

The Colorado Resiliency Arts Lab (CORAL): Alleviating the Healthcare Professional Burnout Crisis with Creative Arts Therapy

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University of Colorado
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The logo for the National Endowment for the Arts Research Labs, featuring a bar chart with five vertical bars in blue, red, and blue.

LIGHTHOUSE
WRITERS WORKSHOP

Ponzio Creative Arts
Therapy Program

The logo for the Ponzio Creative Arts Therapy Program, featuring a stylized drawing of a person's head and shoulders.

DISCLOSURES

Financial Relationships with “ineligible companies” within the past 24 months: None

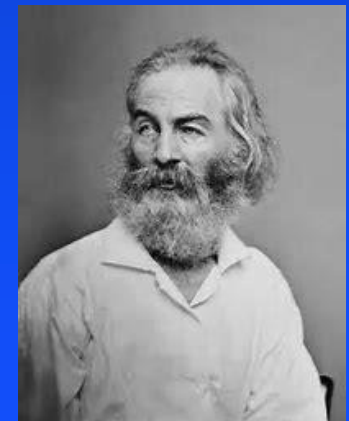
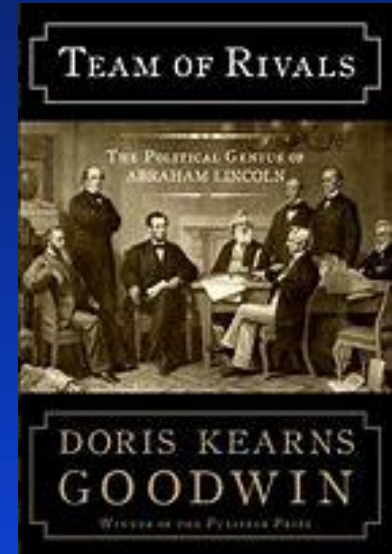
Research funded by:

NIH-NCCIH

National Endowment of the Arts

Healthcare professionals always exposed to difficult experiences

- **Walt Whitman and Louisa May Alcott**
 - Volunteer nurses at army hospital during Civil War
- **Whitman: “Feel sick and actually tremble at night, recalling the deaths, operations, and sickening wounds (perhaps full of maggots).”**
- **Alcott: “Found it difficult to not weep at the sight of several stretchers, each with its legless, armless, or desperately wounded occupants”.**



Is our profession out of balance?

“With altruistic intent, healthcare professionals may place professional responsibilities above personal responsibilities. Though admired, this may be self-defeating in the long run.”

“Role models range from academic superstars with impressive research credentials and international acclaim to committed clinician-teachers who are at the hospital seven days a week...their heroes lead lives that are desperately out of balance.”



M*A*S*H Video: January 14, 1980
Season 8; Episode 17

Burnout Syndrome (BOS)

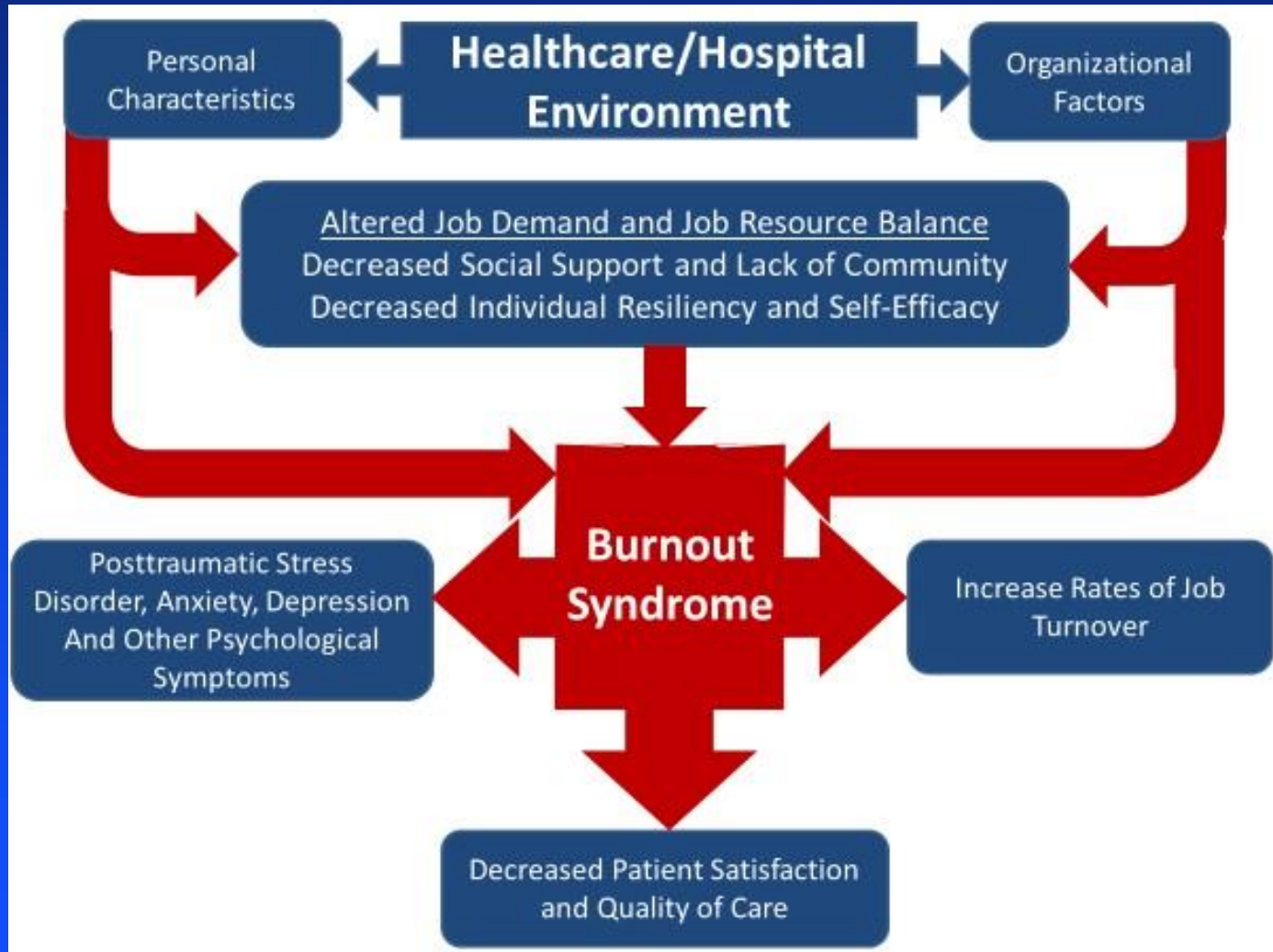
- **Discrepancy between:**
 - Employee expectations and ideals
 - The actual requirements of the position
- **Work-related problem**
 - Do not start a job with symptoms of burnout
 - Occurs gradually over time
- **Best and idealistic employees**
 - No prior psych history
 - Ones who care
 - Want to help people



Core Components of BOS

- **1. Emotional Exhaustion**
 - Devoting excessive time and effort to a task that is not perceived to be beneficial
 - Continuing to care for a patient who has a poor chance of recovery
- **2. Depersonalization**
 - Attempt to put distance between oneself and patients/families
 - Dismiss human qualities
 - Negative, callous, cynical, **inability to express empathy or grief when a patient dies**
- **3. Reduced personal accomplishment**
 - Negatively evaluate the worth of one's work
 - Feeling insufficient about abilities

Conceptual Model of Psychological Distress in Healthcare

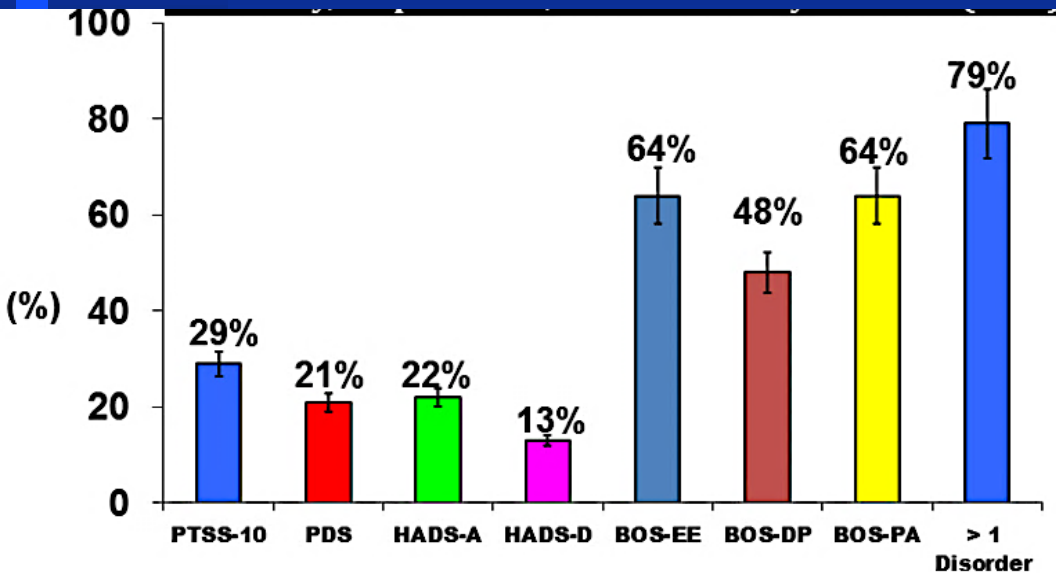


Consequences of Burnout

1. Individual Level

“When burnout was seen as a crisis of wellbeing – affecting healthcare workers personal lives and work satisfaction – it garnered little public sympathy and could be dismissed as the whining of the privileged class”

Prevalence of Disorders in ICU Nurses



PTSS-10: PTSD symptoms, PDS: PTSD diagnosis, HADS-A: anxiety symptoms, HADS-D: depressive symptoms, BOS-EE: emotional exhaustion, BOS-DP: depersonalization, BOS-PA: personal accomplishment

Post-mortem care

Seeing patients die and involvement with end of life care

Combative patients

Verbal abuse from family members, physicians, and other nurses

Open surgical wounds

Massive bleeding

Trauma related injuries

Performing "futile" care to patients

Performing cardiopulmonary resuscitation

Stress related to feeling over-extended due to inadequate nurse to patient ratios

Stress related to not being able to save a specific patient

Unit Level: BOS effect on patient care: Diuresing your service?

115 internal medicine residents

Anonymous mailed survey
Questions about patient care practices

Stratified by MBI score:
76% met burnout criteria

Ann Intern Med 2002;
136: 358-367

Patient Care Practices

I found myself discharging patients to make the service "manageable" because the team was too busy.

I did not fully discuss treatment options or answer a patient's questions.

I made treatment or medication errors that were not due to a lack of knowledge or inexperience.

I ordered restraints or medication for an agitated patient without evaluating him or her.

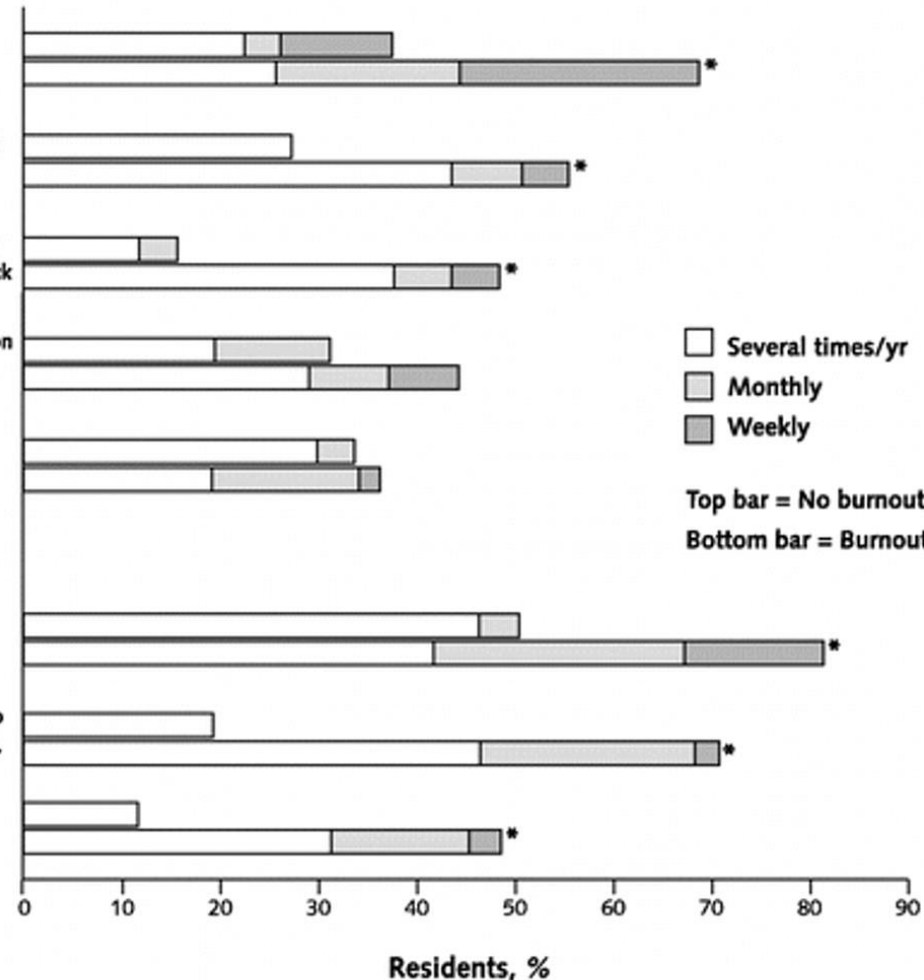
I did not perform a diagnostic test because of desire to discharge a patient.

Patient Care Attitudes

I paid little attention to the social or personal impact of an illness on a patient.

I had little emotional reaction to the death of one of my patients.

I felt guilty about how I treated one of my patients from a humanitarian standpoint.



Hospital Level Economic Impact of Turnover

- Cost of replacing an ICU physician: \$500,000 per person
- Annual turnover rate related to burnout: 3%
- A department with 450 doctors:
 - 13 physicians per year: \$6,750,000



Figure 2. Worksheet to Project Organizational Cost of Physician Burnout

1. Input data:	Enter values
N = No. of physicians at your center	_____
BO = Rate of burnout of physicians at your center	_____ ^a
TO = Current turnover rate per year	_____ ^b
C = Cost of turnover per physician	_____ ^c

2. Calculations:

Estimated Cost of Physician Turnover Attributable to Burnout

A. TO without burnout (solve for "TO without burnout"):

Formula:^d
 $TO = [TO \text{ without burnout} \times (1 - BO)] + [(2 \times TO \text{ without burnout}) \times BO]$

Simplified formula:
 $TO \text{ without burnout} = TO / (1 + BO)$

B. Projected No. of physicians turning over per year due to burnout (solve using input variables and TO without burnout value from step A):

Formula:
 No. of physicians turning over due to burnout per year = $(TO - TO \text{ without burnout}) \times N$

C. Projected cost of physician turnover per year due to burnout (solve using input variables and No. of physicians turning over due to burnout per year from step B):

Formula:
 Estimated cost of turnover due to burnout = $C \times \text{No. of physicians turning over due to burnout per year}$

Example Using N = 450; BO = 50%; TO = 7.5%; C = \$500 000

A. TO without burnout:
 $0.075 = [TO \text{ without burnout} \times (1 - 0.5)] + [(2 \times TO \text{ without burnout}) \times 0.5]$
 or $0.075 / (1 + 0.5) = 5\%$

B. No. of physicians turning over due to burnout per year:
 $(0.075 - 0.05) \times 450 = 11.25$

C. Projected cost of physician turnover per year due to burnout:
 $\$500\,000 \times 11.25 = \$5\,625\,000$

^a National mean, approximately 54%.

^b National mean, approximately 7%.

^c Mean cost of \$500 000 to \$1 000 000 per physician.

^d Assumes that burned out physicians are approximately 2 times as likely to turn over as non-burned out physicians.

US health officials say coronavirus will likely cause a global pandemic

Then COVID Hits

BRIEF REPORT

First Case of 2019 Novel Coronavirus in the United States

Michelle L. Holshue, M.P.H., Chas DeBolt, M.P.H., Scott Lindquist, M.D., Kathy H. Lofy, M.D., John Wiesman, Dr.P.H., Hollianne Bruce, M.P.H., Christopher Spitters, M.D., Keith Ericson, P.A.-C., Sara Wilkerson, M.N., Ahmet Tural, M.D., George Diaz, M.D., Amanda Cohn, M.D., LeAnne Fox, M.D., Anita Patel, Pharm.D., Susan I. Gerber, M.D., Lindsay Kim, M.D., Suxiang Tong, Ph.D., Xiaoyan Lu, M.S., Steve Lindstrom, Ph.D., Mark A. Pallansch, Ph.D., William C. Weldon, Ph.D., Holly M. Biggs, M.D., Timothy M. Uyeki, M.D., and Satish K. Pillai, M.D., for the Washington State 2019-nCoV Case Investigation Team*

JAMA | Original Investigation | CARING FOR THE CRITICALLY ILL PATIENT

Clinical Characteristics of 138 Hospitalized Patients With 2019 Novel Coronavirus-Infected Pneumonia in Wuhan, China

Dawel Wang, MD; Bo Hu, MD; Chang Hu, MD; Fangfang Zhu, MD; Zhenhun Cheng, MD; Yong Xiong, MD; Yan Zhao, MD; Yilong Wang, MD;

ORIGINAL ARTICLE

Early Transmission Dynamics in Wuhan, China, of Novel Coronavirus-Infected Pneumonia

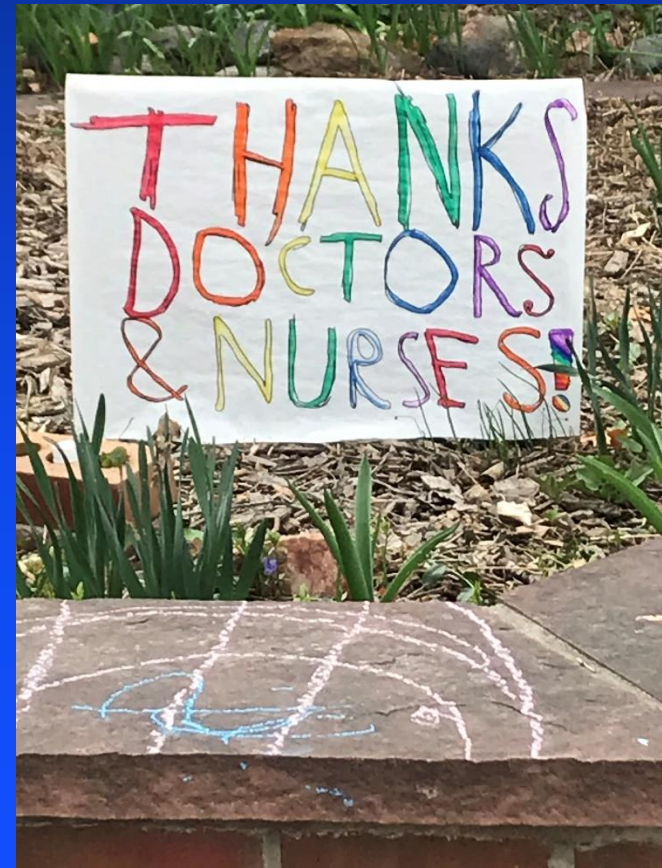
Qun Li, M.Med., Xuhua Guan, Ph.D., Peng Wu, Ph.D., Xiaoye Wang, M.P.H., Lei Zhou, M.Med., Yeqing Tong, Ph.D., Ruiqi Ren, M.Med., Kathy S.M. Leung, Ph.D., Eric H.Y. Lau, Ph.D., Jessica Y. Wong, Ph.D., Xuesen Xing, Ph.D., Nijuan Xiang, M.Med., Yang Wu, M.Sc., Chao Li, M.P.H., Qi Chen, M.Sc., Dan Li, M.P.H., Tian Liu, B.Med., Jing Zhao, M.Sc., Man Liu, M.Sc., Werxiao Tu, M.Med., Chuding Chen, M.Sc., Lianmei Jin, M.Med., Rui Yang, M.Med., Qi Wang, M.P.H., Suhua Zhou, M.Med., Rui Wang, M.D., Hui Liu, M.Med., Yinbo Luo, M.Sc., Yuan Liu, M.Med., Ge Shao, B.Med., Huan Li, M.P.H., Zhongfa Tao, M.P.H., Yang Yang, M.Med., Zhiqiang Deng, M.Med., Boxi Liu, M.P.H., Zhitao Ma, M.Med., Yanping Zhang, M.Med., Guoqing Shi, M.P.H., Tommy T.Y. Lam, Ph.D., Joseph T. Wu, Ph.D., George F. Gao, D.Phil., Benjamin J. Cowling, Ph.D., Bo Yang, M.Sc., Gabriel M. Leung, M.D., and Zijian Feng, M.Med.



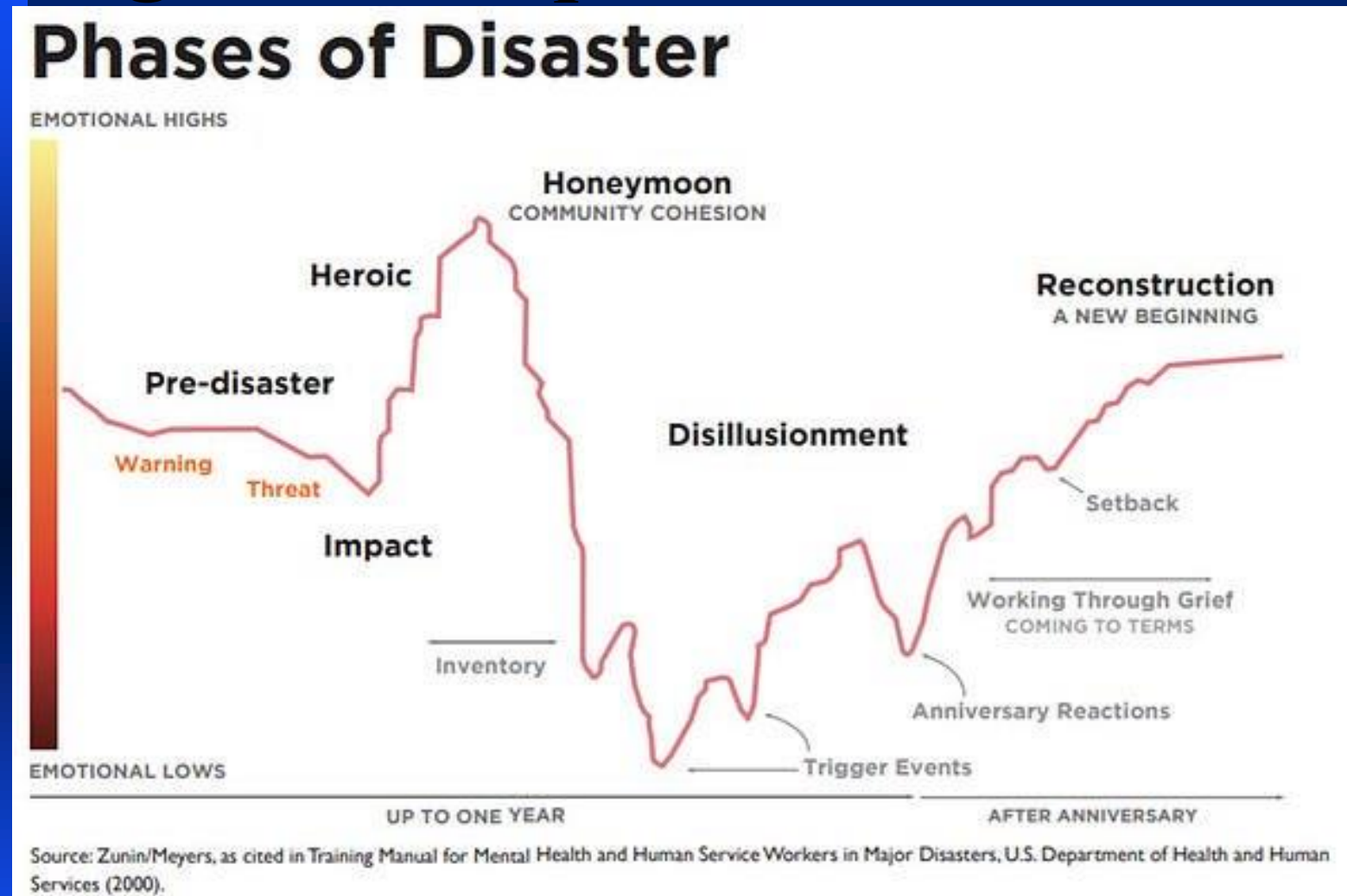
Initial Silver Linings of COVID-19

WSJ: Cities Clap, Ring and Howl, Showing Support for First Responders

- People finally know what we do in the ICU
- Received external validation
- Built comradery in the hospital
 - Broke down barriers
- Things got accomplished quickly



Long Term Sequelae of COVID-19



- Time frame for progression through the stages is highly variable.
- Stages can be skipped
- This is a **NORMAL RESPONSE** to disaster.

Phase of Disillusionment

- **Impact sinks in deeply**
 - Discouragement, fatigue, exhaustion.
- **Support services, volunteers, acute disaster resources and media begin to pull out**
 - HCPs feeling abandoned and resentful.
- **Physical, economic, housing, family discord, bureaucratic hassles with disaster relief, lack of breaks.**
- **Surrounding communities return to business as usual**
 - Causing discouragement and alienation in survivors.
 - Unequal disaster relief rewards can cause conflict between survivors.
- **Inadequate disaster response can produce extreme outrage and long lasting resentment.**

So What can be Done?

Stress Reduction Kit

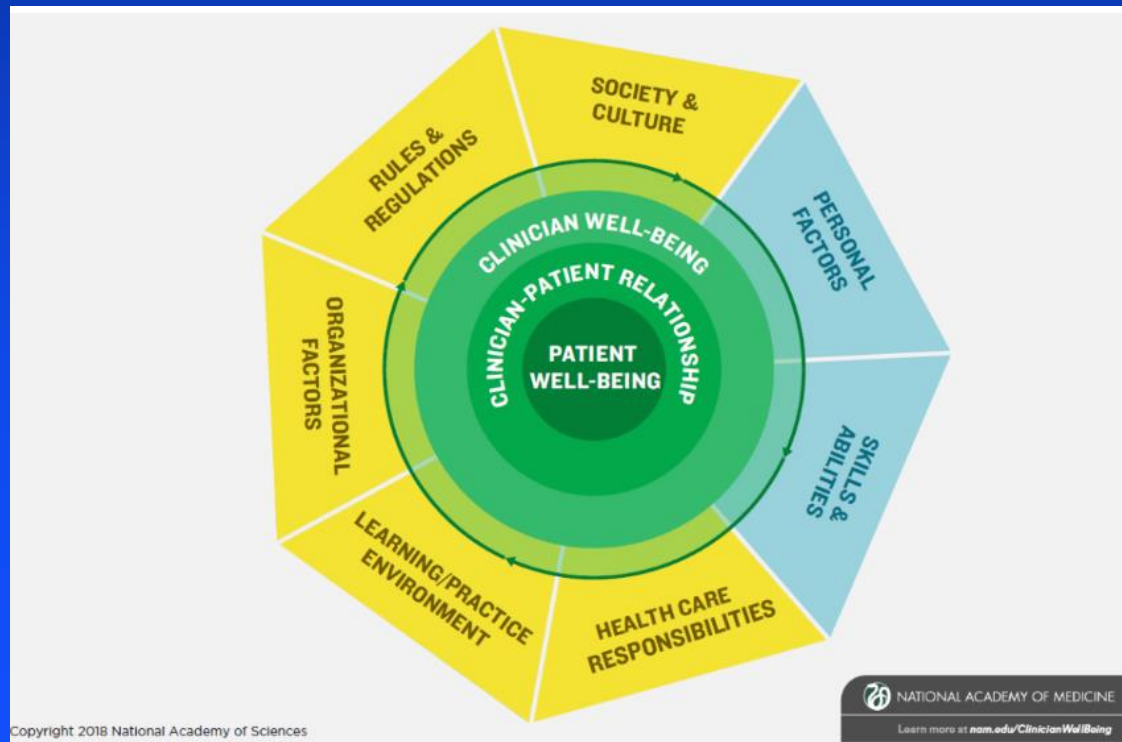


Directions

1. Place kit on FIRM surface
2. Follow directions in circle of kit
3. Repeat step 2 as necessary, or until unconscious
4. If unconscious, cease stress reduction activity

Different Potential Solutions

- Reduce Stigma
- **Organizational solutions**
- **Individual-focused interventions**
- Proper Leadership styles
- Role of Professional Societies



Colorado Resiliency Arts Lab (CORAL)

- To create a vibrant, collaborative creative arts therapy community that is committed to enhancing healthcare professional well-being and alleviating psychological stress in the workplace and beyond.
- We encourage healthcare providers to find a creative outlet, build their identity, and establish a sense of community through the arts.
- <https://medschool.cuanschutz.edu/coral>



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Creative Arts Therapy

Creative Arts Therapy as a Potential Intervention to Prevent Burnout and Build Resilience in Health Care Professionals

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ABSTRACT

The delivery of health care is undergoing a rapid evolution that is dramatically changing the way health care professionals perform their job responsibilities. In this increasingly stressful work environment, professionals are experiencing alarming rates of burnout. Recent efforts to enhance wellness have been directed toward organizations. However, because of the nature of the work performed in intensive care units, interventions to develop individual resilience are also needed. Currently, medical centers are environments in which the emotional impact of work-related trauma is often minimized and

rarely processed. Some individuals may struggle to describe or express the impact of those traumas. Through nonverbal interventions, creative arts therapy can help people access, explore, and share authentic emotion in visual, musical, physical, or written form. By reconstructing meaning through transformative methods, participants may confront, reflect, and better cope with traumatic experiences while catalyzing social support networks and deepening relational bonds in the workplace.

Key words: burnout, creative arts therapy, critical care, resilience, wellness

- If we do not have the ability to describe or process an event verbally,
- May be able to depict its emotional impact through art, music, movement, or writing.
- Guided and supported by a creative arts therapist
 - Identify, explore, and process feeling to match emotional impact

Colorado Resiliency Arts Lab (CORAL)

<https://medschool.cuanschutz.edu/coral>



Creative Arts Clinical Trial

NEA grant

Study participants will engage in one of 4 modalities

Art Therapy

Dance/Movement
Therapy

Music Therapy

Writing Workshop

Control Group

Ponzio CAT

Lighthouse
Writers' Workshop

• Weeks 1-4

CREATING SAFETY

- Intros & group agreements
- Who am I?
- What do I care about?
- Whom do I count on? Who counts on me?

• Weeks 5-8

COPING & EXPRESSING

- What are my work challenges?
- When am I at my best?
- When are my relationships at their best?
- How do I cope with intense, challenging feelings?

• Weeks 9-12

INTEGRATING & RELATING (COMMUNITY)

- How do I access resilience?
- How do I honor my patients?
- What does my community look like?
- What have I learned?

Demographics

	Control (N=32)	Intervention (N=114)
Age	33.5 (8.3)	36.5 (9.7)
Sex (Female)	29 (91%)	105 (92%)
Race/Ethnicity		
Hispanic	2 (6%)	8 (7%)
White	29 (91%)	96 (84%)
Other	1 (3%)	10 (9%)
Marital Status		
Single	20 (63%)	61 (53.5%)
Married	10 (31%)	42 (36.8%)
Divorced / Separated	2 (6%)	11 (9.7%)
Job Title		
BHS	8 (25%)	16 (14%)
MD	2 (6%)	13 (11%)
Nurse	16 (50%)	60 (53%)
SW	1 (3%)	5 (4%)
Other (includes NP, OT/PT, Pharmacist, Other)	5 (16%)	20 (18%)
Years Worked in Healthcare	8.5 (8.4)	10.9 (8.2)
Currently Taking Medications for Anxiety	11 (34.4%)	26 (22.8%)
Currently Taking Medications for Depression	9 (28.1%)	26 (22.8%)
Participate in Therapy/Counseling	10 (31.3%)	48 (42.1%)

Attendance and Satisfaction

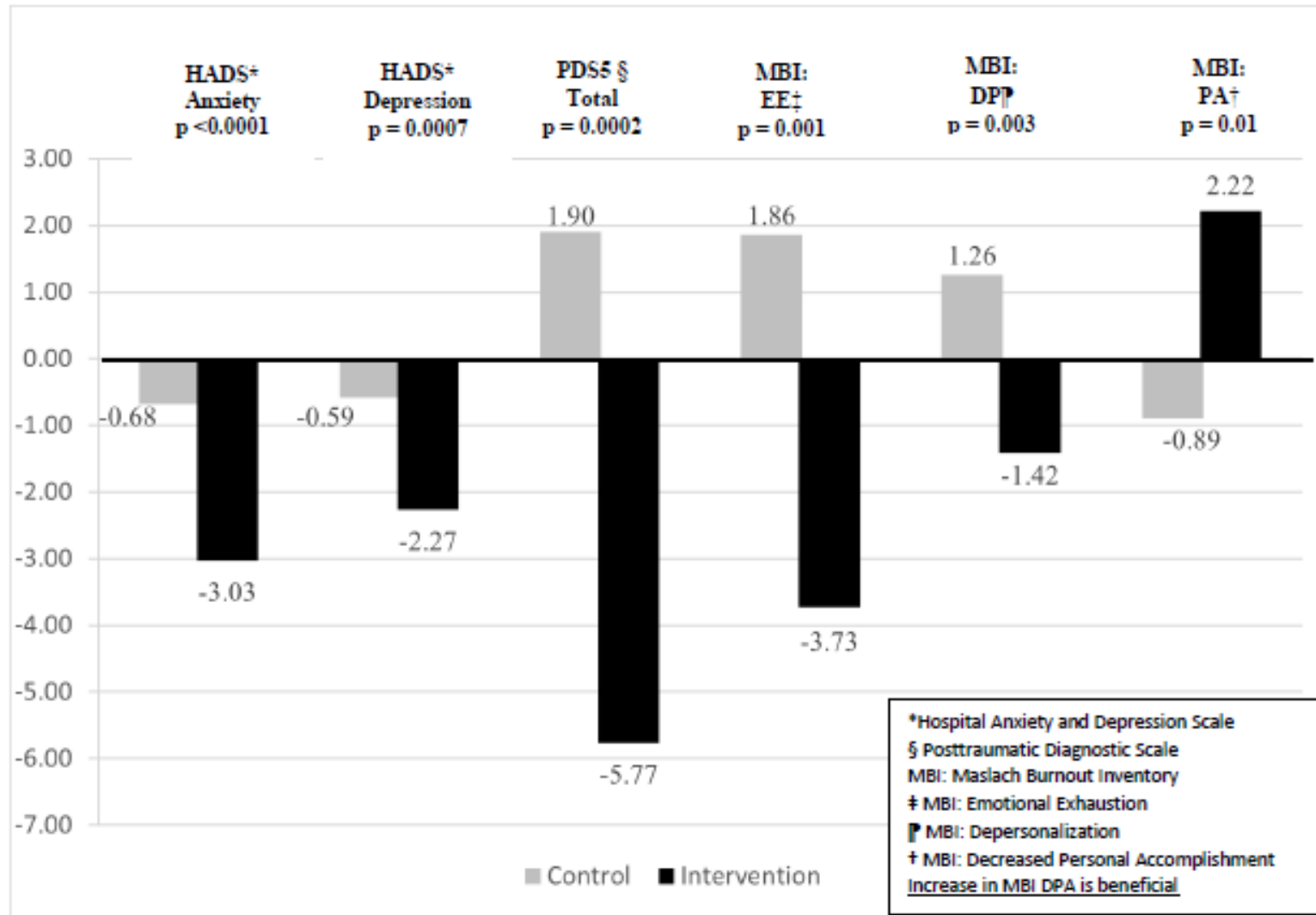
Supplementary Table 2 Attendance and CSQ by Week

Week	Attendance	95% CI	N	Mean (SD)	Median (range)	N (% of respondents) ≥ 24	95% CI on proportion
1	88 (77%)	(68.3%, 84.6%)	88	27.8 (2.9)	28 (19, 32)	81 (92%)	(84.2%, 96.8%)
2	92 (81%)	(72.2%, 87.5%)	90	28.4 (2.7)	29 (20, 32)	88 (98%)	(92.2%, 99.8%)
3	90 (79%)	(70.3%, 86.1%)	90	28.9 (3.0)	30 (18, 32)	87 (97%)	(90.5%, 99.4%)
4	84 (74%)	(64.6%, 81.5%)	84	28.5 (3.4)	30 (20,32)	75 (89%)	(80.6%, 95.0%)
5	84 (74%)	(64.6%, 81.5%)	84	29.1 (3.4)	30 (16, 32)	81 (96%)	(89.9%, 99.3%)
6	82 (72%)	(62.7%, 80.0%)	80	28.7 (4.2)	30.5 (16, 32)	72 (90%)	(81.2%, 95.6%)
7	84 (74%)	(64.6%, 81.5%)	83	29.3 (3.8)	31 (17,32)	76 (92%)	(83.3%, 96.6%)
8	74 (65%)	(55.4%, 73.7%)	74	30.1 (2.9)	32 (21,32)	72 (97%)	(90.5%, 99.7%)
9	84 (74%)	(64.6%, 81.5%)	84	30.0 (2.7)	31.5 (22, 32)	83 (99%)	(93.5%, 100%)
10	76 (67%)	(57.2%, 75.3%)	76	29.0 (4.0)	31 (16, 32)	70 (92%)	(83.6%, 97.1%)
11	79 (69%)	(59.9%, 77.6%)	79	29.5 (4.1)	32 (15, 32)	72 (91%)	(82.5%, 96.4%)
12	83 (73%)	(63.6%, 80.8%)	82	30.6 (2.8)	32 (16, 32)	81 (99%)	(93.3%, 100%)

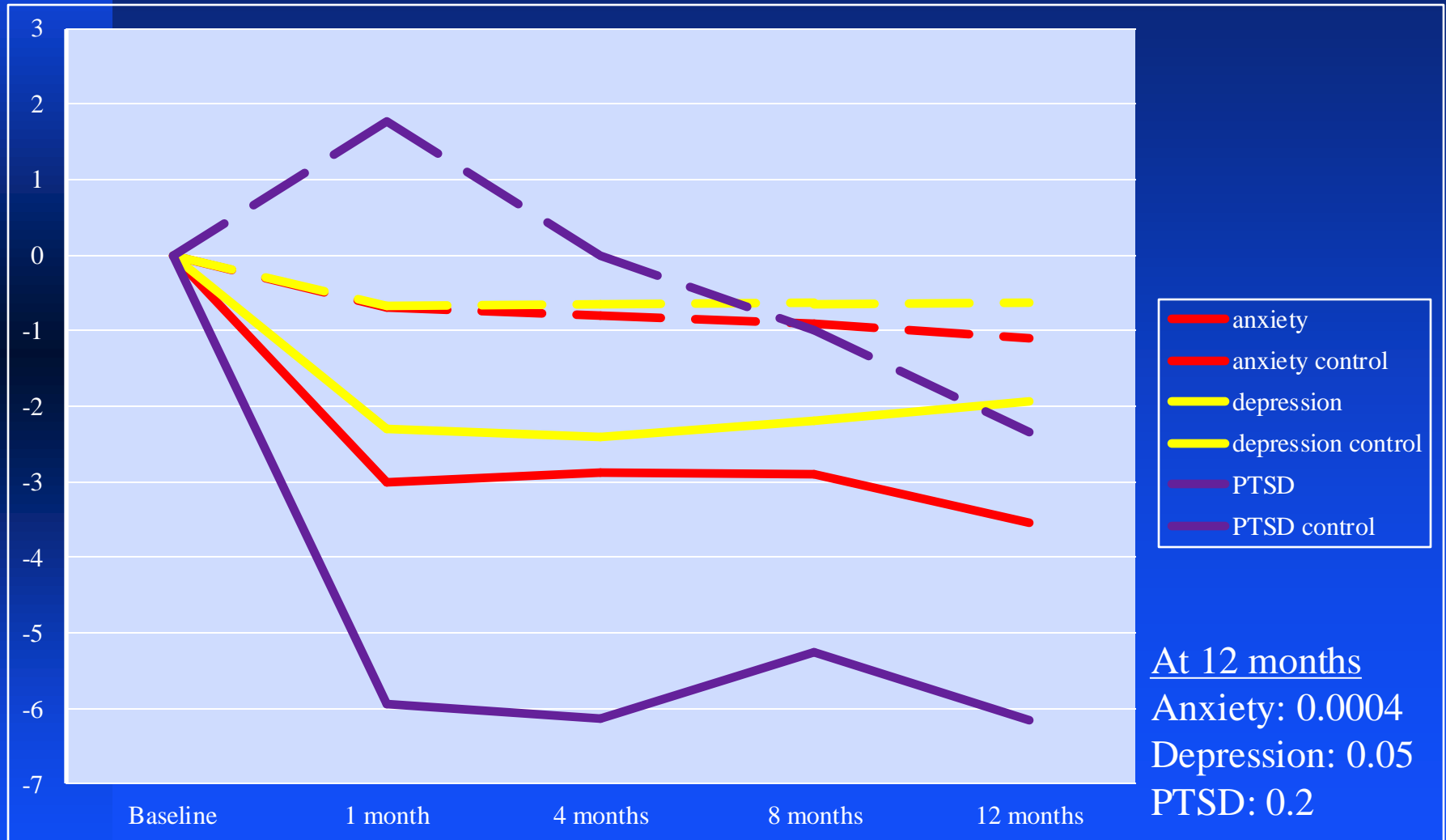
CI = confidence interval; CSQ = Client Satisfaction Questionnaire; SD = standard deviation.

Results

Figure 2: Pre/Post Change in Psychological Distress Measures between Intervention and Control



CAT effects over time: anxiety, depression, PTSD



Limitations

- **Control group**
 - Not an attention control
- **Un-blinded study**
- **Conducted during COVID**
 - Extremely stressful time

Strengths

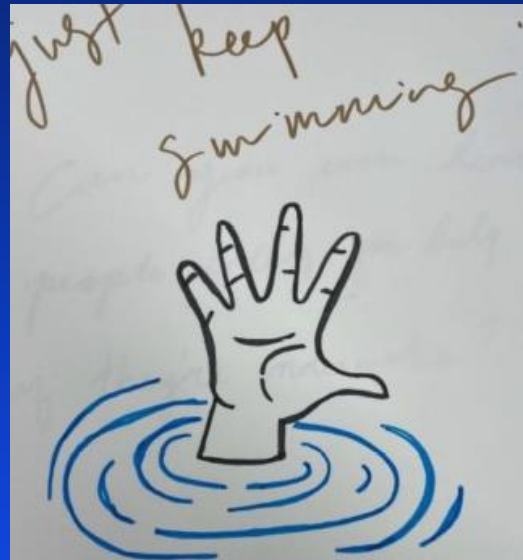
- **Rigorously developed protocols**
- **Variety of healthcare**
- **Extensive outcomes**
- **Excellent follow up**

Qualitative CAT intervention themes:

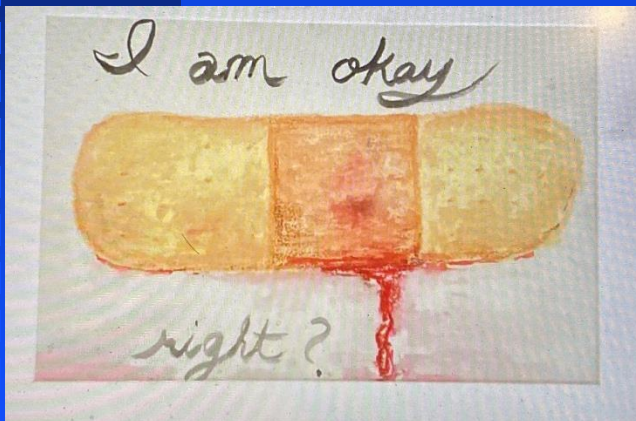
Key: Sense of Community

- **Participants' disciplines, roles, and geographic diversity**
- **Physical separation between the conduct of the CAT program and their primary place of employment**
- **Facilitator skills**
- **Collectively contributed to a group project**
- **Being pushed out of their “comfort zone” through the creative activity.**
- **Co-importance of arts and therapy together**

Traveling Art Exhibit



CAN YOU EVEN HEAR PEOPLE CALLING FOR HELP IF THEY'RE UNDERWATER?
FIGURE 6: CAT Participant Artwork



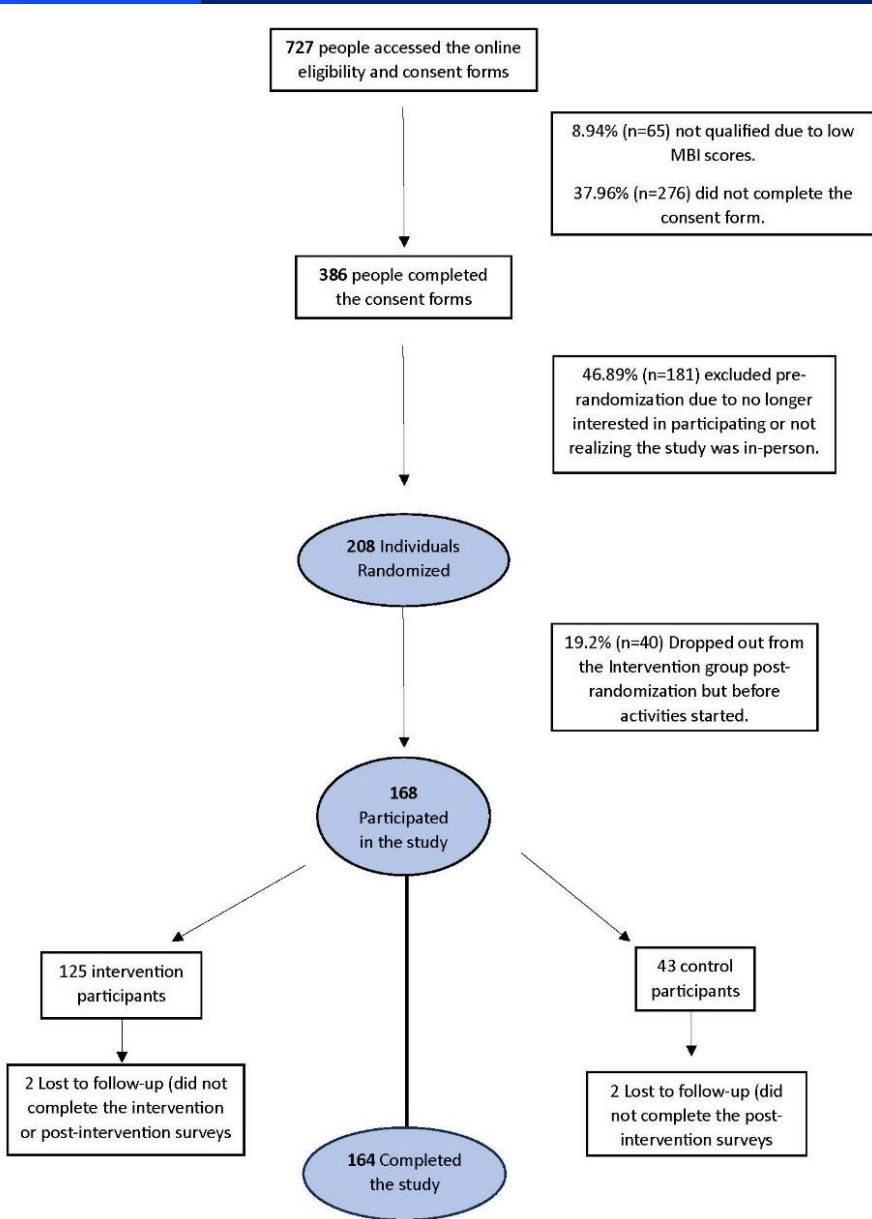
Non-patient facing HCP: randomized clinical trial

- Administrators, researchers, educators, support staff
- Different work-related stressors:
 - job security, grant funding, other financial considerations
- Understudied regarding stress

- Trial of 12-week in-person CAT program
 - Same design as the previous HCP trial

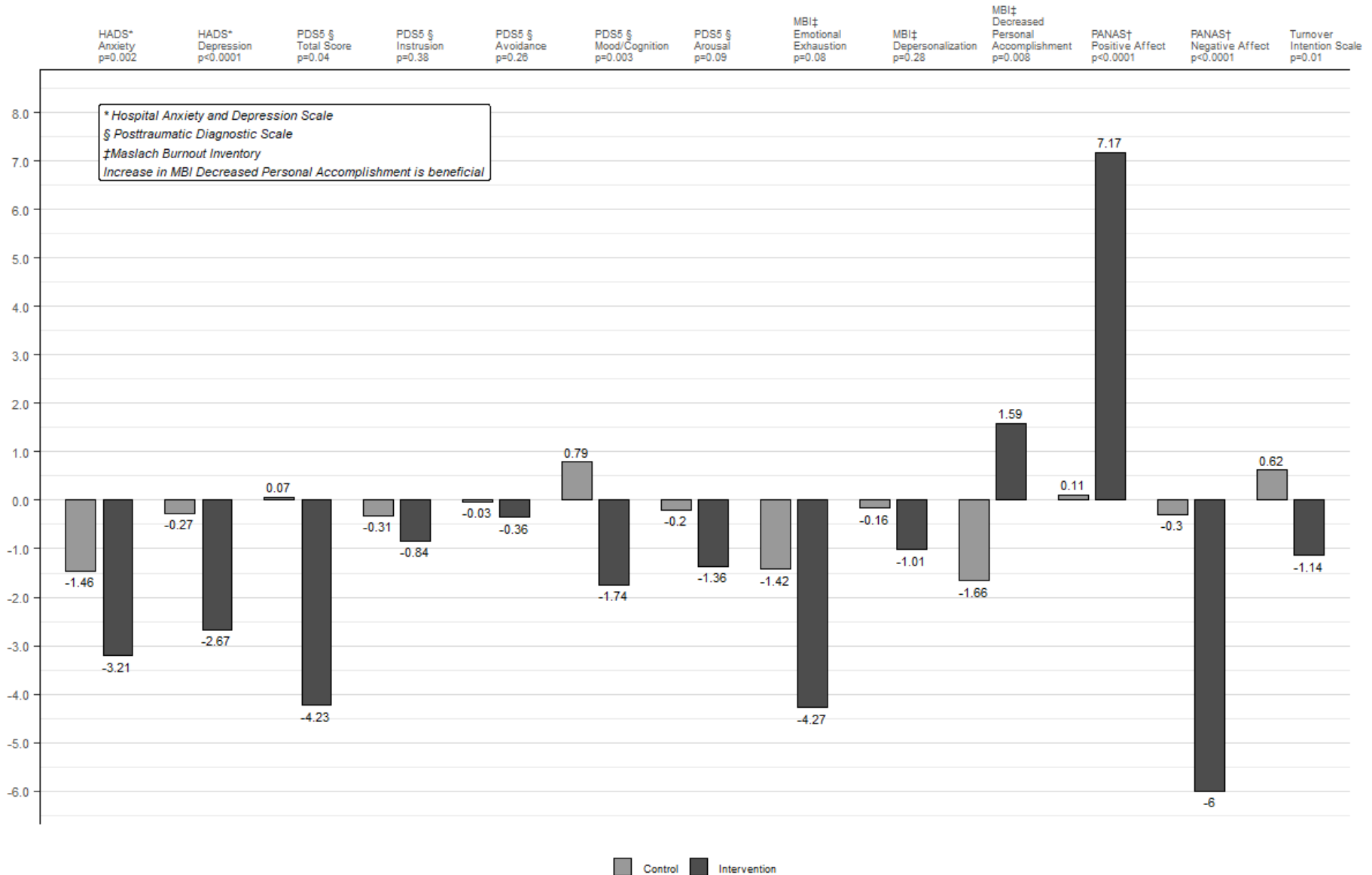
 - Participant's job titles:
 - Research (39%), Managers (30%) Hospital workers (17%), education/HR (12%), other (2%)

Figure 1 and Demographics



	Control (N=43)	Intervention (N=139)	t-test or chi-square p-value
Age	35.5 (10.6)	35.9 (11.3)	0.84
Gender			
Female	37 (86%)	118 (85%)	
Male	5 (12%)	19 (14%)	0.83*
Non-binary	1 (2%)	2 (1%)	
Race/Ethnicity			
Asian	3 (7%)	10 (7%)	
Black	6 (14%)	10 (7%)	0.69
Hispanic	4 (9%)	12 (9%)	
White	25 (58%)	91 (66%)	
Marital Status			
Single	24 (56%)	76 (55%)	
Married	14 (33%)	52 (38%)	0.61
Divorced / Separated / Widowed	5 (12%)	10 (7%)	
Highest Grade Completed			
High School	3 (7%)	2 (1.5%)	
College Graduate	25 (58%)	78 (56.5%)	0.14
Graduate School	15 (35%)	58 (42%)	
Taking Anxiety Medication	16 (37%)	44 (32%)	0.50
Taking Depression Medication	11 (26%)	40(29%)	0.68
Participating in Therapy/Counseling	17 (40%)	45 (32%)	0.39

Results



12-month follow-up results (90%)

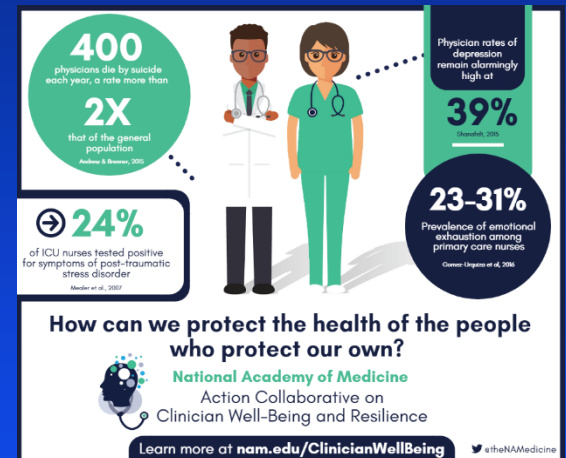
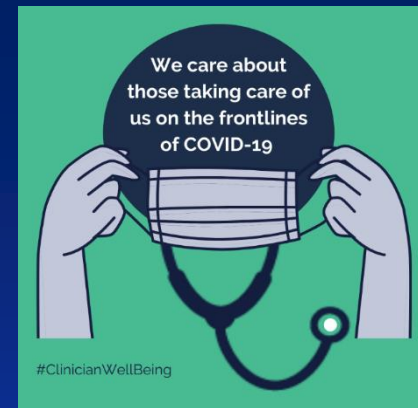
	4-Month Estimated		8-Month Estimated		12-Month Estimated	
	Difference in	p-value	Difference in	p-value	Difference in Change	p-value
	Change (95% CI)		Change (95% CI)		(95% CI)	
HADS						
Anxiety	2.49 (1.12, 3.85)	0.0004	1.40 (-0.06, 2.86)	0.06	1.33 (-0.13, 2.79)	0.07
Depression	2.39 (1.27, 3.52)	<0.0001	3.53 (1.40, 3.67)	<0.0001	2.40 (1.23, 3.57)	<0.0001
PDS5						
Total Score	1.49 (-3.73, 6.71)	0.57	4.21 (-0.77, 9.19)	0.10	1.92 (-3.25, 7.10)	0.46
MBI						
Emotional Exhaustion	2.23 (-1.90, 6.36)	0.29	2.39 (-2.18, 6.95)	0.30	1.73 (-3.06, 6.53)	0.48
Depersonalization	2.45 (0.45, 4.45)	0.02	1.10 (-1.08, 3.27)	0.32	1.74 (-0.29, 3.77)	0.09
Decreased Personal Accomplishment	-0.76 (-3.60, 2.07)	0.60	-3.19 (-5.96, -0.42)	0.02	-1.05 (-3.90, 1.80)	0.47
PANAS						
Positive Affect	-5.61 (-8.27, -2.95)	<0.0001	-5.86 (-8.72, -2.99)	<0.0001	-3.68 (-6.54, -0.81)	0.01
Negative Affect	4.39 (1.37, 7.42)	0.005	4.43 (1.56, 7.29)	0.003	3.20 (0.22, 6.18)	0.04
Turnover Intention Scale	2.19 (0.35, 4.03)	0.02	2.08 (0.04, 4.11)	0.045	1.60 (-0.50, 3.70)	0.14

Next Steps for CORAL

- **Implementing the CORAL at other healthcare settings**
Children's Hospital Colorado
- **Traveling exhibit:**
 - **CAT on healthcare professionals**
- **NIH Grant**
- **Cohort/study for healthcare trainees**
- **New modalities: Drama therapy?**
- **Virtual delivery of CORAL for writing cohort**

Conclusions

- Before COVID, psychological distress in healthcare professionals was the most important issue in healthcare
 - It is even more important now!
- The world is now aware of the difficulties we face
 - Utilize the pandemic to raise awareness of the societal mental health stigma
 - Creative Arts Therapy is one promising intervention!



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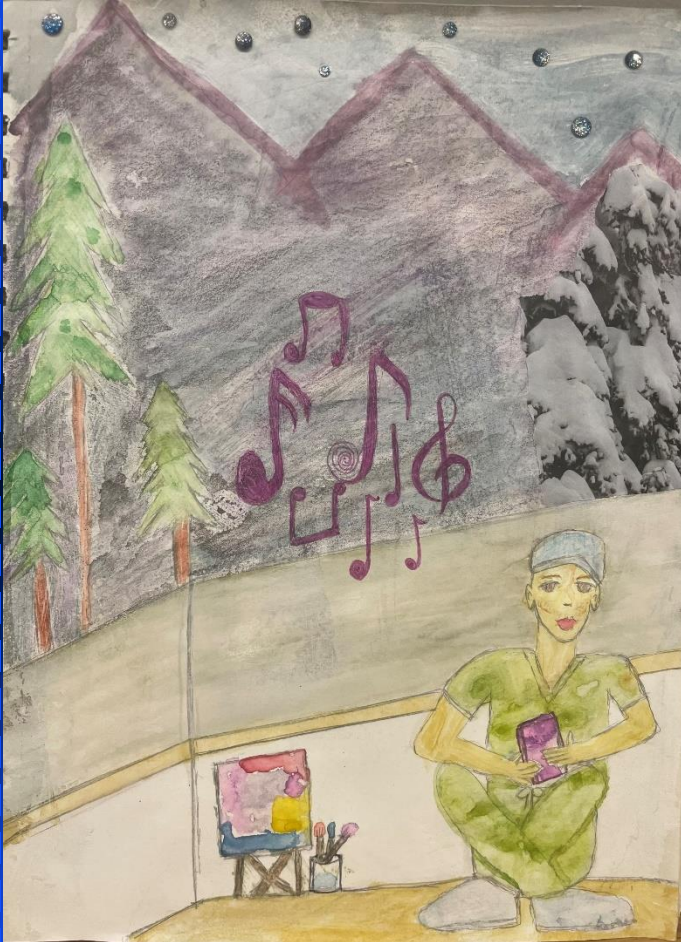
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Anthony Edelblute

Lighthouse Writer's Workshop
Michael Henry

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Ruth Kleinpell, Ph.D.
Vicki Goode, RN

NCCIH

AACN



“We need to be taught how to store these things: difficult conversations, emotional encounters, sacred moments, trauma.

Teach us how to place them in other sacred spaces in music, in movement, in writing, or in art.

This is the invitation for you to burn down all of the shrines in your body dedicated to coping. Just burn it down and rise up into...

The wilderness or snowy peaks the hiking, skiing...
The beaches jumping waves, snorkeling, laying in the warm sand
Into the words written madly without inhibition
With art medium spread across canvas or journal
With movement around the dance or yoga floor
Or in lyric sung loudly in a closed car,
or softly in tears spilling down cheeks.”

-An APRN with no more capacity