Impact of Live Therapeutic Music on Stress Levels Among Healthcare Workers in COVID-19 Critical Care Units
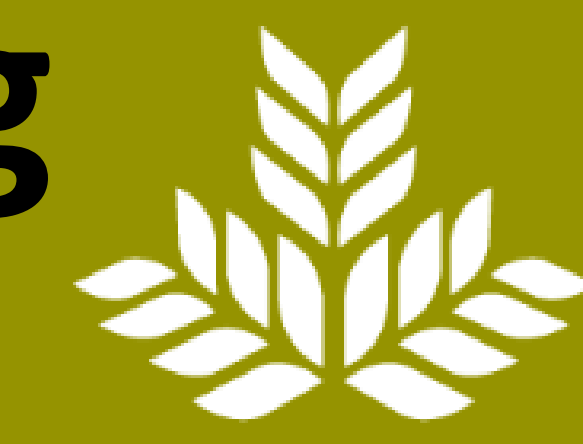
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Background

The Coronavirus pandemic has resulted in stressful work environments above what is considered normal for acute care settings. Chronic stress is known to have adverse effects on physical and emotional health and may lead to higher risk for job burnout and decreased quality of patient care.

The objective of this study was to examine the role of live therapeutic music (LTM) on stress reduction among healthcare workers (HCWs) in a COVID-19 critical care units (CC).

Study Design

A descriptive design was used. A convenience sample of 60 HCWs working in two COVID-19 critical care units were included. HCWs included were Registered Nurses (RNs), Respiratory therapists (RTs), Patient Care Technicians (PCTs), Unit Assistant (UA)

This study sought to answer the following questions:
1. Among HCWs working in COVID-19 CC units, can participation in a LTM session reduce current levels of stress?
2. To what degree is stress reduction associated with selected personal characteristics (specific job role, years in healthcare, general life stress, etc.) and LTM?

Data Collection and Methodology

Participant's stress was measured using two instruments. Global stress was measured using the widely used *Perceived Stress Scale (PSS)*, a 10-item, self-administered questionnaire that measures "the degree to which situations in one's life is stressful" Possible total scores range from 0-40, with a higher score indicating a higher degree of life stress. Current stress levels were measured using a numeric rating scale rating (NRS) immediately prior to and following each LTM session. Participants were asked to circle the number that indicated how they would rate their current level of stress, with "0" indicating "no stress" and "10" indicating "extreme stress".

Multiple 30-minute LTM sessions were provided at different locations in the two COVID-19 CC units with acoustic guitar or electronic keyboard. Sessions and surveys occurred between the 4th and 6th hour of the HCW's 12-hour shift on both day and night shifts. All LTM sessions were conducted by Certified Music Practitioners (CMPs), who played familiar, contemporary, classical, or unfamiliar music, loosely metered @ 50 – 60 beats per minute (bpm) at a volume of 50 – 60 decibels. CMPs also played interludes of improvisation, based on participant's observed responses to the music.

Results

Relationships Among Participant Characteristics, Pre-Intervention Stress and Perceived Stress (N = 60)

	Variable	1	2	3	4	5	6	7
1	PSS	--						
2	Age	-.06	--					
3	Gender	-.19	-.26*	--				
4	Role	.26*	-.19	-.03	--			
5	Years in Healthcare	-.15	.71***	-.17	-.17	--		
7	Shift	-.09	-.19	.27*	-.16	-.14	.24	--
6	# Days Worked	.17	-.10	.27*	.13	-.12	--	
8	PIS-NRS	.59***	-.13	.03	.26*	-.28*	.26*	-.04
9	Stress Reduction	.28*	-.08	-.17	.27*	-.20	.11	-.14

Note: * p =.05, **p=.01, *** p = .001; PSS = Perceived Stress Scale; PIS-NRS = Pre-intervention Stress, Numeric Rating Scale

Healthcare Worker Stress Characteristics and Stress Reduction Before and After Live Therapeutic Music Session (N = 60)

Measurement	n	%	Life Stress (PSS) M(SD)	Pre-Session Stress (NRS) M(SD)	Post-Session Stress (NRS) M(SD)	Stress Reduction (NRS) Average M(SD)
All HCWs			17.3 (6.11)	4.38 (2.29)	2.41 (1.75)	1.97 (1.22)
RN	45	75	16.51 (5.83)	4.02 (2.31)	2.27 (1.79)	1.76 (1.19)
RT	8	13.3	17.88 (5.51)	5.88 (2.03)	3.13 (1.73)	2.75 (1.03)
PCT	4	6.7	21.25 (9.54)	4.25 (1.70)	2.25 (1.26)	2.00 (1.41)
UA	3	5	22.00 (5.57)	6.00 (1.73)	3.00 (2.00)	3.00 (1.00)

HCWs = Healthcare Workers, RN = Registered Nurse, RT = Respiratory Therapist, PCT = Patient Care Technician, UA = Unit Assistant/Secretary, PSS = Perceived Stress Scale, NRS = Numeric Rating Scale

Participants reported significantly higher degrees of life stress than the U.S. national average (t (59) = 5.43, p = .001) and was highest among those in nursing support roles. Their higher life stress was also significantly associated with higher pre-intervention stress (r =.59, p=.001). Higher stress levels, pre-intervention, was also seen in those new to nursing with less experience and those who had shorter periods of time off between workdays.

This study revealed a significant reduction in current stress levels, post-intervention (t(59)=12.48, p = .001

Participant Characteristics

Healthcare Worker Characteristics (N = 60)

	n	%	M (SD)	Range
Age			37 (9.58)	24-64
Female	42	70		
Male	18	30		
RN	45	75		
RT	8	13.3		
PCT	4	6.7		
UA	3	5		
Day Shift	29	48		
Night Shift	31	52		
Supervisory Role	4	7		
# Years in Healthcare			10.7 (7.5)	6 months - 35
# Patients Assigned			3.1 (3.81)	0 - 16
RN			1.54 (.71)	0 - 2
RT			9.00 (3.74)	2 - 15
PCT			10.25	1 - 16
# Consecutive Days Worked			2.30 (1.53)	1 - 10
RN			2.09 (1.14)	1 - 6
RT			3.75 (2.82)	1 - 10
PCT			1.75 (.96)	1 - 3
UA			2.67 (1.15)	2 - 4

RN = Registered Nurse, RT = Respiratory Therapist, PCT = Patient Care Tech, UA = Unit Assistant/Secretary

Conclusion

This study highlights that HCWs may be at increased risk for chronic and work-related stress. Those at greatest risk may include those with less experience, who are working in nursing support roles, and/or who have shorter periods of time off between workdays. Developing strategies for HCW stress reduction and management may positively impact overall health, job satisfaction, productivity, and workforce retention. A healthier, stable, and more satisfied healthcare workforce may lead to better patient outcomes and increase patient satisfaction.

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