The Effect of a Mindfulness Application on the Perceived Stress and Anxiety of Nurse Anesthesia Students

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Background

- Nurse anesthesia education places high demands on students, creating stress and anxiety that can impact their success.[1,2]
- Researchers have identified the short-term benefit of mindful meditation using a mindfulness application.
- Although some research has focused on the health and well-being of graduate students, there is a paucity of research specifically with student nurse anesthetists (SRNAs).[1,2,3]
- This research is important because there are no identified published studies that have tested the longitudinal effectiveness of a mindfulness application over a sustainable period of time.
- Framed in Watson's caring theory (Figure 1), the research question posed for this study was: "What is the effect of a mindfulness application on the perceived stress and anxiety of nurse anesthesia students?".

Methodology

- A quantitative comparative research design was used to determine the effect of a mindfulness meditation application, Mindshift, on SRNA's perceived stress and anxiety over time.
- After the IRB approval was obtained (NSULA: 23-013) three SRNA cohorts were invited to participate in the study (N = 56).
- Thirty-six students agreed to participate, completed the electronic informed consent, and the electronic DASS-21 (Figure 2) baseline measure (64.3%).
- The Mindshift application was downloaded from the App Store onto their personal device and the mindfulness meditation exercises were integrated into their daily routine.
- The stress and anxiety subscale of the DASS-21 was repeated at 1-month, 3-months, and 6-months, with 31 students completing all measures (86.1%).
- Instrument reliability and validity was reconfirmed (Stress: α = .890; Anxiety: α = .788; $\chi 2$ = 232.898, p < .001).
- The difference over time was computed using a repeated measures analysis of covariance (ANCOVA).

Results

- Outcome 1: Stress
  - There was no difference in the student's stress over time (F = 2.62, p = .079, η^2 = .086).
  - When the intervention was considered, stress decreased at the 3-month (F = 4.497, p = .014, η^2.138) and 6-month (F = 7.998, p is < .001, η^2 = .222) intervals.
  - Post-hoc analysis revealed no change between baseline and 1-month (p = .245) but improved from 1-month to 3-months (p = .014), 1-month to 6-months (p < .001), and 3-months to 6-months (p = .007).
- Outcome 2: Anxiety
  - There was no difference in the student's anxiety over time (F = .326, p = .683, η^2 = .011).
  - When the intervention was considered, there was no decrease in anxiety at the three-month interval (F = .647 , p = .488, η^2.024), but did decrease at the six-month interval (F = 4.686, p = .004, η^2 = .143).
  - Post-hoc analysis, revealed no change between baseline and 1-month (p = .261) or 1-month to 3-months (p = .132). However, the student's anxiety significantly improved from 1-month to 6-months (p < .001), and 3-months to 6-month (p = .014).

Theory and Instrument

Figure 1

Parker, M. (2008). *What is Jean Watson's caring theory*. https://jeanwatsoncaringtheory.weebly.com/

Figure 2

DASS21

red blue yellow orange green purple ___ ___ ___ ___ ___ ___

Choose your favorite color from the six colors provided and the last 4#s of your significant other's phone number (remember this color and code as you will use it to match your questionnaires every month

Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you *over the past* month. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

0 Did not apply to me at all
1 Applied to me to some degree, or some of the time
2 Applied to me to a considerable degree, or a good part of time
3 Applied to me very much, or most of the time

1	I found it hard to wind down	0	1	2	3
2	I was aware of dryness of my mouth	0	1	2	3
3	I couldn't seem to experience any positive feeling at all	0	1	2	3
4	I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2	3
5	I found it difficult to work up the initiative to do things	0	1	2	3
6	I tended to over-react to situations	0	1	2	3
7	I experienced trembling (eg, in the hands)	0	1	2	3
8	I felt that I was using a lot of nervous energy	0	1	2	3
9	I was worried about situations in which I might panic and make a fool of myself	0	1	2	3
10	I felt that I had nothing to look forward to	0	1	2	3
11	I found myself getting agitated	0	1	2	3
12	I found it difficult to relax	0	1	2	3
13	I felt down-hearted and blue	0	1	2	3
14	I was intolerant of anything that kept me from getting on with what I was doing	0	1	2	3
15	I felt I was close to panic	0	1	2	3
16	I was unable to become enthusiastic about anything	0	1	2	3
17	I felt I wasn't worth much as a person	0	1	2	3
18	I felt that I was rather touchy	0	1	2	3
19	I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat)	0	1	2	3
20	I felt scared without any good reason	0	1	2	3
21	I felt that life was meaningless	0	1	2	3

DASS-21 Screening Tool; *Note:* Depression subscale was not included; only highlighted statements were used.

Discussion

- The mindfulness meditation intervention reduced perceived stress and anxiety levels over time.
- The gradual decline in stress and the delayed improvement in anxiety suggest that continuous interventions are needed to achieve positive results.
- One limitation of the study is that application use was self-reported and a larger more diverse group of SRNAs would enhance generalizability.
- Another limitation is that factors in the environment could have caused the decrease in the SRNAs stress and anxiety rather than the use of the Mindshift application.

Recommendations and Conclusion

- It is recommended that mindfulness meditation techniques are integrated into the curriculum highlighting the importance of longitudinal interventions. Faculty should assess SRNA well-being throughout programs and maintain open communication channels that encourage students to express when they are feeling stressed.
- Future researchers should consider the intensity and duration of the intervention, whether a supervised meditation is more effective, and how personality traits and cultural variations could affect results.
- In conclusion, the mindfulness meditation intervention reduced perceived stress and anxiety levels over time, highlighting the importance of sustained interventions.

References

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