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Education and Education Management

Education and Education Management

Hong Kong, September 4-5, 2012



ISBN:978-1-61275-025-5

Advances in Education Research Vols.3-5

ISSN:2160-1070, Electronically available at <http://www.ier-institute.org/>

A Study on the Correlation between Healthcare Workers' Stress from Work and Their Quality of Life–Based on Accredited Hospitals in Taiwan

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Keywords: Healthcare, Stress from Work, Quality of Life

Abstract. Along with the change in social environment, institutional workers are subject to increasing stress from work, particularly in medical institutions, which may affects quality of life. (1) To look into status quo of stress from work and quality of life for healthcare workers throughout Taiwan. (2) To investigate into demographic variables upon stress from work and quality of life. (3) To analyze the correlation between stress from work and quality of life. We invited healthcare workers from non-psychiatric hospitals in Taiwan accredited by the Taiwan Joint Commission on Hospital Accreditation in 2007 as our research subjects. We issued a total of 12,000 questionnaires, among them 7,840 were valid, which constituted a 65.33% of valid return. We conducted t-test, one way ANOVA, Scheff post-hoc comparison and Pearson correlation analysis to check and verify the results. Different demographic variables demonstrated significant differences in response to impact from different aspects of stress from work and quality of life. The stress from work and quality of life in various aspects therefore demonstrated significantly negative correlation. Hospitals are not only advised to take into account the stress sources, but also to consider psychological feel as the most important part. Future researches are suggested to continue the investigation by longitudinal study for comparison to this cross-sectional study, or to broaden the research subjects to compare between hospitals and enterprises so as to obtain handy reference to minimize stress from work and to enhance quality of life for workers.

1. Introduction

Along with the changes in technology development, economic structure and social environment, institutional workers are subject to increasing stress from work. The tense stress from work not only inevitably increases jobs quitting rate and chances of workplace accidents, but also it might even ruin the workers health and bring up added costs to the entire society. Chou, Lee and Hsu pointed out that all pressures incurred from work related factors are termed stress from work [1]. Stress from work might incur various impact in line with different personal characters [2]. A heavy stress from work tends to affect quality of life which has become significant index to a society. Quality of life signifies an overall concept, including various phases of the individual lifestyle instead of a specific, objective or observable object. During the process of research, there must be rating scale developed to measure and verify its existence [3].

In this research, we hope to combine stress from work and quality of life into one study in an attempt to prove that lowering stress from work would definitely bring higher quality of life. It is hoped that through this study, we will bring up attention to hospitals regarding stress from work and quality of life for their workers and in turn bring hospitals into better business performance. Specifically, we in the current study hope to accomplish the following purposes:

- (1) To look into status quo of stress from work and quality of life of healthcare workers throughout Taiwan.
- (2) To investigate into demographic variables upon stress from work and quality of life.
- (3) To analyze the correlation between stress from work and quality of life.

2. Literatures Review

2.1 Stress from work

Stress included both mental and physical aspects. All internal reaction that interferes with mental and physical balance could be a stress. To put it in more understandable terms, stress comes into being when an individual perceives threatening environment which leads to a tense sentiment either mentally or physically [4]. Lazarus further elucidated that stress represents a sort of subjective, individual feel, depending upon how an individual would interpret his or her relationship with environments. The stress arises when the external environment over-demands the personal capability [5]. Lee pointed out that amidst daily routine and work, stress is a sort of inevitable situation closely related to individual's environment, physical conditions, thoughts and scenario [6]. When the result of interaction between the work and the worker damages the balance between mental and physical conditions, the stress from work comes into being [7]. The term stress from work is also known as vocational stress, as the impact and influence upon an individual from work related factors and the reaction with behaviors by such individual in response to the stress [8]. It can, as well, be said as the negative sentiment when an individual perceives the fact that his or her personal resources fail to live up to the external demands [9].

2.2 Quality of life

Meebery believed that quality of life is presupposed two conditions: A person with power for live in clear awareness, stressing an individual's subjective feel for assessment based on his or her sense [10]. Accordingly, quality of life stresses an individual's assessment of his or her own lifestyle instead of being measured by external, objective conditions [11]. Aaronson divided the indices to measure quality of life into two concepts, i.e., overall concept and health related concept [12]. WHO further in 1995 convened scholars from 15 countries to develop a cross-culture oriented "WHO quality of life questionnaire" which contained a total of 100 issues. In an attempt to have the questionnaire put into more extensive utilization, it developed a total of 26 issues in the "Compact Version of the WHO Quality of Life Questionnaire". In the present study, we adopted "Taiwan's Compact Version of the WHO Quality of Life Questionnaire" which was added with two indigenous issues in 1997 [13].

2.3 The impact of demographic variables upon stress from work and quality of life:

In terms of the stress from work, Huang et al. inferred that in case of the nursing personnel working in operation rooms, their ages, educational levels, service seniority at work and assigned duties would all have an impact upon the stress from work [14]. Huang pointed out as well that in the case of social workers, their ages, marital status, levels of education, service seniority at work, assigned duties, and incomes from work would all have an impact upon the stress from work [15]. Chang et al. further noticed that in the case of nursing personnel as newcomers, their religious beliefs would have significant impact upon the stress from work [16]. In the aspect of quality of life, Huang took social workers as the subject of study. The results yielded from their study indicated that social

workers' gender, ages, marital status, levels of education, service seniority at work, assigned duties and incomes from work would all have an impact upon the quality of life [15]. Huang (2005) further took the Taiwan residents contained in the databases of the "Interview Survey on National Health" completed in 2002 as the target subject to investigate once more into "Taiwan's Compact Version of the WHO Quality of Life Questionnaire" about the effectiveness. The results yielded from the study program indicates that the subjects' gender, health conditions, ages, levels of education, marital status would all have an impact upon the quality of life [3].

3. Research Methodologies

3.1 Subjects of study:

In the current study, we invited healthcare workers from Taiwan's non-psychiatric hospitals accredited by the Taiwan Joint Commission on Hospital Accreditation in 2007 as our target subjects. A total number of 432 hospitals including medical centers, regional hospitals, district hospitals, and new system hospitals passed the accreditation, from which we randomly picked up 200 hospitals for questionnaire survey. In consideration of the sampling representativeness, we conducted the sampling check by selecting 15 questionnaires from each categories over administration, nursing, medical technicians and doctors/physicians. We issued a total of 12,000 questionnaires to the targeted subjects and received 8,926 returns, among them 7,840 were valid, which constituted a 65.33% of valid return.

3.2 Development of study tools and evaluation of the trustworthiness and effectiveness:

The study adopted a cross-sectional research methodology to proceed with the survey by a structured questionnaire. The questionnaire was designed into three major parts. Part I, "stress from work" integrated the stress from work index rating scales designed by Cooper and Tang, Chen and Chan [13,14]. The questionnaire included a total of 30 questions broken into 2 subjects as the origin of stress from work (organizational structure, individual development at work, roles playing, duties at work, working environments) and the psychological feel at work, with 15 questions in each subject, scored by the Likert 5-score rating scale. The greater the total score, the heavier the stress from work. Part II, "quality of life" designed according to the "Taiwan's Compact Version of the WHO Quality of Life Questionnaire, 2000" (The WHOQOL – Taiwan Group, 2000) with a total of 28 questions, including 2 in overall scope, 7 in physical health, 6 in psychology, 9 in environment and 4 in social relationship, scored by the Likert 5-score rating scale. The higher the total score suggests the better quality of life. Part III, "Demographic variables" included 8 issues as gender, marital status, ages, educational level, assigned duties, service seniority at work, and annual incomes and religious.

After the stress from work questionnaire was drafted, we invited 6 experts in the field of human resources and medical management to evaluate the validity of the questionnaire and offer appropriate suggestions in terms of the questionnaire appropriateness, explicitness and importance. Upon completion of the evaluation process, we adopted the Content Validity Index (CVI) to verify the questions. The results indicated that all contents of the questions showed effectiveness greater than 0.8 in all cases, suggesting the contents are valid. Regarding the questionnaires for quality of life, we directly adopted the "Taiwan's Compact Version of the WHO Quality of Life Questionnaire" therefore unnecessary for validity evaluation. In addition, we conducted the Cronbach's α check for internal consistency. The results indicated the Cronbach's α coefficient at 0.91. The Cronbach's α values indicated above 0.7 for all aspects, suggesting consistency in the questionnaire.

3.3 Methodology in data processing:

Upon receipt of the returned questionnaires, we archived the data and conducted preliminary descriptive statistics before we went any further, picking out irrational statistical values and

conducting further modification. Then we conducted t-test, one way ANOVA, Scheff post-hoc comparison and Pearson correlation analysis to check and verify the results.

4. Research Results

4.1 Demographic variables distribution:

Out of the 7,840 valid questionnaires, females accounted for 87.2% while males accounted for merely 12.8%; with 54.2% unmarried, 44.4% married and 1.4% others. In the category of ages, those within 20~29 years range occupied the most at 44.4% while ages below 20 and above 60 accounted for the least, at 0.4% each. In the aspect of educational levels, graduates from four-year technology university accounted for the highest ratio, at 44.3%, Ph.D. holders accounted for the least, at merely 0.4%. In the category of assigned duties, nursing personnel account for the most, as many as 61.6%, doctors/physicians account for the least, at merely 3.1%. In the category of service seniority at work, employment for 1~6 years accounted for 42.1%, senior workers who have worked for more than 20 years accounted for the least at 2.4%. In the category of annual incomes, salary between US\$15,000~\$22,500 annually accounted for the most, at 48.0%, those over US\$30,000 (inclusive) accounted for the least, at 2.7%. In terms of religious beliefs, Buddhists accounted for the most at 43.1%, Catholics accounted for the least at 1.5%.

4.2 The status quo of stress from work and quality of life:

The average value for stress from work comes to 2.98, close to “fair” in the rating scale. In the part of origin of stress from work, the overall average value comes to 3.04. The highest average score falls in “working environments” (3.13) and the lowest falls in “roles playing” (2.90). In the part of psychological feel at work, the overall average value is 2.92. Among the items, the highest average score is: “I feel exhausted as I go home from work every day” (3.61), the lowest falls in “I feel low and moody while at work” (2.71). In the category of quality of life, the overall average value falls in 3.13, a little higher than the “mid-level satisfaction” in the rating scale. Out of the items, the highest score falls in “Scope of physical health” (3.39) and the lowest in “overall scope” (2.83).

4.3 The impact on stress from work and quality of life by demographic variables:

As indicated in Table 1, different genders demonstrate significant differences in terms of the influence by overall stress from work, origin of stress from work, organizational structure, individual development at work, roles playing, duties at work and social relationship. Over the items, females show heavier stress from work than male counterparts. Males show higher quality of life than female countermeasures. Marital status show significant differences in various phases of the stress from work and quality of life. Among them, unmarried subjects show heavier stress from work than married subjects. Married subjects show higher quality of life than unmarried ones. Different ages of the subjects show significant difference in the impacts upon various phases of stress from work and quality of life. Overall, subjects in 20~29 years old range show heavier stress from work than subjects in the age ranges of 40~49, 50~59 and over 60 years old. Subjects in the age range of 30~39 years old demonstrate greater stress from work than the counterparts in 50~59 years old age range. Subjects in those age ranges of 30~39, 40~49 and 50~59 years old are in higher quality of life than those in 20~29 years old. Subjects in the ages between 50 to 59 years old are in higher quality of life than counterparts in 30~39 years old age level. Other than individual development at work, different levels of education show significant difference in various aspects of stress from work and quality of life. Overall, subjects in junior colleges show greater stress from work than those graduated from senior high schools and with master degrees. The graduates of four-year technology university demonstrate higher stress from work than counterparts graduated with a master degree. Senior high school graduates enjoy higher quality of life than graduates from junior colleges and four-year technology university. Different assigned duties could demonstrate

significant difference in various aspects of stress from work and quality of life. Overall, nursing personnel show higher stress from work than counterparts serving in administration, medical technology, doctors/physicians. Personnel serving in administration, medical technology, doctors/physicians enjoy higher quality of life than nursing personnel. Other than duties at work, different service seniority at work would demonstrate significant difference in various phases of stress from work and quality of life. Overall, those having been employed for less than one year and those for 11~16 years show stress from work heavier than those for 16~20 years. Subjects having been in employment for 1~6 and 6~11 years show stress from work stronger than those having been in employment for 16~20 and over 20 years. Subjects having been in employment for 16~20 and over 20 years enjoy higher quality of life than counterparts having been employed for less than one year, 1~6 years and 6~11 years. Other than duties at work and overall scope, different annual incomes would show significant difference in various phases of stress from work and quality of life. Overall, subjects with annual salary below US\$15,000 and US\$15,000~\$22,500 are in stress from work stronger than those with annual salary above US\$30,000. Those in annual incomes above US\$30,000 enjoy quality of life higher than the counterparts with annual incomes higher than US\$15,000 and US\$15,000~\$22,500. Besides, religious beliefs show significant differences upon stress from work towards quality of life, psychology and environment. Among them, in the terms of psychology, Christians are subject to heavier stress from work than Taoism and others. However, overall quality of life and environment could not demonstrate any organizational difference.

Table 1. The impact on stress from work and quality of life by demographic variables

Question issues	t-test		One way ANOVA analysis					
	Gender	Marital Status	Ages	Educational Levels	Assigned Duties	Service Seniority at Work	Annual Incomes	Religious Beliefs
Stress from Work	1.597*	33.401**	12.217**	5.138**	16.808**	9.324**	7.444**	0.664
A. Origin of Stress from Work	1.553*	15.414**	5.949**	3.336**	16.617**	7.012**	5.719**	0.476
Organizational Structure	0.009**	7.813**	3.212**	3.114**	6.688**	2.998*	4.130**	0.883
Individual Development at Work	1.445*	21.181**	7.760**	2.129	14.245**	8.013**	4.030**	0.350
Roles Playing	-0.544*	5.783**	3.350**	2.589*	8.889**	9.951**	5.259**	0.424
Duties at Work	3.475*	8.960**	2.643*	3.114**	15.480**	1.184	2.407	0.467
Working Environments	2.493	9.991**	5.480**	3.769**	12.329**	8.994**	8.033**	0.889
B. Psychological Feel at Work	1.734	46.851**	17.870**	6.413**	12.781**	12.109**	7.592**	0.835
Quality of Life	-0.742	36.374**	16.412**	8.482**	10.814**	10.880**	5.677**	2.911*
Overall Scope	-0.780	18.448**	10.378**	4.845**	6.346**	3.623**	2.492	1.101
Scope of Physical Health	-1.113	21.258**	11.770**	6.541**	10.008**	7.976**	3.117*	1.291
Scope of Psychology	-1.680	36.810**	15.039**	7.925**	8.437**	8.034**	5.594**	3.310*
Scope of Environment	-0.654	21.794**	11.388**	5.884**	9.428**	9.861**	4.961**	2.480*
Scope of Social Relationship	1.548**	26.880**	7.563**	5.443**	2.652*	6.484**	3.982**	2.229

Remarks: *Where the significance level is at 0.05 (double-end), very significant; ** Where the significance level is at 0.01 (double-end), very significant.

4.4 Correlation between stress from work and quality of life:

As indicated in Table 2, significant negative correlation is noticed between either overall stress from work and quality of life or between various phases of stress from work in different scopes among quality of life. To put it in more understandable terms, the heavier the stress from work upon workers, the relatively lower the quality of life. On the other hand, the smaller the stress from work, the higher the quality of life. Among them, the level of negative correlation between psychological feel at work and overall quality of life in different scopes was higher than the origin of stress. These facts suggest the impact from psychological feel is higher than the origin of stress at work.

Table 2. Correlation between stress from work and quality of life

Question Issues	Quality of Life (Overall)	Overall Scope	Scope of Physical Health	Scope of Psychology	Scope of Environment	Scope of Social Relationship
Stress from Work (Overall)	-0.682**	-0.507**	-0.598**	-0.579**	-0.601**	-0.507**
A. Origin of Stress from Work	-0.558**	-0.429**	-0.475**	-0.446**	-0.520**	-0.410**
Organizational Structure	-0.407**	-2.95*	-0.318**	-0.325**	-.0392**	-0.331**
Individual Development at Work	-0.517**	-0.362*	-0.435**	-0.441**	-0.468**	-0.400**
Roles Playing	-0.453**	-0.327*	-0.373**	-0.354**	-0.443**	-0.334**
Duties at Work	-0.386**	-0.344**	-0.353**	-0.298**	-0.350**	-0.257**
Working Environments	-0.501**	-0.408**	-0.448**	-0.393**	-0.460**	-0.347**
B. Psychological Feel at Work	-0.713**	-0.516**	-0.638**	-0.633**	-0.600**	-0.535**

Remarks: *Where the significance level is at 0.05 (double-end), very significant; ** Where the significance level is at 0.01 (double-end), very significant.

5. Discussions and Suggestions

5.1 The impact on stress from work and quality of life by demographic variables:

The results from the study indicate that different genders have significantly different impact upon stress from work, origin of stress from work (except working environments) and social relationship. Such results prove consistent with the study conducted by Huang who pointed out that different genders would have significant difference in terms of impact from work stress [15]. Marital status show significant difference towards impact from various phases of work stress and life quality. Such results also reconcile with the study conducted by Huang who pointed out impact versus marital status in terms of stress from work could be up to a significant level [15]. Huang further pointed out that different marital status would have significant difference upon the quality of life [3]. Different ages show significantly different impacts upon various aspects of stress from work and quality of life. This reconciles with the result yielded from Huang who pointed out a significant negative correlation between ages and stress from work and proved that different ages would have significant difference in terms of impact upon the quality of life [3]. Other than individual development at work, educational levels show significantly different impact upon various aspects of stress from work and quality of life which coincides with the study conducted by Huang who pointed out educational levels show significant difference towards stress from work and further elucidated that educational levels show some difference upon quality of life [3]. The impact of different assigned duties upon various phases of stress from work and quality of life is significantly different. This well echoes with the rationale of Huang et al. who pointed out that the impact of different assigned duties upon stress from work is significantly different [14]. Huang further proved that the impact of different assigned duties upon the quality of life is significantly different [15]. Other than duties at work, the impact of service seniority at work upon various phases of stress from work and quality of life is significantly different. This well reconciles with the theories held by Huang et al. who pointed out that service seniority demonstrates a significant negative correlation to stress from work [14]. Huang elucidated that the impact of different service seniority upon quality of life is significantly different [15]. Other than duties at work and overall scope, the impact of different annual incomes upon various aspects of stress from work and quality of life is significantly different. This is consistent with the results of the study conducted by Huang who pointed out that the impact of different annual incomes upon the stress from work and quality of life shows a significant difference [15]. Besides, the impact of different religious beliefs upon the overall quality of life, psychology and environment is significantly different, which is consistent with result yielded from the study conducted by Chang et al. who elucidated that the impact of different religious beliefs upon stress from work is significantly different [16]. Huang further pointed out that the impact of religious beliefs upon quality of life is significantly different [3].

Therefore, according to the results of the study, it is suggested that a hospital should try to lower down the stress of work from the origin of stress for female staff members (except working environments) and from the scope of social relationship (e.g., the effort to have adequate communications with staff members before sponsoring on-the-job educational & training programs, sponsoring interpersonal relationship or inter-gender relationship and the like) in an attempt to upgrade their life quality. It is also suggested that for staff members subject to heavy stress and low quality of life, especially for those unmarried, 20~29 and 30~39 years old, graduates of junior colleges and four-year technology university, nursing personnel, workers of less than 16 years in service seniority, with annual incomes below US\$22,500. A hospital should try to make maximum use of various channels to minimize the origin of their stress from work in all aspects and stress from work in the scope of psychological feel at work so as to further upgrade their quality of life. Besides, hospitals are also advised to support more psychological feel at work for the part of Christian staff (by means of, for instance, increasing spiritual consultation or recreational activities) to help reduce their stress from work and, in turn, effectively enhance their quality of life.

5.2 The correlation between stress from work and quality of life:

The results from the study indicate that stress from work and quality of life demonstrate very significant negative correlation. Among the factors, the impact of psychological feel at work upon the quality of life is higher than the origin of stress from work. Such result coincides with the study conducted by Wang and Chen who elucidated workplace stress in significant negative correlation to quality of life [17]. To put it in more understandable terms, the heavier stress from work the staff members undergo, the lower level of satisfaction they will have on the quality of life. A hospital is, therefore, suggested that other than the efforts to lower the origin of stress from work in organizational structure, individual development at work, roles playing, duties at work and working environments, should all be taken into account the employees' psychological feel at work. A hospital, for instance, may provide counseling support to employees under heavy stress, set up employee assistance programs and spiritual counseling support channels with the help from its human resources department, social workers and psychiatrists, or team up with the Teacher Chang's Publishing House or other similar foundations and organizations, purchase books on spiritual cultivation available for employees to read, invite scholars and experts to lecture on communication skills for better interpersonal relationship, undermining and emotional stress management and such workshops or seminars, sponsor tours, birthday parties, Christmas night and garden parties and such recreations, instruct employees how to soothe stress from work. These efforts will effectively upgrade their quality of life.

5.3 Restriction on the study and suggestions to future researches:

In the current study, we adopted the psychological stress rating scale as the measuring index for the feel of stress from work. We suggest that future researches could explore into other stress feel indices (e.g., physical and behavioral indices) to analyze the extent of impact upon the interpretation on stress from work toward the quality of life. Besides, the present study adopted staff members from accredited hospitals in Taiwan through a cross-sectional study (i.e., specific survey within a limited period of time). Due to the limitation on time, funds, manpower and other interferences...etc., these are considered as the limitation in this study. It is suggested for future researches to further investigate by using the longitudinal study (i.e., by conducting multiple surveys in different periods of time) so as to follow-up the development trend on work stress and life quality over the interviewed subjects and to compare the difference to this cross-sectional study. Finally, it is suggested that future researches could broaden the subject scope into comparison with hospitals and enterprises to investigate into the impact of the stress from work in different industries upon quality of life. The results so attained by the future researches could function as handy references regarding how to minimize stress from work and upgrade quality of life for employee.

6. Acknowledgement

The authors would like to thank the 200 hospitals in Taiwan that participated enthusiastically in this study to make it possible.

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