

NON-ROTATING SHIFT SYSTEMS FOR SAFETY PERSONNEL

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INTRODUCTION

- Shiftwork is a major feature of working life in today's world.
- In order to provide service to be available 24 hour per day, 7 days per week **WE NEED SHIFTS**.
- A normal shift described as as a work period of no more than eight consecutive hours during the day.
- What if we need more continuous hours, days, or requires working during the evening....**UNUSUAL**
- OK, 8 h/12 h rotating shifts will be useful to us, but what about non-rotating shifts?
- Health studies on shift workers have been reporting a series of physical, psychological and social problems because of **THE DISRUPTION OF CIRCADIAN AND SOCIAL RHYTHMS** (Waterhouse et al., 1992).
- Here's how we'll see the effects of **NON-ROTATING (8 h/12 h)** shifts on employees at this point .

AIM

- A **number of studies and reviews of shift systems** but nearly all of them compared the effects of 8 h and 12 h rotating shift schedules. However, non-rotating shift effects were not addressed in those studies.
- A **lack of data is available with respect to the non-rotating shift system**.
- The main aim of this study is to determine **whether or not non-rotating shift schedule impacts are different from a rotating one** by examining 8 h and 12 h non-rotating shift schedules effects on sleep problems, alertness, physical health and satisfaction of workers with their work schedules under different shift systems
- This study was designed to **examine how extended shift work in non-rotating shift schedule affects shift workers alertness, sleep, and wellness**.

METHOD

Participants and Study Design

- The security staff and police officers (n=39) from **Public Safety Department of New Jersey Institute of Technology (NJIT)** participated in this study.
- Participation was voluntary, and all participants were an adult and English speaking, aged between 18-50.

Survey Questionnaire

- A **detailed questionnaire survey was designed** based on previous research studies **and approved** by both the Institutional Review Board (IRB) of NJIT and the chief of Public Safety Department.

Data Analysis

- The data analyzed using a **MINITAB15 Statistical Software by conducting a Tukey test**.

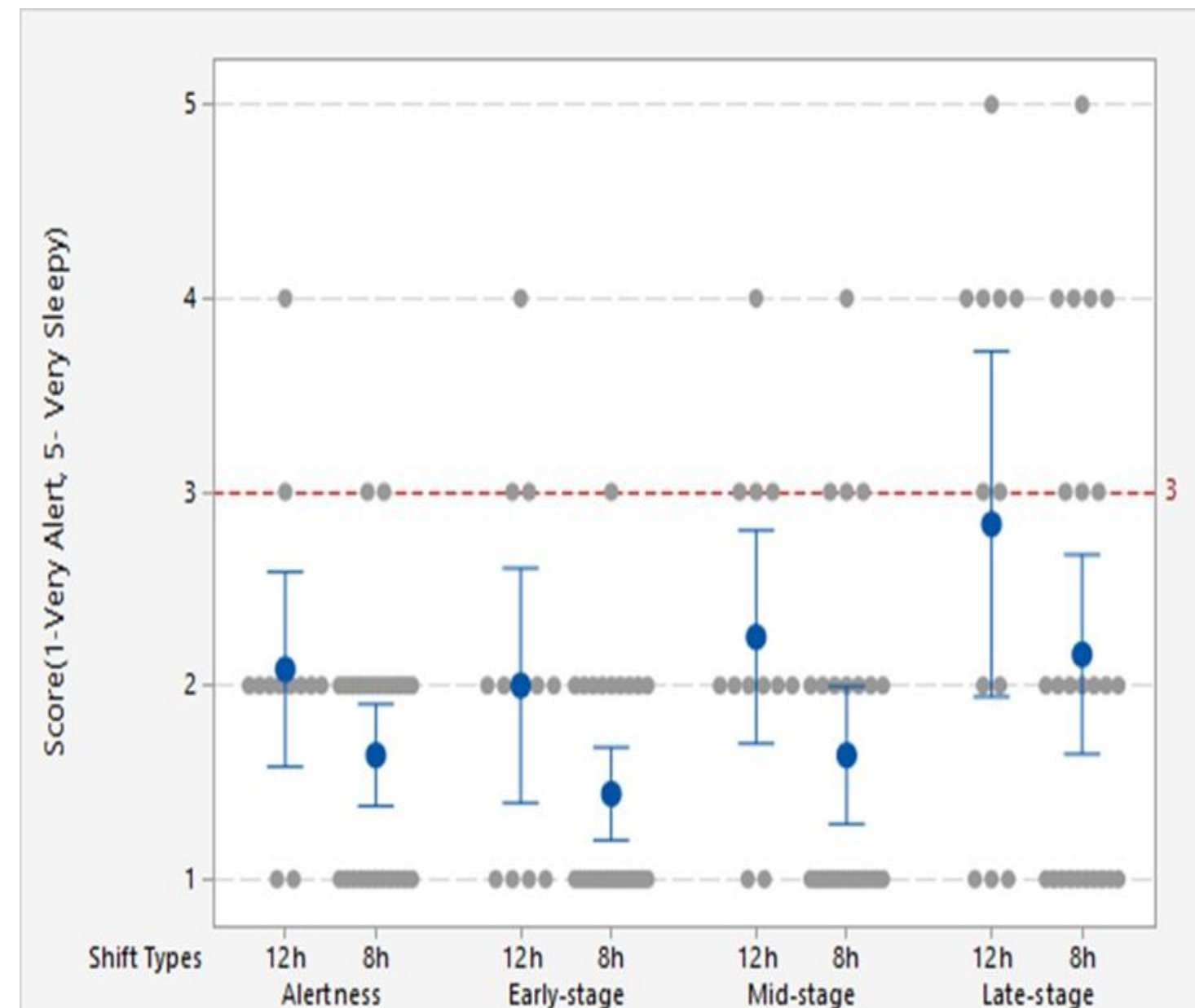
RESULTS

DEMOGRAPHIC

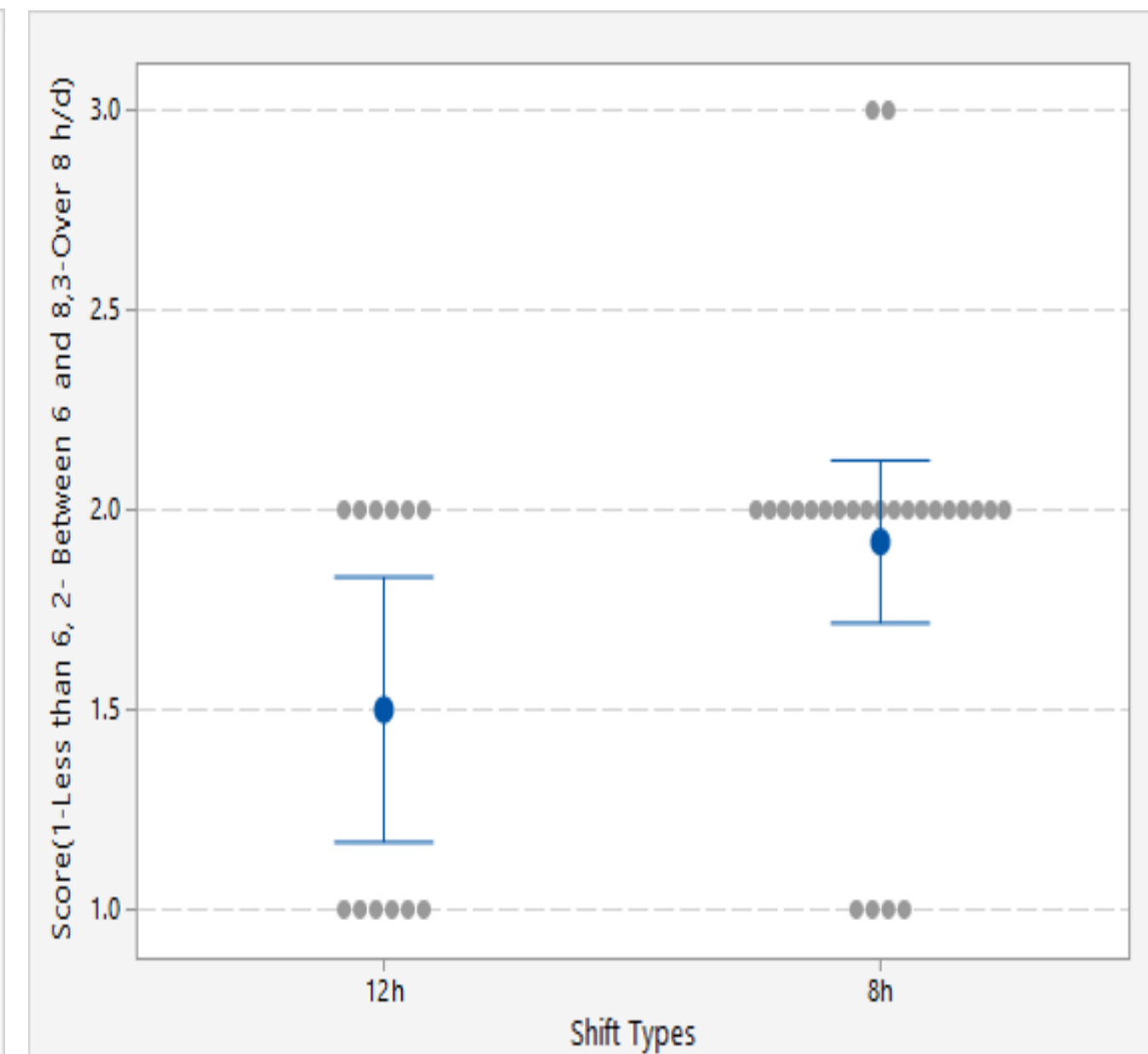
- Participants (n=39, aged between 18-50) are **predominantly male (74%)**
- Married/living with a partner (54%), single participants single (43%), only one is Separated/Divorced/Widow (3%)
- 8 h shift workers: police officer(8%), security staff (64%), and others (28%); 12 h shifts are sergeant (50%) and police officer (50%).
- An **average** of combined present and previous **shift experience of 5.68 (SD=0.85) years**.

ALERTNESS

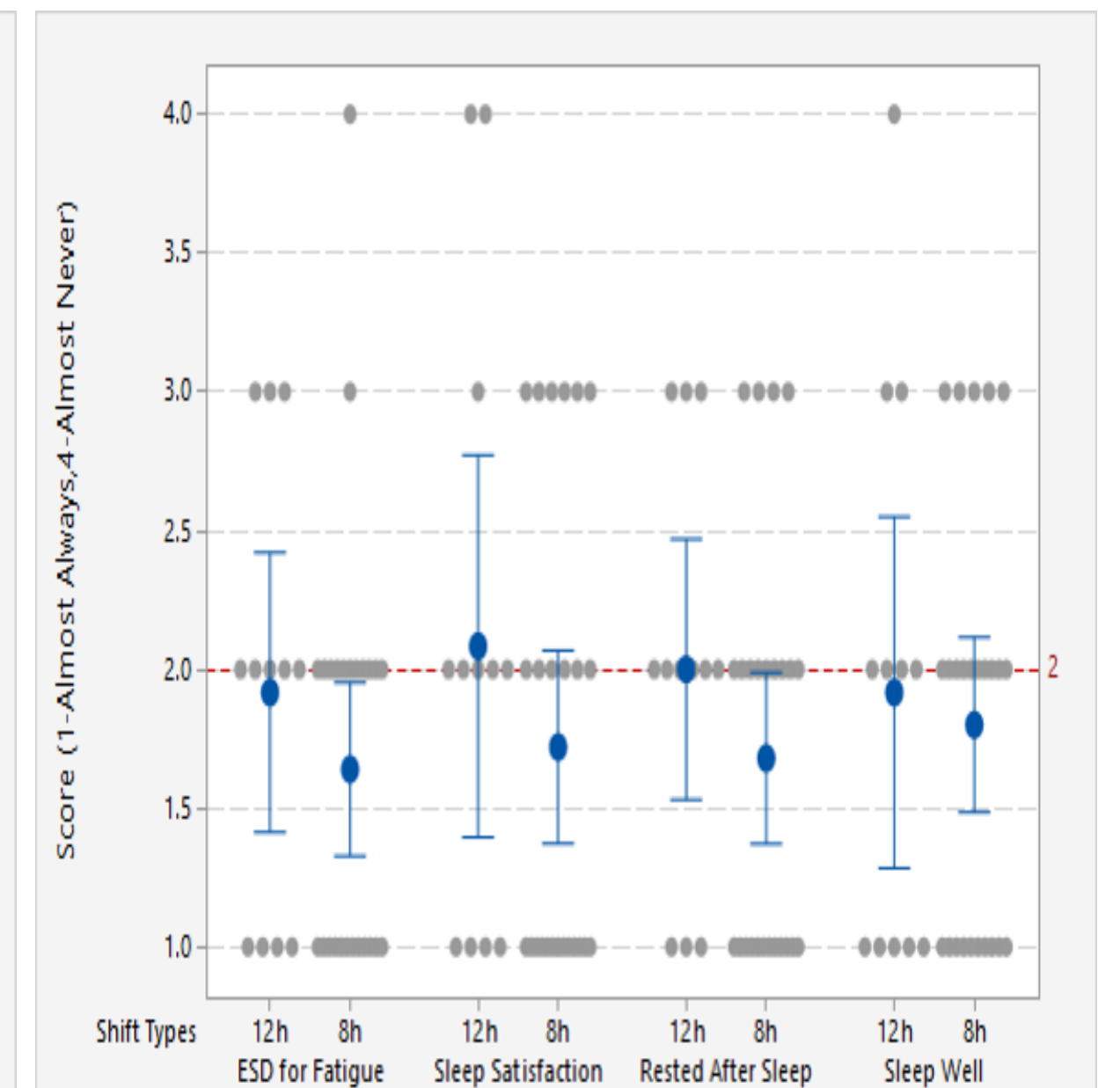
- The mean rating of **alertness levels of 12 h shift workers is lower than 8 h shift workers, for the overall** (Early-stage, Mid-stage and Late-stage of their shift)
- Both 8 h and 12 h shift workers are feeling less alert more sleepy at the late-stage of the shift.
- Late-stage alertness level scores are higher than the overall and other stages of the shift scores for both shift types. **Workers are feeling less alert more sleepy at the late-stage of the shift**.



Individual Value Plot of alertness ratings in the entire shift and, early, mid-stage and late-stage of shift for 8 h and 12 h shifts with 95% CI for the mean.



Individual Value Plot of the amount of sleep duration with 95% CI for the mean according to the 8 h and 12 h shift types.



Individual Value Plot of sleep quality indicators with 95% CI for the mean according to the 8 h and 12 h shift types.

PHYSICAL HEALTH AND SATISFACTION

- Six questions addressed the frequency of pain in various body locations *in a scale 1-“Almost never”, 2- “Sometimes”, 3- “Usually”, and 4-“Almost always”*.
- “12 h shift workers (2.66) suffer from back/lower back pain more than 8 h shift workers (1.78)”**.
- The **satisfaction with the current shift schedule** was **not statistically significant**.

CONCLUSIONS

- The results of **the study strongly support that decreasing level of alertness, and increasing sleep and health problems are associated with 12 h shift**.
- These **findings are similar to** those of previous researchers highlighting **the negative effects of 12 h rotating shift on workers** (Wilson and Rose, 1978; Tepas, 1985; Takahashi et al., 2008).
- We **need more studies for non-rotating shift systems**.

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