



# EFFECTIVENESS OF DIAPHRAGMATIC BREATHING EXERCISE ON ANXIETY AMONG PARENTS OF CHRONICALLY ILL CHILDREN IN A SELECTED HOSPITAL AT MANGALORE.

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## Abstract

A sick child necessitates hospitalisation. Hospitalization is a stressful condition in which the affected person and the family members face a variety of real and imagined threats. Before and throughout their children's hospitalisation, parents endure a significant level of stress and anxiety. It may be due to different factors such as both physiological and psychological factors. It is proved that anxiety can be managed with diaphragmatic breathing exercise and other complementary therapies. The objective of this study was to assess the effectiveness of diaphragmatic breathing exercise on anxiety among parents of chronically ill children. A quasi experimental (Non-equivalent pre-test- post-test control group design) was used for the present study. 50 parents of chronically ill children were select using purposive sampling technique and those who were selected for the experimental group received intervention for five days thrice in day. Before starting with the intervention pre-test was carried out to assess the anxiety of the parents.at the end of the fifth day post-test was carried out to assess the effectiveness of diaphragmatic breathing exercise on anxiety. Descriptive and inferential statistics was used to analyse the data and to assess the effectiveness of diaphragmatic breathing exercise on anxiety. All the parents before the administration of diaphragmatic breathing exercise had high levels of anxiety. After the administration of diaphragmatic breathing exercise level of anxiety has decreased significantly ( $t_{24}=11.85, p=0.001$ ). There was a significant difference in the level of anxiety among the parents of chronically ill children between experimental and control groups ( $t_{48}=10.24, p=0.001$ ). There was a significant association between the pre intervention anxiety score and birth order of children in the control group ( $p=0.02$ ). Interpretation, conclusion and finding of the present study has shown diaphragmatic breathing exercise was effective in the reduction of anxiety among the parents of chronically ill children.

**Keywords** Effectiveness; diaphragmatic breathing exercise (DBE); Anxiety; Parents of chronically ill children

## Introduction

Health illness are common in children. It can be acute or chronic illness. According to Michigan university chronic illness can be defined as “a health problem that last over three months affects a child’s normal activities require hospitalization and home health care or extensive medical care”. A chronic condition is a broad word that encompasses a variety of conditions. At any given time, children with the disease could be sick or well. They may, however, live with the sickness for the rest of their lives<sup>1</sup>. The most popular definition of chronic illness is based on the World Health Organization’s ICD categorization “a disease or condition is considered to be a chronic condition in childhood if: (1) it occurs in children aged 0 up to 18 years; (2) the diagnosis is based on medical scientific knowledge and can be established using reproducible and valid methods or instruments according to professional standards; (3) it is not (yet) curable or, for mental health conditions, if it is highly resistant to treatment and (4) it has been present for longer than three months or it will, very probably, last longer than three months, or it has occurred three times or more during the past year and will probably reoccur”.<sup>2</sup>

A sick child necessitates hospitalisation. Hospitalization is a stressful condition in which the affected person and the family members face a variety of real and imagined threats. This difficulty is exacerbated when the patients are children who rely solely on their parents for help and support in managing. Before and throughout their 2 children’s hospitalisation, parents endure a significant level of stress and anxiety. It may be due to different factors such as both physiological and psychological factors. Physical factors include low income, presence of disease, occupation related problems. Psychological factors include family relationship and functioning, social support system available, conflict solving.<sup>3</sup>

A descriptive study was undertaken to determine the level of anxiety and coping techniques among parents of children hospitalized to a private hospital in Bangalore. The sample was chosen using a non-probability purposive sampling technique. A total of 33 parents of hospitalized children were included in the study. A standardized anxiety rating scale was used to assess the anxiety and coping strategies among parents of hospitalized children. The result shows that 75% of parents were anxious regarding their children’s hospitalization and 25% were used coping mechanisms.<sup>4</sup>

The word Complimentary describes therapies that may be used along with treatment offered by the physician. Complementary therapies include yoga, acupuncture, bibliotherapy, meditation, relaxation, and breathing exercise.<sup>5</sup>

Breathing exercises are commonly utilised in a variety of stress and anxiety relief methods. Slow, deep breathing through the diaphragm (the abdominal muscle beneath the lungs at the base of the ribs) produces a subjective feeling of relaxation as well as physiological effects that are opposite of hyperventilation and autonomic nervous system stimulation. Breathing exercises are therefore beneficial. In general, breathing exercises are widely used to relieve chronic anxiety associated with General anxiety disorder (GAD). Breathing exercises are effective as a general relaxing tool for anyone interested in learning stress management approaches, in addition to these specialized anxiety-reduction applications, breathing exercise can be used as a general relaxing tactic for people who want to conquer stress-reduction techniques.<sup>6</sup>

## Objectives

- 1.To assess the pre-test score of anxiety among the parents of chronically ill children in Intervention and Control group.
- 2.To find the effectiveness of Diaphragmatic breathing exercise on anxiety score among the parents of chronically ill children.
- 3.To compare the post-test anxiety score among the parents of chronically ill children between Intervention and Control group.
- 4.To find the association between pre-test score of anxiety of parents of chronically ill children with selected baseline variables

## Method

A quasi-experimental study was undertaken on parents of chronically ill children, who were got admitted in a tertiary care hospital in Mangalore. The inclusion criteria were Parents of chronically ill children with five days of hospital admission., Parents of age group between 20 to 50 years and Parents of chronically ill children admitted to the Paediatric ward. The exclusion criteria were Parents, whose children are in the end stage of the disease, Parents, whose children are admitted in critical care areas such as PICU and NICU. A sample of 50 parents were selected using purposive sampling technique.

## Instruments

The base line proforma and anxiety rating scale was developed by item generation through interview with special educators, psychologists, and literature review. The tool was validated in terms of content validity through expert reviews. There were 6 questions (open ended questions), to obtain the demographic characteristics of subjects. The anxiety rating scale consisted of 15 questions (60% psychological items and 40% physiological items). Each response was rated from 0 to 3 (0=never,1=sometimes,2=oftern,3=always)

## Data collection procedure

The main study has taken place in the Paediatric ward of a tertiary care hospital at Mangalore from February 8 to March 6, 2021. Prior to data collection, formal approval was obtained from the relevant authority. The parents of chronically ill children who met the sampling requirements were selected, and the study's purpose was explained to them. The investigator introduced herself to the subjects, described the study's objective to them, and acquired written consent. Before the first day of intervention, the parents were divided into experimental and control groups (first 25 parents in Intervention group and next 25 parents in Control group) and asked to score their anxiety. Baseline characteristics. and anxiety of the parents of chronically ill children were assessed and Diaphragmatic breathing exercise intervention was administered for 10 to 15 minutes thrice a day (morning, noon and evening) for five consecutive days. Post-test was carried out 10 minutes after the final 5th day intervention. Routine hospital care was given to the control group subjects.

**Result****Table 1: Frequency and Percentage distribution of Subjects According to the baseline variables in Intervention and Control group**

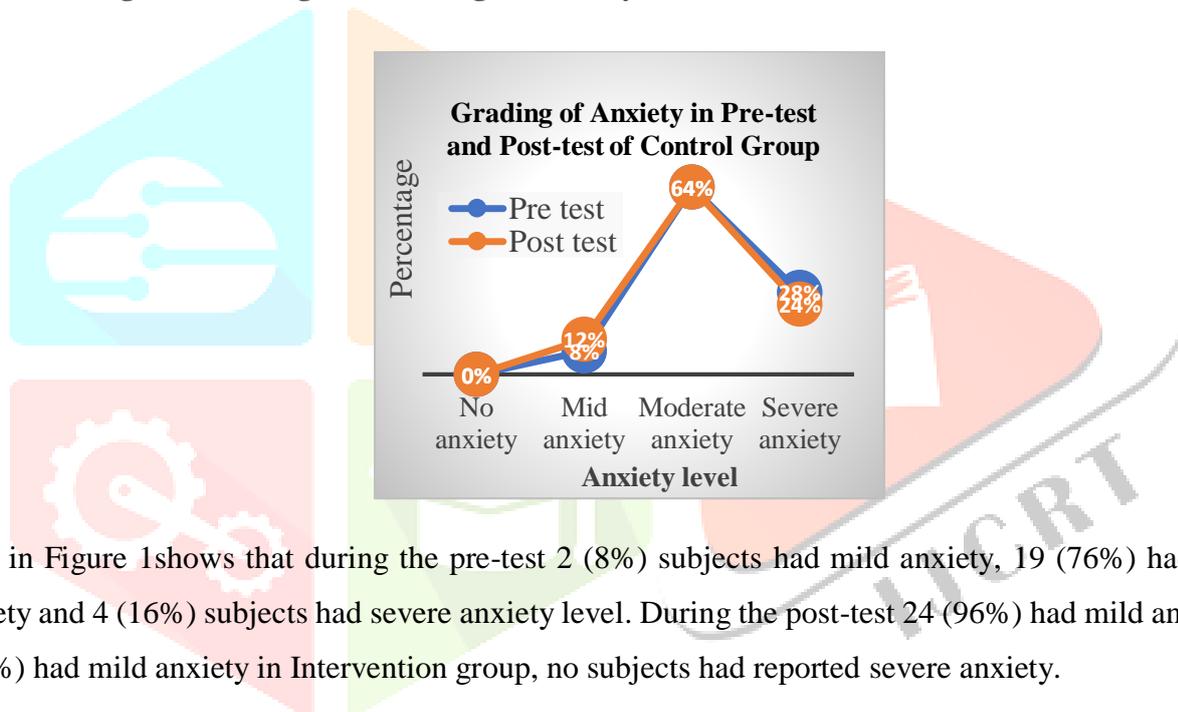
N=25+25=50

Variable	Intervention group			Control group		
	f	%	Mean±SD	f	%	Mean±SD
<b>Age (years)</b>						
20-29	2	8.0	34.3±5.4	5	20.0	35.7±6.0
30-39	20	80.0		12	48.0	
40-49	3	12.0		8	32.0	
<b>Gender</b>						
Male	3	12.0		8	32.0	
Female	22	88.0		17	68.0	
<b>Education</b>						
No formal education	0	0.0		0	0.0	
Primary	7	28.0		1	4.0	
High school	12	48.0		6	24.0	
Higher secondary	2	8.0		10	40.0	
Graduation	3	12.0		7	28.0	
Post-graduation	1	4.0		1	4.0	
<b>Occupation</b>						
Employed	10	40.0		11	44.0	
Unemployed	15	60.0		14	56.0	
<b>Number of children</b>						
One	4	16.0		2	8.0	
Two	16	64.0		15	60.0	
Three	4	16.0		8	32.0	
Four or more	1	4.0		0	0.0	
<b>Birth order of children</b>						
First	10	40.0		6	24.0	
Second	12	48.0		15	60.0	
Third	2	8.0		4	16.0	

Variable	Intervention group			Control group		
	f	%	Mean±SD	f	%	Mean±SD
Four or more	1	4.0		0	0.0	

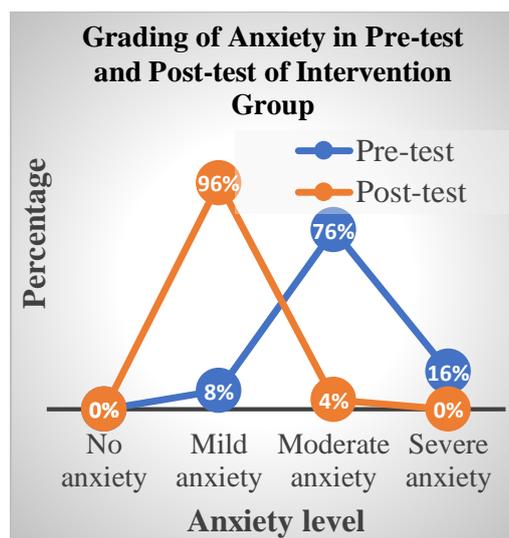
Table1 shows that majority of the subjects in both intervention and control groups were belongs the age group of 30-39. Majority of the subjects in both groups were female. In intervention group majority of the subjects had high school education and in control group majority of the subjects had higher secondary education. Majority of the participants in both groups were unemployed. In both intervention and control group majority of the participants had two children.

**Figure 1: Diagram showing the Grading of Anxiety in Pre-test and Post-test of Intervention Group.**



Data in Figure 1 shows that during the pre-test 2 (8%) subjects had mild anxiety, 19 (76%) had moderate anxiety and 4 (16%) subjects had severe anxiety level. During the post-test 24 (96%) had mild anxiety level, 1 (4%) had mild anxiety in Intervention group, no subjects had reported severe anxiety.

**Figure 2: Diagram showing the Grading of Anxiety in Pre-test and Post-test of Control Group.**



Data in Figure 2 shows that in Control group during the pre-test 2 (8%) subjects had mild anxiety, 16 (64%) subjects had moderate anxiety and 7 (28%) subjects had severe anxiety level and during post-test 3 (12%) of the subjects had mild anxiety, 16 (64%) subjects had moderate anxiety and 6 (24%) subjects had severe anxiety.

**Table 2: comparison of pre and post-test anxiety score of the Intervention group**

n=25

Variable	Mean difference	SD difference	SE	df	95% CI		t value	P value
					Lower limit	Upper limit		
Pre-test	12.88	5.43	1.08	24	10.63	15.12	11.85	0.001***
Post-test								
P<0.05		***very highly significant						

Data depicted in Table 2 shows that the computed p value is 0.001 which is less than 0.05 hence null hypothesis is rejected and research hypothesis is accepted. It is inferred as there is a significant difference in the mean pre and post-test anxiety score in the Intervention group. This indicates that Diaphragmatic breathing exercise decreases the level of anxiety among parents of chronically ill children

**Table 3: Comparison of post Intervention anxiety score between Intervention and Control group**

N=25+25=50

Group	Mean difference	SD difference	SE	95% CI		t value	P value
				Lower limit	Upper limit		
Intervention	-16.48	-4.3	1.60	-19.71	-13.24	-10.24	.002**
Control							
p<0.05, $t_{48} = 2.01$		** Highly significant					

Table 3 shows that computed p value is 0.002, which is less than 0.05. Hence null hypothesis is rejected and research hypothesis is accepted. It is inferred as there is a significant difference in the mean post-test anxiety score between Intervention and Control group.

**Table 4: Association between pre-test anxiety score and selected baseline variables in Intervention group**

n=25

Variable	Anxiety score		$\chi^2$	p value
	≤ Median (≤20)	> Median (>20)		
<b>Age (years)</b>				
20-29	1	1	2.53 (F)	0.26
30-39	9	11		
40-49	3	0		
<b>Gender</b>				
Male	2	1	0.15	0.62
Female	11	11		
<b>Education</b>				
No formal education	0	0	3.7	0.42
Primary	3	4		
High school	5	7		
Higher secondary	1	1		
Graduation	3	0		
Post-graduation	1	0		
<b>Occupation</b>				
Employed	6	4	0.001 (Yates correction)	1.00
Unemployed	7	8		
<b>Number of children</b>				
One	1	3	2.65 (F)	0.44
Two	9	7		
Three	2	2		
Four or more	1	0		
<b>Birth order</b>				
First	4	6	1.25 (F)	0.80
Second	7	5		

Variable	Anxiety score		$\chi^2$	p value
	$\leq$ Median ( $\leq 20$ )	$>$ Median ( $> 20$ )		
Third	1	1		
Fourth or more	1	0		

Data in Table 4 shows that the p values of age ( $p=0.26$ ), gender ( $p=0.62$ ), education ( $p=0.42$ ), occupation ( $p=1.0$ ), number of children ( $p=0.44$ ) and birth order of children ( $p=0.80$ ) are greater than 0.05 level of significance, thus null hypothesis is accepted and is inferred as there is no significant association between pre-Intervention anxiety score and selected baseline variables in the Intervention group.

**Table 5: Association between pre-test anxiety score and selected base lines variables in Control group**

Variable	Anxiety score		$\chi^2$	p value
	$\leq$ Median ( $\leq 26$ )	$>$ Median ( $> 26$ )		
n=25				
<b>Age (years)</b>				
20-29	3	2		
30-39	5	7	1.00	0.60
40-49	5	3		
<b>Gender</b>				
Male	4	4	0.01(yate's correction)	1.00
Female	9	8		
<b>Education</b>				
No formal education	1	0		
Primary	1	5		
High school	5	5		
Higher secondary	5	2	6.9	0.13
Graduation	1	0		
Post-graduation	-	-		
<b>Occupation</b>				
Employed	4	7		
Unemployed	9	5	1.90	0.16

Variable	Anxiety score		$\chi^2$	p value
	$\leq$ Median ( $\leq 26$ )	$>$ Median ( $> 26$ )		
<b>Number of children</b>				
One	1	1	1.06	0.58
Two	9	6		
Three	3	5		
Four or more	-	-		
<b>Birth order</b>				
First	1	5	7.31	0.02
Second	11	4		
Third	1	3		
Fourth or more	0	0		

Data in Table 5 shows that the p values of age ( $p=0.60$ ), gender ( $p=1.0$ ), education ( $p=0.13$ ), occupation ( $p=0.16$ ) and number of children ( $p=0.58$ ), are greater than 0.05 whereas the p value of birth order of child is  $p=0.02$ , which is less than 0.05 level of significance which shows that there was a significant association between pre-test anxiety scores with birth order of child. Thus, null hypothesis is rejected and is inferred as there is significant association between pre-Intervention anxiety score and selected base line variables in the Control group.

## DISCUSSION

### Description of baseline characteristics

In the current study, 20 (80%) of the Intervention group participants and 12 (48%) of the Control group participants were between the ages of 30-39 years. These findings are supported by the findings of a study on the level of anxiety and depression, as well as its clinical and socio-demographic determinants, among the parents of children with cancer who are undergoing chemotherapy, where the average age was found 35.65.<sup>7</sup>

In the intervention group, 22 (88%) were females and 3 (12%) were males, while in the Control group, 17 (68%) were females and 8 (32%) were males. These findings are backed up by the results of a study on the impact of having a child with a developmental disability, in which the majority of the participants were females, with 105 (65%) in the Intervention group and 73 (71%) in the Control group whereas 59 (35%) in Intervention group and 30 (29%) in Control group were males.<sup>8</sup>

In the Intervention group, around 15 (60%) of the subjects were unemployed, while 14 (56%) were unemployed in the Control group. These findings are similar to those of a study on anxiety and depression among parents of children with phenylketonuria, which found that the majority of the participants were unemployed 47 (77%).<sup>9</sup>

## Distribution of subjects according to pre-test and post-test anxiety score

In the current study, participants in both groups had increased anxiety in the pre-test (Mean±SD=25.04±7.08 v/s 21.20±6.48). In the post-test, the intervention group participants had less anxiety (Mean±SD=8.32±3.23) than the Control group (Mean±SD=24.80± 7.10), who had a higher level of anxiety. These findings are supported by the findings of a study on effect of relaxation therapy on anxiety among parents of children with leukaemia, and found that those in the experimental group had higher levels of anxiety (Mean±SD=60.86±8.95) compared to the Control group (mean±SD=56.35± 4.46) in the pre-test assessment of anxiety. In the post-test, Intervention group exhibited less anxiety (Mean± SD= 35.95±4.61) when compared to the Control group participants, exhibited a very little change in the anxiety (Mean±SD= 53.13±3.05).<sup>10</sup>

## Effectiveness of diaphragmatic breathing exercise on Anxiety among parents of chronically ill children

After the diaphragmatic breathing exercise intervention, 24 (96%) of the participants in this study exhibited mild anxiety, 1 (4%) of the individual experienced moderate anxiety, and none of the participants in the Intervention group had severe anxiety. 3(12%) in the Control group experienced mild anxiety, 16 (64%) had moderate anxiety, and 6 (24%) had severe anxiety. These results are supported by the findings of a study on the effects of yoga on mental health among mothers of children with intellectual disability. When compared to the Control group who received regular care, the Intervention group who underwent breathing exercise and meditation exhibited a significant ( $p=0.001$ ) level of reduction in anxiety.<sup>11</sup>

## CONCLUSION

It is widely accepted that parents of chronically ill children experience some sort of anxiety. The level of anxiety or its intensity varies from person to person. Helping parents to manage anxiety is an extremely important function of nurses. The purpose of this study was to see how Diaphragmatic breathing exercise affected the anxiety level among parents of chronically ill children in a hospital at Mangalore. Based on the study's findings, the following conclusions were reached.

- Parents of chronically ill children experience mild to severe level of anxiety.
- The Diaphragmatic Breathing Exercise is effective in reducing anxiety among parents of chronically ill children.

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