



ORIGINALES

Relationship between satisfaction and stress levels identified in parents with children admitted to a Neonatal Intensive Care Unit

Relación entre el grado de satisfacción y el nivel de estrés identificado en padres y madres con hijos ingresados en una unidad de cuidado intensivo neonatal

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ABSTRACT:

Aims. 1) Identify the relationship between the degree of stress and satisfaction, and 2) analyse what aspects influence the overall perception of stress in parents with children admitted to a NICU.

Method. Cross-sectional descriptive study of a sample of 24 mothers / fathers. A socio-biographic questionnaire prepared "ad hoc", parental stress scale Neonatal Intensive Care Unit (PSS: NICU) and questionnaire about the quality of hospital care (SERVQHOS) were used.

Results. Statistically significant differences between some socio-biographic variables and the dimensions of the PSS:NICU scale and the SERVQHOS questionnaire were observed. The variables that best predict the overall stress were the dimensions appearance and behaviour of the new-born (AC) and the role of the mother (PM) ($R^2 = 0.357$, $F(2,21) = 5.822$; $p = 0.010$).

Conclusions. Promote proper communication between professionals and fathers / mothers with children admitted to a NICU, increases in them satisfaction; however, this does not cause a decrease in overall stress. The variables that most influence on the overall stress levels are alterations in the appearance / behaviour of the baby and the role of the mother.

Keywords: Neonatal intensive care unit; stress; satisfaction; communication; parents.

RESUMEN:

Objetivos: Identificar la relación existente entre el grado de estrés y el nivel de satisfacción, y analizar qué aspectos influyen en la percepción de estrés general en los padres y madres con hijos ingresados en UCIN.

Método. Estudio descriptivo transversal realizado sobre una muestra de 24 madres/padres. Como instrumentos de evaluación se utilizaron un cuestionario de variables sociobiodemográficas elaborado "ad hoc", la escala de estrés parental: Unidad de Cuidado Intensivo Neonatal (PSS: NICU) y el cuestionario sobre la calidad de la atención hospitalaria (SERVQHOS).

Resultados. Se observan diferencias estadísticamente significativas entre algunas variables sociobiodemográficas y las dimensiones de la escala PSS: NICU y del cuestionario SERVQHOS. Las variables que mejor predijeron el estrés general fueron las dimensiones Aspecto y comportamiento del recién nacido (AC) y papel de la madre (PM) ($R^2 = 0,357$; $F_{(2,21)} = 5,822$; $p = 0,010$).

Conclusiones. Promover una adecuada comunicación entre los profesionales y los padres/madres con hijos ingresados en una UCIN, hace que aumente en ellos el grado de satisfacción; sin embargo, esto no provoca una disminución del estrés general. Las variables que más influyen sobre los niveles de estrés general son las alteraciones en el aspecto/comportamiento del bebé y el papel de la madre.

Palabras clave. Unidad de cuidados intensivos neonatal; estrés; satisfacción; comunicación; padres.

INTRODUCTION

When a new-born is admitted to a Neonatal Intensive Care Unit (NICU), most of the efforts are centred on providing all the necessary care to try reverse the critical health situation, leaving in the background the needs / feelings that the parents may experience¹.

In general, during the hospitalization period, it was seen that the mothers suffer an urgent need to recover their function as minders, have the need to be with the baby, to be well informed about its evolution, to take care of it, etc. In short, they have the urgent need of "being a mother", thus recovering their maternal role lost after the admittance of their child to a NICU²⁻⁵.

The fact of letting the parents participate in the care of their baby makes them repossess their role as main minders once more, producing in them a sensation of happiness, pleasure and safety, in addition to diminishing the anxiety and anxiety caused by the admittance of the baby^{6,7}.

The parents who are suffering because of the admittance of their baby in a NICU identify the following as needs: information, contact with their child, identification with other parents who are going through the same situation, identification of a professional person as a reference, communication, intimacy, etc. By providing just these needs, the parents may be guaranteed to end up feeling satisfied with the attention received, thus helping them to have a positive attitude in the face of such difficult situations^{5,8}.

Bearing in mind that the care provided to the babies has to be holistic and that considering the needs of the parents and involving them actively in the process has helped not only the recovery of the babies, but also the well-being of the parents^{7,9,10}, it is necessary to know the satisfaction level perceived to adapt these units to the needs / feelings of the parents which results in increasing the quality of help given¹¹.

Stress, as affirmed by Capdevila et al⁸, is one of the parameters kept in mind when measuring and analysing the satisfaction in parents with children admitted to a NICU. A study carried out in the U.K.¹² evaluated the parental stress scale in a NICU (PSS:NICU), demonstrating the usefulness of this scale not only to measure the stress

in parents with children admitted to a NICU, but also to evaluate the efficacy of the attention of nursing and of the psychosocial support services for the parents.

The satisfaction of the patients has a direct bearing on the relational assistance processes, where the nursing work in the humanization of their care contributes to the well-being wished for the parents, thus representing authenticated progress in the quality of assistance¹³.

The aims at in the following study were: 1) to describe the socio-biodemographic characteristics of parents with children admitted to a NICU and their possible relationship to the stress and the satisfaction perceived; 2) to identify the relationship between the grade of stress and the level of satisfaction; and 3) to analyse what aspects best predict the general stress in the parents.

METHOD

A cross-sectional descriptive study was carried out in the University Clinical Hospital "Virgen de la Arrixaca", the hospital of reference in the Region of Murcia, between the months of March and June 2015.

Sample

A sample of a total of 24 parents was used to achieve the aims of this study, with the inclusion in the sample of 8 fathers and 16 mothers, for expediency. The criteria for inclusion were 1) all these fathers and mothers had a child admitted to the NICU of the hospital, and 2) they could read and write. The exclusion criteria were 1) all those fathers and mothers who did not sign their informed assent, and 2) who did not fill correctly the instruments used for data collection.

Procedure

As soon as the assent was obtained on the part of the hospital to carry out the study, the securing of the sample followed: for this purpose, a survey which included different instruments was provided for three months to all the mothers and fathers.

The subjects were informed in detail about the targets and conditions of the study and their informed assent was requested, both for their participation in the study and for the later use and publication of the results obtained.

Likewise, complete confidentiality of all the data and information concerning the participants was guaranteed.

Instruments

The participants completed a self-administered questionnaire, which included:

- Socio-biodemographic characteristics of the participants. An instrument formed of 17 items with close-ended questions which compiled information about the biological, social and cultural aspects both of the mothers / fathers and of the baby. The information that appears in the questionnaire may be classified in two groups: 1) Information regarding the fathers and mothers: age, their employment situation, number of children, previous experiences in a NICU, sex, monthly income, marital status, level of studies and nationality. 2) Information concerning the baby: weight, gestational age, type of conception, reason for admittance in the NICU, length of admittance, use of mechanical ventilation (MV - respiratory support), type of childbearing and number of previous miscarriages.

- Parental Stress Scale: Neonatal Intensive Care Unit (PSS:NICU)^{3,13-15}. This scale measures the perception that the parents have on the stressful factors derived from the physical and psychosocial environment of the neonatal intensive care unit. Miles, Funk and Carlson¹⁴, who identified four factors of environmental stress within the NICU that served as a basis to achieve the scale, carried it out. The different subscales within this scale measure the level of stress experienced. This scale is based on the stress theory illustrated by Magnusson¹³ who defines stress as the reaction of an individual to the demands that exercise pressure on one's personal resources. It consists of 46 items that range between not stressful (1) to extremely stressful (5); considering 0 to be non-applicable (NA), within a range from 46 to 190 points. One of the problems presented by this scale is determined precisely by the value given to the answer NA. In the scale, NA is given the value "0" when introduced, without increasing the entire sum calculated at the time of using such values in a status; that is to say, for example, in the case of subscale "images and sounds" which consists of five items, if the parent answers every question with a value 1 "it has not been stressful at all", the resulting sum would be five, and will be included in the group of "not stressed". But when a father / mother answers with a NA in four of the questions and with 5 in the remaining one, the above-mentioned parent will also belong to the same group, resulting in a completely erroneous situation. To avoid this situation, the answers NA have been taken as lost values and the entire result of the sum has been obtained from the average, as a way of solving the difficulties inherent in the evaluation NA. The four dimensions of the scale are: 1) Images and sounds, defined as the physical environment (included machinery, equipment, lights, etc.); 2) Appearance and the behaviour of the child, which refers to the way how the parents appreciate the behaviour of their child; 3) The relationship parents - children which deals with the relationship between parents and babies and the role of parents; and 4) Staff, which means the communication with the staff and their attitude as perceived by the parents concerning the condition of their baby or the treatment it is receiving. There are some suitable psychometric properties with an acceptable alpha coefficient greater than $> 0,70$ for all the subscales and $0,94$ for the entire scale.

- An opinion poll about the perceived quality of hospital care (SERVQHOS)¹⁶. This survey aims at the evaluation of the quality level perceived by the patients. It consists of 19 items which are easily and rapidly answered, and which include the basic elements in the evaluation of the quality perceived. It can be filled in by the patient as well as by the relatives. The items have a Likert-type scale for the answers that goes from "much worse than what was expected" (1) to "much better than what was expected" (5), going through "worse than what was expected" (2), "just as was expected" (3), "better than what was expected" (4). The SERVQHOS questionnaire is constructed in such a way that higher points are given to a higher level of perceived quality and vice-versa, making a clear difference between satisfied and unsatisfied patients, on the basis of different criteria usually considered as good practice. There are two dimensions in this questionnaire: 1) The Subjective Quality: this is made up of 10 items and explains 36,35% of the variance (Cronbach alpha: 0,95), and it deals with aspects of empathy, ability to give a reply, safety. 2) The Objective Quality: this is made up of 9 items and explains 28,97% of the variance (Cronbach Alpha: 0,89), and it deals with items that refer to situations and aspects which can be cross-checked, like cleanliness of the rooms, state of conservation, uniform behaviour

of the staff, punctuality in consultations or the information provided to the patient or the relatives.

Analysis of the data

To process the information, a database was prepared with the computer programme SPSS© v21, carrying out an analysis with different types of tests. The analysis included, on the one hand, the descriptive statistics (minimum, maximum, average and typical deviation) of the points in each of the dimensions of the instruments PSS:NICU and SERVQHOS, and the quantitative socio-biodemographic variables, and on the other, the frequency and percentages of the qualitative variables.

The bivariate Pearson Correlations were used to study the relationship between the studied variables of interest. The Student's T-test and ANOVA were used to analyse if there were differences of averages between the dimensions of the administered instruments and the socio-biodemographic variables, as soon as the assumptions of normality and homogeneity of the variances were verified. A multiple linear retrogression was also carried out to know the predictor variables of general stress in the parents.

RESULTS

To carry out this study, a total of 8 fathers and 16 mothers with an average age of 30,96 years (SD = 5,77) took part. As for the marital status of the parents, 58,4% declared to be married as opposed to 41,6% that stated to be single or in cohabitation with their partner. For 50% of the parents, the baby admitted to the NICU was their first child, while for the other half, it was their second. 12,5% of the parents declared to have a primary education, while 16,7% and 20,8% had a higher or a secondary education respectively; 12,5% of the sample declared to have no studies, as opposed to 37,5% who declared to have university studies. 20,8% of the couples included in the study were immigrants. As regards the economic level of the parents, we note that 25% had a lower monthly income than 700€, as opposed to 12,5% who were receiving more than 2000€ monthly. The rest of the parents stated their income was between 700-2000€. As regards their occupation, 16,7% declared to be unemployed, as opposed to 62,5% of parents who were working, while 20,8% was made up of housewives. It is necessary to emphasize that 100% of the parents who took part in the study declared that they had a child admitted to a NICU for the first time, with an average stay in the NICU of 23,92 days (SD = 28,59).

83,3% of the babies admitted needed the use of mechanical ventilation during their hospitalization. As regards the reasons for admittance, 62,5% of the babies were admitted because of premature birth, 8,3% because of loss of the foetal well-being, 4,2% with infectious problems and 25% with respiratory problems. 12,5% of the pregnancies were carried out through assisted fertilization, as opposed to 87,5% conceived naturally. With regard to their gestational age, 10 children were born after 26 to 30 weeks of gestation (41,7%); 4 were born after week 36 and 37 (16,7%) and 10 after 31 to 35 weeks of gestation (41,7%). As for their weight at birth, 9 children (37,5%) weighed less than 2500 grams, 6 (25%) weighed less than 1500 grams, 8 (33,3%) weighed less than 1000 grams and only 1 child (4,2%) weighed less than 500 grams. 91,7% of the sample had not suffered previous miscarriages, while 8,3% declared having had miscarriages before the birth of the baby. As for the type of birth, 62,5% of the parents had a normal (euthotic) birth, as opposed to 37,5% that needed an urgent Caesarean section at the moment of childbirth.

In the results included in the dimensions of the Parental Scale Stress (PSS:NICU), the fathers and mothers scored average-low points in the dimensions “Images and Sound” (V/S), and in the behaviour and communication of staff (C/B); while they scored average-high points in the dimension “Aspect and behaviour of their child” (A/B), and in their “Role of mother / father” (R/M). As for the final item of the scale which measures the general stress experienced by the fathers / mothers during the period of hospitalization of their children in the NICU, they scored high points (Table 1).

As regards the points obtained in the dimensions that form the SERVQHOS survey, we find that 24 fathers / mothers obtained average-high points in the two dimensions of the questionnaire (Table 1).

Table 1. Descriptive statistics (minimum, maximum, mean and standard deviation) of the dimensions of the parental stress scale.

	N	Minimum	maximum	M	SD
V/S	24	1	4	2,25	0,60
A/B	24	2	4	2,87	0,79
R/M	24	1,22	4,88	3,14	1,14
C/B	19	1,00	4,30	2,27	0,98
G/E	24	1	5	3,46	1,44
C_OBJ	24	2,78	5,00	4,11	0,64
C_SUB	24	2,80	5,00	4,31	0,67

N: number of participants; M: mean; SD: Standard Deviation; V/S: vision and sounds dimension; A/B: aspect and behaviour of the baby dimension; R/M: role of the mother dimension; C/B: communication and behaviour of health professionals dimension; G/E: general stress; C_OBJ: objective quality dimension; C_SUB: subjective quality dimension.

The results obtained in the analysis of the bivariate correlations show a negative and statistically significant correlation between the dimensions of subjective quality and objective quality and the dimension of behaviour and communication of the staff (C/B). On the other hand, a positive and statistically significant correlation is noted between the dimension concerning general stress (G/E) and the dimensions concerning image and sounds (V/S), aspect and behaviour of the baby (A/B), the role of the mother (R/M), and objective quality (C_OBJ) (Table 2).

Table 2. Pearson's bivariate correlations between the variables age, hospitalization days, dimensions and the last item of the parental stress scale and the dimensions of the SERVQHOS questionnaire.

	Age	D hosp	V/S	A/B	R/M	C/B	G/E	C OBJ	C SUB
Age	--								
D	,070	--							
V/S	-,019	,013	--						
A/B	,017	,080	-,061	--					
R/M	,242*	-,027	,131	,424**	--				
C/B	-,363*	-,089	-,160	,024	,166	--			
G/E	,227	,150	,363*	,344*	,588**	,116	--		
C_OBJ	,147	-,131	-,060	,025	-,140	-,393**	-,396**	--	
C_SU	,249*	-,094	,127	-,073	-,108	-,490**	,049	,670**	--

*p<0,05, **p<0,01.

D hosp: Days of hospitalization; V/S: vision and sounds dimension; A/B: aspect and behaviour of the baby dimension; R/M: role of the mother dimension; C/B: communication and behaviour of health professionals dimension; G/E: general stress; C_OBJ: objective quality dimension; C_SUB: subjective quality dimension.

As for the results obtained by means of the Student's T-test between the dimensions of the administered instruments and the categorical socio-biodemographic variables at two levels, statistically significant differences were found between the variable of nationality and the dimensions R/M, G/E, objective quality and subjective quality; resulting in $t(22)=2,741$; $p=0,012$ for the dimension R/M, $t(22)=3,534$; $p=0,002$; IC (0,866; 3,324) for the dimension G/E, $t(22)=-2,508$; $p=0,020$; IC (-1,33327;-0,12638) for objective quality and $t(22)=-2,161$; $p=0,042$; IC (-1,31618;-0,02698) for subjective quality. This means that parents not having Spanish citizenship obtained higher points in the dimensions of objective / subjective quality, and presented less levels of general stress (G/E) and in the dimension concerning the role of the mother (R/M).

In the variable mechanical ventilation (MV – Respiratory Support), statistical significant differences were observed in the dimension of subjective quality with $t(22)=2,608$; $p=0,016$; IC (0,17407; 1,52593), with greater subjective quality for the parents whose children needed assistance with MV (Respiratory Support).

Finally, the dimension of stress in general (G/E), also presented statistically significant differences with the variable of the type of conception having $t(22) = -2,122$; $p = 0,045$; IC (-3,484; - 0,040), which showed more stress in the parents who had conceived their children by means of assisted fertilization.

As for the results obtained by means of the statistical test ANOVA, between the dimensions of the given instruments and the categorical socio-biodemographic variables with more than two levels, statistically significant differences were found between the variable economic level and the dimension C/B $F(4) = 4,110$; $p = 0,021$. The multiple comparisons carried out in the "post hoc" analysis post hoc indicated that statistically significant differences existed only between the parents who earned <700€ and those who earned 1500-2000€.

Statistically significant differences were also found between the variable occupation and the dimension C/B, presenting a $F(2) = 4,063$; $p = 0,037$. The multiple comparisons carried out in the "post hoc" analysis pointed out statistically significant differences cant between the fathers and mothers who were employed or working and those who were unemployed.

As for the variable weeks of gestation, statistically significant differences were found in the dimension R/M of the stress scale $F(2) = 3,989$; $p = 0,034$. After carrying out multiple comparisons, we verified that the fathers / mothers with children born between week 36-37 have more stress than the parents of children born in between week 31-35.

Finally, a multiple linear regression analysis was carried out, in which the dimensions of the parental stress scale (V/S, A/B, R/M and C/B) were used as predictor variables, and the variable general stress (item general stress during the stay in the NICU) as a dependent variable. In this way, the variables that better predicted the general stress were the dimensions aspect and behaviour of the new-born baby (AC) and the role of the mother (RM) ($R^2 = 0,357$; $F_{(2,21)} = 5,822$; $p = 0,010$) (Table 3).

Table 3. Multiple linear regression analysis on item general stress during the stay in the NICU.

	R ² (%)	F	B	t	p
VD: estrés general	35,7	5,822			0,010
Constante			1,708	2,056	0,009
A/B			0,307	1,410	0,046
R/M			0,681	2,789	0,003

A/B: aspect and behaviour of the baby dimension; R/M: role of the mother dimension.

DISCUSSION

In this study we attempt to provide an analysis of the existing relationship between the grade of stress and the level of satisfaction experienced by fathers and mothers with children admitted to a NICU, as well as an examination of the relationship of the socio-biodemographic variables of the parents on the levels of stress and satisfaction.

As for the information obtained on the parental stress scale and its relationship with the socio-biodemographic variables, we emphasize that according to the variables regarding nationality, occupation, type of conception, economic level and weeks of gestation of the baby, the stress levels change. Nevertheless, the variables regarding age of the parents, marital status, cultural level, number of children, previous miscarriages, type of childbearing, weight, mechanical ventilation, days of stay (at the NICU) and reason of admittance did not present statistically significant differences as regards the stress. This is the same conclusion reached by authors like Mackley et al¹⁷ who stated that marriage or the cultural level has no influence on the stress levels identified in the mothers / fathers with children admitted to a NICU. In contrast, Alkozei et al¹⁸ found, on a sample of 85 subjects, statistically significant differences regarding their marital status, with higher points obtained by the married parents in the dimensions role of the mother (R/M) and vision and sounds (V/S). Recently, and in contrast to our study, the variable concerning advanced age of the parents or the very premature birth of the baby were associated to higher stress levels¹⁹. As for the variable sex, there were no significant differences between mothers and fathers, agreeing in this with other authors such as Aftyka et al²⁰. On the other hand, in the work carried out by Chourasia et al²¹, statistically significant differences in the stress levels were found according to the maternal age, the prematurity of the baby and a previous stay in a NICU, agreeing with our study on the prematurity of the baby. As for the variable previous stay in a NICU, our information is not comparable to the said study since 100% of our obtained sample alleged not to have had a previous admittance in a NICU.

As for the sociodemographic variable and the level of satisfaction, statistically significant differences were observed, both between the dimensions of the SERVQHOS survey and the variables of nationality where we find higher levels of subjective and objective quality in non-Spanish parents. The parents of the children who needed the use of mechanical ventilation also perceived better levels of subjective quality, without the serious conditions of the premature babies, for example, interfering in the quality perceived by the parents, results which coincide with the study of Capdevila et al⁸.

As regards the information obtained on the stress levels identified in the dimensions that form the scale PSS:NICU, we point out that the dimensions that better predicted

the stress levels were the role of the mother (R/M) and the aspect and behaviour of the baby (A/B) (Table 3). This is also the conclusion of numerous authors such as Chourasia et al²², Sikorova et al²³ and Boute et al²⁴, who also place the alterations produced in the mother-child role and within this role, the physical separation between mother and child, as main sources of stress.

On the other hand, González-Escobar et al⁴ carried out a study on a total sample of 145 mothers, without finding a statistically significant relationship between the dimension communication with the staff and the total stress; according to the above-mentioned authors, the mothers gave little importance to the ties or relationships they could have with the health teams due largely to the short time they had to share with their children, focusing primarily on being with them. These results correspond to our work, since there is no correlation between the dimensions of communication and behaviour (C/B) and of subjective quality and the item general stress. The items that form the dimension C/B of health professionals in the parental stress scale are shown as negative values, meaning that the better the dealing on the part of the health professionals, the less is the stress perceived by the parents in this dimension; in the dimension subjective quality of the SERVQHOS, however, it is the other way round. For this reason, statistically significant and negative correlations were found between the dimension C/B of the staff and the subjective quality (Table 2).

The subjective quality dimension of the SERVQHOS survey covers all the matters related to communication and the behaviour of professionals; it shows that, although the parents should have a higher stress level due to the admittance of their children in a NICU, the satisfaction level is higher due to the treatment received, the skills of communication of the health staff, etc., resulting in a perceived high welfare quality (Table 1). Authors like Wigert et al²⁵ thought that communication between the parents and the NICU staff is an essential part and can reduce their emotional stress, thus coinciding with the information obtained in our study, since here, low points have been observed to be obtained in the dimension C/B and high points in subjective quality.

In this way, although it seems that there is no relationship between the relational aspects of the health staff of the NICU and the general stress endured by the parents who have their children admitted there, it seems that suitable behaviour, showing empathy, respect, etc., softens the emotional stress that the parents suffer, and therefore, the satisfaction and the perceived welfare quality is increased.

CONCLUSIONS

The main conclusions that result from this work were:

- Aspects such as the economic level, the nationality, the occupation, the type of conception and the prematurity influence the stress levels perceived by the parents. On the other hand, the nationality, the number of children and the use of mechanical ventilation during the stay in NICU, are associated with higher satisfaction levels.
- The promotion of suitable communication between the professionals and the fathers / mothers with children admitted in a NICU increases the grade of satisfaction in them; nevertheless, this does not provoke a decrease of the perceived general stress.
- The variables that influence most the levels of general stress are the alterations in the aspect / behaviour of the baby and the role of the mother.

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