



# AN ACT OF KINDNESS A DAY KEEPS THE DOCTOR AWAY?

Yfke Prins<sup>1</sup>

<sup>1</sup>Master's student Medicine, Radboud university medical center, Nijmegen, The Netherlands

## *Brief message*

Hi everyone! My name is Yfke, and I am currently studying for my master's in Medicine. During the past year, I have been the editorial editor-in-chief at RAMS. It has been a great pleasure to read all of the articles written by our editors and to see all of the editors becoming (even) better writers. Unfortunately, all good things must come to an end, and I will pass the baton to the next editorial editor-in-chief. When I had to write this brief message, I wanted to write a piece related to Christmas, considering it was supposed to be published in December. And after all, what speaks most to the mind when discussing Christmas? Kindness!

As you are all well aware by now, it is almost Christmas. The time of the year where it is allowed, even encouraged, to watch Christmas movies while wearing atrocious-but-yet-funny Christmas sweaters. It is the time of warm socks, blankets, and cheerful Christmas decorations. However, above all, it is a time of compassion and kindness towards one another. Speaking of kindness – have you ever noticed that an act of kindness made you feel happy? I certainly have, and that made me wonder what the neurobiological basis of kindness is. How do we, from a neuroendocrinological perspective, display kindness?

Humans exhibit high amounts of prosocial behaviour, including empathy, cooperation, care, and altruism [1]. Out of an evolutionary perspective, this behaviour is essential to sustain us, and mammals as a species in general, as the offspring of mammals are born relatively early and vulnerable in comparison to other classes of animals [1]. Therefore, proper care and nursing of the offspring are needed to ensure their longevity, promoting the survival of the species [1]. Several hormonal circuits in the brain have been implicated in this care-centred behaviour, including oxytocin [2].

You might have already heard of oxytocin, which is also referred to as the 'cuddle hormone' [2]. Oxytocin is secreted by the hypothalamus, after which it is secreted systemically through the posterior pituitary gland [3]. The secretion of oxytocin, and the expression of the oxytocin receptor, is altered during pregnancy, which is vital for care-based behaviour of the mother; hence its nickname as the cuddle hormone [4]. In accordance with this line of thought, the intranasal administration of oxytocin has also been shown to increase prosocial behaviour [5]. Although the predominant effect of oxytocin is an increase in prosocial behaviour, in rare cases, the intranasal administration of oxytocin can result in increased antisocial behaviour, including jealousy and aggression [5]. This variability in the results suggests that there are interpersonal variables affecting one's response to oxytocin [5].

Considering oxytocin's effect on prosocial behaviour, it is not surprising that this hormone has also been associated with several health benefits [7]. For example, oxytocin is capable of inhibiting adrenocorticotrophic hormone, which together with its effector hormone cortisol forms the hormonal 'stress-axis' [7]. Inhibition of this axis results in a decreased secretion of cortisol and, therefore, also in reduced levels of stress [7].



Overall, we can conclude that oxytocin is a central player in prosocial behaviour. Perhaps, an act of kindness does keep the doctor away (partially)! Let that serve as a reminder during this Christmas time to keep an eye out for others; call your grandparent(s), call your friends, or write a Christmas card to the elderly at a nursing home. They will appreciate it, and it will not harm you either –give your brain an oxytocin boost! Lastly, I want to wish you, on behalf of the board of Radboud Annals of Medical Students, a merry Christmas and a fantastic 2021, a year in which we hope to see many of you at our (online) activities!

## References

1. Goetz, J., Keltner, D., Simon-Thomas, E. Compassion: An Evolutionary Analysis and Empirical Review. *Psychol Bull.* **136**, 351-374.
2. Magon, N., Kalra, S. The Orgasmic history of oxytocin: Love, lust, and labor. *Indian J Endocrinol Metab.* **15**, 156-161 (2011).
3. Ito, E., Shima, R., Yoshioika, T. A novel role of oxytocin: Oxytocin-induced well-being in humans. *Biophysics and physcobiology.* **16**, 132-139 (2019).
4. Kim, S., Strathearn, L. Oxytocin and Maternal Brain Plasticity. *New Dir Child ADOlesc Dev.* **153**, 59-72 (2017).
5. Marsh, N., Marsh, N., Lee, M., Hurlemann, R. Oxytocin and the Neurobiology of Prosocial Behavior. *The Neuroscientist.* 1-16 (2020).
6. Striepens, N., Kendrick, K., Maier, W., Hurlemann, R. Prosocial effects of oxytocin and clinical evidence for its therapeutic potential. *Frontiers in neuroendocrinology.* **32**, 426-450 (2011).
7. Love, T. M. The impact of oxytocin of stress: the role of sex. *Curr Opin Behav Sci.* **23**, 136-142 (2018).

## EXAM QUESTION

### Question 13

Do you want to test your knowledge regarding the topic of this brief message? Try to answer the exam question below.

The aim of organising personal meetings in the neighbourhoods serves the purpose of reducing loneliness amongst frail elders. This activity is targeted at...

- A. increasing social cohesion
- B. improving socialisation
- C. decreasing social injustice
- D. decreasing social stratification

**The answer to this question can be found on page 34 in this journal.**