

The Impact of Occupational Stress on Quality of Work Life among the Staff of e-Workspace

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Abstract—With the advent of new technologies, factors related to mental health in e-workspaces are taken into consideration more than ever. Studies have revealed that one of the factors affecting the productivity of employees in an organization is occupational stress. Another influential factor is quality of work life which is important in the improvement of work environment conditions and organizational efficiency. In order to uncover the quality of work life level and to investigate the impact of occupational stress on quality of work life among information technology employees in Iran, a cross-sectional study design was applied and data were gathered using a questionnaire validated by a group of experts. The results of the study showed that information technology staffs have average level of both occupational stress and quality of work life. Furthermore, it was found that occupational stress has a negative impact on quality of work life. In addition, the same results were observed for role ambiguity, role conflict, role under-load, work-pace, work repetitiveness and tension toward quality of work life. No significant relation was found between role overload and quality of work life. Finally, directions for future research are proposed and discussed.

Keywords—Information Technology, e-Workspace, Healthcare, IT Staff, Occupational Stress, Quality of Work Life

I. INTRODUCTION

INFORMATION technology (IT) is a dynamic workspace and a novel and high-growth industry of the future [1]. One of the fastest growing professions in the current work environment is the field of information technology. The number of computers in the world is now reaching to one billion whereas the number of IT staff joining the field is declining fast. Bureau of Labour Statistics has estimated about 1.6 million new IT jobs would be created from 2004 to 2016 [2]. As of IT staff, constantly sitting on the chair for several hours and working with the computer or laptop and sometimes without being acquainted with healthy and ergonomic tips may cause harsh strain among IT staff. Additionally, if they do not possess sufficient skills to carry out the given job, it becomes a stressful condition for IT staff to perform the task in given time [3].

In the followings, literatures review about occupational stress and quality of work life (QWL) as long as the joint researches with information technology are examined and then the hypotheses of the research are proposed.

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A. Occupational Stress

Occupational stress is a widespread construction where job-related issues interact with the operator to either enhance or disrupt the physiological or psychological conditions) [4]. Researchers have examined occupational stress in a broad range of professional groups; for instance: pilots, nurses, accountants, teachers, university staff and managers. But lack of considerations on investigating the occupational stress among information technology staff is observed [1]. Thong and Yap state that although usually managers are aware of high turnover and workforce shortages of IT staff, a few know that the major source of high turnover and job dissatisfaction is occupational stress. They also mention that one of the main reasons why there is little research on the effects of occupational stress on IT staff is due to unawareness of this group with the consequences of occupational stress in organizations [5]. The harmful effects of occupational stress are known as key problems for either employees or organizations. For employees, stress regularly contributes to the burn-out, risk of accidents and illnesses like hyper-tension, coronary heart disease and severe depression [6]. In organizations, stress related problems cause poor quality of performance, lower job satisfaction, high turnover and increased work absence [7].

B. Quality of Work Life

In an organization, a high level of quality of work life is necessary to continue to attract and retain employees [7]. So far, different researchers have presented diverse definitions of QWL [8]. Quality of work life is mainly defined as “satisfying an employee’s needs via the resources, activities and outcomes that arise from involvement in the workplace” [9]. Rethinam and Ismail [10] reviewed different researches about definitions and constructs of QWL and designated that quality of work life is a multi-dimensional construct and is made of a number of inter-related factors. Normala [11] proposes that the key constructs of QWL are higher payment, job security, better reward systems, growth opportunity and participative groups among others. Timossi et al. [12] state that according to the Walton’s QWL model [13], the QWL is getting important as a way to save human and environmental values which have been ignored in favor of technological advancement of the economic growth and productivity. QWL has been found to influence the intention of quitting the job [14]. More importantly, various studies on work life confirm that what happens in the workplace has considerable influence on individuals and their families [15]. So it is vital to enhance the QWL in order to reduce the negative effects of lower QWL levels.

The purpose of this research is firstly, to uncover the level of QWL of the IT personnel in Iran, and secondly, to examine the impact of occupational stress on QWL while testing the hypotheses shown in fig. 1. For instance, hypothesis 1 states that occupational stress has a significant negative effect on QWL.

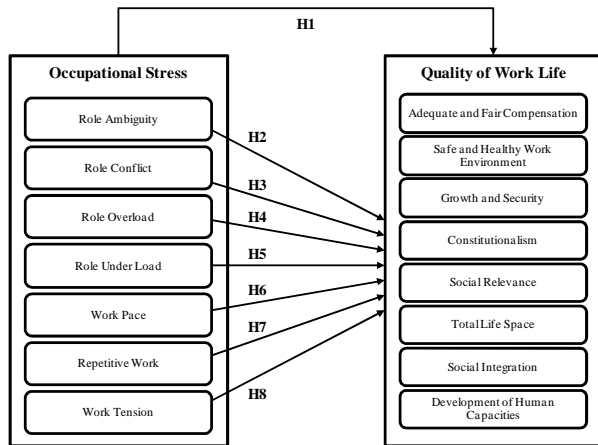


Fig. 1 The Model of the Research

The findings of the current study may be used to propose potential management strategies to attenuate the negative effects of occupational stress on the QWL of IT staffs in e-workspaces.

II. MATERIALS AND METHODS

A. Research Design and Sample

Respondents of the study were information technology staffs working in an e-workspace in an information technology research institute in Tehran, Iran, who were dealing with IT-related products and services (a total of 168 respondents). Information technology is the major part of their professional workday. A cross-sectional study design was applied and the respondents of the research filled-in the questionnaire using a five-point response scale (1: I strongly disagree; 5: I strongly agree). Twelve items of the questionnaire were negatively scored, requiring the reversal of the scoring pattern [16]. Respondents were informed that the questionnaires will be kept confidential.

B. Measures

Data were gathered using electronic methods to collect demographic data and measure indicators of occupational stress and QWL: Microsoft Excel® based questionnaire and an online form-based questionnaire. E-mails were sent to the respondents asking to either fill out the Excel questionnaire or the online one. Two reminding e-mails were sent in the second and forth weeks.

The questionnaire of the research is based on (a) questions concerning the demographic characteristics such as age, gender, work experience and education; (b) an instrument developed by authors to measure occupational stress including

seven variables (table 1); (c) QWL questionnaire developed by Walton [13]. The Cronbach's alpha for the occupational stress questionnaire is 0.74 (35 questions) and 0.88 for QWL questionnaire (24 questions).

C. The Occupational Stress Questionnaire

Items measuring the occupational stress were derived from an extensive review and examination of the literature on occupational stress, investigating different occupational stress models and interviewing with experts. Then the questionnaire was validated by a group of IT, psychiatry, psychology and social science experts. Occupational stress was finally measured using a seven-item scale. Table 1 demonstrates the variables of the occupational stress model.

TABLE I
THE VARIABLES OF THE OCCUPATIONAL STRESS MODEL

Variable	Definition	Constructs of Variables
Role ambiguity	"a lack of clear goals and clarity in the behavioral requirements of one's job" [17]	from the 14-item role ambiguity and role conflict scale firstly presented by Rizzo <i>et al.</i> [17] and applying six item reversals proposed by Howell <i>et al.</i> [16].
Role conflict	"the extent to which a person experiences pressures within one role that are incompatible with the pressures that arise in another role" [18]	
Work overload	happens when "job demands exceed an individual's ability to deal with them" [19]	Six items to measure this construct developed by Harris and Bladen [20]
Work under load	happens when "work-related demands are too low so that they do not sufficiently challenge the individual" [19]	Five items to measure this construct developed by authors
Work pace	the speed of which an operator works	Four items to measure this construct based on Stranks [21]
Work repetitiveness	the degree of which a work is repeated in a time scale	Four items to measure this construct according to Stranks [21]
Job tension	"an affective state resulting from an individual's feelings associated with perceived negative consequences of role perceptions" [22]	The seven-item job tension scale [23], two items were dropped in validity test.

D. The Quality of Work Life Questionnaire

The Walton's QWL questionnaire [13] was translated into Persian, adapted to the Persian context and then validated by a group of IT, psychiatry, psychology and social science experts to elicit feedbacks. The QWL questionnaire consists of 24 items and measures eight dimensions of: "Adequate and fair compensation, safe and healthy work environment, growth and security, constitutionalism, social relevance, total life space, social integration, development of human capacities".

III. RESULTS

All of the 168 questionnaires were valid; none was dropped for data analysis. About 58 percent of the respondents were women; majority had 3 to 5 years of work experience (30%).

More than half of the respondents were between 26 to 35 years old (55.9%); 25% were aged less than 25 years old and the remaining respondents (19.1%) were over 36. More than 88% were having higher education (undergraduate, graduate and PhD degrees). Majority of the respondents (85.1%) had not passed any stress management courses. Other demographic characteristics are shown in table II.

TABLE II
THE DEMOGRAPHICS OF THE RESPONDENTS

Category	Num.	%	Cum. Percent
Gender			
Male	70	41.7	-
Female	98	58.3	-
Age (in years)			
<25	42	25.0	25.0
26 to 35	94	55.9	80.9
36 to 45	29	17.3	98.2
>46	3	1.8	100
Work Experience (in years)			
<2	47	28.0	28.0
3 to 5	50	29.7	57.7
6 to 8	22	13.1	70.8
9 to 11	21	12.5	83.3
over 12	28	16.7	100
Educational Level			
College	19	11.3	11.3
Undergraduate (Bachelor's)	94	55.9	67.2
Graduate (Master's)	48	28.6	95.8
PhD	7	4.2	100
Passed Stress Management Course?			
Yes	25	14.9	14.9
No	143	85.1	100
Education associated with profession?			
Yes	136	80.9	80.9
No	32	19.1	100
Total	168	100	-

The occupational stress and QWL levels of the respondents are demonstrated in table 3. The mean occupational stress level (103.03) is positioned in the medium occupational stress range which shows the average occupational stress level among the IT staff. There are only 2.98% with high occupational stress level and 7.74% with low occupational stress level. Similar to occupational stress level, mean QWL level is located in the medium QWL range and only 7.74% suffer from low QWL level.

TABLE III
THE OCCUPATIONAL STRESS AND QUALITY OF WORK LIFE LEVELS
Num. Valid: 168, Num. Missing: 0

Occupational Stress		
Mean	103.30	
Std. Deviation	12.20	
Minimum	65.0	
Maximum	135.0	
Range	Num. (%)	Mean/SD
35 to 81 (Low)	13 (7.74%)	76.00 (6.55)
82 to 128 (Medium)	150 (89.29%)	100.52 (11.70)
129 to 175 (High)	5 (2.98%)	132.40 (3.36)

Quality of Work Life		
Mean	73.70	
Std. Deviation	13.30	
Minimum	37.0	
Maximum	120.0	
Range	Num. (%)	Mean/SD
24 to 55 (Low)	13 (7.74%)	47.15 (5.20)
56 to 87 (Medium)	131 (77.98%)	72.38 (7.53)
88 to 120 (High)	24 (14.29%)	95.50 (7.58)

The Kolmogorov-Smirnov test results are shown in table 4. This test confirms the type of correlation tests to be applied.

TABLE IV
THE RESULTS OF THE KOLMOGOROV-SMIRNOV TESTS

Variable	Kolmogorov-Smirnov (Z)	Sig.*	Correlation Type
Occupational Stress	0.729	0.633	Pearson
Role Ambiguity	1.359	0.050	Spearman
Role Conflict	1.362	0.049	Spearman
Role Overload	1.028	0.242	Pearson
Role Under-load	1.428	0.034	Spearman
Work Pace	1.508	0.021	Spearman
Work Repetitiveness	1.614	0.011	Spearman
Work Tension	1.913	0.001	Spearman

* p<0.05 (2-tailed)

Table V depicts the results of the hypotheses tests. Of the eight hypotheses, all were confirmed by data analysis except the fourth hypothesis.

TABLE V
THE RESULTS OF THE HYPOTHESES TESTS

Hypothesis Num.	Variables		PC* / SC**	Sig. (2-tailed)**	Test Result
	1	2			
H1	Occupational Stress	QWL	0.471	0.000	Negative Impact
H2	Role Ambiguity	QWL	0.469	0.000	Negative Impact
H3	Role Conflict	QWL	0.160	0.038	Negative Impact
H4	Work Overload	QWL	0.091	0.243	No Impact
H5	Work Under-load	QWL	0.283	0.000	Negative Impact
H6	Work Pace	QWL	0.274	0.000	Negative Impact
H7	Work Repetitiveness	QWL	0.325	0.000	Negative Impact
H8	Work Tension	QWL	0.317	0.000	Negative Impact

*PC: Pearson Correlation, **SC: Spearman Correlation, ***p<0.05 (2-tailed)

IV. DISCUSSIONS

This study tried to investigate the level of QWL and

examine the impact of occupational stress on quality of work life among information technology staff. Eight hypotheses were designed to test the hypotheses using either Pearson or Spearman tests. Of the eight hypotheses, seven were supported by data.

H1: Occupational Stress and QWL

The negative impact of occupational stress on QWL is supported by data ($PC = -0.471$, $Sig. = 0.000$, $p < 0.05$). The same as previous researches [24]-[25]-[26] a negative relationship is approved between these two variables. The results are also in accordance with the results presented in table 3. According to the findings of the first hypothesis, organizations can take different actions to reduce occupational stress and enhance QWL level. Stranks [21] suggests two actions to be taken in organizations to deal with occupational stress: a) prevention and b) management of occupational stress.

H2: Role Ambiguity and QWL

Role ambiguity is found to have a negative impact on QWL ($SC = -0.469$, $Sig. = 0.000$, $p < 0.05$). The same finding was approved among Chinese teachers stating that there is a negative relation between role ambiguity and quality of life [27]. Regarding the role ambiguity definition presented by Kahn *et al.* [28]; "the single or multiple roles that confront the role incumbent which may not be clearly articulated in terms of behaviors or performance levels", the not clearly articulated role is in contrast with constitutionalism variable of QWL. This may interpret the negative impact of role ambiguity on QWL. Consequently, in order to enhance the QWL level, clear and unambiguous roles must be defined in organizations.

H3: Role Conflict and QWL

Olsen and Near [29] have investigated this relationship among new employees in universities. As they have also stated, role conflict has a negative effect on QWL ($SC = -0.160$, $Sig. = 0.038$, $p < 0.05$). Van Sell *et al.* [30] define role conflict as "inconsistency of expectations associated with a role". According to this definition and consistent with the findings of hypothesis three, defining apparent, accurate and obvious roles in organizations can reduce role conflicts and thus improve QWL level [31].

H4: Work Overload and QWL

No significant relation is found between work overload and QWL ($PC = -0.091$, $Sig. = 0.243$, $p < 0.05$). Unlike the findings of hypothesis four, in a study among Chinese teachers, the relation between work overload and quality of life (QOL) was examined and a negative relation was found [27]. Although these findings give the impression of no consistency, but some points have to be considered: a) Yang *et al.* [27] have investigated quality of life while this research has examined QWL and b) this research is being conducted among IT staff whereas they have worked on teachers.

As a result of work overload, staff may need to work longer times and consequently get an increment in payment for working overtimes. This may enhance the "adequate and fair compensation" factor of QWL. On the other hand, work under

load brings boredom, extreme attention to details and isolation [21] which reduces QWL. If one is busy with work overload, he/she does not have the characteristics of the one who works in an under-load condition. In addition, Lee and Wong [32] state that by increasing the work load, QWL of nurses will diminish. So it seems that further researches on this issue needs to be conducted.

H5: Work Under-load and QWL

The same as Yang *et al.* [27], work under-load is observed to have a negative impact on QWL ($SC = -0.283$, $Sig. = 0.000$, $p < 0.05$). As a result, if ones' work under-load is going high, the level of QWL will decrease. As stated earlier, work under-load has negative consequences [21] which apparently decrease QWL level. So, in order to increase the QWL level, job should be redesigned to benefit more from working times.

H6: Work Pace and QWL

Carayon and Hajnal [33] have found a negative impact of work pace on QWL among those who work with personal computers. The same result has been found in the current research ($SC = -0.274$, $Sig. = 0.000$, $p < 0.05$). The more the work pace is, the less the time is consumed to perform the job and the less relaxation is in the workplace. This demonstrates the negative impact of work pace on QWL. Considering the work pace, Stranks [21] suggests that in least cases the speed of work should be tuned with machines. In this case, the operator or staff is not fully independent in handling the job and this changes the work pace and consequently reduces the QWL level.

H7: Work Repetitiveness and QWL

Work repetitiveness is found to have a negative effect on QWL ($SC = -0.325$, $Sig. = 0.000$, $p < 0.05$). Similarly, Subba *et al.* [34] have investigated the repetitive work in the bank industry. They demonstrate that repetitive work has negative consequences on QWL. Considering the work repetitiveness variable, managers can benefit simple techniques to lower work repetitiveness and increase QWL: a) job redesign to decrease repetitive work and increase flexibility in work; b) implementing job enrichment programs and c) benefiting from job rotation techniques [21].

H8: Work Tension and QWL

The negative impact of work tension on QWL is approved by data ($SC = -0.317$, $Sig. = 0.000$, $p < 0.05$). Saad *et al.* [35] note that inappropriate organizational processes in universities lead to work tension which increase occupational stress and reduce QWL level. The same findings were presented by Rossi *et al.* [24]. Along with hypothesis eight, work tension can lead to functional and non-functional responses [36] which both reduce the QWL level.

V. LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

Some of the limitations must be considered within the research. First, the number of participants in this study (the sample size) was 168. As the number of staff exceeds, more exact results would be reached. So the results of the research

should be interpreted cautiously. Secondly, as the questionnaire of this study was online and electronic, Wright [37] negotiates the negative and positive points of applying online questionnaires. Along with the positive points (lower costs, lower time, etc.), the negative points (lack of access to questionnaire everywhere, not to be familiar with online questionnaires, etc.) must also be considered [37]-[38].

Since the occupational stress model was developed by the authors and due to the limitations stated above, it is recommended to apply the findings of this research vigilantly. More than that, according to the findings of Yang *et al.* [27] and hypothesis 4, it is suggested to further investigate the impact of work overload on QWL deeper.

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