Original Article *Egyptian Journal of Health Care, 2016 EJHC Vol.7 No.2*

Effect of Relaxation Techniques in Controlling Anxiety among Patients with Essential Hypertension

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ABSTRACT

Essential hypertension is the most prevalent type of hypertension. It increases progressively with age. **Aim of study:** Was to assess the effect of relaxation technique "Progressive Muscle Relaxation (PMR)" in controlling anxiety among patients with essential hypertension. **Design:** A quasi-experimental study design was utilized. **Setting:** It was conducted on 40 patients with essential hypertension in the out-patient clinic of medical diseases - Ain Shams University Hospital. **Tools:** 1) A Structured Interview Questionnaire (SIQ): That was designed by the researchers based on recent local and international related literatures and articles, it was include, the socio-demographic data of the studied sample which are; age, sex, marital status, etc., it was also include the medical history and duration of illness, body mass index, blood pressure control and previous attendance of any courses or programs regarding relaxation techniques. 2) Patient Knowledge Questionnaire (PKQ): It was developed by the researchers to assess patients' knowledge about relaxation techniques. 3) Taylor Anxiety Scale: It was designed by Janet Taylor (1953) to assess level of anxiety. **Results:** There are highly statistically significant differences were found between pre and post training of relaxation techniques regarding the relationship between' level of anxiety and total knowledge of the patients. **Conclusion**: The implementation of relaxation techniques had a positive effect on anxiety and blood pressure of patients with essential hypertension. **Recommendation:** - Further research is required to study the effect of implementing the developed self-care guide on such a group of the hypertensive patients.

Key words: Relaxation techniques, anxiety, essential hypertension.

Introduction:

Hypertension is a common disease with significant morbidity and mortality rate. It is ranked as the third cause of disability and anticipated to increase to almost 30% by 2025 (**Hodgkinson *et al*., 2015**) and (**Madhur, 2014**) . In Egypt, it has been estimated to be responsible for 9% of life lost. The overall prevalence rate of pre-hypertension and hypertension in Egypt were 57.2% and 17.6% respectively. Only 25.2% of the population had normal blood pressure levels of <120/80 mmHg. (**Ibrahim, 2016**) and (**Wikipedia, 2014**).

Essential hypertension affects 90-95% of hypertensive patients, with this type of hypertension, there is no single identifiable cause; its pathogenesis is multifactorial and can trigger risk as genetic factors which play an important role. Environmental factors such as, sedentary lifestyle, stress, high salt (sodium) intake, smoking and obesity, insulin

resistance and aging are significant (**Emmanoel, 2014** and **WHO, 2014).**

Many non-drug therapies such as diet, exercise and relaxation therapies have proved superior compared to drugs in cases of hypertension. It can be used to control and bring down the blood pressure with no side effects (**James ,*et al*., 2014**).

Relaxation is one of self-management technique that is based on the workings of the sympathetic and parasympathetic nervous system .(**Patel, *et al.*,2012**) and (**Kumutha, *et al*.,2014**) .

According to **John, *et al*., (2016)** who added that, progressive muscle relaxation technique (PMRT) is the easiest one to be learnt and administered. This intervention is inexpensive, available, self induced by the patient and free from side effects. It is a systematic technique to reduce stress and attain a deep state of relaxation. It increases body's immunity and sense of well-being through endorphins release. Ultimately, an improvement in adaptive functioning may be realized. **(Isnaini &Siti 2016**).

As nurses spend more time with patients than do any other member of the health care team. So, they have the ideal position to assist individuals in managing stress in their lives. When nurses are aware of psychological disruption in their patients, they can develop a care plan that can support more adaptive responses and better outcome ***(*Whitmore,2014)** and (**parati, ,*et al*., 2015).**

Significance of the study:

Hypertension is the silent killer, as early stages of this disease have no clinical manifestation other than raised blood pressure and there is no signs and symptoms to lead the person to seek healthcare. The risk factors associated with hypertension includes, stress, obesity, high salted diet, high alcohol intake and lack of exercises. Management of mild elevation of blood pressure can be achieved by non-pharmacological measures. Relaxation technique is a non-invasive and painless measures. It can be done anywhere , any time with no cost. Therefore, this study was conducted to assess the effect of relaxation technique "PMR" in controlling anxiety among patients with essential hypertension.

Aim of the Study:

The aim of this study was to assess the effect of relaxation techniques in controlling anxiety among patients with essential hypertension.

Research hypotheses:

The following research hypotheses were formulated to achieve the aim of the study:

1- Post implementing the relaxation technique, the patients' knowledge score regarding relaxation technique will be higher than their pre implementation scores.

2- Post implementing the relaxation technique, patients' anxiety score will be higher than their pre implementation scores.

3- There will be a positive relation between patients' knowledge and level of anxiety .

4- There will be a positive relation between patients' level of anxiety and their blood pressure

Subjects and Methods:-

Design:

A quasi-experimental study design was utilized.

Setting:

The study was conducted at the out-patient clinic of medical diseases, Ain Shams University Hospitals.

Subjects: the subjects of this study included 40 patients with essential hypertension who met the inclusion criteria during the study period. The inclusion criteria are:-From both sexes, their age were ranged from 30 to 50 years, having upper or lower respiratory tract diseases, past history of any chronic illness as, heart diseases, renal diseases, liver diseases, angina, diabetes and patients receiving anti-hypertensive medication were excluded.

Tools:

Data of this study was collected using the following tools:

1-A Structured Interview Questionnaire (SIQ):

It was designed by the researchers based on recent literatures and articles, it was include, the socio-demographic data of the studied sample which were, age, sex, marital status, etc., it was also include the medical history and duration of patients' illness, body mass index, blood pressure and previous attendance of courses or programs regarding relaxation techniques.

2- Patient Knowledge Questionnaire (PKQ):

It was developed by the researchers to assess patients' knowledge about "PMR". It consisted of 16 questions at multiple-choice form, with 30 answers. It was covered four main areas: meaning, types, benefits of "PMR", and how to proceed these techniques. One point for each correct answer, maximum possible score was 30. The points were summed up and converted into a percent score.

Scoring system as the following, poor, <60%, pass from 60 to 70%, and good, >70%.

3- Taylor Anxiety Scale:

It was designed by Janet Taylor (1953), to assess the level of anxiety , not necessarily with generalized anxiety disorders, it addresses the various aspects of anxiety including, psychological and somatic or autonomic items. Both experimental and control groups were subjected to this scale along the 6 months period.

Scoring system:

Taylor Anxiety Scale consists of 50 statements that have an answer of “Yes” or “No”, the answer of yes is scored 1. When items summed, raw scores for each scale showed that:

Score below 16 referred to non to minimal anxiety levels.

Score from 16 to 25 referred to mild anxiety level.

Score from 26 to 35 referred to moderate anxiety level.

Score above 35 referred to severe anxiety level.

4-Blood Pressure Measuring Scale:

By using the sphygmomanometer \stethoscope, blood pressure will be measured for every patient with essential hypertension.

5- A booklet was distributed by the researchers to the studied group, describing the mechanisms and benefits from the "PMR" and an audio CD providing a helpful guide for in-home technique practice were given, that were requested to practice these techniques 3 to 5 times per day and record relaxation experiences in a specific form. They were also requested to bring their forms to the group sessions. The in-home technique practice was reviewed at the start of each

weekly group session, permitting discussion of problems and encourage to practice.

Ethical considerations:

A written permission of the hospital where the study was conducted and a written consent of the participants before proceeding the study were obtained. In order to-protect patients' rights in scope of the study, the purpose, the duration of the study and procedures to be carried out during study were explained to the patients before collecting the data. Principle was compiled ultimate attention was paid to comply to "The Autonomy" by stating that the patients may withdraw from the study at any time and to" Confidentiality and Protection of the Confidentiality" by stating that the personal information will be kept confidential after being shared with the researchers.

Preparatory phase:

Preparatory phase includes reviewing of local and international related literatures about the various aspects of the research problem which helped the researchers to be acquainted with the magnitude of the problem, and prepare the required data collection tools then, the researchers tested the face and content validity of the tools and reliability by five experts from faculty members in the nursing from Ain Shams University. They were from different academic categories i.e. Psychiatric Mental Health Nursing, and Medical Surgical Nursing to test the completeness, accuracy & relevancy of the tools..

Pilot study:

It was carried out on 10% of the total studied sample. It was conducted to evaluate the applicability and clarity of the tools, assess the feasibility of fieldwork and identification of a suitable place for interviewing the patients, and to detect any possible obstacles that might face the researchers and interfere with data collection. The pilot sample was excluded from the main study sample.

Implementation phase:

Fieldwork:

Data collection and implementation of relaxation technique of this study was carried out along three months period, from the beginning of January, 2016 till the end of March , 2016. The researchers were visited the selected setting three days per week, each Saturdays, Mondays and Thursdays at the out-patient clinic. The purpose of the study was explained to the subjects under study. In every visit, the researchers met from 1-2 patients, the data were collected after insuring that patients fit the criteria for selection. The interviewing questionnaire was needed from 20 to 30 minutes to be filled through asking the patients about its items. Initially, physiological parameters like heart rate and blood pressure were monitored. Following, Taylor Anxiety Inventory was given to the patients to be filled to determine their anxiety levels.

Practice sessions were proceed over 12 weeks, once per week. The first session was include an introductory group discussion of anxiety in patients with essential hypertension. From the second to the eleventh group sessions, the subjects were taught how to relax and contract 16 muscle groups (muscles of the right hand and forearm, right biceps, left hand and forearm, left biceps, forearm, upper section of cheeks and nose, lower section of cheeks and nose, neck and throat, chest, shoulders and upper part of back, abdominal region and stomach, right thigh, right calf, right foot, left thigh, left calf, and left foot). A booklet describing the mechanisms and benefits of "PMR" and an audio CD providing a helpful guide for in home. Post intervention assessment was done in the last session.

Statistical design:

The collected data were organized, categorized, analyzed using the Statistical Package for Social Studies (SPSS). Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables and mean and standard deviations for quantitative variables. The statistical test such as chi-square test was to determine relation between qualitative data, r-test was also used for correlation coefficient. Statistical significance difference was considered when p-value < 0.05, and high significance when p-value < 0.001 and no statistical significance difference was considered when p-value > 0.05.

Results:

Table(1) clarify that more than half of the sample were males patients , in the age group between 30-35 years with X±SD (1.435±0.502), lived in the urban areas and had sufficient income (57.5%,55%,55% and55% respectively. Regarding marriage, more than three fifth of the sample were married. In addition more than one third of the study group were having university education. As well more than two third of the studied sample were work. Regarding smoking of the studied sample more than three fifth of the patients were smokers.

Table(2) demonstrate that less than half of the sample duration of their disease from 1-2 years .Regarding body mass index more than half of the sample were obese , As well as the highest percentage of the patients (85.0%) not controlled their blood pressure and not attending previous techniques regarding relaxation.

Table (3) represent that, there is a highly statistically significant differences was found between pre and post relaxation techniques intervention regarding patients knowledge about relaxation techniques " types, benefits of relaxation techniques and how to apply these techniques in their lives" p < 0. 001

Table (4) illustrate that , there is a highly statistically significant differences was found between pre and post training of relaxation techniques regarding severity of anxiety.

Table (5) illustrate that, there is a highly statistically significant differences was found between pre and post training of relaxation techniques regarding the relationship between level of anxiety and systolic blood pressure p < 0. 001 and p<0.05 on diastolic blood pressure.

Table (6) indicate that ,there is a highly statistically significant differences was found between pre and post training of relaxation techniques regarding the relationship between' level of anxiety and total knowledge of the patients.

Table (1): Frequency Distribution of socio-demographic Characteristics of patients with essential hypertension (n=40).

Items	No	%
Gender		
Male	23	(57.5%)
Female	17	(42.5%)
Age		
30-35	22	(55%)
35-45	17	(42.5%)
50-	1	(2.5%)
×±SD 1.435±0.502		
Education		
No formal education	9	(22.5%)
Read and write	11	(27.5%)
Basic	5	(12.5%)
University	15	(37.5%)
Working status		
Work	32	(80%)
Not work	8	(20%)
Income		
Sufficient	22	(55%)
Insufficient	18	(45%)
Smoking		
Yes	27	(67.5%)
No	13	(32.5%)
Residence		
Rural	18	(45%)
Urban	22	(55%)
Marital status		
Married	33	(82.5%)
Not married	7	(17.5%)

Table (2)health history of illness of patients with essential hypertension

Items	No	%
Disease duration in years		
- < 1	9	(22.5%)
- 1 – 2	18	(45.0%)
- >2	13	(32.5%)
Body mass index		
Ideal	7	(17.5%)
Over weight	11	(27.5%)
Obese	22	(55.0%)
Blood pressure controlled		
Yes	2	(5.0%)
Sometimes	4	(10.0%)
No	34	(85,0%)
Attending previous technique s regarding relaxation		
No	34	(85.0%)
Yes	6	(15.0%)

Table (3): Comparison between pre and post training of relaxation techniques regarding knowledge of patients with essential hypertension (n=40)

Items	Pre (relaxation technique)		Post (relaxation technique)	
	No	%	No	%
1- Meaning of relaxation technique				
- Good	1	(2.5)	24	(60.0)
- Pass	5	(12.5)	11	(27.5)
- Poor	34	(85.0)	5	(12.5)
t (test) p value	t (test) = 2.082 p<0.05 P <0.01		t (test) = 9.945	
2-Types of relaxation technique				
- Good	3	(7.5)	25	(30.0)
- Pass	10	(25.0)	12	(7.5)
- Poor	27	(67.5)	3	(62.5)
t (test) p value	t (test) = 1.433 P >0.05 P <0.01		t (test) = 9.826	
3- Benefits of relaxation technique to hypertensive patients				
- Good	12	(30.0)	25	(30.0)
- Pass	9	(22.5)	12	(7.5)
- Poor	19	(47.5)	3	(62.5)
t (test) p value	t (test) = 0.703 P >0.05		t (test) = 9.826 P <0.01	
4- How to apply relaxation technique				
- Good	1	(2.5)	23	(30.0)
- Pass	8	(20.0)	12	(12.5)
- Poor	31	(77.5)	5	(57.5)
t (test) p value	t (test) = 2.360 P >0.05 P <0.01		t (test) = 9.814	

Table(4) Comparison between pre and post training of relaxation techniques regarding severity of anxiety of patients with essential hypertension (n=40)

Items	pre relaxation technique		Post relaxation techniques	
	No	%	No	%
Minimal anxiety <16	1	(2.5)	29	(72.5)
Mild anxiety 16-25	1	(2.5)	9	(22.5)
Moderate anxiety 26-35	11	(27.5)	1	(2.5)
Severe anxiety +35	27	(67.5)	1	(2.5)
Mean ±SD	0.150±0.36		2.16±0.69	
t-test	2.623		18.914	
P value	<0.05		<0.01	

Table (5): Comparison of mean difference scores of anxiety and systolic , diastolic Blood pressure among the patients with essential hypertension (N=40)

Items	Pre training of relaxation technique	post training of relaxation technique	't' test	P value
	Mean ±SD	**Mean ±SD**		
Anxiety	00.1± 0.30	3.94 ±1.01	49.26	<0.001 ***
Systolic BP	0.34±1.82	9.00 ±4.02	14.73	<0.001***
Diastolic BP	1.00±3.05	8.00 ±6.64	2.32	<0.05*

* P<0.05, ***p<0.001

Table (6): correlation between total knowledge of patient with essential hypertension and level of anxiety pre and post intervention of relaxation techniques (n=40)

Items	Pre implementation of relaxation techniques	post implementation of relaxation techniques
Level of knowledge	X2 = 0.4 P >0.05	X2 = 24.5 P <0.01
Level of anxiety		

Discussion:

Concerning the socio-demographic characteristics of the patients with essential hypertension ,more than half of the sample were males, this result agrees with **Ibrahim (2016)**,who studied the Egyptian hypertension society and indicated that (87.5%) of the study sample were males. Also ,the current study showed that more than half of them were in the age group between 30-35 years , with X±SD (1.435±0.502). It may be due to that the essential hypertension affecting most of hypertensive patients and increases progressively with age. Also, the current study showed that, more than three fifth of the sample were married .as well as more than half of the sample lived in urban areas .in this context, **James *.et al.,* (2014)** studied the Evidence-based guideline for the management of high blood pressure in adults and found that the majority of the patients were married (55.5%) and 26.3% live in the big city. Regarding educational level of the

studied sample more than one third of the them were having university education, this is may be due to that the modern life and highly education not only offered us convenience and comfort but along with them, several complications increasing our indolence, anxiety and stress. In addition the current study revealed that, more than two third of the studied sample were work ,as well more than half of the sample had sufficient income ,this may be due to more than four fifth of the patients were married, so they remained in full time work to fulfill marriage and treatment responsibilities. Regarding smoking of the studied sample more than three fifth of the patients were smokers, these findings are in agreement with **Damodaran& Paul (2015)** who confirmed that ,patients who are using tobacco are at a higher risk of hypertension compared with the non-users .

Regarding health history of the studied sample in the current study less than half of the sample duration of their disease from 1-2 years .this is consistent with **laxmaiah & Meshram(2015)** who studied socio-economic and demographic determinants of hypertension and knowledge ,practices in India and mentioned that ,the duration of hypertension in their study sample ranged between 1-2 years. Regarding body mass index, more than half of the sample were obese ,it may be due to that obesity can be a critical reason for hypertension and in Egypt, there are another factors as , lack of health awareness and nutritional patterns. As well as the highest percentage of the patients (85.0%) not controlled their blood pressure and not attending previous training program related to relaxation techniques ,this is may be due to more than two third of the studied sample were work and don't have any time to attend this program.

According to patients knowledge about relaxation techniques , there are highly statistically significant differences were found between pre and post training of relaxation techniques regarding 'types, benefits of relaxation techniques and how to apply these techniques in their lives . ($p>0.001$), this may be due to that more than one third of the sample represented in the current study had finished university education and were young adults so they were able to know information about relaxation techniques. It may be attributed to the nursing intervention education which might be helpful because the patients spent long time contact with the researchers. This was supported by **El Malky, *et al* (2015)** who mentioned that the nurse is in unique position to inform and educate the patients about the relaxation techniques by lectures; group discussion and booklet to describe the mechanisms and benefits from the " relaxation techniques " and an audio CD providing a helpful guide for in-home technique practice. This is in accordance with(**Yunping, *et al.,* 2015**) who mentioned that the patient with essential hypertension needs knowledge about intervention of relaxation techniques and how to apply these techniques in their lives .

The results of the current study revealed that, there are highly statistically significant differences were found between pre and post training of relaxation techniques regarding severity of anxiety , it may be due to that the feeling of the patients' anxiety decreased when they had to treat by using non-medical methods(relaxation techniques) . This results may be attributed to the fact that (relaxation techniques) can reduce anxiety symptoms by decreasing activity of stress hormones, rising of blood flow to major muscles, decreasing muscle tension and chronic pain, improving concentration and mood, reducing fatigue, decreasing anger and frustration, enhancing confidence to deal with the problems.

These results are contradicted with **Francesco,(2016)**,who indicated that, there was not statistically significant differences between pre and post training of relaxation techniques regarding the anxiety score .

The results of the current study revealed that, there are highly statistically significant differences were found between pre and post training of relaxation techniques regarding the relationship between level of anxiety and systolic blood pressure $p < 0.001$ and $p<0.05$ on diastolic blood pressure. It may be due to that many non-drug therapies such as diet, exercise and relaxation therapies have proved superior compared to drugs in cases of hypertension. It can be used to control and bring down the blood pressure with no side effects. this is consistent with **Wang *et al* .,(2015)** who studied progressive muscle relaxation improves anxiety and depression of pulmonary arterial hypertensive Patients and found that the beneficial effects of progressive muscle relaxation technique on reducing blood pressure

The results of the current study revealed that, there are highly statistically significant differences were found between pre and post training of relaxation techniques regarding the relationship between' level of anxiety and total knowledge of the patients. This could be attributed to the clarity, consistency of the guidelines, contents as well as patient's interest to acquire more information and skills about benefits of relaxation techniques and how to apply these techniques in their lives with help of demonstration of proper technique. In this connection , **Najafian & Hashemi, ,(2014**)studied the effect of relaxation and bio- feedback-Assisted relaxation on patients with mild hypertension and stated that, when patients are put under stress, the most important factor that alleviates anxiety is providing them with information. similarly , **Emmanoel, (2014),** studied the Breathing and relaxation training for patients with hypertension and stress and found that strong positive correlation between patients' anxiety and their knowledge after implementation of the non – pharmacological techniques as relaxation techniques.

Conclusion:

Based on the results of the current study, it can be concluded that:

-The implementation of relaxation techniques had a positive effect on anxiety of patients with essential hypertension.

-There are highly statistically significant differences were found between pre and post relaxation techniques intervention regarding patients knowledge about relaxation techniques '' types, benefits of relaxation techniques and how to apply these techniques in their lives .

-There are highly statistically significant differences were found between pre and post training of relaxation techniques regarding severity of anxiety .

there is a highly statistically significant differences was found between pre and post training of relaxation techniques regarding the relationship between level of anxiety and systolic blood pressure $p < 0.001$ and $p<0.05$ on diastolic blood pressure.

- There are highly statistically significant differences were found between pre and post training of relaxation techniques regarding the relationship between' level of anxiety and total knowledge of the patients.

Recommendations:

Based on the findings of this study the following recommendations can be suggested:

Clinically:-

Incorporate non-drug therapy (relaxation techniques intervention) along with pharmacological therapies in hypertension management to decrease

anxiety of patients with essential hypertension.

Education :-

Continuous in-service educational programs should be held for all the health team working in medical departments regarding nursing care for patients with hypertension to revise, acquire and develop knowledge, performance and attitude needed to deal with such group of patients.

Research :-

Further research is required to study the effect of implementing the developed self-care guide on such a group of the hypertensive patients.

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