



ISSN Print: 2394-7500  
ISSN Online: 2394-5869  
Impact Factor: 5.2  
IJAR 2015; 1(9): 71-83  
www.allresearchjournal.com  
Received: 05-06-2015  
Accepted: 08-07-2015

**Hemu Rathore**

Assistant Professor, Deptt. Of  
FRM College of Home Science,  
Mpuat, Udaipur, Rajasthan

**Khushbu Sharma**

Master's Scholar- Deptt. Of  
FRM College of Home Science,  
Mpuat, Udaipur, Rajasthan,  
India.

**Suman Singh**

Professor & Head, Deptt. Of  
FRM, College Of Home  
Science, Mpuat, Udaipur,  
Rajasthan, India.

**Gaytri Tiwari**

Assistant Professor, Deptt. Of  
Hdfs, College Of Home Science,  
Mpuat, Udaipur, Rajasthan,  
India

**Charu Sharma**

SRF, Of AICRP-H.Sc. (FRM),  
College Of Home Science,  
Mpuat, Udaipur, Rajasthan,  
India.

**Correspondence**

**Hemu Rathore**

Assistant Professor Deptt. Of  
FRM College of Home Science,  
Mpuat, Udaipur, Rajasthan,  
India.

## Psychosocial Impact of Shiftwork on Female Nurses

**Hemu Rathore, Khushbu Sharma, Suman Singh, Gaytri Tiwari, Charu Sharma**

**Abstract**

Women are the backbone of any economy primarily shaping future of country. Shift work and work-related stress are important topics in the healthcare sector due to their possible negative impact on the workers' health and safety. The study was taken to study the problems faced by the nurses in shift work. The Objective of the study was 1. To explore problems related to shift work faced by female nurses. 2. To study the impact of shift work on female nurses the present study was conducted in Maharana Bhopal Government Hospital at Udaipur. The sample consisted of 60 female nurses between the age group of 30 -60 years, working in flexible rotating shifts. A standardized tool was used for the present study. The standard shift work index (SSI) by Emeritus Simon Folkard *et al.* (1995) was used to elicit required data from each respondents showed that majority (86.6) of old respondents worked in rotating shifts with nights, while from young group only 60 per cent worked in rotating shifts with nights. The option of swooping shifts with colleagues was a very good option perceived by them. Disadvantages weighed more than advantages in shift work. Higher per cent of young respondents were more ready for quitting shift job for day time job. We can thus conclude that nurse's family encountered many problems as a result of unpredictability of their shift assignments. The nurses face many problems related to sleep, wellbeing and social and cultural related to personal and family setup.

**Keywords:** Shiftwork, Nurses, Sleep, Rotation, Fatigue

### 1. Introduction

Women are the backbone of any economy primarily shaping future of country. Ever since India opened its doors to liberalization in the early 1990s there has been a steady transformation in India's economy. Self-reliance helped in building great institutions of learning and taking strides in various fields of life in keeping pace with the rapidly changing world.

Women have become equal participants in many respects at all levels of society. The future would see more women venturing into areas traditionally dominated by men. This will lead to the income generation and a greater sense of fulfillment among women. In almost all the countries, governments is providing special provision for women's development and efforts are being made to bring out maximum of their talent. In India, as during Veda and Upanishad periods, women are being accorded with respect and are facilitated in all spheres of life. The researches have shown that shift work causes many physical and psychological demands on an individual.

In recent years, more emphasis has been laid on the psychosocial needs of the worker, so more and more workers have the liberty to choose the hours and times when they wish to work. As a result of the foregoing factors, we now have several work scheduling alternatives: the eight-hour daylight schedule, permanent off-hour shifts, rotating shifts that change from daylight hours to evening to night periodically and schedules arranged according to the choice of the worker. Although alternative work schedules are generally well received by workers, some epidemiologists, sociologists and health personnel have raised questions as to whether these work schedules cause physiological or psychological changes in the workers. Shift work is common in many sectors. Essential and emergency services such as medical, transport, fire and rescue, law enforcement services and some public services have to be provided round-the-clock. In recent years, some service establishments such as convenience stores and fast food shops also provide 24-hour service and employees concerned, therefore,

are required to work in shifts. Suitably arranged shift work is important to employees, employers and the self-employed.

Shift work is a reality for about 25% of North America's working population. Interest in the effect of shift work on people has developed because many experts have blamed rotating shifts for the human errors connected to a number of accidents and catastrophes related to the disturbance of circadian rhythms which results in an increased risk of accidents and injury (Coffey et.al 1998) [2]. The international council of nursing (ICN) recognizes that many health care providers' services are accessible on twenty-four hour basis that makes shift work a necessity. At the same time International Council of Nursing is very concerned that shift work may have a negative impact on an individual's health, ability to function, thus affecting the services provided. According to the International Labour Organization, working in shifts is "a method of organization of working time in which workers succeed one another at the workplace so that the establishment can operate longer than the hours of work of individual workers at different daily and night hours". The shift system can be generally classified into a fixed shift system and a rotating one.

Shift work and work-related stress are important topics in the healthcare sector due to their possible negative impact on the workers' health and safety. This includes cardiovascular diseases, gastrointestinal complaints, sleep troubles, mental health problems, fatigue, job dissatisfaction, accidents and injuries at work, reduced vigilance and job performance, absenteeism and turnover (Muecke, 2005) [7].

According to Taylor *et al.* (1997, p. 74) [15], the movement from a linear, chronobiological conceptualization towards more conceptually broad, dynamic, multidirectional, psychological view of the relationship between shift work and health was mainly supported by the observation that variations in adaptation to shift work cannot be fully explained by factors such as the shift system, biological disturbances and stable individual differences.

The main impact on human health is the lack of sleep. Sleep is an active process and without it, we would not survive. One can neither sleep long enough during daytime nor as soundly as we normally do at night due to the constant noise of the waking world around us. So, the shift worker is less refreshed and develops chronic fatigue that makes him irritable and listless during work hours. Sleep is physically, mentally and emotionally essential to the healthy function of a human being.

There is a growing concern about the ability of individuals to maintain adequate levels of performance over long work shifts, particularly when those shifts span nighttime hours. Research results are mixed on this issue. Most of the nursing studies rely heavily on the general scientific literature in the field of shift work and sleep disorders.

### **Problems faced by shift workers**

Shift work generally is defined as work hours that are scheduled outside of daylight. Shift work disrupts the synchronous relationships between the body's internal clock and the environment. The problem such as sleep disturbances, increased accidents and injuries, and social isolation. Physiological effects include changes in rhythms of core temperature. Various hormonal levels, immune functioning and activity rest cycles. Adaptation to shift work is promoted by entrainment of the internally regulated functions and adjustment of activity rest and social patterns.

The problems faced are briefly laid as under:

### **Fatigue and Shift Workers**

The basic problem with shift work is that you sometimes have to work when it's normal to be sleeping which can upset your natural sleep rhythms. Our internal body clock is designed to help us be alert during the day and then sleep at night. Working in shifts means that the body requires energy at times when it is supposed to take rest and that makes it more difficult for one to be able to digest food at night and to produce energy at the right time for night work. When added to the other things going on in our lives, e.g. family stress, mental stress, physical stress, a sleeping disorder or the effects of certain medications, working shifts can just add to the problem of fatigue or tiredness. Daydreaming, slow reaction times, increased risk-taking, poor communication, poor judgments of distance or time, sore or tired eyes, blurred vision etc are the common signs of fatigue.

### **Sleep and Shift Workers**

Difficulties with sleep are found to be the most common complaint among shift workers. Data suggest that the main reason shift workers leave night shift work is the sleep disturbances they experience (Maasen, Meers and Verhaegen, 1978) [6]. Rutenfranz, Knauth, Angersbach, 1981) [11]. Sleep is vital for the healthy function of a human being - physically, mentally and emotionally. Sleep is an active process and without it we would not survive. Working during normal sleep hours affects the body's ability to digest food, rest, restore and repair itself and may affect a person's sense of well-being.

The majority of sleep difficulties that shift workers report are due to their altered work/ rest schedules. Because of the altered and often reversed sleep/ wake cycle, shift workers must often sleep during the day. Circadian, environmental, and social factors combine to reduce the quality of this day sleep causing chronic partial sleep deprivation or sleep restriction.

### **Shift work and Women's Health**

Studies have found that risk of breast cancer was 60 per cent higher in women who worked in night-shifts compared to those who did not. The improper production of the melatonin hormone is thought to be associated with the increased risk of breast cancer.

Irregular menstrual cycle and pains were reported from women in a number of industries who worked in night shifts. Higher risk of miscarriage and lower rates of pregnancies and deliveries were also mentioned.

### **Shift Work Family and Social Life**

Shift workers sometimes experience frustration with home and social life due to the nontraditional work hours. Shift workers commonly cite difficulty maintaining friendships, keeping the kids quiet during the day, accomplishing household duties and finding time for a satisfying marriage. Partners of shift workers meanwhile may not like the feeling of being left alone at night. Most of the human society is geared towards the daylight hours. That is when most of the work is done. The early evening is for social life and nighttime is for sleeping. Many shift workers suffer from additional stress caused by missing out on important parts of their social life. It is harder for shift workers to spend time with their children and to attend school functions with them.

Spouses may work the opposite shift, thus causing less time together. Unmarried shift workers miss out on the social life that most daytime workers have. Sleeping becomes a problem, especially for workers whose shift ends in the morning. They have been awake all night when their body wanted to sleep and now have to sleep when they should be awake. They also have to try to sleep when the rest of the world is awake and often noisy. Workers' bodies can adjust to working nights if a strict schedule of sleeping during the day is maintained. The body's internal clock will change somewhat to accommodate for the new regular schedule. The problem occurs when the worker, in order to be with friends and family, switches back to a daytime schedule on weekends or on days off. This causes the internal clock to switch back to the normal day-night schedule.

### Need To Cope Up With Shift Work

Having got an insight to the various problems faced by shift workers leads one to think that to cope with the shift work is very essential. Coping strategies are also present which, to some extent, can reduce the effects of shift work. Several million Indians work a shift other than a regular day shift and must face the problems of sleeping during the day and being alert on the job at night. Working a schedule different from most of the world can be challenging but following some simple guidelines may help make shift work easier to live with - and safer too. Many workers find that shift work disrupts their family and personal life and leads to health problems including chronic fatigue and gastrointestinal disorders. On the other hand, some workers prefer shift work because it usually allows for more free time

Hospitals, the biggest employer in the health care field, employ more night shift workers than any other industry. It can therefore be inferred that in medical domain high percentage of workforce may be affected by the problems related to shift work.

Thus, the present study provides knowledge base for the problems faced by the female nurses. Further, studying all aspects of nurses' work, shift and its relationship with other factors in the clinical and other world environment will provide the hospital administration a path to look into the shift work rotation and the problems faced by the health care workers, i.e. female nurses.

The current study may help both nurses and administrators to understand some of the underlying effects of shift work on nurses, their impact on nurses' life and clinical practices. The study will help the managers by giving them a direction as to what steps should be taken to protect nurses from the occupational stress caused by shift work in attempt to decrease nurses' turnover which negatively affects safety and effectiveness of the services rendered. Furthermore, this results of the study will be significant for nurses because it will improve their quality of life and coping with the shift duties.

### Objectives

The present study was carried out with the following objectives:

1. To explore problems related to shift work faced by female nurses.
2. To study the impact of shift work on female nurses in terms of sleep, fatigue, health and wellbeing and social and domestic situation.

### Review of Literature

A comprehensive review of literature is must in any research endeavor. It gives the investigator an excellent overview of work done in the field, and helps in keeping up with recent developments. It not only helps the investigator to define the frontiers of the field but also guides in avoiding unintentional replication of the previous work done.

In this chapter relevant literature having direct or indirect bearing on the present descriptive research has been reviewed and organized under the following headings:

1. Problem faced by female nurses under shift work
2. Impact of shift work on female nurses
3. Coping strategies adopted by female nurses by shift work

### Problem faced by female nurses under shift work

Sartori (2007)<sup>[12]</sup>. observed that the negative effects of shift work derive basically from an inadequate biopsychic-social adaptation to the temporal challenges posed by working on rotating shift work.

Giebel *et al.* (2008)<sup>[4]</sup>. in their study on working at night has become unavoidable in many fields. Night work is not only associated with acute and chronic health problems but also with social impairment, lower performance, increased risk of error and industrial and road accidents Essentially, the most frequent complaints among shift workers are the lack of proper sleep during the day and lower vigilance while working at night.

Alward, R (2008)<sup>[1]</sup>. in his study found that interpersonal conflicts and anxiety are also common problems of shift workers on both evening and night shifts. These difficulties arise when the workers' schedules are not synchronized with the day-oriented, Monday-through-Friday pattern of much of society, and most important, of spouses and children. Feelings of isolation, loneliness, and professional isolation can also result. Other nurses complain of a loss of physical and mental well-being. When shift workers do not adapt to the stress of coping with shift work, they may experience sleep disorders, gastrointestinal problems, depression, and substance abuse.

A hospital-based survey on shift work, sleep, and accidents was carried out among 635 Massachusetts nurses. In comparison to nurses who worked only day/evening shifts, rotators had more sleep/wake cycle disruption and nodded off more at work. Rotators had twice the odds of nodding off while driving to or from work and twice the odds of a reported accident or error related to sleepiness. Application of circadian principles to the design of hospital work schedules may result in improved health and safety for nurses and patients. (D R Gold and S Rogacz, 2008)<sup>[3]</sup>.

### 2. Impact of shift work on female nurses

According to Sheila H and Chandrawanshi (2004)<sup>[13]</sup> sleep quality becomes poorer in shift workers at 32 and 42 years of age. Furthermore, reduction in sleep length was associated with increasing age for workers on afternoon and night shifts, and increasing sleep length for workers on a morning shift.

A Study by Muecke (2007)<sup>[8]</sup> Concluded that shift work and work-related stress are important topics in the healthcare sector due to their possible negative impact on workers' health and safety. This includes cardiovascular disease, gastrointestinal complaints, sleep troubles, mental health problems, fatigue, job dissatisfaction, accidents and injuries at work, reduced vigilance and job performance, absenteeism

and turnover.

Pisarski A (2008) <sup>[10]</sup> in his study examined organizational factors affecting the impact of shift work on work life conflict and subjective health. A model was proposed in which support from supervisors, support from colleagues, and team identity influence time-based work life conflict through two mediating variables: team climate and control over the working environment. Reduced conflict, in turn, produces enhanced psychological well-being and diminished physical symptoms. A structural equation model based on survey data from 530 nurses supported the proposed model. It also identified unpredicted direct links between team identity and physical symptoms, and between supervisor support and both control over the work environment and psychological well-being. The results indicate that organizational interventions focused on social support, team identity, team climate, and control can diminish the negative effects of shiftwork on work life conflict and health in shift workers.

### 3. Coping strategies adopted by female nurses by shift work

Research on coping styles reveals that active, problem-focused coping generally has a positive impact on well-being and that emotion-focused and avoidance strategies result in poorer long-term psychological adjustment. Consequently, it is important for people to be encouraged to use problem-focused strategies. However, when problem-focused strategies are used and fail, or the problem is perceived to be too intractable, the result may be an increase in levels of stress and depression. Organizations therefore have a responsibility to provide sufficient support for problem-focused strategies to be successful. (Terry DJ *et al.* 2001) <sup>[16]</sup> Klag and Bradley (2004) <sup>[5]</sup> study distinguish between two broad types of coping strategy: approach/engagement-oriented strategies (involving active attempts to confront and resolve the problem) and avoidance/disengagement strategies (reducing the associated emotional distress or evading the problem).

### Methodology

Research methodology is the search for knowledge through objectives and systematic method of finding solution to a problem of research. The purpose of research is to discover answer to questions through the application of scientific procedures. The main aim of research is to find out the truth which is hidden and which has not been discovered as yet.

The main objective of the present investigation was to assess the **Problems of shift work faced by female nurses and its impact**. This chapter has been organized in the following sequence

**1. Locale of the study-** The present study was conducted in Maharana Bhopal Government Hospital at Udaipur. The hospital was selected with the view that there is common rotation schedule, common administration and a homogenous group. This point was taken under consideration as literature shows that shift work is directly affected by the type of rotation and the administration.

**Sample and its selection** – The sample consisted of 60 female nurses between the age group of 30 -60 years, working in flexible rotating shifts. These were further categorized into two groups, 30 nurses in age range of 30- 45 and 30 nurses in 45- 60 years of age. A list of the enrolled

nurses was procured from the hospital and then a separate list of nurses within the age group of 30- 45 and 45 – 60 years was prepared from each list a sample of 30 nurses was randomly selected by using systematic random sampling technique.

To each selected female nurse the investigator explained the purpose of the research study and its importance and requested for their cooperation. Among the randomly selected samples, 5 per cent dropout was there so 3 other names were then selected for the study.

**Research Tool-** A standardized tool was used for the present study. The standard shift work index (SSI) by **Emeritus Simon Folkard et. al (1995)** <sup>[14]</sup> was used to elicit required data from each respondent. The questionnaire consisted of

3. The following parameters to get an insight into the problems related to shift work of female nurses.

Situation in India and U.K. regarding working in shifts are different so a pilot study was conducted to see if this SSI would be effective to illustrate the problems of shift work and its impact on female nurses.

The first step was to translate the SSI into Hindi which was done with the help of an expert. This translated questionnaire was put to test on 10 female nurses – 5 each from 30- 45 years and 45-60 years. After tabulation of the data it was found that many questions related to alcohol, smoking etc. were not answered positive by any of the respondents likewise a few questions in background information were not related to Indian conditions.

### Results and Discussions

The present study was undertaken with an objective of getting an insight into the problems faced by female nurses in shift work and its impact on sleep, fatigue, health and well being, social and domestic situations. The following section highlights and the results which have been systematically presented with supportive material enabling a clear understanding of the outcomes of the study. The results have been presented under the following sections.

#### Section A

4.1 Background and general information of the respondents regarding shift work.

#### Section – B

4.2 Problems of shift work and its impact on female nurses related to:

- Sleep and fatigue.
- Health and well being
- Social and Domestic situation

#### Section A- Background and general information of the respondents regarding shift work

General background information and the shift work pattern followed by the respondents. Different factors regarding shift rotation, sleep pattern, partners cooperation, time etc have been presented in this section.

**Table 1:** Mean age of the respondents

S. No.	Age group	Mean Age (years)
1. Young	30 – 45 years	36.6
2. Old	45-60 years	53.3

As evident from Table 1 the mean age of the respondents was 36.6 years and 53.3 years in the young and old group, respectively. All the respondents had more than two years of shift work. This was mandatory for selection of example. The number of hours of work vary in different occupations. It's the timings which the nurses have to adjust at home and the work place.

**Table 2:** Percent distribution of respondents according to time devoted to work in paid employment n = 60

S.No.	Items	Young group	Old group	Total
A	48 hr.	15 (50%)	15 (50%)	30 (50%)
B	56 hr.	15 (50%)	14 (46.6%)	30 (50%)

Perusal of data in Table 2 reveal that the respondents worked in paid employment for 48 – 56 hours a week. An equal percentage of young female nurses (50%) worked for 56 and 48 hours a week. But for the respondents in the old age group, a slightly less per cent of respondents worked for 56 hours per week (46 %).

**Table 3:** Percent distribution of respondents according to usual work pattern n = 60

S.No.	Items	Young group	Old group	Total
A	Rotating shifts with nights	18 (60%)	26 (6.6%)	44 (73.3%)
B	Rotating shifts without nights	12 (40%)	4 (13.3%)	16 (26.6%)

A look into the work pattern gives clear evidence that the higher percentage (86.6) of old respondents worked in rotating shifts with nights, while from young group only 60 per cent worked in rotating shifts with nights. This can be due to the fact that after the age of 45 the families are more or less settled while those within the age group of 35-45 have more family and social responsibilities. (Table 3). Overall 73.3 per cent of the respondents worked in rotating shifts with nights. Lesser percentage i.e. 26.6 worked in rotating shifts without night.

**Table 4:** Percent distribution of respondents by opinion of spouse towards shift jobn = 60

S. No.	Items	Young group	Old group	Total
A	Fairly unsupportive	1 (3.3%)	–	1 (1.6%)
B	Quite indifferent	5 (16.6%)	–	5 (8.3%)
C	Fairly supportive	18 (60%)	16 (53 %)	34 (6.6%)
D	Extremely supportive	5 (16.6%)	12 (40%)	17 (28%)
E	Nil	1 (3.3%)	2 (6.6%)	3 (5%)

When at work females are always concerned about how their husbands feel of how and where they work. Education has changed the mental set up and now egalitarian families are coming up. The same was seen among the respondents that 56.6 per cent and 28.3 per cent partners of the respondents were fairly supportive and extremely supportive. When looking into young and old age group, separately it can be seen that only 16.6 per cent of the partners were extremely supportive in comparison to 40 per cent of their counterparts. Some of the interviewees said that they were lucky enough that they had relatives who could help them manage some of their family responsibilities. The young group also faced this problem of non-cooperation from their husbands (16.6 %). An insight into the length of service of the respondents indicates that the young group of nurses had a shorter length of service i.e. 1- 10 years (93%) while 67 per cent of the respondents from the old group had more than 20 years of service.

When intervened as to how long the respondents have

worked in the present shift. It is clearly depicted that 88 per cent of the respondents irrespective of their age worked in the same shift for 1-5 years with an average of 3 years at a stretch.

An overview of the respondents as to how long they have been working in shift indicates that the young group nurses have been regularly working in shift while the old group respondents have been even in a more long length of service in shifts, 67 per cent of these respondents said to have been working in shifts at stretch of nearly 21-30 years.

The rotation of shift was of 8 hours for all the respondents. Safety while travelling from work to home is another point of concern for those working in shifts. All the respondents travelled to and from hospital during late nights and early mornings. This was also difficult as the time was either too early i.e. 5.30 a.m. or late a 10.30. p.m. They found it risky sometimes to go alone specially those who walked to the hospital.

**Table 5:** Percentage of respondents feeling unsafe when travelling to and from workplace n= 60

S. No.	Category	Items	Young group	Old group	Total
A	Morning	Almost never	4 (13.3%)	14 (46%)	18 (30%)
		Quite seldom	10 (33.3%)	16 (53%)	26 (43.3%)
		Quite often Almost always	16 (53%) Nil	0 Nil	16 (26.6%) Nil
B.	Afternoon	Almost never	4 (13.3%)	11 (36.6%)	15 (25%)
		Quite seldom	10 (33.3%)	19 (63%)	29 (48.3%)
		Quite often	16 (53%)	0	16(26.6%)
		Almost always	Nil	Nil	Nil
C.	Night	Almost never	Nil	Nil	Nil
		Quite seldom	1 (3.3%)	Nil	Nil
		Quite often	10 (33.3%)	5 (16.6%)	15 (8.3%)
		Almost always	19 (63.3%)	25 (83%)	44 (73.3%)

**Table 5** depicts that during morning shift overall 43.3 per cent of respondents felt unsafe while the percentage increased to 73.3 during night shifts i.e. almost always. The safest according to the respondents was only the after-noon

shift, it can be thus said that age was no criteria for assessing feeling unsafe among the respondents, the young group and the old did feel unsafe when they commuted to and fro from the workplace.

**Table 6:** Percent distribution of respondents according types of shifts and average successive shifts they normally work

S. No.	Category	Items	Young group	Old group	Total
A	Number of successive morning shifts	7 days	22 (73%)	24 (80%)	46 (76.6%)
		8 days	1 (3.3%)	Nil	1 (1.6%)
		10 days	7 (23%)	6 (20%)	13 (21.6%)
B	Number of successive afternoon shifts	7 days	22 (73%)	19 (63%)	41 (68.3%)
		8 days	1 (3.3%)	2 (6.6%)	3 (5%)
		10 days	7 (23%)	9 (30%)	16 (26.6%)
C	Number of successive night shifts	7 days	22 (73%)	20 (66%)	42 (70%)
		8 days	1 (3.3%)	2 (6.6%)	3 (5%)
		10 days	7 (23%)	8 (26%)	15 (25%)

The length of the rotation period (i.e. the number of days on any one shift before switching to the next shift): medical literature suggests that a fast rotating shift pattern (e.g. rotating the shifts every 2-3 days) could reduce disruption of the biological clock, while rotation of the shifts after a longer period (e.g. every 3-4 weeks) allows time for adaptation of the biological clock. Either shift patterns could be considered, taking into account the circumstances of the operations.

As depicted from the table above we can say that on an average 7 days shift was common in morning and afternoon i.e. 73 per cent for the young group while in the old group it was 80 per cent and 63 per cent morning and evening shift of 7 days respectively. Overall view into the table, it can be seen that less than 5 per cent of the respondents had a shift of 8 days. While 21.6 per cent, 26.6 per cent, 25 per cent of the respondents in morning, afternoon evening respectively worked for 10 days shift. Studies have examined the differences between various workweek schedules. When comparing a 5-day/8-hr work schedule to a 4-day/10-hr work schedule, most studies found that workers were more tired at the end of a 10-hr shift. Studies also found workers to be more fatigued following a 12-hr shift when compared to an 8-hr shift.

Total number of offs which a respondent can take is very different in Indian context. Studies of health care workers from western countries had an option for having off for 5-7 days though they had to work extra time and equalize the working hours but the scenario was different for the respondents from Government hospital in Udaipur, they could only get 3 days off at a stretch (**Table 6**). This was a point of mental stress for the respondents especially of the young age group. The off or the rest period recommended by doctors is of at least 24 hours after each set of night shift. The more consecutive nights worked, the more rest time should be allowed before the next rotation occurs.

The findings show that due to shift, workers having 3 and sometimes 4 days off in succession thereby, providing more time for participation in family and social life. This interpretation is consistent with findings from focus groups with shift workers, where the positive aspect of shift work often mentioned is the frequency with which they have three and four day-off patterns (Perrucci and MacDermid, 2007) [9].

Each hour of night work imposes a greater workload than the same hour during a day shift (5 am versus 2 pm), because of the effects of circadian rhythms. Work which is physically or mentally demanding, monotonous or requires high vigilance

can lead to fatigue which will be worsened by night work. Night work combined with extended hours is extremely

hazardous in terms of sleep, debt and fatigue, and may result in an increased risk of accidents at work.

**Table 7:** Percent distribution of respondents regarding night shifts schedule n=60

S. No	Items	Young group	Old group	Total
A	Permanent nightshift	0	0	0
B	A single block of night duty per year	12 (39.6%)	19 (63%)	31(51.6%)
C	Occasional blocks of night duty per year	14 (46%)	7 (23%)	21 (35%)
D	A block of nights each month	3 (10%)	3 (10%)	6 (10%)
E	One or two nights each week	1 (3.3%)	1 (3.3%)	2 (3.3%)

A critical look into data related to organization of the night shift clearly reveal that 51.6 per cent of the respondents were placed in a single block of night duty per year. 35 per cent of respondents were placed in a occasional blocks of night duty per year and respondents in a block of night shifts each month was 10 per cent Only 3.3 per cent of the respondents had to give one or two night shifts every week.

**Table 8:** Percent distribution of respondents to what extent have control do they have over the specific shifts that you work

S.No	Items	Young group	Old group	Total
A	Not at all	Nil	Nil	Nil
B	Not very much	7 (23%)	Nil	7 (11.6%)
C	A fair amount	7 (23%)	14 (46%)	21 (35%)
D	Quite a lot	7 (23%)	16 (53%)	23 (38.3%)
E	Complete	9 (30%)	Nil	9 (15%)

In addition to annualized hours there is a growing interest in self **rostering** which is time consuming to set up and often beset with teething problems, again gives staff maximum control over their working. The same pattern was seen among the lives of selected respondents. Thirty five per cent respondents had a fair amount of control over the shift

rotation and 38 per cent had quite a lot control over the specific shifts. When the female nurses have control over the shifts there is more job satisfaction. In a review of shift system in England and Wales, Jane Barton found that out of 182 hospitals some 122 different shift systems were classified and out of these no two shifts were identical with main variation in start and finish time. Fifty per cent of the results also give similar picture that respondents did have a say in the shift rotation. The respondents had control over the time while 50per cent said they had fair amount of control. The reason may be the annualized roster.

The respondents reported that they did not have much control over the specific shifts in which they worked. Even the start to finish time of the shifts was regulated by the management. The respondents did not have any control over the timings. Regarding advance notice of roster given to them, they had a 7 days' advance notice.

Sometimes while at short notice of 2 days also they had to change the roster quite a lot times, this increased their stress. A typical characteristic of shift work that make it more complicated is just nonstandard hours from a work- family perspective. There is a lot of unpredictable and unscheduled work at workspaces that operate shifts. The workers reported that in any week, they can suddenly find out that they have to work on Saturday and there is a lot of pressure to respond to these shifts scheduled on a very short notice. Similar case was seen among the respondents of the present study.

**Table 9:** Percentage of respondents on option for change in shift

S. No.	Category	Items	Young group	Old group	Total
A	Required to change roster as short notice.	Almost never	Nil	Nil	Nil
		Rarely	Nil	1 (3.3%)	1 (1.6%)
		Some-times	11 (36%)	14 (36%)	25 (41.6%)
		Frequently	14 (46%)	15 (50%)	29 (48.3%)
		Almost always	5 (16%)	-	5 (8.3%)
B	Swop shifts with colleagues	Almost never	12 (40%)	12 (40%)	24 (40%)
		Rarely	5 (16%)	5 (16%)	10 (16.6%)
		Some-times	10 (33%)	10 (3.3%)	20 (33.3%)
		Frequently	3 (10%)	3(10%)	6 (10%)
		Almost always	Nil	Nil	Nil
C	Request to work specific in shifts	Almost never	29 (96%)	29 (96%)	58 (96.6%)
		Rarely	1 (3.3%)	1 (3.3%)	2 (3.3%)

	Some-times	Nil	Nil	Nil
	Frequently	Nil	Nil	Nil
	Almost always	Nil	Nil	Nil

As evident from **Table 9** that 57 per cent of the respondents irrespective of the age group said they had to change roster at short notice frequently or almost always while approximately 41 per cent were given notice sometimes.

The option of swoping shifts with colleagues was a very good option but 40 per cent of the respondents did not use this option and 33.3 per cent, 16.6 per cent, 10 per cent used this option some times, rarely and frequently respectively. Changing of roster with colleagues mutually was the most easiest and convenient option because all being in the same

profession were known about the emergency and problem of their colleagues.

The option of requesting for a specific shift was almost never opted by 96.6 per cent of the respondents while 3.3per cent used it rarely.

As already mentioned the mutual change was better of option for them. Thus it can be said that the female nurses of both the groups did not have a say on planning their own rosters and adjusting according to their needs.

**Table 10:** Percent distribution of respondents on reasons for working in shifts n= 60

S. No.	Category	Items	Young group	Old group	Total
A	Part of the job	Not a reason for me	Nil	Nil	Nil
		reason for me	Nil	Nil	Nil
		partly reason for me	Nil	Nil	Nil
		much a reason for me	Nil	Nil	Nil
		very much a reason for me	30 (100%)	30 (100%)	60 (100%)
B	Only job available	Not a reason for me	6 (20%)	-	6 (10%)
		reason for me	-	1 (3.3%)	1 (1.6%)
		partly reason for me	1 (3.3%)	2 (6.6%)	3 (5%)
		much a reason for me	15 (50%)	2 (6.6%)	17 (28.3%)
		very much a reason for me	8 (26%)	25 (83%)	33 (55%)
C	More convenient for domestic responsibility	Not a reason for me	20 (66%)	5 (16%)	25 (41.6%)
		Reason for me	Nil	Nil	Nil
		Partly reason for	Nil	Nil	Nil
		Very much a reason for me	3 (10%)	5 (16%)	8 (13.3%)
		very much a reason for me	7 (23%)	20 (66%)	27 (45%)
D	Higher rates	Not a reason for me	Nil	Nil	Nil
		reason for me	Nil	Nil	Nil
		partly reason for me	Nil	Nil	Nil
		much a reason for me	Nil	Nil	Nil
		very much a reason for me	30(100%)	30 (100%)	60 (100%)

There are many reasons why people opt for shift work. The 100 per cent respondents said that it is a part of the job and it

is true that health care services and specially nursing is a 24 x 7 job and so they have such type of mental makeup for

working in shifts.

In the other response, 50 per cent of the young respondents said that it was the only job available and so it was partly a reason for working in shifts while for 83 per cent of the old group respondents said that this was very much a reason for their working in shift. 60 per cent of the young respondents also were of the opinion that shift work was not convenient for domestic responsibilities while old group found it a reason for working in shifts (66%) but the last main reason for working in shift was higher pay and government job which scored 100 per cent from both groups.

Having deep insight into the general background on shift pattern of the respondents they were asked about advantages and disadvantages of the shift work. Some of the common ones have been noted below

**Table 11:** Percent distribution of respondents preferring to give up working in shifts for day-time job

S. No	Items	Young group	Old group	Total
A	Definitely not	–	–	–
	Probably no	–	–	–
	May be	13 (43%)	17 (23%)	30 (50%)
	Probably yes	13 (43%)	11 (37%)	24 (40%)
	Definitely yes	4 (13%)	2 (7%)	6 (10%)

Forty per cent of the respondents may probably quit the shift job for day job. While 50 per cent said may be i.e. they were uncertain about whether to quit or not. As is seen in previous table no. 4.1.18 that disadvantages weighed more than advantages and thus the respondents could change to full day job if time permits and only 10 per cent were very definite of getting into a full day time job. When comparing both the groups the higher per cent of young respondents were more ready for quitting shift job for day time job.

**Table 12:** Percent distribution of respondents view on advantages and disadvantages of shift work

S. No	Items	Young group	Old group	Total
A	Definitely not	14 (46.6%)	12 (40%)	26 (43%)
B	Probably not	10 (33%)	14 (33%)	24 (40%)
C	May be	6 (20%)	4 (13%)	10(16.6%)
D	Probably yes	Nil	Nil	Nil
E	Definitely yes	Nil	Nil	Nil

The advantages of shift work does not outweigh the disadvantages as opined by the respondents. The disadvantages were more in comparison to the advantages, 43 and 40 per cent of the respondents said definitely not and probably not, respectively.

After receiving response of the respondents regarding advantages and disadvantages of shift system, and effort was

made to know job satisfaction of the nurses with shift system. The response was taken on a seven point continuum ranging from strongly disagree to strongly agree with a score range of 30 -150. The higher the score, higher the job satisfaction. The results pertaining to these are presented in table 13.

As is evident from Table 13 it is clear that general job satisfaction was 100 for young group while it was 91 for the old group but if we see each parameter it can be said that a score of 20 and 12 was calculated for disagree, and disagree slightly satisfied with the job and similar trend was also seen with old group.

A score of 40 'neutral' thinking of quality the job for young group makes the uncertainty of quitting job for full day job more clearly. While a score of 26 was calculated for agreeing to quit the job.

For the old group respondents score of 80 out of 102 was below neutral. This may be due to the length of service and adoption to the working pattern.

There were very few respondents who fell in the category of agree and strongly agree. Researches have also shown that many female nurses are quitting jobs due to problems they face at workplace and home front due to shift work.

We can thus conclude the results of this section by saying that many of our respondents talked about the problems they and their family encountered as a result of unpredictability of their shift assignments. Changes in work schedules were particularly problematic for those with less seniority. Among the dual earner families some of the parents tried to organize their work schedules so that one of the parents is at home. Thus the general information regarding shift work and discussions with the respondents have thrown light on many problems faced by them. A few major problems are taken under the section B.

**Section – B Problems of shift work and its impact on female nurses**

**Sleep related problems and its impact on female nurse**

The fatigue and sleep disturbance are closely related. The impact of disturbance in sleep effects the general feeling of shift workers. The nurses had less amount of sleep have been, discussed in the problem. In all the parameters general impact on sleep was higher than 50 per cent.

As is clearly evident from Figure 1 It can be said the amount of sleep and disturbed sleep has a great impact on the shift workers the highest impact on general feeling of tiredness was amongst old group respondents (134), followed by impact on intended sleep (89) lowest score was 66 for impact on difficulty in falling sleep. While the young group respondents were having its highest impact on normal amount of sleep(98), second highest score i.e. 97 was for impact on intended sleep. The lowest impact was on difficulty in falling sleep (64).

**Table 13:** Mean score of respondents regarding general job satisfactions with shift system

S. No.	Category	Young group								Old group							
		Disagree strongly	Disagree	Disagree slightly	Neutral	Agree slightly	Agree	Agree strongly	Total	Disagree strongly	Disagree	Disagree slightly	Neutral	Agree slightly	Agree	Agree strongly	Total
A	Generally speaking, I am very satisfied with this job	0	20	12	20	40	6	14	112	0	22	18	8	30	6	7	91
B	I frequently think of quitting this job	0	6	30	40	0	26	0	102	0	12	30	8	30	20	0	118
C	I am generally satisfied with the kind of work I do in this job	0	0	90	0	0	0	0	90	0	6	78	4	–	–	–	88
D	Most people on this job are very satisfied with the job	4	0	45	40	5	0	0	94	0	0	27	52	15	–	–	94
E	People on this job often think of quitting	0	0	45	52	6	0	0	103	0	8	45	36	6	–	–	95

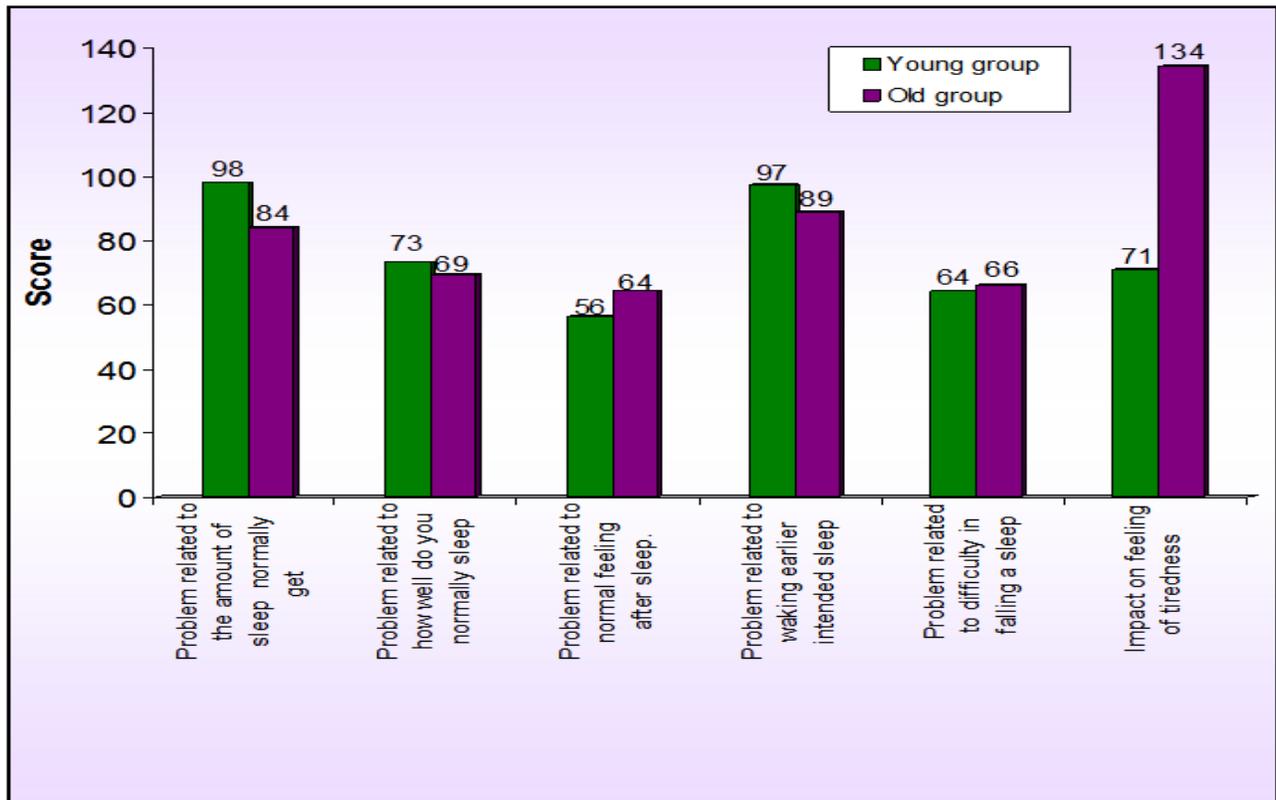


Fig 1: Overall score for problems and impact of shift work on sleep disturbance

Thus we can generalize that shift work does affect the sleep pattern of an individual. It is argued that just as sleep pattern adjustment starts to occur, it is time to rotate to the next shift. Some schedule designers feel that a longer shift rotation should be arranged, so that time the worker spends from two weeks to one month on the same shift would allow the Circadian rhythm to adjust. A problem occurs when the worker reverts to a normal day/ day night schedule on days off, thus possibly cancelling any adaptation. Yet we can say the individual difference and preference play an important role in the problem of sleep and fatigue due to shift work and its impact on the respondents.

Table 14: Overall score for problems and impact of shift work on health and wellbeing of the respondents

S. No.	Category	Young group	Old group
	Problems		
	<b>Problems</b>		
A	Frequency of expercing health problems	1079	807
B	Suffering from disease (diagnose by doctor)	47	84
	<b>Impact</b>		
C	Medications for prolonged periods	199	39
D	Somatic anxiety	629	588
E	Cognitive anxiety	637	596

It is generally agreed that some features of shift system can Influence the extent of wellbeing and health problems experienced by the workers. The overall health and wellbeing problems was very high in young group as compared to the old group with a total score of 1079 and 807 respectively.

Thus the impact of shift work was also higher in the young group than the old group respondents. The interpersonal conflicts and anxiety are also common problems of shift workers. Feeling of isolation, loneliness were also some of the effects of anxiety due to the shift work of female nurses in young age group. Thus we can say that age was affecting factor that the health and wellbeing of the selected respondents of the study.

**3 Impact of shift work on female nurses related to social and domestic situation** the respondents expressed that shift work interfered more with family related problems because of the lack of synchrony between their hours on job and their families daily routine. The most serious impact was for those who worked evenings and night shifts because they were less able to spend time with their children, especially small children who go to bed early. (Fig.2)

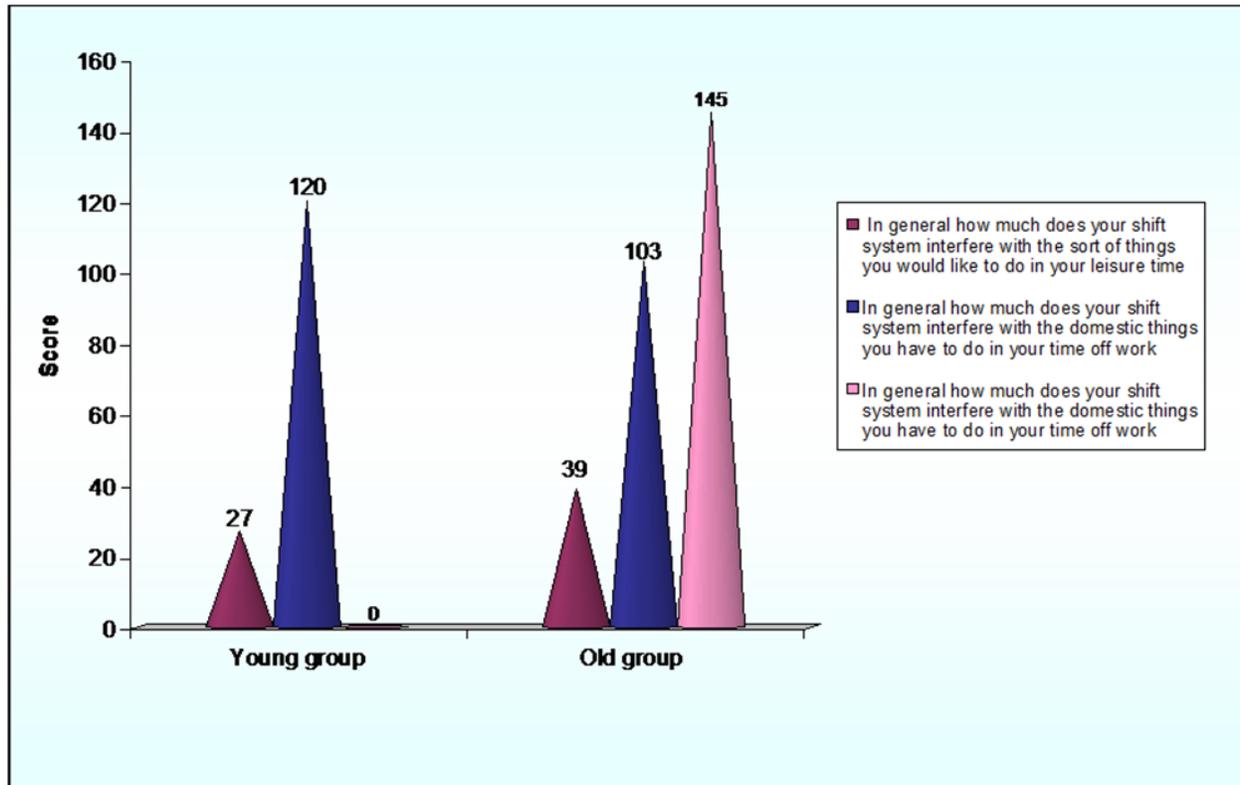


Fig. 2: Overall scores for problems and impact of shift work in leisure and domestic activity

Thus we can say that there are physiological changes which shift work induces, but shift work also involves significant social desynchronization, involving working at times and on days that makes it difficult to maintain a balanced and social life. Shift work therefore is an important, but largely overlooked determinant of social and domestic life of the respondents of the study

### Conclusion

Shift work schedules should be devised based on needs and work load, recommended as this study showed, fixed and regular rotation schedules caused fewer problems for shift workers. It is therefore recommended that in each hospital a fixed regular shift schedule is devised. Hospital administrations should realize that enhancing the personal and professional well-being of shift workers is an effective contribution to the quality of patient care.

Hence we can conclude that acute and chronic sleep loss, whether partial or complete, substantially impairs physical, cognitive, and emotional functioning in human beings. In addition, the influence of circadian physiology dictates that wakefulness and alertness are at optimal levels during daylight hours, and that sleepiness is maximized during the night. Failure to adhere to this need for both adequate amounts of and appropriately timed sleep results in an increase in sleepiness and fatigue levels and a decline in waking function. This is likely to be relevant to performance of daily tasks, particularly in the context of occupational settings.

There are well over a hundred studies in the literature on sleep loss and fatigue, specifically in healthcare professionals that have examined specific effects on a variety of different performance measures.

### References

1. Alward Ruth R. Night Shift Work Related Problems in Young Female Nurses in Japan. *Journal of Occupational Health*. 2008; 43:156-161.
2. Coffey Nachreiner F, Lu'beck-Ploger H. A process model of shift work and health. *Journal of Occupational Health Psychology*. 1998; 4:207-218.
3. D R Gold and S Rogacz, 2008. The impact of shift and night work on Sleep. *Applied Ergonomics*, 27: 9–16.
4. Giebel Haider, Monk, Taylor. Shift Work Sleep Disorder. Excessive Sleepiness Awareness Week 2008; 11:60-67.
5. Klag, Bradley. Occupational stressors and coping as determinants of burnout in female hospice nurses. *Journal of Advanced Nursing*. 2004; 33:396-405.
6. Maasen Meers, Verhaegan. Association between overtime and psychological health in high reward jobs. *Work and Stress* 1978; 15:227-240.
7. Muecke. A study of the social support and job stress among nursing staff. *VGH Nursing*. 2005; 24:59-68.
8. Muecke. Main and interactive effects of shiftwork, age and work stress on health in an Italian sample of healthcare workers. *Applied Ergonomics*. 2007; 39:650-655.
9. Perrucci, Mac Dermid. Shift work and disturbed sleep/wakefulness. *Occupational Medicine*. 2007; 53:89-94.
10. Pisarski A. Shift Work Health Consequences. *International Encyclopedia of Ergonomics and Human Factors*. 2008; 2:1359-1361.
11. Rutenfranz, Knauth, Angersbach, 1981. Rotating Shiftwork. *Journal of the Ontario Occupational Health Nurses Association*. 12: 26- 29.
12. Sartori. Main and interactive effects of shiftwork, age

- and work stress on health in an Italian sample of healthcare workers. *Applied Ergonomics*. 2007; 39:645-666.
13. Sheila H, Chandrawanshi. *Mental Health Disorders with Workplace Consequences*. The Centre for Psychiatric Rehabilitation. 2004; 25:20-26.
  14. standard Shiftwork Index - Working Time Society, [www.workingtime.org/resources/Documents/SSIQUES.doc](http://www.workingtime.org/resources/Documents/SSIQUES.doc).
  15. Taylor DL, Colligan MJ, Skjei EW, Polly SJ. *Health Consequences of Shiftwork*. National Institute for Occupational Safety and Health. 1997; 14:56- 60.
  16. Terry DJ, Callan VJ, Sartori G. *Nursing stress: the effects of coping strategies and job satisfaction in a sample of Australian nurses*. *Journal of Advanced Nursing*. 2001; 31:681-688.