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A Study to Assess the Effectiveness of Structured Teaching Programme (STP) on the Knowledge of Postoperative Patients Regarding Deep Breathing Exercises at J.K. Hospital & Research Centre, Bhopal (MP)

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Abstract

Postoperative chest physiotherapy was implemented in the beginning of the 20th century; deep breathing exercise was one of the first methods. Consequently, several manual treatments including percussion, clapping, and vibration or shaking was developed to improvise bronchial drainage. Recently, mechanical breathing devices like incentive spirometry (IS), blow bottles, intermittent positive pressure breathing (IPPB) and continuous positive airway pressure (CPAP) were introduced into clinical practice (McMahon, 1915). Aim of the study: The aim of the study was to assess the effectiveness of structured teaching programme on deep breathing exercises on the knowledge of postoperative patients. Material and Method: A quasi experimental-nonrandomized control group research design was used; the research approach was pre- and post-test design in nature. The sample size was 80 postoperative patients in selected hospital of Bhopal out of which 40 patients were kept under experimental group and 40 under control group. The instruments used for the data collection were demographic questionnaire, 30 multiple choice questionnaire. The nonprobability purposive sampling technique was adopted to select the subjects. Results: The result showed that pre-test knowledge score of postoperative patients in experimental and control group of postoperative patients regarding deep breathing exercises was 2.7, (SD ± 2.81) and in control group were 2.9, (SD ± 2.56) t value of (0. 0.3328). Post-test scores of patients in experimental and control group were 22.2(SD ± 2.25)in experimental and 5.6(SD ± 4.041) with t value of 22.97 which is significant at the level of $p \leq 0.05$. It had been found that the computed Chi-squares values between the post-test knowledge scores and the demographic variables like education, duration of hospital stay, previous experience of surgery and source of information were associated and age, sex, type of family were not associated at the significance level of ($p \geq 0.05$). Conclusion: These finding support the hypothesis that STP resultant in significant improvement in the knowledge level of postoperative patients regarding deep breathing exercises.

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INTRODUCTION

Postoperative complications have become a serious threat to million people undergoing surgical interventions. Patients managed in a hospital setting, in an ambulatory care facility, or in a free-standing operating suite, the development of postoperative complications in any of these cases may lead to long-term disability and in certain events possibly death.[1–3]

Many anesthetic drugs used in the peri-operative period affect the central regulation of breathing, altering the neural drive to respiratory muscles. At high doses, anesthetic drugs are known to attenuate the activity of all respiratory muscles. Conversely, at adequate level of anesthesia, aesthetics may develop respiratory depression of activity for many problems such as *pneumonia, bronchitis, lobar atelectasis, respiratory failure, and prolonged mechanical ventilation*. It is important that patient should have knowledge regarding the prevention, recognition of pulmonary complications after surgery.

Patient undergoing surgery needs to be aware that postoperative pulmonary complications are a major cause of morbidity, mortality, prolonged hospital stay, and increased cost of care.[4] In context to respiratory complications after abdominal surgery, deep breathing exercises are the most efficient prophylaxis regimen for low risk patients while it is the incentive spirometry for high risk patients.[5]

Breathing exercise causes contraction and release of the diaphragm muscle leading to inflation of the lungs, thereby engaging the muscles of the back and abdomen. One complete breath cycle spreads life-giving oxygen throughout the body, getting rid of waste gasses such as carbon dioxide, and stimulating the spine and internal organs. Deep breathing is a relaxation technique that releases tension out of the body and clears mind, improving both physical and mental wellness.[2] Patients educated about breathing exercises and coughing maneuvers can improve pulmonary status postoperatively as demonstrated by good pulmonary function.[8]

In every nursing assessment period, the preadmission structured education group had a higher percentage of patients devoid of impairment.[6,7]

OBJECTIVES

- Assess the knowledge on deep breathing exercises among the postoperative patients prior to the administration of structured teaching programme in both the groups.
- Compare the pre and post-test knowledge scores of postoperative patient regarding deep breathing exercises in the experimental group.
- Evaluate post-test knowledge scores of postoperative patient regarding deep breathing exercises in both the groups.
- Associate demographic variables with the post-test scores of experimental group.

METHODS AND MATERIAL

A quasi experimental research approach was used with pre- and post-test control group design. The sample size was consisting of 80 postoperative patients were selected by using non probability purposive sampling technique.

Out of total 80 postoperative patients, 40 postoperative patients were kept under experimental group and 40 under control group. The instrument used for data collection was consisting of demographic questionnaire and 30 multiple choice questions related to deep breathing exercises (Figure 1).

Reliability of Tool

Reliability of tool was estimated by split half reliability method. The pre-test ,Structured teaching programme then post-test was conducted by the researcher in experimental group and only pre- and post-test was conducted on control group no manipulation was done.

Reliability was confirmed by computing Karl Pearson's coefficient of correlation,

the result was (0.83). Hence, the tool was found highly reliable (Table 1).

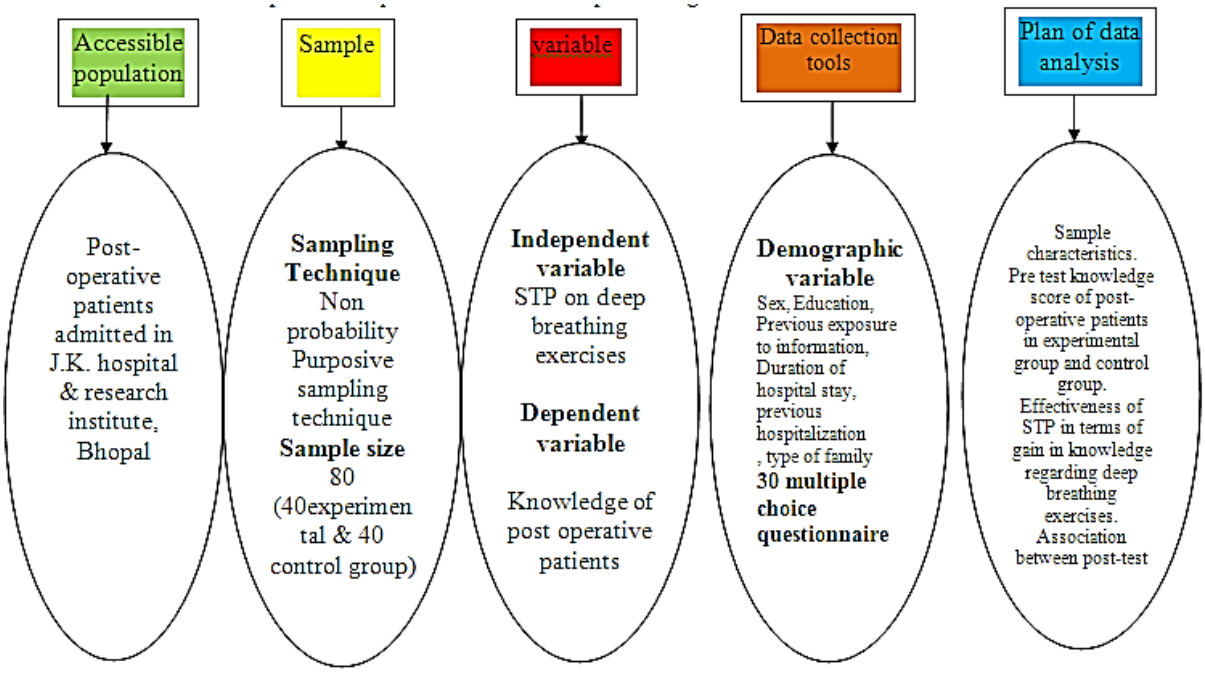

Fig. 1. *Schematic Representation of Research Approach.*

Section A

Table 1. *Percentage Distribution of Sample Characteristics in Experimental and Control Group.*

Sl. no	Characteristics	Experimental group		Control group	
		f	p	f	p
1.	Age				
	20–35	20	50%	16	40%
	36–50	16	40%	22	55%
	51–65	4	10%	2	5%
2.	Sex				
	Male	18	45%	14	35%
	Female	22	55%	26	65%
3.	Education				
	Illiterate	20	50%	18	45%
	Metric	12	30%	10	25%
	Senior secondary	6	15%	6	15%
	Graduate and above	2	5%	6	15%
4.	Duration of hospital stay				
	• Up to 5 days	14	35%	18	45%
	• 6–10 days	20	50%	14	35%
	• 11–15 days	6	15%	6	15%
	• More than 15 days	0	0%	2	5%
5.	Previous exposure to information				
	Health care professional	4	10%	6	15%
	Mass media	18	45%	20	50%
	Relatives	10	25%	8	20%
	No source	8	20%	6	15%
6.	Previous experience of surgery				
	Yes	6	40%	4	10%
	No	34	60%	36	90%
7.	Type of family				
	Nuclear	24	60%	18	45%

	Joint	16	40%	22	55%

F, frequency; p, percentage.

Section B

Table 2. *Pre-test Knowledge Score of Postoperative Patients in Experimental and Control Group.*

Knowledge score Pre-test	**Mean**	**Standard deviation**	**Mean difference**	**'t' value (p value)**
Experimental group	2.7	2.81	0.25	0.3328 Nonsignificant
Control group	2.9	2.56		

On comparing Table 2 shows the means of knowledge scores, researcher observed that the mean knowledge scores of control group is higher than the mean knowledge score of experimental group. However the application of paired t-test resultant in insignificant p-value (0.3328).

Section C

Table 3. *Effectiveness of STP in Terms of Gain of Knowledge Regarding Deep Breathing Exercises.*

Knowledge score Experimental group	**Mean**	**Standard deviation**	**Mean difference**	**'t' value (p value)**
Pre-test	2.7	2.81	19.4	55.69 (Significant)
Post-test	22.2	2.15		

Table 3 shows that the statistics related to the pre- and post-test knowledge score of the postoperative patients in experimental group. On observing the mean knowledge scores of the patients it is observed that the post-test mean knowledge score (74%) is higher than the pre-test mean knowledge scoring (10%). A one tailed paired t test is applied to the test, the significance of difference in pre- and post-test mean knowledge scores of the postoperative patients in experimental group. A significant p value (55.69) indicates that the post-test mean knowledge score is higher than the pre-test mean knowledge score.

Table 4. *Statistics Related to Post-test Scores of Patients in Experimental and Control Group.*

Knowledge score	**Mean**	**Standard deviation**	**Mean difference**	**'t' Value (p value)**
Experimental group	22.23	2.150	1.891	22.97 Significant
Control group	5.6	4.041		

Table 4 shows the statistics related to post-test knowledge scores of postoperative patients in both experimental and control group.

On comparing the mean knowledge scores it is observed that, the mean knowledge score of those in experimental group (22.2) is higher than the control group (5.6).

An independent sample 't' test applied to test the significance of difference in post-test mean knowledge scores of patients in two groups. A significant p value (22.97) indicates the post-test mean knowledge

score in experimental group were higher as compared to those in control group. It is also suggest that the improvement in the knowledge level of patients in experimental group is due to STP.

Section D

Table 5. *Association Between Post-Test Knowledge Score in Experimental Group With Selected Demographic Variables.*

Demographic variables	Post-test grades					df	Chi-square
	Very poor	Poor	Average	Good	Very good		
Age							
20–35 years	0	0	1	19	0	8	2.356 NS
35–50 years	0	0	2	14	1		
51–60 years	0	0	0	3	0		
Sex							
Male	0	0	0	18	0	4	3.636 Nonsignificant
Female	0	0	1	18	3		
Education							
illiterate	0	0	2	19	0	12	14.41 Significant
metric	0	0	1	10	0		
Senior secondary	0	0	0	5	0		
Graduate and above	0	0	0	2	1		

Demographic variables	Post-test grades					df	Chi-square
	Very poor	Poor	Average	Good	Very good		
Duration of hospital stay							
0–5 days	0	0	0	14	2	12	2.571 Significant
6–10 days	0	0	1	17	1		
11–15 days	0	0	0	6	0		
>15 days	0	0	0	0	0		
Previous experience of surgery							
Yes	0	0	0	5	2	4	5.56 Significant
No	0	0	1	31	1		
Source of information							
Health personnel	0	0	1	2	0	12	3.68 Significant
Mass media	0	0	1	20	0		
Relatives	0	0	0	6	0		
No source	0	0	1	9	0		
Type of family							
joint	0	0	2	12	2	4	1.177 Nonsignificant
Nuclear	0	0	0	23	1		

In Table5, applying the Chi-square test it had been found that the computed Chi-squares values between the post-test knowledge scores and the demographic variables like education, duration of hospital stay, previous experience of surgery and source of information were associated and age, sex, and type of family were not associated at the significance level of ($p \geq 0.05$).

CONCLUSION

Mean percentage of the post-test knowledge score of postoperative patients in experimental group was found to be higher than the mean percentage of post-

test knowledge scores of the patients in control group. A one-sided independent sample t test (t value = 55.69) suggests that there is a significant improvement in the knowledge level of postoperative patients in experimental group as compared to the control group. These finding support the hypothesis that STP resultant in significant improvement in the knowledge level of postoperative patients regarding deep breathing exercises.

Recommendations

(1) The study can be replicated on a larger number of samples of patients to generalize the findings.
(2) The study may be conducted in different setting.
(3) The study can be done in other surgical patients.
(4) The study can be done to assess the knowledge, practice and attitude of postoperative patients towards performance of deep breathing exercises.
(5) Effectiveness of video type module can also be checked by giving education to the patients about deep breathing exercises.
(6) The study may be done by using other types of postoperative exercises.

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