Original Article

# Predicting Wellbeing in Irregular Shift Workers

Irregular Shift Workers

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## ABSTRACT

**Objective**: Objective of the study was to assess wellbeing and its relationship with sleep pattern from the biological rhythm science aspect.

**Study Design**: Cross sectional study

**Place and Duration of Study**: This study was carried out at Dow University Hospital. Dow university of Health Sciences Karachi from November 2013 to January 2014.

**Materials and Methods:** This was a non-interventional cross sectional study. Wellbeing was measured in the study subjects (health care provider) working in irregular shift .To profile wellbeing, the instrument used was an integrated questionnaire. This measuring tool has a established scale based on subjective feeling of wellbeing (happiness) where higher score suggested a higher level of wellbeing, low scores suggested a fragile level of wellbeing. Subjects were interviewed and their reply was documented .Influences of a misaligned sleepcycle was measured on positive emotion scale quantitatively.

**Results:** Results revealed a decreased strength of wellbeing amongst rotatory shift workers. Mean scores inferred from happiness scale in the present study was 3.75± 1.02 .

**Conclusion**: It was concluded that sleep/wake misalignment is associated with emotional fatigue .With the introduction of biofeedback as an intervention in certain stress related disease . It has become mandatory to open new windows and option which has become essential in experimental research for applied purpose.

**Key Words**: Sleep Cycle, Wellbeing, Shift Workers, Environment, Biological Rhythm.

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## INTRODUCTION

An important need of psychosocial growth of human behavior is the want of emotional support and a happy feel for wellbeing. Wellbeing of an individual has now emerged as a dynamic equilibrium between environment and man. Subjective component of wellbeing according to psychologist is stated as quality of life which is unanimously accepted as an important component of a perfect life and happiness[1]. The thoughts and perception that create psychological environment and the ability of the person to function in equilibrium within the environment is a major aspect of broad models of psychological efficiency. Appraisal of happiness or wellbeing is vital for certifying concepts and models of happiness[2]. The significance of optimistic approach towards life and its evaluation is a method to examine human feelings and emotional functioning in order to raise and enhance productivity of an individual[3]. We chose sample of health care providers working in irregular shifts as our study population to analyze the role of misalign working environment and its effect on well being[4]. Proximate research has explained the links between coordinated human body's biological rhythms for instance sleep cycle with environment and psychological wellbeing. The hypothesis was if an environment is not synchronized ,and if normal biological rhythm of an individual is made irregular as in rotating work in health care provider like nurses would it be possible by this type of working environment to result in sadness and whether misaligned sleep rhythms in irregular shift workers has psychological penalties [5,6].

Nurses and other health care providers have to be accessible to patients on a 24/7 basis which is only possible through irregular shift work, since their sleep cycle is not entrained, shift workers are often tired, irritated, and not happy[7]. A phenomenon called entrainment is described as a course during which two oscillating systems adjust with in the similar time. This specify the harmonization of endogenous physiological rhythms in the individual with an exogenous rhythm in the environment. There are various biological rhythms in human body, for example there is a and menstrual cycle (~30 days), sleep-wake/wake cycle (~24 hours), rapid-eye-movement sleep (~3 hours). Respiratory cycle made up of inspiration and expiration (~0.15-0.4 Hz), cardiac pulse (~1-2 Hz), and EEG activity (~1-100 Hz)[8]. Exhaustion and fatigue in shift workers is considered accountable for concentration loss, increases in errors and accidents. Moreover, the endogenous biological rhythm is subsequently distorted that influence quality of sleep, therefore result in to sleep

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disorders particularly in those , working in irregular shifts as compare to health care providers with fixed shifts[9]. A positive environment precede a healthy and positive behavior reduce human errors and is needed for better efficiency. It is observed that depression, somatic disturbances, sleep disorders, and burnout, are more commonly seen in over worked health care providers ,moreover, scarce sleep inhibits, time orientation, problem-solving capacity, and attention, that can further threaten patient safety[10]. All these factors compromise the quality of their life, satisfaction and health care they provide to the patients. The aim of this study was to evaluate the relationship between misaligned sleep/wake environment in human and subjective experience of positive emotion. Thus, precise and valid measures of happiness could be determined.

# MATERIAL AND METHODS

This cross sectional design study was conducted at Dow University Hospital Karachi Ojha campus ,from November 2013 to January 2014 by convenient sampling technique .Entire eligible study population of health care providers working in rotatory schedule (n=110) were included. Informed consent was obtained from all respondents .Demographic characteristic of the subjects included age, education, and gender. Exclusion criteria comprised, Participants with history of any illness or drug abuse . Subjects were estimated by the Investigator who confirmed answer of each participant by means of integrated questionnaire (ToolPhenX Toolkit having psychosocial domain ,subjective happiness Scale By Sonja Lyubomirsky) to examine well being. This was a non-interventional study therefore a formal ethical approval was not required by the institution, albeit, it fulfilled existing ethical standards. A formal written approval from the hospital administration was obtained. To examine data gathering process by the measuring instrument .A pilot study was conducted on 15 rotatory health care providers. The self-rating questionnaire included four components that assessed scores obtained by the individual 's response . The first question was pertinent to individual's general extent of happiness, next question was an assessment of the individual s' wellbeing with that of his or her peers. The last two questions were positively and negatively formatted questions about individuals that are either very happy or very unhappy. The subjects were asked to what degree the described characteristics apply to them. A higher rating indicated a better sense of wellbeing and lower scoring was indicative of fragile emotions . All data analysis was carried out on SPSS version 20 for windows. Quantitative variables were presented by their mean and SD values, the qualitative variables were presented by frequency and percentages. T-Test was employed at 0.05 level of significance to find out significant association of happiness with gender. A nova was used to find out any difference between different groups with happiness ,results were considered significant at $P<0.05$.

# RESULTS

The entire eligible subjects ( health care provider) in rotatory shifts (n= 130) were enrolled in this study but we were able to analyze 110 Subjects because of incomplete information. Response rate of the study was 84.6%. Table.1 describe demographic features of the study population. Age range of the study population was from 16 to 56 years, mean age estimated was 27.94 SD±5.97. Screening tool used in this study had 4 components (score range from 4-28)The mean score we obtained from study population on the measuring scale was 3.75 ± 1.02.(Individual mean extent from 1.5-7.00)However mean scores based on gender , female secured 3.45±0.89 and for male mean was 3.93±1.06. T-Test was employed to find any significant difference between the gender and results were found to be significantly different P=0.015. Based on functional job description. A nova was applied to find out any significant difference between different groups but result were not significant P=0.116.

**Table No.1: Demographic features of study population . (n=104)**

| Variables | N | (%) | Mean ± S.D |
|---|---|---|---|
| Age (years) | | | 28.14 ± 6.0 |
| Gender | | | |
| Male | 68 | 61.8 | |
| Female | 42 | 38.2 | |
| Nurses<br>Technicians<br>NurseAssistants | 54<br>49<br>7 | 49.09<br>44.54<br>6.36 | |

**Table No.2: Depicting the overall and individual Meanscores in different groups.**

| | |
|---|---|
| Overall score | 3.75±1.02 |
| Nurses Score | 3.93 ± 0.99 |
| Technician'sScore | 3.63 ± 1.07 |
| Assistant nurses score | 3.20 ± 1.83 |

# DISCUSSION

Our results supported the hypothesis of significant behavioral penalties in a highly fragmented sleep schedules these health care provider has to face due to the nature of their job. There was evidence of decreased strength of well beings amongst shift workers. These health care provider in the present study demonstrated an association between disturbed sleep rhythm and ''stress'' produced with the temporal organization of physiology resulting in behavioral penalties. This study reconfirmed the prior findings that happiness with life in shift workers was reduced. The current study was focused on subjective feeling of happiness. Appropriate assessment of happiness index

necessitates evaluation of one's own life, and positive and negative responses [11]. Moreover, people can feel happy and euphoric without possessing the picture of a psychologically healthy and happy person .Another dilemma in irregular shift workers is that they eventually end up in burnout. Burnout , is a psychological defense mechanism that develop in to human psyche when they are under persistent mood stress and interpersonal conflicts or job-related trauma ,it is defined by three features – emotional fatigue , depersonalization, and reduced personal achievement[12]. Other studies has shown that nurses and other health care providers were sleepy at work hence were more prone to needle stick injuries , and sleep disorders were also common amongst nurses working in irregular shifts ,linked with a multitude of complex, disorders and diseases with diverse pathology, such as diabetic autonomic neuropathy, hyperhidrosis, orthostatic intolerance/postural tachycardia syndrome[13-14]. Shift work disturbs sleep and natural biological rhythms in humans, which might increase psychosocial stress and predispose the individual to physiological disturbances related to the metabolic syndrome[15-16]. proximate research has evidenced the relationship where an extremely emotionally imbalanced incident followed immediate death of the individual[17]. Some other researches focused on subjective social provisions, like monetary security, and subjective health which did not appear as important predictors of happiness[18]. Furthermore, there was no sign that money act as mechanisms of happiness. Some of the conclusion on the subject of influence of income on happiness was resulted due to false assessment. Psychologists and sociologists usually examined subjective happiness against income, but there was dispute of income as the ideal scale. Another observation was, if an individual is suffering from hypomania he might report extremely positive feelings and euphoria with life without optimal daily functioning. Waterman pointed out that "experiences of eudaimonia are always accompanied by experiences of hedonia[19]. Positive effect and well-being is prerequisite for a balanced family unit. However it is significant that life satisfaction and happiness do not simply measure hedonic well-being. The hedonic events are intensely linked to eudaimonic features and ideal living. Beside hedonic and eudaimonic variance, some researchers tried to magnify this viewpoint through counting social dimension of individual happiness along with general development which include cognitive development, emotional development and social needs that had an important role and seemed to be relevant across most developmental stages, along with insight of the social depth of human functioning and satisfaction was broadly acknowledged. However, comprehensive social well-being had a broader vision. Females related marginally greater positive affect and life analysis, however they had more blue affect and more stress. This trend was observed in the present study too, the mean wellbeing score determined in females was less as compare to males .How ever prior researches had established certain other factors likewise making person happy for instance as reported recently, older people living in combined family system were evidenced better on happiness scale , most notably a significant reduction in the experience of stress and anger . Smoking was significant major predictor of low well-being especially its emotional aspect ,even when monetary basis and education are balanced. Smoking is in part genetically determined and is a known indicator of a tense personality [20,21]

# CONCLUSION

The current study demonstrated that irregular sleep cycle has injurious effect on the wellbeing of the individual. This negative impact of circadian rhythms on human physiology and the added time pressures which shift workers are subjected should be further investigated.

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**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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