0.001).

Figure (4): Indicate that, the majority (100.0%) of the studied children had low level of mindfulness level at pre application meditation technique, while more than two third (66.0%) of them had high level of mindfulness level at post application Meditation Technique

Tables (7): Shows mean score and SD of the studied children's physiological measurement during pre and post application meditation technique. It was found that the mean of temperature for children pre and post application meditation technique were37.2±0.53 and49. 5 ±0.16 respectively. While the mean heart rate for children pre and post application meditation technique were 99.4±11.5beat /minute and 94.1±8.28beat /minute respectively. Also it was found that the mean of the respiration of them pre and post application meditation technique were 26.2±2.5 and 22.6±1.82 respectively. Also it was found that the mean of the Blood Pressure for children pre and post application meditation technique were98.2±14.5 mmH/ 99.1±8.21 mmH respectively. This table shows that there were highly statistical significant differences between physiological measurement pre and post application meditation technique.

Table (8): Revealed that there is positive correlation between children total anxiety, depression and pain (p value < .001) after training implementation.

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Table (1): Distribution of the studied children regarding their personal characteristics (n=47).

Items	No	%
Age in years		
▪ <13	6	12.77
▪ 13- <15	17	36.17
▪ 15- ≤18	24	51..06
□ ± SD 13.89±1.89		
Gender		
▪ Male	29	61.70
▪ Female	18	38.30
Education		
▪ Primary	27	57.45
▪ Preparatory	10	21.28
▪ Secondary	7	14.89
▪ University	3	6.38
Child ranking		
▪ First	12	25.53
▪ Second	21	44.68
▪ Third	14	29.79

Table (2): Distribution of the studied children regarding their medical history (n=47).

Items	No	%
Duration of hemodialysis (years)		
< 1	3	6.38
1- < 3	21	44.68
3- < 6	14	29.79
6- < 9	4	8.51
Others (≥ 10)	5	10.64
Numbers of hemodialysis sessions per week		
3 sessions	37	78.72
4 sessions	10	21.28
Duration of hemodialysis session.		
3 hours	29	61.70
4 hours	18	38.30
□ ± SD 3.38±.491		

Table (3): Mean and standard deviation of the studied children anxiety level undergoing hemodialysis at pre\ post of application Meditation Technique (n=47).

Item	Study group(n=47)		(t) test	P
	Pre- application Meditation Technique	Post- application Meditation Technique		
	□ ±SD	□ ±SD		
Numbness or tingling	2.23±.757	1.46±.880	19.86	0.00
Feeling hot	2.21±.749	1.27 ±.852	18.25	0.00
Wobbliness in legs	2.27±.743	1.25±.846	18.14	0.00
Unable to relax	2.31±.694	1.80±.711	26.85	0.00
Fear of worst happening	2.31±.725	1.59±.770	22.90	0.00
Dizzy or lightheaded	2.27±.713	1.59±.741	23.44	0.00
Heart pounding / racing	2.21±.749	1.63±.791	22.77	0.00
Unsteady	2.21±.778	1.59±.851	21.25	0.00
Terrified or afraid	2.38±.677	1.61±.767	23.74	0.00
Nervous	2.25±.736	1.55±.653	23.76	0.00
Feeling of choking	2.34±.700	1.29±.831	19.02	0.00
Hands trembling	2.25±.736	1.42±.800	20.47	0.00
Shaky /unsteady	2.34±.700	1.34±.668	21.08	0.00
Fear of losing control	2.36±.704	1.44±.685	22.23	0.00
Difficulty in breathing	2.23±.757	1.34±.759	19.72	0.00
Fear of dying	2.25±.736	1.65±.635	25.42	0.00
Scared	2.23±.728	1.91±.904	24.15	0.00
Indigestion	2.27±.713	1.68±.783	23.89	0.00
Face flushed	2.23±.728	1.87±.875	24.23	0.00
Hot / cold sweats	2.25±.736	1.82±.842	24.28	0.00
Total	**45..48± 12.98**	**31..21± 10..39**	**27.094**	**0.00**

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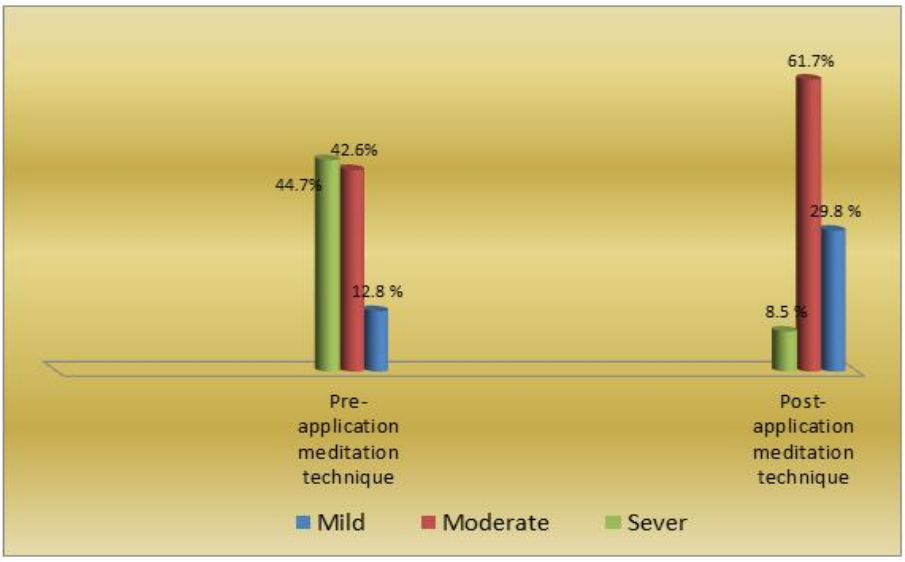

Figure (1): Total score of the studied children anxiety level undergoing hemodialysis according at pre \ post of application Meditation Technique (n=47).

Table (4): Total score of the studied children pain level undergoing hemodialysis at pre and post of application Meditation Technique (n=47).

Item	(n=47)				X2 test	P
	Pre- application meditation technique		Post- application meditation technique			
	No	%	No	%		
Mild pain	9	19.1	28	59.6	16.413	0.00
Moderate pain	7	14.9	12	25.5		
Sever pain	20	42.6	6	12.8		
Very sever pain	11	23.4	1	2.1		
Total	47	100	47	100		

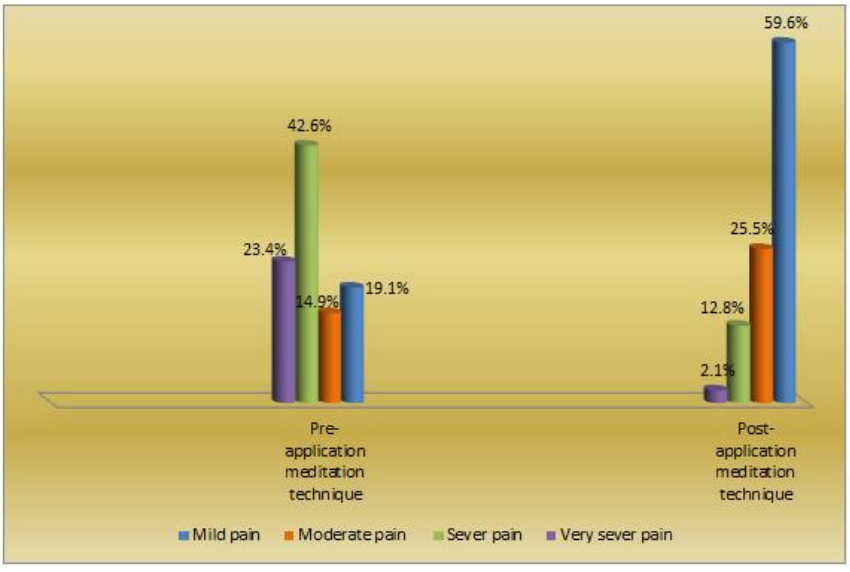

Figure (2): Total score of the studied children pain level undergoing hemodialysis at pre and post of application Meditation Technique (n=47).

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Table (5): Mean and standard deviation of the studied children depression level undergoing hemodialysis at pre\ post of application Meditation Technique (n=47).

Item	(n=47)		Paired (t) test	P
	Pre- application Meditation Technique	Post- application Meditation Technique		
	□ ±SD	□ ±SD		
Feeling sadness	2.23±0.69	1.65±1.04	20.25	0.00
Attention for future	2.17±0.70	1.29±0.99	17.44	0.00
Feeling failure	2.10±0.84	1.36±0.76	19.061	0.00
Feeling satisfaction	2.19±0.77	1.31±0.81	18.90	0.00
Feeling guilty	2.23±0.72	1.63±0.89	21.69	0.00
Feeling punished	2.21±0.72	1.55±0.95	22.95	0.00
Feeling worst	2.19±0.74	1.61±0.76	23.68	0.00
Feeling of killing self	2.27±0.71	1.78±0.85	22.78	0.00
Feeling crying	2.29±0.74	1.68±0.86	15.41	0.00
Feeling irritation	2.21±0.74	1.42±0.71	21.27	0.00
Feeling lost interest in other people	2.23±0.72	1.57±0.77	22.58	0.00
Decision making	2.25±0.70	1.65±0.78	23.66	0.00
Appearance	2.27±0.71	1.63±0.73	24.067	0.00
Sleep	2.29±0.71	1.29±0.65	19.42	0.00
Tired	2.23±0.72	1.44±0.74	21.40	0.00
Appetite	2.19±0.74	1.53±0.68	23.015	0.00
Total	**42.29± 9.31**	**28.91±7.95**	**31.581**	**0.00**

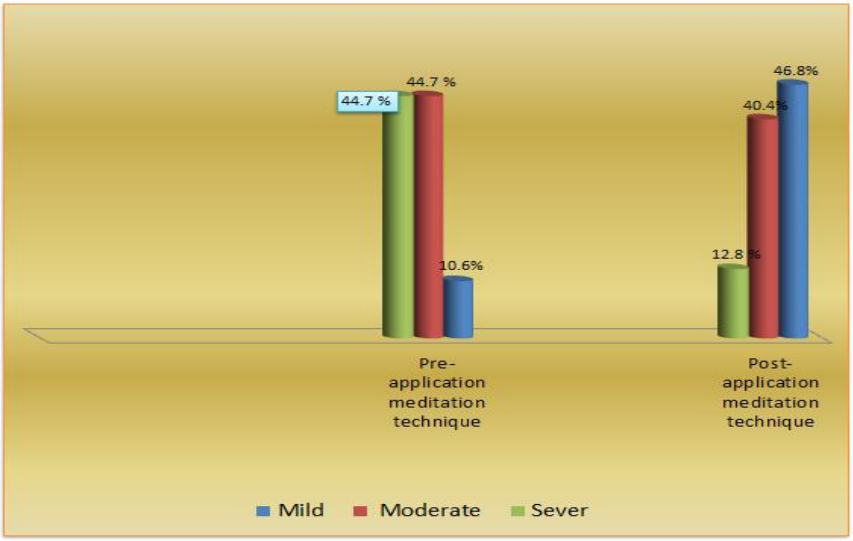

Figure (3): Total score of children depression level at pre\ post of Application Meditation Technique (n=47).

Table (6): Mean and standard deviation of the studied children mindfulness level undergoing hemodialysis at pre\ post of application meditation technique (n=47).

Item			Paired (t) test	P
	Pre- application Meditation Technique	Post- application Meditation Technique		
	□ ±SD	□ ±SD		
I get upset with myself for having feelings that don't make sense	0.89±0.75	2.17±0.84	14.513	0.00
At school, I walk from class to class without noticing what I'm doing.	1.31±0.47	1.87±0.99	18.852	0.00
I keep myself busy so I don't notice my thoughts or feelings	0.63±0.94	1.02±1.05	7.948	0.00
I tell myself that I shouldn't feel the way I'm feeling	1.65±1.08	2.65±2.48	10.604	0.00
I push away thoughts that I don't like.	0.72±0.68	1.68±1.00	11.903	0.00
It's hard for me to pay attention to only one thing at a time.	0.74±0.70	1.78±0.97	12.317	0.00
.I get upset with myself for having certain thoughts	0.87±0.82	2.06±1.03	12.89	0.00
I think about things that have happened in the past instead of thinking .about things that are happening right now	0.63±0.94	1.02±1.05	7.948	0.00
.I think that some of my feelings are bad and that I shouldn't have them	0.89±0.75	2.17±0.84	14.513	0.00
I stop myself from having feelings that I don't like.	0.72±0.68	1.68 ±1.00	11.903	0.00
Total	**9.06±3.13**	**18.02±5.21**	**21.129**	**0.00**

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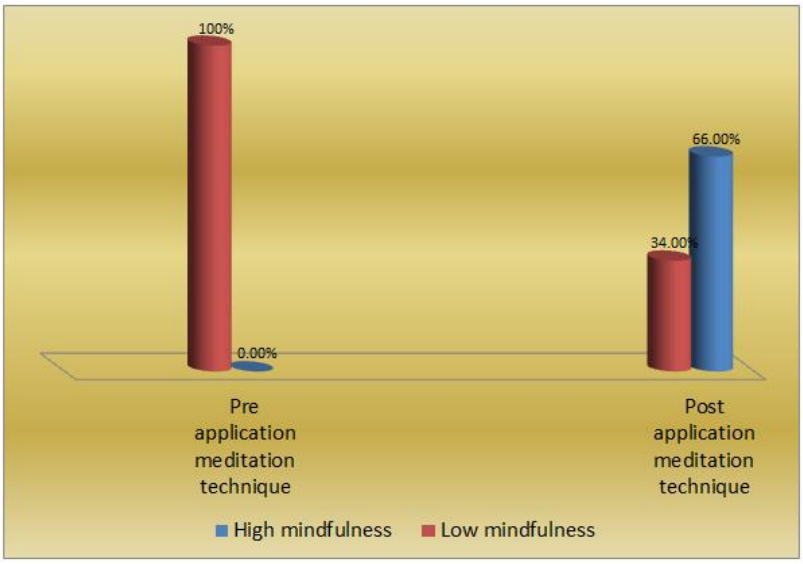

Figure (4): Total score of studied children mindfulness level at pre\ post of application Meditation Technique (n=47).

Table (7): Mean and standard deviation of physiological measurement of children at pre\ post application Meditation Technique (47)

physical measurement	Pre			Post			T	p-value
	Mean	±	SD	Mean	±	SD		
Temperature	37.2±0.53			49.5±0.16			7.54	0.000**
Heart rate beat/mint	99.2±11.5			94.1±8.22			8.02	0.000**
Respiration cycle/ mint	26.2±2.4			22.6±1.82			24.05	0.000**
Blood Pressure								
-Systolic mm/H	150.10±8.04			113.21±11.22			60.97	0.000**
-Diastolic mm/H	90.42±9.60			69.36±9.59			54.33	0.000**

Table (8): Correlation between children total anxiety, depression and pain after training Implementation.

Items	Pearson correlation coefficient					
	Anxiety score		Depression score		Pain score	
	Pearson	Sig	Pearson	Sig	Pearson	Sig
Mindfulness level	.406	.000	.523	.000	.411	.000

Is significant at the 0.01 level (2- tailed).

4. DISCUSSION

Hemodialysis is technically feasible in children of all ages. Although the principles of HD are similar for adults and children, there are technical aspects of the procedure and complications that are unique to the pediatric population **(Rees et al., 2015).** The exact physiological effects of meditation differ from one person to another, and depend on the meditator's experience and discipline. However, in general, meditation can bring profound physical, psychological, emotional and spiritual benefits. These tend to increase with a more frequent meditation practice and are more pronounced in experienced meditators. Meditation causes a reduction in the body's metabolism, which results in a decreased heart and respiratory rate, and decreased b; as well blood pressures reduction of stress reactions, reducing the harmful effects it has on the body **(Baer, 2013).**

Regarding to the personal characteristics of the studied children, according to table (1), was found that, the mean age of the studied children was 13.89± 1.89 years. This result was similar to the result of a study by ***Chery et al., (2017)*** entitled" mindful meditation for individuals with asthma and anxiety: promising results from a multiple baseline study," who reported mean age of the studied children was 13.19± 1.19 years.

According to gender of the studied children, the results of the current study showed that, more than half of them were males. This result was similar to the result of study by **Rady,*(2017)*** entitled" effect of cryotherapy on pain intensity at puncture sites of arteriovenous fistula for children undergoing hemodialysis therapy," who found that more than half of children were mal was(**60 %)**

According to level of education of the studied children results of the current study showed that, more than half of them were primary and regarding child ranking the findings showed that less than half of them were second. This result agree with the study by **Rady,*(2017)*** who found that less than half of them (**42.5 %)** were ranked as the second child in the family. And disagree with the study by ***Abou El Hana (2015)***, which study entitled "life's style of children with maintenance hemodialysis in the Middle of Delta," who found that the children with hemodialysis had negative impact on school achievement. The educational level of the studied children indicated negative impact of disease on school attendance and achievement.

As regard number of dialysis session per week, the current study found that most of children received 3 dialysis sessions per week, while the minority received 4 sessions per week. These findings are in an agreement with the study by ***El-Karmalawy et al.,(2010)*** which study entitled" knowledge, attitudes and practices of care givers of children with end stage renal disease on hemodialysis at Abu El Rish Pediatric University Hospital," who found that, the most of studied children had three times frequency/ week for hemodialysis. While only one child was attending four times weekly.

Regarding to duration of each dialysis session in hours the more than half of children reported 3 hours, while more than one third of them were between 4 hours. These findings were disagreement with ***El- Karmalawy et al., (2010)*** who found that 100% of studied children had four hours duration of hemodialysis. In addition, this study accordance with **Kilicoglu, (2016),** which study entitled" impact of end stage renal disease on psychological status and quality of life ," who showed that, number of dialysis sessions, 42.6% of the children took dialysis for less than three sessions per week and 57.4% of the children took dialysis for less than five sessions per week.

Table (3): Regarding children anxiety level, this study illustrated that, more than one third of the studied children had sever anxiety level at pre application meditation technique (P=<0.001), while two third of them had moderate anxiety level at post application Meditation Technique (P=<0.001). These findings are in an agreement with the study by **Fischer *et al*. (2012),** which study entitled" the prevalence of mental health and pain symptoms in general population samples reporting nonmedical use of prescription opioids: a systematic review and meta-analysis ," who reported that, the prevalence of anxiety in hemodialysis children's to be 12-52% which depends on different screening methods for anxiety. 45.7% of selected children on hemodialysis met criteria for anxiety disorder were to be 39.3% and 22.8% when evaluated by clinical interview. The researcher believes that this could be due to the negative impact of the disease and its management on the child temperament.

The current study revealed that more than one third of the studied children had severe pain at pre application meditation technique, while more than half of them had mild pain at post application meditation technique. This findings in the same lines with **Loosman, et al.,(2015),** which study entitled" association of depressive and anxiety symptoms with adverse events in Dutch chronic kidney disease patients: a prospective cohort study ," who reported that, prevalence of chronic pain ranged from 33% to 82%, while the prevalence of acute pain (current pain, intradialytic pain, and pain during the past 4 weeks) ranged from 21% to 92% showed very high prevalence of intradialytic pain, with only 8% of patients reporting no pain at all. Described their chronic pain as continuous (21%), frequent (18%), intermittent (47%), and rare (15%). Indicated high prevalence of children with moderate or severe pain. Reported prevalence of severe/intensive pain ranged from 0% 45 to 76%. The children with hemodialysis had many negative impacts on their physical status, daily activities, and psychological condition and on their school achievement.

Concerning children depression level, this study reported that, more than one third of the studied children had moderate and sever depression level at pre application meditation technique, while more than one third of them had mild depression level at post application meditation technique. This study agreement with **Paimer *et al*. (2013)**,which study entitled" prevalence of depression in chronic kidney disease: systematic review and meta analysis of observational studies ," who revealed that, present difference between the percentage of depression in dialyzed children (total 67.84%),there are high statistical significance (p<0.01). Depression is much more expressed in hemodialysis children than in the general population. Minimal depression will be transformed in a group without any depression (21.43%) because obtained scores

were below 10. Still, 67, 84% of all dialyzed children confirmed some level of depression. This findings in the same lines with **Goldstein, et al.,(2006),** which study entitled" health-related quality of life in pediatric patients with ESRD ," who reported that, chronic kidney diseases during childhood and adolescence significantly increases the risk of emotional and behavioral disorders. Children with chronic kidney diseases can present psychological disorders caused not only by the disease itself, but also by the treatment. Encouragement to regular exercise training could be problematic in the presence of depressive symptoms children's who had sleep disturbances followed no regular exercise regimen.

Investigating the effect of meditation therapy, this study revealed that, the majority of the studied children had low level of mindfulness level at pre application meditation technique, while more than two third of them had high level of mindfulness level at post application Meditation Technique**.** This findings in the same lines with **Warady, et al.,(2014),** which study entitled that" optimal care of the infant, child, and adolescent on dialysis ," who showed that, a significant difference between the mean score of general health disorder and its subscales (physical symptoms, anxiety and sleep disorders, symptoms of social functioning failure, and depression in the experimental group immediately and 1 month after meditation intervention ($P < 0.05$). the effect of mindfulness on general health of pediatric patients undergoing hemodialysis. The result of the current study matches with a study had done by **Pardenjani, et al.,(2008),** which study entitled that" the effect of self-care teaching by video tape on physical problems and quality of life in dialysis patients ," who founded that, mindfulness had effect on reducing the severe pain in children with chronic headaches. Mindfulness skills have a significant effect on the reduction and recurrence of physical symptoms. Therefore, it seems that the training of mindfulness increases the attention of the individual toward physical emotions and its training makes the children mental and physical emotions organized and helps the sensation and acceptance of physical phenomena, as they happens, helps to improve the physical symptoms of children.

The present study indicated there were highly statistically significant differences between mean score of physiological measurement pre and post application meditation technique. The result of the current study matches with a study had done by This study agreement with **Marciano, et al.,(2010),** which study entitled" mental disorders and quality of life in pediatric patients with chronic kidney disease ," who illustrated that, exercise play positive effect in the promotion of positive mental health and psychosocial outcomes will ultimately be reduced to some physiological system. That perceived psychosocial benefits may occur in the absence of clearly identifiable changes in physiological parameters, just as it is possible to establish physiological changes in the absence of any perceived psychological benefits.

It was found from the present study that there was positive correlation between children total anxiety, depression and pain (p value < .001) after training implementation. This finding agree with **Shennan, et al., (2011),**which study entitled" What is the evidence for the use of mindfulness-based intervention sin cancer care," who pointed that, mindfulness as a targeted intervention that would be helpful for patients affected with chronic pain and incorporates formal practice of yoga, body scan, walking meditation, and sitting meditation with informal practice Mindfulness is typically taught using practice techniques that include sitting meditation, hatha yoga, walking meditation and body scan exercises. Mindfulness walking exercises encourage people to slowly walk paying attention to the breath, heartbeat, and every associated movement that the function of walking necessitates.

5. CONCLUSION

According to the results, the majority of studied children had high level of anxiety, depression and pain and the majority of studied children had low level of mindfulness. All children who practice meditation technique experienced significantly less anxiety, depression and experienced decrease in total pain level scores. In addition, a decrease in sympathetic activity occurred after practicing meditation technique, children having meditation express lower pulse and respiration rate and blood pressure post meditation than pre meditation.

6. RECOMMENDATION

- Plan and develop meditation technique for parent of children with chronic renal failure to reach them how to meet their needs.
- The meditation technique can be used as a routine nursing intervention for all hemodialysis patients
- Establishing an in-service training program for nurses and physician to acquire skills of meditation technique for hemodialysis patients to minimize pain intensity, anxiety and depression to enhance recovery.

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