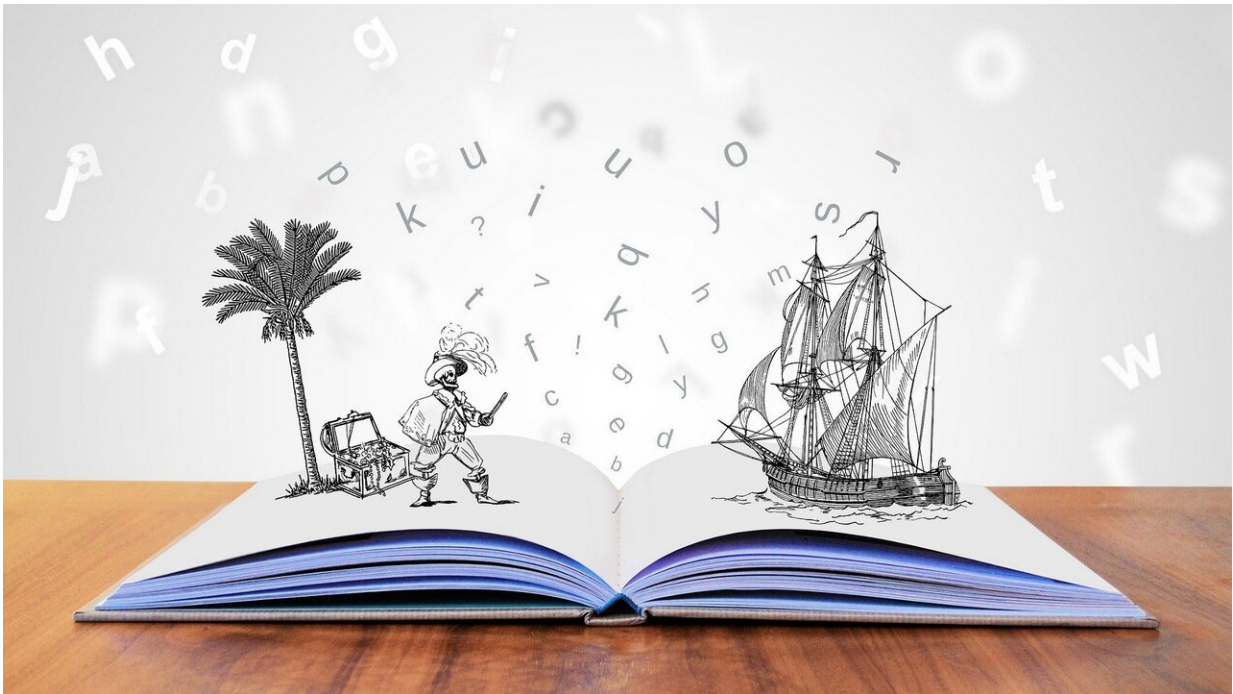


# Storytelling reduces pain and stress, and increases oxytocin in hospitalized children

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A new study, carried out by the D'Or Institute for Research and Education (IDOR) and the Federal University of ABC (UFABC), has shown for the first time that storytelling is capable of providing physiological and emotional benefits to children in intensive care units (ICUs). The study was published in the *Proceedings of the National Academy of Sciences*. The study was led by Guilherme Brockington,

Ph.D., from UFABC, and Jorge Moll, MD, Ph.D., from IDOR.

"During [storytelling](#), something happens that we call 'narrative transportation.' The child, through fantasy, can experience sensations and thoughts that transport him or her to another world, a place that is different from the hospital room, and is, therefore, far from the aversive conditions of hospitalization," says Guilherme Brockington, Ph.D., and lead author of the study.

Storytelling is an immemorial practice of humanity. Legends, religions and social values have spanned millennia through orality and writing. Many successful films and novels captivate audiences through the same mechanism: Listening to a good story is moving from one reality to another. This movement, driven by imagination, can create empathy for events and characters that fluctuate according to the interpretation of each individual.

"Until now, the [positive evidence](#) for storytelling was based on 'common sense' and taken at face value, in which interacting with the child may distract, entertain and alleviate psychological suffering. But there was a lack of a solid scientific basis, especially with regard to underlying physiological mechanisms," explains Dr. Moll.

Considering the psychological and biological processes that occur during and after listening to a story, the study investigators came up with the idea of seeking [scientific evidence](#) for the effects of storytelling on critically hospitalized children.

In total, 81 children between two and seven years old with similar clinical conditions, such as respiratory problems caused by asthma, bronchitis, or pneumonia, were admitted to the ICU at Rede D'Or São Luiz Jabaquara Hospital, in São Paulo, Brazil. They were randomly divided into two groups: Forty-one of them participated in a group in

which storytellers read children's stories for 25 to 30 minutes, while in a [control group](#), 40 children were told riddles offered by the same professionals and during the same length of time.

To compare the effects of the two interventions, saliva samples were collected from each participant before and after each session to analyze the oscillations of cortisol and oxytocin—hormones related to stress and empathy, respectively. In addition, the children took a subjective test to evaluate the level of pain they were feeling before and after participating in the activities. They also performed a free word association task by relating their impressions about seven cards illustrated with elements from the hospital context (nurse, doctor, hospital, medicine, patient, pain and book).

The outcomes were positive for all groups, as both interventions reduced the level of cortisol and increased the production of oxytocin in all the children analyzed, while the sensation of pain and discomfort was also mitigated, according to the evaluation of the children themselves. However, a significant difference was that the positive results of the children in the storytelling group were twice as good as those in the riddles group. These findings led the researchers to conclude that the narrative activity was substantially more effective.

"Another highlight of this study is that it was not performed in an artificial environment, but rather within the routine of the pediatric ICU. The storytelling was done individually; the child chose which story would be told. Among the books offered, we chose titles available in ordinary bookstores and without a pre-defined emotional bias, so that the story would not influence the child's reaction so much after the activity," highlights Dr. Brockington.

Even though storytelling was already being adopted in many children's hospitals, this is the first robust evidence of its physiological and

psychological impacts. The researchers see the activity as an effective and low-cost therapeutic method that can make a great difference in the quality of life for children in intensive care units.

"I consider this study to be one of the most important I have participated in, due to its simplicity, rigor and potential direct impact on practices in the hospital environment, aiming at the relief of human suffering. As it is a low-cost and highly safe intervention, it can potentially be implemented in the entire public system, once larger-scale studies verify its reproducibility and effectiveness. We intend to extend and replicate it in other settings and patient groups and to support volunteering dedicated to the noble activity of storytelling, now with more solid scientific evidence," says Dr. Moll.

The emotional impacts of storytelling were also revealed in the results of the free word association test done at the end of each intervention. Children in the storytelling group reported more positive emotions than in the control group when exposed to the words hospital, nurse and doctor. For example, the children in the control group responded to the card with the drawing of a hospital saying: "This is the place that people go when they are sick." Children in the storytelling group reported for the same card as: "This is the place that people go to get better."

For the illustrations of a nurse and a doctor, the same pattern was observed. Children in the control group said, "This is the bad woman who comes to give me an injection," while those who were told the stories said phrases such as: "This is the woman who comes to heal me."

Although the research had the support of trained volunteer storytellers from the Brazilian nonprofit association Viva e Deixe Viver, the authors say that storytelling is an activity that can be equally practiced by parents and educators, thus providing space for children to participate in the choice of the book and to interact with the story. In addition to reducing

anxiety and stress, the activity enables the strengthening of bonds between the child, the narrator, and the other people present in the environment.

The authors also remarked that the findings of this research on storytelling point to additional potential applications for [children](#) experiencing environmental stress, such as the disruption caused by the pandemic. Storytelling by parents, relatives and friends may be a simple and effective way to improve the wellbeing of a child and is accessible to all families.

**More information:** Guilherme Brockington et al., "Storytelling increases oxytocin and positive emotions and decreases cortisol and pain in hospitalized children," *PNAS* (2021).

[www.pnas.org/cgi/doi/10.1073/pnas.2018409118](http://www.pnas.org/cgi/doi/10.1073/pnas.2018409118)

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