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# Assess the Effectiveness of a Planned Teaching Program on the Effect of Circadian Low and Strategies to Cope with Circadian Low in Terms of Knowledge Among Nurses

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**ABSTRECT:**
Shift work, especially night and rotational duties, forms an indispensable part of nursing services in hospitals, ensuring continuous patient care. However, these work patterns significantly interfere with the body's intrinsic circadian rhythm, resulting in periods of reduced alertness known as circadian low. Evidence suggests that circadian low is associated with impaired cognitive performance, slowed reaction time, mood disturbances, fatigue, and increased likelihood of clinical errors, thereby affecting both nurse well-being and patient safety. Despite these established risks, nurses working in developing nations such as India often have limited formal training or structured guidance on understanding circadian rhythm disturbances and coping strategies. This study was therefore undertaken to assess the knowledge of nurses regarding circadian low, its effects, and coping strategies, and to evaluate the effectiveness of a Planned Teaching Program (PTP) developed for nurses working in selected hospitals of Surat City. Results revealed that prior to the intervention, the majority of participants demonstrated poor knowledge regarding circadian low and its prevention. The mean pre-test score was 15.17, indicating substantial gaps in foundational understanding. Following administration of the Planned Teaching Program, the mean post-test score increased to 19.52, yielding a mean difference of 4.35. A paired t-test showed the difference to be statistically significant ($t = 6.20$, $p < 0.05$), confirming the effectiveness of the teaching intervention. The findings indicate that structured educational programs play an important role in enhancing nurses' awareness of circadian disruptions and their management.

**PROBLEM STATEMENT:**

**OBJECTIVES OF THE STUDY:**

1. To assess the effectiveness of the planned teaching program on the effect of Circadian Low on nurses doing shift duty and strategies to cope with Circadian Low.
2. To assess the knowledge of staff nurses doing shift duty in selected hospitals of Surat on circadian low., Its effect and strategies to cope with circadian low.

3. To find out the association between pre-test knowledge score with selected demographic variables among staff nurses doing shift duty in selected hospitals of Surat.

## HYPOTHESIS:

**Research Hypothesis [$H_0$]:**

There will be no significant difference between pre- test and post-test knowledge scores regarding the effect of Circadian Low on nurses doing shift duty and strategies to cope with Circadian Low among staff nurses doing shift duty in selected hospitals of Surat City.

**Research Hypothesis [$H_1$]:**

There will be significant difference between pre- test and post-test knowledge scores regarding the effect of Circadian Low on nurses doing shift duty and strategies to cope with Circadian Low among staff nurses doing shift duty in selected hospitals of Surat City.

**Research Hypothesis [$H_2$]**:

There will be a significant association between pretest knowledge scores with selected demographic variables among staff nurses doing shift duty in selected hospitals of Surat City.

## METHEDOLOGY:

**RESEARCH APPROACH:** The selected research approach will be the **Quantitative Research Approach.** Since this study is aimed at assessing the effectiveness of a planned teaching program on the effect of Circadian Low and strategies to cope with circadian low in terms of knowledge among nurses working in selected hospitals of Surat City.

**RESEARCH DESIGN:** The research design selected is Quasi-experimental design, where it will be implemented by pretest and post test scores in terms of knowledge.

**The research design adopted for the study diagrammed as:**

| PRE- TEST | | POST -TEST |
|---|---|---|
| Eo1 | X | Eo2 |

**Keys:**

**01**: pretest knowledge among ICU nurses working in selected hospitals of Surat City.

**02**: posttest knowledge among ICU nurses working in selected hospitals of Surat City.

**X**: Administration of structured teaching program regarding Circadian Low and strategies to cope with circadian low.

## VARIABLE:

- **Independent variable**: Planned Teaching Program.
- **Dependent variable**: Baseline knowledge level of Nurses and adaptability of coping strategies.
- **Demographic Variable:** Age, working hours, work permit, extra duty hours, shift duty, educational qualifications, gender, marital status, living environment [residence], activity level [sedentary or moderate], alcohol and smoking consumption [never, occasionally, daily].

## POPULATION:

- **Target Population:** The target population contains members of a group that a researcher is interest-

ed in studying and result of the study are generalized to this population.
For the present study target population will be staff nurses of selected hospital of Surat city.

- **Accessible population:** Accessible population aggregate of cases which is conform to the designated criteria and which is accessible to investigator.

For this study accessible population is staff nurses of Venus hospital.

**SAMPLE:**

**SAMPLE SIZE:** The sample size determined for this study will be 60, hence the pilot study will be based on 6 staff nurses of selected hospitals of Surat.

**SAMPLING TECHNIQUE:** For this study non probability purposive sampling technique used.

**DESCRIPTION OF TOOL:**

**Section 1: Demographic Variable:** Age, working hours, work permit, extra duty hours, shift duty, educational qualifications, gender, marital status, living environment [residence], activity level [sedentary or moderate], alcohol and smoking consumption [never, occasionally, daily].

**Section 2: Multiple Choice Question:** The most important aspect of any investigation is the collection of appropriate information, which will provide necessary data to answer the questions raised in the study. Based on the objectives of the study for the collection of data in present study following tool will be selected and constructed.

**Structured Knowledge Questionnaire:** Considering the setting of the research and characteristics of the subject, a self-administered structured Knowledge Questionnaire will use for assessing the effectiveness of a planned teaching program on the effect of Circadian Low and strategies to cope with circadian low in terms of knowledge among nurses working in selected hospitals of Surat City.

**METHODOLOGY OF DATA ANALYSIS:**

To compute the data, a master data sheets will be prepared by the investigator. Demographic data will be analysed in terms of frequency and percentage. Knowledge questionnaire will be use to find the association between the knowledge score with selected demographic variables.The Investigator planned to analyse the data in the following manner. Personal data of the section I to be analysed using frequency and percentage from the table. The data from A Structure Knowledge Questionnaire of section II to be analysed using frequency and percentage and presented in the form of table. Using the technique of Descriptive statistics: Mean and standard deviations, frequency and percentages used to analyse the data to conclude.

**RESULTS:**

Results revealed that prior to the intervention, the majority of participants demonstrated poor knowledge regarding circadian low and its prevention. The mean pre-test score was 15.17, indicating substantial gaps in foundational understanding. Following administration of the Planned Teaching Program, the mean post-test score increased to 19.52, yielding a mean difference of 4.35. A paired t-test showed the difference to be statistically significant ($t = 6.20$, $p < 0.05$), confirming the effectiveness of the teaching intervention. The findings indicate that structured educational programs play an important role in enhancing nurses' awareness of circadian disruptions and their management. Chi-square analysis further demonstrated that among all demographic variables, educational qualification and overtime frequency

showed a statistically significant association with pre-test knowledge scores, highlighting that professional training and clinical exposure influence baseline awareness. Other variables—including age, marital status, gender, activity level, residence, duty shift, work hours, and lifestyle habits—showed no significant association.

The study underscores the urgent need for systematic educational interventions to prepare nurses for the physiological demands of shift work. As inadequate management of circadian low not only compromises nurses' health—leading to burnout, mental stress, cardiovascular strain, and reduced sleep quality—but also increases the risk of medical errors, the findings are highly relevant for hospital administrators, policymakers, and nursing educators. Regular in-service programs, incorporation of circadian physiology in the nursing curriculum, and structured coping training (including sleep hygiene, strategic napping, controlled light exposure, hydration, and mindfulness-based fatigue management) can significantly improve nurses' performance and patient safety.

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