

# Application of chaos theory in the patient's safety

Dear Editor,

The chaos theory was first used by meteorologists Edward Lorenz and introduced as a science.<sup>[1]</sup> This theory has four main attributes; the most important is the butterfly effect. In a dynamic and nonlinear system, a small change can lead to dramatic effects. This theory can lead to new thinking in the field of health.<sup>[2]</sup> It has been used successfully in various medical disciplines, for instance, neuroscience. However, nursing has not succeeded in applying this theory to its own system.<sup>[1]</sup> The first theoretician who pointed it out in the nursing theory is Martha Rogers.<sup>[3]</sup> The nursing mission is providing health, care, treatment, and rehabilitation services at the highest standard for the maintenance, preservation, and promotion of community health.<sup>[4]</sup> For instance, since patients in intensive care units may have critical condition, nurses should be aware that even insignificant behaviors can dramatically affect the patient's health. The following examples are provided to describe the issue:

1. The lack of attention of the nurse in controlling the light of the laryngoscope or the pressure of the oxygen cylinder can delay the intubation process, followed by hypoxia, consequent cardiac arrhythmia, or brain damage.<sup>[5]</sup>
2. Failure to adhere to aseptic procedures during the intubation leads to pneumonia and septicemia, respectively.<sup>[5]</sup>
3. The presence of additional lights at night in the patient's unit or inappropriate ventilator setting and cardiac monitoring alarms can cause sleep disruption and finally delirium in patients.<sup>[6]</sup>

Therefore, nurses, especially those working in intensive care units, should be aware of the butterfly effect and apply it in their professional affairs. Supervisors of educational hospitals ought to also pay special attention to this subject.

### Conflicts of interest

There are no conflicts of interest.

### Authors' contribution

Jesmi AA developed the idea, Jouybari LM and Sanago A verified and supervised the findings of this work.

### Financial support and sponsorship

Nil.

### Acknowledgment

The author thanked the Iranian Research Center on Healthy Aging, Sabzevar University of Medical Sciences, Sabzevar, Iran.

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**Received:** 03 June 2019; **Accepted:** 28 August 2019; **Published:** 15 October 2020.

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	<b>DOI:</b>
	10.4103/JNMS.JNMS_34_19

**How to cite this article:** Jesmi AA, Leila Mahasti Jouybari, Sanagoo A. Application of chaos theory in the patient's safety. *J Nurs Midwifery Sci* 2020;7:288.

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