

Exploring the Factors of Fatigue among Nurses and Effectiveness of Fatigue Countermeasure Programme

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Nurses are expected to render quality nursing care and treatment at the frontlines of patient care; they frequently endure physical and mental work-related fatigue (Hee Jung Jang, 2021). Cochran KR (2021) mentioned that nurses in today's healthcare industry routinely work long hours and overtime. As a result of such working conditions, nurse exhaustion can occur, increasing the likelihood of errors occurring during patient care. Job dissatisfaction can cause workplace fatigue and affect nurses' perceptions of their quality of life. Because of job dissatisfaction, some nurses decide to leave the nursing profession.

Rahman et al (2017) conducted a study and found that 50.2 percent nurses working in hospital setup reported to have work-related acute and chronic fatigue. It is more with female nurses; among them 84.9 percent experience mental and physical fatigue.

Exhaustion that lasts causes mental fatigue, difficulty focusing, and even memory loss. Nurses are stressed out due to fatigue caused by a heavy workload, a high number of critically ill patients, staff shortage, and doctor demands. A nursing staff member experiencing chronic fatigue may unintentionally contribute to poor nursing care, medication errors, and failure to follow through on a doctor's order, jeopardising the patient's outcome. Fatigue poses a major threat to patient safety. The nurses have been charged with causing serious bodily harm to a patient through negligence and subsequent criminal abuse.

Increased fatigue in a nurse can be caused by a number of factors. Shift work is caused by a lack of staffing, overburdened work, working hours exceeding 40 hours or more per week, shifts extended (more than eight hours per day), inadequate sleep /deficit sleep, worker stress, and patients' and their families' inability to recover from shifts.

When both the management team and the nurses are trained on nursing exhaustion, they will be able to recognise and intervene when a team member is too tired to provide adequate patient care. Yoga being a low-cost fatigue man-

agement programme, Nurses who participated in the fatigue countermeasure programme said they felt less tired. As a result, the researchers undertook to compare the outcomes of using Yoga as a fatigue countermeasure programme to reduce nurse fatigue and increase working capacity among needy patients.

Objectives

- To assess the factors causing fatigue among nurses in selected hospitals of Chhattisgarh
- To assess the pre- and post-test level of fatigue among experimental and control group of nurses.
- To assess the effectiveness of fatigue countermeasure programme on the level of fatigue among nurses.
- To find the association between pre-test level of fatigue with selected socio demographic variables in all the two groups.

Hypotheses

H1: There is significant difference in the level of fatigue within groups of Fatigue Countermeasure Programme among nurses.

H2: There is significant difference in the pre-test and post-test level of fatigue within two groups of nurses.

H3: There will be significant effectiveness of Fatigue Countermeasure Programme on the level of fatigue in experimental group at 0.05 level of significance.

H4: There is significant association between pre-test level of fatigue with selected socio- demographic variables.

Methodology

Research approach: Quantitative (experimental) approach

Research design: quasi-experimental (non-randomised control group) design

Population: Nurses

Accessible population: Nurses of age group 22 to 50 years working at Shri Shankaracharya Institute of Medical Sciences, Bhilai (CG) And Government District Hospital Durg.

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Table 1: Socio-demographic profile

S. No.	Parameters		Control group N (%)	Yoga group N (%)
1	Age group	22 – 30 years	44	40
		31 – 40 years	34	35
		41 – 50 years	22	25
2	Gender	Male	16	17
		Female	84	83
3	Marital status	Single	10	7
		Married	75	85
		Widower	6	4
		Separated	9	4
4	Number of children (if married)	None	2	0
		1	11	19
		2	72	62
		More than 2	5	12
5	Number of children (according to age)	Neonate	0	0
		Infant	20	10
		Toddler	0	0
		Pre-school	25	20
		School going	21	45
		Adolescent	24	18
6	Type of family	Nuclear	57	58
		Joint	43	42
7	Educational qualification	Diploma in Nursing	77	89
		Bachelor of Nursing	23	11
		Master of Nursing	0	0
		Ph.D. or Doctorate	0	0
8	Working unit	Surgical Unit	21	29
		Medical Unit	65	18
		Emergency Department	11	20
		OPD	3	33
9	Current position in hospital	Staff Nurse	77	77
		Sister In-charge	17	15
		Nurse Supervisor	6	8
10	Employment status	Permanent	76	73
		Temporary	24	27
		Adhoc	0	0
11	Years of experience	0-5 years	15	23
		6-10 years	50	31
		11-20 years	25	43
		> 20 years	10	3

Setting: Government Pandurang Ramarao Dongaonkar Hospital and Shri Shankaracharya Institute of Medical Sciences, Bhilai (CG).

Sampling technique: Non-probability (convenient) Sampling Technique

Sample size: 200 Nurses (100 experimental, 100 control)

Independent variable: Fatigue level among nurses

Dependent variable: Yoga therapy

Research tools: Socio-demographic profile, work-related fatigue factors, multidimensional fatigue symptom inventory and occupational fatigue exhaustion recovery

Fatigue Countermeasure Programme (intervention administered by the researcher)

Yoga group (experimental group): The Yoga group samples were assembled in a hospital conference room and they were demonstrated the Yoga practices under the supervision of an Yoga instructor. The respondents received a video session with detailed information of all positions. During the intervention period, a helpline was set up.

A room was made available in the hospital for practicing Yoga for nurses. The participants did Yoga at least four times a week at home, for around 20 to 30 minutes each time, or longer if they wanted, which was observed online by the researcher (morning online session 06:00 to 06:30 am, evening online session 06:00 to 06:30 pm). Yoga techniques such as pranayama, asana and shavasana were demonstrated. A reminder was issued every third day via phone/Whats App message for all participants in the experimental group to perform in-

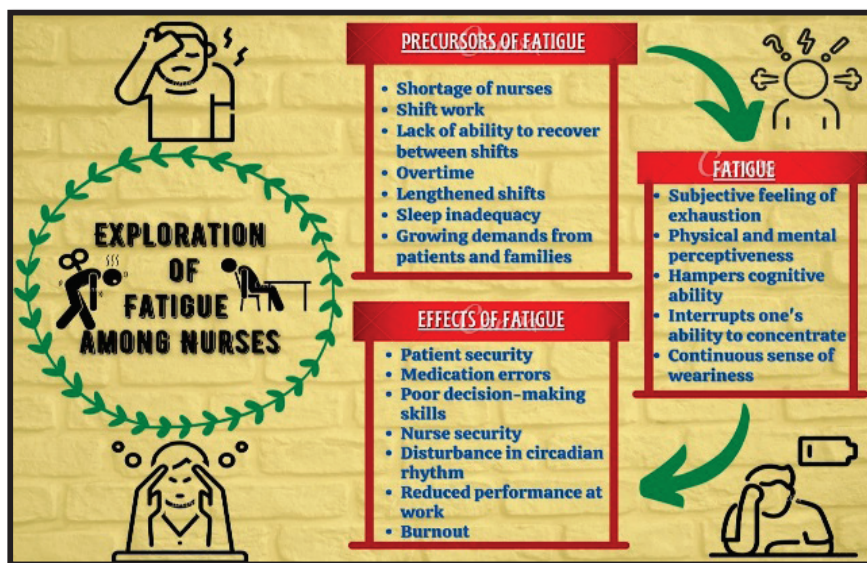


Fig 1: Exploration of fatigue among nurses

terventions regularly.

The study was conducted in the month of February-March 2022. Data on each tool were assessed at the beginning prior to the implementation of intervention and it was re-assessed after 4 weeks.

Data were collected using Socio-demographic profile, work-related fatigue factors and factors outside the workplace, multidimensional fatigue symptom inventory (MDFSI-SF) and occupational fatigue exhaustion recovery (OFER) scale.

Results and Discussion

Objective-Wise Findings

With reference to first objective of the study, work-related factors among nurses are illustrated in Table 2.

Barker LM et al (2011) performed a similar study in which fatigue levels were negatively correlated with performance. Longer shift lengths and hours worked per week were associated with increases in physical and total fatigue levels. Mental, physical and total fatigue levels also differed with shift schedule.

With respect to second objective, high scores in Inventory and Recovery subscales of chronic fatigue (MDFSI-SF) and Occupational fatigue exhaustion recovery

(OFER) scale signified an increase fatigue among nurses. Hence, there is significant difference in fatigue level within Yoga group of nurses as shown in Table 3 and 4. Therefore, H1 was accepted.

As for the third objective, in acute group, the total t-value was found to be 44.64 and in inter shift recovery, the total t-value was 42.49 which was found to be highly significant at $p < 0.0001$. Hence, there is significant difference in the pre-and post-test level of fatigue within yoga group. Therefore, H2 was accepted.

Chronic, acute fatigue and inter shift recovery were highly significant as depicted in Table 5 which showed effectiveness of yoga on level of fatigue

Table 2: Work-related fatigue factors among nurses

S. No.	Parameters	Control group N (%)	Yoga group N (%)
1	Shift work in a row	Fewer than 3 days /night	18
		3 days /night	0
		4 days /night	30
		More than 4 days /nights	52
2	Unit having scheduling guidelines	Yes	83
		No	0
		Didn't know	17
3	Meal and rest breaks	Yes	54
		No	40
		Often missed	6
4	Conveyance from residence to hospital	Own vehicle	89
		Walking	11
		Private Auto	0
		Company vehicle	0
5	Support of family member/ husband in household chores	Never	14
		Little	45
		Moderate	41
		Much	0
		No	52
6	Sleep quality in past three months	Good	0
		Rather good	9
		Neither good or bad	89
		Rather bad	2
7	Hours of sleep received	<6 hours	35
		6-8 hours	57
		> 8 hours	8

Table 3: Multidimensional fatigue symptom inventory (Yoga group) (N=100)

S. N.	Parameters	Not at all (0)		A little (1)		Moderately (2)		Quite a bit (3)		Extremely (4)	
		Pre-test	Post test	Pre-test	Post test	Pre-test	Post test	Pre-test	Post-test	Pre-test	Post-test
1	I have trouble remembering	0	0	0	42	0	57	17	1	83	0
2	My muscles ache	0	0	0	39	3	29	32	10	87	0
3	I feel relaxed	0	0	26	11	12	48	20	15	17	51
4	I feel fatigued	0	0	0	30	27	34	26	23	74	0
5	I feel refreshed	0	0	30	10	8	30	12	40	12	58

Table 4: Occupational Fatigue Exhaustion Recovery Scale (Yoga Group) (N=100)

Parameters	Strongly disagree (0)		Disagree (1)		Somewhat disagree (2)		Neither agree nor disagree (3)		Somewhat agree (4)		Agree (5)		Strongly agree (6)	
	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test
I often feel 'at the end of my rope' with my work.	0	0	0	37	0	0	20	5	2	0	58	0	78	0
After a typical work period I have little energy left.	0	0	0	18	0	60	8	22	25	0	2	0	65	0
I usually feel exhausted when I get home from work.	0	0	0	36	1	30	16	18	26	0	26	1	46	0
I rarely recover my strength fully between work shifts.	0	0	0	23	0	34	51	43	10	0	37	0	2	0

Table 5: Effectiveness of fatigue countermeasure feasibility programme using t-test analysis

Parameters	Chronic				Acute				Inter shift recovery			
	Pre-test	Post-test	t value	p value (t-test)	Pre-test	Post-test	t value	p value (t-test)	Pre-test	Post-test	t value	p value (t-test)
Control	20.17±3.04	20.41±4.65	0.44	0.66*	21.07±1.85	20.69±1.66	1.56	0.12*	19.99±3.24	19.81±3.27	0.40	0.69*
Yoga	21.15±1.7	9.59±2.05	43.5	<0.0001***	20.69±3.15	9.25±2.14	30.04	<0.0001***	19.99±3.24	9.65±2.04	30.49	<0.0001***
Total	61.23±6.03	60.91±7.66	0.33	0.74*	59.97±4.87	28.49±5.09	44.64	<0.0001***	59.99±4.94	32.66±4.07	42.49	<0.0001***

At df=99 *Non-significant at 0.05; ***Highly significant at 0.0001.

among nurses at $p < 0.0001$. Thus, hypothesis H3 was accepted as significant effectiveness was seen in Yoga group.

Tayebe Mehrabi (2012) conducted a similar study to determine how Yoga affected nurses' coping methods in intensive care units, and it was discovered that the emotion emphasis was 13.50 before the intervention, but it changed to 12.97 after the intervention, and the state-trait focus changed from 11.97 to 14.68. The t test revealed a statistically significant difference ($p = 0.001$). The t test revealed a significant difference, indicating that yoga activities were beneficial following intervention.

As for the fourth objective, chi-square analysis was done and significant association was noticed between pre-test level of fatigue with socio demographic variables (age group=19.13, gender=13.53; marital status=21.56, years of experience=29.05, number of children=88.01, current position=94.35); and work-related fatigue factors (shift work in a row=19.51, conveyance from residence to hospital=11.31, sleep quality in the past three months= 13.57, hours of sleep received=15.47). Thus, hypothesis H4 was accepted.

Min A (2019) performed a similar study indicated that an insufficient resting period had a more significant relationship with the level of fatigue.

Recommendations

- A similar study using relaxation approaches other than Yoga therapy (like music therapy) can be done to see its effectiveness on nurses.
- For fatigue countermeasures, very few published researches are available. Hence, more studies need to be done at National level.
- Auto-suggestions can be inculcated as an effective strategy for tackling fatigue at workplace.
- Measures emphasising effective work performance and eliminating medical errors caused by negligence can be implemented to combat fatigue.
- Work culture includes things like taking breaks in between work schedules, getting enough sleep during off-peak hours and days, and incorporating relaxation techniques like listening to music and exercising.
- Nurses should do their part to mitigate the effect of fatigue by getting adequate sleep, eating healthy foods, staying hydrated and maintaining an active family and social life.
- The fatigue-related awareness programmes

should be conducted in collaboration with hospital management to support nursing staffs through implementation of policies and campaigns that even can be embarked upon at global level.

Conclusion

The current study suggested that an integrative Yoga intervention significantly reduced nursing professionals' work-related fatigue. Yoga can be used a cost-effective tool for managing fatigue, resulting in better overall health of nurses and fewer patient care errors. Additional comparative studies with other fatigue countermeasures, and robust research design can be conducted based on the findings of this study. When compared to the control group of nurses, the fatigue countermeasure programme was found to be highly significant among the yoga group of nurses. As a result, the fatigue countermeasure programme reduced fatigue among nurses significantly.

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