



## NURSING APPROACHES OF SOCIAL TYPE HAVE A POSITIVE IMPACT ON THE TREATMENT OF POSTOPERATIVE DELIRIUM

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### Abstract

Acute postoperative organic psychosyndrome (delirium) is a common complication after cardiac surgery. It is characterized by disorientation of the patient in terms of space and time, most often in the Intensive Care Unit, often accompanied by aggressive or self-destructive behaviour.

**Purpose:** The purpose of this study is to investigate the effectiveness of specific nursing interventions in the treatment of delirium.

**Materials and methods:** We included in the study 47 patients who developed delirium out of a total 184 patients undergoing major cardiac surgery (CABG, AVR, MVR, combined interventions, aneurysm and dissection thoracic aorta) in the same period, lasting 18 months. Patients were tested for the syndrome with valid instrument scales, more specifically CAM-ICU (Confusment Assessment Method for Intensive Care Unit) and Nu-DeSc (Nursing Delirium Screening Scale). They were then divided into four groups, a control group without any additional intervention, a group in which patients were given option for listening to music for 20 minutes twice a day, one group that followed an additional physiotherapy program and, finally, a group with two extra visits by friends or relatives, lasting twenty minutes daily.

**Results:** The study included 152 (83%) men and 32 (17%) women. The average age of both sexes without delirium was  $61.55 \pm 7.9$  years and with delirium  $68.97 \pm 8.1$ . Patients supportive interventions implemented have improved behavior in delirium, based on the results of measurement scales. More specifically, patients within the music group had an average score of  $4.8 \pm 0.7$  prior to the intervention and an average score of  $3.2 \pm 0.4$  ( $p < 0.01$ ) after the intervention. The physical therapy group had an average pre-intervention score of  $4.7 \pm 0.6$  and a score of  $3.6 \pm 0.4$  after the intervention ( $p < 0.05$ ). Finally, the group with the additional visits had a pre-score of  $5.0 \pm 0.7$  and a score after the intervention of  $4.0 \pm 0.5$  ( $p < 0.05$ ). Duration of delirium has been much shorter in the intervention groups compared to the control group not receiving intervention ( $32 \pm 3$ ,  $36 \pm 4$  and  $38 \pm 4$  vs  $48 \pm 9$  hours respectively).

**Conclusion:** The supportive, non-pharmaceutical interventions can improve the image of patients with delirium after cardiac surgery.

**Keywords:** Delirium, CAM-ICU, Nu-DeSc, Nursing

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## INTRODUCTION

Postoperative delirium (PD) consists one of the main complications after heart surgery. It is a devastating disorder that causes disorientation and often hostile and aggressive behavior on the part of the patient. This makes the compliance with the remedy plan more difficult and also often leads to self-injuries, incidents that in total result in prolongation of the hospitalization time and of the hospitalization costs [1-6].

So far, there has not been an adequate way to deal with the phenomenon, either pharmaceutical or of any other kind. In this research we investigated the potential impact of other, social and nursing type approaches to the complication, with the hope to alleviate the burden caused by PD to our patients and their relatives.

During the 18-month period March 2012 to September 2013 we prospectively included in the study patients after written informed consent. These were patients planned to undergo elective heart surgery. All patients were followed after extubation for the occurrence of PD. They were checked with two scales: Patients with PD were randomly divided to four categories of intervention:

- i) Control group without any intervention
- ii) Patients submitted to musical therapy based on the kind of music that each patient had declared as his favourite prior to the operation (duration: 20 minutes)
- iii) Patients submitted to an extra session of physical and motion therapy
- iv) Patients allowed to accept extra visits from friends and relatives in the ICU (20 minutes daily).

The response to each kind of the intervention was measured based on the two aforementioned tests [7,8]. In the statistical analysis we included basic data such as age, gender, history of previous stroke and duration of the operative procedure. The three methods of the intervention were compared according to their level of efficacy in alleviating the symptoms of PD. The statistical analysis used the  $\chi^2$  criterion for categorical parameters, the t-student (unpaired) for continuous parameters, the t-student criterion for the comparison of pre-and post-intervention scores (within patient difference) and the ANOVA continuous measurements for the multivariate analysis of factors contributing to the development of delirium. The statistical program applied was the SPSS 21.0.

## RESULTS

We included in the study 184 patients. Postoperative delirium occurred in 47 of those. Mean age of patients with PD was  $68.97 \pm 8.1$  years compared to a mean age of  $61.55 \pm 7.9$  years for the non-delirious patients. Mean duration of surgery in the delirium group was  $220 \pm 14$  minutes compared to the  $203.5 \pm 12$  minutes of the non-delirious group. 34 of the 152 male patients (22.3%) developed PD, while a much higher percentage of 13 out of 32 women (40.6%) had the complication.

As far as the efficacy of our interventions is concerned:

- i) The mean score of  $4.8 \pm 0.7$  in the Nu Desc Scale was lowered to  $3.2 \pm 0.4$  in the group with the musical intervention ( $p < 0.01$ )
- ii) The mean score of  $4.7 \pm 0.6$  in the same scale was improved to  $3.6 \pm 0.4$  in the group with the extra session of physical therapy ( $p < 0.05$ )
- iii) The mean score of  $5.0 \pm 0.7$  was lowered to a mean score of  $4.0 \pm 0.5$  in the group with the extra visits from friends and relatives ( $p < 0.05$ )

In addition, the mean duration of delirium was significantly lower in the three intervention groups compared with the control group ( $32.0 \pm 3$  vs  $48 \pm 9$  hours (musical therapy)- $p < 0.01$ ,  $36.0 \pm 4$  hours vs  $48 \pm 9$  hours (physical therapy)- $p < 0.05$ ,  $38 \pm 4$  hours vs  $48 \pm 9$  hours (extra visit)- $p < 0.05$ . Results are cumulatively depicted in Table 1.

## DISCUSSION

PD remains one of the main problems encountered after heart surgery but also after other kinds of surgical procedures. Aim of our study was to investigate the putative effect of some non-medical interventions of social or nursing type to the treatment of this nosological entity.

As expected from the existing literature, men, aged and patients with longer surgery were more prone to the development of the disorder. What came up as a good surprise was that the efficacy of our interventions, implemented by our nursing staff, had significant results in the alleviation of symptoms, with the musical therapy having the greatest impact, followed by the physical therapy and the intervention based on granting of extra visits. In addition, the mean duration of delirium was significantly lower in the three intervention groups compared with the control group ( $32 \pm 3$  vs  $48 \pm 9$  hours (musical therapy)- $p < 0.01$ ,  $36 \pm 4$  hours vs  $48 \pm 9$  hours (physical therapy)- $p < 0.05$ ,  $38 \pm 4$  hours vs  $48 \pm 9$  hours (extra visit),  $p < 0.05$ ).

These results are particularly important as they are based on methods with practically zero costs for the health carrier and the intensive care department. It is an example of how simple, practical ideas can bring solutions to difficult, long-standing problems. We believe that more efforts can be guided towards the same direction, for the benefit of our patients and their families.



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**Table 1. Baseline characteristics of the involved groups and results regarding intensity and duration of delirium**

BASIC STATISTICS				
	Delirium Group	Group without delirium		Statistical Significance
Gender (Male)	34/152 (22.3%)	118/152 (77.6%)		(male vs female) p<0.01
Gender (Female)	13/32 (40.6%)	19/32 (59.3%)		
Age	68.97±8.1	61.55±7.9		p<0.01
Duration of Surgery	220±14	203.5±12		p<0.01
INTERVENTION STATISTICS				
	Pre-Score	Post-Score	Duration of Delirium	Statistical Significance (comparison to the control group)
Control Group (n=11)			48h±9	
Musical Therapy Group (n=15)	4.8±0.7	3.2±0.4	32 h±3	p<0.01
Physical Therapy Group (n=10)	4.7±0.6	3.6±0.4	36h±4	p<0.05
Extra Visit Group (n=11)	5±0.7	4.0±0.5	38h±4	p<0.05