Pakistan Journal of Social and Clinical Psychology
2007, Vol.5, No. 1, 43 - 51

INFLUENCE OF SHIFT WORK AND ORGANIZATION TYPE ON ADJUSTMENT OF WOMEN IN NURSING PROFESSION

Jyoti S. Madgaonkar, Lancy D'Souza and Veena, V.
University of Mysore, India

The present study reports influence of shift work and organization type on adjustment of women in nursing profession. Bell's (1938) Adjustment Inventory (Adult form) was administered to female nurses working in shifts. Fifty-seven female nurses working in government and private hospitals served as the subjects. Results revealed that nurses working in non-shift schedules were significantly better adjusted in home, health, emotional, occupational and on the whole when compared to nurses working in shift schedules. No difference existed in the social adjustment of nurses working in shift and non-shift schedules. Nurses working in government hospitals were found to be significantly better adjusted in all the areas compared to nurses working in private hospitals. Recent advances in improving shift workers health and tolerance to shift work are also discussed.

In the present era, shift work has become more prevalent, prompted by economic considerations of employers in both traditional manufacturing and in the service sector. More recently new shift work patterns are being introduced. Research has shown that rate of absenteeism, staff turnover and burnout are consistently high in the nursing profession (Goldenberg & Waddell, 1990; Kunkler & Whittick, 1991). This profession is characteristically marked by prevalence of shift work and constant exposure to people in distress and encountering the dying patients on a regular basis. These factors have been suggested as possible contributors to high stress and low job satisfaction among hospital personnel. Nurses working on rotating shifts are prone to low job satisfaction, high job stress and low physical and mental health than nurses working on fixed shifts (Baba & Jamal, 1991). Shift and night work may have specific adverse effects on women's health in relation to family roles and hormonal and reproductive functioning (Costa, 1996). After the age of 40-50 years, health risks and sleep disturbances in shift work are found to be on an increase; this is probably related to changes in circadian rhythms. Older shift workers are found to show more sleep disturbances (Haermae, 1996). Smith *et al*. (1999) hypothesizes that various individual and situational variables influence the development of sleep and

Correspondence concerning this article should be addressed to Dr. Lancy D'Souza, Senior Lecturer and Head, Department of Psychology, Maharaja's College, University of Mysore, Mysore-570 005, India. Email: lancy@37.com or lancy@epatra.com

Jyoti S. Madgaonkar Reader, and Ms. Veena, former student, Department of Psychology, University of Mysore, Mysore, India.

social and domestic disturbances trigger various types of coping behaviour, leading to several proximal outcomes. The end result is the development of chronic health problems in the form of digestive and cardio-vascular symptoms. Bohle and Tilley (1998) examined early experiences in shift work in female nurses and found that nurses rated night shift most negatively on circadian/sleep disturbances and work/non work conflict effects. Jamal (2004) reported that employees involved with weekend work and non-fixed day shifts had higher emotional exhaustion and health problems than other employees. Kageyama et al. (2001) reported prevalence of insomnia is about 29.2 percent among nurses working in rotating shifts, which was three to four times higher than that in the general population. Even the quality of life as rated by shift workers was worse compared to non-shift workers (Kaliterna, Prozmic, & Zganec, 2004).

Nachreiner (1998) in his review on individual and social differences with relevance to prediction of shift work tolerance concludes that individual differences like gender, age, neuroticism, morningness, eveningness, circadian type, patterns of behaviour etc., show only low and inconsistent concurrent covariation with shift work tolerance, and there is no predictive power for any of these measures. It is thus not possible to predict future shift work tolerance from individual differences. Social conditions are also related to shift work tolerance, although again predictive power has not been demonstrated. In this context, the present study is designed to find out the influence of shift work and organization type on adjustment of women in nursing profession.

Method

Sample

The stratified random sample consisted of 57 nurses working on different work schedules, in government and private hospitals and Primary Health Centre (PHC) in and around Bangalore and Mysore cities. The hospitals contacted to collect information included NIMHANS, Bangalore; Wheel and Axle Railway Hospital, Bangalore; ESI Hospital, Bangalore; Bharath Institute of Oncology, Mysore; University Health Centre, Mysore and other PHCs around Mysore. Out of 57 nurses, 36 were from the private sector and 21 nurses were from government sector.

Tools

Bell's Adjustment Inventory (1938)

The adult form of Bell's Adjustment Inventory is self-administering, which provides five separate measures of personal and social measurements of adjustment. This inventory consists of 160 items, which measure personality adjustment of the individual in 5 areas; home, health, social, emotional, occupational and the total adjustment. Each area of measurement consists of 32 statements. The coefficient of reli-

abilities determined by correlating the odd-even items and applying Spearman-Brown prophecy formula for each of the five areas of the inventory and for its total score were found to very high; home (r = .91), health (r = .81), social (r = .88), emotional (*r* = .91), occupational (*r* = .85) and the total adjustment (*r* = .94). The inventory has been validated in two ways; first, the items for each of the sections in the inventory were selected in terms of the degree to which they differentiated between the upper and lower fifteen percent of the individuals in a distribution of adult scores. Only those items, which clearly differentiated between these extreme groups, are included in the inventory. Second, the inventory has been validated through the selection of 'very well' and 'very poorly' adjusted groups of individuals by specialists in adult counseling and a determination of the degree to which the inventory differentiates among them. Low scores in the inventory indicate better adjustment.

2. Personal Data Sheet

This was used to collect some of the personal information of the nurses; they included factors like marital status, age, organizations, experience in shift-work etc.

Procedure

A pilot study was conducted on five shift workers and five non-shift workers to test the suitability of the questionnaire. The instrument was found to be adequately suited to the study. After getting permission from the respective Heads/Directors, the nurses selected for the study were contacted individually and a good rapport was established. The questionnaire was administered on each nurse individually with all the necessary instructions given in the manual. The nurses were requested to complete the questionnaire in a single sitting with no interruptions.

All the adjustment scores in various areas were subjected to a two-way factorial analysis of variance.

Results

Table 1 presents results of two-way ANOVA carried out for adjustment scores in various areas of adjustment, on nurses in relation to various factors and Table 2 presents respective mean values for the above areas.

Home adjustment

In this area, nurses working in shift differed significantly from nurses working in non-shift. F (1, 53) = 3.84 was found to be significant at .05 level. From the mean table, it is clear that nurses with shift work had significantly lesser home adjustment compared to nurses with non-shift background (M = 13.92 & 9.29 respectively). Also nurses working in government hospitals (M = 9.09) had significantly (F = 61.86, p < .0001) better adjustment compared to nurses

working in private hospitals (M = 22.97). However, the interaction effect between shift types and organization was found to be non-significant (F = .27, p = n.s) indicating that pattern of adjustment is similar in nurses working in private and government hospitals irrespective of the shift type they belonged to.

Health adjustment

As in the case of home adjustment, nurses working in non-shifts had significantly better health adjustment compared to nurses working in-shifts. (F = 5.09; p < .028). The respective mean health adjustment scores for nurses with non-shift and shift background are 15.72 and 9.24. Also nurses working in government hospitals (M = 9.43) had significantly (F = 56.13, p < .0001) better health adjustment compared to nurses working in private hospitals (M = 26.54). However, the interaction effect between shift types and organization was found to be non-significant (F = 1.56, p = n.s) revealing that pattern of adjustment is similar in nurses working in private and government hospitals irrespective of the shift type they be-

Table 1

Results of Two-Way ANOVA for Mean Adjustment Scores in Various Areas of Nurses in Relation to Various Factors

Area	Source of Variation	*F*
Home adjustment	Between Shift types (A)	3.84*
	Between organizations (B)	61.86***
	Interaction (A x B)	0.27
Health adjustment	Between Shift types (A)	5.09*
	Between organizations (B)	56.13**
	Interaction (A x B)	1.56
Social adjustment	Between Shift types (A)	0.79
	Between organizations (B)	5.50*
	Interaction (A x B)	0.04
Emotional Adjustment	Between Shift types (A)	4.59*
	Between organizations (B)	27.36***
	Interaction (A x B)	1.53
Occupational adjustment	Between Shift types (A)	7.29*
	Between organizations (B)	13.21**
	Interaction (A x B)	0.00
Total adjustment	Between Shift types (A)	7.66**
	Between organizations (B)	55.89***
	Interaction (A x B)	0.81

df = 1, 53. *p < . 05. **p <.01. ***p < .001.

Table 2

Mean Adjustment Scores in Various Areas of Nurses in Relation to Shift Type and Organizations

Area	Organizations	Shift type		*M*
		Shift	Non-shift	
Home adjustment	Private	23.80	19.33	22.97
	Government	10.12	7.61	9.09
	M	13.92	9.29	12.21
Health adjustment	Private	28.70	19.33	26.54
	Government	10.73	7.56	9.43
	M	15.72	9.24	13.33
Social adjustment	Private	19.00	18.33	18.85
	Government	15.46	14.11	14.91
	M	16.44	14.71	15.81
Emotional adjustment	Private	27.00	17.67	24.85
	Government	13.65	10.61	12.41
	M	17.36	11.62	15.25
Occupational adjustment	Private	20.00	16.00	19.08
	Government	13.96	10.11	12.39
	M	15.64	10.95	13.91
Total adjustment	Private	118.50	90.67	112.08
	Government	63.92	50.00	58.23
	M	79.08	55.81	70.51

belonged to.

Social adjustment

As far as the social adjustment is concerned, no differences existed in the mean social adjustment scores of nurses working with shift and non-shift schedules (F = .79, p = n.s). The mean social adjustment scores for nurses with shift and non-shift background are 16.44 and 14.71, which are almost the same and thus have statistically contributed for the non-significant difference. However, nurses working in government hospitals (M = 14.91) had significantly (F = 5.50, p < .023) better social adjustment compared to nurses working in private hospitals (M = 18.85). The interaction effect between shift types and organization was found to be non-significant (F = .04, p = n.s) revealing that pattern of social adjustment is similar in nurses working in private and government hospitals irrespective of the shift type they belonged to.

Emotional adjustment

Emotionally adjusted nurses with non-shift working conditions are found to be significantly well adjusted than nurses working in shift schedules (F = 4.59, p < .037). The respective mean emotional adjustment scores for nurses with non-shift and shift background are 11.62 and 17.36 respectively. Also nurses working in government hospitals (M = 14.91) had significantly (F = 27.36, p < .0001) better emotional adjustment compared to nurses working in private hospitals (M = 18.85). However, the interaction effect between shift types and organization was found to be non-significant (F = 1.53, p = n.s) revealing that pattern of emotional adjustment is similar in nurses working in private and government hospitals irrespective of the shift type they belonged to.

Occupational adjustment

In occupational adjustment, nurses working in non-shifts had significantly better adjustment compared to nurses working in shifts. (F = 7.29, p < .009). The respective mean occupational adjustment values for nurses with non-shift and shift background are 10.95 and 15.64. Also nurses working in government hospitals (M = 12.39) had significantly (F = 13.21, p < .001) better occupational adjustment compared to nurses working in private hospitals (M = 19.08). However, the interaction effect between shift types and organization was found to be non-significant (F = .00, p = n.s) revealing that pattern of occupational adjustment is similar in nurses working in private and government hospitals irrespective of the shift type they belonged to.

Total adjustment

As far as the total adjustment is concerned, again nurses working in non-shifts had significantly better adjustment compared to shift working nurses (F = 7.66, p < .008). The respective mean total adjustment scores for nurses with non-shift and shift background are 55.81 and 79.08. Also nurses working in government hospitals (M = 58.23) had significantly (F = 55.89, p < .0001) better adjustment compared to nurses working in private hospitals (mean 112.08). However, the interaction effect between shift types and organization was found to be non-significant (F = 0.81, p = n.s) revealing that pattern of adjustment is similar in nurses working in private and government hospitals irrespective of the shift type they belonged to.

Discussion

The main findings of the present study indicated that nurses working in non-shift schedules were significantly better adjusted in home, health, and emotional, occupational and total adjustment when compared to nurses working in shift schedules. Nurses working in government hospitals were found to be significantly better adjusted in all the areas compared to nurses working in private hospitals. No difference existed in the social

Rotation of shift makes it necessary for the workers to readjust to the changes in work-schedule every few days. This takes its toll on other areas of adjustment as well. The body has to adjust to disruptions to the circadian rhythm, changes in meal and sleep timing etc. The individual's participation in the normal family functions is affected (Bosch & Delange, 1987). Working conditions differ on different shifts, which affect vocational adjustment. Even the emotional well being of the person is affected due to the stress of coping in other areas.

Studies by Benjamin (1984) and Staines and Pleck (1984) revealed that shift work affected social, physiological and psychological aspects of an employee's life and shift work was associated with more conflict between work and family life. Health which is an important aspect is affected most of the time in shift workers (Folkard, Minors, & Waterhouse, 1985). Iskra, Folklard, Mark, and Noworol (1996) compared measures of health, sleep, psychological and social well-being, etc., in nurses and found that subjects with more hours of shift work showed worse indices of health, well- being, and burnout than subjects with less number of shift work hours. Significant associations were found between experience of medical errors in the past 12 months and poor mental health with night or irregular shift work and age (Suzuki et al., 2004) among nurses in Japan and significant correlations between sleep disorders and night shift (Ohida et al., 2001).

As far as the organizations are concerned, the reasons for these differences may be due to the reason that the work situation is a composite of management, supervision, pay etc., and the work itself which includes work activity, equipment available etc. differ from one health organization to another. Attitudes towards work situations and work itself influence vocational adjustment to a great extent. Moreover, usually in India, one can find more flexibility in government hospitals compared to private hospitals. In private hospitals the salaries paid are less and more work is expected. The leave and other facilities are more in government hospitals compared to private hospitals. Even the administration is more rigid in private hospitals, which puts additional stress on the nurses. All these factors may lead to unsatisfactory adjustment of nurses working in private hospitals when compared to nurses working in government hospitals. However, a Jordanian study by Mrayyan (2005) revealed that nurses who work in private hospitals were more satisfied and intended to retain their jobs more than nurses in public hospitals that may be to cultural differences in job structures.

The present study underlines the facts revealed by the above studies, that shift work indeed has a negative effect on the adjustment of nurses except in the case of social adjustment.

Many workers in this field put work/system design, according to ergonomic, physiological and social criteria. They include minimization of shift work, preference on forward rotation, avoidance of quick change-overs, limiting of consecutive working days for 5-7 days, free weekends of at least 2 days etc. Multifaceted actions are necessary for shift working conditions and such actions should be based on participatory planning and implementation. Physical training intervention in female shift workers is also suggested. Even giving the social support on job stress might reduce the job stress, which in turn leads to better vocational adjustment (Knauth, 1996; Kogi, 1996; Schmieder & Smith, 1996; Haermae, 1996; Haermae et al., 1998).

References

Baba, V. V., & Jamal, M. (1991). Routinisation of job context and job content as related to employees' quality of working life: A study of Canadian nurses. *Journal of Organizational Behaviour, 11,* 67-71.

Bell, H. M. (1938). *The adjustment inventory and the manual.* California: Stanford University.

Benjamin, G. A. (1984). Shift workers. *Personnel Journal, 63,* 72-76.

Bohle, P., & Tilley, A. J. (1998). Early experiences of shiftwork: Influence on attitudes. *Journal of Occupational and Organizational*

Bosch, E. H., & De Lange, W. A. (1987). Shiftwork in health care. *Ergonomics, 30,* 773-791.

Costa, G. (1996). The impact of shift and night work on health. *Applied Ergonomics, 27,* 9-16.

Folkard, S., Minors, D. S., and Waterhouse, S. (1985). Chronobiology and shiftwork: Current issues and trends. *Chronobiologia, 12,* 31-54.

Goldenberg, D., & Waddell, J. (1990). Occupational stress and coping strategies among female baccalaureate nursing faculty. *Journal of Advanced Nursing, 15,* 531-543.

Haermae, M. I. (1996). Ageing, physical fitness and shiftwork tolerance. *Applied Ergonomics, 27,* 25-29.

Haermae, M., I. Ilmarinen, J., Knauth, P., & Rutenfranz, J. (1998). Physical training intervention in female shiftworkers: I. The effects of intervention of fitness, fatigue, sleep and psychosomatic symptoms. *Ergonomics, 31,* 39-50.

Iskra, G. I., Folkard, S., Marek, T., & Noworol, C. (1996). Health, well-being and burnout of ICU nurses on 12 hour and 8 hour shifts. *Work and Stress, 10,* 251-256.

Jamal, M. (2004). Burnout, stress and health of employees on nonstandard work schedules: A study of Canadian workers. *Stress and Health, 20,* 113-119.

Kageyama, T., Nishikido, N., Kobayashi, T., Oga, J., & Kawashima M. (2001). Cross sectional survey on risk factors for insomnia in

Japanese female hospital nurses working rapidly rotating shifts, of life style and night shift work on 149-154.

Kaliterna, L, L., Prizmic, L.J., Zganec, N. (2004). Quality of life, life satisfaction and happiness in shift and non-shiftworkers. *Revista De Saude Publicxa, 38,* 3-10.

Knauth, P. (1996). Designing better shift systems. *Applied Ergonomics, 27,* 39-44.

Kogi, K. (1996). Improving shiftworkers' health and tolerance to shiftwork: Recent Advances. *Applied Ergonomics, 27,* 5-8.

Kunkler, J., & Whittick, J. (1991). Stress management group for nurses: Practical problems and possible solutions. *Journal of Advanced Nursing, 16,* 172-176.

Mrayyan, M, T. (2005). Nurse job satisfaction and retention: Comparing public with private hospitals in Jordan. *Journal of Nursing Management, 13,* 40-50.

Nachreiner, F. (1998). Individual and social determinants of shiftwork tolerance. *Scandinavian Journal of Work, Environment and Health, 24,* 35-42.

Ohida, T., Takemura, S., Nozaki N., Kawahara, K., Sugie T., & Uehata, T. (2001). The influence hospital nurses in Japan. *Japanese Journal of Public Health, 48,* 595-603.

Schmieder, R. A. & Smith, C. S. (1996). Moderating effects of social support in shiftworking and non-shiftworking nurses. *Work and Stress, 10,* 128-140.

Smith, C. S., Robie, C., Folklard, S., Barton, J., Macdonald, I., Smith, L., Spelten, E., Totterdell, P., & Costa, G. (1999). A process model of shiftwork and health. *Journal of occupational and Health Psychology, 4,* 207-218.

Staines G. L., & Pleck, J. H. (1984). Non-standard work schedules and family life. *Journal of Applied Psychology, 69,* 515-523.

Suzuki, K., Ohida, T., Kaneita, Y., Yokoyama, E., Miyake, T., Harano, S, Yagi, Y., Ibuka, E., Kaneko, A., Tsutsui, T., & Uchiyama, M. (2004). Mental health status, shift work, and occupational accidents among hospital nurses in Japan. *Occupational Health, 46,* 448-454.

Received January, 2006
Revision received March, 2007