



Using Wearable Technology to Increase Mindfulness: a Quality Improvement Project

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BACKGROUND

- Although it cannot address larger systems issues, mindfulness has been shown to help improve psychological wellbeing often with effects extending beyond the individual practicing it.
- Persons unfamiliar with mindfulness often do not know how to begin.
- An employee wellbeing survey from the Summer of 2020 revealed high rates of burnout and mental health concerns.
- To address these concerns, we undertook a quality improvement project from January-May 2021 to train healthcare workers (HCW) in the Department of Medicine (DOM) in mindfulness using two wearable technology devices (Heartmath® Inner Balance and the Muse 2).

OBJECTIVE

- The goals of this project were to assess the devices'
- potential to increase mindfulness and reduce negative mental health outcomes
 - acceptability and usability among HCW

METHODS

- HCW in the DOM were invited to participate in this QI project from January-May 2021.
- Participants used one of the wearable mindfulness-training devices at their leisure for 6 weeks (n=17)
- Voluntary pre- and post-participation surveys queried acceptability, usability, and the following wellbeing scales: Patient Health Questionnaire-2; Generalized Anxiety Disorder-7; Abbreviated UCLA Loneliness Scale 3-item; and the Mindfulness Attention Awareness Scale-5.
- Wilcoxon signed rank tests, Chi-squared, Fisher's exact test, and frequency analysis were used on pre-/post-participation surveys to evaluate results.
- The results presented here include only those participants who completed both the pre- and post-participation surveys (n=8).

RESULTS

	All Participants (n=18)	Completed both surveys (n=8)
Age range in years		
20-39	44%	50%
40-49	39%	25%
50-59	17%	25%
Self Designated Gender (free response)		
Female	67%	75%
Male	33%	25%
Self Designated Ethnicity/Race (Free response)		
Asian	17%	<15%
Black	<15%	<15%
White	78%	75%
Pre-existing meditation practice		
Yes	39%	75%

Cell sizes with proportions 15% or less are represented as <15% to maintain participant anonymity

	Completed both surveys (n=8)	
Comfort with Mindfulness at Study End		
Very Comfortable	<15%	
Somewhat Comfortable	50%	
Neutral	<15%	
Somewhat Uncomfortable	25%	
Very Uncomfortable	0%	
Has this changes because of this device?		
Yes	87.5%	
Device Comparison		
	Inner Balance (n=4)	Muse 2 (n=4)
How easy/hard is it to use this device? (p<0.001)		
Easy	100%	25%
Neutral	0%	50%
Hard	0%	25%
Would you recommend this device for others to use? (p=0.0209)		
Yes	100%	50%
No	0%	50%

Figure 1 - Wellbeing Scales at Study Entry and Exit Surveys

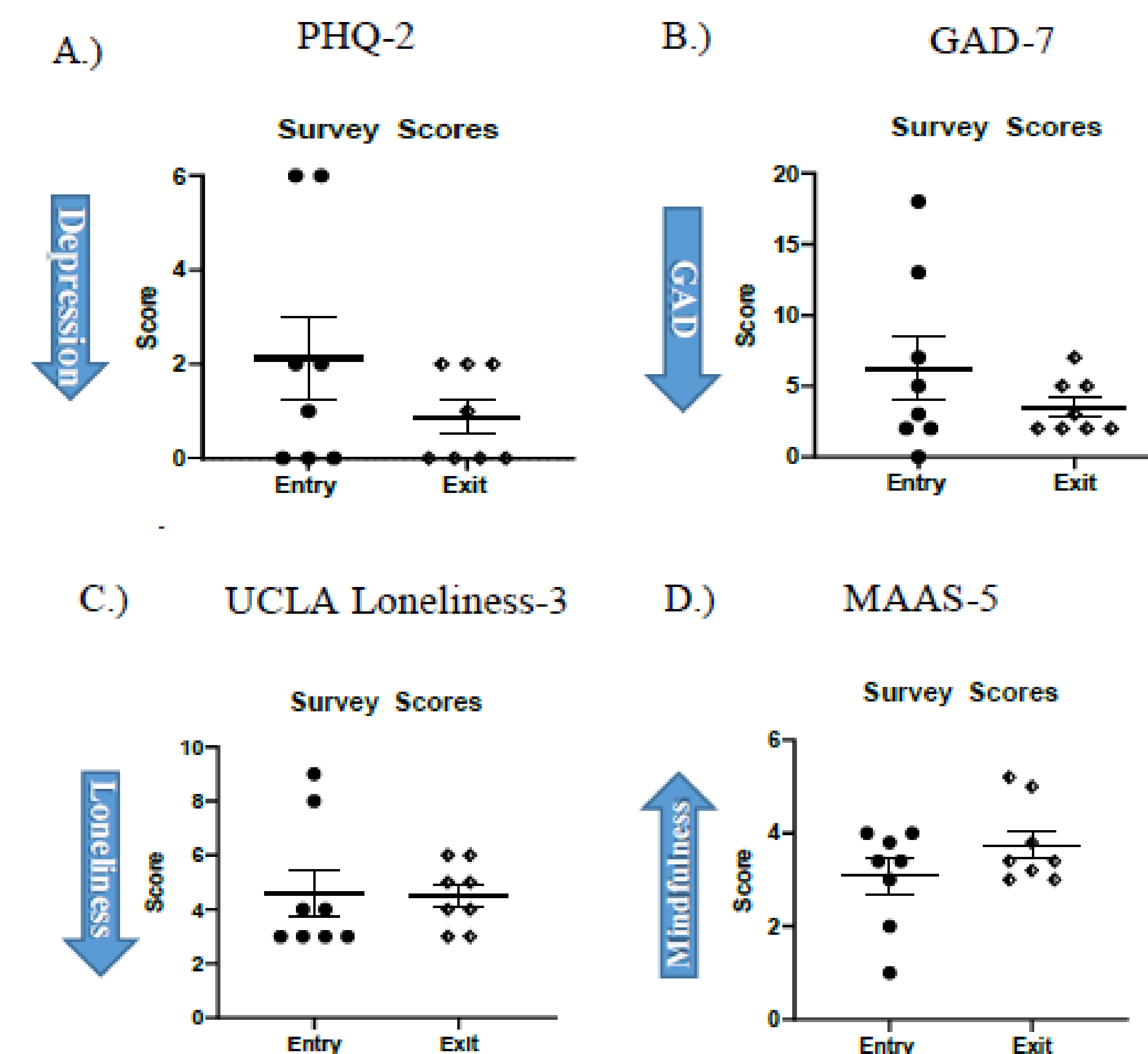


Figure 1:
A.) Patient Health Questionnaire 2-entry survey score average: 2.125, exit survey score average: 0.875, p= 0.2417.
B.) Generalized Anxiety Disorder Assessment 7-entry score average: 6.25, exit survey average score average: 3.5, p= 0.3375.
C.) UCLA 3-Item Loneliness Scale- entry survey average score: 4.625, exit survey average score: 4.5, p= 0.9134.
D.) Mindful Awareness Assessment Scale- State 5 item: entry survey average score 3.075, exit survey average score: 3.75, p=0.2236.
Note: Arrows to the left of the graphs represent the trend of the results, e.g. depression decreased therefore arrow points down.

CONCLUSIONS

- This quality improvement project demonstrated that HCW found wearable mindfulness-training devices to be both acceptable and usable.
- Participants favored the Heartmath® Inner Balance over the Muse 2 for usability.
- We observed trends towards increased mindfulness and improved wellbeing in all 4 scales.
- A larger study is needed to assess for statistically significant differences.

LIMITATIONS

- This is a quality improvement project whose results cannot be generalized.
- Additionally, this project had limited sample size and voluntary participation in the pre- and post-intervention surveys.
- Further study is needed to better assess the potential impact upon wellbeing of these wearable mindfulness training devices.

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