https://dx.doi.org/10.22161/ijaers.612.55 *ISSN: 2349-6495(P) | 2456-1908(O)*

Sociodemographic profile and memories of the post-discharge intensive care unit patient

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Abstract *— The objective of this research is to determinate the capacity of the critical patient to remember what he lived through the time into adult ICU hospitalization after discharge and to stablish a sociodemographic profile. It is a descriptive and transversal study, held at an Intensive Care Center from a Large Hospital at Rondônia Countryside. 50 participants were obtained under average age of 53 years. They answered to a sociodemographic questionnaire and to the Costa and Macron Inventory, (2009). The research started after approval from the Ethics and Research Committee under the assent number 2.899.338. The data description was done through Excel® and Word®, and the statistical analysis through the R Studio program. It was found that most of the participants were male (54%), wherein 54% declared to be married, 76% live in Urban Zone, and the average time of internship was 15 days, the highest diagnostic incidence was Postoperative Surgery related to Tumor and Cancer (28%). About the memories; 18% of the participants do not preset memories, 82% present memories from real facts, 73.17% present illusory memories. Considering the p-value was 2.89; it is stated that the null hypothesis from this work was disregarded. The gathered data is of extreme relevance for hospital psychologists, making it possible to know the patients' reality. It is necessary for new researches to be done for a deeper analysis of these data, thus evaluating the possible causes for the absence of memories from the minority, and the care relation concerning the majority.*

Keywords *— **Memory; Hospital Psychology; Intensive Care; Memory.***

I. INTRODUCTION

According to Le Goff (2017); memory is a gathering of psychic functions whose objective is to store information. Therefore memory is an indispensable process for the human being, because it allows us to create memories about our life's history. Dividino e Faigle (2004) add by stating that memory is a complex process by which the received information from the surroundings are manipulated and comprehended through codification, retention and recover mechanisms which allow people to live a situation and then revive it through memories.

Izquierdo (2018), reports that memories comes from experiences, therefore there are so many memories as possible experiences. Thereby it is possible to say; that which is experienced by the subject and the way through which he understands a certain situation, will constitute his memory about that moment. Therefore when considering memories from hospitalization periods, many different variants should be considered, as for environment, weather, the subject's psychic structure, conscience state, the medications, lastly, there are many different factors that can alter the subject's perception, and consequently;

https://dx.doi.org/10.22161/ijaers.612.55 *ISSN: 2349-6495(P) | 2456-1908(O)*

his memories from what happens through this period (Le Goff, 2017).

Before that, Rovatti (2010) states that each subject has an individual and unique way do perceive and crate memories, while some left the intensive care unit – ICU carrying positive and real memories, others will remember anguish, pain and suffering, which makes the patient to perceive the ICU as a hostile environment that may contribute for psychic illness.

The intense care unit is a place specialized in high complexity treatment of severe patients at risk of death and for this reason; it has greater mystification in popular belief accounting a large number of people still relating it to death instead of perceiving it as an intense care ambiance that may allow a better chance for life. It encompass the subject as a whole, turning him previously fearful of something, frequently experiencing an anticipated mourning, factors that can unleash a change of behavior caused by fear, anguish, stress and anxiety. Along that; the subject can end up developing a series of forthcoming problems, such as Post-Traumatic Stress Disorder – PTSD (Costa, Marcon & Rossi, 2012).

A study by Pina, Lapchinsk and Pupulim (2008), stated that some patients relate internship in ICU with emotional aspects such as family health, lowliness, shame, while others identify this place as one that can promote cure and therefore the continuity of life. Thereby it can be said that the perception each patient will have about the unit meets what was experienced, if they had their physical and emotional needs attended and hosted by the team, and also the care for the relatives.

According to Rovatti (2010), the ICU hospitalization will mark not only the subject's life, but also the lives of his relatives and the team. Being this period defined by the generated memories about the entire ambience and the provided conduct, which may in turn have various effects which Amaral (1997 as quoted in Rovatti, 2010) describes as consequences from the hospitalization period, which are: delirium, organic confusion, some disorders such as PTSD, anxiety, depression and cognitive deficit.

Therefore this research is of paramount importance and relevance, because from this one it will be obtained the memory evaluation from the patients thus allowing a multi-professional team use aiming to humanize the attendance of the subject who is there; by knowing that hearing is essential to understand the patient, since it will allow a communication improvement, which on its turn will allow the comprehension of the subject's real necessities, being a toll that the whole team may and should use.

Given the above; the necessity to evaluate the memories presented by the patients about their ICU hospitalization period is justified, because this information can be used as a toll for a humanized multidisciplinary treatment. Thus, the research objective was to determine the critical patient capacity to remember what he experienced through the adult ICU hospitalization time after the discharge, and to stablish a sociodemographic profile.

II. MATERIAL AND METHOD

It is a transversal study of descriptive character, under a quantity-qualitative approach, performed at the Intensive Care Center – ICC from a Large Hospital at Rondônia (Brazil) South Countryside, from May to June 2019.

The population universe amounted to 153 patients; the inclusion criteria was people from both genders; older than 18 years old; not accounting for religious belief; patients who have being placed in adult ICU for a period superior or equal to 72 hours; patients who were or not in mechanical ventilation; patients who were or not in induced coma who, by the moment of discharge, are clinically able to answer to the questionnaire; those who have agreed to the research and have signed the Informed Consent Form (ICF).

Were excluded from the research: people who were under no condition to answer to the inventory; indigenous patients; people with injuries that made them unable to speak; patients who died before the moment of discharge; patients who displayed some previous disease which could affect his cognition and ability to remember; those who did not agreed on participating from the research. Under the inclusion and exclusion criteria the sample unit amounted to 50 patients.

The gathering of information was done through form fulfillment and validated by Costa and Marcon (2009), entitled as an Instrument to Identify Memories from the Intensive Care Unit – IAM [Brazilian abbreviation], adapted accordingly to the researchers' demands, being composed of 7 open questions and 13 closed ones. The analyzed variants were: Age, Gender, Schooling, Diagnostics, Period of Hospitalization, Residence, Profession, Marital Status, Time of discharge from the ICU, and the factors directly tied to the patients' memories. On their turn these factors were subdivided by three realms classified as: total absence of memories (total amnesia), real fact memories (memories from the treatment/ambiance/emotional) and illusory memories (nightmares, hallucinations, dreams).

https://dx.doi.org/10.22161/ijaers.612.55 *ISSN: 2349-6495(P) | 2456-1908(O)*

The research was made after consent from the Research and Ethical Committee (CEP) [Brazilian initials] from the Cacoal Biomedical Sciences College (FACIMED) under CAAE [Presenting Certification for Ethical Evaluation] number: 97078518.9.0000.5298, favorable assent number 2.899.338 in the year 2018, as for the Hospital General Office and Nursery Management responsible for the ICU and clinics, authorized under memo approved in 10/01/2018.

The data gathering and description was done through *Windows Explorer: Excel® and Word®* (2010) operational system, where the charts were made separating the data for further statistical analysis through the *R Studio* program using *R* language.

For the demographic data analysis and observation; the regression analysis was done through the general idea of examining two elements: (1) a pack of predictor variables do a good job by preventing a variable from a (dependent) result (2) which particular variables are significant predictors from the outcome variable and by which manner they – indicated by the magnitude and signal from the *beta* estimates – affect the outcome variable. These regression estimates are used in order to explain and predict the relation between one dependent variable and one or more independent variable.

Through this analysis it is also obtained the *F* statistical value. Including the *t tests*, this is the second "test" that the abstract function produces for the linear regression models. The *F* statistic is a "global" test which verifies if at least one of its coefficients is different from zero.

Lastly, the *p* value is also obtained. In the classic statistic field, the *p-value* (also known as descriptive level or probability of significance) is the probability to achieve a test statistic equal to or more extreme than the one observed in a data sample under null hypothesis. As a pattern in hypothesis tests; the null hypothesis can be rejected under 5% in case the p-value is less than 5%.

Non-parametric tests were used, because there is no normality or homoscedasticity guarantee from the data. The *Friedman* non-parametric test, according to Hodges and Lehmann (1962), is applied to point statistical differences between groups of results. After confirming the existence of differences between the groups, a *post hoc* test is applied in order to verify which groups show these differences. For that; the *Wilcoxon* (Wilcoxon, 1992) non-parity non-parametric test was used.

III. RESULTS

50 patients participated in the research, ages between 18 and 88 years old, an average of 53 years old. About gender; the higher admission rate was from males (54%), followed by women (46%). The marital status has shown that (54%) were married, (20%) single, (10%) divorced, (12%) widowed and (4%) did not answered. Most of the patients live in urban zone (76%) and (24%) live in countryside. About the average time of stay in the ICC; from the ones who participated in this research the obtained result was 15 days.

About the medical diagnostics; the research revealed 21 categories, among them: the immediate postoperative from surgeries related to Tumors and Cancer (28%), followed by diagnosis of Chronic Kidney Failure (10%), Sepsis and Botulism representing 8% of the participants. As revealed by chart 1 where all shown diagnostics are displayed and its proportions relating to the studied population.

Besides the simple data description; this work did statistical analysis in the sociodemographic data, aiming to verify and validate the gathered information. Considering the previously presented facts about the medical diagnosis, gender and internship period from the patient; the linear regression was statistically applied, where I have obtained the presented values: minimal (-38,412), 1° *quart (4,130) and median* (0,000) 3° *quart* (7.523) and maximum (7,773).

The residual standard error value was 14,84 in 26 degree of freedom. The resulting multiple *R-squared;* also known as coefficient of determination, is a frequently quoted measure of how well your model adjust to the data. Although there are many problems by using it alone, it is a fast verification and pre-calculated for its model. In this model the value is 0,7275 for the *multiple R-squared*. The adjusted *R-square* normalizes the *multiple R-squared* considering how many samples you have and how many variants are being used. In this model, the adjusted *R-square* value is 0,4864.

In this analysis it is also obtained the *F* statistic value. The result from the *F* statistic for this model was 3.018 in 23 variants and 26 degrees of freedom. Lastly, the *p* value is also obtained. In the particular case of the data sample from this project, for this case, the *p-value* was 0,003754

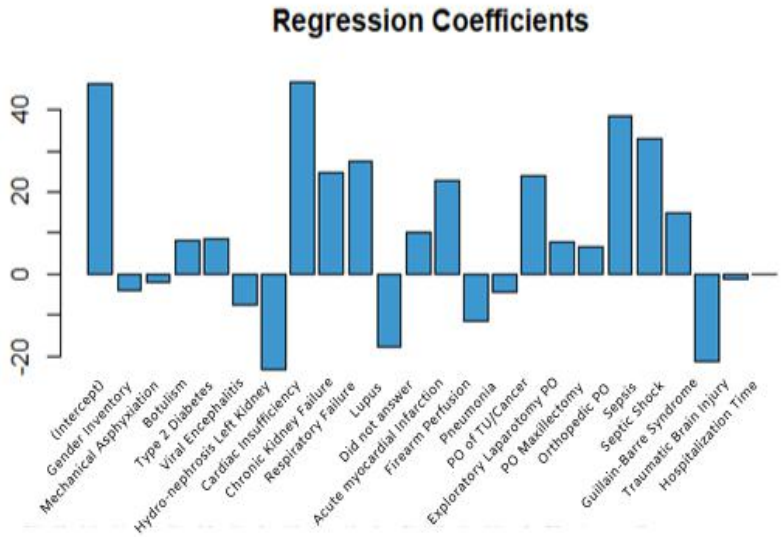
https://dx.doi.org/10.22161/ijaers.612.55 *ISSN: 2349-6495(P) | 2456-1908(O)*

Chart 1: Distribution of the medical diagnostics and the proportions found among the adult ICU from the HRC – Rondônia(Brazil), 2019.

Medical Diagnostic	**N**	**%**
Did not answer	3	6%
Lupus	1	2%
PO of TU/Cancer	14	28%
Botulism	4	8%
Sepsis	4	8%
Liver Abscess	1	2%
Orthopedic PO/Osteomyelitis	2	4%
Guillain-Barre Syndrome	1	2%
Chronic Kidney Failure	5	10%
Mechanical Asphyxiation (Suicide Attempt)	1	2%
Firearm Perfusion	2	4%
Respiratory Failure	1	2%
Hydro-nephrosis Left Kidney	1	2%
Acute myocardial Infarction	1	2%
PO Maxillectomy	1	2%
Pneumonia	3	6%
Exploratory Laparotomy PO	1	2%
Cardiac Insufficiency	1	2%
Type 2 Diabetes	1	2%
LIGHT TBI	1	2%
Viral Encephalitis	1	2%
TOTAL	50	100%

Source: The authors (2019).
Label: *PO: Post-operative, TU: Tumor, TBI:* Traumatic Brain Injury.

Graphic 1: Ilustration of the linear regression for all of the medical diagnistics, gender and period of hospitalization from the used variables, Rondônia(Brazil), 2019.



Source: The authors, (2019).

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The non-parametric test of *Friedman* (Hodges and Lehmann, 1962) is applied to point out the statistical differences between groups of results. The considered significance level for the hypothesis test was 0,05. This methodology was applied through all base variables from the utilized data. The *Friedman* test value was equal to 122,28 with 3 degrees of freedom and the *p-value* equal to 2,2. This result does not show data relevance when applied the *Friedman* test for such variables.

About memory; only (18%) does not present any kind of memory from the period of hospitalization in ICU, while (82%) presented memories from the period of hospitalization, which were concerning to the treatment, ambiance, and both physical and emotional experiences.

The memories from treatment revealed that the highest memory was from body and oral cleansing moment (95%), followed by the daily proceedings, common to all patients such as routine exam collection (92%), and the devices placed around them such as monitors, infusion bomb and mechanical ventilator (90%). Those with the least memory were the extubation moment (87%), use of endotracheal tube (70%), and airway aspiration (61%).

As for the ambiance characterized memories, it was verified a predominance in the presence of memories through all the evaluated factors, being the most frequent ones: the moment of visitation from friends and relatives (97%), followed by the presence of other patients from the unit (92%) and also the alarm noises from the devices (83%).

From the evaluated physical and emotional experiences the ones which obtained most memories were: anxiety feeling and/or fear (73%), trouble sleeping (68%), breaking even with memory of being thirst/hunger (68%) and memory of feeling pain (68%). The least remembered were: being restrained to bed (73%), feeling alone (63%) and difficulty to communicate (56%).

About the illusory memory; it was found that (73,17%) of the participants who remember the ICU period of hospitalization, remember having dreams, nightmares and/or hallucinations during the period of hospitalization.

In order to obtain a statistical analysis from the results referring to memory; the linear regression of the data was done and tests of non-parametric hypothesis were used, because there is no guarantee of the data normality and homoscedasticity.

From the linear regression of these data I obtained the following data, related to the presence of the patients' memories: minimal (-1.841), 1° *quart (-1.032)* and *median* of (0.931) 3° *quart* (0,931) and maximum (1.728).

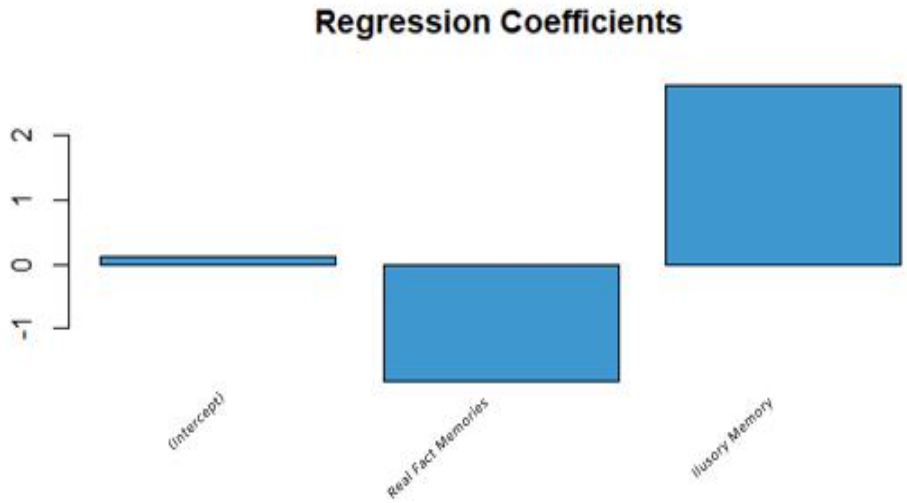
Chart 2: Clipping from the linear regression results for the illusory and real fact memories results, Rondônia(Brazil), 2019.

Coefficients	**Estimated**	**Standard error**	***T-value***
Intercept	0.10547	0.19578	0.539
Real fact memories	-1.80880	0.08044	-22.485
Illusory memories	2.77229	0.09591	28.906

Source: The authors, (2019).

A residual standard error was obtained: 1.244 in 49 degrees of freedom, *multiple R-squared:* 0.9511, *adjusted R-squared*: 0.9491, *F-statistic*: 476.8 in 2 variables and 49 degrees of freedom and the *p-value*: 2.2.

Chart 2: Illustration of the linear regression for all the utilized variables in this model, Rondônia (Brazil), 2019.



Source: The authors, (2019).

https://dx.doi.org/10.22161/ijaers.612.55 *ISSN: 2349-6495(P) | 2456-1908(O)*

Beyond the linear regression, the *Friedman* test (Hodges and Lehmann, 1962) was applied to the data, a non-parametric test which is applied to point out statistical differences between groups of results. The significance level considered for the hypothesis test was 0,05. Where a value was obtained in the *Friedman* test equal to 30.114 under 2 degree of freedom and the *p-value* equal to 2,89.

Based on the linear regression and the *Friedman* non-parametric test, it can be stated that the presented value for total amnesia was not significant, being disregarded for that reason, which confirms the true hypothesis of this research.

IV. DISCUSSION

The aforementioned results have being contextualized based on ideas from researchers of hospital psychology field, such as Alfredo Simonetti. Correlating the results from the research, we can infer them upon the diagnostics concepts proposed by Simonetti (2018), who has stablished in chapter II from his book entitled "Manual de Psicologia Hopitalar*"* [Hospital Psychology Manual] that in order to obtain a psychological diagnostics in a hospital unit it is necessary to go beyond the known traditional psychodiagnosis used in clinics, being necessary to pay attention to the four diagnostic axis: situation, medical, reactionary and transference diagnostic axis.

About the presented sociodemographic data, Simonetti (p. 74, 2018), states that this category is part of the situational diagnostic, which is the diagnostic that allow observation of the patient's life from a panoramic view in order to verify the areas not directly related to the sickness, but which are influenced by it. Upon that, it is necessary to draw the sick subject's sociodemographic profile and to observe the factor that may hinder the disease treatment.

Contemporary studies by Melo, Menegueti and Laus (2014), revealed that the average age from the studied patients in a public ICU from Paulist countryside was 49 years old, under predominance of (64,9%) of males, yet the present research revealed that the average age was 53 years old and about the most predominant gender, it meets the aforementioned study being the male under 54%, which is also reinforced in the Rocha, Caetano, Soares and Medeiros (2007) study, where most of the patients were male (59,1%), Cavalcanti (2019) pointed through his results that men were predominant in ICU (64,3%), all of those data befits the presented reality. Men historically present the caretaker, householder and alfa male role, which can frequently represent a consequential lack of self-care with his physical and mental health, thus inferring that men are more susceptible to the need for an intensive hospitalization than women are.

Melo *et al* (2014), states in his study done at a public ICU in Paulist countryside; that married/cohabiting patients were the most acknowledged in ICU under (45,5%) followed by singles, moreover, about the marital status the present study has shown that (54%) were married and (20%) were single.

When the residence variable was analyzed, the study stated that most of the patients live in urban area (76%) and (24%) live in countryside, confronting these data against the ones found by Schmidt (2014), (65,9%) of the patients live in urban area and the rest in countryside, the life style of countryside people is different from the ones who live in urban areas, these ones are constantly stimulated, thus having a frequently intense and exhausting life style, with no time to look for attendance for their health, and other preventive measures that could contribute over preemptively identifying abnormal findings; besides the stress and anxiety daily conditioned.

When analyzing the points where the subject is inserted and his peculiar characteristics, the medical diagnostic which is considered one of the psychodiagnosis axis by (Simonetti, p.70, 2014), it is relevant, because from it we can gather information to guide the kind of psychological treatment to be offered for the patient. Inside it, we can gather information about the disease, proposed treatment, medication, adherence to the treatment, prognostics, risk of contagion and comorbidities.

The Neoplasia represents most of the diagnostics which has taken patients to ICU. Such disease is still considered little known nowadays, although according to Brazilian Ministry of Health – National Cancer Institute (INCA) (2018), it has affected 282.450 women and 300.140 men in Brazil. The estimation from the same institute for new cases in Rondônia is: 1.620 neoplasia cases among men and 1.360 among women, at 2019. The research has revealed that neoplasia is at first place in ICU hospitalization ranking, and these high numbers of new cases justify the necessity for surgeries and consequently a higher number of post operatory in ICU.

By knowing who the patient is, which sickness affect him, the next step is to understand how the person reacts to the sickness. For that it was necessary an analysis from the Reactionary Diagnosis. Sicken is so intense that it completely changes the person's life structure, making his life revolve toward the sickness. About that, the reaction form, called by Kubler-Ross (2008) as: coping cycle, can be: denial, anger, revolt, bargain, depression and lastly: acceptance.

https://dx.doi.org/10.22161/ijaers.612.55 ISSN: 2349-6495(P) | 2456-1908(O)

Inside this research it was found a group (18%) of people who remembered nothing of what was experienced in ICU, other related not being able to remember the worst moments, and knew what happened from family statements. To block the memory from a fact is a form of denying it thus extinguishing its existence.

According to Freud (1899), there is something called: selective memory; in clinics it is observed that some adults do not remember facts occurred in childhood, facts perceived as traumatic. The unconscious blocks some memories due to the fact that dealing with it can be more painful that facing it.

Bohleber (2007), paraphrasing Freud, states that in the beginning it was believed to be possible to connect to a memory exactly as it has occurred, a fact that was lately perceived as inconsistent to reality, because our memories are influenced by unconscious desires just as by environmental factors, that can lead to displacement or repression. According to Silva, Sertterval and Souza (2012), post traumatic amnesia can be represented as a temporary state of confusion and disorientation, characterized by insomnia, psychomotor agitation, fatigue, confabulation, and eventually they can originate affective and psychotic symptoms.

Nevertheless, the present study stated a total 82% of the participants who remember this moment. Costa, Marco, Macedo, Jorge and Duarte (2014), who evaluated ICU patients' memories at post discharge from the unit, found that 84,4% of the patients present some kind of memory from the ICU.

Among the ones who presented memories from the hospitalization period there are the ones who present real fact memories, a category which includes memories from the ambiance, treatment and emotional ones, from which; every patient who present memories from hospitalization presented this kind of memories.

The fact that the patients have presented more memories from aspects related to the environment than from emotional and treatment factors draws the attention. As for the characteristic memories from environment, it was verified a predominance in the presence of memories through all the evaluated factors, being the relatives visitation (97%), presence of other patients (92%), and noises (83%), the most predominant ones.

For Lemos and Rossi (2002), the intensive therapy center - besides counting with high end equipment and intensive care – is the most stressful environment for its users. The environment itself presents many stress trigger factors, besides the fact that the user is bound to live under the life and death dilemma, which is constant in ICC, which was revealed to us by some patients as the worst experience in the intensive environment, which is; to deal with a possible death just as end up witnessing the death of others.

All of these factors turn the ICU into a technical environment, where it ends up advocating the care directed to the physical well-being, ceasing to be worked the socio-affective skills of the subject, making the assistance an impersonal one, forgetting the subject behind the patient. Before that, the role of the hospital psychologist is necessary in this context, because differently from medicine which aims to treat the subject's disease, the psychologist should treat the subject in the disease (Simonetti, 2014).

Shinotsuka (2010) points that it is still undefined how much the ICU hospitalization – just as the techniques and procedures used in this environment – can interfere with treatment. Nevertheless, it is known that these processes contribute toward an unfavorable psychosocial disclosure.

The most remembered emotional aspects were anxiety/fear (73%), trouble sleeping (68%), felling thirsty and/or hungry (68%) and pain (68%). One of the participants related in her interview.

> *[...] my worst moment was depending on the team in order to fulfill my basic needs, because there were certain moments when they were not willing to help me [...].*

Pina, Lapchinsk and Pupulim (2008) stated that some patients relate the ICU hospitalization with emotional aspects, such as missing family, loneness, shame, while others identify this place as capable of promoting cure, therefore also with the continuity of life. Thereby it can be stated that the perception each patient will have from the unit meets their experiences, if they had their physical and emotional needs attended therefore they were hosted by the team, besides the care to the relatives.

Soares (2010), recall that the team deals with other patients associated to each bed which, in this case, would be the family. They end up getting sick with the patient, and demand time and attention from the team in order to comprehend their necessities, besides the emotional factor correlated to the situation.

In the factors related to the environment we can perceive the relevance of the visitation, since (97%) of the participants remember this moment, being the most recalled factor through all the research. Soares (2010), also points to the relevance of communication with the relatives, this communication should be clear and realistic, properly providing relevant information for the situation,

https://dx.doi.org/10.22161/ijaers.612.55 *ISSN: 2349-6495(P) | 2456-1908(O)*

clear and coherent information provide them tools for dealing with anguish.

V. FINAL CONSIDERATIONS

Lastly we can state that ICU patients have memories from the experienced moments and such memories are directly related to the experienced aspects, thus confirming as true the hypothesis of the research.

Upon that, we should reconsider our attitude as multidisciplinary team searching for a way to increasingly humanize our assistance to offer each patient an individualized care. The subject as a whole should be attended, always aiming for the biopsychosocial concept toward wellbeing, knowing that listening is essential to understand the patient, because it improves our communication which, on its turn; allow us to comprehend the real necessities from the being, being this tool one that all members of the team can and should use.

Through the course of the research it was possible to notice changes that could help in the final data analysis, such as the creation and comparison between a group of patients who underwent the mechanical ventilation and those who did not, thus precisely knowing if the data related to this process are due to the fact of the patients really not remembering it or not being submitted to it.

Therefore it is suggested for more studies to be developed about the Post Traumatic Stress Disorder – PTSD, and that the proposed study provides a trigger to stimulate the scientific community into making more research in this area under a multi-professional approach.

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