Impact of Emergency Department Art Therapy on Patient's Self-Reported Pain and Anxiety

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ABSTRACT

OBJECTIVE: Anxiety and pain are often major components of a patient's experience in the emergency department (ED). The purpose of this study is to assess the effects of engaging in nature-themed coloring activities on patients' pain and anxiety scores while waiting to be seen by a physician in the emergency department.
METHODS: This is a randomized, four-armed prospective interventional study. ED patients who are aged 18 or older, primarily English-speaking, able to provide informed consent, with a triage pain score >3 and a HADS-A anxiety score >6, are eligible for participation. Subjects are randomly assigned to one of four activities: (A) nature-themed coloring pages, (B) geometric-themed coloring pages, (C) non-coloring activity packets, or (D) blank sheets of paper with pencil as an active control. Questionnaire responses, HADS-A anxiety scores, and pain scores are compared among the four groups.
RESULTS: Results from an initial sample of 33 subjects reveal a statistically significant reduction in mean pain score based on length of time spent on the activity, regardless of activity type (p = 0.03). Patients who spent more than 5 minutes on their activity had a greater reduction in pain score than those who spent less than 5 minutes engaged in their activity. There is no statistically significant reduction in pain or anxiety attributable to any one specific activity. There is no statistically significant reduction in anxiety based on length of time engaged in activity.
CONCLUSION: Patients who spend more time on their assigned activities in the ED waiting room had greater reductions in pain scores. This may be attributed to the potential benefits of entering a period of mindfulness or distraction from physical symptoms. Current conclusions are based on preliminary results (n = 33). Future recommendations will be drawn after the study is sufficiently powered (n = 168).

BACKGROUND & HYPOTHESIS

Anxiety is often a major component of a patient's experience in the emergency department (ED).Visits are unplanned and circumstantial, evoking immediate feelings of uncertainty and dread about impending events. Other common emotions in the ED setting, such as feelings of helplessness, vulnerability, fear, and various manifestations of pain, also contribute to patient anxiety (Elmqvist & Frank, 2014).Furthermore, patient volume in U.S. emergency departments has increased over the last decade, leading to overcrowding and increased wait times (Cypress, 2014). Art therapy has been a longstanding tool for managing patient anxiety, distress, and pain in several sectors of healthcare, including psychiatry, pediatrics, and oncology (Abbing et al., 2018).To date, only one study has looked at the potential benefits of introducing coloring therapy to ED waiting rooms. Rajendran et al. (2019) showed that patients who colored during their wait time had decreased self-reported anxiety scores two hours into their ED visit. This expands upon the initial objectives of Rajendran et al.'s study by exploring the effects of coloring nature-themed scenes on patient anxiety scores and pain scores in the emergency department.

Hypothesis: Art therapy interventions (coloring nature scenes or geometric patterns) will lead to reduced pain scores and HADS-A scores compared to the active control arm (drawing with pencil on blank sheet or paper) and non-coloring activities (word search, Sudoku). The art therapy intervention of coloring nature scenes will lead to the greatest overall improvement in patient anxiety and pain scores.

METHODS

•Randomized, non-blinded, four-armed interventional prospective study
•Subjects recruited via convenience sampling at Stony Brook University Hospital Emergency Department's waiting room
•Inclusion criteria: (1) Aged 18 years or older (2) English-speaking (3) Able to provide informed consent (4) moderate-to-severe anxiety (HADS-A >6) (5) moderate-to-severe pain (pain score >3)
•Intervention A: Subject colors nature-themed pages with crayons.
•Intervention B: Subject colors geometric-themed pages with crayons.
•Intervention C: Subject engages in written activity packet with pencil (word search, Sudoku).
•Intervention D: Subject writes or draws on a blank sheet of paper with pencil (active control arm).
•Questionnaire responses, HADS-A anxiety scores, and pain scores are compared among the four groups.
•Assuming parametric data, ANOVA will be used to test for differences in the distributions of continuous variables between the control and two intervention groups (pain score, HADS-A score), using p-value of 0.05 for significance.

RESULTS

We have currently recruited 33 of the 168 subjects necessary for appropriately powered data analysis. The following results are preliminary:

- There is a statistically significant reduction in mean pain score based on length of time spent on the activity, regardless of activity type.
- Patients who spent more than 5 minutes on their activity had a greater reduction in pain score than those who spent less than 5 minutes engaged in their activity.
- There is no statistically significant reduction in pain or anxiety attributable to any one specific activity.
- There is no statistically significant reduction in anxiety based on length of time engaged in activity.

Outcomes by Type of Activity

	ACTIVITY TYPE				
	NON-COLORING ACTIVITY	BLANK PAPER	GEOMETRIC COLORING	NATURE COLORING	P
	(n=9)	(n=6)	(n=9)	(n=9)	
Initial pain score, mean (sd)	7.0 (1.6)	7.0 (1.8)	7.4 (0.7)	7.2 (1.7)	0.92
Initial HADS-A score, mean (sd)	10.2 (3.3)	12.5 (4.9)	12.0 (3.7)	10.1 (2.0)	0.43
Final pain score, mean (sd)	7.1 (2.2)	6.6 (2.2)	6.8 (2.4)	6.6 (2.1)	0.96
Final HADS-A score, mean (sd)	7.0 (4.7)	9.2 (4.8)	10.0 (3.9)	8.9 (3.1)	0.48
Change in pain score, mean (sd)*	0.1 (2.0)	-0.4 (0.9)	-0.6 (1.9)	-0.4 (0.9)	0.8
Change in HADS-A score, mean (sd)*	-3.2 (3.6)	-3.3 (6.3)	-2.0 (3.2)	-1.2 (2.9)	0.66

*Negative numbers indicate a score has decreased from intial to final score

Outcomes by Time Spent on Activity

	TIME SPENT			
	<5 MINUTES	5-60 MINUTES	>60 MINUTES	P
	(n=8)	(n=23)	(n=2)	
Initial pain score, mean (sd)	7.5 (1.1)	7.1 (1.6)	6.5 (0.7)	0.66
Initial HADS-A score, mean (sd)	10.3 (2.7)	11.1 (3.7)	14.0 (2.8)	0.41
Final pain score, mean (sd)	8.4 (0.7)	6.3 (2.2)	6.0 (1.4)	0.05
Final HADS-A score, mean (sd)	10.4 (4.2)	8.1 (3.9)	9.5 (6.4)	0.39
Change in pain score, mean (sd)*	0.9 (1.4)	-0.7 (1.4)	-0.5 (2.1)	0.03
Change in HADS-A score, mean (sd)*	0.1 (2.8)	-3.0 (3.9)	-4.5 (3.5)	0.1

*Negative numbers indicate a score has decreased from initial to final score

CONCLUSION

Patients who spend more time on their assigned activities in the ED waiting room had greater reductions in pain scores. This may be attributed to the potential benefits of entering a period of mindfulness or distraction from physical symptoms. There is no statistically significant reduction in pain or anxiety due to any one specific activity. Current conclusions are based on preliminary results (n = 33). Future recommendations will be drawn after the study is sufficiently powered (n = 168).

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