

## PSYCHOLOGICAL PAIN TREATMENT IN INVASIVE MEDICAL PROCEDURES

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### Abstract

The aim of this study is to offer a scientific contribution and to improve the psychological service in the pediatric hospital “Mother Teresa”. It started as a need to confirm the effectiveness of collaboration between two disciplines; medicine and psychology, and to open a wide diapason for further research in this context. The hypotheses of the study were: 1. Usage of psychological treatment manual “information for preparation and bubbles” helps fear level reduction during medical invasive procedures in children. 2. Usage of psychological treatment manual “information for preparation and bubbles”, indicate the pain perception change during invasive medical procedures in children. Subjects in this study were children (aged 4-6), who were patients in Pediatric University Hospital Centre “Mother Teresa”, Tirana (QSUT). The sample of 30 subjects (n=30), is divided in two groups: experimental group (n=15), who received psychological treatment and group control (n=15), without receiving psychological treatment. The psychological treatment manual and compilation of the instrument were applied while children were going through invasive procedure. The schema of the study design is quasi-experimental NR X O1/ NR O1. The instrument used, is a scale, divided in two categories: 1. Scale of fear experiencing. 2. Scale of self-reporting pain. Results were analyzed with SPSS. The statistical analyze was based on descriptive statistics and significance statistics through T-test for both groups. The results of groups comparison, showed difference with statistically significance  $p = .05$  for all variables included in the study. Both hypotheses of the study were confirmed: 1. Usage of psychological treatment manual “information for preparation and bubbles” helps fear level reduction during invasive medical procedures in children. 2. Usage of psychological treatment manual “information for preparation and bubbles”, indicate the pain perception change during invasive medical procedures in children. Finding of the study, strongly recommend the application of psychological techniques in treating pain. Psychological treatment is an important element in patient’s wellness during hospitalization. Results of this study brought to the identification of difficulties, needs, and psychological service improvement in health institutions confirming the effectiveness of collaboration between two disciplines; medicine and psychology, and opening a wide diapason for further research in this context.

**Keywords:** *psychological treatment, fear level, pain perception, invasive medical procedures.*

## Introduction

The disease associated with medical staff has an important role in every child's experience. Children's role-play like a doctor, are constantly present in their spontaneous activities. Through their drawings and plays, meaningful aspects of medical image can be analyzed. Very often the doctor, because of the attribution of knowledge and potency, takes in general an active and dominant position towards the small patient who has to be passive and in some way to "obey". (Marcelli, D. Cazzulo, G. A. Quarello, M., 2004). Just a survey in the pediatric yards of the UHC "Mother Tereza", is enough to understand that when a child is exposed to a space surrounded by medical equipment and unknown people to him, he feels that everything around him is such enigmatic. In the first moment a child comes in the hospital, the doctor assess the symptoms and decides for the first medical procedures like intravenous injection, cannula, blood sample, etc. In a medical space things happen so fast without giving space to the child to process what is happening to him. The child feels threatened by the authority of medical staff's uniform and then the syringe which for its invasive nature, psychologically and physically hurt the small patient causing him fear and pain. These feelings can stay with this child growing up. Authors suggest that there is a correlation between childhood pain and fear due to medical procedures and avoidance behaviour later on in adulthood towards medical care. (Official Journal of the American Academy of Pediatrics, October 31, 2008, pg. 130). It seems this correlation explains why parents are often unprepared to manage their child's emotions. Some of them transmit their fear to the child who suddenly perceives it. In other cases parents try to minimize child's emotions using phrases like: "its enough, it just passed, there is no sense to go on crying, forget it, ...". The fear and pain a child feels are real, so they shouldn't either exaggerated neither denied. (Pollenghi, S., 2008). Considering both the scientific literature and the clinical context, pain felt during medical procedures is included in the acute pain group. The most often sorts of acute pain are: cannula, blood sample, intravenous injection, etc. Considered as routine procedures, they are treated by health care professionals as unimportant and with a transitory impact for the child. But from the review of many studies realised in the clinical context, acute pain is resulting as including in the same intensity the interaction of both physiologic and psycho-affective factors. (PEDIATRICS Vol. 108 No. 3 September 2001, p. 793-797). Emotional reactions like fear, frustration, anger, are importantly connected with pain expression of the child. (Craig, 1989; McGrath, 1994). Exactly, since pain started to be considered as a complex psychological experience, psychological discipline has contributed in research, in building instruments for pain assessment and in proposal of psychological techniques (non-pharmacological), mostly cognitive-behavioral ones. Application of these techniques in clinical spaces has indicated the affective part of hospitalization and pain towards medical procedures. Children, who have been helped from the pediatric staff to emotionally and in continuity face their pain, report a low preceding fear and a change in pain perception. (Schechter et al. 1993). It should be considered the fact that a part of hospitalized children, go through aggressive medical procedures and therapies which cause pain and trauma, which are repeating due to the chronicity of disease, surgical interventions, etc. "If pain and its affective components are not treated, in the child are present symptoms of anxiety, depression, regression, low pain tolerance, all these reflected in relationship difficulties with parents, mates etc". (Marcelli, D. et al., 2004. p. 475). Because of its complexity, is important that pediatric procedural pain assessment and management, profits from a dialogue of both disciplines; medicine and psychology. Both can invest their reciprocal knowledge to guarantee to the patient an efficient treatment which

considers clinical conditions and individual context in which pain experience is manifested. (Favaro, Ch. 2009. p .23). The primary aim of including the psychological service in a pediatric clinic, is emotional support and psychological counseling of the hospitalized child and the parent. The psychologist can assist in the interpretation and treatment of the hospitalized child's emotion, in the relationship child-parent, child-medical staff, parent-medical staff. (Selmi S. 2006).

### **Aim of study/Research:**

The aim of this study is to offer a scientific contribution and to improve the psychological service in the pediatric hospital "Mother Teresa". It started as a need to confirm the effectiveness of collaboration between two disciplines; medicine and psychology, and to open a wide diapason for further research in this context.

### **Research topics:**

Since the psychological service inclusion in hospitals was still in its first steps and a new experience in our country, psychologists were working more referring on their own knowledge and perspective, also consulting foreign literature. Through time it was becoming evident the need to assess what was really needed from a psychologist and also to assess how successful the intervention of the psychologist was becoming. The research could go to many directions, but where the intervention of a psychologist was focused more, was the interpretation and treatment of the hospitalized child's emotion. It came the moment to apply some specific techniques that in foreign health clinics and hospitals are applied widely, to check their effectiveness, and to arouse more collaboration in health staff and more sensitivity to emotions of a child.

### **Research questions:**

The hypotheses of the study were: 1.Usage of psychological treatment manual "information for preparation and bubbles" helps fear level reduction during medical invasive procedures in children. 2. Usage of psychological treatment manual "information for preparation and bubbles", indicate the pain perception change during invasive medical procedures in children. Subjects in this study were children (aged 4-6), who were patients in Pediatric University Hospital Centre "Mother Teresa".

The treatment manual was built as simple as possible, just for the simple reason to be realistic and not ask from a staff who never tried this treatment before, something more complicated. Apart testing the hypotheses, what else this applied study in a clinic context aimed, was to show to other medical staff members how it can be done differently.

So the questions were not only the hypotheses but also some invitation of the staff to consider health treatment of a child not only physically but especially emotionally.

### Scientific methods:

Subjects in this study were group age children 4-6 patients in Pediatric hospital UHC “Mother Teresa”, Tirana. This group age was selected as suitable for this study, based on Piaget’s cognitive stages of development (Gaffney, 1988; Gaffney & Dunne 1986, 1987). The sample is made of 30 subjects, divided in two groups, experimental group and control group each of them made of 15 subjects. In the procedure of sample selection are rigorously followed the criteria predetermined by the researcher aiming to guarantee the maximum equality between groups. Sex was controlled by including equal number of males and females in each group. In the study were included only subjects that were for the first moment coming in the hospital and would pass through the first procedure for that day. Patients, who came in emergency state, were excluded from the study. Also were excluded patients with chronic disease who maybe have been passing through some even more difficult and painful procedures in other moments. Subjects had to be accompanied by parents who were informed for the aim of the study, were instructed for their role and invited to participate. This study was conceptualized with applied intervention in subjects. The interventions consists in the application of a psychological treatment manual in children who put the cannula. The manual included the child preparing before the medical procedure, and playing with bubbles during the procedure. Study design is conceptualized with post-test and control group, non casual selection of the subjects for both experimental and control group. NR X O1 / NR O1

### Data analysis

In the statistic analysis were included 9 variables (behavioral categories): *child behavior in parent’s presence, Crying, Body Position, Touching, Verbal expression, Facial tension, Cardiologic frequency, Respiratory frequency, Pain perception*. The reliability of the instrument is  $\alpha=.948$  of a total of 9 scales. It means that it is considered to be very reliable.

*Table 1. The psychometric characteristics of the measurement scale*

	Nr inst.	Inter Corre lac	If Scale Del
Child behavior in parent’s presence	1	.901	.936
Crying	1	.945	.933
Body Position	1	.797	.941
Touching	1	.679	.948
Verbal expression	1	.754	.944
Facial tension	1	.821	.943
Cardiologic frequency	1	.745	.944

Respiratory frequency	1	.739	.945
Pain Perception	1	.858	.938

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*Table 2. The reliability of the scale*

Cronbach's Alpha	N of Items
.948	9

*Cronbach's Alpha* is 0.948.

The test was applied for all variables and the total number of subjects is included, n=30. This instrument can be applied for all child categories receiving this treatment.

Data analysis was conducted with SPSS 16. Statistical analysis consisted in getting descriptive statistics for both groups. Also T-test (Independent Samples Test; Group Statistics) was applied to analyses the statistical importance level of difference between the group who received treatment and the one who didn't receive treatment, for each variable.

Table 3 and 4. Descriptive statistics

**Descriptive Statistics**

	N	Minimum	Maximum	Average	St. Deviation
Child behavior in parent's presence	15	1	4	2.07	.961
Crying,	15	1	4	2.00	.926
Body Position	15	1	4	1.40	.910
Touching	15	1	3	1.27	.594
Verbal expression	15	1	4	1.93	1.033
Facial tension	15	2	4	2.40	.632
Cardiologic frequency	15	1	3	1.60	.828
Respiratory frequency	15	1	4	2.07	1.223
Pain Perception	15	1	4	2.33	1.175
Valid N (listwise)	15				

It was noticed that answers for all variables included in the group who received treatment, present approximately the same average, near to the first or second category. This result demonstrates that fear level diminishes for all behaviors from level of low fear to the level of quiet state. Also was noticed that the indicator variable for pain perception, presents an average around the second level. This result, indicate the tendency for a moderate pain perception.

**Descriptive Statistics**

	N	Minimum	Maximum	Average	St. Deviation
Child behavior in parent's presence	15	1	4	2.80	.941
Crying	15	1	4	3.07	.961
Body Position	15	1	4	2.20	1.014
Touching	15	1	4	2.13	1.356
Verbal expression	15	1	4	3.33	.900

Facial tension	15	2	4	3.20	.561
Cardiologic frequency	15	1	4	2.67	1.175
Respiratory frequency	15	2	4	3.13	.834
Child behavior in parent's presence	15	2	4	3.40	.737
Valid N (listwise)	15				

It was noticed that answers for all variables indicating fear in the group who didn't receive treatment, present an average around the second and third category. This result demonstrates that fear level increases for all behaviors from the level low fear to the level increased fear. Also is noticed that the variable indicator for pain perception, present an average over 3. This result demonstrates that pain perception is tending to change from strong pain perception toward unbearable pain.

*Table 5. T-test, Groups Comparison*

	Group1	Group 2	t	p
	M	M		
Child behavior in parent's presence	2.80	2.07	2.111	.044
Crying	3.07	2.00	3.096	.004
Body Position	2.20	1.40	2.274	.031
Touching	2.13	1.27	2.268	.031
Verbal expression	3.33	1.93	3.959	.000
Facial tension	3.20	2.40	3.666	.001
Cardiologic frequency	2.67	1.60	2.874	.008
Respiratory frequency	3.13	2.07	2.791	.009
Pain Perception	3.40	2.33	2.978	.006

Note: \*  $p < 0,05$ . \*\*  $p < 0,01$ . \*\*\*  $p < 0,001$ .

## Results comparison between two groups

Regarding the behavior “Child behavior in parent’s presence”, the test is valuable in the significance level  $p = .05$ . This means that the change between patients who received treatment and those who didn’t regarding this variable is statistically important ( $t(28) = 2.11, p = .044$ ).

Regarding the behavior “Crying”, the test is valuable in the significance level  $p = .05$ . This means that the change between patients who received treatment and those who didn’t regarding this variable is statistically important ( $t(28) = 3.096, p = .004$ ).

Regarding the behavior “Body Position”, the test is valuable in the significance level  $p = .05$ . This means that the change between patients who received treatment and those who didn’t regarding this variable is statistically important ( $t(28) = 2.274, p = .031$ ).

Regarding the behavior “Touching”, the test is valuable in the significance level  $p = .05$ . This means that the change between patients who received treatment and those who didn’t regarding this variable is statistically important ( $t(28) = 2.268, p = .031$ ).

Regarding the behavior “Verbal expression”, the test is valuable in the significance level  $p = .05$ . This means that the change between patients who received treatment and those who didn’t regarding this variable is statistically important ( $t(28) = 3.959, p = .000$ ).

Regarding the behavior “Facial Tension”, the test is valuable in the significance level  $p = .05$ . This means that the change between patients who received treatment and those who didn’t regarding this variable is statistically important ( $t(28) = 3.666, p = .001$ ).

Regarding the behavior “Cardiac Frequency”, the test is valuable in the significance level  $p = .05$ . This means that the change between patients who received treatment and those who didn’t regarding this variable is statistically important ( $t(28) = 2.874, p = .008$ ).

Regarding the behavior “Respiratory Frequency”, the test is valuable in the significance level  $p = .05$ . This means that the change between patients who received treatment and those who didn’t regarding this variable is statistically important ( $t(28) = 2.791, p = .009$ ).

Regarding the behavior “Pain Perception”, the test is valuable in the significance level  $p = .05$ . This means that the change between patients who received treatment and those who didn’t regarding this variable is statistically important ( $t(28) = 2.978, p = .006$ ).

Through this statistical analysis, is noticeable that all variables have a statistical importance in the assessment of fear level and pain perception. Results for each variable indicate the importance in assessing them in this instrument. On the other hand the results obtained are statistically important so they should be considered also in presence of other uncontrolled variables that might have interfered during the procedure.

## Findings

The results of groups comparison, showed difference with statistically significance  $p = .05$  for all variables included in the study. Both hypotheses of the study were confirmed: 1. Usage of psychological treatment manual “information for preparation and bubbles” helps fear level reduction during invasive medical procedures in children. 2. Usage of psychological treatment manual “information for preparation and bubbles”, indicate the pain perception change during invasive medical procedures in children. Psychological treatment is an important element in patient’s wellness during hospitalization. Results of this study brought to the identification of difficulties, needs, and psychological service improvement in health institutions confirming the

effectiveness of collaboration between two disciplines; medicine and psychology, and opening a wide diapason for further research in this context. In applying this methodology, our country is still in theoretical steps. Concretely in our country, these are the first findings proving the effective collaboration between two disciplines.

## **Conclusions**

Usage of psychological treatment manual “information for preparation and bubbles” helps fear level reduction and indicate pain perception change during invasive medical procedures in children, aged 4-6. This study has confirmed the hypotheses apart personal characteristics of children including other factors that might have interfered in the treatment and the procedure (childs temper, possible earlier pain experiencing, environmental factors, sample number, etc.) During the study it was noticed that the application of “bubble technique”, was in a considering level offering a lot of emotional relief and helping communication in the relationship between medical staff-patients, medical staff-parents, children-parents. In accordance with what was mentioned earlier, the realisation of this study has been a big challenge. First difficulty in designing the study because of any reference model of a quasi-experimental study missing. Second, staff-training for the intervention. Third, convincing parents for the effect of this intervention. Fourth, the difficulties are connected with the try to rigorously control the environmental factors. Each detail and instruments used have been kept under control and observed frequently, so not to indicate the final results. The subjects number was conditioned considering the fact that the possibility to have collaboration of the staff and training them gets lower with increasing number of patients. Considering differences in the statistical average values between two groups, statistically important differences in the significance level  $p = .05$  for each variable, it can be concluded that the study confirms its internal validity, distinctly qualifying the treatment effect. However, the limited number of patients, selection by criteria, limited age criteria, and the treatment of a unique element (cannula) as a causing fear and pain in pediatric context, limits the generalization of the results as valid in cases when faced different or attached conditions as the above.

## **Recommendations**

During the everyday job practice in an hospital environment, a variety of needs and space that can be considered as challenges for other studies appear. Usage of assessment methods (observations, self-reporting) as well as the psychological preparation for procedural interventions (with parents presence) are necessary for childs emotions. Parents inclusion, gives them the possibility to learn how to emotionally support their child while being also helpful and facilitator for the medical staff's duty. Results of the study, strongly recommend a continuity and especially a need for improvement in the collaboration among medical staff as well as the necessity for exchanging trainings among two disciplines in the health system.

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