# Developing an assessment tool for healthcare employee satisfaction: Validating in cross-cultural settings

Xiuzhu Gu (xiuzhu.g.aa@m.titech.ac.jp)
Department of Industrial Engineering and Economics, Tokyo Institute of Technology

Kenji Itoh

Department of Industrial Engineering and Economics, Tokyo Institute of Technology

# Abstract

This paper aims at developing a reliable and valid job satisfaction scale for healthcare employees and making comparisons between China and Japan. Employee satisfaction surveys were conducted, collecting 429 and 474 staff responses from Chinese and Japanese hospitals. We yielded six- and five-factor employee satisfaction structure separately, among which five factors were the same. Both countries' staff did not have high job satisfaction. Chinese physicians were significantly less satisfied than Japanese physicians whereas Chinese nurses were more satisfied. Common predictors of overall job satisfaction in both countries were satisfaction with growth and development, own reputation and work demands and workload.

**Keywords:** Employee satisfaction, Healthcare, Cross-cultural comparison

## Introduction

Job satisfaction assessment and its improvement have been practically applied to the enhancement of individual quality of working life (QWL) as well as organizational effectiveness (Judge and Klinger, 2007). As the widely accepted concept, on the one hand, from the humanitarian perspective, job satisfaction is to some extent a flection of good treatment, an indicator of emotional well-being or psychological health; and on the other hand, from the utilitarian perspective, job satisfaction can lead to employees' motivation and behaviour that contribute to organizational performance such as safety and productivity (Spector, 1997). Job satisfaction is a multi-dimensional concept, which can be regarded as composition of some crucial facets of a job to be satisfied/dissatisfied; it also could be assessed by a single measure as overall satisfaction (Wanous et al., 1997). Various satisfaction factors were proposed by a number of studies using different instruments. As results of literature review in health care, the following job satisfaction factors were often suggested: autonomy, work content, communication, financial rewards, growth/development, promotion, coworkers, meaningfulness, supervision/feedback/recognition, workload and work demands (van Saane et al., 2003). However, most of these factors were captured by tools simply adopted from those developed in sectors other than health care. In most studies, they were elicited by applying only to nurse samples. In addition, only a few of the tools were verified reliability and validity. In China, several studies about healthcare staff's job satisfaction have been conducted after the 2009 healthcare reform (Liu et al., 2012; Wu et al., 2014; Lu et al., 2016). However, these studies mostly adopted tools developed in other countries and did not confirm reliability and validity well when applying in Chinese healthcare context. Similarly, because of lower patient-staff ratios for physicians and nurses in Japan, great attention has been paid to their job satisfaction and its assessment scales were developed (Ozaki et al., 2008; Muya et al., 2014).

With this background, in this study, we develop a reliable and valid scale measuring job satisfaction for Chinese and Japanese healthcare staff. Applying this scale, we seek to identity similarities and differences of the two countries in terms of job satisfaction factors, satisfaction levels, and crucial factors as determinants of overall job satisfaction.

## Methods

## Questionnaire

We developed a questionnaire for measurement of healthcare employee satisfaction. The questionnaire, which was originally written in Japanese, comprised of two sections with an additional demographic part. The questionnaire included no question by which a specific individual can be identified, e.g., name and exact age. Section 1 is the job satisfaction scale that we developed having 35 facet-specific items. A respondent was asked to rate his/her satisfaction level as agreement/disagreement to each statement starting with "I am satisfied with..." on a 7-point Likert-type scale from 1 (disagree strongly) to 7 (agree strongly). We determined these satisfaction items in the following steps: First, we acquired a number of satisfaction items by literature survey, and tentatively selected 50 candidate items on the basis of frequency of use in articles, and applicability to Japanese healthcare setting. Then, a preliminary small-scaled survey was performed, collecting responses to these items (in Japanese) and open-ended opinions about other possible items from several Japanese healthcare professionals. The 35 items were finally selected based on the results of the preliminary survey. Content validity was taken into consideration during the developing process.

The second section included 10 general satisfaction items. Five items, including the one directly asking overall job satisfaction "I am very satisfied with my present job", were adapted from a well-known instrument developed by Brayfield and Rothe (1951). This satisfaction scale was used to verify convergent validity - as a subtype of construct validity - of the developed scale in Section 1 by the degree of similarity between these two scales, as these two scales are supposed to measure the same concept. To examine criterion validity of the developed scale, we adopted the following self-reported outcome items: respondent's wish to continuously work at the current hospital; his/her wish to find a new position in another hospital; satisfaction with his/her own occupation; recommendation of own occupation to children/friends; and satisfaction with own life. Items in Section 2 were also rated on a 7-point Likert-type scale.

The Japanese questionnaire was then translated into Chinese. It was checked to ensure no mismatch with the situations in China as well as careful language validation by several healthcare professionals. In the preliminary survey to several healthcare professionals, it was found that Chinese healthcare employees strongly concerned about their relationship and interaction with patients. Therefore, two additional items asking their satisfaction with "communication with patients" and "patient involvement and cooperation" were inserted in Section 1 of the Chinese questionnaire. An additional question item was also included after Section 2 to ask "whether you had conflicts or

medical disputes with patients in the last three years", with the following response options: "yes, one or several medical disputes", "yes, one or several conflicts" and "no".

# Survey sample

This study was approved by the Ethics Committee of the university to which both authors belonged. The Chinese questionnaire survey was conducted between October and December 2017 while the Japanese survey was made between August and October 2013. Healthcare staff in a public hospital participated in the Chinese survey while two public hospitals cooperated in the Japanese survey. We sent the questionnaires to the administration of each hospital by post mail (parcel), and administration staff assisted data collection process in each hospital. The survey's anonymity and confidentiality were explained and a questionnaire enclosed in an envelope was distributed to each employee who agreed to cooperate. When the respondent completed the questionnaire, he/she sealed the envelope containing his/her response and returned it to the administration. Then each hospital returned all the collected responses to the authors by post mail or courier. A total of 429 valid responses were collected with 69% of response rate in the Chinese survey and the Japanese sample included 474 responses with 74% response rate. Details of the both survey samples are shown in Table 1.

*Table 1 - Profile of the survey samples* 

	China		Japan	
Attributes	N	%	N	%
Gender				
Female	306	71%	351	74%
Male	106	25%	111	23%
NA	17	4%	12	3%
Age				
20-29	153	36%	136	29%
30-39	166	39%	159	34%
40-49	77	18%	94	20%
50-59	19	4%	65	14%
≥60	1	0%	9	2%
NA	13	3%	11	2%
Professional group				
Physician	160	37%	38	8%
Nurse	211	49%	317	67%
Pharmacist	22	5%	16	3%
Technician	20	5%	88	19%
Others	4	1%	6	1%
NA	12	3%	9	2%
Dispute/conflict experience with patients				
Medical dispute	14	3%		
Conflict	146	34%		
None	247	58%		
NA	22	5%		
Total	429		474	

# Statistical analysis

To elicit satisfaction factors, we applied principal component analysis with Varimax rotation separately to Section 1 responses of the Chinese and the Japanese sample. Differences in level of each satisfaction factor between countries and between professional groups were investigated by one-way ANOVA (analysis of variance) while Mann-Whitney test/Kruskal-Wallis test was applied to rank-based question item responses. To verify convergent and criterion validity, correlation analyses were applied to the scores obtained in Section 1 and in Section 2 by Spearman's rho. Stepwise regression analysis was employed when exploring crucial factors contributing to overall job satisfaction, i.e., satisfaction factors as independent variables, and the direct overall job satisfaction response as the dependent variable. All the statistical analyses were performed using PASW statistics v.25 (SPSS Inc., Chicago, IL).

#### Results

# Homogenous job satisfaction factors between China and Japan

The Kaiser-Meyer-Olkin measure of sampling adequacy was 0.969, and Bartlett's test of sphericity was significant at p < 0.001 for the Chinese sample, indicating that the data was appropriate for principal component analysis. Applying the analysis with Varimax rotation, based on the scree plot, four factors were yielded with 66% of cumulative variance accounted for. The analysis result is summarized in Table 2 in terms of factor label, component items, their factor loadings, and Cronbach's alpha for each factor. Internal reliability, as assessed by Cronbach's alpha, was high enough for all the factors, i.e., > 0.70, which is a regular limit of acceptance level (Nunnaly, 1978). The first factor seems to consist of three concepts that provide rationale for their satisfaction more concretely: satisfaction with work demands and workload (e.g., volume of work and stress level from work), growth and development (e.g., opportunity of career development and promotion) and financial rewards (e.g., welfare and income). Cronbach's alpha for each of the sub-factors was high enough, i.e., higher than 0.7. In this way, we interpreted all the six factors/sub-factors as follows: (1-1) work demands and workload; (1-2) growth and development; (1-3) financial rewards; communication and teamwork; (3) own reputation; and (4) relationship with patients.

For the Japanese sample, the Kaiser-Meyer-Olkin measure of sampling adequacy was 0.960, and Bartlett's test of sphericity was significant at p < 0.001. Applying the same analysis to the Japanese sample, five factors were elicited with 64% of cumulative variance accounted for. The analysis result of the Japanese sample was also shown in Table 2. Internal reliability was adequate as Cronbach's alpha was higher than 0.7 for each factor. It can be seen that all the five factors and their component items were shared with Chinese structure. The only exception was item Q26 "interpersonal relations with patients", as this item was included in Chinese factor 4 "relationship with patients" while in Japanese factors 3 "communication and teamwork".

# Correlation with Brayfield-Rothe's satisfaction scale and outcome items

A sum score over all the items in Section 1, a mean score of each satisfaction factor over its component items, and a sum score over the five items of Brayfield-Rothe's satisfaction scale were calculated for each respondent. There was a high correlation between sum scores of the items in Section 1 and Brayfield-Rothe's satisfaction scale for the Chinese ( $\rho = 0.72$ ; p < 0.001) and a moderate correlation for the Japanese sample ( $\rho = 0.55$ ; p < 0.001). Therefore, convergent validity of the developed scale in Section 1 is adequate as the common requirement for the correlation coefficient is over 0.50.

Table 2 - Employee satisfaction factors elicited by principal component analysis

Table 2 - Employee satisfaction factors elicited by principal component analysis					
Factors Items			Loading		
	onbach's alpha)				
Sati	sfaction with		China	Japan	
I.	Work demands &	Q15: Management consideration of staff safety	0.738	0.634	
	workload	Q33: Duties at no sacrifice of personal life	0.725	0.800	
	China	Q19: Staffing in the facility	0.707	0.705	
	Factor 1-1 ( $\alpha = 0.95$ )	Q12: Ease to take paid leave	0.703	0.678	
	Japan	Q35: Management support for primary tasks	0.693	0.699	
	Factor 1 ( $\alpha = 0.94$ )	Q20: Rules, procedures and protocols	0.683	0.557	
	,	Q13: Volume of work as a healthcare staff	0.640	0.642	
		Q11: Volume of paperwork	0.638	0.692	
		Q18: Stress level from work	0.603	0.600	
		Q10: Medical equipment and materials	0.581	0.463	
		Q16: Frequency of interruptions during tasks	0.558	0.594	
		Q34: Comfort of work environment	0.500	0.671	
		Q1: Discretion about task performance	0.450	0.545	
		Q4: Clear task assignment	0.435	0.480	
II.	Growth &	Q30: Opportunity of career development	0.561	0.483	
	development	Q5: Opportunities of fair promotion	0.540	0.397	
	China	Q27: Personal growth and development	0.533	0.615	
	Factor 1-2 ( $\alpha = 0.92$ )	Q31: Technical training related to own work	0.531	0.528	
	Japan	Q7: Engagement in a variety of tasks	0.407	0.645	
	Factor 2 ( $\alpha = 0.90$ )	Q3: Acquisition of new skills and knowledge	0.376	0.743	
	(=====,	Q9: Challenging work	0.324	0.782	
III.	Financial rewards	Q28: Welfare provided	0.746	0.591	
	China	Q32: Income for job	0.707	0.767	
	Factor 1-3 ( $\alpha = 0.93$ )	Q25: Salary raise and its amount	0.703	0.771	
	Japan				
	Factor 4 ( $\alpha = 0.81$ )				
IV.	Communication &	Q8: Competence of co-workers	0.716	0.645	
	teamwork	Q2: Communications among healthcare staff	0.669	0.792	
	China	Q6: Supervisor's feedback about my work	0.629	0.488	
	Factor 2 ( $\alpha = 0.89$ )	Q17: Teamwork within the facility	0.611	0.783	
	Japan	Q14: Support and guidance from supervisor	0.566	0.566	
	Factor 3 ( $\alpha = 0.88$ )	Q24: Interpersonal relations with co-workers	0.421	0.788	
		Q22: Opportunity and time for discussion of	0.253	0.386	
		healthcare problems with co-workers	0.200	0.000	
		Q26: Interpersonal relations with patients	_	0.346	
V.	Own reputation	Q21: Own competence	0.785	0.729	
• •	China	Q23: Meaningfulness of the job	0.716	0.468	
	Factor 3 ( $\alpha = 0.80$ )	Q29: Reputation from co-workers and patients	0.499	0.497	
	Japan	Carried and partons			
	Factor 5 ( $\alpha = 0.71$ )				
VI.	Relationship with	Q36: Communication with patients	0.700	_	
. 4.	patients	Q26: Interpersonal relations with patients	0.672	_	
	China	Q37: Patient involvement and cooperation	0.622	_	
	Factor 4 ( $\alpha = 0.89$ )	Ze 2 and in vorvement and cooperation	3.022		
				F070/ 1	

Variance [cumulative variance]: China Factor 1 (including Factor 1-1, 1-2 and 1-3): 27% [27%]; Factor 2: 17% [44%]; Factor 3: 14% [57%]; and Factor 4: 9% [66%]. Japan Factor 1: 21% [21%]; Factor 2: 14% [35%]; Factor 3: 13% [47%]; Factor 4: 9% [56%]; and Factor 5: 8% [64%].

Regarding outcomes resulting from job satisfaction, significant correlations were identified between the developed scale in Section 1, i.e., score of the total items and each satisfaction factor, and their willingness to continuation of work in the current hospital ( $\rho$  ranging from 0.28 to 0.62; p < 0.001) and their wish to find a new position in another hospital" ( $\rho$  ranging from -0.24 to -0.46; p < 0.001) in both Chinese and Japanese samples. In addition, responses to the developed job satisfaction scale were also correlated with satisfaction with their own occupation and life ( $\rho$  ranging from 0.15

to 0.71; p < 0.01). Thus, criterion validity of the satisfaction scale was ensured to some extent in both Chinese and Japanese hospital settings.

# Comparison of satisfaction level between China and Japan

The percentage satisfaction is referred to as a proportion of respondents having a score of 5.0 or greater (score ranging from 1.0 to 7.0; neutral: 4.0) for a specific satisfaction factor. Table 3 summarizes comparative results between China and Japan in terms of the percentage satisfaction with each satisfaction factor for physicians, nurses, pharmacists and technicians, and its significance level derived by applying one-way ANOVA. In the Chinese sample, no significant difference was identified between the four professional groups for almost all the satisfaction factors. The only exception was relationship with patients: physicians and technicians expressed significantly lower satisfaction than nurses and pharmacists (F = 2.72; p < 0.05). In contrast, significant differences were observed for all the factors between Japanese professional groups. In general, physicians exhibited the highest satisfaction level between the four professional groups for all the satisfaction factors whereas nurses showed the lowest.

Satisfaction factor	Profession	China	Japan	$p_1$
I. Work demands & workload	Physician	21%	42%	**
	Nurse	33%	8%	***
	Pharmacist	43%	27%	
	Technician	37%	32%	
	$p_2$		***	
II. Growth & development	Physician	42%	61%	
•	Nurse	48%	15%	***
	Pharmacist	43%	38%	
	Technician	45%	40%	
	$p_3$		***	
III. Financial rewards	Physician	22%	43%	***
	Nurse	30%	7%	***
	Pharmacist	23%	44%	
	Technician	30%	21%	
	$p_4$		***	
IV. Communication & teamwork	Physician	56%	76%	
(excluding Q26)	Nurse	62%	32%	***
	Pharmacist	55%	40%	
	Technician	60%	50%	
	$p_5$		***	
V. Own reputation	Physician	69%	53%	*
	Nurse	68%	16%	***
	Pharmacist	86%	38%	**
	Technician	74%	27%	***
	$p_6$		***	
VI. Relationship with patients	Physician	47%		
• •	Nurse	53%		
	Pharmacist	59%	_	-
	Technician	45%		
	$p_7$	*		

<sup>\*:</sup> *p* < 0.05; \*\*: *p* < 0.01; \*\*\*: *p* < 0.001;

Comparing Chinese and Japanese responses based on professional groups, as results shown in Table 3, Chinese respondents exhibited significantly higher satisfaction with own reputation than Japanese regardless of profession. Significant differences of other

 $p_1$ : Significance level between Chinese and Japanese responses;

 $p_2 - p_7$ : Significance level between professional groups.

factors were observed between the two countries in only the physician and the nurse sample. Chinese physicians' satisfaction with work demands and workload, and with financial rewards was lower than that of Japanese physicians. In contrast, Chinese nurses had higher satisfaction than Japanese nurses for all the factors. However, all these professional groups in both countries shared a similar trend for some factors: satisfaction with communication and teamwork was high whereas low satisfaction was seen with work demands and workload and financial rewards.

Comparative results of the general satisfaction items between Chinese and Japanese respondents exhibited a similar trend of the above-mentioned factor-based analyses. Chinese physicians had significantly lower overall job satisfaction (satisfaction percentage 43% versus 83%; p < 0.001), satisfaction with own occupation (58% vs. 92%; p < 0.001) and satisfaction with own life (51% versus 75%; p < 0.05) than Japanese physicians. In contrast, Chinese nurses showed higher overall job satisfaction (46% vs. 31%; p < 0.001) and life satisfaction (54% vs. 29%; p < 0.001). No significant difference was observed in occupation satisfaction between two countries' nurses (55% versus 63%; p > 0.05). In addition, not a single significant difference was identified between the two countries in the pharmacist and the technician sample for general items.

Comparison of contributing factors to overall job satisfaction between China and Japan Due to a small number of pharmacist and technician responses, we tried to determine crucial factors for overall job satisfaction by applying regression analysis to the physician and the nurse sample in both countries. For comparison, item Q26 was set as an independent variable in Japanese sample analyses. The results of stepwise regression analyses are summarized in Table 4 for profession-based models predicting overall job satisfaction. There was no collinearity (Condition Index < 20) for each model.

Table 4 - Crucial factors contributing to overall job satisfaction

Profession	Country	Satisfaction factor	$oldsymbol{eta}$	p
Physician	China	II. Growth & development	0.499	***
•		III. Financial rewards	0.240	**
		VI. Relationship with patients	0.163	*
		Constant	-0.303	
		Adjusted $R^2 = 0.66$		
	Japan	V. Own reputation	0.535	***
	•	II. Growth & development	0.380	**
		Constant	0.063	
		Adjusted $R^2 = 0.70$		
Nurse	China	I. Work demands & workload	0.398	***
		III. Financial rewards	0.307	***
		V. Own reputation	0.179	**
		Constant	-0.188	
		Adjusted $R^2 = 0.63$		
	Japan	V. Own reputation	0.366	***
	•	I. Work demands & workload	0.289	***
		II. Growth & development	0.166	*
		Constant	-0.642	
		Adjusted $R^2 = 0.53$		

<sup>\*:</sup> *p* < 0.05; \*\*: *p* < 0.01; \*\*\*: *p* < 0.001.

Crucial factors to overall job satisfaction were partly overlapped across professional groups and countries. For instance, Chinese physicians' overall job satisfaction was critically determined by the following three factors ( $R^2 = 0.66$ ; F = 98.08, p < 0.001): satisfaction with growth and development, financial rewards and relationship with

patients. Growth and development also affected overall job satisfaction of Japanese physicians and nurses. Financial rewards were also critically important for Chinese nurses. In addition, satisfaction with work demands and workload, and own reputation were crucial determinants of both Chinese and Japanese nurses' overall job satisfaction.

## **Discussion**

Homogenous job satisfaction structure

The same satisfaction factors were elicited in the Chinese and the Japanese sample, and some of these factors were conceptually shared with common factors for healthcare employees proposed by van Saane et al. (2003) and Lu et al. (2012). Factors reported in their reviews were labelled slightly different: growth and development, promotion (growth and development in this study), work demands, workload (work demands and workload are merged in this study), financial rewards (financial rewards), supervision/feedback/recognition, communication, co-workers (communication and teamwork), and meaningfulness (own reputation). Other job satisfaction factors often reported such as autonomy and work content was not yielded in this study since few items related to these aspects were included in the questionnaire. Relationship with patients was elicited as a satisfaction factor in Chinese health care. A plausible reason may stem from specific Chinese healthcare context: healthcare staff-patient relationship has become extremely important to Chinese healthcare professionals' working life. Patient violence particularly against physicians becomes frequent, and approximately 50% of healthcare professionals have experienced workplace violence (Wu et al., 2012). In our study, 37% of Chinese respondents experienced medical disputes or conflicts with patients. Therefore, we believe that content validity - which is related to whether the factors cover representative facets of what it is intended to measure - of the developed job satisfaction scale for healthcare employee was confirmed to some extent.

# Crucial factors to overall job satisfaction

Growth and development, and own reputation were identified as the crucial determinants for both Chinese and Japanese healthcare employees' overall job satisfaction. This result is alliance with the former studies' suggestions in not only China, Japan but also other countries (Krogstad et al., 2006; Gu and Itoh, 2015; Zhang et al., 2016). Opportunities for professional developments and recognition of professional status are very important for healthcare professionals regardless of country. In addition, work demands and workload seems to be an important factor for nurses' overall job satisfaction. This result is also similar to a previous study in Japan (Gu and Itoh, 2015). The reason why this factor is crucial important only for nurses can be speculated as follows: although high workload and work demands are perceived by both physicians and nurses, it is more difficult for nurses to well maintain work-life balance, because of their shift scheduling and since most of them are female.

Financial rewards are crucially important only to Chinese healthcare staff's overall satisfaction. This finding was also supported by studies performed in China (Wu et al., 2014; Zhang et al., 2016) and some other developing countries (Willis-Shattuck et al., 2008). In these countries, incomes of healthcare professionals are still relatively in a low level. Relationship with patients also contributes significantly to Chinese physicians' overall satisfaction. This seems due to deteriorating of the physician-patient relationship.

# Characteristics of job satisfaction

Both Chinese and Japanese healthcare employees exhibited the lowest level of satisfaction with financial rewards, and with work demands and workload among all the

satisfaction factors. The low satisfaction of healthcare employees with financial rewards was shared with those in other countries (McHugh et al., 2011). A major reason for the low satisfaction with work demands and workload may be low staffing in both countries, i.e., 1.8 physicians per 1,000 population in China and 2.4 in Japan (in 2015), which was much lower than the OECD average as 3.4; and 2.4 nurses in China while the average is 9.0. Although there are 11.0 nurses per 1,000 population in Japan, Japanese nurses must provide healthcare service to three times of average hospital beds, i.e., 13.2 beds per 1,000 population in Japan comparing to 4.7 beds as average (OECD, 2017).

Japanese physicians exhibited the highest job satisfaction across four professions that may be partly contributed by their higher social status. Japanese nurses showed the lowest job satisfaction and this trend was the same as reported in other study that nurses had lower levels of job satisfaction than other professionals (Labiris, et al., 2008). In contrast, no significant difference was identified between Chinese physicians and other professionals. The reason may be not high professional status, but high risk of patient violence and increasing litigation perceived by Chinese physicians (Wu et al., 2014). Chinese healthcare staff had significantly higher satisfaction with own reputation than Japanese. It may be because of the culture that Chinese healthcare professionals have strong perceptions of self-competence and recognition (Gu and Itoh, 2011).

## **Conclusions**

We developed a satisfaction scale for healthcare employee and verified its reliability and validity by hospital staff responses in China and Japan. The same satisfaction factors were acquired from the two country samples: satisfaction with (I) work demands workload, (II) growth and development, (III) financial rewards, (IV) communication and teamwork, and (V) own reputation. An additional factor "(VI) relationship with patients" was elicited in the Chinese sample. Applying the satisfaction factors, comparison results between two countries were as follows: (1) both Chinese and Japanese healthcare employees did not have high satisfaction with their job-related elements, especially with their work demands and workload, and financial rewards; (2) similar satisfaction levels were observed in four professional groups in China whereas large differences were identified in Japanese context, in which physicians were the most and nurses were the least satisfied; (3) Chinese physicians were less satisfied with all the factors than Japanese physicians except own reputation whereas Chinese nurses were more satisfied; (4) crucial factors to overall job satisfaction were satisfaction with growth and development, own reputation and work demands and workload regardless of country. Additional factors, i.e., financial rewards and relationship with patients, were also suggested contributing to overall job satisfaction of Chinese healthcare employees.

It is suggested that more attention must be paid to supporting employees' growth and development in both countries. Career development must be enhanced through various opportunities such as well-designed career path, involvement in research projects and training programmes. In addition, work demands should be well managed to maintain appropriate level of workload especially for nurses, e.g., by effective staffing and management support for concentration on primary tasks. Besides these suggestions, improvement should also be made to financial rewards and management support for dealing with conflicts or medical disputes with patients in Chinese hospitals.

## **Acknowledgments**

This work was in part supported by Grant-in-Aid for Scientific Research (A) (No. 23241048) and Grant-in-Aid for Young Scientists (B) (No. 15K16291), Japan Society

for the Promotion of Science. We are grateful to healthcare employees who participated in our survey and hospital management for insightful discussions.

#### References

- Brayfield, A.H. and Rothe, H.F. (1951), "An index of job satisfaction", *Journal of Applied Psychology*, Vol. 35, No. 5, pp. 307-311.
- Gu, X. and Itoh, K. (2011), "A pilot study on safety climate in Chinese hospital", *Journal of patient safety*, Vol. 7, No. 4, pp.204-212.
- Gu, X. and Itoh, K. (2015), "Construct of dialysis employee satisfaction: Acquiring satisfaction factors and their contributions", *Therapeutic Apheresis and Dialysis*, Vol. 19, No. 5, pp.503-512.
- Judge, T.A. and Klinger, R. (2007), "Job satisfaction: subjective well-being at work", in Eid, M. and Larsen, R. (Eds.), *The Science of Subjective Well-Being*, Guilford Publications, New York, pp. 393-413.
- Krogstad, U., Hofoss, D., Veenstra, M. and Hjortdahl, P. (2006), "Predictors of job satisfaction among doctors, nurses and auxiliaries in Norwegian hospitals: relevance for micro unit culture", *Human Resources for Health*, Vol. 4, No. 1, 3.
- Labiris, G., Gitona, K., Drosou, V. and Niakas, D. (2008), "A proposed instrument for the assessment of job satisfaction in Greek mental NHS hospitals", *Journal of Medical Systems*, Vol. 32, No. 4, pp.333-341
- Liu, C., Zhang, L., Ye, W., Zhu, J., Cao, J., Lu, X. and Li, F. (2012), "Job satisfaction and intention to leave: a questionnaire survey of hospital nurses in Shanghai of China", *Journal of Clinical Nursing*, Vol. 21, No. (1-2), pp.255-263.
- Lu, H., Barriball, K.L., Zhang, X. and While, A.E. (2012), "Job satisfaction among hospital nurses revisited: a systematic review", *International Journal of Nursing Studies*, Vol. 49, No. 8, pp.1017-1038
- Lu, Y., Hu, X.M., Huang, X.L., Zhuang, X.D., Guo, P., Feng, L.F., Hu, W., Chen, L. and Hao, Y.T. (2016), "Job satisfaction and associated factors among healthcare staff: a cross-sectional study in Guangdong Province, China", *BMJ Open*, Vol. 6, No. 7, e011388.
- McHugh, M.D., Kutney-Lee, A., Cimiotti, J.P., Sloane, D.M. and Aiken, L.H. (2011), "Nurses' widespread job dissatisfaction, burnout, and frustration with health benefits signal problems for patient care", *Health Affairs*, Vol. 30, No. 2, pp.202-210.
- Muya, M., Katsuyama, K., Ozaki, F. and Aoyama, H. (2014), "Development of a scale measuring the job satisfaction of Japanese hospital nurses", *Japan Journal of Nursing Science*, Vol. 11, No. 3, pp.160-170.
- Nunnaly, J.C. (1978), Psychometric Theory. 2nd ed, McGraw-Hill, New York.
- Organization for Economic Cooperation and Development (OECD). (2017), *Health at a Glance 2017: OECD Indicators*. https://read.oecd-ilibrary.org/social-issues-migration-health/health-at-a-glance-2017 health glance-2017-en#page1. Last accessed Apr 10, 2018.
- Ozaki, M., Bito, S. and Matsumura, S. (2008), "Developing a Japanese hospital physician satisfaction scale", *International Journal of Health Care Quality Assurance*, Vol. 21, No. 5, pp.517-528.
- Spector, P.E. (1997), Job Satisfaction: Application, Assessment, Causes, and Consequences, SAGE Publications, New York.
- van Saane, N., Sluiter, J.K., Verbeek, J.H.A.M and Frings-Dresen, M.H.W (2003), "Reliability and validity of instruments measuring job satisfaction—a systematic review", *Occupational Medicine*, Vol. 53, No. 3, pp.191-200.
- Wanous, J.P., Reichers, A.E. and Hudy, M.J. (1997), "Overall job satisfaction: how good are single-item measures?", *Journal of Applied Psychology*, Vol. 82, No. 2, pp. 247-252.
- Willis-Shattuck, M., Bidwell, P., Thomas, S., Wyness, L., Blaauw, D. and Ditlopo, P. (2008), "Motivation and retention of health workers in developing countries: a systematic review", *BMC Health Services Research*, Vol. 8, No. 1, 247.
- Wu, D., Wang, Y., Lam, K.F. and Hesketh, T. (2014), "Health system reforms, violence against doctors and job satisfaction in the medical profession: a cross-sectional survey in Zhejiang Province, Eastern China", *BMJ Open*, Vol. 4, No. 12, e006431.
- Wu, S., Zhu, W., Li, H., Lin, S., Chai, W. and Wang, X. (2012), "Workplace violence and influencing factors among medical professionals in China", *American Journal of Industrial Medicine*, Vol. 55, No. 11, pp.1000-1008.
- Zhang, M., Yang, R., Wang, W., Gillespie, J., Clarke, S. and Yan, F. (2016), "Job satisfaction of urban community health workers after the 2009 healthcare reform in China: a systematic review", *International Journal for Quality in Health Care*, Vol. 28, No. 1, pp.14-21.