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Physical Quality of Life among Military Health Care Workers in Downsizing Organization

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Abstract

Objectives: To investigate the quality of life (QOL) among health care workers in two downsizing military general hospitals in Taiwan and to explore the relationship between psychosocial factors, job loss, psychological morbidity and QOL in this work environments.

Methods: A cross sectional survey including the General Health Questionnaire (GHQ) and the Taiwan brief version of the WHOQOL Questionnaire were administered to 340 health care workers divided into job losers and job keepers.

Results: The job losers had worse physical domain QOL scores than the job keepers (14.27 vs. 14.94, p=0.012). The hypnotic use history, life event and nurse category (p=0.006, 0.043. and <0.001 respectively) were positive associated with GHQ. Both total GHQ score (β=-0.39, p<=0.01) and age (β=0.26, p<=0.01) might associate with QOL.

Conclusions: Physical domain of WHOQOL might be the most significant job related health impact to downsizing organization. Younger employees with psychological morbidities working in hospitals that are downsizing may be in need of attention to their quality of life.

Keywords: GHQ; WHOQOL-BREF; Downsizing; Job lost; Military hospital

Introduction

Health care organizations have been subject to tremendous pressure from downsizing, redesigning, re-engineering, restructuring and cost-cutting [1]. Many studies have investigated the well-being of employees facing organizational change and found that workers were under more work-related pressure and that their self-reported health was markedly poorer [2-5].

Studies investigating factors related to the personnel response to downsizing of facilities in the health care system have produced contradictory results. While one study has reported higher stress in among older, more educated workers with longer company tenure, another has found not with personal demographics but with downsizing and restructuring [6,7]. While one study has found job insecurity to be more prevalent among employees with lower education attainment, in blue-collar and construction workers, those employed in smaller companies, and in older women, another has found little evidence of a relationship between the social factors of gender, education, household income, age, marital status, or social support at work and health in people facing job insecurity [3,4]. In addition, few studies have taken into consideration the job category of health care workers when investigating employee responses to organizational downsizing [5,8].

The source of stress in Taiwan's military hospitals is the government's downsizing and merging of a number of military general hospitals. For example, the Air Force's Pingtung Hospital was merged with its hospital in Kaohsiung and Navy's Penghu Hospital was merged with Tri-service General Hospital in July 2006 [5]. Because downsizing and layoffs change working circumstances, it would be reasonable to assume that these changes, which are often stressful, can influence the mental health status and quality of life for health care workers in Taiwan's military hospitals. We do not know, however, to what extent this occurs.

This study uses the GHQ and WHOQOL-BREF to estimate the prevalence of psychological morbidity among 298 health care workers in two downsizing military general hospitals in southern Taiwan between January and February 2006 and to explore the relationship of various psychosocial factors, being laid off, and psychological morbidity to quality of life in this work environment.

Material and Methods

This cross-sectional study was started in January 2006. The study follows the guidelines outlined in the Helsinki declaration and the design was approved by the institutional review board of Taiwan Armed Forces Kaohsiung General Hospital. A purposive sampling was done to choose study subjects, health care workers, from two southern Taiwan military hospitals. The potential subjects were delivered a description of this study, an informed consent form and a structured questionnaire, which had items collecting personal characteristic data, including disease history, as well as the questions from two well-accepted instruments-one for psychological morbidity and the other for quality of life. The questionnaire was collected the day after it was distributed. Subjects were enrolled into this study if they signed the informed consent form and reported no major illnesses.

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Participants

We sent a questionnaire to a total of all employees in the professional categories of 340 health care workers, which we categorized into physicians, nurses and other health care workers (social workers, psychologists, pharmacologists, laboratory workers and executive officers, etc.). We collected anonymous questionnaires from 12 of 42 physicians, 145 of 153 nurses, and 141 of 145 other health care workers from the three hospitals. In total, we collected 298 completed questionnaires, making a response rate of 87.7%.

Instruments

Questionnaires were used to collect each participant's basic information, including gender, age, occupation, educational level, marital status, smoking history, history of alcohol consumption and hypnotic drug use, disease history, whether they would be laid off or not, and potentially confounding life events occurring with the previous six months. Such life events included the death of a relative, economic stress, marital or divorce, sentinel events and malpractice problems with legal implications. Questionnaires also included the question items from the General Health Questionnaire (GHQ) (Chinese version) and the Taiwan brief version of the WHO Quality of Life Questionnaire (Taiwan Brief Version) (WHOQOL-BREF).

The General Health Questionnaire-12 (Chinese Version) (GHQ-12-CV) is a self-administered screening instrument used to assess psychological morbidity. The four answer choices for each GHQ item were assigned either a score of 0 or 1. "Not at all" and "About as usual" were assigned a score of 0, and "more than usual" and "always" a score of 1. Psychopathology was represented by the total score zero to twelve of all 12 questions. The optimum cutoff point were subdivided into potential cases (>=3) and non cases (<=2) which provides the best compromise between high sensitivity and a low false-positive rate, based on the Receiver Operating Characteristic curves, with a Cronbach`s alpha of 0.79 [9].

The WHOQOL-BREF is a 26-item revised version of the 100-item WHOOQOL designed by the WHO to measure quality of life (QOL). The measure, based on a multi-geographical, multi-ethnic background, and cross-cultural perspectives, has been used in studies of medical outcomes and clinical and health policy to evaluate QOL. The instrument is used to evaluate one's perception of his or her physical, mental, social and environmental well-being over the past four weeks. 7 to 35, 6 to 30, 3 to 15 and 8 to 40 are the minimum and maximum-scores of physical, psychological, social and environmental domains respectively. The higher the score, the higher the QOL. The reliability test between WHOQOL-BREF and the original measure ranges from 0.70 to 0.80, with a Cronbach's alpha ranging from 0.70 to 0.77. Pearson correlation coefficient for each question was calculated, and ranged between 0.53 and 0.78. Criteria-related validity explained 60% of the global QOL. The construct validity has been found to explain 73% variance by principal factor analysis [10].

Data analysis

The chi-square test, student t test and multivariate regression analysis were used to examine the differences in the demographic variables and assess measures among the two groups. A p-value <0.05 was considered significant. All statistical operations were performed on SPSS 10.0 for Windows software package (SPSS, Chicago, IL).

Results

There was a higher response rate from nurses and other health care workers (145/153, 94.8% and 141/145, 97.2%, respectively) and lower response rate from physicians (12/42, 28.6%). We had a higher response rate from the Pingtung hospital (95%) and a lower response rate from the Penghu hospital (82%). There were 57 job losers out of the 133 responders in Pintung hospital and 36 job losers out of 165 responders in Penghu hospital.

As can be seen in Table 1, our sample consisted of 93 job losers and 205 job keepers. Among the job losers were two physicians (2.2%), 47 nurses (50.5%), and 44 others (47.3%). Among the job keepers were 10 physicians (4.9%), 98 nurses (47.8%), and 97 others (47.3%). There were no significant differences in demographic or personal characteristics between the two groups (p=0.704). The job losers had a greater percentage of females than the job keepers (86% vs. 76%, p=0.051), were older (36.2 vs. 35.4 years; p=0.513), and were more educated (14.09 and 13.95 years; p=0.631). There were no significant differences between the two groups with regard to marriage status, alcohol use history, hypnotic drug use history or life events (p=0.777, 0.570, 0.503 and 0.837 respectively). A greater portion of the job keepers smoked (8.3% vs. the layoff group 2.2%) (p=0.044). We found no significant difference in the total score of GHQ between two groups (t=-1.025, p=0.306). In our analysis of the WHOQOL BREF, job losers had worse physical domain scores than the job keepers (14.27 vs. 14.94) (p=0.012).

	Job loser (N=93)		Job keeper (N=205)		X2/t	P
Job category		%; ± SD		%; ± SD	X2 0.38	0.70
Physician	2	(2.2%)	10	(4.9%)		
Nurse	47	(50.5%)	98	(47.8%)		
Others	44	(47.3%)	97	(47.3%)		
Gender					X2 -1.96	0.05
Male	13	(14%)	49	(24%)		
Female	80	(86%)	156	(76%)		
Age (mean)	36.2		35.4		t -0.66	0.51
Educational level (years)	14.1		13.9		t -0.48	0.63
Marriage status					X2 0.28	0.78
Single	39	(41.9)	77	(37.6%)		
Married	49	(52.7%)	121	(59.0%)		
Others	5	(5.4%)	7	(3.4%)		
Alcohol use history	4	(4.4%)	12	(5.9%)	t 0.57	0.57
Hypnotic drug use	3	(3.2%)	4	(2%)	t -0.67	0.52
Smoking	2	(2.2%)	17	(8.3)	t 2.03	0.04*
Life event	7	(7.5%)	14	(6.8%)	t -0.21	0.84
GHQ						
Total score	2.05	± 2.62	1.74	± 2.32	t -1.03	0.31
Psychological morbidity	32	(34.4%)	61	(26.8%)	t -1.33	0.18
WHQ-QOL-BREF						
Physical	14.27	± 2.16	14.94	± 2.05	t 2.54	0.01*
Psychological	12.93	± 2.77	13.30	± 2.44	t 1.15	0.25
Social	13.59	± 2.23	14.07	± 2.13	t 1.77	0.08
Environmental	13.14	± 2.23	13.46	± 2.23	t 1.11	0.27

*: $p < 0.05$

Table 1: Characteristic, Total GHQ and WHO-QOL-BREF Scores of the Health Care Workers at the Two Military Hospitals in Taiwan.

In this study, we analyzed the total score of GHQ and four dimensions QOL by independent variables in forward stepwise regression analysis. The hypnotic use history, life event and nurse category were positive associated with GHQ (p=0.006, 0.043. and <0.001 respectively). Total GHQ scores and age predicted the four domains QOL (p<0.001). The unstandardized coefficients were -0.35, -0.42, -0.18, -0.33 and 0.08, 0.06, 0.04, 0.05 to physical, psychological, social and environmental domains respectively. We found gender, educational level, and job loss to be significantly associated with the physical domain QOL (p=0.019, 0.037, and 0.003 respectively) (Table 2). Both total GHQ score (β= -0.39, p<=0.01) and age (β=0.26, p<=0.01) could predict scores on total score of QOL (Table 3).

Discussion

This study found psychological morbidity to be more common among those who were laid off, though the difference was not significant, and the job loss was negative associated with QOL. Physical domain of WHOQOL might be the most significant job related health predictor to downsizing organization. The younger, lower educational level, male worker were negative associated with QOL too. The hypnotic use history, life event and nurse category were positive associated to psychological morbidity. GHQ might be the mediator between nurse categories, hypnotic drug use and life event with QOL. Downsizing had a similar impact on health care workers but had not similar result as one study on a global oil company, where employees' perceptions of their psychosocial working environment were highly related to their attitude to organizational change [2,7,11].

	R^2	B	SE	β	p	95% C. I. LB	UB
GHQ	0.09						
Constant		-3.41	1.08		<0.01**	-5.53	-1.29
Hypnotic use		2.58	0.92	0.16	0.006	0.76	4.39
Life event		1.11	0.55	0.12	0.043	0.04	2.18
Nurse		0.98	0.27	0.20	<0.00***	0.43	1.52
QOL							
Physical	0.32						
Constant		10.50	1.24				
GHQ		- 0.35	0.04	-0.41	<0.00***	-0.43	-0.26
Age		0.08	0.01	0.39	<0.00***	0.06	0.11
Gender		0.67	0.28	0.13	0.02*	0.11	1.22
Education(year)		0.12	0.06	0.12	0.04*	0.01	0.22
Layoff or not		-0.69	0.23	-0.15	<0.01**	-1.13	-0.24
Psychological	0.20						
Constant		12.01	0.53				
GHQ		-0.42	0.06	-0.39	<0.00***	-0.53	-0.31
Age		0.06	0.01	0.19	<0.00***	0.03	0.05
Social	0.07						
Constant		12.94	0.48				
GHQ		-0.18	0.05	-0.2	<0.01**	-0.28	-0.08
Age		0.04	0.01	0.16	<0.01**	0.01	0.06
Environmental	0.17						
Constant		12.26	0.48				
GHQ		-0.33	0.05	-0.36	<0.00***	-0.43	-0.23
Age		0.05	0.01	0.21	<0.00***	0.02	0.07

QOL: Quality of Life; R2: R square; B: unstandardized coefficient; SE: Standardized Error; β: standardized coefficient; C. I.: Confidence Interval; UB: Upper Bound, LB: Lower Bound; *: p<0.05; **: p<0.01; ***: p<0.00

Table 2: Regression analysis of Predicting factors to Physical, Psychological, Social and Environmental QOL.

The GHQ is used worldwide and considered an appropriate measurement of mental health outcomes [2,5,12-16]. Women have been reported by several epidemiological studies to have a higher prevalence of psychological morbidity [5,12,14,16-18]. In this study, females dominated the nurse category, making up 80% of our sample, which may have caused an overestimation in the prevalence of psychological morbidity related to downsizing of their healthcare facilities. However, when we divided the population into job losers and job keepers, there were no significant differences in gender or job category between the two groups, except for a higher prevalence of smoking in the job keepers. One Canadian study found that high levels of job insecurity lowered self-rated health and increased distress and the use of medications, but had no impact on heavy drinking [3]. In our regression analysis, the hypnotic drug use, life event and nurse category were positive associated to GHQ. Beside the reason of feeling of a loss of control, the nurses might have accessible reason to take the hypnotic drug and changed the health behavior when faced life event or insomnia [1,3]. However, the prevalence of smoking is usually less among healthcare workers in common healthcare facilities, it is higher in military facilities where cigarette smoking plays a large role in social interaction, especially among males, who are more influenced by their peers than females [19]. In this study, more women were to lose their jobs than men, which might exaggerate the psychosocial stress when they face the life events. Now matter how, the GHQ might play a mediator between the psychosocial factors such as job category, life event, health behavior of hypnotics use with the four domains QOL.

This study of the effect of hospital downsizing used the WHOQOL as an outcome measure. Previous studies of the effect of organizational change have used various tools to measure health outcome, including self-rated health questionnaires or a single physical condition [3,20-22]. Others have used tools measuring depression or mental health or general health [1,4,7,13,16,23]. Most outcome measures are limited to one area of response. No study has used tools that measure health more comprehensively, taking into account physical, psychological, social and environmental aspects of health. This study used the WHOQOL, which subdivides quality of life into not only physical and psychological domains but also into social and environmental domains, giving a more comprehensive picture of health [2].

In this study, the physical QOL was poorer in the group of job losers, which is not surprising since the adverse effect of being laid off influences both psychological morbidity and physical health. Though the mean scores of the four domains for job losers were poorer than the job keepers, there were no other significant differences among the other three domains for them, possible because, as has been be reported by Yao, the physical domain of the WHOQOL-BREF is considered the most significant predictor of the total score, followed by the psychological domain and the environmental domain [10]. Another

						95% C.I	
	B	S.E.	β	t	sig	lower bound	upper bound
constant	50.91	2.63		19.39	<0.01	45.74	56.07
gender	0.42	1.05	0.02	0.40	0.69	-1.65	2.48
age	0.22	0.04	0.26	4.93	<0.01	0.13	0.30
job looser	-1.51	0.91	-0.09	-1.67	0.09	-3.29	0.28
GHQ score	-1.25	0.17	-0.39	-7.27	<0.01	-1.58	-0.91
model 1: R=0.475, R Square=0.23, adjusted R Square = 0.22 ; C.I = Confidence Interval							

Table 3: The linear regression analysis to total score of WHOQOL-BREF with independents variables.

reason might due to personal demographic but not downsizing and restructuring variables predicted family-work conflict. The indirect effect of nurse category and life event might influence the GHQ then decreased physical, psychological, social, and environmental QOL [7]. With regard to the determinants of QOL in this study, job status was found to be significantly associated with physical QOL after controlling for age, gender, educational level and psychological morbidity. It can be assumed that if job status is so important, then downsizing, which directly affects job status, will affect the mental and physical health of employees, especially in nurse category. Based on our regression analysis, age and total GHQ scores associated the four domains scores for the QOL. The younger had poorer QOL. The higher the GHQ, the poorer the QOL. However, Burke, investigating 686 hospital base nurses, found no relationship between demographics and work conflicts, an indicator of increased stress in that study [7]. This difference might be explained by his use of outcome measure with work-family conflict and family-work conflict. The dichotomous results of work and family conflicts in Burke`s study and our results might need path analysis in cohort study to clarify the causal relationship.

McDonough`s study also reported that there was little evidence of a relationship between gender, education, household income, age, marital status, and social support to level of job security [3]. The reason for the difference between that study and ours may be that the perceived job insecurity in that study was not as clearly defined in our study, which defined it as knowing one would be laid off. The other reason may be that employees' perceptions of their psychosocial working environment, in particular the corporate social responsibility, were highly related to their positive attitude to organizational change [11]. Reissman did a study of predominantly white males who were married, college-educated, and nonsmokers. Higher stress levels were seen among older, more educated workers who had longer company tenure [6]. Around fifty percent of our samples were not married and the average age was around 36 years old, the lower response rate from our higher educated physician, and the specific job characteristics of health care workers which might explain the reason our results differ.

One study reported the job insecurity was more prevalent among employees with lower education levels, blue-collar and construction workers, those employed in smaller companies, and in older women [4]. Our study of downsizing found younger persons, males, peoples with lower educations, higher psychological morbidity and job losers to have worse physical QOL scores. The reasons of this difference may be related the possibility that during restructuring of manpower, the job keeper has an increase in average days on duty per month, a decrease in opportunity for promotions, and an increase in work load, while the soon to be job losers would have lost some self-confidence in their ability to do perform their duties [1]. Still it is difficult to make comparisons because employers at a hospital may base their layoff decisions on different psychosocial characteristics (e.g. age, gender, professional skill and educational level) than employers at a construction firm.

McDonough postulated that the job insecurity occurs as result of downsizing reduces feelings of control over one's environment and opportunities for positive self-evaluation, and that these psychological experiences, in turn, have deleterious physical QOL and health consequences [3]. The adverse effects on staff facing organizational change may be ameliorated by improved management practice [11]. Reissman reported the time delay for management to implement the threatened layoff and peer rankings for a new job performance appraisal might contribute to a decline in worker solidarity because of concerns about job security. These uncertainties reduced worker productivity and effective teamwork [6]. In this study, the prevalence of psychological morbidity with health care workers in these two hospitals resembled results regarding the impact of severe acute respiratory syndrome on nurses in Taiwan [5,8,24]. Both job losers and job keepers are affected. Assisting those persons who remain on the job is becoming increasingly important in preventing and treating layoff survivor sickness (who do not lose their job but are grieving and feeling guilty about keeping their jobs) [1].

About the sample size estimation, we used sample size determination in health studies, version 2.0 (World Health Organization), selected the 95% confidence interval, anticipated population prevalence 0.025, population size 50000, and predicted the parameter of sample size to be 364. Our sample size was small in the physician group, though the total response rate was around 87.7%. The physician category had lower participated rate might be due to firstly, the deployment policy assigned the rotation course to these hospitals every year among physicians; secondly, these physician were recruited difficultly when compared to other disciplines. The response rate was higher over the more job loser hospital which would overestimate the downsizing effect, especially downsizing does not often occur in military society of Taiwan. In these situations, we should not over-conclude by these results.

This study has some limitations. First, psychological morbidity and QOL were measured using self-report questionnaires, so reporting bias could not be avoided. The mental health of the participants would influence the reliability of outcome. Second, the cross-sectional design of the study did not allow us to establish causal relationships between psychosocial factors, downsizing policy, GHQ and QOL. Finally, since the results are based on a sampling of health care workers from military general hospitals in Taiwan, there is no clear social context, information regarding employee's previous learning experience, work conditions or night shift hours and so the result may not be generalized to other health care workers in private health care sector or to health care works outside Taiwan.

Implication:

1. job loser had worse QOL.

2. Younger employees, males, those with lower educational levels, worse total GHQ scores and those who were laid off were more likely to have lower physical QOL.

3. Age and GHQ might associate with four domains QOL.

4. Physical domain of WHOQOL might be the most significant job related health predictor to downsizing organization.

Conclusions

In conclusion, this study found worse physical QOL among employees who were laid off during the downsizing of two military hospitals. Younger employees, males, those with lower educational levels, worse total GHQ scores and those who were laid off were more likely to have lower physical QOL. Physical domain of WHOQOL might be the most significant job related health predictor to downsizing organization. Age and GHQ could predict four domains QOL. The hypnotic use history, life event and nurse category were positive associated with GHQ. Therefore, younger employees with

psychological morbidity may be in need of attention to their quality of life in downsizing military hospitals in Taiwan.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the authorship and/or publication of this article.

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