

## **Effect of Implementing Communication Strategies on Nonverbal Critically Ill Patients' Outcomes.**

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### **Abstract**

The nonverbal critically ill patients have a considerable need for information and support, so verbal communication can provide orientation and meaningful sensory input to these patients, Information received by the nonverbal critically ill patients may assist in reducing stress, helping patients preserve self-identity. **Aim:** This study was carried out to investigate effect of implementing communication strategies on nonverbal critically ill patient's outcomes (level of consciousness, pain and duration of mechanical ventilation). **Design:** a quasi-experimental design. **Setting:** In (Trauma, General and Critical care ICUS) at Assiut University Hospital. **Subjects:** A convenience sampling of 60 adults patients. Sample was assigned to two equal groups (study and control). **Tools:** Three tools were utilized to collect data of study, **Tool I:** Patient assessment tool. **Tool II:** Level of consciousness assessment tool (FOUR scale). **Tool III:** Pain assessment tool (Critical care pain observation (CPOT) scale). **Method:** The researcher used preparatory, implementation and evaluation phases to implement this study. **Results:** Finding of present study revealed that there was significant statistical difference between both study and control groups regarding to level of consciousness (P value = 0.005\*\*& <0.001\*\*). **Conclusion:** implementing communication strategies had effects on promotion of level of consciousness, improve pain sensation and decrease duration of mechanical ventilation of the study group. **Recommendation:** Communication strategies should standardize as a basic part of care provided to all nonverbal critically ill patients in intensive care units.

**Keywords:** *Communication Strategies, Nonverbal Critically Ill Patient & Patients' Outcomes.*

### **Introduction**

Communication with hospitalized patients is essential to improve the quality and safety of patient. Patients in the intensive care unit (ICU) are often deprived of speech and their ability to communicate, because of intubation. There is a significant relationship between the loss of speech and severe emotional reactions among ICU patients, such as a high level of frustration, stress, anxiety, and depression. Current practice in the ICU is to use less sedation in mechanically ventilated patients, which increases the number of patients potentially able to communicate while mechanically ventilated and awake .Even though there are numerous alternative methods of communication available and about 50 % of the ICU patients could potentially be served by simple assistive communication tools caregivers currently make little to no use of communication tools for patients in the ICU. (Baumgarten & Poulsen, 2015). Effective communication strategies is one of the foundations of professional nursing practice , as nurses are the professional group that have the greatest contact with patients, ensuring their communication needs are fully met has been established as one of most important skills of

nursing. Even with developments in technology, most health care remains firmly communication centred. Healthcare professionals use communication strategies to give directions, offer reassurance, provide consolation, interpret, receive information, and carry out different duties. Therefore, the more effectively and efficiently the nurse communicates, the more accomplished they will become in fulfilling their health care role

(Hemsley et al., 2012).

The unconscious patients have a considerable need for information and support, so verbal communication can provide orientation and meaningful sensory input to these patients, Information received by the unconscious patients may assist in reducing stress, helping patients preserve self-identity and self-esteem and reduce social isolation, in addition, communication experts emphasized that the use of nonverbal communication in the form of caring touch with verbal communication has a considerable outcome for unconscious patients, It can enhance the messages patients receive, help to meet patients' psychological needs and prevents psychosis withdrawal and delirium, which

may contribute to psychological stress, disorientation, anxiety and isolation. Despite its importance, there is evidence that communication in ICUs is not sufficiently implemented in practice, Researchers have also seen that nurses talk very little to the unconscious patient while doing any procedure, Even if they communicate it is to check only the patient's reflexes ( **Laureys et al., 2012**).

Patient-nurse communication requires an understanding of the patient and the feelings they express, therefore effective communication demands for skills and sincere intention of the nurse to understand what concerns the patient . Meanwhile, argued that to understand the patient only is insufficient but the nurse also must pass his/her message to patient in a manner that is clear, understandable and acceptable. Often, simple gestures by the care giver such as warm greetings and/or a thoughtful question can help put the patient at ease and strengthen communication. ( **Ennis & Ennis, 2013**).

### Significance of study

It is documented that many patients have regained consciousness and given accurate accounts of what happened to them in their unconscious stage, the majority of unconscious patients has normal brainstem auditory evoked responses and indicated that they may hear. During the period of unconsciousness, most participants revealed that they heard, understood, and emotionally responded to what was said to them, that talking to comatose patients may have considerable therapeutic value ( **Goudarzi et al., 2010**).

Patient communication has long been recognized as a research priority in critical care, unfortunately, many of the studies in the area of communication with unconscious patients suffer from design weaknesses, such as

non standardized practices, so definitive recommendations for clinical practice are difficult to make.( **Simões et al., 2012**).

In 2018, the number of unconscious patients connected to MV admitted in critical care ICU was about (480) patients. ( **Assuit University Hospital records, 2018**).

### Operational definition

**Patients' outcomes** refer to increase pain response, decrease duration of mechanical ventilation and promotion of level of consciousness.

### Aim of the study

To evaluate the effect of implementing communication strategies on nonverbal critically ill patient's outcomes.

### Hypothesis

The following research hypothesis were formulated will be in an attempt to achieve the aim of the study.

**Hypothesis 1** -the study group subjects who receive communication strategy will be improve level of consciousness compared to the control group.

**Hypothesis 2** -the study group subjects who receive communication strategy will be improve pain sensation compared to the control group.

**Hypothesis 3** -the study group subjects who receive communication strategy will be decrease duration of mechanical ventilation compared to the control group.

### Patients & Method

#### Research design

-Quasi experimental research design was used to conduct this study.

#### Variables

- Independent variable: is a communication strategy.
- Dependent variable: is nonverbal critically ill patient's outcome (level of consciousness, pain and duration of mechanical ventilation).

#### Setting

This study was conducted in (Trauma, General and Critical care) Intensive care units at Assiut university hospital.

#### Subjects

A convenience sampling of 60 unconscious adults, both gender. Patients were assign to two equal groups, each group consist of 30 patients. Control group who received routine hospital care and study group who received communication strategies.

#### Inclusion criteria

The study included patients who had the following criteria

- All patients receiving mechanical ventilation.
- Patient in endotracheal tube or tracheostomy.
- Unconscious patient.

#### Exclusion criteria

The study excluded patients with the following criteria

- Patients with vision problems.
- Patients with hearing problems.
- Conscious patients.

#### Tools of data collection

Three tools were used to collect the necessary information for the study, the following tools were used

#### Tool one: Patient assessment tool

The tool was developed by the researcher after reviewing literatures, the tool used to assess patient condition, and divided into two parts as

**Part I: Demographic assessment sheet**

- Demographic data includes patient's code, age and sex.

**Part II: clinical data assessment sheet:**

- Clinical data includes patient diagnosis and duration of mechanical ventilation

**Tool two: Level of consciousness assessment tool (FOUR scale)**

This tool was adapted from (Khanal, et al., 2016) "FOUR" is acronym for "Full Outline of Unresponsiveness". This tool used to assess level of consciousness. This score comprises four main items (Eye response (0-4), Motor response (0-4), Brain stem reflexes (0-4) and Respiration (0-4) where total score of this tool are 16 items. A score of 0 on the FOUR scale assumes the absence of brainstem reflexes and breathing while, 16 indicates full consciousness .the researcher categorizes the FOUR scale as the following:-

(Less than 6) Severe impairment level of consciousness, (from 6-12) moderate impairment level of consciousness and (from 13-16) mild impairment level of consciousness.

**Tool three: Pain assessment tool ( Critical care pain observation (CPOT) scale.**

This tool was adopted from (Gélinas, 2010) Used to assess intensity of pain levels and patient's comfort. This scale consists of 5 items (facial expressions (0-2) , body movements(0-2), muscle Tension(0-2), ventilation compliance or vocalization (0-2) and Pain with movement(0-2). Each item is scored from 0 to 2. The total score thus varies from 0 to 10. Includes (0→No pain, 1, 2, 3→mild pain, 4, 5, 6→moderate pain and 7, 8, 9, 10→sever pain). Critical care pain observation pain intensity scale the left anchor representative no pain &the right anchor representative the worst pain.

**Method of data collection**

**The study was conducted throughout four main phases**, which were preparatory phase, assessment phase, implementation phase and evaluation phase

**1. Preparatory phase for both control, and study groups:-**

- Permission to conduct the study obtained from the responsible hospital authorities in anesthesiology department, after explaining the aim and nature of the study.
- The tool (I) used in this study were developed by the researcher based on reviewing the relevant literature.
- Content validity: the tools were tested for content related validity by 5 specialists in the field of critical care nursing and critical care medicine from Assiut university and ascertain that the tools were relevant, understood, and applicable.

- The reliability and validity of FOUR were acceptable in another research done by( Iyer. et al,2009) Cronbach \_ 0.87 and a Kappa coefficient of 0.99.

**Pilot study**

A pilot study was carried out in order to assess the feasibility and applicability of the tools and who the necessary modifications were done. The pilot study was done on 6 patients were excluded from the study.

**Ethical considerations**

- The research was approved from ethical committee in the faculty of nursing.
- There was no risk for study subject during application of the research.
- The study follow common ethical principles in clinical research.
- Informed consent was taken from person participating in the study after explaining the nature and purpose of the study.
- Confidentiality and will be assured.
- Patient has the right to refused to participate or withdraw from the study without any rational at any time.

**2. Assessment phase for control and study groups**

- During this phase the researcher assessed patients from the first day of admission and record patient demographic and clinical data before any data collection by taking this information from his/her sheet using tool 1.
- The researcher assessed level of consciousness by using FOUR scale tool 2.
- The researcher assessed pain of nonverbal critically ill patients by using critical care pain observation (CPOT) scale from the first day of Intervention and record critical care pain observation (CPOT) scale daily tool 3 to assess (facial expressions, body movements, Muscle Tension, ventilation compliance or vocalization (if extubated), Pain with movement (e.g. above behavior or individualized response) while providing usual care (e.g. Turning).

**3. Implementation phase for study group**

The researcher applied communication strategies for study group from the first day of admission and for fifteen consecutive days, every day as the following:

- During this phase the patient's closest relative of the intervention group was interviewed to determine the patient's social history and personality characteristics. From the first day of admission and for fifteen consequent days, every day, the researcher reviewed patient's chart to document demographic and clinical data using tool 1.
- Before started communication with the patient, the researcher prepared the room: maintain privacy,

and researcher tried to keep the surroundings as quiet as possible and ensured that the patient is in a resting position (semi-fowler's position or appropriate position to the applied procedure). Then the researcher stood beside the patient's bed (facing the patient to be in the visual field).

- Verbal communication practices were performed each time from the first day of admission and for fifteen consequent days, every day the structured verbal messages consisted of **three parts**:
- The first part included presentation and orientation; the second part included information; the third part included functional assessment and stimulation.
- **The first part** included contents with the purpose of introducing the speaker and orientating the conversation in space and time. This part was composed of calling the patient by his name, greeting the patient, identifying the health professional or relative (name, profession or relationship), stating the date, day of the week and the weather, and explaining their current location. Finally, explaining the procedure before performing it and reassuring the patient at the end of each procedure; explaining patient's progress, and communicating the present condition of the patient.
- **The second part** consisted of providing the patient with information about: current affairs; saying something about their family life and some sentences about recovery and coming back to family in the future.
- **The third part** of the verbal message had the purpose of assessing the functional abilities and response to stimulation of the patients. This part was composed of instructions (e.g., open your eyes) and an evaluation of their responses, including verbal replies, opening of eyes and motor responses.
- The standardized criteria for verbal communication to nonverbal critically ill patients was identified such as: using the appropriate voice tone, not speaking too loud or shouting, avoiding parallel talk while care procedures are performed, communicating with the patient directly, simplifying language by using short and uncomplicated sentences, repeating the content words or key words to clarify meaning as needed, maintaining a natural conversational manner appropriate for an adult, minimizing distractions, and encouraging any type of communication feedback from patient.
- **Nonverbal communication practices** were performed in combination with verbal practices. The researcher leaned forward and smiled each time she spoke to the patient, maintained eye contact

throughout the procedure, taped on patient shoulder and hand before and after procedure.

- The family members were encouraged to communicate "verbally and non-verbally" with their patients during visiting hours. Family verbal communication covered spiritual support, reaffirming that the patient is not alone; concerns about the patient's recovery the wish for the patients to return to family life; and should not worry about external events; family is concerned with reporting the visits, memories about daily life and news from home. Nonverbal communication methods used by family members consisted of taping on patient's face and arms and leaning forward during talking to the patient.
- Patients in the intervention group were followed up by the researcher from the first day of admission and for fifteen consequent days, each patient evaluated there times (on admission, at 7<sup>th</sup> day and on discharge).

#### 4. Evaluation phase

- This phase was done to evaluate the effect of implementing communication strategies on nonverbal critically ill patients' outcomes by using tool I, II, III from the first day of admission through fifteen consequent days, each patient evaluated there times (on admission, at 7<sup>th</sup> day and on discharge). So outcomes of the patient were (level of consciousness, pain and duration of mechanical ventilation).

#### Statistical analysis

Data entry and data analysis were done using SPSS version 20 (Statistical Package for Social Science). Data were presented as number, percentage, mean and standard deviation. Chi-square test and Fisher exact test were used to compare qualitative variables. Mann-Whitney test was used to compare quantitative variables between groups in case of non-parametric data. Wilcoxon Signed Rank Test was done to compare quantitative variables between different times. Spearman correlation was done to measure correlation between quantitative variables. P-value was considered statistically significant when  $P < 0.05$ .

## Results

Table (1): Comparison between study and control groups related to demographic and clinical data.

	Study		Control		P.value
	No	%	No	%	
<b>Age</b>					
18 -<30 yrs	11	36.7	5	16.7	0.359
30 -<40 yrs	4	13.3	5	16.7	
40 -<50 yrs	0	0.0	1	3.3	
50 -<60 yrs	9	30.0	9	30.0	
> 60 yrs	6	20.0	10	33.3	
Mean±SD	43.8±16.3		50.23±15.8		0.123
<b>Sex</b>					
Male	26	86.7	22	73.3	0.332
Female	4	13.3	8	26.7	
<b>Diagnosis</b>					
Neuro Vascular system disorder	16	53.3	12	40.0	0.301
Cardiovascular system disorder	5	16.7	6	20.0	0.739
Respiratory system disorder	8	26.7	12	40.0	0.273
Renal disease	1	3.3	1	3.3	1.000
Gastro intestinal tract disease	4	13.3	5	16.7	0.718
Other disease	4	13.3	8	26.7	0.197

Table (2): Comparison between study and control groups in relation to Four Score Scale to assess level of consciousness.

Four Scale Level	Study		Control		P. value
	No	%	No	%	
<b>On admission</b>					
Sever(Less than 6)	19	63.3	21	72.4	0.562
Moderate (From 6-12)	10	33.3	9	31.0	
Mild(From 13-16)	1	3.3	0	0.0	
Mean ±SD	5±4.01		5.4±3.34		0.676
<b>At 7th day</b>					
Sever Less than 6	12	40.0	25	86.2	0.001**
Moderate (From 6-12)	13	43.3	5	17.2	
Mild(From 13-16)	5	16.7	0	0.0	
Mean ±SD	7.17±4.75		4.13±3.22		0.005**
<b>On discharge</b>					
Sever Less than 6	11	36.7	26	89.7	<0.001**
Moderate (From 6-12)	9	30.0	2	6.9	
Mild(From 13-16)	10	33.3	1	3.4	
Mean ±SD	8.97±5.18		3.21±2.81		<0.001**

Used chi-square for categorical variables and for independent-samples T Test continuous variables.

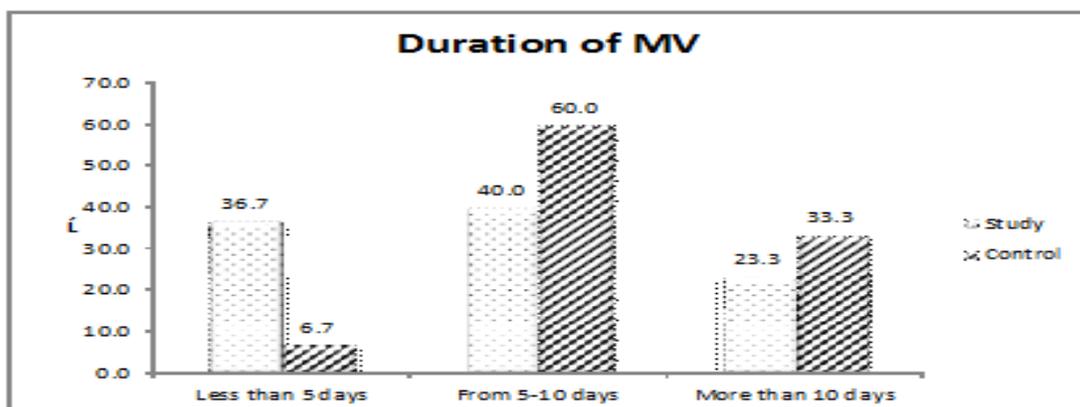
\* Statistically significant difference ( $p < 0.05$ ) \*\* highly statistically significant difference ( $p < 0.01$ ).

**Table (3): Comparison between study and control groups in relation to critical care pain observation (CPOT) scale to assess pain.**

	Study(n=30)	Control(n=30)	P. value
	Mean ±SD	Mean ±SD	
<b>On admission</b>			
facial expressions	0.3±0.53	0.67±0.61	0.012*
Body movements	0.3±0.47	0.7±0.65	0.012*
Ventilated Patient	0.52±0.57	0.9±0.67	0.030*
Extubated, "vocal" Patient	0±0	0±0	1.000
Muscle Tension	0.27±0.45	0.57±0.5	0.019*
Pain with movement	0.37±0.61	0.7±0.6	0.019*
Total score	1.73±2.3	3.5±2.56	0.007**
<b>At 7<sup>th</sup> day</b>			
facial expressions	0.67±0.61	0.43±0.5	0.139
Body movements	0.77±0.57	0.4±0.5	0.013*
Ventilated Patient	0.58±0.58	0.66±0.67	0.765
Extubated, "vocal" Patient	0.33±0.82	0±0	0.683
Muscle Tension	0.67±0.48	0.4±0.5	0.040*
Pain with movement	0.77±0.57	0.43±0.5	0.025*
Total score	3.4±2.4	2.3±2.12	0.065
<b>On discharge</b>			
facial expressions	0.77±0.57	0.33±0.55	0.003**
Body movements	0.8±0.55	0.23±0.43	<0.001**
Ventilated Patient	0.59±0.5	0.43±0.63	0.197
Extubated, "vocal" Patient	0.33±0.82	0±0	0.683
Muscle Tension	0.63±0.49	0.23±0.43	0.002**
Pain with movement	0.83±0.53	0.31±0.54	<0.001**
Total score	3.47±1.96	1.53±2.05	<0.001**

**Table (4): Comparison between study and control groups in relation to duration of mechanical ventilation:**

	Study		Control		P.value
	No	%	No	%	
<b>Duration of MV</b>					
Less than 5 days	11	36.7	2	6.7	0.019*
From 5-10 days	12	40.0	18	60.0	
More than 10 days	7	23.3	10	33.3	
<b>Mean±SD</b>	<b>7.90±3.74</b>		<b>10.0±3.59</b>		<b>0.031*</b>

**Figure (5): percent distribution of duration of mechanical ventilation among studied patients:**

**Table (1):** Illustrates demographic and clinical data of study and control groups. Regarding to age, it was noticed that the main age in study and control groups ( $43.8 \pm 16.3$  and  $50.23 \pm 15.8$ ) respectively. Regarding to sex, the high percent of patients were male in study and control groups (86.7% and 73.3%) respectively. As regard to diagnosis, the majority of patients were complained from neurovascular system disorder in study and control groups (53.3% and 40.0%) respectively. it was noticed that there was no statistical significant differences between study and control groups in all item ( $P$  value  $> 0.05$ ).

**Table (2):** Illustrates Four Score Scale of study and control groups. It was found that there was a statistical significant difference between study and control groups in 7<sup>th</sup> day and on discharge ( $P = 0.005^{**}$  &  $P = < 0.001^{**}$ ) respectively.

**Table (3):** Illustrates critical care pain observation (CPOT) scale of study and control groups. Regarding to facial expressions it was observed there was statistical significant differences between study and control groups on admission and on discharge ( $P = 0.012^{*}$  &  $P = 0.003^{**}$ ) respectively. Regarding to Body movements it was observed there was statistical significant differences between study and control groups On admission, in 7<sup>th</sup> day, and On discharge ( $P = 0.012^{*}$  &  $P = 0.013^{*}$  &  $P = < 0.001^{**}$ ) respectively. Regarding to Muscle Tension it was observed there was statistical significant differences between study and control groups On admission, in 7<sup>th</sup> day, and On discharge ( $P = 0.019^{*}$  &  $P = 0.040^{*}$  &  $P = 0.002^{**}$ ) respectively. Regarding to Pain with movement it was observed there was statistical significant differences between study and control groups On admission, in 7<sup>th</sup> day, and On discharge ( $P = 0.019^{*}$  &  $P = 0.025^{*}$  &  $P = < 0.001^{**}$ ) respectively. It was found that there was a statistical significant difference between study and control groups on admission and on discharge ( $P = 0.007^{**}$  &  $P = < 0.001^{**}$ ) respectively.

**Table (4):** Illustrates Comparison between study and control groups in relation to duration of mechanical ventilation. It was noticed that there were a statistical significant differences between study and control groups regarding to duration of mechanical ventilation ( $P$  value =  $0.031^{*}$ ) respectively.

**Figure (5):** Illustrates percent distribution of duration of mechanical ventilation among studied patients. It was noticed that there decrease duration of mechanical ventilation in study groups comparing to control groups ( $P$  value =  $0.031^{*}$ ) respectively.

## Discussion

The majority of patients in critical care units are compromised in their ability to communicate. Specifically, they are unable to communicate orally

and so cannot represent their thoughts, feelings, desires and needs clearly to others (Jakimowicz, & Perry, 2015).

The nonverbal critically ill patients have a considerable need for information and support, so verbal communication can provide orientating and meaningful sensory input to these patients. Information received by the unconscious patients may assist in reducing stress, helping patients preserve self-identity and self-esteem and reduce social isolation (Mancia, 2018). So, the aim of this study was to investigate effect of implementing communication strategies on nonverbal critically ill patient outcomes at Assiut University Hospital.

This discussion will cover the main result findings as follow:

### Patient assessment

Regarding demographic and clinical data of study and control groups:

**Regarding to age,** it was noticed that the main age in study and control groups ( $43.8 \pm 16.3$  and  $50.23 \pm 15.8$ ) respectively. This not agreed with Cameron et al., (2016) who found the mean age of ICU patients were more than 60 years old.

Falsini et al., (2018) showed that their average age was 58.6 years (most ICU cases were between 46 to 65 years old).

**Regarding to sex,** the high percent of patients were male in study and control groups.

This not compatible with Flaatten et al., (2017) who found no significant difference between both sexes which compatible with the result of the current study. In this context (Garnacho-Montero et al., (2018) found that male: female ratio in admitted ICU patients suffering from ARF was 1:2.

**Regarding to diagnosis,** the majority of patients were complained from neurovascular system disorder in study and control groups. This result matched with De Guzman, & Ament, (2017) who mentioned that; It is common for neuropsychological and functional deficits to occur in ICU patients receiving mechanical ventilation because of the various sedative medications commonly used. However, Ponikowski et al., (2016) found of all the patients admitted to the ICU during the study period, the incidence of hypertension, DM, renal dysfunction, acute heart failure, chronic obstructive pulmonary disease (COPD) and unstable angina were higher in patients aged  $\geq 60$  years and in male patients aged  $\geq 60$  years.

Generally, it was noticed that there was no statistical significant differences between study and control groups in all item ( $P$  value  $> 0.05$ ). This was important to ensure comparability of the two groups, and indicate successful randomization of the two groups. This confirmed by (Friedman et al., 2015).

### Regarding Four Score Scale to assess level of consciousness

**The present study** it was found that there was a statistical significant difference between study and control groups in 7<sup>th</sup> day and On discharge. In present study, application of communication strategies significantly to improve level of consciousness among unconscious patient revealed by FOUR scale.

**Othman, & El-Hady, (2015)** found that; the average mean of LOC revealed by FOUR scale for control and intervention groups at the

beginning of study were  $7.51 \pm 2.06$  vs.  $7.38 \pm 1.71$  respectively with no significance difference between the two groups. **Skrobik et al., (2018)** found that the two groups were similar at baseline, patients in the intervention group had a higher FOUR scale scores all over the study period than

patients in the control group. Also, **Luetz et al., (2016)** The implementation of strategic communication was associated with a statistically significant positive effect on level of consciousness revealed by FOUR scale. **Vincent et al., (2015)** found that consciousness level in the intervention group was significantly higher than the control group after application of conventional strategy among ICU patients. **Sugimoto et al., (2018)** findings showed that duration to reach GCS = 15 was significantly shorter in the experimental group than the control group. Moreover, **Roets-Merken et al., (2018)** examined the effect of organized stimulation, which was performed by a nurse, on the length of coma. The results indicated that the intervention group has become conscious from the 5th day and control group from the 10th day.

### Regarding critical care pain observation (CPOT) scale to assess pain

**The present study** illustrates regarding to facial expressions it was observed there was statistical significant differences between study and control groups On admission and On discharge. Regarding to Body movements it was observed there was statistical significant differences between study and control groups On admission, in 7<sup>th</sup> day, and On discharge. Regarding to Muscle Tension it was observed there was statistical significant differences between study and control groups On admission, in 7<sup>th</sup> day, and On discharge. Regarding to Pain with movement it was observed there was statistical significant differences between study and control groups On admission, in 7<sup>th</sup> day, and On discharge.

This agreed with **Harris et al., (2016)** who found the control group had a significantly higher incidence rate of pain assessment scale than patients in the intervention group. Adding that; a number of

interventions in the intensive care unit are painful as placement of invasive monitoring lines, endotracheal tube intubation increase patient discomfort sedative with analgesia properties such as narcotics, can help alleviate this pain of intrusion allows patients to tolerate painful/distressing procedures optimize mechanical ventilation.

The improvement of patients' clinical conditions during the current study could be attributed to application of communication strategies. supported by,

**Hoseinzadeh et al., (2017)** who indicated that communication content, such as the patient's own name by familiar voice, induced extensive brain activation than sounds without meaning. This implies that content is important when talking to unconscious patients.

**Wang et al., (2015)** found that the average visual analog scale score in all patients was  $5.8 \pm 2.0$ , and most patients presented moderate discomfort.

**Regarding duration of mechanical ventilation:** The present study illustrated regarding the comparison between study and control groups in relation to duration of mechanical ventilation. It was noticed that there were a statistical significant differences between study and control groups regarding to duration of mechanical ventilation ( $P$  value = 0.031\*) respectively.

In this line **Gorji et al., (2014)** found that the mean duration of mechanical ventilation was significantly shorter in the intervention group than in the control group ( $6.20 \pm 2.074$  days vs.  $9.80 \pm 2.17$  days respectively  $P \leq .001$ )

This result supported by **Othman & El-Hady (2015)** who reported that patient's level of conscious affects the duration of MV, as high level of conscious was accompanied with a decreased duration of MV for intervention group than patients of the control group.

### Conclusion

Based on the results of this study, it could be concluded that: implementing communication strategies had effects on promotion of level of consciousness, improve pain response and decrease duration of mechanical ventilation of the study group.

### Recommendation

- Communication strategies should standardize as a basic part of care provided to all nonverbal critically ill patients in intensive care units.
- Reapply this research on a larger probability sample acquired from different geographical areas in Egypt for generalization.

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