Comparison of Mental Health and Quality of Life between Shift and Non-shift Employees of Service Industries

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Abstract

This study examined the relationship between the employment practices and employees' mental health and quality of life in Iran. In particular, the study compared the mental health and quality of life of shift and non-shift workers in sensitive employment settings. Using a cross-sectional survey design, 120 individuals employed in two airline companies as either shift or non-shift employees completed the survey for the study. Data was collected using General Health Question (GHQ28) for mental health, the Short Form (36) Health Survey (SF-36) for Quality of Life and a demographic questionnaire. Multivariate analysis of variance (MANOVA) was used to analyze the collected data. The results showed that (1) type of work (shift or non-shift) has an effect on mental health and quality of life; and (2) there are significant differences in dimensions of quality of life and mental health between shift and non-shift staff.

Keywords: mental health, quality of life, shift work, service industry

For many people work is very fulfilling and associated with better mental health and less substance abuse. However, work environment and the nature of the work being performed itself have been implicated as significant factors in many mental health-related problems (Thayer et al., 2010; Woo & Postolache, 2008). For example, mental health issues such as depression, anxiety, stress and sleep disorder are more common among many workers than the general population, especially in service industries (Harrington, 2001). In particular, extreme work conditions, hectic work activities, stressful working hours and toxic workplace relationships with peers and superiors, affect the mental health of many employees (Thayer et al., 2010). The International Labor Organization (ILO) reports that individuals employed in service industries are more likely to experience mental health problems than individuals employed in non-service industries (International Labor Organization, 2011).

Previous studies have reported that employees' mental and emotional problems constitute a source of significant medical costs to employers, increased absenteeism, disability, and reduced overall productivity (Goetzel et al., 2004). Recent reports show that employees' mental health and substance abuse problems cost employers an estimated $80 to $100 billion in indirect cost (Center for Disease Control, 2013). Similarly, the nature of work and work experiences of employees have been associated with their overall quality of life (QOL) (Gigantesco & Giuliani, 2011; Martel & Dupuis, 2006: Raj Adhikari & Gautam, 2010). It is proposed that QOL covers employees' feelings about the work environment, job content, benefits, work-life balance and support of colleagues and supervisors (Raj Adhikari & Gautam, 2010). Employees that have a poor QOL are more likely to have high job dissatisfaction, and engage in turnover intent behavior or actual turnover (Mohammad-Mosadeghrad, 2013).

Researchers have observed that shift work or shift-employment is common in many industrialized and emerging economies, and is an essential component of employment patterns in several industries (AlMetrek, 2014; Asaoka et al., 2012). In many industries, traditional employment (40 hours per week, hours 9 am to 5 pm) is complemented by such work arrangements as shift work, part-time work and teleworking. Shift work is any type of work which is done outside the normal hours (7 am to 6 pm) (Wang, Armstrong, Cairns, Key, & Travis, 2011). In the United States, almost 17% of full-time workers in service jobs (such as health care and transportation) are working shift jobs, whereas 15-45% of the workforce is permanently employed in shift work (Lee, McCann, & Messenger, 2007). Even in many developing countries, shift work is the dominant form of employment (Lee et al., 2007). For instance, in Senegal, 89% of workers are employed as shift workers; this contrasts sharply with 36.1% in China or 14% in the United Kingdom (Lee et al., 2007).

Previous studies have emphasized the disruptive effects of shift-work on the physical and mental wellbeing of workers (Kaliterna, Prizmic & Zganec, 2004; Mokarrami et al., 2010). In general, the effects of shift working on people are divided into two categories: the reduction of good physical and mental health because of interference with the body's natural rhythm, and the disruption of social and family life (Kaliterna et al., 2004). Results from studies on it suggests that shift work, particularly working at night, has a significant impact on a person's physical performance and is sometimes associated with mental stress, mood disorders, weight problems and other psychological factors (AlMetrek, 2014). Consecutive sleep deprivation or interrupted sleep impacts concentration, attention and the ability to think properly (Mokarami et al., 2010). In addition, shift work also creates problems with family life, such as strained communication, and discordance with the spouse's working hours and free time (Kaliterna et al., 2004).

Shift work and mental health

Mental health and employee well-being is important in organizations because of the associated implications: improved employee relationships, stress control at work, reduced absenteeism of employees and unpredictable accidents in the workplace, reduced mental and physical illness, increased productivity of human resources, and improved labor efficiency (Mokarami et al., 2010). Employees who work night shifts have been reported to experience excessive tiredness, sleep disturbance, excessive sleepiness, impatience, mood changes and burnout (Asaoka et al., 2013). Studies have found that shift work adversely impacts mental health and quality of life of shift workers. Soleimany et al. (2008) compared fixed shift nurses and non-fixed shift nurses, and showed that 72.3% of fixed-shift nurses have favorable health, 18.8% have somewhat favorable health, and 81.8% unfavorable health. However, among non-fixed shift nurses, 62.3% have favorable health, 26.2% have somewhat favorable health, and 11.5% have unfavorable health. The results showed that fixed-shift nurses had a better general health than non-fixed-shift nurses. Nurses who were required to work in three shifts on a rotating basis and without preplanning to work earlier than others suffered from several medical ailments.

Almondes and Araujo (2009) evaluated anxiety and stress in workers under different shift work conditions (divided into fixed daytime working and different working shifts). Their results showed that shift workers had higher State-Trait Anxiety scores than fixed daytime workers. In addition, both fixed daytime employees and shift workers exhibited stress. The researchers also found that shift work schedules caused more situational and dispositional anxiety, but did not significantly increase stress levels when compared to fixed-daytime working (Almondes & Araujo, 2009).

Similarly, Amini (2006) examined the relationship between job stress, shift work and the efficiency of nurses working in teaching hospitals in Tehran. The study's results showed that, although shift work does not significantly affect efficiency, overall individuals had higher job stress. Furthermore, Homayounfar (2001) found that 23.2% of nurses who were engaged in shift work were involved in accidents or injury caused by sleepiness. Homayounfar also found that 92.7% of those accidents and 87% of medication errors occurred during night shifts. Fouladi (1996) did not find a significant relationship between shift work and depression, although there was a significant correlation between working night shifts and having depression. Mohajer (1987) found that night-shift nurses on rotation had more anxiety than those with a fixed schedule.

Jaradat, Khaldoun and Espen (2010) conducted a study to identify the impact of shift work on the mental health of nurses working in a hospital in Hebron at Palestine. The researchers compared two different work shifts at the hospital, fixed-shift work and rotation shift work. The sample included 422 nurses, of whom 261 were female and the rest were male. The results showed that, compared to men, women working rotation shifts had lower mental health and happiness ($p < .04$). In general, regardless of gender, the mental health of nurses working in rotating shifts is lower than those nurses who work in fixed shifts. Teran (2008) showed that NASA employees who slept 4 to 5 hours on average daily were able to adapt themselves to circadian rhythm. In addition, Teran (2008) found that sleep is important because lack of sleep causes indiscriminate naps when full consciousness is necessary. He concluded that people's awareness of circadian rhythm and its role in the physiological body can be very useful. The results also showed that individuals who work late shift and midnights (12 pm to 6 am) experienced high stress.

Shift employment and employees' quality of life

Previous work has associated shift employment with a number of negative QOL indicators such as decreased family life and marital satisfaction, and higher rates of divorce (Bara & Arber, 2009; Strzemecka, Bojar, Strzemecka, & Owoc, 2014). Bara and Arber (2009) examined the impact of shift work on mental health at the population level using longitudinal data (1995-2005) from the British Household Panel Survey. The study found that undertaking night work for > or =4 years in men was associated with an increased risk of having poor mental health and anxiety/depression. In addition, it was found that women were significantly more likely to report anxiety/depression and have poor mental health after working varied shift patterns for 2-3 years and >/=4 years respectively (Bara & Arber, 2009). However, Berthelsen, Pallesen, Bjorvatn and Knardahl (2015) did not find any association between shift work and anxiety or depression. However, Strzemecka et al. (2014) reported that shift workers who are married or have families are further affected in their inability to meet their parental or spousal demands due to the work cycle. In many instances, children of parents who are engaged in shift work often go for days on end without some form of social interaction or family time with their loved ones. In addition, it was observed that communication between parents and children or between spouses becomes strained as a result of the lack of regular interactions (Strzemecka et al., 2014).

A study by Kaliterna et al. (2004) examined QOL, life satisfaction and happiness in shift and non-shift workers; their findings revealed that shift workers reported lower QOL in spiritual matters than non-shift workers. The authors also reported that shift workers found less enjoyment in satisfying their personal values and standards than non-shift workers. Furthermore, the parent or partner that is constantly away from home as a result of shift work often experienced mixed emotions such as guilt, anger and other forms of emotional difficulties that further exacerbated the decline of their mental well-being and overall quality of life (Kaliterna et al., 2004). Finally, the findings of a cross-sectional study conducted by Shao, Chou, Yeh and Tzeng (2010) on 435 female nurses from five regional hospitals in Taiwan showed that the majority of shift workers (57%) suffered from poor sleep quality, low QOL, premenstrual dysphoria, occupational injury, illness and excessive medication use.

Objectives of the study

Iran is a society of the Middle East. Recent estimates conservatively place the population of Iran at approximately 79 million (Statistical Center of Iran, 2016). More than 71% of that population lives in urban areas (Rahimi-Movaghar et al., 2014). In Iran, as in many developing countries, shift working is rapidly expanding across all industry settings because of the need to increase the production of goods and the provision of 24-hour service (Mokarrami, Kakoei, Dehdashti, Jahani & Ibrahim, 2010); however, there are no exact statistics on the number of employees working in shift employment (Mokarami, et al., 2010).

Incidence of problems of mental health among the general population of Iran is reported to be around 27.2% (Rahimi-Movaghar et al., 2014). In addition, work-related mental health problems are common, especially in major industrial settings in Iran (Mokarami et al., 2010). More importantly, shift work has been identified as a risk factor for mental health and reduced quality of life (Bazazan et al., 2014). Previous studies conducted in Iran have examined the relationship between demographic factors, fatigue, psychological distress, and mental disorder among shift workers (Bazazan et al., 2014; Rasoulzadeh, Bazazan, Safaiyan, & Dianat, 2015), health effects associated with shift work (Choobineh, Soltanzadeh, Tabatabaee, Jahangiri, &

Khavaji, 2012) and sleepiness, fatigue, and accidents among workers employed in shift work (Halvani, Zare, Mirmohammadi, 2009). However, none of these studies has compared the mental health and quality of life between shift and non-shift workers. The current study addresses this gap by comparing the mental health and quality of life between shift and non-shift workers in two service industries in Iran.

The following hypotheses guided the research study:
1. There are differences in mental health between shift and non-shift employees.
2. There are differences in the types of mental health problems between shift and non-shift employees.
3. There are differences in quality of life between shift and non-shift employees.

Methods

Participants and settings
The study was cross-sectional and used survey instruments for the collection of data (Dillman et al., 2009; Gray, Williamson, Karp & Dalphin, 2007). Cross-sectional studies permit the estimation of the prevalence of the outcome of interest for a given population at a point and over a period of time (Gray et al., 2007). Recruitment of participants for the study was done through the human resources department of two Iranian Airlines. The first company is a wholly government-owned airline with 7,500 employees, it is also the oldest airline in the Middle East and operates services to 58 destinations. The second company is a private airline based in Tehran, Iran with over 2,511 employees. It operates scheduled domestic services and international flights to the Far East, Middle East, Central Asia, and Europe.

Procedures
Approval was sought from the ethical review board of Islamic Azad University, Roudehen and the two service companies before starting the study. Following the approval of the study by the companies, information requesting participation for the study was posted on the companies' notice boards to solicit participation for the study. Participants were directly recruited during staff meetings; interested employees were given a copy of the survey to complete and return to the human resources department. Of the 140 surveys given out, 132 were completed and returned. However, 12 were not completed properly and were therefore removed. Thus, 120 respondents successfully completed and returned the survey. Of the 120 completed surveys, 60 respondents indicated that they were shift-jobs employees, whereas 60 were non-shift-employees.

Research instruments
The first instrument for the study is the General Health Questionnaire (GHQ28: Goldberg, 1978). The GHQ28 was developed as a screening tool to detect individuals that are likely to have or to be at risk of developing psychiatric disorders (Sterling, 2011). Previous investigations (e.g. Robinson & Price 1982) of the reliability and validity of the scores of the items of the GHQ28 have shown a high test-retest reliability (0.78 to 0 0.9). In addition, interrater and intra-rater reliability have both been shown to be excellent (Cronbach's α 0.9–0.95) (Failde & Ramos 2000). The instrument contains 28 items, and measures emotional distress in medical settings. The GHQ-28 has four subscales: somatic symptoms (items 1–7); anxiety/insomnia (items 8–14); social dysfunction (items 15–21), and severe depression (items 22–28) (Goldberg, 1978; Sterling, 2011). Examples of some of the items include 'Have you found everything getting on top of you?', 'Have you been getting scared or panicky for no good reason?' and 'Have you been getting edgy and bad tempered?' Each item is accompanied by

four possible responses: 'Not at all', 'No more than usual', 'Rather more than usual', and 'Much more than usual' (Sterling, 2011). Items on the questionnaire were scored using a binary approach where 'Not at all', and ''No more than usual' score (0), and 'Rather more than usual' and 'much more than usual' score (1). Using this method, any score above 4 indicates the presence of distress (Sterling, 2011).

The second instrument used in the study, the SF-36 (Ware & Sherbourne, 1992), measures Health Related Quality of Life (HRQOL). The SF-36 includes eight components: (1) physical functional limitation due to health problems, (2) usual limited role in life due to physical health problems, (3) physical pain, (4) mental health (mental and emotional stress or distress), (5) usual role limitations due to a person's life or emotional issues, (6) fatigue or vitality, (7) general opinion about health, and (8) restrictions causing problems in social functioning due to physical and mental health. The survey can be self-administered by persons 14 years of age and older, or by a trained interviewer (Ware & Sherbourne, 1992). Since 1996, the validity and reliability of this questionnaire has been examined by the World Health Organization (WHO) in different countries and cultures. The internal consistency of the instrument has been reported to be .90 (Williams, 2000). All items are scored on a range of 0-100, so that a high score defines a more favorable health state. Items in the same scale are averaged together to create the 8 scale scores (Ware & Sherbourne, 1992).

In Iran, a study was carried out to determine the reliability and validity of the international and Persian versions of the SF-36 instrument (Jafari, Lahsaeizadeh, Jafari, & Karimi, 2008). The instrument was translated and used with individuals 15 years and older. The collected data was tested for internal consistency, validity and convergence validity. Scores on the instrument showed an internal consistency of .65. The other reliability measures showed coefficients ranging between .77 and .90. Consequently, it was concluded that the Farsi version of the SF-36 was adequate for the measurement of quality of life.

Results

Description of participants

The Multivariate analysis of variance (MANOVA) was used to analyze collected data. Specifically, a one-way MANOVA was conducted to determine the effect of the factor-type of work (Shift or Non-Shift employment) on two dependent variables (mental health and QOL scores). The test was conducted at (0.05) significance level.

There were 120 participants in this study. Of the 120 participants, 70 (58.3%; n = 22 shift, 38 non-shift) were married, whereas 50 (41.7%; n = 38 shift, 12 non-shift) were unmarried. In terms of educational qualification, 55 (91.6%) non-shift workers had a high school certificate, whereas 5 (8.3%) had an undergraduate degree. Among shift workers, 58 (96.7) had a high school certificate and 2 (3.3%) had an undergraduate degree. Individuals earning more than 700,000 Tomans, which is equivalent to about $23.09 (Tomans is the official Iranian currency), were more likely to be in the shift group (n = 48, 80%), than non-shift (n = 20, 33.3%).

With regard to the first hypothesis: there are differences in mental health between shift and non-shift staff. A one-way MANOVA revealed a significant multivariate main effect for region, Wilks' λ =. 894, F (4, 115) = 3.4, p <. 001, as shown in Table 1. In particular, the non-shift group (M = 11.7; SD = 4.08) on average had a slightly higher score than the shift group (M = 10.74; SD = 4.71).

Effect	Statistics	Value	F	hypothesis df	Error df	Sig.
Job Type	Pillai's Trace	0. 106	3. 42	4	115	.001
	Wilks Lambda	0. 894	3. 42	4	115	.001
	Hotelling's Trace	0. 119	3. 42	4	115	.001
	Roy's Largest Root	0. 119	3. 42	4	115	.001

Note: α =.05

Table 1: Multivariate test for difference in mental health between shift and non-shift staff

Testing of the second hypothesis focused on determining if there were any differences in the types of mental health problems between shift and non-shift employees. Table 2 reflects the results of univariate two sample t-tests employed to assess the difference in means between the two groups (Shift vs Non-Shift) for mental health services. As depicted in the table, there are statistically significant differences (at the $p < 0.05$ level) between the two groups in terms of depression and anxiety only. There was no statistically significant difference, $p > .05$, between the two groups for both social dysfunction, hypochondria and somatic disorders.

Mental Health	Total Shift	Total Non- Shifts	t	Df	Sig.
Depression	1.1	0.78	2. 34	118	0.02
Anxiety	0.5	0.78	3. 56	118	0.01
Social dysfunction	1.1	1.54	1. 54	118	0.12
Hypochondria	0.64	1.56	1. 56	118	0.12

Note: α =.05

Table 2: T-test comparing shift and non-shift workers on dimensions of mental health

Table 3 below shows the results of a one-way MANOVA test with respect to quality of life between shift and non-shift employees. The results showed a non-significant multivariate main effect for region, Wilks' $\lambda =. 893$, $F (8, 111) = 1.7$, $p <.116$. Thus, hypothesis 3 was not confirmed.

Effect	Statistics	Value	F	Hypothesis Df	Error df	Sig.
Job Type	Pillai's Trace	0. 107	1.66	8	111	0.11
	Wilks Lambda	0. 893	1.66	8	111	0.11
	Hotelling's Trace	0. 120	1.66	8	111	0.11
	Roy's Largest Root	0. 120	1.66	8	111	0.11

Note: α =.05

Table 3: Multivariate test for difference in quality of life between shift and non-shift staff

Table 4 shows the results of t-tests to determine the difference in quality of life between shift and non-shift staff. The results showed that there were no significant differences in physical functioning and general health among shift and non-shift staffs. However, typical life role limitation as a result of physical health problems, anxiety, fatigue or vitality, emotional health, and social functioning were significantly different among the two groups ($p < .05$).

Quality of Life	Total Shift	Total Non-Shifts	t	Df	Sig.
Physical functional	71	78.8	1.93	118	0. 50
Usual limited role in life due to physical health problems	44.92	67.4	3.23	118	0. 00
Usual limited role in life due to anxiety	47.92	64.3	2.20	118	0. 03
Fatigue or vitality	54.24	64.9	2.79	118	0. 00
Emotional health	59.1	68.3	2.63	118	0. 01
Social functioning	58.2	69.6	2.54	118	0. 01
Pain	64.3	75.4	2.45	118	0. 01
General health	56.6	62.7	1.78	118	0. 08

Note: $\alpha = .05$

Table 4: T-test comparing quality life of shift and non-shift staff

Discussion

The results of the study with regard to the first hypothesis showed that mental health was significantly different among shift and non-shift staff. The mental health of shift staff was better than that of non-shift staff. We find, as did previous studies (Amini, 2006; Bara & Arber, 2009; Berthelsen et al, 2015), that engaging in shift work, especially for a prolonged period, resulted in poor mental health. Berthelsen et al. (2015) indicated that the impact of shift work on mental health occurs through three pathways: (1) disruption of the circadian rhythm, which disrupts neurohumoral systems, and ultimately mental health; (2) sleep deprivation; and (3) difficulties with meeting personal and family demands. Carrying this observation to the airline employment context as done in this study provides a basis for how shift work should be organized, taking into consideration, the effects that it might have on employee physical and mental wellbeing. Relative to mental health, Costa (2015) suggested that an important consideration may be designing the work roster carefully, and providing the necessary support to employees in the workplace. Specifically, organizations and work environments that provide the right design for shift work (shift length, schedule format, on-off work pattern, and overtime, scheduling policies) are more likely to have employees with better mental health.

Evidence that shift workers and non-shift workers differ significantly on depression and anxiety parameters is consistent with the results of several studies (Almondes & Araujo, 2009; Homayounfar, 1998; Mohajer, 1987). Almondes and Araujo (2009) found that shift workers had higher state-trait anxiety scores than those of fixed daytime workers. Specifically, shift work caused situational and dispositional anxiety for persons engaged in shift employment. However, we did not find a significant difference between shift and non-shift employees in hypochondria and social dysfunction. This evidence is in line with the finding by Fossum, Bjorvatn, Waage, and Pallesen (2013) that there were no significant differences between offshore shift workers and onshore non-shift workers in social dysfunction. Rasoulzadeh et al.

(2015) indicated as much, and noted that social dysfunction may be only related to physical and mental fatigue and reduced activity. It is likely that social dysfunction may likely be a consequence of differences in personality, or family composition and relationship. The result of the study also showed that there was no significant difference in hypochondria between shift and non-shift workers. This can be interpreted to mean that concerns about ill-health among workers in airline industries may not be significantly different. Given that the work setting in the airline industry is generally stressful, it is likely that, regardless of their work schedule, employees are prone to exhibit hypochondria.

The results also showed that there was a significant difference in QOL between shift and non-shift workers. In particular, there were significant differences in several domains of QOL (physical, emotional, social and psychological) between shift and non-shift employees. This is consistent with the results of Kaliterna et al. (2004) which found that shift work negatively influenced workers' quality of life, in terms of lack of regular contact with family members, irregular eating and sex life, and overall deterioration of family life.

Limitations

Although the findings of the study provide useful insight into the relationship between shift employment, mental disorders, and quality of life, these should be utilized within the constraints that the sample size was small and self-reported assessments were used. The present study was cross-sectional in design, and therefore no causal inferences can be drawn. In cross-sectional studies, a large sample size is required to establish a relationship between variables (Johnson & Christensen, 2008). Secondly, self-report data and results from the present study must be looked at with caution because of the tendency of respondents to present themselves in a socially desirable manner (Kazdin, 2003). A qualitative study design, or mixed method with in-depth interviews, would have provided more robust information about the relationship between the variables. Additional research, using a larger sample and more measures, should be carried out to validate or provide more insight into the relationship among these variables.

Implications

The results of the current study have implications for supervisors of shift workers, human resources personnel, and mental health practitioners. Given the findings on the relationship between shift work and several physical and mental health components, an important consideration for many large organizations, including airline industries, is to provide employee support systems that have the capacity to recognize and address mental health-related problems that arise out of the employment context.

The present study used a cross-sectional survey design to examine the differences in mental health and QOL between shift and non-shift employees. The sample comprised 120 workers employed in two service companies. The results of the study support the general observation that the nature of work has deleterious physical and mental health consequences in many employment settings. We also provide evidence that engaging in shift work significantly affects employees' mental health and overall quality of life. Our work suggests that there is a significant difference in the mental health functioning and overall quality of life between shift and non-shift employees. In particular, shift workers are more likely to experience anxiety, depression and report reduced QOL in several domains (physical, emotional, social and psychological) compared to non-shift workers.

Ideally, companies should try to provide a better work environment for every employee; also, addressing the mental health and quality of life issues that result from its impact on employees

should be a priority for organizations. As the incidence of mental health-related issues continues to increase among workers in Iran and other developing countries, it is vitally important for leadership in strategic industries to pay specific attention to the relationship between working conditions, employees' mental health and quality of life, and their overall productivity. Specific information on the impact of shift work on the mental health and QOL among shift and non-shift workers can help employers and leaders in these organizations create the necessary support systems needed to assist their employees in maintaining a healthy work life.

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