

ORIGINAL ARTICLES

## Job satisfaction and its associated factors of preventive medicine workers in northern Vietnam

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### ABSTRACT

**Objective:** To assess job satisfaction and its associated factors of preventive medicine workers in Vietnam.

**Method:** A cross-sectional study was conducted using a purposive convenience sample of 12 preventive medicine centers in three provinces of northern Vietnam. Overall, 400 preventive medicine staff were invited to participate, and a response rate of 95.7% was perceived (153 from three provincial centers and 230 from nine district centers). All eligible participants completed the six-point response and validated questionnaire, which included questions relating to general information (basic demographics and social circumstances), job satisfaction. The job satisfaction measure produced scores for individual facets and overall job satisfaction (scored as continuous variables).

**Result:** Bivariate analyses showed that satisfaction with pay and benefits had the lowest mean score (Mean: 3.81, SD: 0.76), satisfaction with the nature of the job had the highest mean score (Mean: 4.81, SD: 0.56), while the mean score of overall job satisfaction was 4.36, SD: 0.50. Bivariate analysis showed that personal factors were significantly associated with the facets of job satisfaction and overall job satisfaction. However, these associations varied across facets. Satisfaction with pay and benefits was significantly associated with six personal factors, including age, marital status, number of children, having a second job, tenure at the current job, and length of employment at the current center, while no personal factors were significantly associated with satisfaction with community support.

**Conclusion:** The findings regarding the factors that appear to influence satisfaction could be useful to help management at preventive medicine centers and policy makers design programs to improve morale and commitment among these workers. Addressing the aspects of job satisfaction that were found to have the lowest scores may help the preventive medicine system to retain staff.

**Keywords:** Health worker, preventive medicine, job satisfaction, personal factors, Vietnam.

### INTRODUCTION

A shortage in the health workforce is being experienced all over the world. The World Health Organization (1) estimated that there will be a global shortage of 12.9 million skilled health workers by 2035. Many of the countries facing health workforce shortages are in Africa and Southeast Asia. In Vietnam, there are

shortages in health workers in both the curative and preventive medicine sectors (2, 3).

To minimize shortages, health systems should focus on three strategies: better recruitment, improving the performance of the existing workforce, and lowering turnover rates (1-4). Studies have indicated that high levels of job satisfaction may reduce the turnover rates



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of health workers (5-7) and help workers perform more effectively (8).

To date, there have been few studies undertaken regarding the job satisfaction of the health workforce in Vietnam and all of the studies were conducted in hospital or primary health care settings. In particular, the job satisfaction of preventive medicine workers has not been the focus of systematic research. Anecdotal evidence suggests that morale and productivity varies across the sector and many preventive medicine workers experience low levels of job satisfaction. However, anecdotal feedback is not sufficient, and in-depth research is necessary.

In order to measure job satisfaction of preventive medicine, there is a need of a reliable and valid measurement instrument, which needs to reflect the depth and contextual detail of job satisfaction among preventive medicine workers in Vietnam. Therefore, this study takes the advantage of a published validated job motivation questionnaire by Nguyen and colleagues (9) to identify the levels of job satisfaction as well as influences of personal factors on job satisfaction among the target group. In turn, these findings should contribute to development of sound policies for human resource management for the health system of Vietnam. This study could also contribute to the literature regarding job satisfaction and the associated personal factors of job satisfaction.

## METHODS

**Study design:** This study was conducted using a cross-sectional design through quantitative data collection method.

### Study sites

The study was implemented in district and provincial preventive medicine centers in three provinces, including Hanoi, Yen Bai,

and Hai Duong. Hanoi is an urban city and the capital of Vietnam, Hai Duong is a well-developed plain province, about 70 km from Hanoi. Yen Bai, approximately 300 km from Hanoi, is a less-developed mountainous province. These provinces were chosen in order to maximize the regional diversity of the preventive medicine staff. There are three provincial, 15 urban district, and 31 rural district centers in the city and provinces. About 900 staff work in the 49 centers.

### Sampling

The sample was obtained using a convenience method. There are three main categories of provinces in northern Vietnam, including mountainous, plain, and urban provinces. Thus, it was decided to choose three provinces representing these three categories (Hanoi is the capital and urban city, Hai Duong is a plains province, and Yen Bai is a mountainous province). The three provincial centers and nine district centers (two in Hanoi, three in Hai Duong, and four in Yen Bai) of the three provinces were involved in the survey. Staff at the centers who were not working as a director, a deputy director, a supervisor, an accountant, a driver, or administrative staff, were invited to participate in the study. Given 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 main survey was set at 383 participants. This sample size was considered big enough for an organizational survey as suggested by Barlett, Kotrlik (10).

### Recruitment procedures

To recruit participants, the researcher first contacted the directors of preventive medicine centers in the selected provinces to explain

the project and activities which would be undertaken at their own centers and gave them an Acceptance Letter for Conducting Research. Those allowing the researcher to collect data at their own centers would sign the letter and fixed the date and time for data collection. Afterwards, the director introduced the research team (including the researcher and two assistants) to his/her staff. All staff of the center were given the Participant Information Sheets and the instrument attached with a pen and a blank envelope. They were assured that no one except the researcher could assess their completed questionnaire. Those agreeing to join the research completed the questionnaire, put it in the envelope and returned the envelope to the researcher.

### **Instrument for data collection**

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

Job satisfaction scores were collected 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 (9). 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). A 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 score of all of the facets.

### **Data management**

Data management steps were conducted to ensure quantitative data integrity, including:

(1) A coding manual was developed for the survey data; (2) All returned questionnaires were checked and cleaned for inconsistent responses and non-responses prior to the data entry. (3) Data were entered into Epi-Data version 3.1. Ten percent of the collected questionnaires were entered for a second time to double check entry error. (4) The data were analyzed using the Statistical Package for Social Science (SPSS) version 20.0.

Variables were checked for normal distribution (for continuous variables), invalid response codes, and the frequency of missing data. Any record having missing data or invalid responses were checked against the original questionnaire.

### **Data analysis**

Descriptive analysis was used to explore the characteristics of the respondents. Independent t-test, analysis of variance (ANOVA), and Kruskal-Wallis H test (if assumption of homogeneity of variances for ANOVA was violated) were employed to explore associations between personal factors and job satisfaction.

### **Ethics approval**

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

## **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%).

### Personal characteristics of the participants

Table 1 shows the demographic characteristics of the respondents. Females

made up 62.9% of the sample. Ages were categorized into four groups. The largest group were between 20 – 29 years (37.3%), followed by those aged between 30 – 39 years (30%), nearly one in five (19.6%) were between 40 – 49 years, and 13.1% were over 50 years. Most respondents had children (76%).

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

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

Work related characteristics are presented in Table 2. Most participants were working at district preventive medicine centres while the remainder were at provincial preventive medicine centres. Most respondents did not have a second job. Just over half were living less than 5km from their work centre,

while nearly one quarter lived more than 10 km from their workplace. 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. A small number of the respondents had worked for between 11 – 15 and 16 – 20 years.

**Table 2. Respondent’s work characteristics**

	Frequency	Percent
<b>Province</b>		
Hai Duong	127	33.2
Hanoi	127	33.2
Yen Bai	129	33.6
<b>Level of centre (n=383)</b>		
Provincial	153	39.9
District	230	60.1
<b>Having a second job (n=383)</b>		
Yes	27	7.0
No	356	93.0
<b>Distance from home to work (n=383)</b>		
< 5 km	197	51.4
5-10 km	98	25.6
> 10 km	88	23.0
<b>Tenure at current position (n=383)</b>		
≤ 5 years	249	65.0
6-10	92	24.0
11-15	23	6.0
16-20 years	19	5.0
<b>Length of employment at current centre (n=383)</b>		
≤ 5 years	168	43.9
6-10	95	24.8
11-15	33	8.6
16-20	26	6.8
≥ 21 years	61	15.9

### Levels of job satisfaction

The survey assessed eight facets of job satisfaction and overall job satisfaction. The scores ranged from 1 (the least satisfied) to 6 (the most satisfied). Table 3 shows the mean scores

and standard deviations of facet and overall job satisfaction of the participants. Satisfaction with pay and benefits (Mean: 3.81, SD: 0.76) was the lowest, while satisfaction with the nature of the job had the highest score (Mean: 4.81, SD: 0.56).

**Table 3. Levels of job satisfaction among preventive medicine workers**

	Mean	Standard deviation
Pay and benefits	3.81	0.76
Reward and recognition	4.11	0.80
Supervision	4.54	0.79
Community	4.31	0.72
Working conditions	4.21	0.84
Communication	4.39	0.67
Co-worker	4.71	0.64
Nature of the job	4.81	0.56
Overall job satisfaction	4.36	0.50

**Associated personal factors of job satisfaction**

***Satisfaction with pay and benefits, by personal factors***

Associations between satisfaction with pay and benefits and personal factors are presented on Table 4. Satisfaction with pay and benefits was significantly different between age groups. Gender was not significantly associated with satisfaction with pay and benefits. Single workers were more satisfied with pay and benefits than their married colleagues and satisfaction with pay and benefits was highest among those with no children. People not having a second job reported significantly higher scores in satisfaction with pay and benefits than those having a second job and satisfaction was highest among those who had worked for five years or less compared to other lengths of tenure. Workers with professional training were more satisfied than those with higher education levels. There were significant differences in satisfaction with this dimension between provinces. None of the other variables were significantly associated with this aspect of job satisfaction.

***Satisfaction with reward and recognition, by personal factors***

Table 4 shows that age, gender, marital status, number of children, center level, distance from home to work, and education level were not significantly associated with satisfaction with reward and recognition. One way ANOVA showed that professional degree and length of employment at their current center were significantly associated with satisfaction with reward and recognition. However, Post-Hoc tests were not significant. Employees who only worked at their own center were more satisfied with reward and recognition than their co-workers who had a second job. Tenure at their current position was significantly associated with satisfaction with pay and promotion when analyzed using one way ANOVA. Respondents working at the current position for less than 5 years reported higher levels of satisfaction with reward and recognition than their colleagues working between 11-15 years. Respondents in Hai Duong province reported a significantly higher level of satisfaction with this dimension than the others.

### ***Satisfaction with supervision, by personal factors***

Table 4 shows that age was associated with satisfaction with supervision. Post-Hoc tests showed that employees in the 20-29 year old range were more satisfied than those in the 40-49 years group and the over 50 year group. Single participants were significantly more satisfied with supervision than their married co-workers. Employees without children reported higher levels of supervision satisfaction than those who had two children. There were significant differences in supervision satisfaction between the three provinces. Nurses were more satisfied with supervision than respondents with a Bachelor of Public Health. Employees with less than 5 years of tenure were more satisfied with supervision than those with tenure between 6-10 years and those with tenure between 10-20 years. People working at their current center for less than 5 years reported a higher score of supervision satisfaction than those who had worked for over 21 years. There was no significant difference in supervision

satisfaction by gender, education level, second job, and the distance to work.

### ***Satisfaction with community support, by personal factors***

The bivariate analysis results showed that people with a bachelor degree were significantly more satisfied with community support than those with a professional training or a Master degree ( $p = 0.05$ ). All other personal variables were not significantly associated with this aspect of job satisfaction.

### ***Satisfaction with working conditions, by personal factors***

The bivariate analysis showed that employees at provincial level were significantly more satisfied with working conditions than those at the district level. Respondents in Hanoi reported a significantly higher level of satisfaction with working conditions than their colleagues in Hai Duong province. All other personal factors were not significantly associated with working conditions satisfaction.

**Table 4. Associations between (1) satisfaction with pay and benefits, (2) satisfaction with reward and recognition, (3) satisfaction with supervision and personal factors**

Characteristics	n	Satisfaction with pay and benefits			Satisfaction with reward and recognition			Satisfaction with supervision		
		Mean	SD	Sig.	Mean	SD	Sig.	Mean	SD	Sig.
<b>Age</b>										
20-29 years	143 <sup>a</sup>	3.96	0.77	.020	4.24	0.78	.069	4.73	0.70	.001*
30-39	115	3.67*	0.75		4.06	0.77		4.54	0.77	
40-49	75	3.73	0.77		3.95	0.90		4.33*	0.83	
≥ 50 years	50	3.79	0.67		4.11	0.70		4.31*	0.91	
<b>Gender</b>										
Male	142	3.74	0.78	.162	4.07	0.85	.426	4.51	0.84	.679
Female	241	3.85	0.74		4.14	0.77		4.55	0.77	
<b>Marital status</b>										
Single	68	4.00	0.68	.020	4.25	0.68	.081	4.74	0.58	.005
Married	315	3.76	0.77		4.08	0.82		4.49	0.82	
<b>Number of children</b>										
None	92 <sup>a</sup>	3.99	0.70	.025	4.27	0.72	.099	4.72	0.62	.027
One	142	3.74*	0.80		4.06	0.82		4.53	0.84	
Two	149	3.75*	0.73		4.07	0.81		4.42*	0.82	
<b>Province</b>										
Hai Duong	127 <sup>a</sup>	3.65	0.73	.015	3.86	0.77	.000	4.31	0.87	.000
Hanoi	127	3.90*	0.76		4.24*	0.77		4.74*	0.62	
Yen Bai	129	3.88*	0.77		4.24*	0.80		4.56*	0.81	
<b>Centre level</b>										
Provincial	153	3.81	0.71	.942	4.09	0.80	.672	4.51	0.76	.622
District	230	3.80	0.79		4.13	0.80		4.55	0.81	
<b>Second job</b>										
Yes	27	3.40	0.65	.004	3.66	0.77	.002	4.23	1.14	.152
No	356	3.84	0.76		4.15	0.79		4.56	0.76	

Characteristics	n	Satisfaction with pay and benefits			Satisfaction with reward and recognition			Satisfaction with supervision		
		Mean	SD	Sig.	Mean	SD	Sig.	Mean	SD	Sig.
<b>Distance from home to work</b>										
< 5 km	197	3.80	0.76	.789	4.06	0.79	.313	4.53	0.80	.477
5-10 km	98	3.85	0.77		4.21	0.75		4.60	0.68	
> 10 km	88	3.77	0.75		4.12	0.85		4.46	0.90	
<b>Education level</b>										
Professional training	241	3.83	0.76	.050	4.15	0.75	.293	4.57	0.78	.340
Bachelor	114	3.79	0.71		4.06	0.85		4.47	0.81	
Masters	24	3.44	0.84		3.91	0.99		4.40	0.88	
<b>Professional degree</b>										
Medical doctor	65	3.74	0.76	.239	4.19	0.88	.048***	4.44	0.86	.031
Nurse	<b>196<sup>a</sup></b>	3.86	0.77		4.19	0.75		<b>4.62</b>	<b>0.78</b>	
Public health bachelor	29	3.58	0.71		3.84	0.86		<b>4.18*</b>	<b>0.87</b>	
Other	93	3.80	0.73		3.99	0.80		4.54	0.72	
<b>Tenure at current position</b>										
≤ 5 years	<b>249<sup>a</sup></b>	<b>3.90</b>	<b>0.74</b>	<b>.008</b>	<b>4.21</b>	<b>0.76</b>	<b>.001</b>	<b>4.66</b>	<b>0.73</b>	<b>.000</b>
6-10	92	<b>3.63*</b>	<b>0.78</b>		4.03	0.84		<b>4.35**</b>	<b>0.85</b>	
11-15	23	3.57	0.62		<b>3.59*</b>	<b>0.65</b>		4.47	0.74	
16-20 years	19	3.68	0.87		3.85	0.94		<b>3.93**</b>	<b>0.89</b>	
<b>Length of employment at current center</b>										
≤ 5 years	<b>168<sup>a</sup></b>	<b>3.92</b>	<b>0.73</b>	<b>.028</b>	4.22	0.75	.037***	<b>4.69</b>	<b>0.69</b>	<b>.031</b>
6-10	95	3.70	0.85		4.02	0.89		4.47	0.81	
11-15	33	<b>3.52*</b>	<b>0.68</b>		3.82	0.65		4.45	0.82	
16-20	26	3.86	0.87		4.26	0.94		4.39	0.80	
≥ 21 years	61	3.78	0.63		4.05	0.74		<b>4.32*</b>	<b>0.94</b>	

<sup>a</sup> Reference category; \* Post-Hoc test  $p < 0.05$ ; \*\* Post-Hoc test  $p < 0.01$ ; \*\*\* Post-Hoc test was not significant

### ***Satisfaction with communication, by personal factors***

Table 5 shows that differences in communication satisfaction by age, gender, marital status, province, and number of children were not statistically significant. Workers at the provincial level were slightly more satisfied with communication than their district colleagues. There were no significant differences by second job, distance from home to work, tenure at current position, and length of employment at the current center. Employees holding a professional training degree reported a higher level of communication satisfaction than those holding a bachelor degree. Nurses were significantly more satisfied with communication than respondents with a Bachelor of Public Health.

### ***Satisfaction with co-workers, by personal factors***

Table 5 shows that there were no significant differences in co-workers satisfaction by age, gender, marital status, number of children, distance from home to work, education level, tenure at current position, and length of employment at the current center. Workers in Yen Bai reported a higher level

of co-worker satisfaction than those who worked in Hai Duong province. Employees at the provincial level were more satisfied with co-workers than their colleagues at the district level. People having a second job were significantly more satisfied with their co-workers than those without a second job. Levels of co-workers satisfaction among medical doctors were significantly higher than that of respondents with a Bachelors of Public Health.

### ***Satisfaction with nature of the job, by personal factors***

Table 5 shows that there were no significant differences in satisfaction with nature of the job by age, gender, marital status, number of children, province, center level, second job, distance from home to work, tenure at current position, length of employment at the current center. Education level and professional degree were significantly associated when analyzed using one way ANOVA. Post-Hoc tests showed that employees with a professional training degree were more satisfied than those with a bachelor degree. Nurses reported higher levels of satisfaction than respondents with a Bachelor of Public Health.

**Table 5. Associations between (1) satisfaction with communication, (2) satisfaction with co-workers, (3) satisfaction of nature of the job and personal factors**

Characteristics	n	Satisfaction with communication			Satisfaction with co-workers			Satisfaction with nature of the job		
		Mean	SD	Sig.	Mean	SD	Sig.	Mean	SD	Sig.
<b>Age</b>										
20-29 years	143	4.38	0.62	.754	4.71	0.67	.093	4.75	0.62	.348
30-39	115	4.37	0.63		4.67	0.64		4.83	0.43	
40-49	75	4.37	0.79		4.65	0.62		4.83	0.61	
≥ 50 years	50	4.49	0.71		4.92	0.58		4.91	0.58	
<b>Gender</b>										
Male	142	4.39	0.68	.956	4.72	0.67	.930	4.77	0.59	.343
Female	241	4.39	0.67		4.71	0.63		4.83	0.57	
<b>Marital status</b>										
Single	68	4.47	0.66	.266	4.77	0.65	.397	4.76	0.66	.518
Married	315	4.37	0.67		4.70	0.64		4.82	0.54	
<b>Number of children</b>										
None	92 <sup>a</sup>	4.39	0.66	.975	4.68	0.75	.720	4.74	0.64	.275
One	142	4.38	0.62		4.71	0.60		4.80	0.47	
Two	149	4.40	0.72		4.74	0.62		4.86	0.59	
<b>Province</b>										
Hai Duong	127 <sup>a</sup>	4.31	0.62	.072	4.56	0.71	.000	4.75	0.60	.213
Hanoi	127	4.35	0.60		4.66	0.65		4.80	0.56	
Yen Bai	129	4.50	0.77		4.93*	0.50		4.88	0.52	
<b>Centre level</b>										
Provincial	153	4.31	0.63	.049	4.58	0.69	.001	4.75	0.50	.056
District	230	4.44	0.69		4.80	0.60		4.85	0.60	
<b>Second job</b>										
Yes	27	4.29	0.75	.416	4.38	0.82	.035	4.93	0.54	.269
No	356	4.40	0.66		4.74	0.62		4.80	0.56	

Characteristics	n	Satisfaction with communication			Satisfaction with co-workers			Satisfaction with nature of the job		
		Mean	SD	Sig.	Mean	SD	Sig.	Mean	SD	Sig.
<b>Distance from home to work</b>										
< 5 km	197	4.40	0.69	.896	4.67	0.68	.380	4.81	0.59	.966
5-10 km	98	4.38	0.61		4.76	0.53		4.82	0.51	
> 10 km	88	4.37	0.68		4.76	0.67		4.81	0.57	
<b>Education level</b>										
Professional training	<b>241<sup>a</sup></b>	<b>4.45</b>	<b>0.64</b>	<b>.022</b>	4.77	0.61	.118	<b>4.87</b>	<b>0.56</b>	<b>.020</b>
Bachelor	114	<b>4.25*</b>	<b>0.70</b>		4.62	0.70		<b>4.69*</b>	<b>0.58</b>	
Masters	24	4.30	0.72		4.65	0.66		4.82	0.50	
<b>Professional degree</b>										
Medical doctor	65	4.42	0.70	<b>.008</b>	<b>4.74<sup>a</sup></b>	<b>0.65</b>	<b>.013</b>	4.76	0.60	<b>.010</b>
Nurse	196	<b>4.47<sup>a</sup></b>	<b>0.66</b>		4.79	0.57		<b>4.88<sup>a</sup></b>	<b>0.58</b>	
Public health bachelor	29	<b>4.05**</b>	<b>0.66</b>		<b>4.31*</b>	<b>0.88</b>		<b>4.52**</b>	<b>0.61</b>	
Other	93	4.30	0.65		4.64	0.65		4.80	0.45	
<b>Tenure at current position</b>										
≤ 5 years	249	4.43	0.66	.350	4.74	0.64	.244	4.82	0.60	.545
6-10	92	4.34	0.68		4.73	0.63		4.82	0.46	
11-15	23	4.22	0.65		4.48	0.61		4.65	0.47	
16-20 years	19	4.30	0.79		4.60	0.78		4.88	0.58	
<b>Length of employment at current center</b>										
≤ 5 years	168	4.37	0.63	.228	4.71	0.66	.133	4.77	0.60	.120
6-10	95	4.33	0.72		4.69	0.66		4.79	0.47	
11-15	33	4.29	0.62		4.51	0.69		4.73	0.48	
16-20	26	4.56	0.71		4.76	0.57		4.92	0.54	
≥ 21 years	61	4.52	0.69		4.86	0.57		4.96	0.62	

<sup>a</sup> Reference category; \* Post-Hoc test  $p < 0.05$ ; \*\* Post-Hoc test  $p < 0.01$ ; \*\*\* Post-Hoc test was not significant

### Overall job satisfaction, by personal factors

Table 6 shows that overall job satisfaction was not significantly different by age, gender, marital status, number of children, center level, distance from home to work, education level, and length of employment at the current center. People having a second job reported slightly lower scores of job satisfaction than their colleagues who had the one job. There were significant differences in

overall job satisfaction among those with a professional degree. The similar finding was found between provinces. Medical doctors were more satisfied than respondents with a Bachelor of Public Health. Nurses also reported higher levels of job satisfaction than respondents with a Bachelor of Public Health. Tenure at their current job was significantly associated with overall job satisfaction when analyzed using one way ANOVA. However, the Post-Hoc test was not significant.

**Table 6. Associations between overall job satisfaction and personal factors**

Characteristics	n	Mean	SD	Sig.
<b>Age</b>				
20-29 years	143	4.42	0.49	.174
30-39	115	4.31	0.49	
40-49	75	4.29	0.53	
≥ 50 years	50	4.42	0.50	
<b>Gender</b>				
Male	142	4.33	0.55	.399
Female	241	4.38	0.47	
<b>Marital status</b>				
Single	68	4.45	0.49	.090
Married	315	4.34	0.51	
<b>Number of children</b>				
None	92	4.43	0.49	.344
One	142	4.33	0.50	
Two	149	4.35	0.51	
<b>Province</b>				
Hai Duong	127 <sup>a</sup>	4.22	0.52	.000
Hanoi	127 <sup>*</sup>	4.39	0.47	
Yen Bai	129 <sup>*</sup>	4.48	0.49	
<b>Centre level</b>				
Provincial	153	4.33	0.48	.386
District	230	4.38	0.52	
<b>Second job</b>				
Yes	27	4.15	0.54	.024
No	356	4.38	0.50	

Characteristics	n	Mean	SD	Sig.
<b>Distance from home to work</b>				
< 5 km	197	4.35	0.50	.823
5-10 km	98	4.39	0.44	
> 10 km	88	4.35	0.57	
<b>Education level</b>				
Professional training	241	4.40	0.50	.094
Bachelor	114	4.30	0.51	
Masters	24	4.22	0.57	
<b>Professional degree</b>				
Medical doctor	<b>65<sup>a</sup></b>	<b>4.36</b>	<b>0.55</b>	<b>.004</b>
Nurse	<b>196*</b>	<b>4.42</b>	<b>0.49</b>	
Public health bachelor	<b>29**</b>	<b>4.07</b>	<b>0.50</b>	
Other	93	4.32	0.46	
<b>Tenure at current position</b>				
≤ 5 years	249	4.42	0.50	.016***
6-10	92	4.30	0.51	
11-15	23	4.16	0.43	
16-20 years	19	4.19	0.56	
<b>Length of employment at current centre</b>				
≤ 5 years	168	4.41	0.48	.062
6-10	95	4.29	0.54	
11-15	33	4.17	0.47	
16-20 years	26	4.42	0.58	
≥ 21 years	61	4.42	0.47	

a Reference category; \* Post-Hoc test  $p < 0.05$ ; \*\* Post-Hoc test  $p < 0.01$ ; \*\*\* Post-Hoc test was not significant

Bivariate analysis showed that personal factors were significantly associated with the facets of job satisfaction and overall job satisfaction. However, these associations varied across facets. For example, satisfaction with pay and benefits was significantly associated with six personal factors, including age, marital status, number of children, having a second job, tenure at the current job, and length of employment at the current center, while no personal

factors were significantly associated with satisfaction with community support.

## DISCUSSION

### Levels of job satisfaction

The survey found that levels of job satisfaction among preventive medicine workers were not high; the mean scores of job satisfaction were within 3.81 to 4.81 on a 6 points scale. Among

eight dimensions, the respondents were least satisfied with pay and benefits. The income of preventive medicine workers mainly comes from salary and professional allowance, while the income of hospital health workers comes from many sources such as salary, professional allowance, profit of the hospitals, and their private clinics. Thus, incomes of hospital health workers are much higher than that of preventive medicine workers in the same area. Although the professional allowance for preventive medicine workers has increased significantly in recent years, it remains lower than their expectation. This is a possible explanation of the low mean score of this dimension. This low level of job satisfaction is consistent with the study by Nhuan and Linh (11) among primary health care workers in Vietnam and another by Delobelle et al (12) among primary health care nurses in rural South Africa.

The low mean-score of the “reward and recognition” dimension (4.11) may reflect poor management of the centers in regard to this dimension. Preventive medicine workers often face difficult and dangerous work such as communicable diseases control or working in a laboratory. They might expect more rewards and recognition for their work. The result may suggest that reward and recognition did not meet their expectation.

The highest mean score of the “nature of the job” dimension (0.481) may reflect a fact that most respondents liked their job because it was helpful for local people. A possible explanation may be that nurses liked their jobs and they accounted for 51.2% of the respondents.

### **Personal factors and job satisfaction**

Some personal factors influence job satisfaction, while others do not. In this study,

associations between job satisfaction and eleven personal factors were assessed. Age appeared to be associated with satisfaction with pay and benefits and supervision. In terms of overall job satisfaction, the levels of overall job satisfaction were in a U-shape manner by age as found in a study by Oswald and Warr (13) and another by Paul and Seok Kheng (14). The mean score of job satisfaction was highest (4.42) in the age group 20-29 years. It decreased to 4.31 and 4.29 at the age groups 30-39 and 40-49 years, and then increased to 4.42 at the age group over 50 years. However, the differences in overall job satisfaction by age were not significant.

Men and women reported similar levels of satisfaction across each facet as well as overall satisfaction. This is consistent with some previous studies (11, 14-16). In Vietnam, Tran et al. (17) found that female primary health care workers reported significant lower levels of satisfaction with benefits and prospects than males. However, the test of gender difference in their study was significant at  $p < 0.1$ .

Marital status was not associated with overall job satisfaction. However, it was found to be related to pay and benefits and supervision facets. Married workers reported lower levels of job satisfaction than their single colleagues, which suggest that married workers may require more income to meet family commitments. This argument is supported by the finding that people without children were more satisfied with pay and benefits than those with children. Married people were also less satisfied with supervision than their single colleagues, and this was in line with the finding that people with children were less satisfied with supervision than those without children.

Differences in satisfaction between provincial and district workers were found in working

conditions, communication, and co-workers satisfaction. Workers at provincial centers were more satisfied with working conditions than those at district levels. This reflects the fact that working conditions at provincial centers are much better than district centers as the government pays more attention to provincial centers. However, provincial workers were less satisfied with communication and co-worker relationships than district employees. This might be due to the different sizes of the centers. The number of staff at a provincial center is often several times higher than that at a district center, and communication and relationships with co-workers at a large center may be more difficult than at a small center.

Having a second job was associated with satisfaction with pay and benefits, reward and recognition, and overall job satisfaction. The minority of workers who had a second job were less satisfied than those who had one job. This difference suggests that people who have a second job may expect higher income and benefits than their colleagues with one job.

The survey showed that nurses were more satisfied with supervision, communication, nature of the job, and overall job satisfaction than their colleagues with a bachelor or medical doctor degree, and this is linked with the finding that people with a professional training degree were more satisfied than those with a higher education level. These findings are consistent with a study among primary health care workers in Vietnam by Nhuan and Linh (11). The study found that workers who had a professional training degree had higher overall job satisfaction than their colleagues who had a higher education degree. Another study by Oleckno (18) among environmental health professionals in the USA also found that officers with less education were more satisfied with their job than those with a

higher education level. However, Kvist, Mäntynen (19) conducted a survey on 1424 hospital staff in Finland and found that physicians had higher overall job satisfaction than nurses. This difference may be due to different conditions for nurses and physicians between hospital and non-hospital settings.

Tenure appears to have an effect on job satisfaction. Workers with a tenure of less than five years were more satisfied with pay and benefits, reward and recognition, and supervision than those who had worked more than five years. These findings suggest that young workers are less experienced at work so they do not expect a high salary, professional allowance, or reward and recognition.

### **Strengths and limitations of the study**

As discussed in the literature review, there have been a limited number of studies into job satisfaction among health workers in the southeast Asian region. All most all of them were conducted amongst nurses in hospital settings. Some studies were conducted among primary health care workers (11, 17) and only one study examined physicians (20). There are no studies of job satisfaction among health workers in non-clinical settings such as environmental health and preventive medicine. Results of the studies in this region showed that levels of job satisfaction and its relationships with other factors are different across worker groups and countries.

The current study highlights the current levels of job satisfaction among preventive medicine workers in northern Vietnam, which have not been previously investigated. The results of eight facets of job satisfaction and overall job satisfaction may give a more comprehensive picture of job satisfaction among the workforce than only one level of overall job satisfaction. It shows a number of personal factors affecting

job satisfaction of the workers such as age, marital status, center level, having a second job, and tenure. These findings serve as a basis for further research in the preventive medicine setting in Vietnam or other similar contexts.

Although the current study made significant contributions to the literature of the research area, especially in the Vietnamese context, 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. In addition, the sample size for the main survey was calculated based on the time and finance limitations of the project, not on a statistical formula.

## CONCLUSIONS

Management of the centers should focus on the sources of job satisfaction found to be related to low levels of satisfaction of the workers. As salary and professional allowance are fixed by the government, center managers should, as far as possible, identify means by which extra income could be supplemented and in particular identify forms of support for workers with children.

In addition, center management should create more innovative types of reward and recognition, which might improve satisfaction with reward and recognition. For example, workers who are involved in controlling dangerous communicable diseases should be recognized regularly and not just when the outbreak of a disease is successfully contained.

Finally, working conditions should be a focus of management, especially at district centers. Workers responsible for controlling infectious

diseases should be provided with appropriate working environments at the center.

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