

ORIGINAL ARTICLE

Factors related to dental nurse preparation for working in Tambon Health Promoting Hospitals in Thailand

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Received: 15 June 2015 Revised: 27 August 2015 Accepted: 30 August 2016

Available online: September 2016

Abstract

Jirojvanichakorn S, Hongkrait N, Chompikul J and Keiwkarnka B.

Factors related to dental nurse preparation for working in Tambon Health Promoting Hospitals in Thailand. J Pub Health Dev. 2016;14(2):3-16

Dental nurses are the important persons who often the major influential to promote oral health in the sub-district (Tambon) level. Dental caries is still a serious problem among the varieties group of the population in Thailand especially the group of children in rural areas. This cross-sectional descriptive study aimed to identify factors associated with dental nurse preparation by chiefs of dental departments of community hospitals all over Thailand. Self-administered questionnaires were filled out by 290 respondents to assess their socio-demographic characteristics, psycho-social factors, cues to action and enabling factors, which were considered related to their dental nurse preparation performance. Data were analyzed by descriptive statistics. The Chi-square test and multiple logistic regression were performed to determine associations between the dental nurse preparation and influential factors.

Half of respondents had a low level of dental nurse preparation. Those who received information said this was mostly from their Provincial Health Office personnel. Factors that were found to have a significant association with dental nurse preparation were age group, perception preparation, mass media, advice from NHSO personnel, advice from other chief of a dental department of a community hospital, hospital policy, hospital assignment, hospital budget support and hospital manpower management system. The most significant predictors was hospital assignments (Adj. OR=2.87, 95%CI=1.76-4.65). Chiefs who had hospital assignments were 2.87 times more likely to be well prepared than those who had not after adjusting for other factors.

The research recommendation showed that the department chiefs need to be encouraged to achieve better dental nurse preparation by mean of hospital policy, hospital budget support, and advice from other chief of a dental department of a community hospital to improve the levels of preparation and management among department chiefs in community hospitals.

Keywords: dental caries, dental nurses, chiefs of dental departments, preparation behavior

ปัจจัยที่ส่งผลต่อการเตรียมการทันตภิบาล เพื่อลงปฏิบัติงานทันตสาธารณสุขในโรงพยาบาล ส่งเสริมสุขภาพตำบล ในประเทศไทย

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ปัจจัยที่ส่งผลต่อการเตรียมการทันตภิบาลเพื่อลงปฏิบัติงานทันตสาธารณสุขในโรงพยาบาลส่งเสริมสุขภาพตำบล
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ทันตภิบาลเป็นบุคลากรที่มีความสำคัญและได้รับมอบหมายให้รับผิดชอบในการปฏิบัติงานทันตสาธารณสุข เพื่อดูแลสุขภาพช่องปากของประชาชนในระดับตำบล ซึ่งโรคฟันผุเป็นปัญหาที่ส่งผลกระทบมากที่สุดต่อประชากรทุกกลุ่มอายุ โดยเฉพาะเด็กเล็กในพื้นที่ชนบท การศึกษานี้เป็นการเก็บข้อมูลแบบภาคตัดขวางเพื่อศึกษาปัจจัยที่เกี่ยวข้องกับการเตรียมการทันตภิบาลเพื่อลงปฏิบัติงานในโรงพยาบาลส่งเสริมสุขภาพตำบล (รพ.สต.) ของหัวหน้ากลุ่มงานทันตสาธารณสุขโรงพยาบาลชุมชนทั่วประเทศ เก็บข้อมูลโดยใช้แบบสอบถามจากกลุ่มตัวอย่าง จำนวน 290 คน วิเคราะห์ข้อมูลโดยใช้สถิติเชิงพรรณนา การทดสอบไคสแควร์และการถดถอยโลจิสติกเพื่อค้นหาปัจจัยที่มีความสัมพันธ์กับการเตรียมการทันตภิบาลของหัวหน้ากลุ่มงานทันตสาธารณสุข

ผลการวิจัยพบว่าครึ่งหนึ่งของหัวหน้ากลุ่มงานทันตสาธารณสุขมีการเตรียมการในระดับต่ำ ปัจจัยที่พบว่ามีความสัมพันธ์อย่างมีนัยสำคัญทางสถิติกับการเตรียมการทันตภิบาล คือความอาวุโสของหัวหน้ากลุ่มงาน กลุ่มที่มีการรับรู้ต่อผลกระทบสูง กลุ่มที่ได้รับข่าวสารสาธารณะ กลุ่มที่ได้รับคำแนะนำจากบุคลากรของ สปสช. กลุ่มที่ได้รับคำแนะนำจากหัวหน้ากลุ่มงานทันตสาธารณสุขของโรงพยาบาลอื่น ๆ นโยบายโรงพยาบาล การมอบหมายภารกิจ การสนับสนุนงบประมาณของโรงพยาบาล และระบบการบริหารจัดการกำลังคนของโรงพยาบาล การคาดการณ์พยากรณ์ตัวแปรที่สำคัญที่สุดคือกลุ่มที่โรงพยาบาลมอบหมายภารกิจการเตรียมการให้ (Adj. OR=2.87, 95%CI=1.76-4.65) หัวหน้าที่โรงพยาบาลมอบหมายภารกิจการเตรียมการให้มีแนวโน้ม 2.87 เท่าที่จะการเตรียมในระดับดีกว่ากลุ่มที่ไม่ได้รับมอบหมาย เมื่อได้ปรับอิทธิพลของปัจจัยอื่นๆ

ข้อเสนอจากผลการวิจัยคือหัวหน้ากลุ่มงานทันตสาธารณสุขโรงพยาบาลชุมชน ควรได้รับการสนับสนุนจากโรงพยาบาลและได้รับคำแนะนำที่เหมาะสม ได้แก่การกำหนดเป็นนโยบาย การมอบหมายเป็นภารกิจ การสนับสนุนด้านงบประมาณ ตลอดจนคำแนะนำจากทันตบุคลากรรอบข้างเพื่อให้เกิดการเตรียมการทันตภิบาลที่ดีในการลงปฏิบัติงานใน รพ.สต. ต่อไป

Keywords: โรคฟันผุ ทันตภิบาล หัวหน้ากลุ่มงานทันตสาธารณสุขโรงพยาบาลชุมชน พฤติกรรมการเตรียมการ

Introduction

Dental caries is still a serious problem in Thailand. Dental caries is not just a children's disease; it can happen as long as natural teeth are in the mouth. Dental caries is caused by bacteria that normally live in the mouth. The bacteria cling to teeth and form a sticky, colorless film called dental plaque. The bacteria in plaque live on sugars and produce decay causing acids that dissolve minerals on tooth surfaces¹.

Millions of Thai children continue to suffer needlessly from preventable oral diseases and have limited access to basic dental services. Over of 60 percent of Thai children experience dental caries (tooth decay) by the age of 3, and 80 percent by the age of 5. Fully 4.3 percent of 12 years old Thai children absented from school 2.5 days and 4.1 percent of 15 years old Thai children absented from a school 4.4 days due to toothache. Only 2 in 10 received routine preventive dental services². The problem is worse in southern part of Thailand, especially, three provinces of deep southern of Thailand (Pattani, Yala, Narathiwat) which have higher prevalence of dental caries. More than 80 percent of children experience dental caries in permanent teeth by the age of 12³.

Dental nurses are often the major influence and key persons to promote dental public health at the Tambon level⁴. Dental nurses, sometimes also known as oral health practitioners or dental therapists are dental care professionals and work as part of the dental team. Therefore, the dental therapist in the international context is the same as dental nurse in Thailand⁵.

97 percent of the dental nurses in Thailand in 2006 were working under the Ministry of Public Health, and 95.9 percent of their workplaces were

outside Bangkok. These included 55.7 percent working in community hospitals and 32.5 percent in THPH. The ratio nationwide of dental nurses increased from 1:21,331 in 2002 to 1:16,883 in 2006, excluding Bangkok⁶. Among those working in Tambon Health Promotion Hospitals (THPH), the workload of those involved in oral health care to other types of care was 3:1 in terms of time share. The proportion of jobs in curative care, promotion and prevention, and proactive services was 3:1:1. With regard to capacity-building, training is required in oral health promotion and proactive activities⁷.

The imbalance of the number and distribution of dental nurses is an important issue for policy-makers. In 2015, 1,664 new dental nurses graduated and most of them had to perform field services at the THPH level (in 9,770 THPH in 7238 Tambon)⁸. Therefore, when dental nurses arrived at THPH, the chief of the dental department of the community hospital had to set up the management system and quality preparation to support them. The study of Wijaranaphiti found that when dental nurses had more stress which caused by conflict role with internal standards and having to perform many roles, their performance effectiveness were reduced⁹. The dental nurses not only managed problems of early childhood caries (ECC) but also conducted health education, promotion, prevention and management.

Preparation or 'on boarding' is the process of assimilating new employees into the workplace and providing the knowledge and tools for them to achieve success early on in their jobs. It is the bridge between selection and productivity, encompassing activities from pre-arrival through the end of the first year¹⁰. Therefore, good preparation for new dental nurses at

the THPH needs to cover the necessary knowledge and skills by formal meetings, lectures, videos, etc. If done properly, this should lead to positive outcomes such as higher job satisfaction, better job performance, greater organizational commitment, and reduction in occupational stress and intent to quit. In contrast, there are very few preparation programs for dental nurses or working at THPH because of heavy work load or lack of knowledge to prepare dental nurses or nobody knows what are the benefits or impacts of good or poor preparation. Moreover, nobody used to studied this issue. Therefore, this study tried to identify factors affecting provision of dental nurse preparation.

Methods

A cross-sectional descriptive study was designed for implementation during a six-month period of January – June 2014 with the aim to identify the factors related to dental nurse preparation for working at THPH in Thailand. Data were collected by self-administered questionnaire by the chief of the dental department of community hospitals from all over Thailand. Respondents were asked about their preparation activities for dental nurses working at THPH. There were 661 chiefs of dental departments in community hospitals. After applying the calculation from the Yamane Formula, the optimal sample size was determined to be 244. To allow for non-response, 290 chiefs of dental departments of the community hospitals were sampled and requested to fill out and return the study questionnaire.

Multi-stage stratified sampling was used to randomly select 290 chiefs of dental departments who work at community hospitals from all 12 health

service regions of the country. From those 12 regions, 46 provinces were randomly selected, and every community hospital in those provinces were selected as respondents.

A structured questionnaire was divided into six parts: Socio-demographic factors (9 questions), Psycho-social factors (10 questions, 29 statements), Enabling factors (4 questions), Cues to action (7 questions), Preparation of dental nurses for work at the THPH (10 questions), Open-ended questions (9 questions). In the pretest, Kuder-Richardson coefficient of the knowledge part was 0.68 and Cronbach alpha of the perception part was 0.95.

Descriptive statistics described mean, median, standard deviation, minimum and maximum number, and percentage of each independent and dependent variable. The Chi-square test was used for analyse to identify association between each independent variables and dental nurse preparation of the chief of the dental department of the community hospital. Multiple logistic regression, using a backward stepwise (Wald) method which the low level of the dental nurse preparation was the reference, was performed to explore significant predictors. This study was approved by the Ethical Committee of Mahidol University and the study sites.

Results

A total of 290 respondents participated in this study. For distribution of respondents by socio-demographic characteristics, more than one-half (57.2%) were 35 to 60 years old. The mean age was 36.3. Nearly two-thirds (62.4%) were female. Almost one-half (47.2%) had a bachelor's degree. 14.8 percent were in an acting-chief position. The

mean years working as chief was 8.7 years. Most (95.0%) had others position such as HA or hospital or provincial dental board committee member, and nearly one-half (42.4%) had no prior experience in dental nurse preparation (Table 1).

Table 1 Percentage of respondents by socio-demographic characteristics

Socio-demographic characteristics	Number	Percentage
Gender		
Male	109	37.6
Female	181	62.4
Age Group (years)		
25 - 29	57	19.7
30 - 34	67	23.1
35 - 39	61	21.0
40 - 44	61	21.0
45 or over	44	15.2
Mean = 36.3, SD = 7.2, Min = 25, Max = 59		
Education levels		
Bachelor's degree	137	47.3
Post graduate	61	21.0
Master's degree	76	26.2
Dental public health board certification	2	0.7
Specialist board	12	4.1
Others	2	0.7
Position		
Chief	247	85.2
Acting chief	43	14.8
Work Experience (years)		
1 - 6	144	49.7
7 - 12	60	20.7
13 - 18	46	15.9
19 - 24	34	11.6
25 or more	6	2.1
Mean = 8.7, SD = 7.4, Min = 0, Max = 33		
Other position		
None	9	3.1
HA or hospital committee member	276	95.0
Provincial level committee member	135	46.5
Region level committee member	29	10.0
National level committee member	12	4.1
Other	4	1.3
Experience of dental preparation (years)		
None	123	42.4
1 - 6	131	45.2
7 - 12	22	7.6
13 - 18	9	3.1
19 - 24	5	1.7
Mean = 4.65, SD 4.99, Min = 0, Max = 22		

Half of the respondents (51%) had a poor level of knowledge of preparation. Three-fourths of the respondents (77.6%) knew that telling the objective, assigning the trainer for trainees and determining the proper time are the suitable matters for on-the-job training of dental nurses. Three-fourths (74.8%) knew that training, preparing (budget, material, information) and rotating dental nurses for work in different work places are part of the preparation process. Two-thirds (67.9%) knew that human resources preparation is the first process should be done and this process is the basis for the success of the organization.

Over half (53.8%) had a low level of perception of dental nurse preparation. While, only 29.7% of respondents were exposed to mass media (television, newspaper), most (92.1%) received advice from the provincial health office (PHO) whilst 66.6%, 48.6% and 65.5% received advice from others (senior chief, junior chief, or friend, respectively). Almost one-half (47.2% and 45.2%) accepted the advice from the National Health Security Office (NHSO) and Bureau of Dental Health (BoDH). About three-fourths (73.4%) had a hospital manpower management system in their community hospital, and 55.9% of respondents' community hospital supported budget for dental nurse preparation in THPH. Over half (55.2%) of

respondents' community hospital director set the dental nurse preparation as a hospital policy and 53.8% of respondents' community hospital director had assigned dental nurse preparation to the chief of the dental department of the community hospital. More than one-half of the respondents (59.7%) were classified as having a good level of dental nurse preparation whilst the rest (40.3%) were classified as having a poor level of dental nurse preparation.

Most of respondents accessed dental nurse preparation from PHO personnel. The Chi-square test showed that the significant socio-demographic characteristic is only age group. The following factors were not found to be significant: gender, education, position, experience, and other position. The significant psycho-social factor was high perception group (Table 2). The significant cues to action were media, advice from NHSO personnel, advice from someone other than the chief of the dental department of the community hospital (friends and junior chief) (Table 3). The significant enabling factors are hospital policy, hospital assignment/directive, hospital budget support and hospital manpower management system. Other variables did not have a significant association with dental nurse preparation at $p\text{-value} < 0.05$ (Table 4).

Table 2 Relationship between Knowledge and the perception of preparation, and dental nurse preparation

Levels of variables	Dental nurse preparation				Chi-square	P-value
	Low		High			
	n	%	n	%		
Knowledge					2.58	0.108
Poor	53	35.8	95	64.2		
High	64	45.1	78	54.9		
Perception of preparation					8.39	0.004*
Low	75	47.2	81	50.9		
High	42	31.3	92	68.7		

* P-value < 0.05

Table 3 Relationship between advice from persons and media, and dental nurse preparation

Sources of information		Dental nurse preparation				P-value of Chi- square test
		Low		High		
		n	%	n	%	
Having advice from	NHSO personnel	44	33.6	87	66.4	0.035*
	BoDH personnel	48	35.0	89	65.0	0.081
	PHO personnel	108	40.5	159	59.6	0.902
	Friend	67	35.3	123	64.7	0.015*
	Junior chief	46	32.6	95	67.4	0.009*
	Senior chief	77	39.9	116	60.1	0.826
Having media exposure		25	29.1	61	70.9	0.011*

* P-value < 0.05

Table 4 Relationship between enabling factors and dental nurse preparation

Enabling Factors	Dental nurse preparation				P-value of Chi- square test
	Low		High		
	n	%	n	%	
Having hospital policy	50	31.3	110	68.8	0.010*
Having hospital assignment	45	28.8	111	71.2	<0.001*
Having hospital budget support	53	32.7	109	67.3	0.002*
Having hospital manpower management system	73	34.3	140	65.7	0.002*

* P-value < 0.05

Using multiple logistic regression, the factors of **High Perception group** (Adj OR= 2.03, 95% CI = 1.25-3.28), **Hospital Policy** (Adj. OR= 2.34, 95% CI = 1.45-3.78), **Hospital Assignments** (Adj OR=2.87, 95% CI =1.76-4.65), **Hospital Budget Support** (Adj OR= 2.06, 95% CI = 1.28-3.32), **Hospital Manpower Management System** (OR= 2.56, 95% CI = 1.50-4.36), **Advice from NHSO** (Adj OR= 1.68, 95% CI = 1.04-2.71), **Advice from friends** (Adj

OR=1.84, 95% CI = 1.12-3.00), **Advice from junior chief** (Adj OR=1.88, 95% CI= 1.17-3.03), and **Mass media** (Adj OR= 2.00, 95% CI = 1.17-3.44) were significant determinants of dental nurse preparation by the chief of the dental department of the community hospital. The most significant predictors was the hospital assignment (Table 5). Chiefs who had hospital assignments were 2.87 times more likely to be well prepared than those who had not.

Table 5 Multiple logistic regression for the dental nurse preparation

Predictors	Adjusted OR	95 % CI		P –value
		lower	Upper	
Age group				
≥35	1.52	0.95	2.44	0.081
<35	1			
Perception preparation				
Low	1			
High	2.03	1.25	3.28	0.004
Hospital policy				
No	1			
Yes	2.34	1.45	3.78	0.001
Hospital assignments				
No	1			
Yes	2.87	1.76	4.65	<.001
Hospital budget support				
No	1			
Yes	2.06	1.28	3.32	0.003
Hospital manpower				
Management system				
No	1			
Yes	2.56	1.50	4.36	0.001
Advice from NHSO				
No	1			
Yes	1.68	1.04	2.71	0.034
Advice from friend				
No	1			
Yes	1.84	1.12	3.00	0.016
Advice from junior chief				
No	1			
Yes	1.88	1.17	3.03	0.009
Mass media				
No	1			
Yes	2.00	1.17	3.44	0.012

Discussion

Preparation or ‘on boarding’, also known as organizational socialization, refers to the mechanism through which new employees acquire the necessary knowledge, skills, and behaviors to become effective organizational members and insiders¹¹. Tactics used in this process include formal meetings, lectures, videos, printed materials, or computer-based orientations to introduce newcomers to their jobs and organizations. Research has demonstrated that these socialization techniques lead to positive outcomes for new employees such as higher job satisfaction, better job performance, greater organizational commitment, and reduction in occupational stress and intent to quit¹²⁻¹⁴. These outcomes are particularly important to an organization looking to retain a competitive advantage in an increasingly mobile and globalized workforce. In the United States, for example, up to 25% of workers are organizational newcomers engaged in an ‘on boarding’ process¹¹.

This research showed that 59.7 percent of respondents were classified as having a good level of dental nurse preparation, whilst 40.3 percent of respondents had poor preparation. Wijaranaphiti studied factors related to performance effectiveness and found that, when the dental nurse had stress caused by role conflict with internal standards, and having to perform several roles, their performance effectiveness was reduced¹⁵. It is suggested that much more effort should be applied in promoting use of relevant information. The chief of the dental department of the community hospital should be setting up a data bank and guidelines, and use them for preparing their dental nurses.

Dental nurses have a heavy work load and multiple functions at the THPH¹⁶. It is important and necessary to describe all of these functions clearly during orientation. Proper preparation needs to use the data bank and guidelines. The findings indicate that more encouragement should be provided for the chief of the dental department to implement training about project planning, project management and budget defense support for dental nurses who work at THPH. According to the budget, the chiefs of the dental department of the community hospital should be firmly encouraged to prepare budget to sustain dental nurses who work at THPH. And also the chiefs should be encouraged to prepare appropriate material and equipment to supporting dental nurses at THPH continuously.

In this research, 92.4 percent of the study respondents set up the dental curative care course to supporting dental nurses at THPH in their district. An effective dental health care program includes a service plan, and this is one of the most important resource boxes in the six building blocks of the ideal health system of WHO¹⁷. All the chiefs of the dental departments should be encouraged to prepare dental service courses to support dental nurses at THPH. The findings suggest that the chiefs in this study practiced a certain level of good preparation in this area.

The results of the Chi-square test showed that there was no relationship between the levels of knowledge of preparation and dental nurse preparation. In contrast, there was a significant relationship between the levels of perception and dental nurse preparation (P-value = 0.004). Furthermore, multiple logistic regression analysis to determine the significant factors which can be predictors of dental nurse preparation found

that chiefs of the dental department who had high perception were 2.18 times more likely to properly prepare dental nurses than those who had low perception (95% CI, 1.307 – 3.635).

This finding is logical in that a high perception of the value of preparation actually practiced more preparation than the low perception group. In addition, high perception is probably associated with better understanding about the effects and benefits of the preparation. Higher perception can generate higher sense of responsibility and more preparation¹⁸. Juntana Aungchusak, et al¹⁹ conducted a study of management of dental nurses in health centers from 1997 to 1998. They found that dental nurses had to take responsibility for dental tasks as well as other demanding tasks such as administrative work, guarding the premises, and providing curative care for non-dental patients. Thus, there was a mismatch of some tasks with the dental nurse training.

There was a significant relationship between mass media and dental nurse preparation. Therefore, mass media was one effectively communicating information about health-related issues to the chief of the dental department of community hospitals²⁰. According to the advice from persons, found that advice from NHSO is influential for dental department chiefs because of the long-term relationship and trust between the two groups. The chiefs realize that the NHSO is public organization dedicated to good management, is knowledge-based, and provides consistent and meaningful support to the district and sub-district levels. The NHSO mandate is to create health security for every Thai citizen. The universal health coverage system is responsible for developing a service system which is easily accessible, with an effective infor-

mation system for communications. The NHSO implements an evidence-based system of health care delivery, and enables the public to have freedom of choice in registering with a health care provider that is convenient and essential²¹. Thus, dental department chiefs have confidence in the NHSO.

In this study, advice received by chiefs of the dental department of other community hospitals (friend, junior chief) was firmly associated with dental nurse preparation. Because the close and long-term relationships result in trust and belief in advice from their peers. In particular, the junior chief may be the most proximal source of new knowledge and information. Therefore, advice from a junior chief was an influential factor for chiefs of the dental department of community hospitals to prepare dental nurses.

Relationship between enabling factor and dental nurse preparation of this study found that both hospital policy and hospital assignment has a significant relationship with level of dental nurse preparation of chiefs of the Dental department of community hospitals. The hospital director is the most proximal commander and manager of staff in community hospitals. In the Thai officer culture, staff are trained to trust and follow the hospital director's policy, assignment or directives for good and smooth work. Thus, hospital policy and assignments from the direct line of command are an efficient way to ensure that the chief of the Dental department of community hospitals practices good dental nurse preparation.

For hospital budget support and hospital manpower management system in this study found that 55.9 percent of respondents received budget support for dental nurse preparation for work in THPH. Within this group, 67.3 percent practiced good dental

nurse preparation. The results of the Chi Square test results also confirm that there is significant relationship between budget support and level of dental nurse preparation ($P\text{-value} = 0.002$). And also there is significant relationship between respondents who had a hospital manpower management system and level of dental nurse preparation ($P\text{-value} = 0.002$). Multiple logistic regression was used to analyze all the associated independent variables showed that hospital director assignment/directives was the most significant predictors of dental nurse preparation by chiefs of the dental department of community hospitals. The advice from another chief was also a significant predictor. These factors were more significant after adjusting other factors in the final model.

Recommendations

For the national level

Policy was the influential factor for chiefs of the dental department of community hospitals to provide dental nurse preparation for work at THPH. Therefore, policy makers in the Office of the Permanent Secretary of the MOPH should announce a policy focusing on preparation or on boarding for dental nurses, to be administered by the community hospital directors to promote new dental nurses' confidence and productivity.

For the provincial level

This study found that most of the chiefs of the dental departments of community hospitals received information from PHO, while chiefs of the dental

department of other community hospitals (including friends, or the junior chief) influenced their dental nurse preparation. Therefore the chief of the dental department of the PHO needs to take full advantage of these opportunities to improve knowledge, and to influence the dental department of the community hospital to adopt and maintain dental nurse preparation and supervision for those nurses working at THPH. This could be done by arranging meetings and lessons learned forums about general management and dental nurse preparation for work at THPH.

For the community hospital

The community hospital director is the most important influence for the chief of the dental department of the community hospitals in conducting dental nurse preparation in this study. The hospital director provides policy, directives and budget to support dental work in THPH. However, only half of the chiefs of the dental department of community hospitals received support from their community hospital directors. Based on these findings, the PHO and community hospital director should work together to set policy, assignments and support budget in order to empower the chief of the Dental Department of community hospitals to prepare dental nurses for work at THPH.

Acknowledgements

We sincerely thank all participated in this study. We also thank to the National Health Security Office for the financially support.

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