

THE EFFECT OF “HOSPITAL CLOWNS” ON PSYCHOLOGICAL DISTRESS AND MALADAPTIVE BEHAVIOURS IN CHILDREN UNDERGOING MINOR SURGERY

Victoria Meisel, Karin Chellew, Esperança Ponsell, Ana Ferreira*, Leonor Bordas* and Gloria García-Banda
*Universitat de les Illes Balears and * Asociación Sonrisa Médica*

Clown programmes are used in healthcare settings in many countries to reduce distress in children who are undergoing surgery. The aim of the present study is to determine the effect of the presence of clowns on children's distress and maladaptive behaviours while in hospital for minor surgery. The sample consisted of 61 paediatric patients (aged 3-12 years) undergoing general anaesthesia for minor surgery. Participants were assigned to two groups: experimental and control group. The child's distress was assessed using the FAS (Facial Affective Scale). Post-operative maladaptive behaviours were evaluated one week after surgery, using the PHBQ (Post-Hospital Behavior Questionnaire). Our results suggest that clowns are not able to reduce the child's level of distress. On the other hand, post-operative maladaptive behaviours in the experimental group decreased, though the decrease was not statistically significant. Further research is needed to determine the effects of clowns in hospitals, taking into account age, sex, parents' presence, and different types of hospital settings.

La intervención de los payasos en el ámbito hospitalario es un programa para disminuir el malestar psicológico que conlleva la hospitalización infantil que se ha ido implantando en España y en otros países. El objetivo del estudio es evaluar el efecto de la intervención de los payasos de hospital sobre el malestar psicológico y las conductas desadaptativas de los niños y niñas que van a ser operados. La muestra la componen 61 niños y niñas de 3 a 12 años, sometidos a intervenciones programadas de cirugía menor, y que fueron asignados al grupo experimental y control. El malestar psicológico del niño/a se evaluó utilizando la escala FAS (Facial Affective Scale). Los comportamientos desadaptativos producidos después de la cirugía se registraron utilizando el PHBQ (Post Hospital Behavior Questionnaire). Nuestros resultados indican que los payasos de hospital no fueron eficaces para reducir el nivel de malestar psicológico. Las conductas desadaptativas de los niños y niñas en el grupo experimental disminuyeron después de la operación, aunque no alcanzaron la significación. Es necesario realizar más estudios que determinen los efectos de los payasos de hospital, teniendo en cuenta la edad, el sexo, la presencia de los padres y los diferentes contextos de hospitalización.

Children in hospital, or who undergo surgery, can be subject to a variety of psychological disturbances (Polaino-Lorente & Lizasoain, 1992). It is estimated that between 50 and 75% of the child population who undergo surgery experience high levels of distress and stress during their time in hospital (Kain, Wang, Mayes, Krivutza, & Teague, 2001; Pedroche, Quiles, Méndez, & Ortigosa, 1998). Such high levels of anxiety before and after the operation can cause psychological and physiological problems in the child, even days after the hospitalization experience (Kain et al., 2004).

Child anxiety and psychological distress are characterized by feelings of tension, seizures, nervousness and worry (Kain, Mayes, O'Connor, & Cicchetti, 1996). Maladaptive behaviours such as bedwetting, eating difficulties, apathy, withdrawal and sleep disturbances are some of the potential consequences of pre-operative anxiety (McCann & Kain, 2001). Furthermore, research indicates that up to 60% of children who have undergone operations may present negative changes in their behaviour for days after the surgery (Kain et al., 1996).

The worry and fear experienced by children who undergo medical procedures have motivated research on the factors that trigger them, as well as the design of programmes aimed at preventing or minimizing emotional disturbances (Quiles, Ortigosa, Méndez, & Pedroche, 1999). In the hospital context, the pharmacological and behavioural methods have been

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Correspondence concerning this article should be addressed to Gloria García-Banda. Facultad de Psicología. Universitat de les Illes Balears. 07122 Palma de Mallorca (Spain).

E-mail: ggbanda@uib.es

used to reduce child emotional distress. The pharmacological method involves the use of medication to reduce distress levels, but it can sometimes have side effects (Wollin, Plumier, Owen, Hawkins, & Materazzo, 2003). The behavioural or psychological techniques most commonly used include surgery preparation programmes, having parents present when the anaesthetic is administered, and the use of music and humour.

Humour and laughter are central to some of the approaches currently most widely used for reducing fear, stress and anxiety in the hospital context. Hospital clown programmes constitute an approach that uses humour to reduce child psychological distress in healthcare settings. Recent years have seen a considerable increase in the presence of clowns in hospitals, especially in paediatrics. Thousands of children across the world watch clown shows during their time in hospital (Koller & Gryski, 2007). However, scarce few empirical studies have explored the effectiveness of such programmes. Gorfinkle, Slater, Bagiella, Tager and Labinsky (1998) carried out two pilot studies at the University of Columbia whose objective was to determine the effectiveness of clowns as a “distractive presence” during the cardiac catheterization process and other invasive procedures at a paediatric oncology clinic. The results of these studies showed that when the clown was present during cardiac catheterization there was a significant reduction in levels of psychological distress reported by the children and by their parents (Gorfinkle et al., 1998). In a study by Higuera et al. (2006) it was shown that clowns were a positive element for change and progress in psychiatric patients. Furthermore, in a qualitative study carried out in Brazil by Aquino, Bortolucci and Marta (2004), in which 72 paediatric patients were asked about their experiences with clowns through individual semi-structured interviews, the participants expressed the view that the clowns were funny, and that this made them laugh and feel good.

Vagnoli, Caprilli, Robiglio and Messeri (2005) carried out a controlled, randomized study to determine the effects of hospital clowns together with the presence of parents during the administration of anaesthetic (N= 40). Their results demonstrate the efficacy of the intervention of hospital clowns, together with the presence of one parent, in reducing pre-operative anxiety in paediatric patients. Recently, the same research group (Vagnoli, Bastiani, Turchi, Caprilli, & Messeri, 2007) carried out another study on the efficacy of clowns with the

presence of parents in reducing pre-operative anxiety, this time using a qualitative self-report instrument (participants did drawings), as well as the observational scale (N= 50). The results showed that the presence of clowns, together with that of one parent, reduced pre-operative anxiety during the administration of anaesthetic. In contrast, in a study published recently in Spain with a sample of 60 children aged 6 to 10, it can be observed that clowns do not significantly reduce anxiety levels and maladaptive behaviours, by comparison with a control group, though there was a trend toward improvement in anxiety in the experimental group (Gutiérrez et al., 2008).

In sum, various studies have demonstrated the negative impact of the hospitalization experience in paediatric patients, and the need to develop more effective approaches for reducing the psychological distress and maladaptive behaviours that emerge in children after an operation. Currently, clown show programmes are being used more and more in hospitals all over the world for reducing the effects of hospitalization. However, their effectiveness has not been sufficiently tested in empirical studies. Moreover, the research review revealed the need to study the efficacy of clown programmes in themselves, without the presence of parents. Therefore, the aim of the present study is to assess the effect of the intervention of hospital clowns on pre-operative psychological distress and post-operative maladaptive behaviours in children about to undergo an operation. Our first hypothesis is that the intervention of hospital clowns will significantly reduce levels of psychological distress in children about to undergo an operation, by comparison with a control group. Likewise, such intervention will significantly reduce children’s maladaptive behaviours one week after the operation, also by comparison with a control group.

METHOD

Participants

The initial sample was made up of 282 boys and girls whose parents were contacted during the consultation with the anaesthetist and gave their consent to be included in the study. Of this initial sample, 138 were operated on and assessed in the surgical ward. The remaining 144 were not assessed for various reasons: the admissions service failed to inform us of the operation, the assessors could not go to the surgical ward on that particular day, or the plans were changed and no operation took place. Of these 138 participants, 21 were

excluded because of differences in the surgery conditions (the doctors did not wait for the children to be given the tests and administered the anaesthetic directly in the operating theatre; the parents were allowed into the pre-op area; the children arrived already asleep; etc.). Of the 117 remaining participants, 97 completed the Facial Affective Scale (FAS) 1 and 2 and the other 20 declined to complete the FAS 1 or 2 due to their mood state (they were tense and crying when they arrived). Finally, 27 participants were lost to the study because it was impossible to contact their parents. Thus, the study sample was reduced to 70. For the analysis, 9 children with fear of clowns were excluded. Therefore, the final study sample was made up of 61 children, of which 53 were boys and 8 were girls, with a mean age of 6 years ($SD=2.55$) and an age range of 3 to 12 years. For the data analysis by age we divided the participants into three age groups: 3-5 years ($n=27$), 6-8 years ($n=20$) and 9-12 years ($n=14$). Of the total sample, 28 participants watched the clown show (experimental group) and 33 did not (control group).

Instruments

PHBQ (Post Hospital Behavior Questionnaire). Spanish adaptation by Palomo (1995). This scale was originally developed by Vernon, Schulman and Foley (1966), and comprises 27 items and six categories of anxiety: general anxiety, separation anxiety, sleep anxiety, eating disturbances, aggression against authority and apathy/withdrawal. In the original study, the internal consistency of the instrument (Cronbach's alpha) ranged from 0.45 to 0.73 for the factors and 0.82 for the total score (Vernon et al., 1966). The objective of this questionnaire is that parents assess their child's maladaptive behaviours. This instrument was revised by McClowry and McLeod (1990), who removed the question: "Does your child need a dummy (pacifier)?", since it was inappropriate for a school-age population. This new version employed a questionnaire with Likert-type scale ["always" (0), "nearly always" (1), "sometimes" (3), "hardly ever" (4) and "never" (5)].

FAS (Facial Affective Scale). This is an instrument comprising a scale of 9 faces that aims to measure the child's emotional reaction to an experience involving pain. The 9 faces in the FAS are ordered according to intensity, from "feeling as good as possible" to "feeling as bad as possible". This instrument can be used with children from age 3 or 4 (Goodenough, van Dongen, Brouwer, Abu-Saad, & Champion, 1999). The scale showed good consistency with the VAS (Visual

Analogue Scale; Huskisson, 1974) during different medical procedures, and there was a moderate correlation between the different face scales and behavioural measures (Chambers, Giesbrecht, Craig, Bennett, & Huntsman, 1999). The range of scores for the 9 faces, from happiest to saddest, is as follows: 0.04, 0.17, 0.37, 0.47, 0.59, 0.75, 0.78, 0.85, 0.97. These numerical values were determined in a previous study in which the VAS was applied to 200 children aged 3 to 17 in order to assess the feelings elicited by the faces (McGrath, 1990; McGrath, deVeber, & Hearn, 1985). Each value represents the geometric mean of 400 responses (2 trials per child) from 200 children. Values of the mean were subsequently transformed from a scale of 0-1, where the maximum value of negative affect is equal to 1 and the maximum value of positive affect is equal to 0.

Fear of clowns. To determine whether the children were afraid of clowns, the parents were asked to respond to a structured interview with questions such as: Do you think your child is afraid of clowns?; How afraid of clowns is your child?; or How does your child react to clowns? A pilot study was carried out to determine whether the questions and response options were appropriate.

Procedure

Inclusion criteria were as follows: boys and girls aged between 3 and 12 with the following pathologies for which surgery was necessary: phimosis, inguinal hernia, umbilical hernia and cryptorchidism, or removal of adenoids and/or tonsils. Exclusion criteria were as follows: having undergone an operation previously; having other previous pathologies or mental deficiencies; and difficulties with understanding the language, either in the child or the parents. Also excluded were those children who, for some reason not included in the previous criteria, were taking some type of medication that altered their perception or sensitivity.

A pilot study was carried out with 22 participants to ensure that the children, especially the youngest ones, understood the FAS and that the procedure designed could be implemented in the context of the surgical ward.

Participants' operations were timetabled by the admissions service of the hospital, and the clowns put on their show in the surgical ward on Thursdays. Thus, if the children underwent surgery on a Thursday they were assigned to the experimental group (who watched the clown show), and if their operation was

on any other day (Monday, Tuesday, Wednesday or Friday) they formed part of the control group (without clowns).

In the experimental group, six time points of the study were set (Table 1). At Point 1 the parents were administered the PHBQ to establish whether their child normally displayed maladaptive behaviours. This interview took place when the parents and child came to the outpatient consultation about the surgery/anaesthetic. On the day of the operation (Point 2), immediately after the child had arrived at the pre-op area, a (female) psychologist administered the FAS (FAS 1). After the child had completed the FAS 1 the hospital clowns performed for 7 minutes. Once the performance was over the FAS was applied for the second time (FAS 2), prior to the anaesthesia in the pre-op area (Point 3). Next, the child's operation took place. And finally, one week later, the parents were administered the PHBQ once again (PHBQ 2), this time by telephone, to establish whether they had observed any changes in the child's maladaptive behaviours in the wake of the hospitalization experience (Point 6). In this telephone interview the parents were asked whether their child was afraid of clowns and to what extent, and how he/she reacted to them.

In the control group (Table 2) Points 1, 2, 4, 5 and 6 were the same. However, in contrast to the case of the experimental group, there was no performance by the clowns; instead, the experimenters waited 5 minutes before applying FAS 2.

Data analysis

The statistical package used was SPSS 15.0 for Windows. The data were analyzed using an ANOVA for mixed designs (within-groups-between-groups). Furthermore, we carried out Student *t*-tests to observe the differences of means between the groups, and to analyze in detail the direction of the changes in psychological distress and maladaptive behaviours.

RESULTS

Table 3 shows the means, standard deviations and Student *t*-test for the levels of psychological distress and maladaptive behaviours of the children in our sample.

The clowns did not have a significant effect on the children's distress levels. Nor were interaction effects observed between the intervention of the clowns and the before and after measures of psychological distress (Table 4). If we consider the means, in both the experimental and control groups there is an increase in the psychological distress experienced by the children, measured through the FAS (Table 3).

No significant effects of clowns were found for maladaptive behaviours, nor interaction effects between before and after measures for maladaptive behaviours and/or in the absence and presence of clowns (Table 5). However, if we consider the results of the Student *t*-test, the experimental group shows a reduction in maladaptive behaviours one week after the operation, compared to the other group. Even so, although a strong trend is observed ($p= 0.06$), the differences are not significant (Table 3).

Table 1 Procedure in the experimental group						
	Point 1	Point 2	Point 3	Point 4	Point 5	Point 6
When	Days before	Prior to operation		Prior to anaesthetic		1 week later
Where	Outpatient consultation	Entrance to pre-op area	Pre-op area	Pre-op area		By telephone
What	PHBQ (parents)	FAS (psychologist)	CLOWNS	FAS (psychologist)	Surgery	PHBQ (parents)

Table 2 Procedure in the control group						
	Point 1	Point 2	Point 3	Point 4	Point 5	Point 6
When	Days before	Prior to operation		Prior to anaesthetic		1 week later
Where	Outpatient consultation	Entrance to pre-op area	Pre-op area	Pre-op area		By telephone
What	PHBQ (parents)	FAS (psychologist)		FAS (psychologist)	Surgery	PHBQ (parents)

Differences by age

Age range of the children making up the sample is 3 to 12 years. For the analysis of the results we put the children in three different age groups (3-5 years, 6-8 years and 9-12 years).

Time of assessment	Experimental n= 28		Control n= 33		<i>t</i>
	M	SD	M	SD	
<i>Levels of psychological distress (FAS)</i>					
Before	.33	.30	.34	.33	-.21
After	.38	.32	.38	.29	-.01
<i>Maladaptive behaviours (PHBQ)</i>					
Before	19.00	22.88	9.97	25.53	15.36
After	19.00	11.73	25.20	13.27	-1.86

Note: *M*: Mean; *SD*: Standard deviation; *t*: Student *t*-test

Source	df	SS	MS	F
<i>Between-participants</i>				
Clowns	1	.00	.00	.02
Error 1	59	8.08	.14	
<i>Within-participants</i>				
Time of assessment	1	.06	.06	1.01
Clowns x Time	1	.00	.00	.04
Error 2	59	3.23	.05	

Note: *df*: Degrees of freedom; *SS*: Type III sum of squares; *MS*: Mean square

Source	df	SS	MS	F
<i>Between-participants</i>				
Clowns	1	680.21	680.21	2.52
Error 1	52	14004.64	269.32	
<i>Within-participants</i>				
Time of assessment	1	98.70	98.70	1.46
Clowns x Time	1	20.92	20.92	.31
Error 2	52	3514.48	67.58	

Note: *df*: Degrees of freedom; *SS*: Type III sum of squares; *MS*: Mean square

No effects of age were found in interaction with the intervention of the clowns or in the before and after measures of psychological distress $F(2)= 0.14$, n.s., or maladaptive behaviours $F(1.96)= 0.15$, n.s.

However, according to the Student *t*-test, psychological distress in the smallest children (aged 3 to 5) is similar in the experimental group and the control group on arriving at the surgical ward (FAS 1), but we can observe an increase ($p= 0.06$) in psychological distress (FAS 2) in the experimental group compared to the control group. In participants aged 6 to 8 there are no significant differences between the group that saw the clown show and the control group, but it is observed that in both groups there is an increase in psychological distress in FAS 2. In those aged 9 to 12 who watched the clowns, levels of distress fall with a value close to significance ($p= 0.09$) compared to the control group, and significantly ($p= 0.01$) when we compare FAS 1 and FAS 2 in the clowns group.

DISCUSSION AND CONCLUSIONS

The objective of our study was to assess the effect of hospital clown programmes on psychological distress and maladaptive behaviours in children about to undergo surgery. Our results indicate that hospital clowns were not effective in reducing the psychological distress of children undergoing minor surgery to any significant degree. These results are similar to those found in a recent study by Gutiérrez et al. (2008), in which it can be observed that clowns did not produce a significant reduction in anxiety levels in comparison to the control group. On the other hand, our findings differ from those of other studies which found that intervention with clowns was effective for reducing distress in children undergoing surgery (Gorfinkle et al., 1999; Vagnoli et al., 2007; Vagnoli et al., 2005). However, in these other studies a parent was present in both the experimental and control groups, so that the reduction in distress could be attributed to the interaction between the presence of the parents and the intervention of the clowns.

With regard to maladaptive behaviours, we expected a significant reduction after the operation in the experimental group, which would demonstrate that the clowns were effective for reducing the negative impact of a hospitalization experience. The results showed a trend towards such reduction by comparison with the group that did not watch the clown show. These results are similar to those of Gutiérrez et al. (2008), who found a reduction in maladaptive behaviours measured with

the same questionnaire one week after the operation.

It is interesting to note that the eldest children (aged 9-13) are those who most benefit from this type of intervention, and that the youngest children (aged 3-8) who watched the clown show not only failed to improve, but actually showed increase distress levels. A possible explanation for these results is that the instrument used for measuring psychological distress, the FAS, was not sufficiently sensitive and reliable for measuring distress in these youngest children. Moreover, it may be that the duration of the clown show (7 minutes) was sufficient for reducing distress in the eldest children, but insufficient to involve and distract the youngest ones.

Our results also indicate that with the passage of time participants' mood state worsens, possibly due to the stressfulness of the situation. Therefore, probably the most advisable approach would be to reduce the waiting time, administering the anaesthetic to the child as soon as possible, more than using the intervention of clowns. Thus, the question raised by our results would be whether the intervention of clowns is appropriate in the context of the pre-op area, or whether it would be more effective to transfer it to other hospitalization contexts, such as during invasive surgical procedures, during the administration of vaccinations or the extraction of blood, in wards during long periods of hospitalization, etc.

A limitation of our study is that we were unable to study possible gender differences, given the very small number of girls (n= 8) in our sample. This discrepancy in numbers between the sexes was due to the fact that we included only children undergoing minor surgery, and that this type of surgery includes more interventions carried out only in boys, such as the correction of phimosis. Another limitation is that participants were not assigned at random to the conditions, since the clowns were scheduled to perform their show in the hospital on a particular day. It should also be pointed out that the assessors who administered the FAS were not blind to the conditions of the experiment.

In conclusion, given that hospital clown programmes are becoming more and more common in hospitals all over the world, there is a need to carry out studies that include larger samples of children, which would permit us to identify a profile of children (age, sex, type of intervention, initial distress level, etc.) who could most benefit from this type of intervention. Likewise, there is a need for controlled, randomized studies that assess the intervention of clowns with and without the presence of parents, in order to determine with some clarity whether

hospital clowns should constitute an element complementary or alternative to the presence of parents. Finally, it is necessary to determine in which hospitalization contexts the intervention of clowns is most effective.

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