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

*; **Basma R. Abdel Sadik **; Amal A. Abd –El Salam**

* Assistance Professor of Pediatric Nursing /Faculty of Nursing/Benha University

** Lecturer of Pediatric Nursing/Faculty of Nursing/Benha University

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 (٤٧) undergoing hemodialysis therapy through ٤ 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 pre and post application meditation technique. **This study concluded that:** Application of the meditation technique improved the physiological and psychological change and less sever pain on children with chronic kidney disease on hemodialysis. 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. **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.

Key words: Meditation Techniques, Mindfulness, Chronic Kidney Disease and Hemodialysis

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 **(١)**

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 **(٢).**

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 ٢,٧٨٦,٠٠٠ with a ٦ -٧٪ growth rate continues to increase at a significantly higher rate than the world population. Hemodialysis remained the most common treatment modality, with approximately ١,٩٢٩,٠٠٠ patients undergoing hemodialysis (٨٩٪ of all dialysis patients) **(٣).** In Egypt; End stage renal disease (ESRD)is growing by ١٠٠٪ annually; the estimated

annual incidence of ESRD is around ٧٤ per million and the total prevalence of patients on dialysis is ٢٦٤ per million, also there are ٩٠,٠٠٠ patients die each year because of kidney failure **(٣).**

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) (٤). 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 **(٥)**

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 **(٦).**

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 **(٧).** 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 **(٥).** 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 ١٦ hemodialysis machines. Each room contained ٨ hemodialysis machines.

Subjects:

Study subjects was consist of purposive sample of children (٤٧) undergoing hemodialysis therapy through ٤ 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 ١٣-١٨ 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 (٢٠١٦)**, 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 from٠-٢. The total pain score was ١٠. Mean score for the different levels of pain was calculated as No pain (٠), Mild pain (١-٣), moderate pain (٤-٦), severe pain (٧-٨) and very sever (٩-١٠).

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.

١-Beck Anxiety Inventory (BAI)

This scale was adapted from **Beck, et al (١٩٨٨)**, to assess children anxiety level. The total anxiety score was ٦٠. Mean score for the different levels of anxiety was calculated as not at all (٠), Mild (١), moderate (٢) and severe (٣).

The total score for anxiety was classified as the following

-Normal anxiety from ٠-٢٠ score

-Mild anxiety from ٢٠- ٤٠ score

-Moderate anxiety ٤٠-٦٠ score

-Sever anxiety above ٦٠ degrees

٢-Depression self- rating scale for children

This scale was adapted from **Faulstich, et al (١٩٨٦)**, to assess depression level in children and adolescents. It consist of (١٦) question, Mean score for the different levels of depression was calculated as not at all (٠), a little (١), Some (٢), a lot (٣). The total depression score was ٤٨. The total score for depression was classified as the following

-Normal depression from ١-١٥ degrees

-Mild depression from ١٦- ٣٠ degrees

-Moderate depression from ٣١-٤٠ degrees

-Sever depression above ٤٠ degrees

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

This scale was adapted from **Greco, et al., (٢٠١١)**, to assess mindfulness in children and adolescents. It consist of (١٠) question, the total mindfulness score was ٤٠. Mean score for the different levels of mindfulness was calculated as never true (٠), rarely true (١), sometimes (٢), Often true(٣) and always true(٤). The total score for mindfulness was classified as the following

-High mindfullness٢٠-٤٠ degrees

-Low mindfulness below ٢٠ 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 ٠.٨٣ for the structured interviewing schedule, and ٠.٨٩ for Pain measurement scale

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 ١٠ % of the total study sample (٥ 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 ٢٠ 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 ٢٠١٧ to the end of March ٢٠١٨. The researchers were available three days/week (Saturday, Monday, and Thursday) from ٩am-١pm. The total number of children included in the study ٤٧ child ٥ of them weren't excluded in the pilot study. So the final total of study sample was (٤٧) who agree to participate in the study, the study group divided into (٩groups), each group consists of (٥: ٦students). 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 ٢٠–٣٠minutes. During this period the researchers observed each child's practice through pre and post application. The total numbers of sessions were ٥. It divided as follows: one session for knowledge, and ٤ sessions for the practice. The time of knowledge session ranged between ١٥ minutes to ٢٠ minutes. The children divided into groups, each group contains (٥-٦) 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 ٣٠minutes to ٤٥ minutes, and numbers of sessions were ٤ 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 eight weeks, with ١٦ weekly meetings lasting ٤٥ minutes. A noise-free room was used, such as an auditorium, with padded chairs, and a quiet environment. During the first ١٥ 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 ٢٠. 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 ($X^{٢}$ -value). Also, Pearson correlation coefficient test was used. P value <٠.٠٥ was considered statistically significant (*) while >٠.٠٥ statistically insignificant and P value <٠.٠٠١ was considered highly significant (**) in all analyses.

Result:

Table (١): This table shows the characteristics of the studied children. The mean age of the children was years, more than half of them (٦١.٧٠%) were males, more than half of them (٥٧.٤٥٪) were primary and less than half of them (٤٤.٦٨%) were ranked as the second child in the family.

Table (٢): This table reveals the medical history of the studied children. It reveals that almost half of the children (٤٤.٦٨٪) the hemodialysis duration were between ١- < ٣ years. Regarding number of dialysis ٣ sessions per week, most of children (٧٨.٧٢٪) and the duration of each dialysis session in hours was reported by more than half of children (٦١.٧٠٪) were ٣ hours.

Table (٣): 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=<٠.٠٠١).

Figure (١) : Indicate that, more than one third (٤٤.٧٪) of the studied children had sever anxiety level at pre application meditation technique (P=<٠.٠٠١). while two third (٦١.٧٪) of them had moderate anxiety level at post application Meditation Technique (P=<٠.٠٠١).

Table (٤): Indicate that, more than one third (٤٢.٦٪) of the studied children had sever pain at pre application meditation technique, while more than half (٥٩.٦٪) of them had mild pain at post application meditation technique.

Table (٥): 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=<٠.٠٠١).

Figure (٣): Indicate that, more than one third (٤٤.٧٪) of the studied children had moderate and sever depression level at pre application meditation technique, while more than one third (٤٦.٨٪) of them had mild depression level at post application meditation technique.

Table (٦): 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=<٠.٠٠١).

Figure(٤): Indicate that, the majority (١٠٠.٠٪) of the studied children had low level of mindfulness level at pre application meditation technique, while more than two third (٦٦.٠٪) of them had high level of mindfulness level at post application Meditation Technique

Tables (٧): 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 were٣٧.٢±٠.٥٣ and٤٩. ٥ ±٠.١٦ respectively. While the mean heart rate for children pre and post application meditation technique were ٩٩.٤±١١.٥beat /minute and ٩٤.١±٨.٢٨beat /minute respectively. Also it was found that the mean of the respiration of them pre and post application meditation technique were ٢٦.٢±٢.٥ and ٢٢.٦±١.٨٢ respectively. Also it was found that the mean of the Blood Pressure for children pre and post application meditation technique were٩٨.٢±١٤.٥ mmH/ ٩٩.١±٨.٢١ mmH respectively. This table shows that there were highly statistical significant differences between physiological measurement pre and post application meditation technique.

Table (٨): Revealed that there is positive correlation between children total anxiety, depression and pain (p value < .٠٠١) after training implementation.

Table (١): Distribution of the studied children regarding their personal characteristics (n=٤٧).

Items	No	%
Age in years		
▪ <١٣	٦	١٢.٧٧
▪ ١٣- <١٥	١٧	٣٦.١٧
▪ ١٥- ≤١٨	٢٤	٥١..٠٦
$\overline{X}$ ± SD ١٣.٨٩±١.٨٩		
Gender		
▪ Male	٢٩	٦١.٧٠
▪ Female	١٨	٣٨.٣٠
Education		
▪ Primary	٢٧	٥٧.٤٥
▪ Preparatory	١٠	٢١.٢٨
▪ Secondary	٧	١٤.٨٩
▪ University	٣	٦.٣٨
Child ranking		
▪ First	١٢	٢٥.٥٣
▪ Second	٢١	٤٤.٦٨
▪ Third	١٤	٢٩.٧٩

Table (٢): Distribution of the studied children regarding their medical history (n=٤٧).

Items	No	%
Duration of hemodialysis (years)		
< ١	٣	٦.٣٨
١- < ٣	٢١	٤٤.٦٨
٣- < ٦	١٤	٢٩.٧٩
٦- < ٩	٤	٨.٥١
Others (≥ ١٠)	٥	١٠.٦٤
Numbers of hemodialysis sessions per week		
٣ sessions	٣٧	٧٨.٧٢
٤ sessions	١٠	٢١.٢٨
Duration of hemodialysis session.		
٣ hours	٢٩	٦١.٧٠
٤ hours	١٨	٣٨.٣٠
$\overline{X}$ **± SD** ٣.٣٨±.٤٩١		

Table (٣): Mean and standard deviation of the studied children anxiety level undergoing hemodialysis at pre\ post of application Meditation Technique (n=٤٧).

Item	Study group(n=٤٧)		(t) test	P
	Pre-application Meditation Technique	Post-application Meditation Technique		
	$\bar{X}$ ±SD	$\bar{X}$ ±SD		
Numbness or tingling	٢.٢٣±.٧٥٧	١.٤٦±.٨٨٠	١٩.٨٦	٠.٠٠
Feeling hot	٢.٢١±.٧٤٩	١.٢٧ ±.٨٥٢	١٨.٢٥	٠.٠٠
Wobbliness in legs	٢.٢٧±.٧٤٣	١.٢٥±.٨٤٦	١٨.١٤	٠.٠٠
Unable to relax	٢.٣١±.٦٩٤	١.٨٠±.٧١١	٢٦.٨٥	٠.٠٠
Fear of worst happening	٢.٣١±.٧٢٥	١.٥٩±.٧٧٠	٢٢.٩٠	٠.٠٠
Dizzy or lightheaded	٢.٢٧±.٧١٣	١.٥٩±.٧٤١	٢٣.٤٤	٠.٠٠
Heart pounding / racing	٢.٢١±.٧٤٩	١.٦٣±.٧٩١	٢٢.٧٧	٠.٠٠
Unsteady	٢.٢١±.٧٧٨	١.٥٩±.٨٥١	٢١.٢٥	٠.٠٠
Terrified or afraid	٢.٣٨±.٦٧٧	١.٦١±.٧٦٧	٢٣.٧٤	٠.٠٠
Nervous	٢.٢٥±.٧٣٦	١.٥٥±.٦٥٣	٢٣.٧٦	٠.٠٠
Feeling of choking	٢.٣٤±.٧٠٠	١.٢٩±.٨٣١	١٩.٠٢	٠.٠٠
Hands trembling	٢.٢٥±.٧٣٦	١.٤٢±.٨٠٠	٢٠.٤٧	٠.٠٠
Shaky /unsteady	٢.٣٤±.٧٠٠	١.٣٤±.٦٦٨	٢١.٠٨	٠.٠٠
Fear of losing control	٢.٣٦±.٧٠٤	١.٤٤±.٦٨٥	٢٢.٢٣	٠.٠٠
Difficulty in breathing	٢.٢٣±.٧٥٧	١.٣٤±.٧٥٩	١٩.٧٢	٠.٠٠
Fear of dying	٢.٢٥±.٧٣٦	١.٦٥±.٦٣٥	٢٥.٤٢	٠.٠٠
Scared	٢.٢٣±.٧٢٨	١.٩١±.٩٠٤	٢٤.١٥	٠.٠٠
Indigestion	٢.٢٧±.٧١٣	١.٦٨±.٧٨٣	٢٣.٨٩	٠.٠٠
Face flushed	٢.٢٣±.٧٢٨	١.٨٧±.٨٧٥	٢٤.٢٣	٠.٠٠
Hot / cold sweats	٢.٢٥±.٧٣٦	١.٨٢±.٨٤٢	٢٤.٢٨	٠.٠٠
Total	٤٥..٤٨± ١٢.٩٨	٣١..٢١± ١٠..٣٩	٢٧.٠٩٤	٠.٠٠

Figure (١): Total score of the studied children anxiety level undergoing hemodialysis according at pre \ post of application Meditation Technique (n=٤٧).

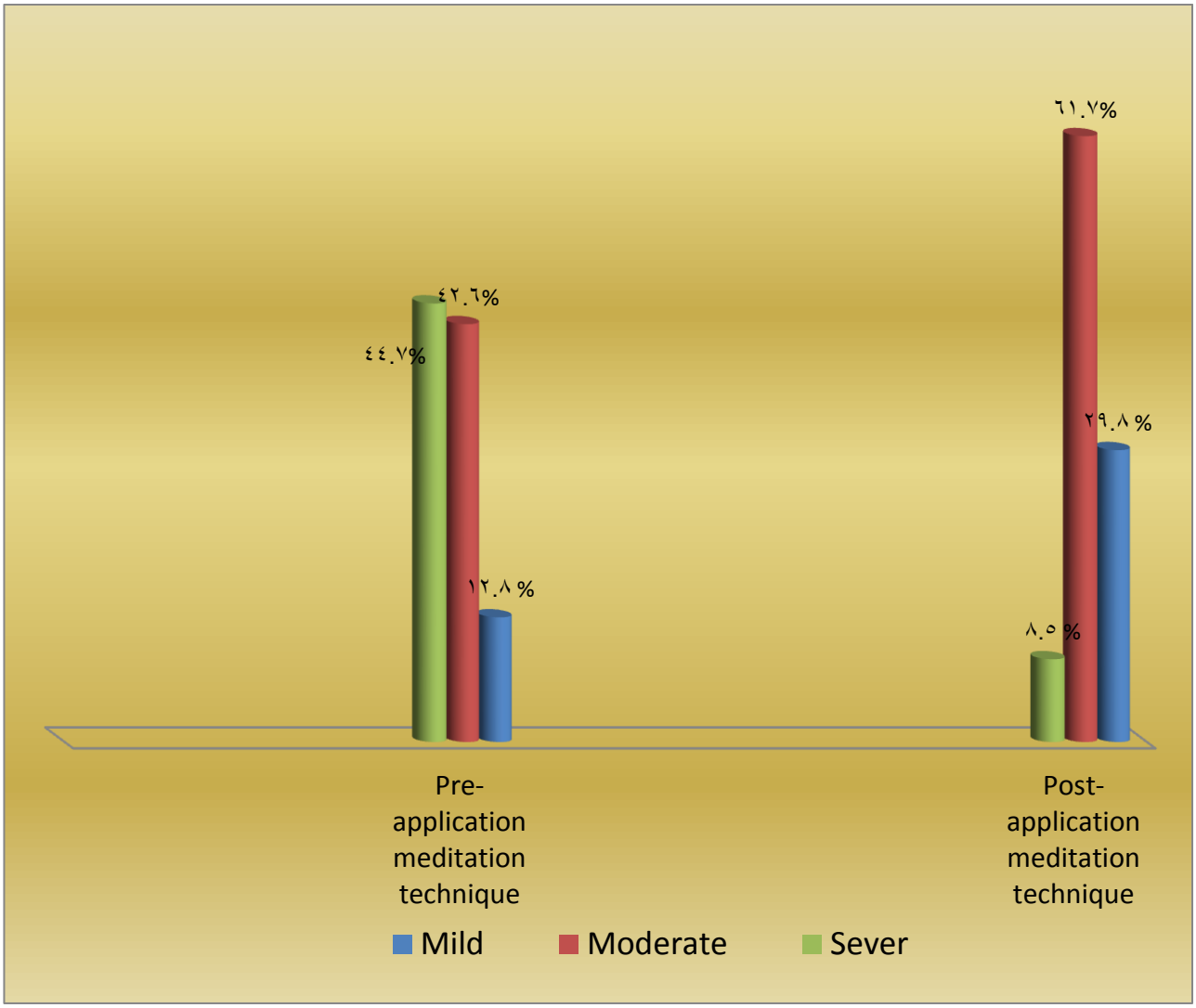

Table (٤): Total score of the studied children pain level undergoing hemodialysis at pre and post of application Meditation Technique (n=٤٧).

Item	(n=٤٧)				X٢ test	P
	Pre- application meditation technique		Post- application meditation technique			
	No	%	No	%		
Mild pain	٩	١٩.١	٢٨	٥٩.٦	١٦.٤١٣	٠.٠٠
Moderate pain	٧	١٤.٩	١٢	٢٥.٥		
Sever pain	٢٠	٤٢.٦	٦	١٢.٨		
Very sever pain	١١	٢٣.٤	١	٢.١		
Total	٤٧	١٠٠	٤٧	١٠٠		

Fuger (٢): Total score of the studied children pain level undergoing hemodialysis at pre and post of application Meditation Technique (n=٤٧).

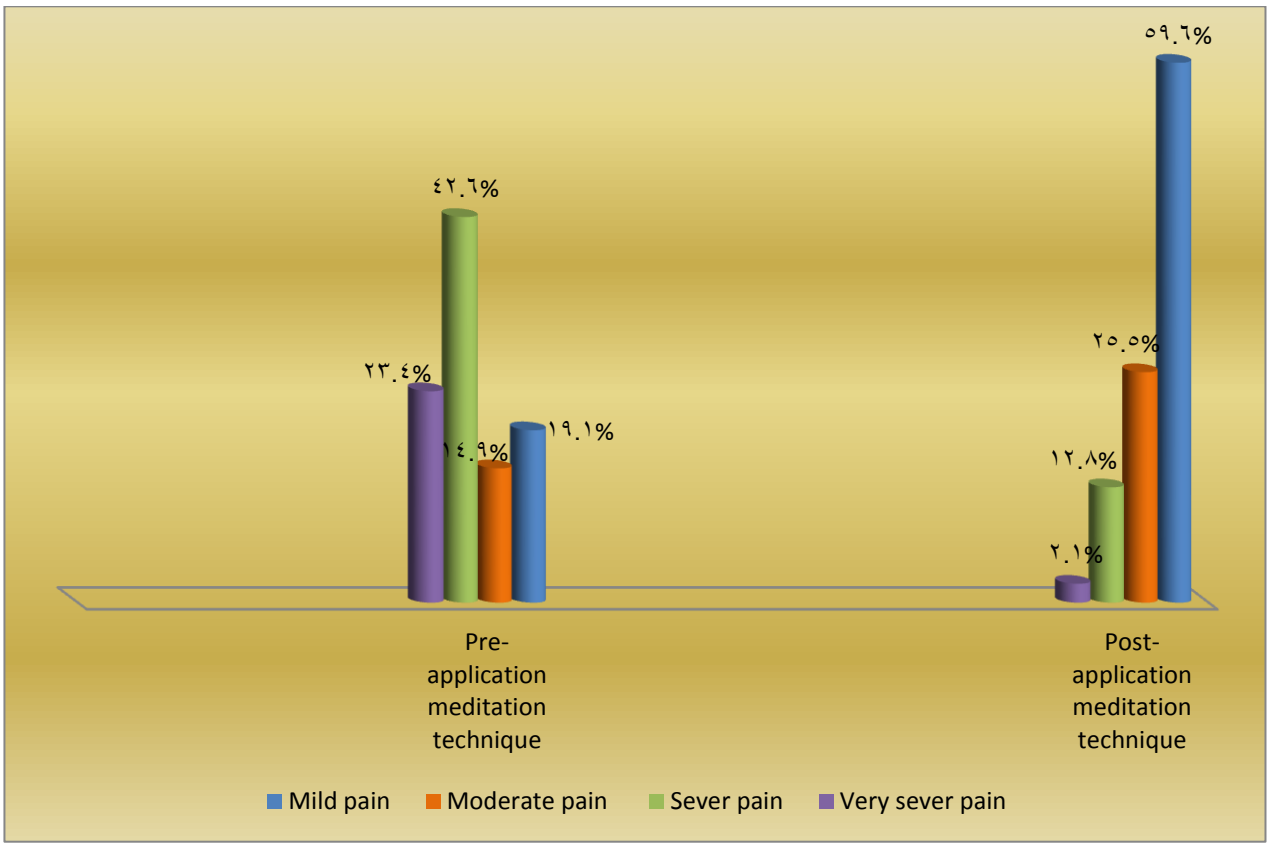

Table (٥): Mean and standard deviation of the studied children depression level undergoing hemodialysis at pre\ post of application Meditation Technique (n=٤٧).

Item	(n=٤٧)		Paired (t) test	P
	Pre-application Meditation Technique	Post-application Meditation Technique		
	$\overline{X}$ ±SD	$\overline{X}$ ±SD		
Feeling sadness	٢.٢٣±٠.٦٩	١.٦٥±١.٠٤	٢٠.٢٥	٠.٠٠
Attention for future	٢.١٧±٠.٧٠	١.٢٩±٠.٩٩	١٧.٤٤	٠.٠٠
Feeling failure	٢.١٠±٠.٨٤	١.٣٦±٠.٧٦	١٩.٠٦١	٠.٠٠
Feeling satisfaction	٢.١٩±٠.٧٧	١.٣١±٠.٨١	١٨.٩٠	٠.٠٠
Feeling guilty	٢.٢٣±٠.٧٢	١.٦٣±٠.٨٩	٢١.٦٩	٠.٠٠
Feeling punished	٢.٢١±٠.٧٢	١.٥٥±٠.٩٥	٢٢.٩٥	٠.٠٠
Feeling worst	٢.١٩±٠.٧٤	١.٦١±٠.٧٦	٢٣.٦٨	٠.٠٠
Feeling of killing self	٢.٢٧±٠.٧١	١.٧٨±٠.٨٥	٢٢.٧٨	٠.٠٠
Feeling crying	٢.٢٩±٠.٧٤	١.٦٨±٠.٨٦	١٥.٤١	٠.٠٠
Feeling irritation	٢.٢١±٠.٧٤	١.٤٢±٠.٧١	٢١.٢٧	٠.٠٠
Feeling lost interest in other people	٢.٢٣±٠.٧٢	١.٥٧±٠.٧٧	٢٢.٥٨	٠.٠٠
Decision making	٢.٢٥±٠.٧٠	١.٦٥±٠.٧٨	٢٣.٦٦	٠.٠٠
Appearance	٢.٢٧±٠.٧١	١.٦٣±٠.٧٣	٢٤.٠٦٧	٠.٠٠
Sleep	٢.٢٩±٠.٧١	١.٢٩±٠.٦٥	١٩.٤٢	٠.٠٠
Tired	٢.٢٣±٠.٧٢	١.٤٤±٠.٧٤	٢١.٤٠	٠.٠٠
Appetite	٢.١٩±٠.٧٤	١.٥٣±٠.٦٨	٢٣.٠١٥	٠.٠٠
Total	٤٢.٢٩± ٩.٣١	٢٨.٩١±٧.٩٥	٣١.٥٨١	٠.٠٠

Fuger (٣): Total score of children depression level at pre\ post of Application Meditation Technique (n=٤٧).

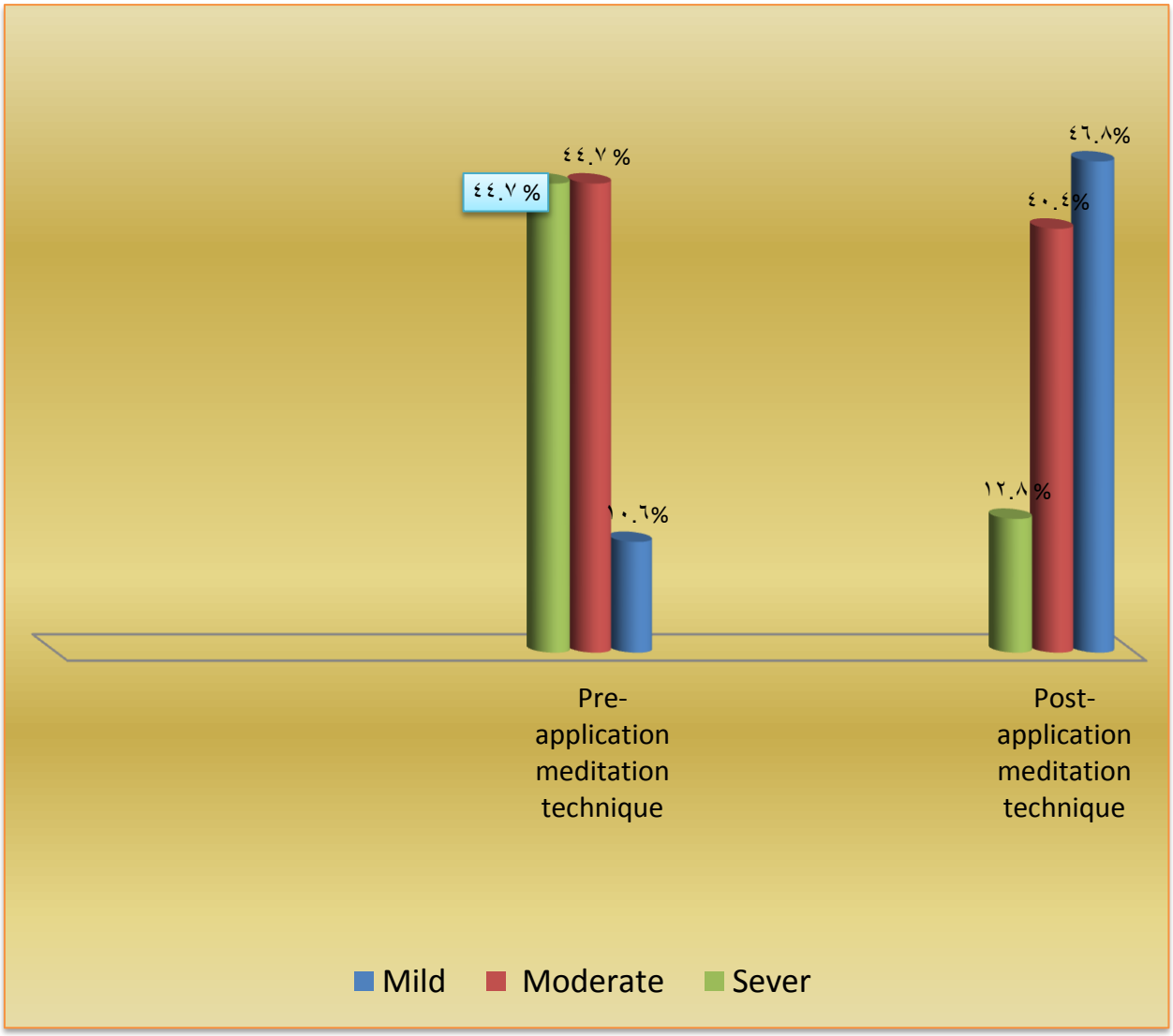

Table (٦): Mean and standard deviation of the studied children mindfulness level undergoing hemodialysis at pre\ post of application meditation technique (n=٤٧).

Item	Pre-application Meditation Technique	Post-application Meditation Technique	Paired (t) test	P
	$\overline{X}$ ±SD	$\overline{X}$ ±SD		
I get upset with myself for having feelings that don't make sense	٠.٨٩±٠.٧٥	٢.١٧±٠.٨٤	١٤.٥١٣	٠.٠٠
At school, I walk from class to class without noticing what I'm doing.	١.٣١±٠.٤٧	١.٨٧±٠.٩٩	١٨.٨٥٢	٠.٠٠
I keep myself busy so I don't notice my thoughts or feelings	٠.٦٣±٠.٩٤	١.٠٢±١.٠٥	٧.٩٤٨	٠.٠٠
I tell myself that I shouldn't feel the way I'm feeling	١.٦٥±١.٠٨	٢.٦٥±٢.٤٨	١٠.٦٠٤	٠.٠٠
I push away thoughts that I don't like.	٠.٧٢±٠.٦٨	١.٦٨±١.٠٠	١١.٩٠٣	٠.٠٠
It's hard for me to pay attention to only one thing at a time.	٠.٧٤±٠.٧٠	١.٧٨±٠.٩٧	١٢.٣١٧	٠.٠٠
.I get upset with myself for having certain thoughts	٠.٨٧±٠.٨٢	٢.٠٦±١.٠٣	١٢.٨٩	٠.٠٠
I think about things that have happened in the past instead of thinking about things that are happening .right now	٠.٦٣±٠.٩٤	١.٠٢±١.٠٥	٧.٩٤٨	٠.٠٠
I think that some of my feelings are bad and that I .shouldn't have them	٠.٨٩±٠.٧٥	٢.١٧±٠.٨٤	١٤.٥١٣	٠.٠٠
I stop myself from having feelings that I don't like.	٠.٧٢±٠.٦٨	١.٦٨ ±١.٠٠	١١.٩٠٣	٠.٠٠
Total	**٩.٠٦±٣.١٣**	**١٨.٠٢±٥.٢١**	**٢١.١٢٩**	**٠.٠٠**

Fuger (٤): Total score of studied children mindfulness level at pre\ post of application Meditation Technique (n=٤٧).

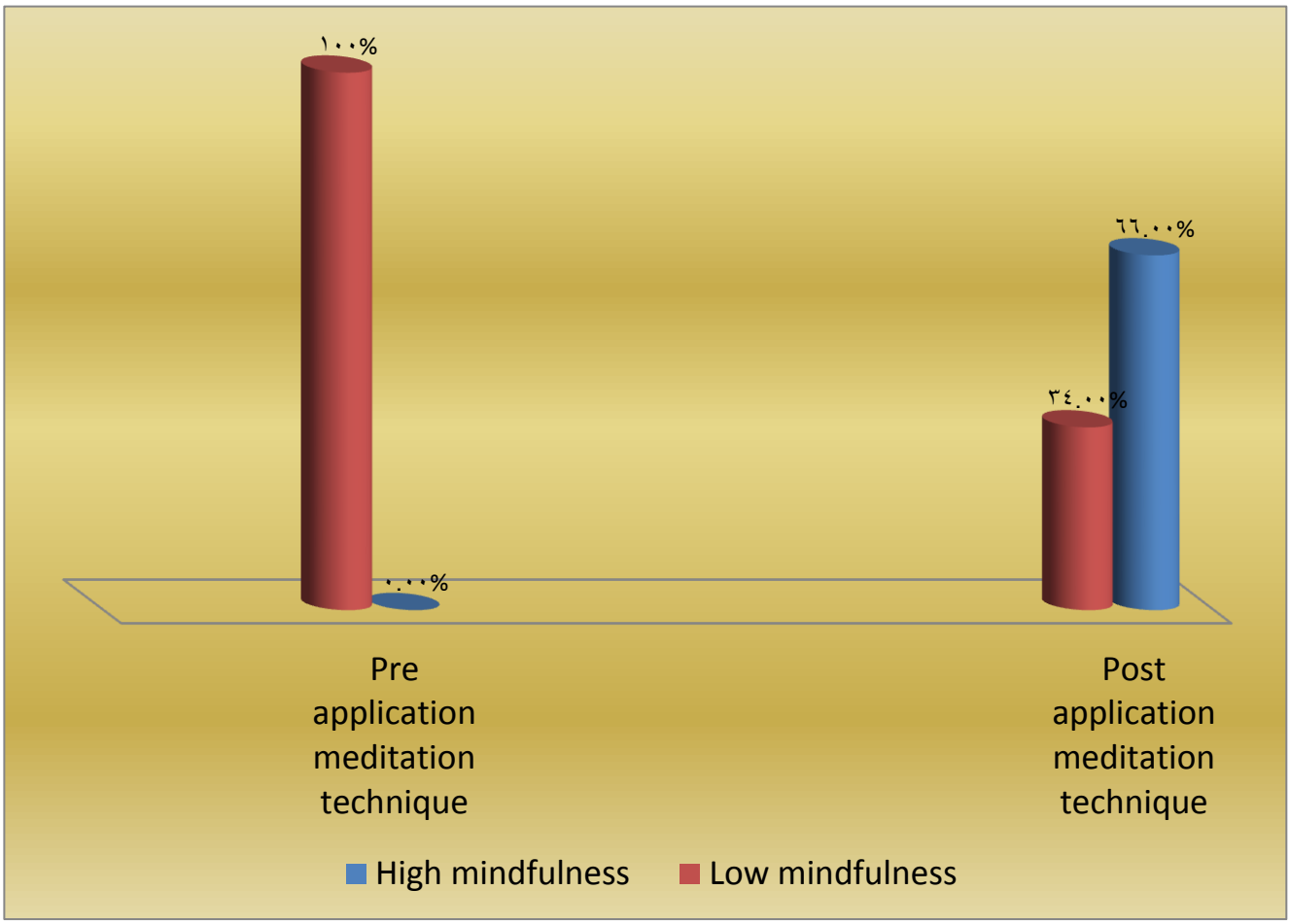

Table (٧): Mean and standard deviation of physiological measurement of children at pre\ post application Meditation Technique (٤٧)

physical measurement	Pre			Post			T	p-value
	Mean	±	SD	Mean	±	SD		
Temperature	٣٧.٢	±	٠.٥٣	٤٩.٥	±	٠.١٦	٧.٥٤	٠.٠٠٠**
Heart rate beat/mint	٩٩.٢	±	١١.٥	٩٤.١	±	٨.٢٢	٨.٠٢	٠.٠٠٠**
Respiration cycle/ mint	٢٦.٢	±	٢.٤	٢٢.٦	±	١.٨٢	٢٤.٠٥	٠.٠٠٠**
Blood Pressure								
-Systolic mm/H	١٥٠.١٠	±	٨.٠٤	١١٣.٢١	±	١١.٢٢	٦٠.٩٧	٠.٠٠٠**
-Diastolic mm/H	٩٠.٤٢	±	٩.٦٠	٦٩.٣٦	±	٩.٥٩	٥٤.٣٣	٠.٠٠٠**

Table (٨): 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	.٤٠٦	.٠٠٠	.٥٢٣	.٠٠٠	.٤١١	.٠٠٠

Is significant at the ٠.٠١ level (٢- tailed).

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., ٢٠١٥).** 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, ٢٠١٣).**

Regarding to the personal characteristics of the studied children, according to table (١), was found that, the mean age of the studied children was ١٣.٨٩± ١.٨٩ years. This result was similar to the result of a study by ***Chery et al., (٢٠١٧)*** 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 ١٣.١٩± ١.١٩ 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,*(٢٠١٧)*** 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(**٦٠ %)**

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,*(٢٠١٧)*** who found that less than half of them (**٤٢.٥ %)** were ranked

as the second child in the family. And disagree with the study by ***Abou El Hana (٢٠١٥)***, 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 ٣ dialysis sessions per week, while the minority received ٤ sessions per week. These findings are in an agreement with the study by ***El-Karmalawy et al.,(٢٠١٠)*** 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 ٣ hours, while more than one third of them were between ٤ hours. These findings were disagreement with ***El- Karmalawy et al., (٢٠١٠)*** who found that ١٠٠٪ of studied children had four hours duration of hemodialysis. In addition, this study accordance with **(Kilicoglu, ٢٠١٦),**which study entitled" impact of end stage renal disease on psychological status and quality of life ," who showed that, number of dialysis sessions, ٤٢.٦٪ of the children took dialysis for less than three sessions per week and ٥٧.٤٪ of the children took dialysis for less than five sessions per week.

Table (٣): 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=<٠.٠٠١), while two third of them had moderate anxiety level at post application Meditation Technique (P=<٠.٠٠١). These findings are in an agreement with the study by **Fischer *et al.* (٢٠١٢),** 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 ١٢-٥٢٪ which depends on different screening methods for anxiety. ٤٥.٧٪ of selected children on hemodialysis met criteria for anxiety disorder were to be ٣٩.٣٪

and ٢٢.٨٪ 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.,(٢٠١٥),** 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 ٣٣٪ to ٨٢٪, while the prevalence of acute pain (current pain, intradialytic pain, and pain during the past ٤ weeks) ranged from ٢١٪ to ٩٢٪ showed very high prevalence of intradialytic pain, with only ٨٪ of patients reporting no pain at all. Described their chronic pain as continuous (٢١٪), frequent (١٨٪), intermittent (٤٧٪), and rare (١٥٪). Indicated high prevalence of children with moderate or severe pain. Reported prevalence of severe/intensive pain ranged from ٠٪ ٤٥ to ٧٦٪. 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.* (٢٠١٣)**,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 ٦٧.٨٤٪),there are high statistical significance ($p<٠.٠١$). Depression is much more expressed in hemodialysis children than in the general population. Minimal depression will be transformed in a group without any depression (٢١.٤٣٪) because obtained scores were below ١٠. Still, ٦٧, ٨٤٪ of all dialyzed children confirmed some level of depression. This findings in the same lines with **Goldstein, et al.,(٢٠٠٦),** 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.,(٢٠١٤),** 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 ١ month after meditation intervention ($P <$ ٠.٠٥). 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.,(٢٠٠٨),** 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.,(٢٠١٠),** 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 < .٠٠١) after training implementation. This finding agree with **Shennan, et al., (٢٠١١),**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.

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.

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.

Referance :

١- **National Kidney Foundation of Arizona, (٢٠١٧):** Children with kidney disease.p١. Available at: http://azkidney.org/children-kidney-disease

٢- **Petingola, G.(٢٠١٢):** Relaxation therapy and mindfulness meditation one-day workshop for nephrology social workers: Exploring the impact of this training on professional practice. National Kidney Foundation Journal of Nephrology Social Work. Vol ٣٨(٢) Published online ٢٠١٥ Sep ٢١. doi: ١٠.١١٨٦/s١٢٨٨٢-٠١٥-٠١٤٩-٧

٣- **El-Abbassy, A., Atia,M., Alam, F.(٢٠١٥):** The effectiveness of practical guides on burden's coping strategies among caregiver of children undergoing hemodialysis. International Journal of Nursing. Vol. ٢(٢). Available at: http://dx.doi.org/DOI: ١٠.١٥٦٤٠/ijn.v٢n٢a١٣

٤- **Birdee, G. S., Phillips, R. S., and Brown, R. S.(٢٠١٣):** Use of complementary and alternative medicine among patients with end-stage renal disease. Evidence Based Complementary Alternative Medicine. Available at: https// doi: ١٠.١١٥٥/٢٠١٣/٦٥٤١٠٩

٥- **Eisler, M. (٢٠١٥):** Meditation styles and techniques explained. P٢. Available at:www.mindufulminutes.com/category/meditation

٦- **Rempel, K.D. (٢٠١٢):** Mindfulness for children and youth: A review of the literature with an argument for school-based implementation. Canadian Journal of Counselling and Psychotherapy. Vol ٤٦ (٣). Available at: https:// kdrempel@shaw.ca

٧- ***Hothi D.K. , Laskin B.& Geary D.F(٢٠١٦):*** Pediatric KidneyDisease,١st ed, Pediatric Hemodialysis Prescription, Complications, and Future Directions, Springer Berlin Heidelberg , pp ١٧٢٥-١٧٦٥.

٨- **Swan, J. and Hamilton, P.(٢٠١٦):** Pain management for Oregon healthcare professionals. p٣. Wild Iris Medical Education, Inc. Available at: https:// wild iris medical education. com/ company/ corporation

٩- **Beck, A.T., Epstein, N., Brown, G. and Steer, R.A. (١٩٨٨):** An inventory for measuring clinical anxiety:Psychometric properties. Journal of Consulting and Clinical Psychology. vol ٥٦(٨).

١٠- **Faulstich, M.E., Carey, M.P. and Ruggiero, L. (١٩٨٦):** Assessment of depression in childhood and adolescence: An evaluation of the center for epidemiological studies depression scale for children (CES-DC). American Journal of Psychiatry. Vol ١٤٣(٨):١٠٢٤–١٠٢٧.

١١- **Greco, L., Baer, R. A. and Smith, G. T. (٢٠١١):** Assessing mindfulness in children and adolescents: Development and validation of the child and adolescent mindfulness measure (CAMM). Psychological Assessment, ٢٣, ٦٠٦-٦١٤

١٢- ***Rees L., Mattoo T. & Kim M. (٢٠١٥):*** Hemodialysis for children with chronic kidney disease. Avaliable at: http://www.uptodate.com/contents/hemodialysis-for-children-with-chronic- *kidney-disease.*

١٣- ***Baer ,RA., (٢٠١٣)*** : Mindfulness training as clinical intervention: A empirical conceptual and review. Clin Psychol-Sci Pr ١٠: ١٢٥-١٤٣

١٤- ***Cheryl M, Karen LOC, Nilani LS, Melissa AB, Gabriel BA, et al. (٢٠١٧)*** : Mindful Meditation for Individuals with Asthma and Anxiety: Promising Results from a Multiple Baseline Study. March ٢٣ Journal of Yoga & Physical Therapy

١٥- **Rady,R, El Said., (٢٠١٧):** Effect of Cryotherapy on Pain Intensity at Puncture Sites of Arteriovenous Fistula for Children Undergoing Hemodialysis Therapy**,**Doctoral thesis in in Pediatric Nursing, faculty of Nursing , Benha University.

١٦- ***Abou El Hana N.M., Sabry Y.Y., El Mahdy N.H & Mina S.A.(٢٠١٥):*** Life's style of children with maintenance hemodialysis in the middle of delta ,International Journal of Advanced Research , Volume ٣, Issue ٢, ٢٦٢-٢٧٤.

١٧- ***El- Karmalawy E., Habib N. , Fadel F& Mahmoud A(٢٠١٠):*** Knowledge, Attitudes and Practices of Care givers of Children with End Stage Renal Disease on Hemodialysis at Abu El Rish Pediatric University Hospital , Egyptian nursing journal, Vol ١٥, No.١,P١.

١٨- **Kilicoglu, A.G., Bahali, K.and Canpolat, N.(٢٠١٦):** Impact of end stage renal disease on psychological status and quality of life. Pediatr Int. vol ٥٨(١٢). Available at: https:// doi: ١٠.١١١١/ped.١٣٠٢٦

١٩- **Fischer B, Lusted A, Roerecke M. (٢٠١٢):** The prevalence of mental health and pain symptoms in general population samples reporting nonmedical use of prescription opioids: a systematic review and meta-analysis. J Pain. vol١٣: ١٠٢٩-١٠٤٤

٢٠- **Loosman, W., Rottier, M., Honig, A. and Siegert, C.(٢٠١٥):** Association of depressive and anxiety symptoms with adverse events in Dutch chronic kidney disease patients: a prospective cohort study**.** BMC Nephrol. vol١٦: ١٥٥.

٢١- **Paimer, S., Vaccio, M., Craig, J.C. (٢٠١٣):** Prevalence of depression in chronic kidney disease: systematic review and meta analysis of observational studies. Kidney Int.vol ٨٤. ١٧٩-١٩١.

٢٢- **Goldstein, S.L., Graham, N., Burwinkle, T., Warady, B., Farrah, R., Varni, J. W.(٢٠٠٦):** Health-related quality of life in pediatric patients with ESRD. Pediatr Nephrol. ٢١(٨).٤-٦.

٢٣-**Warady,B., Neu,A., Schaefer, F. (٢٠١٤):** Optimal care of the infant, child, and adolescent on dialysis. American Journal of Kidney Disease. Vol ٦٤, Issue ١. Available at: https://doi.org/١٠.١٠٥٣/j.ajkd.٢٠١٤.٠١.٤٣٠

٢٤- **Pardenjani, S., Mohammadi, E., Boroumand, B. (٢٠٠٨):** The effect of self care teaching by video tape on physical problems and quality of life in dialysis patients. Iran J Nurs. Vol ٢١

٢٥- **Marciano, R., Soares, C., Diniz, J., Lima, L.(٢٠١٠):** Mental disorders and quality of life in pediatric patients with chronic kidney disease. Brazillian Journal of Nephrology. Vol.٣٢ Issue ٣.Available at http://www.jbn.org.br/news

٢٦- **Shennan, C., Payne, S. and Fenlon, D. (٢٠١١):** What is the evidence for the use of mindfulness-based intervention sin cancer care. A review of Psycho-Oncology. vol ٢٠(٧).Available at: http:// doi:١٠.١٠٠٢/pon.١٨١٩

.

.