# PARTICIPATORY CAPACITY BUILDING IN OCCUPATIONAL DISEASE SURVEILLANCE AMONG PRIMARY CARE UNIT (PCU) HEALTH PERSONNEL

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**Abstract.** This study aimed to demonstrate participatory capacity building regarding occupational disease surveillance (ODS) could enable the Primary Care Unit (PCU) health personnel provide satisfactory occupational health services for workers in the community. A needs assessment was carried out to identify gaps in PCU health personnel skills and knowledge so these areas could be strengthened. An ODS training program was developed. Fifty-nine health personnel participated in a 5 day workshop and received instructions regarding a wide range of occupational diseases, surveillance methods, prevention measures, and Ministry of Public Health (MOPH) surveillance systems. Participants self reported positive changes in knowledge and skills, as well as a high level of satisfaction with the workshop. However, many participants noted barriers to consistently implementing reporting procedures.

**Keywords:** occupational disease surveillance, capacity building, primary care unit, Thailand

## INTRODUCTION

The workforce of Thailand consists of about 35 million people; 40% in agriculture and 51% engage in informal work (National Statistical Office, 2007). Each year more than 200,000 people are injured on the job or become ill as a result of exposure to health hazards at work, which must be diagnosed and compensated (Workmen's Compensation Office, 2008). This results in substantial human and economic cost to the workers, employers and the nation as a whole. Therefore, it is important to indentify and implement effective prevention and control measures (Siriruttanapruk, 2009).

Occupational health surveillance is vital to preventing occupational diseases, injuries, and fatalities. Surveillance data are needed to determine the magnitude of the problem of work-related injuries and illnesses, identify workers at greatest risk, and establish preventive policies (Levy and Wegman, 2000). Data are also necessary to measure the effectiveness of preventive policies and to identify workplace health and safety problems that need further investigation. However, there is under reporting of occupational

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health problems in Thailand. These need improvement in diagnosis and reporting (Siriruttanapruk and Anantagulnathi, 2004).

Under recent reforms in the Thai health care system, primary care units (PCU) have become the frontline for providing primary health care at the sub-district level. PCUs play an important role in occupational disease surveillance (ODS) in Thailand. In 2004 the Ministry of Public Health (MOPH) ordered occupational health surveillance be carried out by PCU (Siriruttanapruk *et al*, 2009). However, the number of cases of occupation related diseases reported is still low. This could be because PCUs lack adequate numbers of occupational health specialists. Strengthening the capacity to recognize, diagnose and report occupational illness and injury cases by PCU health personnel is necessary for Thai workers to have adequate access to occupational health and safety resources. This study evaluated the effect of participatory capacity building on ODS by PCU health personnel in regard to the knowledge and skills necessary to provide occupational health services to workers in the community.

## MATERIALS AND METHODS

We evaluated community based participation in the process of capacity building in the areas of needs assessment, a workshop and a training program. The study was conducted from July 2008 to June 2009.

**Participants**

The characteristics of the participants in this study are shown in Table 1. Most participants were public health officers working at PCUs. Their ages ranged between 24 and 60 years with a mean age of 39.8±7.2 years. More than half the participants were female and married.

Table 1
Characteristics of participants.

| Variables | *n* (%) |
|---|---|
| Age (year) | |
| 24-30 | 7 (11.9) |
| 31-40 | 32 (54.2) |
| 41-50 | 15 (25.4) |
| 50-60 | 5 (8.5) |
| Mean=39.8, SD=7.2 | |
| Gender | |
| Male | 18 (30.5) |
| Female | 41 (69.5) |
| Marital status | |
| Married | 38 (64.4) |
| Not married | 21 (35.6) |
| Profession | |
| Nurse | 20 (33.9) |
| Public health officer | 39 (66.1) |
| Workplace | |
| Provincial public health office | 5 (8.5) |
| District public health office | 3 (5.1) |
| Community hospital | 8 (13.6) |
| Primary care unit | 43 (72.9) |

For ethical consideration, before launching the program, all of the participants was informed regarding the aims, methods, outcome and expectation of the program as well as the participants' benificient.

**Study area**

Nonthaburi Province was purposively selected for this study since it had been the site of a MOPH pilot study regarding ODS training. It has a population of 1,256,769 people living in 6 districts with 63 PCUs, 5 community hospitals and 2 general hospitals. There are 2,000 factories, 95% are small or medium sized enterprises. In 2007, a 2 day ODS training program was conducted for 10 programmers, 8 occupational health officers and

Table 2
Occupational disease surveillance training program.

| Date | Time | Contents |
|---|---|---|
| Day 1 | 8:30-9:30 | Introduction of participants and social group activity |
| | 9:30-12:00 | Overview of occupational health concepts |
| | 13:00-14:00 | Overview of the occupational disease surveillance system of the MOPH |
| | 14:00-16:00 | Experience sharing: discuss problems and challenges with ODS at the PCU level |
| Day 2 | 8:30-9:00 | Warm up session |
| | 9:00-12:00 | Principles of occupational disease screening |
| | 13:00-16:00 | Musculoskeletal disorder surveillance |
| Day 3 | 8:30-9:00 | Warm up session |
| | 9:00-12:00 | Skin disease surveillance |
| | 13:00-16:00 | Practice by case study: occupational disease surveillance at the PCU level |
| | 16:00-16:30 | Homework assignment |
| Three weeks break | | Practice at their own PCU regarding diagnosing, recording and reporting occupational diseases |
| Day 4 | 8:30-9:00 | Warm up session |
| | 9:00-12:00 | Pesticide related disease surveillance |
| | 13:00-16:00 | Homework presentation |
| Day 5 | 8:30-9:00 | Warm up session |
| | 9:00-12:00 | Best practice in occupational disease surveillance at the PCU level |
| | 13:00-16:00 | Evaluation of the workshop |
| | | Closing the workshop |

12 epidemiologists from four general hospitals and five community hospitals in Nonthaburi Province. The program included lectures on occupational disease, data sources and the reporting system. Participants were able to practice recording data. Only the two general hospitals reported a few of occupational related diseases.

**Data analysis**

The data were analyzed using qualitative and quantitative methods. Participant perceptions, experiences, areas needing strengthening and obstacles to ODS were analyzed using manual content analysis (Berelson, 1971). Descriptive categories were formed from the content of focus group discussions after they were transcribed and significant ideas extracted. The relevant categories were linked and themes identified. Quantitative data were analyzed using numbers, percentages, means and standard deviations. The analysis was conducted using the SPSS statistical package.

## RESULTS

**Needs assessment**

A needs assessment was undertaken to identify areas in which PCU health personnel were deficient in ODS. A focus group of 20 participants discussed their current knowledge and skills as well as obstacles with the ODS. Ninety point nine percent of health personnel were deficient in training in data collection methods,

filling out the ODS form, data analysis, knowledge of occupational health concepts, diagnosis of occupational disease, training in reporting procedures and guidelines, enforcement of ODS reporting, and time to perform ODS, making it difficult to diagnose occupational disease. When asked about work-related diseases in their community, 73.3% listed musculoskeletal disorders, skin diseases and pesticide related disease.

**Training program**

Based on these findings a training program for health care personnel was developed and carried out in a workshop format. Special attention was given to areas identified by the focus group as being required in order to effectively perform ODS. The training program lasted 3 full days, and was followed by 3 weeks of self-directed practice at each participant's PCU, followed by 2 additional days of training (Table 2).

The workshop covered the occupational health surveillance system in Thailand managed by the MOPH. Participants were given an overview of occupational health concepts: hazard analysis, risk assessments, primary prevention of occupational hazards, protection and promotion of health at work, employment conditions, types of occupational hazards, surveillance, treatment, and reporting of occupational diseases. Instruction in the principles of occupational disease included screening procedures, such as obtaining medical histories, questionnaires, clinical examinations, diagnostic tests, organ function assessments and biological monitoring. Participants were introduced to designing, planning, implementing, and following up screening tests. Additional topics included surveillance and prevention measures for a wide range of occupational diseases, such as musculoskeletal disorders, occupational skin diseases and pesticide toxicity.

Several case studies were discussed in the workshops, then the participants were given a homework assignment to diagnose and record all potential cases of occupational disease that presented to their PCUs using the skills gained at the workshop. If they were unable to diagnose a suspected case, participants were given contact information for two occupational health physicians to assist them. After 3 weeks of practice, the workshop reconvened and all participants presented their case findings and discussed the problems they faced implementing workshop principles in their practice. A best practice model of occupational health surveillance at a PCU in Ratchaburi Province was presented by staff from that PCU.

**Achievements of ODS**

Workshop participants were asked to provide feedback in both written and oral formats to enable the project committee to evaluate the effectiveness of this program at building the capacity to perform ODS. Participants reported improvement in their knowledge and skills, and a high level of satisfaction with the workshop. Table 3 shows percentages of participants classified by level of knowledge gained by topic during the workshop. Sixty-six point seven percent of participants reported gaining much knowledge about ODS. Fifty-four point five percent reported gaining much knowledge from the occupational skin disease surveillance session. The remaining topics were judged as providing moderate to much knowledge.

Table 4 shows the participant ratings for the various aspects of the workshop. The majority of participants rated the teaching/learning methods, course con-

Table 3
Participants knowledge gained for each topic covered by the workshop.

| Topic | High (%) | Moderate (%) | Low (%) |
|---|---|---|---|
| Occupational diseases surveillance system of the MOPH | 33.3 | 60.6 | 6.1 |
| Role of PCU health personnel with ODS | 42.4 | 51.5 | 6.1 |
| Occupational health overview | 39.4 | 54.5 | 6.1 |
| Musculoskeletal disorder surveillance | 48.5 | 45.5 | 6.1 |
| Occupational skin disease surveillance | 54.5 | 42.4 | 3.0 |
| Pesticide related disease surveillance | 45.5 | 48.5 | 6.1 |
| Completing the report form | 39.4 | 45.5 | 15.2 |
| Overall ODS | 66.7 | 27.3 | 6.1 |

Table 4
Participant rating of various aspects of the workshop.

| Topic | Excellent (%) | Good (%) | Moderate (%) | Fair (%) | Poor (%) |
|---|---|---|---|---|---|
| Teaching/learning methods | 12.1 | 63.6 | 21.2 | 3.0 | 0.0 |
| Course content | 21.2 | 69.7 | 9.1 | 0.0 | 0.0 |
| Speakers | 36.4 | 63.6 | 0.0 | 0.0 | 0.0 |
| Venue and meal | 9.4 | 65.6 | 25.0 | 0.0 | 0.0 |
| Workshop materials | 18.2 | 54.5 | 24.2 | 3.0 | 0.0 |
| Workshop management | 18.2 | 57.6 | 24.2 | 0.0 | 0.0 |

tent, speakers, venue, meals, workshop materials and workshop management as good. Thirty-six point four percent of participants rated the speakers as excellent. This suggests the participatory approach in training was successful in meeting the needs of the PCU staff and the training program was successful in building the capacity of the participants. However, many participants noted workplace barriers to consistently implementing surveillance reporting procedures. Contributing factors included lack of an electronic recording system, ineffective communication between PCUs and public health offices at the district and provincial levels, lack of supervision, lack of a clear referral system and lack of an occupational health network.

More specific feedback was obtained from participants in a discussion session held on the final day of the workshop. Fiftty-five point two percent of participants felt practicing screening methods in a real workplace situation would be the best tool for learning these skills. Unfortunately, it was difficult for them to practice their skills since they had no occupational illnesses or injury cases during the three weeks of practice. Another

suggestion was to increase attendance of at least two public health officers from each PCU and a physician from the corresponding community hospital. This would improve understanding of occupational diseases, communication and cooperation, therefore easing consultation, diagnosis and referrals. Other suggestions included expanding course content, providing training to all PCUs in Thailand, and creating electronic reporting forms.

## DISCUSSION

This study demonstrated the effectiveness of participatory capacity building regarding ODS. More than 85% of participants gained knowledge of each topic covered by the workshop at a high or moderate level. This can result in increased ODS recognition, recording, and reporting among health personnel as seen in a previous study (Aekplakorn *et al*, 2002). This training program should be provided to health care personnel at PCUs throughout Thailand.

Future workshops should incorporate suggestions of previous participants when practical. For example, future workshops may consider incorporating a practice session with a factory visit, allowing participants the opportunity to practice screening skills in a real setting outside the constraints of their normal working environment. Alternately, role playing may be a more feasible approach allowing participants to practice their screening skills.

Some barriers to full implementation of ODS were reported, including an inconvenient reporting system (paper not electronic), insufficient numbers of experts; such as occupational physicians, lack of understanding among employees and employers regarding the objectives of ODS, the absence of set laboratory standards at occupational health labs, and the need of a network for reporting data among agencies (employers, MOPH, Ministry of Labor, etc). Maintaining a database of occupational diseases and injuries requires special knowledge and skills, good communications between internal and external stakeholders, a high level of coordination, adequate resources, standardization of guidelines, and accurate data (Pearce *et al*, 2005). Future projects and studies should further examine how to improve these factors in order to achieve full implementation of the ODS system.

In conclusion, this project demonstrated the importance of participatory planning in development projects. Available evidence suggests the project was successful in reaching its objectives. The provision of appropriate content and teaching methods and understanding the value of human resource development along with the achievement of organizational goals greatly contributed to the effectiveness of this training program. The true achievements of this workshop will be revealed over time. From an operational perspective the collaborative nature of this project optimized the use of limited resources, combining the skill and expertise of government, service and educational sectors to improve the national occupational health system.

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## REFERENCES

Aekplakorn W, Suriyawongpaisal P, Methawikul T. The diagnosis and reporting of occupational diseases: the performance of physicians in Thailand. *Southeast Asian J Trop Med Public Health* 2002; 33: 188-92.

Berelson B. Content analysis in communication research. New York: Hafner Publishing, 1971.

Levy B, Wegman D. Occupational health: Recognizing and prevention work-related disease. Boston: Little, Brown & Co, 2000.

National Statistical Office. The labor force survey, whole kingdom quarter 2: April-June 2007. Bangkok: Ministry of Information and Communication Technology, Thailand, 2007.

Pearce N, Dryson E, Feyer AM, Gander P, McCracken S, Wagstaffe M. Surveillance of occupational disease and injury in New Zealand: Report to the Minister of Labour. Wellington: National Occupational Health and Safety Advisory Committee (NOHSAC), 2005. [Cited 2011 Jan 16]. Available from: URL: http://www.otago.ac.nz/ipru/ReportsPDFs/OR056.pdf

Siriruttanapruk S, Anantagulnathi P. Occupational health and safety situation and research priority in Thailand. *Ind Health* 2004; 42: 135.

Siriruttanapruk S. Situation of occupational health services in Thailand. *Asian-Pacific Newsl Occup Health Safety* 2009; 16: 28-9.

Siriruttanapruk S, Wada K, Kawakami T. Promoting occupational health services for workers in the informal economy through primary care units. ILO Asia-Pacific Working Paper Series. Bangkok: ILO Sub-regional Office for East Asia, 2009.

Workmen's Compensation Office. Annual report. Bangkok: Social Security Office, Ministry of Labor and Welfare, Thailand, 2008.