

# Evaluating the relationship between Fitbit sleep data and self-reported mood, sleep and environmental contextual factors in healthy adults

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## What might the attendee be able to do after being in your session?

After viewing my poster, audience members will understand how mobile technology and patient generated data from the Fitbit might be used as a novel tool to detect early markers of underlying MH disorders.

## Description of the Problem or Gap

Mental Health disorders can disrupt a person's sleep resulting in a lower quality of life. A literature gap exists for using patient generated data from personal fitness devices to identify sleep patterns indicative of underlying mental health disorders. This gap can be addressed by comparing Fitbit sleep data to self-reported mood, sleep and contextual factors.

## Methods: What did you do to address the problem or gap?

This is an observational cohort study conducted at the Madigan Army Medical Center. 17 healthy adults wore a Fitbit Flex for 2 weeks while completing a daily self-reported mood and sleep log. Daily Fitbit data was obtained for each participant. Contextual factors were collected with interim and post study surveys. Three aims were addressed 1. Determine the correlation between daily Fitbit sleep data and daily self-reported sleep 2. Determine the correlation between number of waking events and self-reported mood 3. Explore qualitative relationships between Fitbit waking events and self-reported contextual factors for sleep.

## Results: What was the outcome(s) of what you did to address the problem or gap?

Preliminary results show a strong Spearman correlation (0.65,  $P < 0.001$ ) between Fitbit measured sleep and self-reported sleep. No correlation (.04,  $P = 0.38$ ) seen between number of waking events and pre-sleep mood. Contextual factors revealed that noise, pain, shift work, children and pets were the major factors contributing to disruptive sleep.

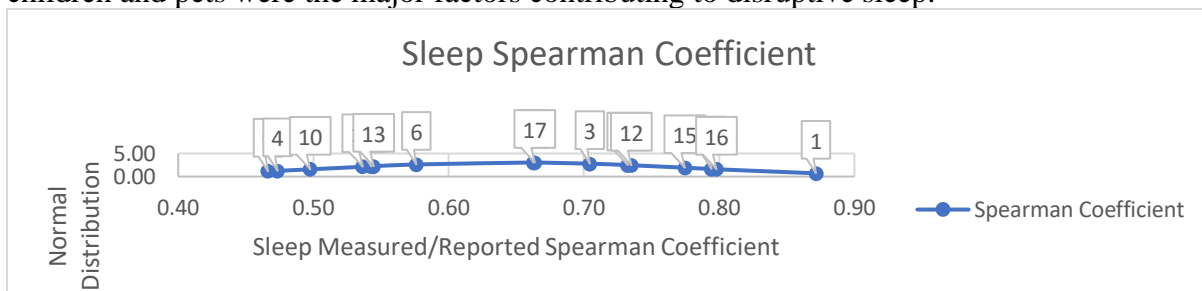


Figure 1. Spearman Coefficient for self reported sleep versus Fitbit measured sleep

## Discussion of Results

This is an interesting approach with a novel methodology to address a gap in the literature. Fitbit is a reliable tool for measuring sleep compared to self reported survey data. Though there was no correlation seen between mood and waking events, this is an expected finding in a healthy population. Knowing this may help to rule out potential populations with undiagnosed mental health disorders. Future studies with larger sample sizes will be needed to investigate this.

## Conclusion

Fitbit reliably estimates a person's sleep and may carry the potential tool to identify early markers of mental health disorders.