



ORIGINAL RESEARCH ARTICLE- CLINICAL STUDY

ASSESEMENT OF QUALITY OF LIFE (WHOQOL-BREF) IN NIGHT SHIFT WORKERS

(RATRIJAGARANA)

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ABSTRACT

Background: WHOQOL- BREF is assessment of a multidimensional concept incorporating an individual's perception of health status, which is embedded in a physical, psychological, social, and environmental context. Various types of health issues are common around the globe due improper sleep pattern and life style. Sleep deprivation can cause ill effects both physically and psychologically. *Ratrijagarana* is *rooksha* which causes increase in *vata* and *divaswapna* causes *snigdhatata* (increases *kapha*) in our body. Out of total global employees, nearly 1/5th of them are shift workers. In the present scenario, our society demands round the clock services in order to meet their needs. The present study was opted to analyse the health status of the individuals who do night shift (*ratrijagarana*) due to their work pattern. **Objective:** To Evaluate the Health Status through WHO-QOL BREF questionnaire in night shift workers. **Methods:** 208 night shift workers were selected for this Survey study. WHO-QOL BREF Questionnaire was used for assessment of health status. (As per inclusion and exclusion criteria) **Results:** Among 208 subjects 89.9% had moderate health status when assessed with the WHO QOL Bref questionnaire. Maximum of 28.8 % had 56 percent of physical health status, 27.9% had 56 percent of psychological health status, 30.3% had 75 percent of socio-economic health status, 30.8% had 50 percent of environmental health status. The Chi-square test is significant ($p < 0.0005$) with WHO Bref questionnaires. **Conclusion:** Health status of night shift workers was moderate. Night shift working (*ratrijagarana*) has an impact on the health status of the individual by decreasing the physical, psychological and socio-economic health. Circadian misalignment is the cause for Shift Work Sleep Disorder (SWSD) and lead to Cognitive risks, Health risks and Social Risks of the individuals. **Key words:** Health status, Ratrijagarana, Night shift workers, WHOQOL-BREF

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INTRODUCTION

State of wellbeing without any *dukha* (misery) is *arogya* (health) and *vikara* (disease) is quiet opposite to *arogya*(health) [1]. State of a body which is devoid of abnormality and feeling of healthiness itself is *swasthya* [2]. *Acharya sushruta* opines equilibrium state of *dosha, agni, dhatu* and *mala* in body along with mental, sensory, spiritual pleasantness and happiness. [3].

WHO defines health as, “A state of complete physical, mental & social well-being not merely an absence of disease or infirmity” [4]

Nidra (sleep) is an important phenomenon to provide rest and relaxation to the body, mind and senses which get tired and exhausted. *Ahara* (food), *nidra* (sleep) and *brahmacharya* (abstinence) are given prime importance in our Ayurvedic classics under the name of “*trayopastambha*” the sub pillars of life, they support our *shareera*(body) [5]. *Nidra* is considered as one among the *adharaneeya vegas* [6]. Benefits of sleep includes *sukha* (Pleasure), *pushti* (Nourishment and growth), *bala* (Strength and immunity), *vrishtataa* (Potency and sexual vigour), *gyaanam* (Knowledge and intellect) & *jeevitam* (Good life span, longevity of life) are the desired impact of qualitative and quantitative *nidra* [7]. Suppression of *nidra vega* results in *grumbha*

(Yawning), *anga marda* (Malaise), *tandra* (Drowsiness), *shiroruja* (Headache), *akshi gourava* (Heaviness in eyes) [8]. Sleep is the golden chain that ties health and body together. The best time for sleep is night.

Ratrijagarana is *Rooksha* which causes increase in *Vata*, and day sleep causes *Snigdghata* which causes increases in *Kapha* [9]. Hence both *Ratrijagarana* (night awakening) and *Divaswapna* (day sleep) are contraindicated. Hence night sleep is the one all should follow because night is the best time for sleep. *Ratrijagarana* is mentioned among one of the *Vata Prakopa Hetu* [10]. Those who are indulge in Night shift (*Ratrijagarana*) can affect with *Vata* and *Pitta* disorders [11].

Out of total global employees, nearly 1/5th of them are shift workers. In the present scenario, our society demands round the clock services in order to meet their needs. Hence to meet this, long and variable working hours for the shift workers lead to inadequate sleep. Rotating shift workers are exposed to unstable sleep pattern due to frequent disruption of circadian rhythm. When they work against their natural sleep cycle, they have more ill effects on physical and psychological health [12]. In general it can be understood that *nidra* gives a rest which is essentially required for the

strained senses, Mind and soul. Thus, the sleep is vital for healthy brain activity during the day.

Sleep deprivation causes decrease in attention, decrease in working memory, decrease in decision making, decrease in vigilance, visual tasks may be affected, mind-body co-ordination may be affected. Circadian rhythms are endogenous rhythms with a periodicity of approximately 24 hours. These rhythms are synchronized to the physical environment by social and work schedules. The most common symptoms of these disorders are difficulties with sleep onset and/or sleep maintenance and excessive sleepiness that are associated with impaired social and occupational functioning^[13].

Sleep disorders which in turn affects physical and psychological health which is becoming a burning crisis in the society and are increasing day by day due to life style and job pattern of people. The working pattern of job too has promoted irregular and improper sleep habits which is becoming increasingly prevalent amongst the people^[14]. People are engaged in night awakening for several reasons. In this present study, Health status of nightshift workers (*ratrijagarana*) due to their job pattern are analysed.

Objective: To Evaluate the Health Status through WHO-QOL BREF questionnaire in night shift workers.

Materials and methods

Study Design: Retrospective Survey study. WHOQOL-BREF health assessment Questionnaire on health status was used for analysing the health status of individuals (as per inclusion and exclusion criteria). Questionnaire was translated to the regional language (Kannada) of the subjects so that it made easy for them to understand.

Source of Data: Volunteers those who were having night duty shifts in an industry and hospitals in Hassan district were selected. Night shift workers of either gender who are fulfilling the criteria of inclusion are selected irrespective of gender, caste, creed etc.

Methods of collection of data: 208 night shift workers who are doing night shift job as per inclusion criteria are selected and their health status were analysed.

Inclusion Criteria: Age-18-50 years, Gender-Both, Night duty shifts for at least 7-15 days in a month, Subjects working at night shift at least 6-8/24 hours, Subjects working at night shift for a period of not <6 months

Exclusion criteria: Any Systemic and Psychological illness, Sleep Related Disorders, Those who are under medications

Sampling method: Purposive sampling

Sample size: 208

Sample size estimation:

Mean population (μ_0):

100%

Mean, study group (μ_1): 101.1%
 Probability of type I error (α): 0.05
 Probability of type II error (β): 0.2
 Power: 0.8
 Total sample size: 196

$$N = \sigma^2 (z_{1-\beta} + z_{2-\alpha/2})^2 / (\mu_0 - \mu_1)^2$$

$$N = (5^2 (0.84 + 1.96)^2) / (100 - 101)^2$$

N= 196

For the study 208 samples were used.

Assessment Criteria: Health status was analyzed from the score obtained by the questionnaire.

Subjective Parameters: Health assessment questionnaire - WHO-QOL BREF

Statistical Analysis:

Software 'Statistical Package for Social Sciences', Version 20 was used for the statistical analysis. Data were analysed by using WHO QOL tool, percentage, and proportions.

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SCORING PATTERN OF THE QUESTIONNAIRE

1) WHOQOL-BREF ^[15]

a) Following questions from 1-2 and 5-25 belonging to various domains of WHO-QOL was positively graded as shown in the table

Table: 01

WHO-QOL POSITIVE SCALE GRADING

Not at all	1
A little	2
A moderate amount	3

Very much	4
An extreme amount	5

b) Questions 3, 4 and 26 were graded negatively as shown in the table

Table: 02

WHO-QOL NEGATIVE SCALE GRADING

Not at all	5
A little	4
A moderate amount	3
Very much	2
An extreme amount	1

Following are 26 questions containing 4 domains like, physical, psychological, socio-economic and environmental.

The question 1 and 2 are two subjective questions with positive scale grading

1. Q.1 How would you rate your quality of life?
2. Q.2 How satisfied are you with your health?

The remaining 24 questions are taken for the calculation

Domain 1

3. Q.3 To what extent do you feel that (physical) pain prevents you from doing what you need to do?
4. Q.4 How much do you need any medical treatment to function in your daily life?
5. Q.10 Do you have enough energy for everyday life?

6. Q.15 How well are you able to get around?
7. Q.16 How satisfied are you with your sleep?
8. Q.17 How satisfied are you with your ability to perform your daily living activities?
9. Q.18 How satisfied are you with your capacity for work?

Domain 2

10. Q.5 How much do you enjoy life?
11. Q.6 To what extent do you feel your life to be meaningful?
12. Q.7 How well are you able to concentrate?
13. Q.11 Are you able to accept your bodily appearance?
14. Q.19 How satisfied are you with yourself?
15. Q.26 How often do you have negative feelings such as blue mood, despair, anxiety, depression?

Domain 3

16. Q.20 How satisfied are you with your personal relationships?
17. Q.21 How satisfied is you with your sex life?
18. Q.22 How satisfied are you with the support you get from your friends?

Domain 4

19. Q.8 How safe do you feel in your daily life?

20. Q.9 How healthy is your physical environment?
21. Q.12 Have you enough money to meet your needs?
22. Q.13 How available to you is the information that you need in your day-to-day life?
23. Q.14 To what extent do you have the opportunity for leisure activities?
24. Q.23 How satisfied are you with the conditions of your living place?
25. Q.24 How satisfied are you with your access to health services?
26. Q.25 How satisfied are you with your transport?

Statistical Calculation:

The WHOQOL-BREF (WHO Quality of Life-Bref) produces four domain scores. There are also two items that are examined separately: question 1 asks about an individual's overall perception of quality of life and question 2 asks about an individual's overall perception of his or her health. Domain scores are scaled in a positive direction (i.e. higher scores denote higher quality of life). The mean score of items within each domain is used to calculate the domain score. Mean scores are then multiplied by 4 in order to make domain scores comparable with the scores used in the WHOQOL-100, and subsequently transformed to a 0-100 scale, using the formula below.

A method for the manual calculation of individual scores is below:

Physical domain= ((6-Q3) + (6-Q4) + Q10 + Q15 + Q16 + Q17 + Q18) x4.

Psychological domain= (Q5 + Q6 + Q7 + Q11 + Q19 + (6-Q26)) x4.

Social Relationships domain= (Q20 + Q21 + Q22) x4.

Environment domain=(Q8 +Q9 + Q12 + Q13 + Q14 + Q23 +Q24 +Q25) x4.

Response scales: For this WHOQOL, there are 4-5 point response scales concerned with the intensity Capacity, frequency & evaluation of states or behaviour. So, these facts were also assessed.

Table No: 3

METHOD FOR CONVERTING RAW SCORES TO TRANSFORMED SCORES ^[16]

DOMAIN 1			DOMAIN 2			DOMAIN 3			DOMAIN 4		
Raw Score	Transformed scores		Raw Score	Transformed scores		Raw Score	Transformed scores		Raw Score	Transformed scores	
	4-20	0-100		4-20	0-100		4-20	0-100		4-20	0-100
7	4	0	6	4	0	3	4	0	8	4	0
8	5	6	7	5	6	4	5	6	9	5	6
9	5	6	8	5	6	5	7	19	10	5	6
10	6	13	9	6	13	6	8	25	11	6	13
11	6	13	10	7	19	7	9	31	12	6	13
12	7	19	11	7	19	8	11	44	13	7	19
13	7	19	12	8	25	9	12	50	14	7	19
14	8	25	13	9	31	10	13	56	15	8	25
15	9	31	14	9	31	11	15	69	16	8	25
16	9	31	15	10	38	12	16	75	17	9	31
17	10	38	16	11	44	13	17	81	18	9	31
18	10	38	17	11	44	14	19	94	19	10	38
19	11	44	18	12	50	15	20	100	20	10	38
20	11	44	19	13	56				21	11	44
21	12	50	20	13	56				22	11	44
22	13	56	21	14	63				23	12	50
23	13	56	22	15	69				24	12	50
24	14	63	23	15	69				25	13	56
25	14	63	24	16	75				26	13	56
26	15	69	25	17	81				27	14	63

27	15	69	26	17	81		28	14	63
28	16	75	27	18	88		29	15	69
29	17	81	28	19	94		30	15	69
30	17	81	29	19	94		31	16	75
31	18	88	30	20	100		32	16	75
32	18	88					33	17	81
33	19	94					32	17	81
34	19	94					35	18	88
35	20	100					36	18	88
							37	19	94
							38	19	94
							39	20	100
							40	20	100

Table 4 - Steps for checking and cleaning data and computing Domain scores ^[17]

Steps	SPSS syntax for carrying out data checking, cleaning and computing total scores
1. Check all 26 items from assessment have a range of 1-5	RECODE Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10 Q11 Q12 Q13 Q14 Q15 Q16 Q17 Q18 Q19 Q20 Q21 Q22 Q23 Q24 Q25 Q26 (1=1) (2=2) (3=3) (4=4) (5=5) (ELSE=SYSMIS). (This recodes all data out with the range 1-5 to system missing).
2. Reverse 3 negatively phrased Items	RECODE Q3 Q4 Q26 (1=5) (2=4) (3=3) (4=2) (5=1). (This transforms negatively framed questions to positively framed questions)
3. Compute domain scores	COMPUTE DOM1=MEAN.6(Q3,Q4,Q10,Q15,Q16,Q17,Q18)*4. COMPUTE DOM2=MEAN.5(Q5,Q6,Q7,Q11,Q19,Q26)*4. COMPUTE DOM3=MEAN.2(Q20,Q21,Q22)*4. COMPUTE DOM4=MEAN.6(Q8,Q9,Q12,Q13,Q14,Q23,Q24,Q25)*4.

	<p>(These equations calculate the domain scores. All scores are multiplied by 4 so as to be directly comparable with scores derived from the WHOQOL-100. The [.6Z in [mean.6Z specifies that 6 items must be endorsed for the domain score to be calculated).</p>
<p>4. Delete cases with >20% missing Data</p>	<p>COUNT TOTAL=Q1 TO Q26 (1 THRU 5). (This command creates a new column [totalZ. [TotalZ contains a count of the WHOQOL-100 items with the values 1-5 that have been Endorsed by each subject. The [Q1 TO Q26Z means that consecutive columns from [Q1Z, the first item, to [Q26Z, the last item, are included in the count. It therefore assumes that data is entered in the order given in the assessment). FILTER OFF. USE ALL. SELECT IF (TOTAL>=21). EXECUTE. (This second command selects only those cases where [totalZ, the total number of items completed, is greater or equal to 80%. It deletes the remaining cases from the data set).</p>
<p>5. Check domain scores</p>	<p>DESCRIPTIVES VARIABLES=DOM1 DOM2 DOM3 DOM4 /STATISTICS=MEAN STDDEV MIN MAX. (Running descriptives should display values of all domain scores within the range 4-20).</p>
<p>6. Save data set</p>	<p>Save data set with a new file name so that the original remains intact.</p>

Observational & Results

208 night shift workers were selected and their health status was analysed using the questionnaire in the present study. The following observations were found.

Male subjects were 53.4% and 46.6% were female subjects. Majority of 72.6% were between the age group of 20-30 years. In occupation 51.4% subjects were Factory workers and 48.6% subjects were Medical staff workers. In Diet 10.6% were pure vegetarians and 89.4% were having mixed diet pattern.

Habits wise distribution of subjects: 82.2% were having the habit of taking tea, 44.2% were having the habit of taking coffee, 34.1% were habituated for taking alcohol, 19.7% were having the habit of chewing tobacco and 39.9% were smokers. Majority of the subjects were habituated for tea in the present study.

Distribution of work experience in months: 58.7% were having an experience of More than 2 years in the shift job pattern, 26% were having 6months- 2 years of job experience and 15.4% were having Less than 6 months of experience as night shift workers.

Night shifts schedule wise Distribution of subjects: 15.4% were working for less than 1 week, 26% were working for 1 week continuously and 58.7% were working for more than 1 week continuously.

Duration of night duty time wise distribution of subjects: 40.4% were working for 6-8 hours,

23.1% were working for 10 hours and 36.5% were working for more than 10 hours in night shifts.

Distribution of time in overtime duty: 13% were doing overtime duty for 1/2- 1 hour, 5.8% were doing overtime duty for 8 hour and 81.3% were not doing overtime at all.

Distribution of short nap/ sleep duration in night shifts: 51.4% of the individuals were not taking any short naps (sleeping in between) during their night shifts. 3.4% of the individuals were taking a nap of ½ -1 hours, 13.9% were taking naps of 1-2 hours, 28.8% were taking naps of 2-3 hours and 2.4% were taking 3-4 hours of naps (sleeping in between) during their night shifts.

Distribution of day sleep duration after night shift: 2.4% subjects were sleeping around 7-8 hours during the daytime after their night shifts, 1.0% were sleeping about 6-7 hours, 17.8% were sleeping about 5-6 hours , 46.2% were sleeping about 4-5 hours , 31.3% were sleeping less than 3-4 hours after their night shifts and only 1.4% were sleeping less than 2-3 hours. In the present study, majority of the subjects took around 4-5 hours' sleep during daytime after their night shifts.

Distribution of day sleep –without/ after having breakfast after night shift: 45.2% subjects were sleeping without having breakfast and 54.8% were sleeping after having breakfast.

Distribution of holidays in a month: 24.3% of the individuals were getting less than 4 holidays, 67.3% were getting 4-6 holidays in a month and 8.2% were getting more than 6 days holidays in a month. Majority of the subjects were getting 4-6 holidays in a month.

Sleep in an average per day wise distribution of subjects: 23.1 % of the subjects were taking an average of less than 6 hours of sleep per day, 67.3% were taking sleep about 6-8 hours and 9,6% was sleeping more than 8 hours per day.

Symptoms of Shift Work Sleep Disorder (SWSD) ^[18] such as Fatigue was observed in 87 subjects, Reduced Quality of sleep in 131subjects, Inadequate sleep in 111subjects, Falling asleep at work in 106 subjects, Insomnia in 63 subjects, Desire to nap in 115subjects, Impaired mental acuity in 63 subjects, Irritability in 114 subjects, Reduced performance in work in 106 subjects, Loss of memory in 68 subjects and Loss of concentration in 59 subjects was observed among 208 subjects.

Results

THE TWO SUBJECTIVE QUESTIONS OF WHOQOL-BREF

1. Rating the quality of life:

Table 5: RATING THE QUALITY OF LIFE

Option	Frequency	Percentage
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Very dissatisfied	1	0.5
Dissatisfied	19	9.1
Moderate	82	39.4
Satisfied	103	49.5
Very satisfied	3	1.4

Among the 208 subjects maximum of 49.9% were satisfied with their quality of life and 39.4% were moderately satisfied with their quality of life.

2. Health satisfaction:

Table 6: Health satisfaction

Option	Frequency	Percentage
Very dissatisfied	1	0.5
Dissatisfied	19	9.1
Moderate	86	41.3
Satisfied	101	48.6
Very satisfied	1	0.5

Among 208 subjects 48.6 % were satisfied with their health and 41.3 % were moderately satisfied with their health

Total WHOQOL-BREF health status:

Table 7: Total WHOQOL-BREF health status

QOL Health Status	Frequency	Percentage
Poor	1	0.5
Moderate	187	89.9
Good	20	9.6

Among 208 subjects 0.5% were had poor health status, 89.9% had moderate health status and 9.6% were had good health status

when assessed with the WHO QOL Bref questionnaire.

Table 8: different domain health status

Domains	Maximum percentage among 208 subjects
Physical health status percentage	Maximum of 28.8 % had 56 percent of physical health status.
Psychological health status percentage	Maximum of 27.9% had 56 percent of psychological health status.
Socio-economic health status percentage	Maximum of 30.3% had 75 percent of socio-economic health status.
Environmental health status percentage	Maximum of 30.8% had 50 percent of environmental health status.

DISCUSSION

Age: In this study, the individuals were in the age group of 20-50years. 72.6% of individual's were age group of 20-30years. Nowadays mostly young age people are doing shift works.

Gender: In the study 53.4% were males and 46.6% were females. This is because; in factory more male subjects were seen and in hospitals more female workers are doing night shifts.

Habit: 82.2% subjects were having habit of talking tea; the caffeine present in tea can act as a nerve stimulant. That may be the reason why most of the individuals were taking tea in order to avoid sleep during the duty time.

39.9% had the addiction like smoking and 19.7% had the addiction of tobacco chewing etc.

The addiction may be the cause for decrease in the quality of life of the individual by disturbing their health and socio-economic condition.

Overtime duty: 81.3% subjects were not doing overtime at all and 13% were doing overtime duty. In hospitals during change in shift subjects were doing over duty ½-1 hour and some subjects were continuing day shift after night shift. The overtime duty may decrease the quality of life of the individual by their disturbing their physical health and psychological health.

Short naps (sleeping in between): 51.4% of the individuals were not taking any short naps during their night shift. That may be because of their hectic work schedules which were seen more in factory workers. But 3.4% were taking a short nap of 30-60 minutes and 13.9

% were sleeping for 1-2 hours which was seen in hospital workers.

Day sleep duration after night shift (*divaswapna*): 46.2% subjects were sleeping around 4-5 hours during the daytime after their night shifts. 31.3% were sleeping less than 3-4 hours after their night shifts and only 1.4% was sleeping less than 2-3 hours. For those who are doing *ratrijagarana*, Day sleep (*divaswapna*) for half of that period (of wakefulness) is desirable. Since the working hours vary from 8-10 hours, 4-5 hours of day sleep is a must for the shift workers.

Work experience: 58.7% subjects were having an experience of More than 2 years in the shift job pattern, 26% were having 6months- 2 years of job experience and 15.4% were having Less than 6 months of experience as night shift workers. Age group (20-30 years) may be one of the reasons, as they may enter the shift works at the age of 23 or 24 years.

Average working hours (shift) per day: Among the shift workers, 3.4% were working for less than 6 hours, 69.2% were working for 6-8 hours and 27.4% were working for more than 8 hours in day shifts. This may be because their working hours vary from 8-10 hours.

Holidays in a month: 24.3% of the individuals were getting less than 4 holidays, 67.3% were getting 4-6 holidays in a month and 8.2% were getting more than 6 days holidays in a month. Majority of the subjects were getting 4-6

holidays in a month. This may be because the permitted days of leaves were limited for individuals in their respective working area.

Average sleeping hours per day: 3.1 % subjects were taking an average of less than 6 hours of sleep per day, 67.3% were taking sleep about 6-8 hours and 9.6% was sleeping more than 8 hours per day. Day sleep duration is minimal when compared to normal sleeping hours for the subjects.

Discussion on Symptoms of Shift Work Sleep Disorder (SWSD):

Fatigue was agreed in 87 subjects, Reduced Quality of sleep was agreed in 131subjects, Inadequate sleep was agreed in 111 subjects, Falling asleep at work was agreed in 106 subjects, Insomnia was agreed in 63 subjects, Desire to nap was agreed in 115 subjects out of 208 subjects, Although the longer a person works, the more they will tired, it is also vital to relate work to the time of day at which it is performed as, according to Fletcher and Dawson (1997), fatigue is observed faster during night work compared with day work^[19].

Self-reported short sleep duration, poor sleep quality, impaired ADL score and insomnia are common among US workers especially among night shift workers. (Yong, Lee C.et all 2016)^[20].

Impaired mental acuity was agreed in 63 subjects, Irritability, was agreed in 114 subjects, Reduced performance in work, was agreed in 106 subjects, Loss of memory was agreed in 68 subjects and Loss of concentration was agreed in 59 subjects out of 208 subjects. This may be due to *vata prakopa* caused by *ratrijagarana*, Irregular timings of sleep, work pressure in night shift and Circadian misalignment which Lead to Cognitive risks, Health risks and Social Risks of the individuals. [21].

WHOQOL-BREF: The quality of life assessment questionnaire of WHO consisted of 26 questions with two subjective questions likely the rating the quality of life and rating the satisfaction of the health [22].

i) Rating the quality of life:

39.4% of moderate quality of life was seen among the subjects of night shift workers.

It implies that, night shift (*ratrijagarana*) has an impact on the quality of life and working for long time decreases the quality of the individual.

ii) Rating the health satisfaction:

41.3% of moderate health satisfaction was seen among the subjects of night shift workers.

It implies that, night shift (*ratrijagarana*) has an impact on the health and working for long

time decreases the health and consequently the health satisfaction reduces.

1. Physical domain of the WHOQOL-BREF: The question of the physical domain of WHO Brief implies the physical health of the individual with 7 questions.

Among 208 subjects maximum of 28.8 % had 56 percent of physical health status.

a) Physical pain preventing the activity: Out of 208 subjects, 56 subjects were suffering from more and 118 suffering with moderate type of physical pain.

It implies that night shift (*ratrijagarana*) has an impact on physical pain and working for long time causes some sort of physical discomfort preventing normal physical activities of the individuals. Due to *nidra vegadhaarana/ratrijagarana* there will be *vata prokopa* which leads to *anga marda*.

It has been observed by the researches that shift workers needed more physical efforts to complete their work and reported being more physically tired. (Kaliterna LL et al. 2004) [23].

Fatigue accumulates faster during night work compared with day work. (Fletcher and Dawson.1997) [24].

b) Need of medical treatment for the daily life:

Out of 208 subjects, 59 sample required medical treatment very much and 104 sample required medical treatment moderately.

It implies that night shift (*ratrijagarana*) causes various health disturbances which makes a need of medical treatment for the daily routine work in the individuals.

Periodic checks are important tools aimed at detecting early signs of difficulty in adjustment or intolerance that may require prompt intervention both at the organizational and the individual level.

Furthermore, advances in clinical diagnosis, pharmacology and rehabilitation now offer better possibilities for the treatment of some diseases (e.g. peptic ulcer, hypertension, ischaemic heart diseases, metabolic and hormonal disorders) (Giovanni Costa.2003) [25].

c) Energy for daily activity:

Out of 208 subjects, 16 subjects had less energy and 102 subjects had moderate energy for everyday life.

It implies that night shift (*ratrijagarana*) decreases the energy required for daily activity. Wellbeing status of individual decreases because of *ratrijagarana*.

Reduced nourishment of *Dhatu*s makes a person feel loss of energy in the work.

d) Ability to get around: Out of 208 subjects, 92 subjects had moderate ability to get around with the surrounding.

It implies that night shift (*ratrijagarana*) decreases the ability of adjustment and the ability to cope up with the environment. This

may be due to decrease energy and decreased health status of the individuals.

e) Sleep satisfaction: Out of 208 subjects, 65 subjects were dissatisfied and 78 subjects were moderately satisfied with sleep.

It implies that night shift (*ratrijagarana*) decreases the sleep satisfaction, hence disturbances in the normal physiological functions of the body is seen. This may be due to the improper diet, continuous night shifts, more work pressure, and irregular sleeping habits in day time.

Night work causes a mismatch between the endogenous circadian timing system and the environmental synchronizers (the light/dark cycle in particular), with consequent disturbances of the normal circadian rhythms of psycho-physiological functions, beginning with the sleep/wake rhythm (Folkard S et al.1987) [26].

In the past few years investigations have found that sleep loss may have harmful consequences for our immune and endocrine systems, as well as contribute to serious illness [27].

f) Satisfaction of ability of performance in daily living activities: Out of 208 subjects, 104 subjects were moderately satisfied with their ability to perform daily living activities.

It implies that night shift (*ratrijagarana*) decreases the satisfaction of ability of

performance in daily living activities. Poorer performance especially at night in shift workers (J M Harrington.2018)^[28].

g) Satisfaction on working capacity: Out of 208 subjects, 122 subjects were moderately satisfied with their capacity for work.

It implies that night shift (*ratrijagarana*) decreases the capacity for work satisfaction.

2. Psychological domain of the WHOQOL-BREF: The question of the psychological domain of WHO Bref implies the psychological or the mental health of the individual with 6 questions. Among 208 subjects maximum of 27.9% had 56 percent of psychological health status.

Under psychological health, 99 subjects had Moderate satisfaction in enjoyment of life, 117 subjects had Moderate satisfaction in the meaningful of life, Ability to concentrate was moderate in 120 subjects, Acceptance of body appearance was moderate in 97 subjects, Self-satisfaction was moderate with 75 subjects, Increases in negative feelings was observed in 67 subjects.

Disruption in normal circadian rhythm which finally leads to Shift Work Sleep Disorder(SWSD). And resulted in short term and long term effects. So improper sleep pattern may affect thinking of mind and psychological health^[29].

Fixed night shift was associated with greater risks for sleep and mental health problems. (cheng,Wan-Ju,,et al.2016)^[30].

Manasika bhavas like *veerya* (energy), *sanjna* (recognition), *medha* (intelligence), *mana*, *shraddha*(attention or desire), *smriti*(memory), *avasthaana*(stability of mind), *harsha*(joy), *vigyaana*(knowledge), *dhairya* (courage), *chinta* were hampered due to *vata prakopa* during *ratrijagarana* in shift workers. (ELGEENA.2017)^[31].

3. Socio-economical domain of the WHOQOL-BREF: The three questions of the socio-economical domain of WHO Brief implies the inter-personal relationship of the individual with society to lead life. Among 208 subjects maximum of 30.3% had 75 percent of socio-economic health status.

Under socio economic domain, the satisfaction of personal relationship was moderate in 82 subjects, sex satisfaction was moderate in 110 subjects and friends support was moderately satisfied in 78 subjects.

The impact of long term working in nightshift decreases the socio economic status. On the other hand it has a negative impact on personal life including sexual life may be due to reduced feeling of wellbeing and increased chances of affliction with disease ailments.

Workers who engage in shift work or who work long hours can experience considerable

disruption of family and social activities as many of these rhythms of the general population are oriented around the day. Saturday and Sunday work, for example, can preclude involvement in sporting events or religious activities. Shift work can thus lead to social marginalisation^[32].

Family and marital responsibilities can be severely disrupted by shift work or long hours. Childcare, housework, shopping, and leaving a partner alone at night can all lead to marital strain and family and social health dysfunction. (J M Harrington.2018)^[33].

4. Environmental domain of the WHOQOL-

BREF: The question of this domain refers to the environmental satisfaction of the individual. It constitutes eight questions. Among 208 subjects maximum of 30.8% had 50 percent of environmental health status.

Under environmental domain, 127 subjects were moderate safe in their daily life, Healthiness of physical environment was moderate in 134 subjects, Money for daily life was moderate in 131 subjects, Information for daily life was moderate in 123 subjects, Opportunity for leisure activity was less in 56 subjects, Living place satisfaction was moderately satisfied in 115 subjects, Health service satisfaction was moderately satisfied with 124 subjects and Transportation facility

satisfaction was moderately satisfied with 122 subjects.

The impact of long term working in nightshift decreases the satisfaction of oneself and happiness and thus it reflects in the decrease in the satisfaction of environmental acceptance.

CONCLUSION

Health status of night shift workers was moderate. Night shift (*ratrijagarana*) has an impact on the health status of the individual by decreasing the physical, psychological and socio-economical health. Circadian misalignment is the cause for Shift Work Sleep Disorder (SWSD) and lead to Cognitive risks, Health risks and Social Risks of the individuals.

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