



**COMPARISON ON THE EFFECT OF INCENTIVE SPIROMETRY AND DEEP BREATHING PERFORMANCE ON PAIN AND RESPIRATORY STATUS IN POSTOPERATIVE ABDOMINAL SURGERY.**

**Ms. Apurva Thawkar**

Final Year M.Sc. Nursing Department of M.Sc. Nursing (Medical Surgical Nursing) Dr. D.Y. Patil University, Pimpri, Pune, India.

**Dr. (Mrs.) Sadhana Adhyapak\***

Associate Professor, Department of M.Sc. Nursing (Medical Surgical Nursing) Dr. D. Y. Patil University, Pimpri, Pune, India. \*Corresponding Author

**ABSTRACT**

Incentive spirometry are used to promote deep breathing. They measure the flow of air inhaled through the mouthpiece and enhance pulmonary ventilation (Berman et. Al. 2012). Deep breathing exercises inspiring to total lung capacity with particular emphasis on the use of the diaphragm (Celli BR, 1993) We compare the effect of incentive spirometry and deep breathing on Pain and respiratory status and association between Pain scale and Respiratory scale with demographic variables.

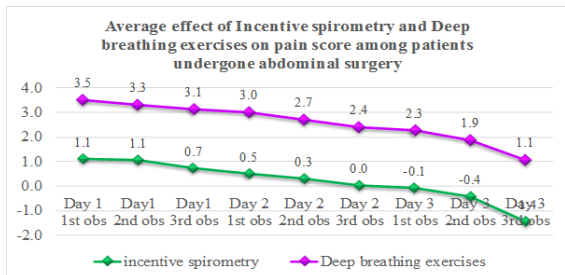
**Method:** Two group post-test only study of 60 patients who underwent abdominal surgeries between 20 Oct to 30 Nov in Dr. D.Y. Patil Hospital, Pune. The comparison between incentive spirometry and deep breathing exercises on pain was assessed as the primary outcome. Other independent predictors of incentive spirometry and deep breathing exercises were also identified.

**Result:** Post-operative effect of the incentive spirometry on pain was significantly less as compared to the effect of deep breathing exercises. Pain in incentive spirometry group on (day 1 first observation 1.1) and in (day 3 third observation -1.4) and the pain in deep breathing exercises group on (day 1 first observation 3.5) and in (day 3 third observation 1.1) and also improve the respiratory status in both the groups. Associated with pain scale and respiratory scale with demographic variable  $p < 0.05$  as was type of anaesthesia in pain and  $p < 0.05$  as was type of anaesthesia, incision type, and name of surgery in respiratory status.

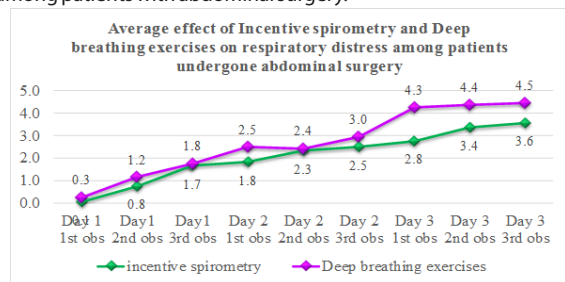
**Conclusion:** The present study suggests that pain with deep breathing exercises is worsened in post-operative patient. Furthermore Incentive spirometry performance would be used after abdominal surgery.

**KEYWORDS :** Incentive Spirometry, Deep Breathing, Post-operative

**FIGNO 1.** Two sample t-test for comparison of the effect of incentive spirometry and deep breathing exercise on pain among patients with abdominal surgery.



**FIGNO 2.** Two sample t-test for comparison of the effect of incentive spirometry and deep breathing exercise on respiratory distress among patients with abdominal surgery.



**TABLE 1:** Fisher's exact test for association of pain among patients with abdominal surgery with selected demographic variables

N=60

| Demographic variable |             | Pain |          | p-value |
|----------------------|-------------|------|----------|---------|
|                      |             | Mild | Moderate |         |
| Age                  | 18-28 years | 2    | 0        | 0.490   |
|                      | 29-38 years | 11   | 1        |         |
|                      | 39-48 years | 19   | 0        |         |
|                      | 49-60 years | 25   | 2        |         |
| Gender               | Male        | 41   | 3        | 0.558   |
|                      | Female      | 16   | 0        |         |

|                            |                    |    |   |       |
|----------------------------|--------------------|----|---|-------|
| Education                  | Illiterate         | 19 | 2 | 0.781 |
|                            | Primary            | 20 | 1 |       |
|                            | Secondary          | 17 | 0 |       |
|                            | Graduate and above | 1  | 0 |       |
| Occupation                 | Government sector  | 3  | 0 | 1.000 |
|                            | Private sector     | 24 | 1 |       |
|                            | Business           | 4  | 0 |       |
|                            | Farmer, Laborer    | 25 | 2 |       |
|                            | Retired            | 1  | 0 |       |
| Active smoking             | Yes                | 21 | 2 | 0.552 |
|                            | No                 | 36 | 1 |       |
| Passive smoking            | Yes                | 3  | 0 | 1.000 |
|                            | No                 | 54 | 3 |       |
| Alcohol                    | Yes                | 17 | 1 | 1.000 |
|                            | No                 | 40 | 2 |       |
| Duration of surgery        | 1- 1.5 hour        | 16 | 0 | 0.206 |
|                            | 1.5- 2.5 hour      | 38 | 2 |       |
|                            | 3 hours            | 3  | 1 |       |
| Associated medical illness | Yes                | 31 | 3 | 0.251 |
|                            | No                 | 26 | 0 |       |
| BMI                        | < 18.50            | 52 | 3 | 1.000 |
|                            | 18.50 - 24.99      | 5  | 0 |       |
| Type of anesthesia         | General            | 13 | 3 | 0.016 |
|                            | Spinal             | 44 | 0 |       |
| Incision type              | Longitudinal       | 16 | 2 | 0.801 |
|                            | Transverse         | 27 | 1 |       |
|                            | Supraumbilical     | 8  | 0 |       |
|                            | Maylard            | 6  | 0 |       |

Table 1 cont.....

| Demographic variable |                 | Pain |          | p-value |
|----------------------|-----------------|------|----------|---------|
|                      |                 | Mild | Moderate |         |
| Name of surgery      | Appendectomy    | 6    | 0        | 0.238   |
|                      | Cholecystectomy | 15   | 0        |         |
|                      | Herniectomy     | 14   | 0        |         |
|                      | Hysterectomy    | 7    | 0        |         |
|                      | Any other       | 15   | 3        |         |

**TABLE 2:** Fisher’s exact test for association of respiratory distress of patients with abdominal surgery with selected demographic variables

N = 60

| Demographic variable |                    | Respiratory distress |          | p-value |
|----------------------|--------------------|----------------------|----------|---------|
|                      |                    | Mild                 | Moderate |         |
| Age                  | 18-28 years        | 9                    | 3        | 0.834   |
|                      | 29-38 years        | 15                   | 4        |         |
|                      | 39-48 years        | 18                   | 9        |         |
|                      | 49-60 years        | 2                    | 0        |         |
| Gender               | Male               | 28                   | 16       | 0.003   |
|                      | Female             | 16                   | 0        |         |
| Education            | Illiterate         | 15                   | 6        | 1.000   |
|                      | Primary            | 15                   | 6        |         |
|                      | Secondary          | 13                   | 4        |         |
|                      | Graduate and above | 1                    | 0        |         |
| Occupation           | Government sector  | 2                    | 1        | 0.772   |
|                      | Private sector     | 19                   | 6        |         |
|                      | Business           | 2                    | 2        |         |
|                      | Farmer, Laborer    | 20                   | 7        |         |
|                      | Retired            | 1                    | 0        |         |
| Active smoking       | Yes                | 15                   | 8        | 0.369   |
|                      | No                 | 29                   | 8        |         |
| Passive smoking      | Yes                | 2                    | 1        | 1.000   |
|                      | No                 | 42                   | 15       |         |
| Alcohol              | Yes                | 12                   | 6        | 0.529   |
|                      | No                 | 32                   | 10       |         |
| Duration of surgery  | 1- 1.5 hour        | 15                   | 1        | 0.052   |
|                      | 1.5- 2.5 hour      | 27                   | 13       |         |
|                      | 3 hours            | 2                    | 2        |         |

**TABLE 2 CONT....**

| Demographic variables      |                 | Respiratory distress |          | p-value |
|----------------------------|-----------------|----------------------|----------|---------|
|                            |                 | Mild                 | Moderate |         |
| Associated medical illness | Yes             | 24                   | 10       | 0.769   |
|                            | No              | 20                   | 6        |         |
| BMI                        | < 18.50         | 39                   | 16       | 0.311   |
|                            | 18.50 - 24.99   | 5                    | 0        |         |
| Type of anesthesia         | General         | 2                    | 14       | 0.000   |
|                            | Spinal          | 42                   | 2        |         |
| Incision type              | Longitudinal    | 6                    | 12       | 0.000   |
|                            | Transverse      | 24                   | 4        |         |
|                            | Supraumbilical  | 8                    | 0        |         |
|                            | Maylard         | 6                    | 0        |         |
| Name of surgery            | Appendectomy    | 6                    | 0        | 0.000   |
|                            | Cholecystectomy | 14                   | 1        |         |
|                            | Herniectomy     | 14                   | 0        |         |
|                            | Hysterectomy    | 7                    | 0        |         |
|                            | Any other       | 3                    | 15       |         |

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