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Effectiveness of augmented alternative communication method on physiological parameters among conscious mechanical ventilation patients

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Abstract--Background: Conscious mechanical ventilation patients in intensive care unit experience intense anxiety due to inability to communicate which might also affect their physiological parameters. Aim: to evaluate the effectiveness of augmented alternative communication method on physiological parameters (heart rate, systolic blood pressure, diastolic blood pressure, respiratory rate and SpO₂-oxygen saturation) among conscious MV patients in the ICU. Methodology/Design: Quantitative evaluative approach with quasi experimental (pretest, posttest with control group) research design was adopted in the present study. 120 conscious mechanical ventilated patients were randomized into two groups, experimental and conventional care group (60 in each group). The experimental group, mechanical ventilation patients who were awake, aware and responsive to verbal communication was served by a simple assistive communication tool (augmented alternative communication) for continuous three days. In contrast, only routine or usual nursing communication practice or standard care was provided to the control group. The socio-demographic data, clinical profile, communication difficulties self-evaluation questionnaire, patient satisfaction self-evaluation questionnaire, self-rating Face anxiety scale and Physiological parameters was used to measure study parameters. Results: The results of this study indicated that administration of augmented alternative communication method stabilises and reduces heart rate by an average of 2 bpm, respiratory rate by an average of 2 bpm, systolic blood pressure by an average of 3-4 mmHg, diastolic blood pressure by an average of 3 mmHg and improvement of SpO₂ (oxygen saturation) by an average of 2 percentage points in the

experimental group from posttest 1 to posttest 3 compared to the experimental group pretest. Conclusion: The augmented alternative communication method is a non-invasive, non-pharmaceutical, and efficient communication practice to conscious mechanical ventilation patients. it reducing anxiety and was significantly effective in stabilizing key physiological parameters among experimental group subjects during the posttest after the intervention as compared to the conventional care group.

Keywords---Conscious mechanical ventilation patients, Communication difficulties, Augmented alternative communication method, Physiological parameters.

Introduction

Mechanical ventilation (MV) is a common treatment option in intensive care units (ICUs) for respiratory failure caused by a range of reasons [1]. Approximately 20 million people seek admission to ICUs and MV each year. The number of ventilator assisted individuals (VAIs) varies between 6.6 and 23 per 1,00,000 [2]. Communication is essential for a person in order to verbalise their feelings. When a patient receiving MV is unable to communicate their requirements to the health care provider, it might result in psychological distress [3]. Patients who are treated with MV report a variety of psychological stress like anxiety, depression, anger, fear, panic, trouble sleeping as well as reduced self-esteem due to inability to communicate [4, 5 6, 7]. As a result, increased sympathetic nervous system stimulation, work of breathing, oxygen demand, and cardiac stimulation are all results of anxiety [8]. A rise in HR, RR, BP, metabolic rate and oxygen consumption occurs when the sympathetic nervous system is activated by fear [9]. Critically ill patients with high anxiety levels are more likely to have complications during their ICU stay.

Vital signs in the ICU determine the status of the patient's life-threatening functions [10]. A patient's vital signs or physiological functions are monitored closely to ensure their safety by alerting them to critical changes in their health status and guiding daily therapeutic intervention [11, 12]. Changes in vital signs such as RR, BP, HR, temperature and SpO₂ levels are early indicators of clinical deterioration and can lead to negative consequences [13, 14]. By regularly monitoring vital signs, clinical deterioration can be diagnosed far before any adverse events occur [15, 16]. Vital signs must be checked prior to detecting an abrupt change in a patient's physiology [17].

Efficient communication is a main concern throughout the healthcare system because it has a direct effect on patient treatment quality, protection, therapeutic outcomes, and satisfaction [18]. Nurses must use evidence-based approaches to effectively treat patient anxiety, as well as be cognizant of the dynamic nature of this distressing symptom during ventilator support [19]. Techniques, tactics, and equipment for augmentative and alternative communication (AAC) can greatly reduce communication challenges and barriers, and should be a major

component of communication resources offered throughout healthcare settings [20].

Material and methods

The study was conducted among conscious MV patients in the control and experimental groups. The current study used a quantitative evaluative approach with a quasi-experimental (pretest and posttest control group) research design. The study was approved by the institution ethics committee of SK. Sengoda Gounder Hospital and S.Palaniandi Mudaliar Memorial Hospital Salem, Pranav Hospital and Manipal Hospital, Salem (Lr.No.SKSH/PROJECT/03/2018-03 and dated 1.10.2018; Lr.No.PNH/PROJECT /01/2018-01 and dated 5.9.2018; Lr.No.MPH/PROJECT/ 01/2018-01 and dated 15.1.2019 and Lr.No.SPMM /PROJECT/04/2018-04 and dated 5.9.2018).

Participants

120 samples were chosen from patients who met the inclusion criteria using the non-probability sampling technique (purposive sampling). The experimental group consists of 60 participants, while the control group consists of 60 participants. After an explanation, the patients gave verbal or written informed consent based on their functional ability or after 6 hours of extubation to participate in the study, and family members also gave written informed consent.

Inclusion and exclusion criteria

The study included male and female conscious patients on mechanical ventilators ranging in age from 18 to 60 years. The ventilator settings were continuous positive airway pressure therapy (CPAP) and spontaneous intermittent mandatory ventilation (SIMV). Patients on MV after major surgery and medical conditions required intubation and MV for at least 5 days and were alert on the Glasgow Coma Scale (GCS) of 13 to 15, motor activity assessment scale (MAAS) score of 3, and the ability to sign informed consent. The study excluded MV patients with corneal ulcer and exposure keratitis, hyperopia, myopia, other visual, hearing and mental illnesses, cognitive impairment, unconscious state, encephalopathy, cerebrovascular disease, dementia, cranio-cephalic trauma, treated with sedatives, anti-anxiety agents, and control mode of ventilation, who had tracheostomy, and were hemodynamically unstable at the time of implementation.

Data collection procedure

After getting permission from the concerned authorities of the ICUs, the investigator reviewed patient's files and interviewed patients to find out socio-demographic data and clinical profiles and assess whether the patients satisfied the inclusion criteria. The investigator reviewed with the nursing staff regarding potential subject's physical and psychological status, as well as any difficulties in cognition (assessment of following commands, attention/inattention, consistent Yes/No signal) or emotional state. Pre-assessment or screening tests were conducted. Baseline information from the socio-demographic data and clinical proforma was collected from a structured questionnaire. Medical history was

obtained from the patient's 'medical record. Some of the demographic data will be obtained by querying the patient after extubation. Pretest was carried out by the nurse researcher on the first day of admission after conducting a screening test and allocating the sample into experimental and control groups without administering/ implementing communication device or communication interventions in the experimental group. The routine nursing communication practices were delivered to participation both the control and experimental groups. The effectiveness of AAC in MV patients was tested in terms of communication difficulties, anxiety satisfaction and physiological parameters. Physiological responses to communication difficulties, anxiety and satisfaction were measured by physiological parameters such as HR, SBP, DBP, RR and SPO₂ in different work shifts. These physiological parameters were measured by using bedside monitors with a base line reading and values were recorded at every 2 hour interval. Bedside monitors are calibrated annually by the bioengineering department. Reference values for normal physiological and abnormal pathological parameters were obtained from Macleod's Clinical Examination.[21].

On the second day of admission, the simple assistive communication tool, the words-phrases with pictures communication board (AAC), is served to the MV patients who are awake, aware and responsive to verbal communication in the experimental group. It is recommended that the patient use it whenever communicating with health care professionals about their needs, distressed symptoms or sources of discomfort. Patients in the control group received the routine nursing communication practises or methods (such as nonverbal communication such as gestures, mouthing and facial expressions) or occasionally offered paper and pen or alphabet board, when the nurse could not identify or recognise the patient's needs.

After assessing the conscious status of MV patients using the GCS scale, posttest-1, 2 and 3 were carried out on the third, fourth and fifth days of admission in both groups. Subsequently, after utilising AAC (words-phrases, with pictures communication board) in the experimental group and routine conventional nursing communication practises or procedures in the control group, participants were asked to measure the communication difficulties, anxiety and satisfaction. Following that, the participant's physiological response to communication difficulties, anxiety and satisfaction were measured by physiological parameters such as HR, SBP, DBP, RR and SPO₂ in different work shifts.

Statistical Methods

The data was interpreted using inferential statistics. Tables and diagrams were used to describe the data analysis and interpretation. The physiological parameters were represented as mean $\pm$ SE and analysed by using a two-way RM ANOVA for groups (control and experimental), tests (pre-test, posttest-1, posttest-2 and posttest-3). Comparing the pretest with posttest 1, 2 and 3 (within group) by the Bonferroni 't' test. A statistically significant probability of 0.01 was used. Sigma plot 14.5 (Systat Software Inc., USA) was used for the analysis and plotting of graphs.

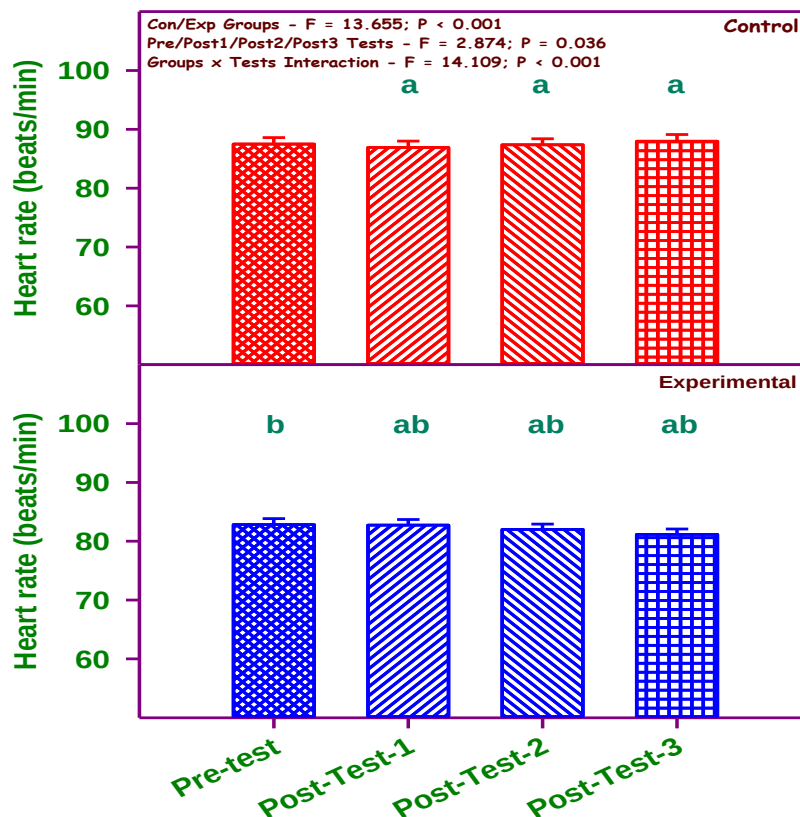
Result

Heart rate

Table 1 and Figure 1 represent the comparison of pretest and posttest mean scores values of heart rate (HR) among conscious MV patients in the control and experimental groups. The heart rate of the control group pretest, posttest 1, 2 and 3 was 87.5, 87.0, 87.4 and 88.0 respectively. The mean scores of the heart rate of the experimental group at pretest, posttest 1, 2 and 3 were 82.8, 82.7, 82.0 and 81.2, respectively. Two-way RMANOVA analysis shows the significance among control and experimental groups ($p < 0.001$). The tests (pretest and posttest 1, 2 and 3) also showed statistical significance ($p = 0.036$). The group $\times$ test interaction also showed statistical significance ($p < 0.001$). Comparing the control group pretest with posttest 1, 2 and 3 (within group) by the Bonferroni 't' test showed statistically not significant ($p = 0.319$, $p = 1.000$ and $p = 0.745$ respectively). Comparing the experimental group (within group) by the Bonferroni 't' test showed the pretest with posttest -1, was not significant ($p = 1.000$), whereas posttest 2, and 3 showed statistically significant $p = 0.040$ and $p < 0.001$ respectively. The control and experimental groups of pretest, posttest-1, 2 and 3 (between groups) showed statistically significant ($p = 0.002$, $p = 0.005$, $p < 0.001$ and $p < 0.001$ respectively). Hence, it can be interpreted that there was a reduction of approximately 1-2 bpm in HR in the experimental group from posttest-1 to posttest-3 compared to the experimental group pretest. This shows HR was stabilised both in the control and experimental groups. The experimental group shows better stabilization.

Table 1: Comparison of mean scores values of heart rate related to augmented alternative communication method between control and experimental groups.

Parameter	Groups	Mean	SEM
Heart rate (beats/min)	Control pretest	87.5	1.1
	Control posttest-1	87.0	1.1
	Control posttest -2	87.4	1.0
	Control posttest -3	88.0	1.1
	Exp- pre test	82.8	1.0
	Exp-1 posttest -1	82.7	1.0
	Exp- posttest -2	82.0	0.9
	Expe-posttest-3	81.2	0.9



Values are mean $\pm$ SE (n = 60 each)

The 'F' and 'P' values are by two-way RM ANOVA for groups (control and experimental), tests (pre-test, post-test-1, post-test-2 and post-test-3) and the interaction with Bonferroni 't' test.

^aSignificantly different from the respective pre-test group (control or experimental; within groups).

^bSignificantly different from the respective control group (pre-test, post-test-1, post-test-2 or post-test-3; between groups).

Figure 1: Bardigram showing heart rate in control (conventional method) and experimental (AAC method) groups of conscious mechanical ventilated patients pretest and posttest level scores

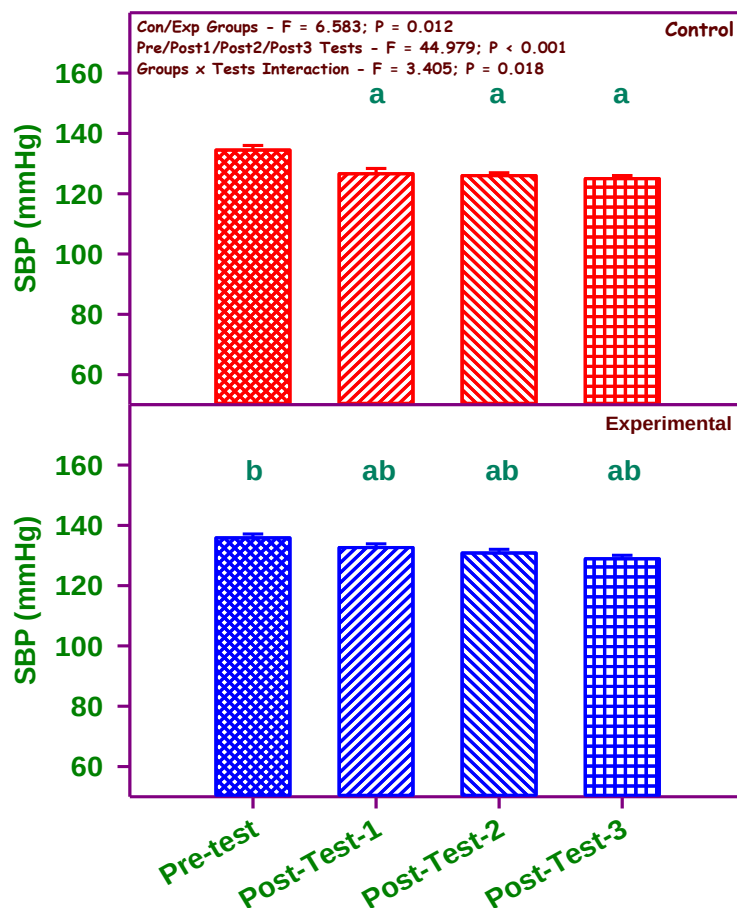
Systolic blood pressure

Table 2 and Figure 2 represent the comparison of pretest and posttests mean scores values of systolic blood pressure (SBP) of the conscious MV patients in control and experimental groups. SBP in the control group pretest, posttest 1, 2 and 3 was 134.4, 126.6, 126.0 and 125.0 mmHg respectively. The mean SBP of experimental groups pretest, posttest 1, posttest 2, and 3 was 135.8, 132.6, 130.8 and 128.8 mmHg respectively. Two-way RMANOVA analysis shows the

significance among control and experimental groups ($p < 0.001$). The test (pretest/posttest 1, 2 and 3) also showed statistically significance ($p < 0.001$). The group $\times$ test interaction also showed statistically significance ($p = 0.018$). Comparing the control group pretest with posttest 1, 2 and 3 (within group) by the Bonferroni 't' test showed statistically significant $p < 0.001$, $p < 0.001$ and $p < 0.001$ respectively. Comparing the experimental group (within group) by the Bonferroni 't' test showed that pretest with posttest 1, 2 and 3, were significant at $p = 0.018$, $p < 0.001$ and $p < 0.001$ respectively. The control and experimental groups (between groups) of the pretest were not statistically significant, $p = 0.447$, whereas the posttests-1, 2, and 3 showed statistically significance ($p = 0.001$, $p = 0.008$ and $p = 0.035$ respectively). Hence, it can be interpreted that there was a reduction of approximately 3-4 mmHg in systolic BP in the experimental group from posttest 1 to posttest 3 compared to the experimental group pretest. This shows SBP was stabilised both in the control and experimental groups, which shows better stabilization.

Table 2: Comparison of mean scores values of Systolic blood pressure related to augmented alternative communication method between control and experimental groups.

Parameter	Groups	Mean	SEM
SBP (mmHg)	Control pre test	134.4	1.5
	Control posttest-1	126.6	1.7
	Control posttest -2	126.0	0.9
	Control posttest -3	125.0	1.0
	Exp- pre test	135.8	1.2
	Exp-1 posttest -1	132.6	1.2
	Exp- posttest -2	130.8	1.1
	Expe-posttest-3	128.8	1.1



Values are mean $\pm$ SE (n=60 each)

The 'F' and 'P' values are by two-way RM ANOVA for groups (control and experimental), tests (pre-test, post-test-1, post-test-2 and post-test-3) and the interaction with Bonferroni 't' test.

^aSignificantly different from the respective pre-test group (control or experimental; within groups).

^bSignificantly different from the respective control group (pre-test, post-test-1, post-test-2 or post-test-3; between groups).

Figure 2: Bardigram showing systolic blood pressure level in control (conventional method) and experimental (AAC method) groups of conscious mechanical ventilated patient's pretest and posttest level scores.

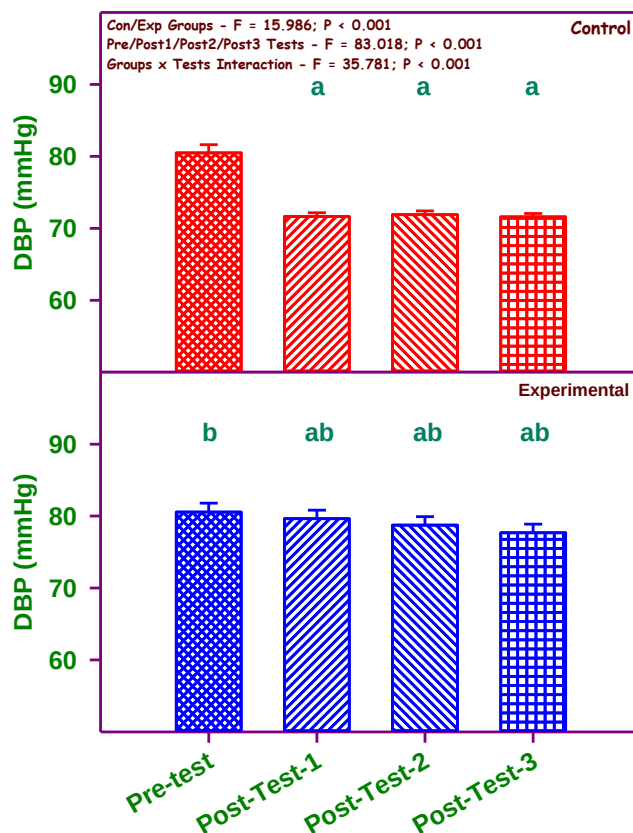
Diastolic blood pressure

Table 3 and Figure 3 represent the comparison of pretest and posttests mean scores values of diastolic blood pressure (DBP) of the conscious conscious MV patients in control and experimental groups. The mean values of DBP in the control group pretest, posttests 1, 2 and 3 were 80.4, 71.6, 71.8 and 71.6 mmHg

respectively. The mean DBP of experimental groups pretest, posttest 1, posttest 2 and 3 was 80.5, 79.6, 78.7 and 77.6 mmHg. Two-way RMANOVA analysis shows the significance among control and experimental groups ($p < 0.001$). The tests (pretest /posttest 1, 2 and 3) also showed statistical significance ($p < 0.001$). The group $\times$ test interaction also showed statistical significance ($p < 0.001$). Comparing the control group pretest with posttest 1, 2 and 3 (within group) by the Bonferroni 't' test showed statistically significant $p < 0.001$, $p < 0.001$ and $p < 0.001$ respectively. Comparing the experimental group (within group) by the Bonferroni 't' test showed the pretest with posttest 1 was not statistically significant, $p = 0.723$, whereas the pretest with posttest 2 and 3 were statistically significant, $p = 0.013$ and $p < 0.001$ respectively. The control and experimental groups (between groups) of the pretest were not statistically significance, $p = 0.962$, whereas posttest -1, 2 and 3 showed statistically significance ($p < 0.001$, $p < 0.001$ and $p < 0.001$ respectively). Hence, it can be interpreted there was an improvement of approximately 3 mmHg in diastolic BP of the experimental group from posttest 1 to posttest 3 compared to the experimental group pretest. This shows DBP was stabilised both in the control and experimental groups and shows better stabilization.

Table 3: Comparison of mean scores values of DBP related to augmented alternative Communication method between control and experimental groups.

Parameter	Groups	Mean	SEM
DBP (mmHg)	Control pretest	80.4	1.1
	Control posttest-1	71.6	0.5
	Control posttest -2	71.8	0.5
	Control posttest -3	71.6	0.4
	Exp- pre test	80.5	1.2
	Exp-1 posttest -1	79.6	1.1
	Exp- posttest -2	78.7	1.1
	Expe-posttest-3	77.6	1.2



Values are mean $\pm$ SE (n = 60 each)

The 'F' and 'P' values are by two-way RM ANOVA for groups (control and experimental), tests (pre-test, post-test-1, post-test-2 and post-test-3) and the interaction with Bonferroni 't' test.

^aSignificantly different from the respective pre-test group (control or experimental; within groups).

^bSignificantly different from the respective control group (pre-test, post-test-1, post-test-2 or post-test-3; between groups).

Figure 3: Bardigram showing diastolic blood pressure level in control (conventional method) and experimental (AAC method) groups of conscious mechanical ventilated patient's pretest and posttest level scores.

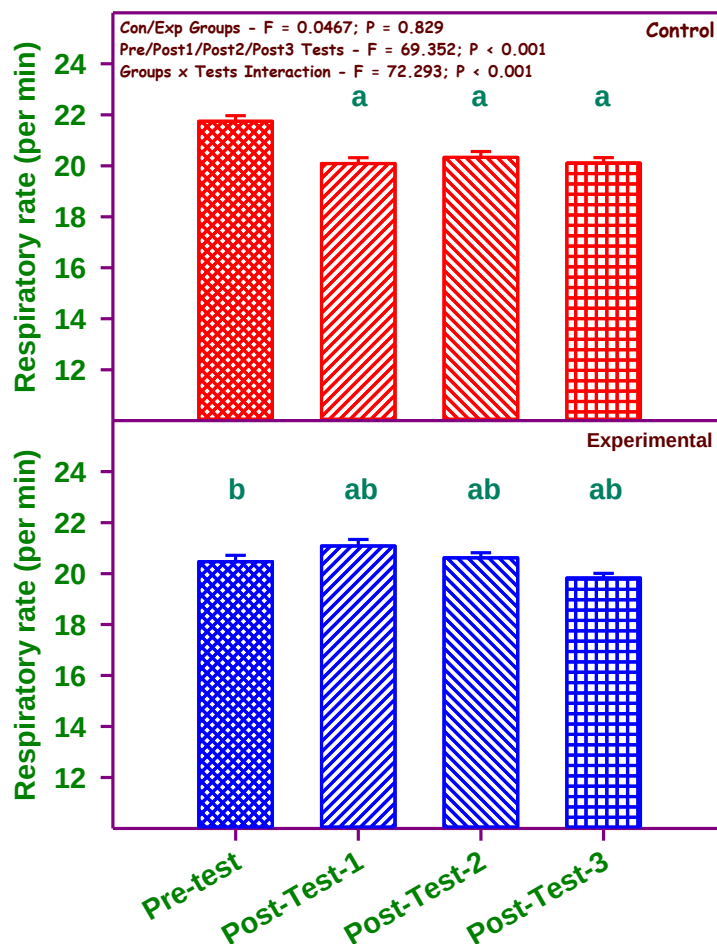
Respiratory rate

Table 4 and Figure 4 represent the comparison of pretest and posttests mean scores values of respiratory rate of the conscious MV patients control and experimental groups. The mean scores of the RR of the control group pretest, posttest-1, 2 and 3 were 21.7, 20.0, 20.3 and 20.1 bpm respectively. The mean scores of the RR of the experimental group pretest, posttest 1, 2 and 3 were 20.4, 21.0, 20.6 and 19.8 breaths/minute. Two-way RMANOVA analysis shows the significance among control and experimental groups ($p < 0.001$). The tests (pretest /posttest 1, 2 and 3) also

showed statistical significant ($p < 0.001$). The group x test interaction also showed statistical significance ($p < 0.001$). Comparing the control group pretest with posttest 1, 2 and 3 (within group) by the Bonferroni 't' test showed statistically significant $p < 0.001$, $p < 0.001$ and $p < 0.001$ respectively. Comparing the experimental group (within group) by the Bonferroni 't' test showed the pretest with posttest 2 was not statistically significant ($p = 1.000$), whereas the pretest with posttest-1 and 3 were statistically significance ($p < 0.001$ and $p < 0.001$ respectively). The control and experimental groups (between groups) of pretest and posttest-1 were statistically significant, $p < 0.001$ and $p = 0.002$, whereas posttest-2 and 3 were statistically not significant ($p = 0.362$ and $p = 0.390$, respectively). Hence, it can be interpreted that there was a reduction of approximately 2 breaths per minute of RR in the experimental group from posttest 1 to posttest 3 compared to the experimental group pretest. This shows RR was stabilised both in the control and experimental groups, which shows better stabilization.

Table 4: Comparison of mean scores values of RR related effectiveness of AAC between control and experimental groups.

Parameter	Test	Mean	SEM
Respiratory rate (beats/min)	Control pretest	21.7	0.2
	Control posttest-1	20.0	0.2
	Control posttest -2	20.3	0.2
	Control posttest -3	20.1	0.2
	Exp- pretest	20.4	0.2
	Exp-1 posttest -1	21.0	0.2
	Exp- posttest -2	20.6	0.2
	Expe-posttest-3	19.8	0.1



Values are mean $\pm$ SE (n = 60 each)

The 'F' and 'P' values are by two-way RM ANOVA for groups (control and experimental), tests (pre-test, post-test-1, post-test-2 and post-test-3) and the interaction with Bonferroni 't' test.

^aSignificantly different from the respective pre-test group (control or experimental; within groups).

^bSignificantly different from the respective control group (pre-test, post-test-1, post-test-2 or post-test-3; between groups).

Figure 4: Bardigram showing Respiratory rate in control (conventional method) and experimental (AAC method) groups of conscious mechanical ventilated patient's pretest and posttest level scores.

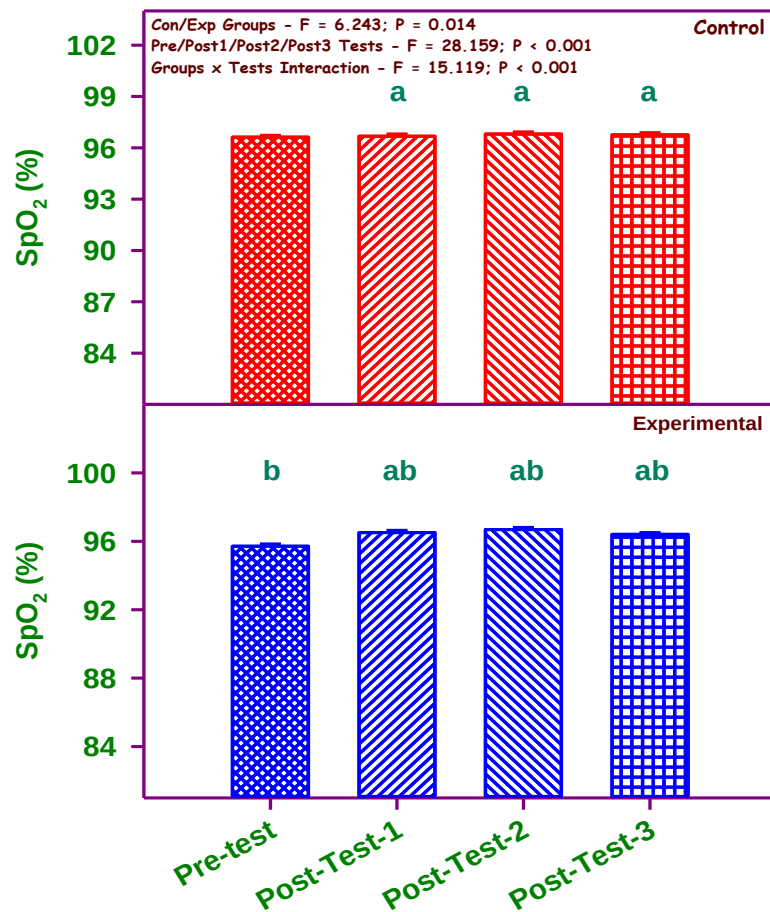
SPO₂

Table 5 and Figure 5 represent the comparison of pretest and posttests mean scores values of SPO₂ of the conscious MV patients in control and experimental groups. SPO₂ of control pretest, posttest 1, 2 and 3 are 96.6, 96.6, 96.8 and 96.7

percentages respectively. The mean scores of SpO₂ of the experimental group pretest, posttests 1, 2 and 3 were 95.7 percent, 96.5 percent, 96.6 percent and 96.4 percent respectively. Two-way RMANOVA analysis shows the significance among control and experimental groups ($p < 0.001$). The tests (pretest and posttest 1, 2 and 3) also showed statistical significant ($p < 0.001$). The group x test interaction also showed statistical significance ($p < 0.001$). Comparing the control group pretest with posttest 1, 2, and 3 (within group) by the Bonferroni 't' test showed statistically not significant $p = 1.000$, $p = 0.310$ and $p = 0.892$ respectively. Comparing the experimental group (within group) by the Bonferroni 't' test showed pretest with posttest 1, 2, and 3 were statistically significant ($p < 0.001$, $p < 0.001$ and $p < 0.001$ respectively). The control and experimental groups (between groups) of the pretest and posttest-3 were statistically not significant, $p < 0.001$ and $p = 0.045$, whereas posttests 1 and 2 showed statistically significant $p = 0.349$ and $p = 0.495$ respectively. Hence, it can be interpreted that there was an improvement of approximately two percentage points of oxygen saturation (spO₂) in the experimental group from posttest 1 to posttest 3 compared to the experimental group pretest. This shows SpO₂ was stabilised both in the control and experimental groups, which shows better stabilization.

Table 5: Comparison of mean scores values of SpO₂ related effectiveness of AAC between control and experimental groups.

Parameter	Test	Mean	SEM
SpO ₂ (%)	Control pretest	96.6	0.1
	Control posttest-1	96.6	0.1
	Control posttest -2	96.8	0.1
	Control posttest -3	96.7	0.1
	Exp- pretest	95.7	0.1
	Exp-1 posttest -1	96.5	0.1
	Exp- posttest -2	96.6	0.1
	Expe-posttest-3	96.4	0.1



Values are mean $\pm$ SE (n = 60 each)

The 'F' and 'P' values are by two-way RM ANOVA for groups (control and experimental), tests (pre-test, post-test-1, post-test-2 and post-test-3) and the interaction with Bonferroni 't' test.

^aSignificantly different from the respective pre-test group (control or experimental; within groups).

^bSignificantly different from the respective control group (pre-test, post-test-1, post-test-2 or post-test-3; between groups).

Figure 5: Bardigram showing SpO₂ level in control (conventional method) and experimental (AAC method) groups of conscious mechanical ventilated patient's pretest and posttest level scores.

Discussion

Anxiety causes tachycardia, decreased diastolic coronary blood flow, raised overall oxygen and myocardial oxygen consumption, hyperventilation, respiratory alkalosis, and increased breathing effort. Critical care nurses must recognise the importance of anxiety in a patient's state, outcome and assess anxiety using physiological and behavioural signs in addition to clinical practice [22]. Inaccurate assessment of anxiety with inappropriate care can lead to negative effects, due to changes in immunological role, autonomic tone, and cardiovascular function [23, 24]. As a result, HR, BP, RR, the formation of blood clots and myocardial burden all raise [25, 26, 27].

The fight-or-flight response is a physiological arousal response in which the body reacts to perceived danger or stress by increasing HR and BP, slowing digestion, increasing blood flow to the extremities, and increasing the release of chemicals such as adrenaline and cortisol [28]. The relaxation reaction is the opposite of the stress response in our bodies. The body progresses toward a state of physiological calm during the relaxation reaction, in which BP, HR, digestive function, and hormonal levels return to normal [29]. Vital sign changes are the earliest signs of a patient's clinical deterioration. (Brekke et al, 2019) [13]. They play a crucial role in determining the best course of treatment. (Poncette et al, 2019) [12]. In critically ill patients, it is important to begin mobilisation and physical therapy as soon as possible in order to improve the patient's outcome. (Nydahl et al, 2017) [30]. As a result, critical care nurses must carefully and continuously monitor and analyse patient's vital signs in order to provide therapeutic guidance.

A study was conducted on patients in critical care/ICU, and patients admitted to wards were evaluated psychologically. The study concluded that, patients had higher levels of despair, anxiety and stress, which were significantly higher among ICU patients [31]. The findings of this study were similar to those of a study on reliance on physiological and behavioural parameters, which looked at nurses' assessments of patients' anxiety. Increased BP, HR, pain level and RR were among the physiological parameters covered. According to the findings, agitation was rated as the most important indicator of anxiety by the participants. Increased BP and HR were ranked second and third, as the most significant indicators. The fourth most common symptom was patients' verbalization of anxiety, followed by restlessness [22].

The use of a communication board for MV patients has been highlighted in a review. According to the review findings, there is a link between speech loss and strong emotional reactions in ICU patients, such as high levels of frustration, tension, worry and sadness. Lip reading, gestures and head nods, which are the most often used communication modalities with critically ill patients, take more time, are insufficient to cover all communication demands and are stressful for both patients and nurses. This could have an influence on critical care survivor's long-term mental health. Medical and nursing staff should be aware of the tools and technologies accessible to intubated patients to help them communicate and improve their quality of life, such as spelling boards, icon charts and electronic assistance [32].

Conclusion

The results of this study indicated that administration of AAC stabilises and reduces HR by an average of 2 bpm, RR by an average of 2 bpm, SBP by an average of 3-4 mmHg, DBP by an average of 3 mmHg and improvement of SpO₂ by an average of 2 percentage points. This may not be clinically significant because all the values are falling within the normal range. It may be clinically important, significant and clinically benefit, when there is a reduction in value of tachycardia, tachypnea, bradycardia, bradypnoea, reduction in systolic BP between 110-139 mmHg and diastolic BP between 70-89 mmHg and improvement of SpO₂ more than 91 percentage. A mild decrease in HR, SBP, DBP values, RR values and a slight improvement in oxygen saturation rate were observed after the administration of AAC. The relaxation response is commonly considered as a decrease in HR and RR. Even a mild relaxation response, we feel, can be helpful. According to this study, AAC may be beneficial for parameters such as HR, RR, DBP, SBP and SPO₂. The study findings suggest that administration of AAC stabilises and reduces HR, SBP and DBP values across the study. Reduction of these physiological responses is considered indicative of a relaxation response. Furthermore, the results showed decreased RR and an increased level of oxygen saturation.

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Ethical Approval

The study was approved by the Institutional Ethics Committee.

Conflict of Interest

The authors declare no conflict of interest.

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