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RESEARCH ARTICLE

Understanding the Relationship between Job Satisfaction and Psychological Well-being of Preventive Medicine Workers in Northern Vietnam

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Abstract:

Objective:

The study aims to access the relationship between job satisfaction and the psychological well-being of preventive medicine workers in Vietnam.

Methods:

A cross-sectional study was implemented in 12 preventive medicine centers in three provinces of northern Vietnam. A total of 400 preventive medicine staff participated, and a total of 383 questionnaires were analyzed. The questionnaire included validated questions related to general information, job satisfaction, and psychological well-being.

Results:

As expected, job satisfaction is correlated with psychological well-being. This association varied across dimensions. Satisfaction with supervision and community support had the lowest correlations with well-being (0.22 and 0.27, respectively), while co-worker satisfaction and overall job satisfaction had the strongest correlation (0.41 and 0.47, respectively) with psychological well-being. After controlling for personal factors, these correlations remained significant. Co-worker satisfaction and overall job satisfaction were the strongest predictors of psychological well-being (β = 0.38 and 0.45, respectively).

Conclusion:

Among preventive medicine workers, job satisfaction was positively correlated with psychological well-being. In turn, these findings should contribute to the development of sound policies for human resource management in the health system of Vietnam. A better understanding of the factors contributing to job satisfaction and psychological well-being among preventive medicine workers may help improve their working conditions, which may subsequently improve the quality of healthcare delivery.

Keywords: Health worker, Preventive medicine, Job satisfaction, Psychological well-being, Questionnaires, Self-esteem.

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1. INTRODUCTION

The link between job satisfaction and the health of workers has been suggested by a vast number of published studies. Faragher *et al*. [1] conducted a systematic meta-analysis review of 485 studies published from 2000 to 2005, with a combined sample size of 267,995 individuals to confirm the relationship as well as the magnitude of the relationship. This meta-analysis emphasized that job satisfaction level is an important factor influencing the health of workers. Further, job satisfaction was most strongly associated with psychological problems, whereas the strongest negative relationships were found for burnout, depression, and anxiety, and the positive relationships were found for self-esteem.

Moreover, a number of published studies show growing evidence that current trends in employment conditions may erode job satisfaction and directly damage the physical and mental health of employees [2]. For physical health, almost physical health scales were restricted to subjective scales (mostly measuring a combination of "psychosomatic complaints" such as headaches, dizziness, muscle pain, and digestive problems), cardiovascular disease and musculoskeletal disorders. While for mental health, many authors meant depression, anxiety, burnout, self-esteem, and

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general mental health.

Many scientists acknowledged that the knowledge of psychological well-being persistently lags behind the knowledge of psychological dysfunction [3]. As suggested by many researchers, psychological well-being is derived from several aspects, such as self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth [4]. Results of preview studies have indicated that overall job satisfaction was assumed to have a positive correlation with psychological well-being [5].

To date, there have been few studies undertaken regarding the relationship between job satisfaction and psychological well-being among health workers in Vietnam. Moreover, all the studies were conducted in hospital or primary health care settings, and were not specific to preventive medicine workers. Thus, the relationship between job satisfaction and psychological well-being amongst preventive medicine workers in Vietnam was crucially necessary.

2. METHODS

2.1. Design and Participants

This study was conducted using a cross-sectional design through a quantitative data collection method. We included all preventive medicine workers at three provincial, 15 urban districts, and 31 rural district centers in three provinces, including Hanoi, Yen Bai, and Hai Duong.

Staff at the center who were not working as a director, a deputy director, a supervisor, an accountant, a driver, or an administrative staff, were invited to participate in the study. Given that all preventive medicine centers are government-operated agencies and operate under the same structure and policies, the selected centers could be seen as representative of all preventive medicine centers in northern Vietnam. The sample size for the survey was set at 400 participants. This sample size was considered big enough for an organizational survey, as suggested by Barlett, Kotrlik [6].

2.2. Questionnaire

The questionnaires comprised three main parts:

[1] Demographic information, including gender, age, education level, professional degree, job tenure, marital status, number of children, having a second job, and distance from home to work,

[2] Job satisfaction scores, in terms of facet job satisfaction and overall job satisfaction. The instrument used for the survey was a questionnaire that was validated and published previously [7]. The Cronbach's alpha coefficients of individual dimensions and the whole instrument ranged from 0.684 to 0.854. The test-retest reliability coefficients over an interval of five days were 0.732–0.937, showing that the instrument had good test-retest reliability over a short period. The instrument consisted of 34 items and eight facets, including pay and benefits (7 items), reward and recognition (6 items), supervision (4 items), community support (4 items), working conditions (3 items), communication (4 items), co-workers (3 items), and nature of the job (3 items). The score for each facet was the average score of the facet's items. An overall job satisfaction score was calculated by averaging out the summed scores of all facets and published previously [8].

[3] Psychological well-being was measured using the Index of Psychological Well-being developed by Berkman [9]. This instrument was designed to measure the mental health of the general population. Its reliability and validity were assessed in several studies. Berkman [9] reported a correlation of 0.48 between the Index of Psychological Well-being and a 20-item Index of Neurotic Traits, a scale containing five aspects of mental health. Wright and Bonett [10] reported the test-retest reliability coefficient of 0.74 for the scale after six months. A Cronbach's alpha coefficient of 0.70 for the scale was reported in a study by Wright and Bonett [11]. The scale includes eight items, five negative items and three positive items. These items ask respondents how often they feel very lonely or remote from other people, pleased about having accomplished something, depressed or very unhappy, bored, so restless you could not sit long in a chair, on top of the world, vaguely uneasy about something without knowing why, and particularly excited or interested in something. Answer options for each item are often, some time, and never. Total scores of the negative items and the positive items are calculated separately. The index of Psychological Well-being were calculated using the matrix of negative scores and positive scores recommended by Berkman [9]. The index ranges from 1 (most negative feelings) through 4 (as many positive as negative feelings) to 7 (most positive feelings).

2.3. Data Analysis

The data were analyzed using the Statistical Package for Social Science (SPSS) version 20.0. Facet job satisfaction, overall job satisfaction, and index of psychological well-being were measured as continuous variables. They were checked for normality, and the results showed that they were all normally distributed. Personal factors were categorical variables. Bivariate associations between job satisfaction, psychological well-being, and personal factors were analyzed using Pearson's correlation, independent T-test, and one-way ANOVA (or Kruskal-Wallis H test in case of unequal variances). Associations were considered statistically significant at the 0.05 alpha level. Post-Hoc comparison (Turkey HSD) was used when one-way ANOVA was significant.

To investigate the relationships between job satisfaction and psychological well-being (dependent variable), bivariate correlation coefficients were calculated for each facet and overall job satisfaction. Hierarchical multiple regression was then computed to examine the relationships between job satisfaction and the dependent variable when controlling for personal factors. Psychological well-being was the outcome variable. For each model, personal factors with a p-value of less than 0.05 were entered into the first block. Categorical variables with more than two categories were recoded into

dummy variables to be suitable for multiple regression analysis. A facet job satisfaction variable or overall job satisfaction was entered into the second block. The assumptions of linearity, normally distributed errors, and uncorrelated errors were checked and met the assumptions for the models.

2.4. Ethics Approval

The ethical clearance application for the quantitative survey was approved by the Human Research Ethics Committee of Queensland University of Technology (Ethics Variation Approval No. 1200000682) and the Research Ethics Committee of Hanoi University of Public Health (Ethics Approval No. 004/2014/YTCC-HD3). The Helsinki guidelines were followed in this study when applicable.

3. RESULTS

From the twelve preventive medicine centers in the three provinces involved in the survey, 400 eligible participants were invited to complete the questionnaire. A total of 389 questionnaires were returned to the research team, of which 6 were judged to be incomplete because they had two or more blank pages. The final number of records for the analysis was 383 (the response rate was 95.7%).

3.1. Personal Characteristics of the Participants

The demographic characteristics of the respondents are shown in Table **1**. Participants in this study were mostly female (62.9%), age between 20 – 29 years (37.3%), and had children (76%).

Work-related characteristics are presented in Table **2**. Most participants worked at district preventive medicine centers and did not have a second job. Job tenure of the respondents ranged from 1 to 20 years, although two-thirds had worked for less than 5 years at their current job.

Table 1. Gender, age, marital status, number of children, and education level of respondents.

	Frequency	Percent
Gender (n=383)		
Male	142	37.1
Female	241	62.9
Age (n=383), Mean = 35.13, SD = 10.017, min = 21, max = 66		
20 – 29 years	143	37.3
30-39	115	30.0
40-49	75	19.6
≥ 50 years	50	13.1
Number of children (n=383)		
None	92	24.0
One	142	37.1
Two	149	38.9
Marital status (n=383)		
Single	68	17.8
Married	315	82.2
Education level (n=379)		
Professional training	241	63.6
Bachelor	114	30.1
Masters	24	6.3
Professional degree (n=383)		
Medical doctor	65	17.0
Nurse	196	51.2
Public health bachelor	29	7.6
Other degree	93	24.2

Table 2. Respondent's work characteristics.

	Frequency	Percent
Province (n=383)		
Hai Duong	127	33.2
Hanoi	127	33.2
Yen Bai	129	33.6
Level of center (n=383)		
Provincial	153	39.9

(Table 2) contd.....

District	230	60.1
Having a second job (n=383)		
Yes	27	7.0
No	356	93.0
Distance from home to work (n=383)		
< 5 km	197	51.4
5-10 km	98	25.6
> 10 km	88	23.0
Tenure at current position (n=383)		
≤ 5 years	249	65.0
6-10 years	92	24.0
11-15 years	23	6.0
16-20 years	19	5.0
Length of employment at current center (n=383)		
≤ 5 years	168	43.9
6-10 years	95	24.8
11-15 years	33	8.6
16-20 years	26	6.8
≥ 21 years	61	15.9

3.2. Psychological Well-being Among Preventive Health Workers

Table **3** presents the bivariate analysis of associations between psychological well-being and personal factors. The results show that there were no significant differences in psychological well-being by age, gender, marital status, number of children, center level, second job, distance from home to work, education level, and tenure at the current job. Respondents with a Bachelor of Public Health reported more negative feelings than nurses. Length of employment at the current center was significantly associated with psychological well-being when analyzed using one-way ANOVA. The Post-Hoc test showed that employees working at the center for less than 5 years, 6-10 years, and 11-15 years had more negative feelings than those who had worked more than 21 years.

Table 3. Bivariate analysis of associations between psychological well-being and personal factors.

Characteristics		n	Mean	SD	Sig.
Age					
	20-29 years	143	4.48	1.48	.057
	30-39	115	4.37	1.35	
	40-49	75	4.44	1.35	
	≥ 50 years	50	5.00	1.29	
Gender					
	Male	142	4.61	1.45	.255
	Female	241	4.44	1.37	
Marital status					
	Single	68	4.59	1.48	.596
	Married	315	4.49	1.38	
Number of children					
	None	92	4.55	1.45	.151
	One	142	4.33	1.46	
	Two	149	4.64	1.30	
Centre level					
	Provincial	153	4.54	1.37	.738
	District	230	4.49	1.42	
Second job					
	Yes	27	4.19	1.36	.216
	No	356	4.53	1.40	
Distance from home to work					
	< 5km	197	4.50	1.39	.218
	5-10 km	98	4.35	1.31	

(Table 3) contd.....

	> 10 km	88	4.70	1.50	
Education level					
	Professional training	241	4.54	1.46	.685
	Bachelor	114	4.41	1.25	
	Masters	24	4.42	1.50	
Professional degree					
	Medical doctor	65	4.57	1.33	**.022**
	Nurse	**196***	**4.65**	**1.40**	
	Public health bachelor	**29**[a]	**3.86**	**1.33**	
	Other	93	4.35	1.42	
Tenure at current position					
	≤ 5 years	249	4.55	1.45	.322
	6-10	92	4.45	1.28	
	11-15	23	4.04	1.52	
	16-20 years	19	4.74	1.10	
Length of employment at current center					
	≤ 5 years	**168***	**4.48**	**1.48**	**.006**
	6-10	**95***	**4.38**	**1.28**	
	11-15	**33****	**4.09**	**1.38**	
	16-20 years	26	4.35	1.29	
	≥ 21 years	**61**[a]	**5.08**	**1.27**	

a Reference category; * Post-Hoc test p<0.05; ** Post-Hoc test p<0.01.

Table 4. Levels of job satisfaction, bivariate analysis of correlations between job satisfaction and psychological well-being (n=383).

	Job satisfaction		Correlation between job satisfaction and psychological well-being	
	Mean	**Standard deviation**	**Correlation (r)**	**Sig.**
Pay and benefits	3.81	0.76	.342	.000
Reward and recognition	4.11	0.80	.354	.000
Supervision	4.54	0.79	.221	.000
Community	4.31	0.72	.267	.000
Working conditions	4.21	0.84	.311	.000
Communication	4.39	0.67	.383	.000
Co-worker	4.71	0.64	.411	.000
Nature of the job	4.81	0.56	.364	.000
Overall job satisfaction	4.36	0.50	.470	.000

3.3. Relationship between Psychological Well-being and Job Satisfaction

Table **4** shows that all facets of job satisfaction and overall job satisfaction had positive relationships with psychological well-being. The correlations ranged from 0.221 (supervision satisfaction) to 0.470 (overall job satisfaction).

Table **5** presents a summary of the hierarchical multiple regression analysis of satisfaction with pay and benefits and psychological well-being, controlling for professional degree and length of employment at the current center. When the personal factors were entered into the first block, only the length of employment at the current center of over 21 years was the significant predictor (R^2 = 0.06, p < 0.01). When satisfaction with pay and benefits was added, it significantly improved the prediction (R^2 change = 0.11, p < 0.001). Psychological well-being level increased by 0.33 of a point when satisfaction with pay and benefits increased by one point. Length of employment at the current center of over 21 years was still a significant predictor, and the other variables remained not significant. The group of variables explained 17% of the variance in psychological well-being.

Table **5** shows that when satisfaction with reward and recognition was entered into the second model with related personal factors, it was a significant predictor of psychological well-being (R^2 change = 0.12, p < 0.001). When satisfaction with reward and recognition increased one point, psychological well-being increased by 0.35 of a point. In the final model, the length of employment at the current center of over 21 years remained a significant predictor. This model explained 17% of the variance in psychological well-being.

The correlation between satisfaction with supervision and psychological well-being was analyzed by controlling for

personal factors, and the results are presented in Table **5**. In the final model, supervision satisfaction made a significant R square change of 0.05. Psychological well-being increased by 0.23 of a point while supervision satisfaction increased one point. The length of employment at the current center was still significant. This model explained 11% of the variance in psychological well-being.

Table **6** presents a summary of the hierarchical multiple regression analysis of the relationship between community support satisfaction and psychological well-being, after controlling for related personal factors. When community support satisfaction was entered into the second model with related personal factors, it was a significant predictor (R^2 change = 0.06, $p < 0.001$), while length of employment at the current center over 21 years remained a significant predictor. Psychological well-being increased by 0.24 of a point when satisfaction with community support increased by one point. This model explained 12% of the variance in psychological well-being.

The outcomes of the hierarchical multiple regression analysis of working condition satisfaction and psychological well-being, after controlling for related personal factors, are presented in Table **6**. The results show that working condition satisfaction was a significant predictor when entered into the second model (R^2 change = 0.08, $p < 0.001$). When this aspect of job satisfaction increased one point, psychological well-being increased 0.28 of a point. The length of employment at the current center over 21 years was also a significant predictor. The final model explained 14% of the variance in psychological well-being.

Table **6** shows that in the second model, communication satisfaction was a significant predictor when it made R^2 change of 0.12 compared with the first model containing only related personal factors. Psychological well-being increased by 0.36 of a unit when communication satisfaction increased by one unit. Length of employment at the current center of over 21 years was also a significant predictor in the second model. This final model explained 18% of the variation in psychological well-being. Communication satisfaction was a much better predictor ($\beta = 0.36$) than the length of employment at the current center ($\beta = 0.12$).

Table 5. Hierarchical multiple regression analysis of psychological well-being and satisfaction with pay and benefits, psychological well-being and satisfaction with reward and recognition, psychological well-being and satisfaction with supervision (n = 383).

Variables	Psychological well-being and satisfaction with pay and benefits					Psychological well-being and satisfaction with reward and recognition					Psychological well-being and satisfaction with supervision				
	B	*SEB*	*β*	R^2	Δ R^2	*B*	*SEB*	*β*	R^2	Δ R^2	*B*	*SEB*	*β*	R^2	Δ R^2
Step 1				.06	.06**				.06	.06**				.06	.06**
Doctor *vs*. others	0.19	0.22	0.05			0.19	0.22	0.05			0.19	0.22	0.05		
Nurse *vs*. others	0.21	0.18	0.08			0.21	0.18	0.08			0.21	0.18	0.08		
BPH *vs*. others	-0.52	0.29	-0.10			-0.52	0.29	-0.10			-0.52	0.29	-0.10		
Years at center 6-10 *vs*. others	-0.06	0.18	-0.02			-0.06	0.18	-0.02			-0.06	0.18	-0.02		
Years at center 11-15 *vs*. others	-0.37	0.26	-0.07			-0.37	0.26	-0.07			-0.37	0.26	-0.07		
Years at center 16-20 *vs*. others	-0.14	0.29	-0.02			-0.14	0.29	-0.02			-0.14	0.29	-0.02		
Years at center over 21 *vs*. others	0.57	0.21	0.15**			0.57	0.21	0.15**			0.57	0.21	0.15**		
(Constant)	4.37	0.17				4.37	0.17				4.37	0.17			
Step 2				.17	.11***				.17	.12***				.11	.05***
Doctor *vs*. others	0.23	0.21	0.06			0.07	0.21	0.02			0.23	0.22	0.06		
Nurse *vs*. others	0.20	0.17	0.07			0.11	0.17	0.04			0.19	0.17	0.07		
BPH *vs*. others	-0.36	0.28	-0.07			-0.42	0.27	-0.08			-0.36	0.29	-0.07		
Years at center 6-10 *vs*. others	0.08	0.17	0.02			0.05	0.17	0.01			0.03	0.17	0.01		
Years at center 11-15 *vs*. others	-0.13	0.25	-0.03			-0.13	0.25	-0.03			-0.28	0.26	-0.06		
Years at center 16-20 *vs*. others	-0.10	0.27	-0.02			-0.16	0.27	-0.03			-0.01	0.28	-0.00		
Years at center over 21 *vs*. others	0.67	0.19	0.17**			0.69	0.19	0.18***			0.73	0.20	0.19***		
Satisfaction with Pay and benefits/Reward and recognition/Supervision	0.62	0.09	0.33***			0.61	0.08	0.35***			0.41	0.09	0.23***		
(Constant)	1.93	0.39				1.86	0.38				2.46	0.45			

* p < .05; ** p< .01; *** p< .001.

Table 6. Hierarchical multiple regression analysis of psychological well-being and satisfaction with pay and benefits, psychological well-being and satisfaction with reward and recognition, psychological well-being and satisfaction with supervision (n = 383).

Variables	Psychological well-being and satisfaction with community support					Psychological well-being and satisfaction with working conditions					Psychological well-being and satisfaction with communication				
	B	*SEB*	*β*	R^2	ΔR^2	*B*	*SEB*	*β*	R^2	ΔR^2	*B*	*SEB*	*β*	R^2	ΔR^2
Step 1				.06	.06**				.06	.06**				.06	.06**
Doctor *vs*. others	0.19	0.22	0.05			0.19	0.22	0.05			0.19	0.22	0.05		
Nurse *vs*. others	0.21	0.18	0.08			0.21	0.18	0.08			0.21	0.18	0.08		
BPH *vs*. others	-0.52	0.29	-0.10			-0.52	0.29	-0.10			-0.52	0.29	-0.10		
Years at center 6-10 *vs*. others	-0.06	0.18	-0.02			-0.06	0.18	-0.02			-0.06	0.18	-0.02		
Years at center 11-15 *vs*. others	-0.37	0.26	-0.07			-0.37	0.26	-0.07			-0.37	0.26	-0.07		
Years at center 16-20 *vs*. others	-0.14	0.29	-0.02			-0.14	0.29	-0.02			-0.14	0.29	-0.02		
Years at center over 21 *vs*. others	0.57	0.21	0.15**			0.57	0.21	0.15**			0.57	0.21	0.15**		
(Constant)	4.37	0.17				4.37	0.17				4.37	0.17			
Step 2				.12	.06***				.14	.08***				.18	.12***
Doctor *vs*. others	0.19	0.22	0.05			0.13	0.21	0.03			0.10	0.21	0.03		
Nurse *vs*. others	0.21	0.17	0.07			0.22	0.17	0.08			0.10	0.16	0.04		
BPH *vs*. others	-0.49	0.28	-0.09			-0.35	0.28	-0.07			-0.33	0.27	-0.06		
Years at center 6-10 *vs*. others	-0.04	0.17	-0.01			0.01	0.17	0.00			-0.05	0.17	-0.02		
Years at center 11-15 *vs*. others	-0.27	0.26	-0.05			-0.21	0.25	-0.04			-0.32	0.25	-0.06		
Years at center 16-20 *vs*. others	-0.11	0.28	-0.02			-0.17	0.28	-0.03			-0.28	0.27	-0.05		
Years at center over 21 *vs*. others	0.50	0.20	0.13*			0.51	0.20	0.13*			0.47	0.19	0.12*		
Satisfaction with Community support/Working conditions/Communication	0.47	0.10	0.24***			0.47	0.08	0.28***			0.75	0.10	0.36***		
(Constant)	2.33	0.44				2.36	0.38				1.17	0.46			

* p < .05; ** p< .01; *** p< .001.

Table 7. Hierarchical multiple regression analysis of psychological well-being and satisfaction with co-workers, psychological well-being and satisfaction with nature of the job, psychological well-being, and overall job satisfaction (n = 383).

Variables	Psychological well-being and satisfaction with co-workers					Psychological well-being and satisfaction with nature of the job					Psychological well-being and overall job satisfaction				
	B	*SEB*	*β*	R^2	ΔR^2	*B*	*SEB*	*β*	R^2	ΔR^2	*B*	*SEB*	*β*	R^2	ΔR^2
Step 1				.06	.06**				.06	.06**				.06	.06**
Doctor *vs*. others	0.19	0.22	0.05			0.19	0.22	0.05			0.19	0.22	0.05		
Nurse *vs*. others	0.21	0.18	0.08			0.21	0.18	0.08			0.21	0.18	0.08		
BPH *vs*. others	-0.52	0.29	-0.10			-0.52	0.29	-0.10			-0.52	0.29	-0.10		
Years at center 6-10 *vs*. others	-0.06	0.18	-0.02			-0.06	0.18	-0.02			-0.06	0.18	-0.02		
Years at center 11-15 *vs*. others	-0.37	0.26	-0.07			-0.37	0.26	-0.07			-0.37	0.26	-0.07		
Years at center 16-20 *vs*. others	-0.14	0.29	-0.02			-0.14	0.29	-0.02			-0.14	0.29	-0.02		
Years at center over 21 *vs*. others	0.57	0.21	0.15**			0.57	0.21	0.15**			0.57	0.21	0.15**		
(Constant)	4.37	0.17				4.37	0.17				4.37	0.17			
Step 2				.20	.14***				.17	.11***				.25	.19***
Doctor *vs*. others	0.12	0.21	0.03			0.22	0.21	0.06			0.14	0.20	0.04		
Nurse *vs*. others	0.12	0.16	0.04			0.15	0.17	0.06			0.12	0.16	0.04		
BPH *vs*. others	-0.22	0.27	-0.04			-0.29	0.28	-0.06			-0.19	0.26	-0.04		
Years at center 6-10 *vs*. others	-0.06	0.16	-0.02			-0.09	0.17	-0.03			0.06	0.16	0.02		
Years at center 11-15 *vs*. others	-0.21	0.24	-0.04			-0.35	0.25	-0.07			-0.08	0.24	-0.02		

(Table 7) contd.....

Years at center 16-20 *vs*. others	-0.17	0.27	-0.03			-0.26	0.27	-0.05			-0.15	0.26	-0.03		
Years at center over 21 *vs*. others	0.46	0.19	0.12*			0.42	0.19	0.11*			0.57	0.18	0.15*		
Satisfaction with Co-workers/Nature of the job/Overall job satisfaction	0.83	0.10	0.38***			0.84	0.12	0.34***			1.25	0.13	0.45***		
(Constant)	0.50	0.51				0.39	0.59				-1.11	0.58			

* p < .05; ** p< .01; *** p< .001.

Table **7** shows that when entered into the second model, co-worker satisfaction significantly improved the prediction of psychological well-being compared with the first model containing only related personal factors (R^2 change = 0.14, p < 0.001). When this facet of job satisfaction increased by one unit, psychological well-being increased by 0.38 of a unit. The length of employment at the current center of over 21 years was also a significant predictor in the second model. The final model explained 20% of the variance in psychological well-being. Co-worker satisfaction was a much better predictor (β = 0.38) than the length of employment at the current center (β = 0.12).

Table **7** also demonstrates that when entered into the second model, satisfaction with the nature of the job made a significant improvement in the prediction of psychological well-being compared with the first model containing only related personal factors (R^2 change = 0.11, p < 0.001). Psychological well-being increased by 0.34 of a unit when the job itself satisfaction increased by one unit. Length of employment at the current center of over 21 years was also a significant predictor in the second model. The final model explained 17% of the variation in psychological well-being. Satisfaction with nature of the job was a much better predictor (β = 0.34) than length of employment at the current center (β = 0.11).

Table **7** presents a summary of the hierarchical multiple regression analysis of overall job satisfaction and psychological well-being. When professional degree and length of employment at the current center were entered into the first model, only the length of employment at the current center of over 21 years was a significant predictor. When overall job satisfaction was entered into the second model with the related personal factors, it significantly improved the prediction (R^2 change = 0.19, p < 0.001). Psychological well-being increased 0.45 of a unit when overall job satisfaction increased one unit. The length of employment at the current center over 21 years remained a significant predictor in the second model, while the others were still not significant. These predictors explained 25% of the variance in psychological well-being. Overall, job satisfaction was a much better predictor (β = 0.45) than length of employment at the current center (β = 0.15).

4. DISCUSSION

Among preventive medicine workers, job satisfaction was positively correlated with psychological well-being. The associations between satisfaction with supervision and community support were small, while the other correlations were more robust. Overall, job satisfaction was strongly correlated with psychological well-being. Facets and overall job satisfaction remained significant predictors of psychological well-being when controlling for personal factors, with overall job satisfaction-the best predictor out of the satisfaction facets (β = 0.45). Among personal factors, only a professional degree and length of employment at the current center were associated bivariately with psychological well-being. However, when examined in multiple hierarchical analyses of job satisfaction, only length of employment at the current center remained a predictor.

The findings of correlations between job satisfaction and psychological well-being are in line with previous studies. For example, Agarwal and Sharma [12] conducted a study with the aim of investigating the effects of perception of hospital workplace factors on job satisfaction and psychological well-being among 200 health care workers from a medical college (teaching) hospital and public (non-teaching) government-run hospitals in India. The authors used stepwise regression analysis of the data, which revealed that the organization's structure-related factors, co-ordination and work autonomy were significantly predictive of job satisfaction and psychological well-being of health care employees, while the process-related workplace factors, participative decision-making and intraprofessional relations, emerged as significant predictors of psychological well-being and job satisfaction in both types of hospitals. The authors also found that the correlation between overall job satisfaction and psychological well-being was 0.58 (for teaching hospital workers) and 0.68 (for non-teaching hospital workers). This finding is similar to our research's results. In another study on 1,025 workers in Fujian Province in the People's Republic of China, Nielsen, Smyth [13] found that the correlation between overall job satisfaction and psychological well-being was 0.36. This study tested the moderating effect of job complexity and social status, proxied by a unique Chinese cultural variable (hukou status), on the relationship between job satisfaction and subjective well-being in urban China. Results confirmed that hukou status does moderate the job satisfaction–subjective well-being relationship in this sample. In 2013, a study on job satisfaction and psychological well-being among mental health nurses was done in Nigeria [14]. The authors realized that most studies on job satisfaction among nurses in Nigeria have focused on general nursing specialities, with relatively little attention paid to mental health nursing. This study was done to have a better understanding of the factors contributing to job satisfaction and psychological well-being among mental health nurses. Majority of these nurses reported positive psychological well-being (84.5%), while 15.5% had psychological distress. Job satisfaction had a positive significant relationship with psychological well-being (X2= 15.13, p =0.003). The findings from this study once again

confirmed the significantly positive relationship between job satisfaction and psychological well-being. Together with these studies, a systematic review and meta-analysis on the relationship between job satisfaction and health was conducted with 485 studies with a combined sample size of 267 995 individuals [1]. The results emphasized that the overall correlation combined across all health measures was r=0.312 (0.370 after Schmidt-Hunter adjustment). Job satisfaction was most strongly associated with mental/psychological problems; the strongest relationships were found for burnout (corrected r=0.478), self-esteem(r=0.429), depression (r=0.428), and anxiety (r=0.420). The correlation with subjective physical illness was more modest (r=0.287) [1].

On the other hand, in other studies, the correlations were small. For example, among 237 policewomen in India, Chitra and Karunanidhi [15] found that the Pearson correlation between overall job satisfaction and psychological well-being was only 0.14. Gustainiene and Endriulaitiene [16] conducted a study on 200 sales managers in Lithuania and found the association to be negligible. The differences in the pattern of associations may be due to the use of different measures by different worker groups in the various studies.

The current findings indicate that facets of job satisfaction and overall job satisfaction could be meaningful predictors of the psychological well-being of the workforce, with overall job satisfaction a better predictor than the others.

Although the current study made significant contributions to the literature of the research area, especially in the context of Vietnam, there are several limitations associated with the study. There are some weaknesses in the current study regarding the generalizability of the findings. A convenience sample method was applied, so the findings may not be able to be generalized to other provinces in Vietnam. Further studies using a similar framework to that of the current study should be conducted in other provinces and regions of Vietnam to help to produce comparable results. The findings from such studies could also help provide a comprehensive picture of the job satisfaction of the whole group. A random sampling method is recommended for future studies to increase generalizability. In addition, longitudinal studies should be conducted to examine the causal relationships between job satisfaction and other outcomes such as psychological well-being, turnover intention, and actual turnover.

CONCLUSION

The bivariate analysis showed that psychological well-being was significantly associated with only a few personal factors (professional degree and length of employment at the current center). Job satisfaction had positive relationship with psychological well-being. The correlations between facets and overall job satisfaction and psychological well-being ranged from 0.221 (supervision satisfaction) to 0.470 (overall job satisfaction). Further analyses of these correlations when controlling for related personal factors showed that the correlations remained significant. Overall, job satisfaction was the strongest predictor of psychological well-being ($\beta = 0.45$, $p < 0.001$).

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

The ethical clearance application for the quantitative survey was approved by the Human Research Ethics Committee of Queensland University of Technology (Ethics Variation Approval No. 1200000682) and the Research Ethics Committee of Hanoi University of Public Health (Ethics Approval No. 004/2014/YTCC-HD3).

HUMAN AND ANIMAL RIGHTS

No animals were used in this research. All procedures performed in studies involving human participants were in accordance with the 1975 Declaration of Helsinki, as revised in 2013.

CONSENT FOR PUBLICATION

Informed consent was obtained from all participants.

STANDARDS OF REPORTING

STROBE guidelines were followed.

AVAILABILITY OF DATA AND MATERIALS

The datasets used and/or analyzed during the current study are available from the corresponding author [N.Q.A.], on reasonable request.

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CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

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