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RESEARCH ARTICLE

IMPACT OF NIGHT SHIFT NAPPING ON WORK PERFORMANCE AND FATIGUE AMONG NURSES

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ABSTRACT

Aim: To investigate the impact of night shift napping on work performance and fatigue among nurses. **Background:** Night shift has various side effects on health and work performance. Due to which there are errors in patient's care. **Methods:** Quasi-experimental study conducted, data were collected from 60 nurses among them 30 control and 30 experimental who got chance to take nap for 20-30 minute (between 12 am to 4 am and alternate nurse took care of their assignment) in night duty and data is collected. Descriptive (frequency, percentage, mean, standard deviation) and inferential statistics (z-test, Pearson's correlation test, chi-square test) used for data analysis and finalized the result. **Conclusion:** There is significant difference in work performance but no significant difference in fatigue. Nurses who nap during night duty had found improved in morning sleep as well as health and concentration. However the napping time can be increased to 1 - 2 hours and dedicated place can be provided for napping. Larger-scale randomized trial needed to implement on large population.

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INTRODUCTION

As we are working in the hospital, we have to maintain the continuity of patient care that is for 24 hrs. Hence, we have to provide care in night shift as well but working in night shift affects on health, work performance as well as circadian cycle which leads to various health issues, fatigue, errors and inability to concentrate. There are various methods to solve these issues. One of the best way to cope up with such problems is by taking nap during night shift. Napping is one of the potential interventions which help to reduce the fatigue and enhance the recovery from damage of the body due to break down in circadian cycle. It also helps to improve the alertness. However, intervention napping is still inconsistent. Few studies claim that napping during night shift enhance the health and compensate the sleep deprivation as well as they require less sleep in morning but another research contradicts the same. Marianne *et al*. conducted an experimental study in 2020 to find out the effects of naps and therapy glasses on fatigue and well-being among 95 nurses who concluded that therapy glasses and sleeping in a facility is effective on reducing the adverse effects on night shit among nurses and also helpful in reducing the fatigue among nurses (Marianne, 2021).

Ruggliero *et al*. conducted a research on effects of napping on sleepiness and sleep-related performance deficits in night-shift workers with the purpose to recommend directions for future research and practice and concluded that clinical trials of night-shift napping and safety outcomes are needed for mass implementation (Edwards, 2013).

PROBLEM STATEMENT: A study to assess the impact of night shift napping on work performance and fatigue among nurses in a selected tertiary hospital in Mumbai city."

RESEARCH OBJECTIVES

- To assess the impact of night shift on work performance before and after napping among nurses.
- To assess the fatigue before and after night shift napping among nurses.
- To assess the effectiveness of night shift napping on work performance and fatigue among nurses.
- To correlate work performance & fatigue among nurses.
- To associate the findings with selected demographic variables

HYPOTHESIS

H_0: There is no significant difference in work performance and fatigue after napping at 0.05 level of significance.

OPERATIONAL DEFINITIONS

- **Night shift Napping: -** Night shift nurse will take nap for 20 to 30 min (between 12 am to 4 am) during shift. (Alternate nurse will take care of her/his assignment.)
- **Work performance: -** Nurse's ability to accomplish the assigned task effectively and in stipulated time at the night shifts.
- **Fatigue: -** An overall feeling of tiredness or lack of energy.

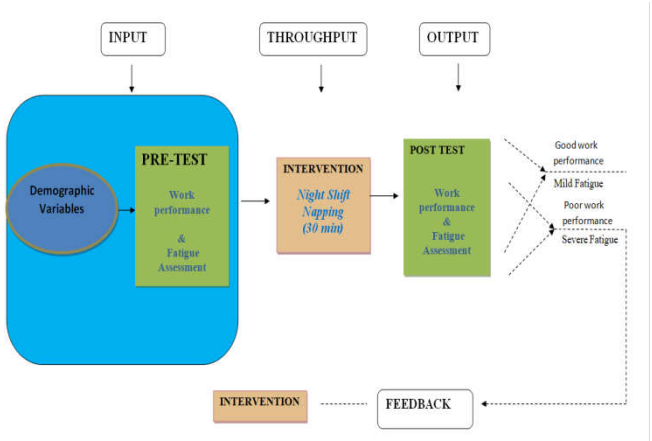

Figure 1. Conceptual framework based on modified ludwig general system theory

METHODOLOGY

- **Research design:-** Quasi experimental - pre-test and post-test control group
- **Variables:**
- **Independent variable: -** Night shift napping.
- **Dependent variable:-** Work performance and Fatigue.
- **Setting:-** The selected tertiary hospital.
- **Population:** Nurses working in the selected hospital.
- **Sample:-** Night duty Nurses working in the selected hospital
- **Sample size:-** 60
- **Sampling technique:-** Random sampling technique.
- **Data collection tool :-** Tool used for data collection included
- Demographic Data
- Questionnaire to assess the overall impact of night shift on work performance
- Fatigue Assessment Scale (FAS)

Intervention

- Explained about research topic and objective to nurses.
- Random selection of night shift nurses.

Table 1. Symbolic representation of the Research Design

Group	Pre-test	Treatment	Post- test
Experimental	O_1	X	O_2
Control	O_1	------	O_2

- **O_1** : Pre-test to the experimental and control group
- **X** : Administration of video-assisted teaching on patient's safety during transportation.
- -----: No treatment
- **O_2** : Post-test to the experimental and control group

MAJOR FINDINGS AND DISCUSSION

SECTION I: Demographic Data

Table 2. Frequency and percentage distribution of demographic data n=30, 30

Sr. No.	Demographic data		Experimental Group		Control Group	
			(f)	%	(f)	%
1.	Age (Year)	< 25	23	77	21	70
		25 -30	6	20	7	23
		> 30	1	3	2	7
2.	Gender	Female	27	90	27	90
		Male	3	10	3	10
3.	Marital status	Married	3	10	2	7
		Separated, Divorced & Widowed	2	7	1	3
		Single	25	83	27	90
4.	Current working area	Ward (single room)	16	53	4	13
		General ward	4	13	7	24
		ICU	10	34	16	53
		A&E	0	0	3	10
5.	Alcohol consumption	Yes	0	0	0	0
		No	30	100	30	100
6.	Complaints of Insomnia	Yes	6	20	7	23
		No	24	80	23	77
7.	Domestic Burden	Low	29	97	24	80
		High	1	3	6	20
8.	Physical exercise in the past 2 weeks	Yes	7	23	8	27
		No	23	77	22	73
9.	Presence of children under 6 yrs of age	Yes	2	7	0	0
		No	28	93	30	100
10	Length of night-time work in Nursing	> 1yr	10	34	8	27
		1 to 5 yr	19	63	19	63
		< 10 yr	1	3	3	10
11.	Weekly hour load of professional work	Up to 30 hrs	2	7	6	20
		31 to 60 hrs	23	77	18	60
		61 hrs or more	5	16	6	20

As per above demographic data table, it reveals that 77 % of nurses was with age less than 25 yrs in experimental while 70% in control group. 90% of nurses were female in both experimental and control group. 83 % and 90% of nurse were single in experimental and control group respectively. Majority of nurses were working in ICU that is 34 % in experimental and 53 % in control group. None of the nurses consumes alcohol. Majority of nurses were not having complaints of insomnia that is 80% and 77% in experimental and control group respectively. Only 3% nurses in experimental while 20% in control group were having domestic burden. Few nurses are doing physical exercise that is 23% and 27% in experimental and control group respectively. 7 % nurses in experimental group are having children less than 6 years of age. 63% of nurses are having 1-5 years of experience working in night-time in both experimental group and control group.

SECTION II: Analysis of impact of night shift on work performance

Table 3. Analysis of impact of night shift on work performance n=30, 30

Group	Category	Pre-test				Post-test			
		F	%	Mean	SD	F	%	Mean	SD
Experimental	Poor (5-6)	7	23	7.8	1.5	3	10	9	1.2
	Average (7-8)	10	33			4	13		
	Good (9-10)	13	44			23	77		
Control	Poor (5-6)	6	20	8.3	1.7	2	7	8.3	1.1
	Average (7-8)	8	27			18	60		
	Good (9-10)	16	53			10	33		

As per above table, it shows that 44% of nurses in pre-napping were having good work performance and in post-napping 77 % of nurses were having good work performance.

SECTION III: Analysis of data related to fatigue among night shift nurses

Table 4. Analysis of fatigue among night shift nurses

n =30, 30

Group	Category	Pre-test				Post-test			
		F	%	Mean	SD	F	%	Mean	SD
Experimental	Normal (10-26)	20	67	26.4	7.9	27	90	21.4	6.2
	Fatigue (27-38)	4	13			1	3		
	Extreme fatigue (39-50)	6	20			2	7		
Control	Normal (10-26)	13	43	27.5	8.1	19	63	24.5	6.6
	Fatigue (27-38)	15	50			11	37		
	Extreme Fatigue (39-50)	2	7			0	0		

While in control group 53 % were good at work but in post test it decreased to 33%. As per above data, it depicts that majority of Nurses (i.e. 90 %) was normal after napping but before napping 67 % nurse was normal that is no fatigue while in control group 50 % of nurses were having fatigue in pre-test and 63 % nurses were normal.

SECTION IV Analysis of effect of night shift napping on work performance and fatigue

Table 5. Effectiveness of napping on work performance and fatigue among night shift nurses n=30, 30

Variables	Section	Mean	SD	df	z-test	P-value
Work Performance	Experimental	9	1.2	29	-2.35	0.01
	Control	8.3	1.1			
Fatigue	Experimental	21.4	6.2	29	1.875	0.06
	Control	24.5	6.6			

Work performance: Mean value of control group is 8.3 and experimental group is 9. p value is 0.01 which is less than 0.05 hence, proves that there is significant difference between work performance in control and experimental group.

Fatigue: - Mean value of control group is 24.5 and experimental group is 21.4. p value is 0.06 which is more than 0.05 hence, proves that there is no significant difference between fatigue in control and experimental group.

SECTION V: Analysis of correlation between work performance and fatigue: Calculation according to Pearson's correlation coefficient, the value of R is 0.2588, which shows positive correlation between work performance and fatigue but value is near to zero which suggests that there is weak relationship between them. Table No. 6 shows that there is no significant association between work performance and demographic variables at 0.05 level of significance.

SECTION VI: To associate the findings with selected demographic variables

Table 6. Association of work performance with demographic variables n=30, 30

Demographic variables	Chi-square test				
	Cal. value	df	p- value	S* / NS	
Age (year)	<25	1.204	49	0.877	NS
	25-30				
	>30				
Gender	Male	3.878	49	0.144	NS
	Female				
Current working area	single room	7.785	49	0.254	NS
	General ward				
	ICU				
	A&E				
Physical exercise in last 2 weeks	Yes	5.202	49	0.074	NS
	No				

Note: S*: Significant NS :Not Significant

Table no. 6 shows that there is no significant association between work performance and demographic variables at 0.05 level of significance.

DISCUSSION

Huanhuan *et al* conducted a research on napping on night-shift among nursing staff: a mixed-method systematic review with aim to find of influence of night-shift napping on nurses find out that napping is beneficial to the well-being of nurses and improves psychomotor vigilance and work performance. But napping in nursing still faces challenges[2]. In current research study there is significance difference between in work performance among nurses but there is no significance difference in fatigue among nurses after napping. Nurses improved the work performance but in fatigue level there was mild Improvement. . Nurses are facing few challenges for napping which can be improved by proper delegation of responsibilities during napping.

CONCLUSION

However, the impact of napping on work performance was good but there was not much difference in fatigue. As per feedback from these nurses quality of sleep improved during day time.. Work performance improved and errors decreased.

RECOMMENDATION

Napping was only for maximum 30 minutes. Few nurses were facing difficulty due to inability to sleep in very less time. Hence, researcher suggest that same duplicate replication of the research can be done by increasing napping time for at least 1 to 2 hours. In-spite of provided permission for napping due to workload few nurses could not take rest. Hence researcher suggest that, next time same research could be conducted where ideal place to nap as well as systematic staffing can be included in order to provide favourable environment for napping.

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