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Effectiveness of communication board on level of satisfaction in communication among the mechanically ventilated patients in selected hospitals of Guwahati, Kamrup, Assam: Quasi experimental post-test only design study.

Ms. Selfina Leivon Aimol[1], Prof. Dr. Ranju Rani Das[2]

[1] Nurse Practitioner, Critical Care,
Asian Institute of Nursing Education
[2] Principal, Medical Surgical Nursing
Asian Institute of Nursing Education

Abstract

Introduction: Mechanical ventilation is widely used to treat patients with critical conditions. Patients in critical situations are frequently treated with mechanical ventilation. The Communication Board for patients facilitates better communication, keeps records up to date, and provides a welcoming environment for patients, their families, and medical staff. This study aims to evaluate the effectiveness of communication board on the level of satisfaction in communication among the mechanically ventilated patients.

Methods: In this study, 40 sample were selected by using non – probability purposive sampling technique, 20 in experimental group and 20 in control group. The experimental group was given access to visual communication board during mechanical ventilation period, and control group got standard regular routine care without communication board. Data was collected by using self-structured 3- point Likert scale. Data was analysed using descriptive and inferential statistics.

Results: In the experimental group, 20(100%) were highly satisfied and in control group, 15(75%) were moderately satisfied and 5(25%) were highly satisfied. The calculated "t" test value t=12.516 was statistically significant at $p<0.001$ level. ANOVA "F" / "t" test was used. It was observed that gender from demographic variables ($F=3.283$, $p=0.008$) had significant association with level of satisfaction in communication among the mechanical ventilated patients at $p < 0.05$ level.

Conclusion: In this study researcher found that communication board was found to be useful for enhancing communication and level of satisfaction of the patients with mechanical ventilation.

Keywords: Communication board, level of satisfaction, mechanically ventilated patients.

1. Introduction

In acute or emergent situations, mechanical ventilation is an essential intervention to maintain life, especially for patients with hypoxemic respiratory failure, damaged airways, or hindered ventilation.[1]
For many physiological and therapeutic reasons, mechanical ventilation is recommended. The nursing management of a patient on mechanical ventilation presents several challenges, including the need to develop highly technical skills, possess in-depth knowledge of intrusive monitoring, and carry out interventions to provide patient care. Effective communication with ventilator-dependent patients is crucial for the expression of decisions, wishes, and desires on the care plan and end-of-life decision making, as well as for the communication of different basic physiological and psychological needs. There are several ways to communicate, such as head nods, gestures, writing, mouthing words, using letter or picture boards, and using common words or phrases that are customized to each patient's needs.[2]

Our everyday activities depend on interpersonal interactions. We may communicate verbally and by gestures, share our thoughts, attend to our needs, and exhibit emotions like love, gratitude, excitement, grief, and anxiety. General life-saving care, such as endotracheal intubation and mechanical ventilation, is necessary for critically ill patients admitted to the critical care unit. Consequently, verbal communication skills are compromised. Low sedation, which is now used in the critical care unit for patients on mechanical ventilation, improves the patient's ability to stay conscious and express their wants and emotions. Due to their inability to communicate vocally, they may express their demands through nonverbal means including writing, speaking aloud, or making gestures.[3]

Nurses are essential caregivers for patients on mechanical ventilation in the intensive care unit (ICU), and they usually spend more time with patients than other medical staff. To support health and autonomy in patients with impaired communication, it is crucial to have effective nurse-patient communication in the intensive care unit. Critical care in addition to caring for critically sick patients, critical care unit nurses are able to interact with patients' families and caregivers on the job. In these situations, nurses must make prompt decisions based on their knowledge and have excellent communication skills in order to fully evaluate the needs of patients and their families.[4]

Enhancing the quality and safety of medical care requires communication with hospitalized patients. Nurses are adept at comprehending the communication needs of patients on mechanical ventilation. Despite this, the majority of nurses concur that they are unaware of the requirements or issues faced by patients on mechanical ventilation. They stated that they were not given specific instruction on how to interact with patients who were intubated. Additionally, this results in decreased satisfaction with nursing care provided to patients on mechanical ventilation. Since most intensive mechanical ventilated patient communications with nurses were brief and focused on informing them about procedures rather than explaining their health condition, a study that looked into patients' experiences in the intensive care unit found that 64% of patients wished they knew more about their health status and progress in the ICU.[5]

A visual communication board is a board with pictures and icons that reflect fundamental needs that is used for intubated patients. Enhances patient pleasure, improves communication efficiency and speed, reduces frustration, and allows patients to voice their requirements more quickly. Due to intubation, patients in the intensive care unit frequently lose their capacity to speak and communicate. Severe

emotional reactions, including high levels of irritation, tension, worry, and depression, are significantly correlated with speech loss in intensive care unit patients.[6]

2. Materials and Methods

A quasi - experimental post - test only design was used in this study. Forty sample were selected by using non - probability purposive sampling technique, out of which 20 were allocated to experimental group and 20 were allocated to control group. The sample size was determined by using Roasoft formula with margin of error 10%, level of confidence 95%, response distribution 50%.

The data was collected by using self- structured rating scale and communication board. The self-structured questionnaire consists of 7 demographic data and 6 clinical variables and 22 self-structured 3-point Likert scale to assess the level of satisfaction. The experimental group was given access to the visual communication board during mechanical ventilation period whereas in control group visual communication board was not used. The level of satisfaction in communication was assessed by the investigator during her 8 hours shift duty. The investigator was taken care of the patient for three consecutive days in both the groups. Prior to data collection, permission was obtained from the concern authorities of the selected Hospitals, Guwahati, Assam. All the participants were informed about the purpose of the study and the data was collected by using self – structured rating scale to assess the level of satisfaction among mechanically ventilated patients.

RESULTS: The study was conducted among 40 mechanical ventilated patients to find out their level of satisfaction.

TABLE – 1

FREQUENCY AND PERCENTAGE DISTRIBUTION OF DEMOGRAPHIC VARIABLES OF MECHANICALLY VENTILATED PATIENTS

n = 40(20+20)

Demographic Variables	**Experimental Group**		**Control Group**	
	Frequency (f)	**Percentage (%)**	**Frequency (f)**	**Percentage (%)**
1. Age (in years)				
a) 19 – 30	0	0	3	15.0
b) 31 – 40	3	15.0	5	25.0
c) 41 – 50	5	25.0	2	10.0
d) 51 – 60	6	30.0	4	20.0
e) ≥60	6	30.0	6	30.0
2. Gender				
a) Male	14	70.0	10	50.0
b) Female	6	30.0	10	50.0
c) Transgender	0	0	0	0
3. Marital status				

Demographic Variables	Experimental Group		Control Group	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
a) Married	20	100.0	16	80.0
b) Unmarried	0	0	4	20.0
c) Single / Divorce	0	0	0	0
4. Educational status				
a) Non-formal education	1	5.0	0	0
b) Primary education	5	25.0	1	5.0
c) Secondary school certificate	4	20.0	5	25.0
d) Higher secondary certificate	5	25.0	4	20.0
e) Graduate and above	5	25.0	10	50.0
5. Occupation				
a) Employed	7	35.0	3	15.0
b) Unemployed	7	35.0	12	60.0
c) Laborer / Daily wages	2	10.0	3	15.0
d) Retired	1	5.0	1	5.0
e) Business	3	15.0	1	5.0
6. Area of residence				
a) Urban	12	60.0	13	65.0
b) Rural	8	40.0	7	35.0
7. Languages known				
a) English	4	20.0	7	35.0
b) Hindi	5	25.0	5	25.0
c) Assamese	9	45.0	8	40.0
d) More than one	2	10.0	0	0

Table 1 shows that frequency and percentage distribution of demographic variables of the mechanically ventilated patients i.e. 6(30%) in the experimental and 6(30%) control group were in the age group between ≥60 years, 14 (70%) in the experimental and 10 (50%) control group were male, 20 (100%) in the experimental and 16 (80%) control group were married, 5 (25%) in the experimental and 10 (50%) control group were graduate and above, 7 (35%) in the experimental and 12 (60%) control group were unemployed, 12 (60%) in the experimental and 13 (65%) control group were residing in urban area, 9 (45%) in the experimental and 8 (40%) control group had known Assamese language.

TABLE – II

FREQUENCY AND PERCENTAGE DISTRIBUTION OF CLINICAL VARIABLES OF MECHANICALLY VENTILATED PATIENTS.

n = 40(20+20)

Clinical Variables	Experimental Group		Control Group	
	Frequency (f)	**Percentage (%)**	**Frequency (f)**	**Percentage (%)**
1. Previous exposure in ICU				
a) Yes	4	20.0	0	0
b) No	16	80.0	20	100.0
2.Previous experience with ET intubation				
a) Yes	1	5.0	0	0
b) No	19	95.0	20	100.0
3.Number of days of present intubation				
a) 1- 10 days	18	90.0	20	100.0
b) 11 – 20 days	2	10.0	0	0
4. Medical diagnosis				
a) RHD	7	35.0	5	25.0
b) Others	13	65.0	15	75.0
5. GCS Score				
a) E_4 V_5 M_6	0	0	0	0
b) E_4 V_{ET} M_6	20	100.0	20	100.0
6. Number of days in ICU				
a) 1 – 10 days	15	75.0	20	100.0
b) 11-20 days	5	25.0	0	0

Table II shows that that frequency and percentage distribution of clinical variables of the mechanically ventilated patients i.e.16 (80%) in the experimental and 20 (100%) control group had no previous exposure to ICU, 19 (95%) in the experimental and 20 (100%) control group had no previous experience with ET intubation, 18 (90%) in the experimental group and 20 (100%) control group were 1-10 days of present intubation, 13 (65%) in the experimental and 15 (75%) control group had others medical diagnosis, 20 (100%) in the experimental and 20 (100%) control group had GCS Score of E_4 V_{ET} M_6, 15 (75%) in the experimental and 20 (100%) control group had stayed in ICU for 1-10 days in ICU.

TABLE – III

FREQUENCY AND PERCENTAGE DISTRIBUTION OF LEVEL OF SATISFACTION IN COMMUNICATION AMONG THE MECHANICALLY VENTILATED PATIENTS IN THE EXPERIMENTAL AND CONTROL GROUP

n=40(20+20)

Level of Satisfaction	**Experimental Group**		**Control Group**	
	f	**%**	**f**	**%**
Minimally satisfied (22)	0	0	0	0
Moderately satisfied (23 – 43)	0	0	15	75.0
Highly satisfied (≥44)	20	100.0	5	25.0

Table III shows the frequency and percentage distribution of level of satisfaction in communication among the mechanically ventilated patients in the experimental and control group. It shows that in the experimental group, all 20(100%) were highly satisfied and in the control group, 15(75%) were moderately satisfied and 5(25%) were highly satisfied.

TABLE – IV

EFFECTIVENESS OF COMMUNICATION BOARD ON LEVEL OF SATISFACTION IN COMMUNICATION AMONG THE MECHANICALLY VENTILATED PATIENTS.

n = 40

Satisfaction	**Median**	**Mean**	**SD**	**Mean Difference**	**Student Independent "t" test and p- Value**
Experimental	60.0	59.05	3.79	**18.20**	**t = 12.516 p=0.0001***
Control	40.0	40.85	5.28		

p<0.001 level

Table IV shows that the mean score of satisfaction in the experimental group was 59.05±3.79 with the median of 60.0 and the mean score in the control group was 40.85±5.28 with median of 40.0. The mean difference score was 18.20. The calculated student independent "t" test value of t=12.516 was statistically significant at p<0.001 level. This clearly infers that there was significant difference in the level of satisfaction in communication among the mechanically ventilated patients between the experimental group in compared to control group.

TABLE - V

ASSOCIATION OF LEVEL OF SATISFACTION IN COMMUNICATION AMONG THE MECHANICALLY VENTILATED PATIENTS WITH THEIR SELECTED DEMOGRAPHIC VARIABLES IN THE EXPERIMENTAL GROUP.

N = 20

Demographic Variables	**F**	**Satisfaction** **Mean ± SD**	**One Way ANOVA "F" / Student Independent "t" test**	**p-value & Sig.**
1. Age (in years)			F=2.112	0.139 (N.S)
a) 19 – 30	0	0		
b) 31 – 40	3	54.66±0.58		
c) 41 – 50	5	60.60±4.33		
d) 51 – 60	6	60.17±2.14		
e) ≥60	6	58.83±4.40		
2. Gender			**t=3.283**	**0.008***
a) Male	14	60.50±3.18		
b) Female	6	55.67±2.94		
c) Transgender	0	0		
3. Marital status			0	0
a) Married	20	59.05±3.79		
b) Unmarried	0	0		
c) Single / Divorce	0	0		
4. Educational status			F=1.654	0.213 (N.S)
a) Non-formal education	1	58.00±		
b) Primary education	5	55.80±4.09		
c) Secondary school certificate	4	61.50±3.41		
d) Higher secondary certificate	5	59.80±2.95		
e) Graduate and above	5	59.80±2.63		
5. Occupation			F=0.582	0.680 (N.S)
a) Employed	7	58.14±4.09		
b) Unemployed	7	59.71±3.98		
c) Laborer / Daily wages	2	59.00±5.65		
d) Retired	1	55.00±		
e) Business	3	61.00±2.00		
6. Area of residence			t=1.195	0.249

Demographic Variables	F	Satisfaction Mean ± SD	One Way ANOVA "F" / Student Independent "t" test	p-value & Sig.
a) Urban	12	58.25±3.91		(N.S)
b) Rural	8	60.25±3.49		
7. Languages known				
a) English	4	59.75±3.20	F=0.109	0.954 (N.S)
b) Hindi	5	58.60±4.28		
c) Assamese	9	59.22±4.49		
d) More than one	2	58.00±1.41		

*p<0.05, N.S – Not Significant, p>0.05

Table V shows that, there were significant association of level of satisfaction in communication among the mechanically ventilated patients with gender (p=0.008) with at p<0.05 level. The other demographic variables did not show significant association with level of satisfaction in communication among the mechanically ventilated patients.

TABLE - VI

ASSOCIATION OF LEVEL OF SATISFACTION IN COMMUNICATION AMONG THE MECHANICALLY VENTILATED PATIENTS WITH THEIR SELECTED CLINICAL VARIABLES IN THE EXPERIMENTAL GROUP.

n = 20

Clinical Variables	F	Satisfaction Mean ± SD	One Way ANOVA "F" / Student Independent "t" test	p-value & Sig.
1. Previous exposure in ICU			t=2.314	0.056 (N.S)
a) Yes	4	62.00±2.58		
b) No	16	58.31±3.74		
2.Previous experience with ET intubation			0	0
a) Yes	1	61.00±		
b) No	19	5894±3.86		
3.Number of days of present intubation			t=2.065	0.226 (N.S)
a) 1 – 10 days	18	59.50±3.67		
b) 11 – 20 days	2	55.00±2.83		
5. Medical diagnosis			t=0.486	0.638

Clinical Variables	F	Satisfaction	One Way ANOVA "F" / Student Independent "t" test	p-value & Sig.
		Mean ± SD		
a) Rheumatic heart disease	7	58.42±4.54		(N.S)
b) Others	13	59.38±3.48		
6. GCS Score				
a) E_4 V_5 M_6	0	0	0	0
b) E_4 V_{ET} M_6	20	59.05±3.79		
Number of days in ICU				
a) 1 – 10 days	15	59.80±3.73	t=1.686	0.132 (N.S)
b) 11 – 20 days	5	56.80±3.35		

N.S – Not Significant, p>0.05

Table VI shows that, there is no significant association on level of satisfaction in communication among the mechanically ventilated patients with their selected clinical variables in the experimental group.

DISCUSSION

Finding of the present study showed that out of the 40 mechanically ventilated patients on which the study was conducted, in experimental group, all 20(100%) were highly satisfied and in the control group, 15(75%) were moderately satisfied and 5(25%) were highly satisfied.

The findings of the present study are supported by Arora B. et al. (2017) which aimed to evaluate the impact of visual communication boards on patient satisfaction for patients with communication impairments in a few New Delhi hospitals. The study discovered that in the experimental group majority 13(43.33%) were satisfied, followed by 9(30%) completely satisfied and only 2 (6.6%) were not satisfied. Whereas in control group, 11 (36.67) were completely unsatisfied followed by 10(33.33%) were unsatisfied and only two (6.67%) participants were satisfied. Study participants in the experimental group reported much greater levels of satisfaction than those in the control group.

For effectiveness of communication board on level of satisfaction, the mean in experimental group was 59.05±3.79 with the median of 60.0 and the mean score in the control group was 40.85±5.28 with median of 40.0. The calculated student independent "t" test value t=12.516 was statistically significant at p<0.001 level.

This was supported by Sarkar R. (2022), which aimed to evaluate the impact of a communication board on the communication process of aphasic patients. The study discovered that the experimental group's communication process had a higher mean score on the post-test (M=27.03, SD=5.64) than on the pre-test (M=10.53, SD=6.71) of aphasic individuals. At the p<0.001 level, the difference was statistically significant.

To determine the association between the level of satisfaction in meeting the basic needs with demographic variables in experimental and control group. In the present study, the association between the level of satisfaction with demographic variables was assessed by One Way ANOVA "F" / "t" test. The finding of

the present study showed that the level of satisfaction in communication among the mechanically ventilated patients with their selected demographic variables. It was observed that the demographic variable gender (F=3.283, p=0.008) had statistically significant association with level of satisfaction in communication among the mechanically ventilated patients at $p < 0.01$ level and the other demographic variables did not show statistically significant association with level of satisfaction in communication among the mechanically ventilated patients at $p < 0.05$ level.

The findings of the present study are supported by Bai J. et al. (2017) aimed to evaluate the efficacy of the communication board and the degree of satisfaction among patients on mechanical ventilation following cardiothoracic surgery. The study discovered that the communication board was successful in enhancing mechanically ventilated post-cardiothoracic surgery patients' communication (t=9.051, p = 0.001) and frustration (t=6.604, p= 0.001). The degree of frustration and communication had a statistically significant strong negative connection (r=-80.543). Additionally, there was no significant correlation (p=0.05) between the experimental and control groups' chosen baseline variables and communication or level of dissatisfaction.

The finding of the present study showed that there was no significant association between level of satisfaction in meeting the basic needs among patients in the experimental and control group with clinical variables such as previous exposure in ICU, previous experience with ET intubation, number of days of present intubation, medical diagnosis, GCS score, number of days in ICU at $p > 0.05$ level of significant.
The findings of the present study are supported by Bhardwaj K, George M (2023) which aimed to assess the efficacy of the Communication Board in terms of patient satisfaction among mechanically ventilated patients in intensive care units at the Institute of Liver and Biliary Sciences, Vasant Kunj, New Delhi, India. 50 patients each were chosen for the Comparison and Experimental groups. During their weaning phase, the experimental group of mechanically ventilated patients used the communication board. The results demonstrated a statistically significant difference in satisfaction following the use of a communication board between the experimental and comparison groups of mechanically ventilated patients (t=16.151, $p<0.001$ level). There was no statistically significant correlation between the clinical and sociodemographic features of patients on mechanical ventilation and their level of satisfaction.

CONCLUSION

The study shows that out of 40 mechanically ventilated patients in the experimental group, 20(100%) were highly satisfied and in the control group, 15(75%) were moderately satisfied and 5(25%) were highly satisfied, which indicates that there was significant difference in the level of satisfaction in communication among the mechanically ventilated patients between the groups. The calculated "t" test value of t=12.516 was statistically significant at $p<0.001$. There was significant association of level of satisfaction in communication among the mechanically ventilated patients with gender at $p<0.05$ level. The study concluded that there is difference in the level of satisfaction among mechanically ventilated patients between experimental and control group.

The sample size was small so the generalization is limited to study population.

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Author's Contribution
Conceptualization: Selfina Leivon Aimol, Dr. Ranju Rani Das
Data curation: Selfina Leivon Aimol, Dr. Ranju Rani Das
Formal analysis: Selfina Leivon Aimol,
Investigation: Selfina Leivon Aimol
Methodology: Selfina Leivon Aimol, Dr. Ranju Rani Das
Project administration: Selfina Leivon Aimol**,** Dr. Ranju Rani Das
Supervision: Dr. Ranju Rani Das

Ethical Approval:
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