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## Comparison of the sleep quality of undergraduate training staff in the Strong Survivors Exercise Program for Cancer Patients and Caregivers and a control group of undergraduate students not involved in the program

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COMPARISON OF THE SLEEP QUALITY OF UNDERGRADUATE  
TRAINING STAFF IN THE STRONG SURVIVORS EXERCISE PROGRAM  
FOR CANCER PATIENTS AND CAREGIVERS AND A CONTROL GROUP OF  
UNDERGRADUATE STUDENTS NOT INVOLVED IN THE PROGRAM

By

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B.S., Iran University of Medical Sciences, 2022

A Research Paper

Submitted in Partial Fulfillment of the Requirements for the  
Master of Science

School of Human Sciences  
in the Graduate School  
Southern Illinois University Carbondale

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**RESEARCH PAPER APPROVAL**

COMPARISON OF THE SLEEP QUALITY OF UNDERGRADUATE TRAINING STAFF IN  
THE STRONG SURVIVORS EXERCISE PROGRAM FOR CANCER PATIENTS AND  
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A Research Paper Submitted in Partial

Fulfillment of the Requirements

for the Degree of

Master of Science

in the field of Human Sciences

Approved by:

Dr. Philip Anton

Graduate School

Southern Illinois University Carbondale

July 1, 2024

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# CHAPTER 1

## INTRODUCTION

The importance of adequate sleep quality in promoting overall well-being, mental health, and academic performance among university students is well-documented in the literature (Hershner & Chervin, 2014; Lund et al., 2010). University life poses a variety of stressors, including academic pressures, social dynamics, and in some cases, engagement in demanding extracurricular activities. These activities could potentially affect sleep quality individually or in concert (Lund et al., 2010).

One of the most common extracurricular engagements is the participation in community service programs, which, although fulfilling, could present additional demands on students' time and energy. This demand could potentially influence sleep patterns in a negative fashion. That said, the effects of such programs might potentially improve the students' mental and physical health and well-being due to the satisfaction they can generate, as well as the impact of the frequent inclusion of physical activity in these opportunities. These factors could potentially improve sleep patterns for the student engaged in them.

The Strong Survivors Exercise Program for Cancer Survivors and Caregivers (Strong Survivors) is one such community service initiative that enlists the support of university students as personal training staff to aid cancer patients and their caregivers, using physical activity and emotional support as the primary tools. Engaging in such a program can be emotionally challenging and time-consuming, potentially impacting the sleep quality of the participating students. On the other hand, the volunteering nature of the service and the physical activity involved could also serve as coping mechanisms, potentially enhancing sleep quality, as suggested by some research findings (O'Connor et al., 2010).

The involvement in community service programs such as Strong Survivors presents a complex scenario for students. In addition to the possibilities outlined above, the supportive and communal environment within such programs could alleviate stress and promote a sense of belonging among participants, possibly contributing to better sleep quality. Understanding this complex interaction can provide a broader perspective on how community service, physical and emotional well-being, and academic performance interrelate in the university student population. This aspect not only explores the understanding of the research but also sets the stage for the future comparative analysis aimed at uncovering the detailed implications of community service engagement on students' sleep quality and overall university experience (Poulin, 2014).

Comparatively, less is known about how participation in such community service programs, particularly those involving emotional and physical support to vulnerable populations, impacts the sleep quality of university students. Moreover, the comparative analysis of sleep quality between students engaged in the Strong Survivors program and those not engaged could provide insight into the broader implications of extracurricular engagements on students' well-being and academic performance.

This research project aims to investigate the sleep quality of undergraduate students participating as personal training staff members for the Strong Survivors Program in comparison to a control group of undergraduate students not involved in the program. The findings could be instrumental in informing university policies regarding student engagement in community service programs and also contribute to the broader discourse regarding student well-being and success in the university context.

## CHAPTER 2

### METHODOLOGY

#### Participants

The study recruited undergraduate students who were volunteering as personal training staff members in the Strong Survivors Program and non-Strong Survivors Program undergraduate students in the control group. Before the testing, the participants gave informed consent that was approved by the institution. The inclusion criteria were being enrolled as an undergraduate student older than the age of 18 at Southern Illinois University Carbondale (the control group). Additionally, undergraduate students who were active staff members for the Strong Survivors Program were included in the experimental group. Those who did not meet the inclusion criteria or did not sign the consent form were excluded from the study. The participants filled out the Pittsburgh Sleep Quality Index (PSQI) and the demographic questionnaire (both described below).

#### Instruments

The Pittsburgh Sleep Quality Index (PSQI) was used as the screening tool to measure the sleep quality of the participants in the past month. The Pittsburgh Sleep Quality Index (PSQI) is comprised of 19 self-evaluated questions along with 5 additional questions assessed by the bed partner or roommate (if one is available). Only the self-evaluated questions contribute to the scoring process. These 19 items form seven distinct "component" scores, each spanning a range of 0-3 points. Consistently, a score of "0" signifies the absence of difficulty, whereas a score of "3" demonstrates severe difficulty. These seven component scores are subsequently summed to generate a "global" score, ranging from 0-21 points, where "0" symbolizes no difficulty and "21" illustrates severe difficulties across all areas (Buysse et al., 1989).



## Procedures

The undergraduate staff of the Strong Survivors Program and the control group were invited to the School of Human Sciences Graduate Assistant Office (Davies Hall Rm. 132) to participate in the study. The objective and procedure of the study, along with the information about PSQI's questions were explained to the participants. After signing the consent form, they filled out the demographic questionnaire and Pittsburgh Sleep Quality Index (PSQI) in the laboratory.

## Design and analysis

The PSQI data from all the participants were organized and imported into an Excel file for further analysis. The statistical analysis was conducted using R Studio (RStudio Team, 2021). The normality of the sleep quality data distribution within each group was verified using Shapiro-Wilk test. The Independent Samples t-test was used to determine if there is a significant difference between the sleep quality of the Strong Survivors Program undergraduate staff and the control group. Also, a p-value of less than 0.05 was considered statistically significant for all tests.

## CHAPTER 3

### RESULTS

Twenty-two participants were recruited for this study, 11 Strong Survivor undergraduate staff members with a mean age of 20.36 (SD = 1.75) and 11 undergraduate students in control group with a mean age of 22.73 (SD = 2.61). The mean PSQI score among Strong Survivors was 5.18 (SD = 4.21) and the mean PSQI score in the control group was 7.09 (SD = 3.53). Thirteen participants were female and the mean PSQI score for all participant was 6.14 (SD = 3.92). (Table 1)

The Shapiro-Wilk test indicated that the PSQI scores for the Strong Survivors group were not normally distributed,  $W = 0.81$ ,  $p = 0.012$ , whereas the PSQI scores for the Control group were normally distributed,  $W = 0.92$ ,  $p = 0.296$  (Table 2). Due to the violation of normality for the Strong Survivors group, a Mann-Whitney U test was conducted. The test indicated no significant difference in sleep quality scores between the Strong Survivors group and the Control group,  $W = 84$ ,  $p = 0.129$ . (Table 3).

The Shapiro-Wilk test was conducted to assess the normality of sleep quality scores (PSQI) for both genders. The results indicated that the PSQI scores for males were normally distributed,  $W = 0.96$ ,  $p = 0.747$ , and the PSQI scores for females were also normally distributed,  $W = 0.93$ ,  $p = 0.361$  (Table 2). Levene's test was conducted to assess the equality of variances between the PSQI scores of males and females. The test indicated that the variances were not significantly different,  $F(1,20) = 1.57$ ,  $p = 0.225$ . Given the normality of the data and the homogeneity of variances, an Independent Samples t-test was performed to compare the PSQI scores between males and females. The results of the t-test indicated no significant difference in PSQI scores between males ( $M = 4.33$ ,  $SD = 2.65$ ) and females ( $M = 7.38$ ,  $SD = 4.25$ ),  $t(20) = 1.90$ ,  $p = 0.071$ .

The 95% confidence interval for the difference in means was -0.29 to 6.39. (Table 4).

**Table 1**  
**Demographic Characteristics of Participants**

Group	Male (n)	Female (n)	Total (n)	Mean Age (SD)	Mean PSQI Score (SD)
Strong Survivors	7	4	11	20.36 (1.75)	5.18 (4.21)
Control	2	9	11	22.73 (2.61)	7.09 (3.53)
Total	9	13	22	21.55 (2.48)	6.14 (3.92)

**Table 2**  
**Shapiro-Wilk Normality Test for PSQI Scores**

Group	W	p-value
Strong Survivors	0.808	0.012
Control	0.917	0.296
Male	0.955	0.747
Female	0.932	0.361

**Table 3**  
**Mann-Whitney U Test for PSQI Scores by Group**

Comparison	W	p-value
Strong Survivors vs. Control	84	0.129

**Table 4**  
**Independent Samples t-test for PSQI Scores by Gender**

Comparison	t-value	df	p-value	Mean Difference	95% CI
Males vs. Females	1.904	20	0.071	-3.05	-0.29 to 6.39

## CHAPTER 4

### DISCUSSION

The findings of this study indicate no statistically significant difference in sleep quality between students who participate as training staff in the Strong Survivors program and those who do not. This result aligns with previous research suggesting that participation in community service programs can have complex effects on students' well-being, potentially balancing the demands of the program with the benefits derived from altruistic engagement and physical activity (Poulin, 2014).

As literature suggests that adequate sleep quality is crucial for promoting overall well-being, mental health, and academic performance among university students (Hershner & Chervin, 2014; Lund et al., 2010), future investigation should explore the effects of participation in community service programs, such as the Strong Survivors Exercise Program, on various quality of life factors and additional demands on students' time and energy. However, the supportive and communal environment within such programs may alleviate stress and promote a sense of belonging, which can improve sleep quality (Poulin, 2014).

The results of the Shapiro-Wilk normality test indicated that the PSQI scores for the Strong Survivors group were not normally distributed, whereas the PSQI scores for the Control group were normally distributed. This necessitated the use of the Mann-Whitney U test for comparing the two groups. The Mann-Whitney U test indicated no significant difference in sleep quality scores between the Strong Survivors group and the Control group. This suggests that the emotional and time demands of the Strong Survivors program do not significantly impact the sleep quality of its participants, potentially due to the coping mechanisms and benefits provided by the program.

The Independent Samples t-test revealed no significant difference in PSQI scores between

males and females. This finding is consistent with previous studies indicating that gender differences in sleep quality among university students may not be substantial (Lund et al., 2010). Both males and females in this study demonstrated similar sleep quality, suggesting that gender does not play a significant role in how community service engagement impacts sleep among participants in the Strong Survivors program.

The results of this study have implications for university policies regarding student engagement in community service programs. While such programs do not appear to negatively impact sleep quality, they offer significant benefits in terms of mental and physical health, as well as a sense of community and belonging. Universities should consider these factors when designing and promoting community service opportunities for students. Another important consideration is the role of individual differences in coping mechanisms and stress management among students participating in community service programs. Research suggests that resilience and effective stress management strategies can significantly buffer the negative impacts of stress on sleep quality among university students. For instance, a study by Pidgeon et al. (2014) found that students who participated in resilience training programs reported improved sleep quality and reduced stress levels. This highlights the potential benefits of incorporating resilience training and stress management workshops into community service programs like Strong Survivors. By equipping students with effective coping strategies, universities can help mitigate the potential negative impacts of extracurricular demands on sleep quality (Pidgeon et al., 2014). Future studies could explore the relationship between resilience, stress management, and sleep quality in more depth, potentially leading to more targeted interventions to support student well-being.

Future research could further explore the underlying factors that might influence sleep quality in students engaged in community service programs. Longitudinal studies could provide

insights into how sustained engagement in such programs impacts sleep quality over time. Additionally, qualitative research could explore students' subjective experiences of balancing community service with academic and personal demands.

In conclusion, the study found no significant difference in sleep quality between students participating in the Strong Survivors program and those not involved. Similarly, no significant gender differences in sleep quality were observed. These findings suggest that community service programs like Strong Survivors can be integrated into students' lives without adversely affecting their sleep quality, providing valuable opportunities for personal growth and well-being.

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To: Amirmohammad Babaniamansour  
From: M. Daniel Becque  
Chair, Institutional Review Board

Date: December 12, 2023

Title: *Comparison of the sleep quality of undergraduate training staff in the Strong Survivors Exercise Program for Cancer Patients and Caregivers and a control group of undergraduate students not involved in the program.*

Protocol Number: 23211

The SIUC Institutional Review Board has approved the above-referenced study. The study is determined to be exempt according to 45 CFR 46.104. This approval does not have an expiration date. However, this approval is valid only for as long as you are a student or employee of SIUC. Additionally, any future modifications to your protocol must be submitted to the IRB for review and approval before implementation.

The IRB requests updates on exempted studies every three years. Failure to file a project update report may lead to the premature closure of your protocol.

When your study is complete, please fill out and return a study close-out form. A study is considered complete when you are no longer enrolling new participants, collecting or analyzing data.

Best wishes for a successful study.

This institution has an Assurance on file with the USDHHS Office of Human Research Protection. The Assurance number is FWA00005334.

MDB:eb

cc: Philip Anton

**VITA**

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Major Professor: Dr. Philip Anton