

Effectiveness of Communication Board on the Communication Pattern and Level of Satisfaction among the Patients on Mechanical Ventilator in IMS & SUM Hospital, Bhubaneswar

Farzana Begum

Medical Surgical Nursing, SUM Nursing College/ SOA University, Odisha, India.

Abstract

The purpose of the study is to assess the effectiveness of communication board on the communication pattern and level of satisfaction among the patients on mechanical ventilator in IMS & SUM Hospital, Bhubaneswar, Odisha. Critically ill patients often have their usual means of communication interrupted or limited, either mechanically by endotracheal intubation or by the effect of drugs, at a time when the need for the information and expression of anxieties is great. Deficiency in communication ranks as one of the most negative experiences in the studies of perception of intubated patients. A retrospective study was conducted on stressful experiences of patients who received mechanical ventilation in an ICU; a majority of subjects (78.1%) remembered having trouble speaking during ventilator treatment. Most of those subjects (82.7%) rated speaking difficulties as moderately to extremely bothersome. Incidents of Panic were associated with not being able to talk because of endotracheal intubation. The approach/design of the study was Evaluatory approach/ Pre-Experimental one group pre-test post-test research design, which was carried out among 60 patients; those are on mechanical ventilator in IMS & SUM Hospital, Bhubaneswar, Odisha, selected by Non-Probability purposive sampling technique. An exclusive review of literature helped in preparation of data collection tools to assess the communication pattern and to assess the level of satisfaction among the patients those are on mechanical ventilator. Structured Questionnaires were administered to collect demographic data & data on communication pattern and level of satisfaction. The techniques used for data collection are interview & self structured rating scale. The analysis of the obtained data was based on the objective of the study. Descriptive & inferential statistics was used for data analysis & data interpretation. Results of the study revealed that mean post test score of communication pattern is 134.4, which is higher than mean pre test score of communication pattern 78.85. The standard deviation of post test 6.689143 is less than standard deviation of pre test 7.161159 which indicates that the group was more homogenous in post test. It inferred that there is a marked improvement in communication pattern in post test than pre test. Mean post test score of satisfaction level is 36.9, which is higher than mean pre test score of satisfaction level 31.4. The standard deviation of post test 2.51 is less than standard deviation of pre test 2.55 which indicates that the group is more homogenous in post test. It inferred that there is a marked improvement in satisfaction level in post test than pre test. There is significant positive relationship between communication pattern and level of satisfaction of the patients with mechanical ventilator. The calculated r value is 0.25 (before using communication board) & 0.29 (after using communication board) indicate high significant relationship between communication pattern and level of satisfaction of the patients with mechanical ventilator. It was concluded that, there was a significant improvement in communication pattern and level of satisfaction of the patients with mechanical ventilator and communication board is found to be useful for enhancing communication pattern and level of satisfaction of the patients with mechanical ventilator. The findings conclude that the communication board developed by the researcher was found to be helpful in enhancing communication pattern and level of satisfaction of the patients with mechanical ventilator.

Keywords: Effectiveness; Communication Board; Communication Pattern; Level of Satisfaction; Ventilated Patients; Mechanical Ventilator.

Reprint Request: Farzana Begum, Medical Surgical Nursing SUM Nursing College, SOA University Khandagiri Square-751030, Bhubaneswar, Orissa, India.

E-mail: sweetfarzana786@gmail.com

© RED FLOWER PUBLICATION PVT. LTD.

Introduction

Communication is the exchange of ideas, opinions, views, thoughts, emotions etc. between two or more persons. Patients with physical and sensory disabilities, such as deafness and blindness and patient with endotracheal intubation and mechanical ventilation have been shown to face considerable barriers when communicating with health care professionals. In addition, patients with communication disabilities are already at increased risk for depression and other co morbidities.

A study exemplifies communication picture boards to bridge communication barriers between health care professionals and patients. The authors have distributed more than 2,200 boards to facilities across the state in its efforts to ensure that every patient receives effective medical care. The article strongly advocates the use of communication boards, stating that they should become an integral part of the health in communication. Although communication boards may not be an appropriate tool for diagnosing diseases or requesting consent, they are useful for everyday communication purposes.

The study is conducted to determine the effectiveness of communication board on the communication pattern and level of satisfaction among the patients on mechanical ventilator in IMS & SUM Hospital, Bhubaneswar, Odisha.

Problem Statement

Effectiveness of communication board on the communication pattern and level of satisfaction among the patients on mechanical ventilators in IMS & SUM Hospital, Bhubaneswar, Odisha.

Aim of the study

This study aimed to evaluate the effectiveness of communication board on the communication pattern and level of satisfaction among the patients on mechanical ventilators in IMS & SUM Hospital, Bhubaneswar, Odisha.

Objectives of the study

1. To assess the communication pattern among the patients with mechanical ventilator
 - a) before use of communication board
 - b) after use of communication board
2. To assess the level of satisfaction among the patients with mechanical ventilator

- a) before use of communication board
- b) after use of communication board
3. To compare the:
 - a) communication pattern before and after use of communication board
 - b) level of satisfaction before and after use of communication board
4. To Correlate the communication pattern with the level of satisfaction before and after use of communication board among the patients with mechanical ventilator

Materials & Methods

Research Methodology

Research Approach: Quantitative Evaluatory Research Approach

Research Design: Pre-Experimental one group pre-test post-test Research Design

Setting: ICU of IMS & SUM Hospital, Bhubaneswar, Odisha.

Sample Population

Sample Size: 60

Sampling Techniques

Non-Probability purposive sampling Technique

Inclusion criteria are: (a) The patients those are on mechanical ventilator, admitted in ICU of IMS & SUM Hospital, Bhubaneswar, (b) Those who are willing to participate in this study. (c) Those who are available during the study.

Exclusion criteria are: (a) The patients those are not on mechanical ventilator admitted in ICU of IMS & SUM Hospital, Bhubaneswar, (b) Those who are not willing to participate in this study. (c) Those who are absent during data collection.

Research tool for data collection

Self structured questionnaire rating scale were developed to assess the communication pattern and level of satisfaction among patients those are on mechanical ventilator by reviewing related literatures, books, journals, published & unpublished research studies, consultancy & guidance from various subjects experts in related fields, past experience of the investigator, formal & non-formal discussion with peer groups & consultation with statistician for data

analysis. A self structured questionnaire (MCQ) was constructed for collecting socio-demographic data and rating scale was constructed to assess the communication pattern & level of satisfaction among patients those are on mechanical ventilator. The tool used in the present study includes the following section. *Section- A* comprises of 9 items on socio-demographic profile that includes: age, sex, marital status, type of family, educational status, occupation, monthly income, area of resident, & duration of ventilator support. *Section- B* deals with self structured questionnaire to assess the communication pattern of patients on ventilator that contains rating scale, each having 3 options. *Section- C* deals with self structured questionnaire to assess the level of satisfaction of patients on ventilator that contains rating scale, each having 3 options.

Pilot study

Pilot study was carried out on 10% of total sample and it was excluded from the study subject to test the feasibility, applicability and the clarity of the questionnaire and to estimate the length of time needed to fill the sheet. As a result of the pilot study, the necessary modification in the tools was done and the final form was developed.

Implementation phase

Data collection period for this study was from September 2013 to October 2013, the researcher collected the data during the morning from 9A.M. to 1P.M, six days/week, at ICU of IMS & SUM Hospital, Bhubaneswar, Odisha. The researcher administered the self structured questionnaire to the patients & then responses recorded.

Ethical consideration

At the initial interview, all subjects were informed about the nature, purpose and benefits of the study and that their participations were voluntary. Also, all the informations were kept confidential.

Limitation of the study

Some limitations of this study are:

- ❖ The study was confined to a small group (60) patients with mechanical ventilator. This limits the generalization of the finding to the study sample.
- ❖ The study is limited to SUM Hospital.
- ❖ The study limited to the samples of those who are present at the time of data collection.

- ❖ The time period of the study was limited.

Validity

Validity is the suitability of the instrument or tool, for which it is prepared to measure. The tool was validated by three nursing experts, one critical care specialist and one statistician and recommended corrections were made in the tool.

Reliability

Reliability is the degree of consistency or dependability of the tool. The reliability value for questionnaire related to communication pattern of ventilated patients was 0.70 & the reliability value for questionnaire related to level of satisfaction of ventilated patients was 0.72., which was calculated on 10 patients of IMS & SUM Hospital, Bhubaneswar, Odisha, by using *Chronbach reliability formula*, thus it indicates that the tools are reliable.

Data Analysis

Statistical analysis involves segmentation of a complex problem to smaller section & the smaller segments are analyzed, then the result is co-related with respect to the whole process in order to solve the problem. The data analysis was carried out by using both descriptive, inferential statistics and on the basis of objectives of the study & the hypothesis set by the investigator.

Section-A: Description of patients on mechanical ventilator according to socio demographic variables by using frequency & percentage

Table 1: Frequency percentage of sample according to age

Age (years)	Frequency	Percentage%
21-30	18	30
31-40	18	30
41-50	15	25
>50	09	15

Distribution of data according to age shows that 30%(18 out of 60) of patients are between age group 21 to 30 yrs, 30%(18 out of 60) of patients are between age group 31 to 40 yrs, 25%(15 out of 60) of patients are between age group 41 to 50 yrs, 15%(09 out of 60) of patients are above 50 yrs.

Table 2: Frequency percentage of sample according to gender

Gender	Frequency	Percentage%
Male	37	62
female	23	38

Distribution of data according to gender shows that

62 % (37 out of 60) of patients are male and 38 % (23 out of 60) of patients are female.

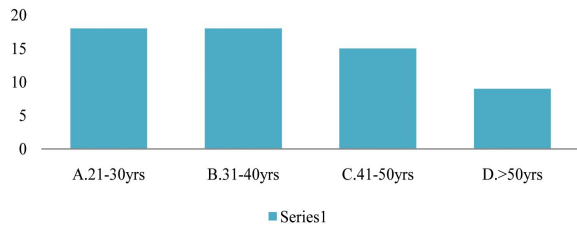


Fig. 1: Bar diagram showing frequency distribution of samples according to age

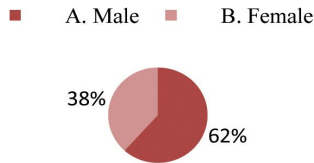


Fig. 2: Pie chart showing percentage distribution of samples according to gender

Table 3: Frequency percentage of sample according to marital status

Marital status	Frequency	Percentage%
Married	51	85
Un-Married	09	15
Divorce	00	00
Widow	00	00

Distribution of data according to marital status shows that 85 % (51 out of 60) of patients are married, 15 % (09 out of 60) of patients are unmarried and 0% (00 out of 60) patients are divorce and widow.

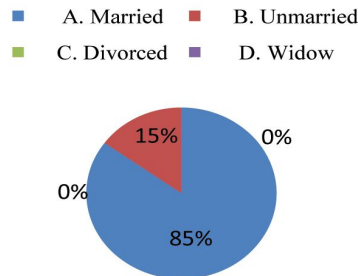


Fig. 3: Pie chart showing percentage distribution of samples according to marital status

Table 4: Frequency percentage of sample according to educational status

Educational status	Frequency	Percentage%
Illiterate	00	00
Primary/high school	19	32
Under graduate	26	43
Graduate and above	15	25

Distribution of data according to educational status shows that 00 % (00 out of 60) of patients are illiterate, 32 % (19 out of 60) of patients are Primary/ high school passed, 43 % (26 out of 60) of patients

are Under graduate and 25% (15 out of 60) patients are Graduate and above.

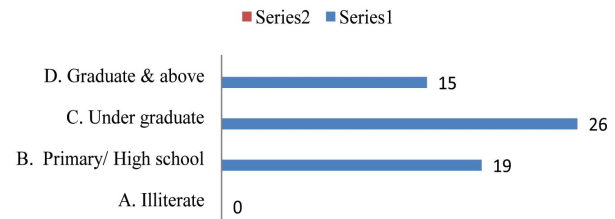


Fig. 4: Line diagram showing frequency distribution of the samples according to educational status

Table 5: Frequency percentage of sample according to family type

Family type	Frequency	Percentage%
Nuclear	22	36
Joint extended	31	52
	07	12

Distribution of data according to family type shows that 36 % (22 out of 60) of patients are belong to nuclear family, 52 % (31 out of 60) of patients are belong to joint family and 12% (07 out of 60) patients are belong to extended family.

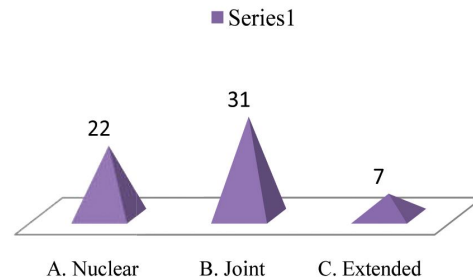


Fig. 5: Pyramid graph showing distribution of sample according to family type

Table 6: Frequency percentage of sample according to occupation

Occupation	Frequency	Percentage%
Business	22	36
Govt. sector	10	17
Private sector	13	22
other	15	25

Distribution of data according to occupational status shows that 36 % (22 out of 60) of patients are business persons, 17 % (10 out of 60) of patients are govt. employee, 22% (13 out of 60) of patients are working in private sectors and 25% (15 out of 60) patients are doing other job.

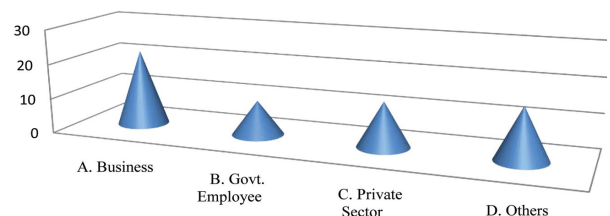


Fig. 6: Cone graph showing frequency distribution of samples according to their occupation

Table 7: Frequency percentage of sample according to monthly income

Monthly income	Frequency	Percentage%
< 5,000	03	05
5,000-10,000	21	35
10,000-15,000	14	23
>15,000	22	37

Distribution of data according to monthly income shows that 05 % (03 out of 60) of patients are earning less than Rs.5, 000, 35 % (21 out of 60) of patients are earning between Rs.5, 000 to 10,000, 23 % (14 out of 60) of patients are earning between Rs.10, 000 to 15,000 and 37% (22 out of 60) patients are earning more than Rs.15, 000.

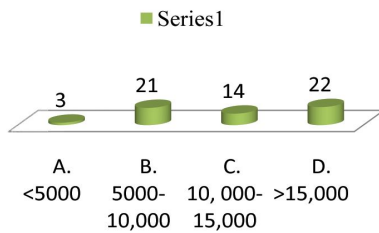


Fig. 7: Cylindrical graph showing frequency distribution of samples according to monthly income

Table 8: Frequency percentage of sample according to residential status

Residential status	Frequency	Percentage%
Rural	22	37
Urban	38	63
Slum	00	00

Distribution of data according to residential status shows that 37 % (22 out of 60) of patients are residing in rural area, 63 % (38 out of 60) of patients are residing in urban area and 0% (00 out of 60) patients are residing in slum area.

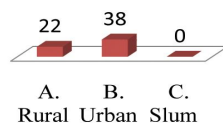


Fig. 8: Bar diagram showing frequency distribution of samples according to residential status

Table 9: Frequency percentage of sample according to duration of ventilator support

Duration of ventilator support(days)	Frequency	Percentage%
<4	17	28
4-7	16	27
>7	27	45

Distribution of data according to duration of ventilator support shows that 28 % (17 out of 60) of patients are less than four days on mechanical ventilator, 27%(16 out of 60) of patients are four to seven days on mechanical ventilator and 45% (27 out of 60) patients are more than seven days on ventilator support.

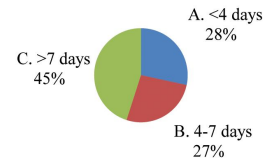


Fig. 9: Pie diagram showing frequency distribution of sample according to duration on mechanical ventilator

Section B: (Findings related to evaluation of the effectiveness of communication board in terms of communication pattern)

Table 10: Mean, median and standard deviation of pre test & post test communication pattern of patients with mechanical ventilator

Criteria	Total Score	Mean	Median	Stander Deviation
Pre test	4731	78.85	79	7.16
Post test	8064	134.4	134	6.68

Table 10 reveals that mean post test score of communication pattern is 134.4, which is higher than mean pre test score of communication pattern 78.85. The stander deviation of post test 6.68 is less than stander deviation of pre test 7.16 which indicates that the group was more homogenous in post test. It inferred that there is a marked improvement in communication pattern in post test than pre test.

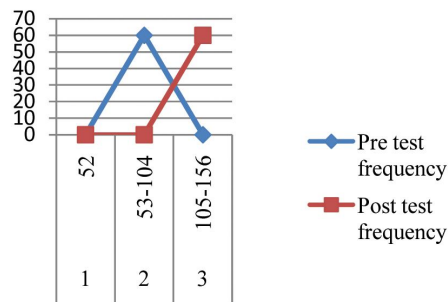


Fig. 10: Line diagram showing the pre test & post test communication pattern score

Table 11 and fig.10 show that in pre test all the patients on mechanical ventilator having score between 53-104, which is between 105-156 in post test.

Table 11: Frequency polygon on pre test & post test communication pattern score of patients with mechanical ventilator

Sl. No.	Score	Pre test frequency	Post test frequency
1	52	00	00
2	53-104	60	00
3	105-156	00	60

Table 12: Z-Test for effectiveness of communication board on communication pattern of patients with mechanical ventilator (N=60)

Type of test	Total mean	Mean score percentage	S.D.	variance	Z ² value
Pre test	78.85	50.5	7.16	51.26	31.2(p=<0.0001)
Post test	134.4	86.1	6.68	44.74	

Z (59) at 0.05 significant level=2.0

The data presented in table- 12. Shows that mean post test communication pattern score 134.4 is higher than their mean pre test communication pattern score 78.85 with a mean score percentage of post test communication pattern 86.1 is higher than their mean score percentage of pre test communication pattern score 50.5. The variance of post test communication pattern score 44.7446 is less than

the variance of pre test communication pattern score 51.2656. The calculated 'z' value at degree of freedom (D.F.) 59 is 31.2 which is higher than the tabulated z (59) at 0.05 level of significance (2.0). Hence the null hypothesis H_0 is rejected & research hypothesis H_1 is accepted. It indicates that communication board is effective in improving communication pattern of patients with mechanical ventilator.

Table 13: Analysis of overall communication pattern score as per criterion

Communication Pattern	Score	Pre test		Post test	
		Frequency	Percentage	Frequency	Percentage
Good	104-156	0	0	60	100
Average	52-104	60	100	0	0
Poor	52	0	0	0	0
total		60	100	60	100

Fig. 11: Bar diagram showing the analysis of overall communication pattern of patients with mechanical ventilator

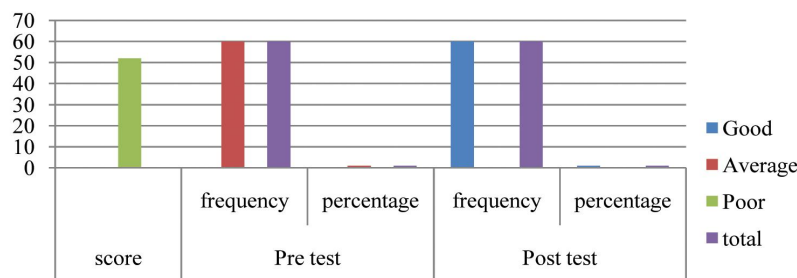


Table 13 and figure 11 depicts that the pre use of communication board the communication pattern of

the mechanically ventilated patients is average but it is good after using communication board.

Section C: (Findings related to evaluation of the effectiveness of communication board in terms of satisfaction level)

Table 14: Mean, median and standard deviation of pre test & post test of satisfaction level of patients with mechanical ventilator

Sl. No.	Score	Pre test frequency	Post test frequency
1	20	00	00
2	21-40	60	54
3	41-60	00	06

Table 14 reveals that mean post test score of satisfaction level is 36.9, which is higher than mean pre test score of satisfaction level 31.4. The stander deviation of post test 2.51 is less than stander

deviation of pre test 2.55 which indicates that the group is more homogenous in post test. It inferred that there is a marked improvement in satisfaction level in post test than pre test.

Table 15: Frequency polygon on pre test & post test satisfaction level score of patients with mechanical ventilator

Type of test	Total mean	Mean score percentage	S.D.	variance	z- value
Pre test	31.4	52.33	2.55	6.5	10.06 (p=<0.0001)
Post test	36.9	61.63	2.51	6.3	

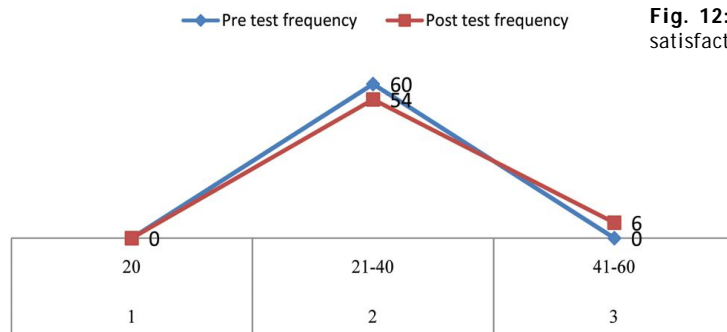


Fig. 12: Line diagram showing the pre test & post test satisfaction level score

Table 15 and fig. 12 show that in pre test all the patients on mechanical ventilator having score between 21-40, but in post test 54 patients having score between 21-40 and 6 patients having score between 41-60.

Table 16: Z- test for effectiveness of communication board on satisfaction level of patients with mechanical ventilator

Type of test	Total mean	Mean score percentage	S.D.	variance	z- value
Pre test	31.4	52.33	2.55	6.5	10.06 (p=<0.0001)
Post test	36.9	61.63	2.51	6.3	

Z (59) at 0.05 significant level=2.0

The data presented in table 16 shows that mean post test satisfaction level score 36.9 is higher than their mean pre test satisfaction level score 31.4 with a mean score percentage of post test satisfaction level 61.63 is higher than their mean score percentage of pre test satisfaction level score 52.33. The variance of post test communication pattern score 6.3 is less than the variance of pre test

communication pattern score 6.5. The calculated 'z' value at degree of freedom (D.F.) 59 is 10.2 which is higher than the tabulated z (59) at 0.05 level of significance. Hence the null hypothesis H_0 is rejected & research hypothesis H_1 is accepted. It indicates that communication board is effective in improving satisfaction level of patients with mechanical ventilator.

Table 17: Analysis of overall satisfaction level score as per criterion

Satisfaction level	Score	Pre test		Post test	
		Frequency	Percentage	Frequency	Percentage
Good	41-60	0	0	06	10
Average	21-40	60	100	54	90
Poor	20	0	0	0	0
total		60	100	60	100

Fig. 13: Cylindrical diagram showing the analysis of overall satisfaction level of patients with mechanical ventilator

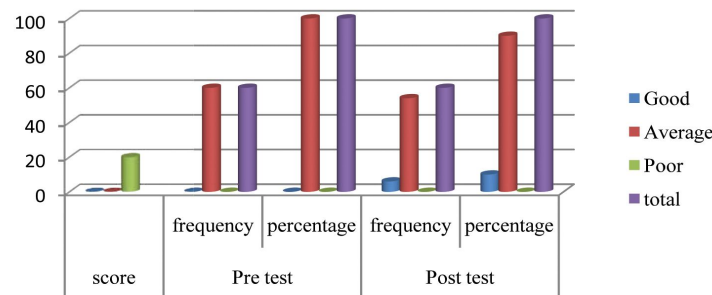


Table 17 and fig.13 depict that the pre use of communication board, the level of satisfaction of the mechanically ventilated patients is average

but it shows improvement in few of the mechanically ventilated patients after using communication board.

Section-D

Table 18: Co-relation between communication pattern and level of satisfaction of the patients with mechanical ventilator

Test	Communication pattern		Level of satisfaction		r	p
	mean	S.D.	mean	S.D.		
Pre test	78.85	7.16	31.4	2.55	0.25	0.02
Post test	134.4	6.68	36.9	2.51	0.29	

The findings of table 18 indicate that there is significant positive relationship between communication pattern and level of satisfaction of the patients with mechanical ventilator. The calculated r value is 0.25 (before using communication board) & 0.29 (after using communication board) indicate high significant relationship between communication pattern and level of satisfaction of the patients with mechanical

ventilator.

Discussion

Analysis of pre test and post test communication pattern score reveals that mean post test score of communication pattern is 134.4, which is higher than mean pre test score of communication pattern 78.85. The standard deviation of post test 6.689143 is less

than standard deviation of pre test 7.161159 which indicates that the group was more homogenous in post test. It inferred that there is a marked improvement in communication pattern in post test than pre test.

Analysis of pre test and post test level of satisfaction score reveals that mean post test score of satisfaction level is 36.9, which is higher than mean pre test score of satisfaction level 31.4. The standard deviation of post test 2.51 is less than standard deviation of pre test 2.55 which indicates that the group is more homogenous in post test. It inferred that there is a marked improvement in satisfaction level in post test than pre test.

Here is significant positive relationship between communication pattern and level of satisfaction of the patients with mechanical ventilator. The calculated *r* value is 0.25 (before using communication board) & 0.29 (after using communication board) indicate high significant relationship between communication pattern and level of satisfaction of the patients with mechanical ventilator.

The investigator observed the effectiveness of communication board on communication pattern and level of satisfaction of the patients with mechanical ventilator by comparing mean scores, mean score percentage & standard deviation of pre test & post test scores of communication pattern and level of satisfaction which is significantly higher.

So the present study findings describe that by using a communication board, the communication pattern and level of satisfaction can be improved.

This study supports with the study of Gawlinski A. et al (2006) and Lone NI. Walsh TS., (2011) as per review of literature.

In the study conducted by Gawlinski A. et al (2006), 73% patients found their communication process was inadequate without use of communication board, however with the board 80% found their communication process was adequate but in my study 100% patient found their communication process was inadequate without use of communication board and 100% patient found their communication process was adequate with communication board. Again of those who used communication board, 80% were satisfied, 20% moderately satisfied and none reported unsatisfied. In my study 10% were satisfied, 90% moderately satisfied and none reported unsatisfied. As per the study conducted by Lone NI. Walsh TS., (2011), 69% patients perceived that communication board would have been helpful where as in my study 10% patients

perceived that communication board would have been helpful.

Recommendation

Basing on the finding of the study, the investigator proposes the following recommendations for further research.

- ❖ The study can be replicated on large samples in different setting to have a wider generalization of findings.
- ❖ A similar study may be conducted to assess the effectiveness of communication board on communication pattern and level of satisfaction of the patients with tracheostomy.
- ❖ A study can be conducted using other augmentative communication methods.
- ❖ An experimental study can be carried out to identify the actions of various augmentative communication methods.
- ❖ A study can be carried out on communication pattern and level of satisfaction of the patients with injury or surgery in the mouth or neck.

Conclusion

On the basis of the findings of the study, the following conclusions are drawn.

- ❖ There was a significant improvement in communication pattern of the patients with mechanical ventilator.
- ❖ There was a significant improvement in level of satisfaction of the patients with mechanical ventilator.
- ❖ Communication board is found to be useful for enhancing communication pattern and level of satisfaction of the patients with mechanical ventilator.

The findings conclude that the communication board developed by the researcher was found to be helpful in enhancing communication pattern and level of satisfaction of the patients with mechanical ventilator.

Acknowledgement

The author is grateful to Almighty God for accomplishment of this research work. The author is

also wish to thank all the patients and staffs of IMS & Sum Hospital for their participation in this study.

References

Books

1. Anisha Maheswari., Communication and educational technology for nurses, Indore, N.R. Brothers; 2009.
2. Basavanthappa BT, Medical-Surgical Nursing, First edition, New Delhi, Jaypee Brother Medical Publisher, 2005.
3. Basavanthappa BT, Nursing -Research, Second edition, New Delhi, Jaypee Brother Medical Publisher, 2003.
4. Basavanthappa BT, Nursing -Theories, First edition, New Delhi, Jaypee Brother Medical Publisher, 2007.
5. Bergbom-Engberg, A Retrospective Study Of Patients Recall Of Respiratory Treatment, 1998.
6. Berman Andrey, Synder Shirlee J., Kozier Barbara, Erb Glenora, Fundamentals of Nursing, 8th Edition, New Delhi: Dorling Kindersley, 2009; Pp. 1041.
7. Britton, Deanna and Barslag-Benson, Ross, Spinal Cord Injury. Augmentative Communication Strategies for Adults with Acute or Chronic Medical Conditions, 2007; 19(1): 8-9.
8. Brunner & Suddharth's, Text Book of Medical and Surgical Nursing, eleventh edition, New Delhi, N.R. Brothers Publication, 2007.
9. Cheryl Veney, Nursing the critically ill., Harcourt publishers limited; 1999.
10. Clement I, Basic Concepts on Nursing Procedures, First edition, New Delhi, Jaypee Brother Medical Publisher, 2007.
11. Craven Ruth F., Hirule Constance J., Fundamentals of Nursing, 5th Edition, U.S.A. Lippincott Williams And Wilkinson, 2007.
12. Denise F Polit, Cheryl Tatano Beck, Nursing research generating and assessing evidence for nursing practice, 9th Edition. New Delhi, India, Wolters Kluwer Publishers; 2011.
13. Gupta S.P., Statistical Methods, 34th. Edition, New Delhi, Sultan Chand & Sons, 2006.
14. Jablonski Raj, The Experience of Being Mechanically Ventilated Patients, 2000; 188 – 207.
15. Kaur Lakhwinder, Kaur Maninder, A Textbook of Nursing Foundations, 1st Edition, Punjab: P.K. Jain Prop. 2009; Pp 380- 382.
16. Kothari C.R, Research Methodology, 2nd edition, New Delhi, New Age International Publication, 2006.
17. Lewis, Heitkemper, Dirksen, O'Brien, Bucher, Medical surgical nursing, South Asian Edition, Haryana, India: Elsevier; 2011.
18. Nieswiadomy Marie Rose, Foundations of Nursing Research, 2nd edition, New Delhi, Dorling Kinderley Publication, 2009.
19. Parker E. Marylin, Nursing Theory & Nursing Practice, First edition, New Delhi, Jaypee Brother Medical Publisher, 2007.
20. Polit F. Denis & Beck Tatano Cherly, Nursing Research, 9th Edition. New Delhi, India, Wolters Kluwer Publishers; 2011.
21. Potter and Perry, Fundamentals of Nursing, 5th Edition, Mosby Publication, 496.
22. Sandra M. Nettina, The Lippincott Manual of Nursing Practice, seventh edition, New York, Lippincott Williams & Wilkins, 2001.
23. Sorensen and Luckman's, Basic Nursing, 3rd Edition, Saunders Publication, 436.
24. Sunanda S. Roy, Respiratory Nursing Care, 2nd Edition, Jaypee Publication, 94-96.
25. Suresh k Sharma, Nursing Research and statistics, 1st Edition. India, Elsevier Publishers; 2011.
26. Susan Sereika, Katheryn Garret, Mary Beth Happ and Judith Talc, The study of patient nurse effectiveness with assisted communication strategies, Contemporary clinical Trials. 2008 September; 29 (5): 801-808.
27. Suzanne C. Smeltzer, Brenda G. Bare, Janice L. Hinkle, Kerry H. Cheever. Text book of Medical surgical nursing. Twelfth editon. New Delhi: Wolters Kluwer; 2010.
28. The Trained Nurses Association of India, Fundamentals of Nursing a Procedure Manual, 1st Edition, New Delhi: TNAI, 2005; Pp 452-470.
29. Wilkinson, Judith M., Fundamentals of Nursing, 1st Edition, New Delhi, Jaypee Brothers, 2008.

Journals

1. Ali, S. & kabir, Z. Domiciliary non-invasive ventilation and the quality of life outcome of patients suffering from chronic respiratory failure. Ire Med J, 2007; 336-8.
2. Asworth P., Neurogenic communication disorders: A functional approach, International Nursing Journal, New York, 1996; 231-8.

3. Bagsti W.B., Burnard, P. A method of analyzing interview transcripts in qualitative research. *Nurse Education Today*, 2005; 461-6.
4. Bartlett, Gillian, Clermont, Richard J. et al., Towards an international framework for communication disorders: use of the ICF. *J Communication Disorder*, 1985; 251-65.
5. Baxter L. Burnard, P. Interpreting text: an alternative to some current forms of textual analysis in qualitative research. *Social Sciences in Health*, 2000; 236-245.
6. Bergbom I. & Haljamae H., Assessment of patients' experience of discomforts during respiratory therapy. *Critical Care Medicine*, 2002; 1068-72.
7. Cameron D., Wilson-Stronks A, Costello J, Kleinpell RM, Person C, Henneman E A, Happ MB, Improving Patient-Provider Communication. *Journal of nursing Administration*. 2009 September; 372-376.
8. Carey J.W., Bronwin, John, Marybeth Communication Ability, Method, and Content Among Nonspeaking: Discussion *American Journal of Critical Care*. 2004.
9. Craig R. T., Veer Bala Restogi. *Fundamentals of Biostatistics: Data analysis*. New Delhi: Ane books India; 2008.
10. Costello. J. AAC Intervention in the Intensive care units. *Journal of Augmentive and alternative communication*. 2007 September; 137-153.
11. Dan Schiller, Impairment and Social Views of Speech-Language Pathology, *American journal for Speech-Language Pathology*, 2001; 37-45.
12. Fitch M. I., Subjective well-being: implications for medical rehabilitation outcomes and models of disablement. *American Journal of Physical Medicine for Rehabilitation*, 2007; 358-64.
13. Gwalinski A., the communication experience of nonvocal ventilated patients. *Qual Health Research*, 2011; 1165-77.
14. Happ M B, Rosesch T K, Garrett k. Electronic voice output, a feasibility study. *Journal of Heart Lung*. 1994; March-April; 92-101.
15. Hemsley, Bronwyn, Sigafoos et al., Tracheostomy tube enabling speech during mechanical ventilation, *European Respiratory Journal*, 1982; 46-51.
16. Hweidi M. Jordanian patients' perception of stressors in critical care units. *Inter National Journal for nursing students*. 2008 Feb; 227-235.
17. Jablonski R., Communication in context: A qualitative study of the experiences of individuals with mechanical ventilator, *American Journal of Speech-Language Pathology*, 1998; 126-137.
18. John Durham Peters, Brooks D., King A., Tonack M., Simson H., Gould M. & Goldstein R. User perspective on issues that influence the quality of daily life of ventilator-assisted individuals with neuromuscular disorders. *Canadian Respiratory Journal* 2004; 547-554.
19. Johnsson I.S., Bjorling G., Johansson U. B., Andersson G., Schedin U., Markstrom A. & Frostell C. A retrospective survey of outpatients with long-term tracheostomy. *Acta Anaesthesiol Scand*, 2009; 399-406.
20. Katja Laakso, Ballangrud R., Bogsti W. B. & Johansson I. S., Clients' experiences of living at home with a mechanical ventilator. *J Adv Nurs*, 2011; 425-34.
21. Lawrance G., H. L. & hoit, J. D. Ventilator-supported communication: A survey of ventilator users *Journal of Medical Speech-Language Pathology*, 2001; 61-72.
22. Lone NI, Walsh TS. 'Prolonged mechanical ventilation in critically ill patient: epidemiology, outcome and modeling the potential cost consequences of establishing a regional weaning unit'. *Journal of critical care*. 2009 March 27; 102.
23. Mattelart A., Bjorling, G., johansson, U. B., andersson, G., schedin, U., markstrom, A. & frostell, C, A retrospective survey of outpatients with long-term tracheostomy. *medical surgical nursing journal*, 2006; 399-406.
24. Mary Beth Happ, Kathryn Garrett, Dana Virgilio Thomas, The Severe Respiratory Insufficiency (SRI) Questionnaire: a specific measure of health-related quality of life in patients receiving home mechanical ventilation. *Journal of Clin Epidemiol*, 1991; 752-9.
25. Murphy, Joan and Cameron, Lois Brooks, D. King, A. Tonack, M., Simson, H., Gould, M. & Goldstein, R. User perspective on issues that influence the quality of daily life of ventilator-assisted individuals with neuromuscular disorders. *Canadian Respiratory Journal*, 1984; 547-554.
26. Patak, Henneman, Elizabeth A. et al. Classifying communication disability using the ICF. *Advances in Speech-Language Pathology*, 1987; 53 – 62.
27. Peters J. D., Kagan, A., black, S. E., duchan, J. F., simmons-mackie, N. & square, P. Training volunteers as conversation partners using "Supported Conversation for Adults with Aphasia"

(SCA): A controlled trial. *Journal of Speech Language and Hearing Research*, 2006; 624-638.

28. Robin Penman, Neetham D M, Bronskill S E, Calinawan J R. Projected incidence of mechanical ventilation in Ontario to 2026: Preparing for the aging baby boomers. *Journal of critical care Medicine*. 2003 March; 574-579.
29. Rogina J. S. Savarimuthu, Shirley David, Amala Rajan, Preserving Oral Communication in Individuals with Tracheostomy and Ventilator Dependency. *American Journal of Speech-Language Pathology*, 1989; 55.
30. Richard M., Lindahl J., B., sandmann, P. & rasmussen, B. On becoming dependent on home mechanical ventilation. *Journal of Advanced Nursing* 2000; 33-42.
31. Susan Sereika, Blending quantitative and qualitative methods in language research and intervention. *American Journal for Speech Language Pathology*, 2000; 165-71.
32. Tarkan, Laurie, Home ventilation. *European Respiratory Journal*, 1983; 38-46.
33. Tuite P, Dobbin K, Happ MB, Divirgilio-Thomas D, Kitutu J. A communication ability method and content among non speaking non surviving patient treated with mechanical ventilator in Intensive care unit. *American Journal of Critical care*. 2004 May; 210-18.

Unpublished Thesis

1. Nayak Geetarani, A study to assess the effectiveness of information booklet on management of preterm babies in terms of knowledge and practice of G.N.M. students in school of nursing, M.K.C.G. Hospital, Berhampur, Ganjam, Odisha, unpublished Master of Nursing Dissertation, Berhampur University, May-2010.
2. Jose Anu, A study to assess the effectiveness of computer assisted planned teaching programme on knowledge & practice of partograph among nurses working in labour rooms of selected

hospital in Ujjain, MP, Ayush & Health Science University of Chattishgarh, Raipur, May-2011.

3. Anupama Das, A study to assess the effectiveness of planned teaching programme on immunization in terms of knowledge and practice of staff nurse working at SUM hospital, Bhubaneswar, Odisha, unpublished Master of Nursing Dissertation, Siksha O Anusandhan University, August-2011.

Published Thesis

1. Gawlinski A, Patak L, Fung NI, Doering L, Berg J. Communication boards in critical care: patients' views. *Applied Nursing Research*. 2006; 19(4): 182-90.
2. Patak, Lance, Gawlinski, Anna, Fung, Ng Irene, Doering, Lynn, Berg, Jill, & Henneman, Elizabeth A. Communication Boards In Critical Care: Patients' Views. *Applied Nursing Research*: 2006; 19(4): 182-190.
4. Rani M lourdu, effectiveness of communication board on communication pattern among mechanically ventilated clients in selected hospitals in Bangalore, published Master of Nursing Dissertation, Rajiv Gandhi University of health sciences, Karnataka, August-2009.
5. M.M Julie, effectiveness of communication board on level of satisfaction among mechanically ventilated clients in selected hospitals in Bangalore, published Master of Nursing Dissertation, Rajiv Gandhi University of health sciences, Karnataka, July-2011.

Website

1. <http://www.vidatak.com/research.htm/>.
2. http://www.asha.org/NJC/bill_of_rights.htm
3. <http://www.kesslerrehab.com/patientcenter/staff/profiles/beth-weill.aspx>
4. <http://www.kesslerrehab.com/patientcenter/staff/profiles/beth-weill.aspx>
5. <http://www.patientprovidercommunication.org>.
6. <http://www3.who.int/icf/icftemplate.cfm>.
7. <http://www.uiowa.edu/~comsci/research/speechlab/powerpoints>
8. <http://www.un.org/disabilities/default.asp>