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Impact of Occupational Health Interventions in Indonesia

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by

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of the requirements for the degree of
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Dedication

This study is dedicated to the underserved working population around the world, to the health officers who never get tired of expending their time and effort to promote human health, and to the future enhancements of occupational health services for all workers.

This dissertation is also dedicated to all members of the Indonesian Public Health Union (PERSAKMI) who bear patiently as the author presides over the organization from abroad.

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"Whatever the mind of man can conceive and believe, it can achieve. Regardless of who you are or what you have been, you can be what you want to be." —W. Clement Stone

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Abstract

Although the Ministry of Health, Indonesia, has achieved some successful occupational health interventions, published literature on such interventions in Indonesia remains scarce.

This study utilized mixed methods of qualitative and quantitative research for the years 2010 and 2011. The qualitative study covered respondents in West, Central, and East Java Provinces to gather stakeholders' perspectives on the impact, effectiveness, adoption, implementation, maintenance, and barriers of occupational health services for informal sectors in Indonesia. The quantitative portion measured the impact of occupational health training for community health officers using Reach, Efficacy, Adoption, Implementation and Maintenance (RE-AIM) dimensions. West Java, as a province with a center for occupational health referral services *(Balai Kesehatan Kerja Masyarakat/BKKM)*, was compared to Central Java as a province without BKKM.

The qualitative study showed that interventions improved knowledge of and engagement in occupational health among workers and health officers. Among other improvements, occupational health training resulted in some owners of food processing home industries switching from non-food to food-based coloring. The advocacy program improved local governments' political

commitment to funding the occupational health program. The BKKM played important roles in delivering occupational health in West Java Province. The quantitative study showed the efficacy variable to have the lowest p-value (p:<.0001). Meanwhile, the reach variable showed on the second lowest p-value among RE-AIM components (p: <.0190). Moreover, education (p-value: 0.0001), job type (p-value: 0.0015), and job duration (p-value: 0.0289) were considered individual variables that could have contributed to the differences in RE-AIM scores between Central and West Java.

The qualitative study confirmed that occupational health interventions in Indonesia resulted in some positive impacts related to safe and healthy work-related behaviors. The quantitative study found that West Java, a province with BKKM, had a better RE-AIM score as compared to Central Java, a province without BKKM. Some individual variables such as education, job type, and job duration could have contributed to the differences in RE-AIM scores between Central and West Java. The future direction of the occupational health-training program should consider the participants' diversity in their education, job type, and job duration.

Chapter 1

Introduction

Occupational health interventions in some countries have been imminent as current issues. In 2007, the World Health Organization (WHO) endorsed the global plan of action on workers' health 2008–2017 with the name of Sixtieth World Health Assembly (WHA): 60.26Agenda item 12.13. WHA: 60.26 urged member states to work toward full coverage of all workers, especially for the underserved, including workers in informal sectors, small and medium-sized enterprises, agriculture, migrant, and contractual workers. The goal in occupational health is to provide essential interventions and basic occupational health services for primary prevention and work-related diseased and injuries. Moreover, member states have to take measures to establish and strengthen core institutional capacities and human resource capabilities to enable health officers to understand the health needs of workers and to analyze workers' health risks and outcomes, and then translate the information into policy and actions [1].

Workers in big companies have privileged access to occupational health and safety (OHS) services, under regulation and supervision from the Ministry of

Manpower and Transmigration of the Republic of Indonesia. However, the access to OHS services covers less than 10% of employment. In fact, around 72,424,386 people out of a 111,947,265 labor force, or 65% of people in Indonesia work as self-employed, self-employed assisted by family member/temporary help, casual employment in agriculture, casual employment not in agriculture, and unpaid workers. These groups do not have access to occupational health and safety services [2]. Meanwhile, Indonesian law No. 36 in 2009 on Health, Section XII, stated that Indonesia must strengthen its national direction on Occupational Health.

In responding to the law on health and the WHO endorsement, the Directorate of Occupational Health and Sport (Dir. OH&S), the Ministry of Health, Republic of Indonesia, conducted interventions to strengthen its human resources capacities and capabilities to deliver basic occupational health services in primary health care or in a community health center (PUSKESMAS). In 2010, Dir. OH&S recruited 305 community health officers (PUSKESMAS) from Sumatra, Kalimantan, Java, Bali, and the Sulawesi Islands to participate in occupational health training titled "Capacity Improvement Training for Occupational Health Officers." Sumatra Island contributed 83 participants, Java Island 123 participants, Bali Island 17 participants, Sulawesi Island15 participants, and Kalimantan 67 participants [3].

Appropriate and realistic evaluation models in occupational health interventions have the advantages of avoiding ineffectiveness, unnecessary

spending, and wasted effort [4, 5].However, the effectiveness and efficacy of an intervention are slightly different. The effectiveness dimension refers to the level of effect of a program under realistic conditions of an achievement in the target audience. Efficacy refers to the level of effect under ideal conditions of an achievement in the target audiences [4].The RE-AIM evaluation framework covers five dimensions: **R**each, **E**fficacy, **A**doption, **I**mplementation, and **M**aintenance to evaluate public health and community based interventions. Adequate evaluation on those five dimensions would be useful to avoid wasting resources, lack of sequence in the project, and failure in public health improvement.

Intervention effectiveness research seeks impact, outcome, or summative evaluation in which the interventions are applied, or not, according to real-world conditions. Effectiveness means the degree that interventions affect the real situation, while efficacy refers to the effect on the ideal situation [4,6]. Previous studies reported the use of the RE-AIM framework in public health program evaluations. This framework is an evaluation model, which covers the reach and representativeness of participants and settings. The RE-AIM model measures quantitatively and qualitatively at five levels, which are reach, efficacy, adoption, implementation, and maintenance [7, 8, 9, 10].

1.1. The Research Problem

Occupational health training among community health officers is one intervention in occupational health in Indonesia. To research the reports and

studies related to impact on training in occupational health among health officers, the investigator searched 500 articles, including citations from an Advanced Scholar Google search using key words in the Indonesian language: *evaluasi, efektifitas, dampak, pelatihan, kesehatan kerja* (or evaluation, effectiveness, impact, training, occupational health), but no results were found with similarities to this study. Moreover, the investigator reviewed some internal reports from the Directorate of Occupational Health and Sport from 2006 to 2011, and found that certain annual reports covered some post-training actions. However, there was no report on the impact of evaluation on occupational health program using the RE-AIM indicator as pertaining to post-training performance. Therefore, the investigator assumes that, at present, there is no study on the impact of occupational health training among community health officers in Indonesia.

The components of RE-AIM dimension that consist of 5 factors are conceptualized in each indicator that represents on 0 % to 100 % scale in quantitative measure [7].

1). *Reach* measures the percentage and risk characteristics of persons who receive or are affected by a program or policy;

2). *Efficacy/effectiveness* measures behaviors of program officers, stakeholders, and participants;

3). *Adoption* measures the proportion of representativeness of settings that adopt the program;

4). *Implementation* refers to effectiveness of the program, such as: the proportion of participants who follow through with the program and to what extent the staff member delivers the program;

5). *Maintenance* refers to sustainability of the program.

Impact is "*the power to bring about a result on another*," while effectiveness is "the capacity or the power to produce a desired result" [11]. In this study, impact refers to the magnitude of the intervention on the OHIS program to improve workers' health. It refers to whether training in occupational health among community health officers has impact. Effectiveness refers to the extent to which the OHIS program fulfils the purpose of improving workers' health or fulfils the objective of occupational health training.

Workers' health includes healthy behavior, healthy workplace, and safety at work. The focus of initial study on Occupational Health interventions has been the central concern of providing workers with their specific needs for health services. Thus, skill in delivering Occupational Health Services requires knowledge and practice to understand the connection between health and work. Unfortunately, very few health officers have the capability to provide services in Occupational Health.

The term *occupational health services* include the prevention, promotion, treatment, and rehabilitation of illnesses and injury related to work. In responding to the need to provide Occupational Health Services, the Directorate

of Occupational Health and Sport have conducted training on Occupational Health among Health Officers in Indonesia

1.2. Past Research on the Problem

At this writing, very little published research has measured the impact of interventions in an occupational health program countrywide. Most of the studies reported a specific intervention in a specific setting. Those studies included training community health workers to promote the use of personal protective equipment among farmers, teaching farm-worker families to promote safe use of pesticides, and safety orientation and training to reduce injuries in the plumbing and pipefitting industries [12, 13, 14]. A meta analysis study found that 95 studies, which were compiled from different countries in specific settings, showed that all methods of training using, e.g., videos, pamphlets, hands-on training, lectures, improved behavioral conduct in safety and impacted reduction of injuries among workers [15].

Although there are numerous attempts to study the effectiveness and impact of training in occupational safety and health, very few raise the topic of the impact of occupational health training among community health workers concerning health services for informal sector workers. After searching with Google Scholar using the keywords "training," "health," and "Indonesia," the researcher found 90 titles, but only three titles that actually related to training among health workers in Indonesia. One example was of education and training in terms of paraquat product stewardship in the safe use of pesticide. This

intervention covered 11 provinces between January 1993 and September 1995. Results showed improvement in knowledge of paraquat products; skill of the farmers in calibration, spraying, and maintenance of sprayer; personal hygiene; and interactive training techniques among the farmers in the group. However, the measure of improvement was merely the statement without any dimension [16]. Training on Life Saving Skills (LSS) among village midwives indicated significant improvement in their ability to perform life saving measures [17]. On the job peer training programs were given by experienced nurses to less experienced ones, but this intervention did not increase the coverage of immunization programs, nor the quality of practice [18].

None of the available published research in Indonesia covers a topic related to particular community health workers and the impact of occupational health training. Therefore, deeper understanding of the impact of training in occupational health among community health workers would be beneficial to provide input for improving occupational health programs in community health centers.

1.3. Deficiency in Past Research and One Deficiency Related to the Need to Collect Both Quantitative and Qualitative Data

Current occupational health intervention studies mostly use quantitative methods. For example, a study in reduction of risk of injuries is significantly different among construction workers who receive safety orientation as compared to those who do not. Another study analyzing 95 research reports is

also quantitative in design and concludes that the most engaging training is likely related to reductions in accidents [14, 18].All of those studies have characteristics of finding factors associated with the outcome and how significant the differences are, but fail to answer why? In addition, what are the stories related to the outcome or the problem?

The fact was that the investigator did not find any published research utilizing mixed methods pertaining to occupational health interventions in Indonesia, specifically focused on occupational health services for informal sector workers. Therefore, this study will enrich the scarcity of its references.

1.4. The Audience That Will Profit from the Study

The policy makers include the Ministry of Health, the Ministry of Manpower and Transmigration, and The Ministry of Cooperation and Small Scale Enterprises.

1.5. The Purposes or Aims of the Research and the Reason for a Mixed Methods Study

In the first study, the qualitative purpose was to seek the perspectives of either stakeholders or actors in occupational health regarding the impact of occupational health service interventions in informal sector. Interventions in this qualitative study referred to the establishment of the Center for Occupational Health Services *(BKKM)* and Occupational Health Posts *(POS UKK)* as the focus of the occupational health program of the Directorate of Occupational Health and Sport, Ministry of Health, Indonesia.

In the second study, the researcher measured the impact of occupational health training among health officers in Indonesia, who participated in the 2010 training program. Thus, this study refers to occupational health training as intervention in occupational health. Furthermore, this study compares the difference in the magnitude of impact of occupational health training among district health offices related to the presence or absence of BKKM and/or POS UKK.

1.6. The Research Questions and Hypotheses

Qualitative research questions mainly consist of two components as follows:

1). The impact of occupational health services for the informal sectors (OHIS) program in Indonesia based on stakeholders' perceptions.

2). The effectiveness of the OHIS program in Indonesia based on stakeholders' perceptions.

3). Stakeholders' perceptions on barriers, adoption, and implementation of Occupational Health Services for Informal Sectors

The researcher investigated the impact, the effectiveness, and the variability of the OHIS program among selected districts based on the following research questions:

1). How did stakeholders perceive the effectiveness of the OHIS program in their area?

2). How did stakeholders perceive the impact of the OHIS program in their area?

3). How did stakeholders perceive barriers to delivering the OHIS program in their area?

4). What did stakeholders think about the ongoing OHIS program in their area?

5). How did they adopt the OHIS program in their area?

6). How did they implement the OHIS program in their area?

7). How did they maintain the sustainability of the OHIS program in their area?

8). What was the need in term of resources to support the OHIS program in their area?

9). What was the most important aspect of delivering the OHIS program in their area, based on stakeholders' opinions?

10). How did they obtain the resources for the OHIS program?

11). How did they utilize the resources?

12). What aspects of change in the target audience occurred in accordance with the purpose of the OHIS program?

13). What part of the OHIS program ought to be strengthened in each selected district?

14). What was the variability of the OHIS program among district health offices in the presence or absence of BKKM and POS UKK?

15). What factors might explain this variability?

The researcher categorized these 15 research questions into primary, secondary, and tertiary. The following diagram describes the approach of categorization.

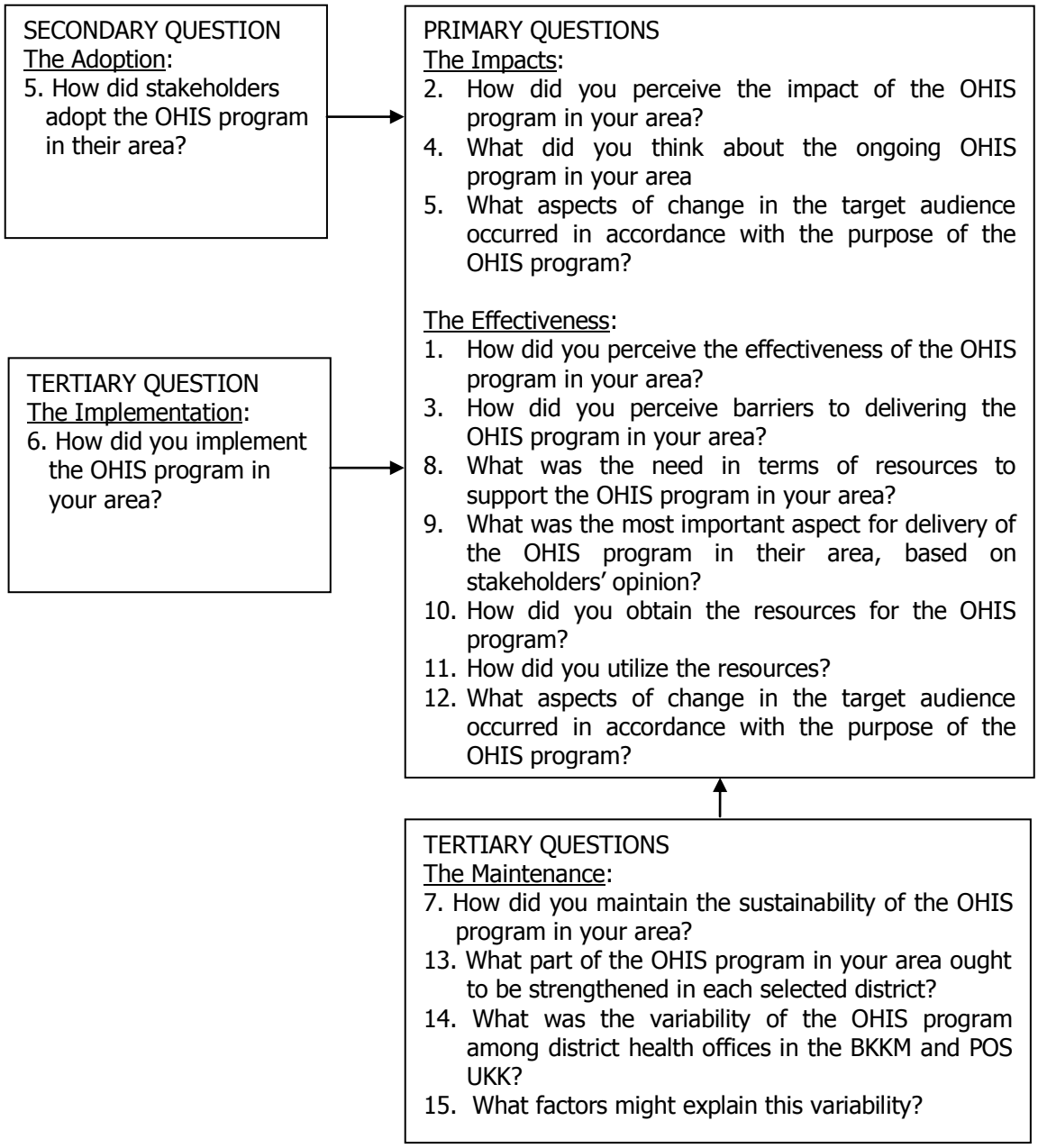

Figure 1. The Diagram of the Qualitative Research Questions.

Quantitative Hypothesis was that the impact of training in occupational health among health officers in Indonesia differed between regions with BKKM (West Java Province) and without BKKM (Central Java Province). The mixed method questions in this study sought a comprehensive interpretation to answer

the magnitude, the effectiveness, and the impact of these following research questions:

1). What was the magnitude of impact of occupational health interventions in Indonesia?

2). How great was the effectiveness of occupational health interventions in Indonesia?

3). What was the difference in the impact of occupational health interventions among district health offices related to the presence or absence of POS UKK and BKKM in Indonesia?

The results of qualitative and quantitative studies

1.7. Philosophical Foundations for Using Mixed Methods Research

The reason for combining qualitative and quantitative methods was to explore the perceptions of stakeholders and actors in occupational health interventions, followed by the numerical magnitude of impact of occupational health training, so that the results comprehensively explain the impact of occupational health interventions in Indonesia.

Philosophically, qualitative research is an interpretive method seeking understanding and insight into deeper phenomena. Qualitative research explores certain phenomena in the context of socio-cultural, political, and physical environments. Qualitative research assumes that research participants construct their own insight from their experience and reality. Qualitative research explores data, seeking to understand the expression of participants' language, verbal and

nonverbal, that has symbolic meaning [19].In a case study, qualitative research promises to explore in-depth information of a program, an event, or activities using a variety of data collection techniques [20].

The quantitative approach measures the magnitude of impact on occupational health training among health officers. From the qualitative perspective, this study investigates the numerical measures of the impact using the RE-AIM framework or Reach, Efficacy, Adoption, Implementation, and Maintenance [7].

Chapter 2

Literature Review

2.1. Qualitative Research, Quantitative Research and Mixed Methods Studies in Occupational Health

A new way to evaluate occupational safety interventions includes factors such as behavior, motivation of employers and employees, and organizational change that incorporates both qualitative and quantitative methods. Emphasizing qualitative research is useful in identifying the factors that are associated with success or failure, but the quantitative measures are useful in describing the metric dimensions of the program results. [21]

Methodological criteria in occupational health intervention research use quantitative and qualitative methods to determine the effectiveness of occupational health intervention. Thus, the method would be helpful in avoiding unnecessary expenses in the intervention activities. [4]

2.2. Occupational Health Interventions

Studies on occupational health interventions have several dimensions—in both behavioral changes and organizational changes. An example would be the pesticide reduction program among migrant farmworkers in Colorado.

Quantitative methods revealed that their knowledge improved significantly after receiving training regarding safe use of pesticides [22].

2.3. Basic Occupational Health Service (BOHS)

The World Health Organization (WHO) and the International Labour Organization (ILO) worked hand in hand to develop the framework for expanding access to Occupational Health Services (OHIS) among workers who have no access to services. The WHO has enacted a Global Plan of Action on Workers' Health. Meanwhile, the ILO has launched a Global Strategy on Occupational Safety and Health as well as the ILO Convention No.1987 [23].

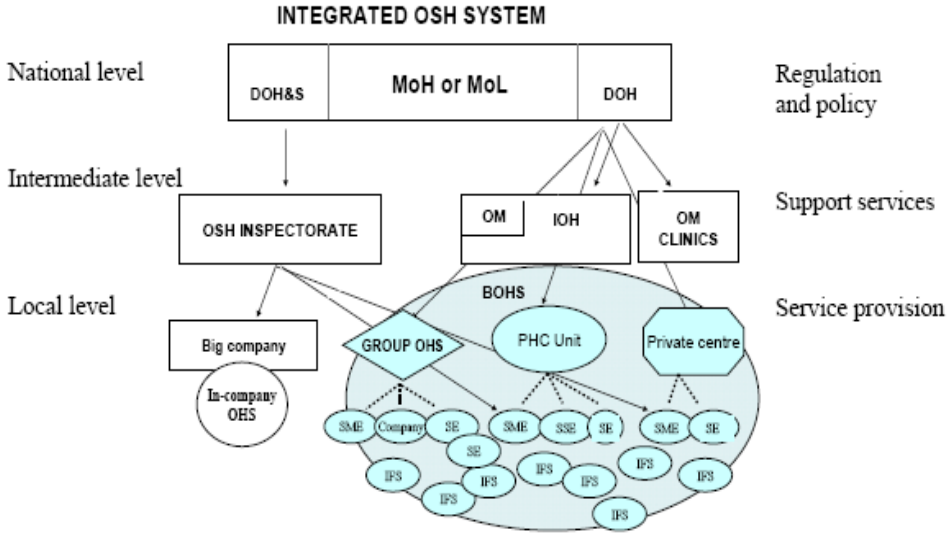

Figure 2. The Integrated Occupational Health Services System, adopted without modification from reference [23].

The concept of Basic Occupational Health Services comes from the WHO Alma Ata Declaration in 1978, article VI, which states that the services have to be as close as possible to where people live and work [23]. The structure of

BOHS is part of the national health system so that every country has possibilities of modifying the model to fit their respective national health system. The original concept of the integrated occupational health services that is available at the WHO website and several guides is the model from the Joint ILO/WHO Committee on Occupational Health, with the support of the Finnish Institute of Occupational Health (FIOH), is shown in figure 2 and is adopted without modification [23].

Various provisions of BOHS are available in primary health care units, private services in Occupational Health (OH), group services in OH, and the in-company health services unit of large-scale enterprises. The model broadens the coverage on the small-scale and medium enterprise (SME) workers, the self-employed workers, the farmers, and the informal sectors workers.

The services of BOHS include, but are not limited to, orientation and planning, surveillance of work environment, work risk assessment, information, education, initiatives, prevention of OH hazards, accident prevention, emergency preparedness, record keeping, and evaluation [23].

A pilot project on BOHS in Thailand reported the integration activities of OH services into primary care. The activities included: collection of patient work history; job characteristics identification; illness and accident records; risk assessment to identify hazards at work; occupational health promotion, data collection and analysis; assisting work units in problem identification, prioritization and solution; and monitoring at multiple levels of the health system.

The pilot project indicated that the awareness of the workers who were affected by the project was increased [24]. However, the report did not quantify the "increase" of awareness.

Indonesia implemented BOHS from 2005 to 2008, focusing on the establishment and development of 5107 Occupational Health Posts (POS UKK). POS UKK is a part of community empowerment among the working population and is notable for its success in BOHS initiation. The Directorate of Occupational Health, in partnership with the provincial governments, established five facilities as Centers for Occupational Referral Services (BKKM) in West Java Province and South Sulawesi Province. The BBKKM establishment is to accommodate the specific needs of occupational health services [25].

2.4. Informal Sectors Workers in Indonesia

The informal economy represents a challenge for a developing country like Indonesia in providing a job market. In Indonesia, the informal economy sustained the country during the economic crisis of 1998. The Fifteenth International Conference of Labour Statisticians (the 15th ICLS) in 1993 recommended classification as an informal sector based on one or more of the following three criteria: [26]

1). Non-registration of the enterprise according to national legislation;

2). Small size in terms of employment on a continuous and an occasional basis; and

3). The employees of the enterprise are not registered.

4). The absence of employment or apprenticeship contracts that commit the employer to pay relevant taxes and social security contributions on behalf of the employees or that make the employment relationship subject to standard labor legislation;

5). There is no registration of employees in the national labor statistics system.

The 15th ICLS also set up some exclusion criteria [26]:

1). The exclusion from the informal sector of units that are exclusively engaged in the production of goods or services for their own final consumption or their own fixed capital formation (e.g., construction of their own houses) of households;

2). The exclusion of agricultural activities from the scope of the informal sector, for practical reasons;

3). The inclusion or exclusion of enterprises engaged in the production of professional or technical services rendered by self-employed persons (e.g., doctors, lawyers, accountants, architects, engineers) on the same basis as other enterprises; and

4). The option to include or to exclude the coverage among paid domestic workers engaged by households in or from the informal sector. It depends upon national circumstances and the intended uses of the statistics.

In this study, the agricultural sector was included as part of the informal sectors, because agricultural jobs have no registration in the national

employment registration system. In addition, agricultural workers were part of the main target audiences of the OHIS program in Indonesia.

The Asian Development Bank (ADB) reported that the contribution of agriculture in informal sectors accounted for 87% of the total Gross Added Value (GAV) to economics in Yogyakarta, one of most populous provinces on Java Island, Indonesia [27]. This is just one example of how important agriculture is as a part of informal sectors in Indonesia.

Lund of WIEGO Social Protection Program made a sharp remark on the poor condition of informal sector workers:

> "The conditions of informal work for millions of workers in the developing world are objectively and starkly worse, and unprotected. Millions of the world's poor work all their lives, yet never receive more than two dollars a day for their work. They face low and uncertain incomes, high levels of hazard associated with the work, and the work is not covered by social protections. The global financial recession will result in more people working informally, and in more people earning less through their work. Both these facts mean that more working people will have less access to social protection through work" [28]**.**

Besides low standards of earning, informal employment makes workers vulnerable and makes it difficult to defend their basic rights. Informal sector workers are exposed to illness or health problems, unsafe working conditions, and possible loss of earnings due to absence from injury or sickness. The nature of conditions and situational occupations in informal sectors reduces the ability of the state to ensure that workers have fair working conditions; including appropriate working hours and safety regulations, and that, they receive adequate pay. Informal employment reduces fiscal revenues and the ability to

develop social security systems based on taxes and contributions if a registration system is not adequately established [29].

The ILO recognized that:

> "informal sectors had been part of the "East Asian Miracle." However, their share of the labour market had been falling before the financial crisis, but it had grown enormously in Indonesia, Thailand, the Philippines and elsewhere in 1997-1998 [30]."

Approximately, seventy million workforces in Indonesia engage in informal sectors works [2]. In this concern, health service for informal sectors in Indonesia would be a strategic program for maintaining the productivity of the country's workforce.

Informal sectors workers mostly rely on community health centers to meet their needs and demands for health services. As reported by 492 respondents, Community Health Centers (PUSKESMAS) were the most preferred health care provider. In fact, male workers had higher percentages of knowledge on Occupational Health Posts (POS UKK) than their female peers (84% vs. 24%). Male workers had more opportunity to participate in social engagement and received more information related to community activities, while female workers had less social engagement due to household jobs responsibility. Almost 70% of workers expressed that they needed free medication and treatment for illness, while 5% needed free personal protective equipment. Additionally, 15% of the respondents did not know what they needed for occupational health services other than medication and illness treatment [31].

2.5. Impact Evaluation in Occupational Health

In selecting the measures for OHIS impact in Indonesia, the researcher cited some definitions of the RE-AIM Framework [7, 9, 10].

Table 1. RE-AIM Definitions, Dimensions, and Levels

Measure	Definition	Dimension*	Level
Reach	The percentage and risk characteristics of persons who receive or are affected by a policy or program, i.e., participants compared to all members in a given clinic or defined population	Proportion of the target population that participated in the intervention	Individual
Efficacy	Assessments of positive and negative outcomes include behavioral outcomes and participation satisfaction outcomes	Success rate if implemented as in guideline: positive outcome – negative outcome	Individual
Adoption	The proportion and representativeness of setting, e.g. worksite, health department, or community, that adopted a given policy or program	Proportion of settings, practices, and plans that will adopt this intervention	Organization
Implementation	The extent to which a program is delivered as intended. The multiplication of efficacy and effectiveness is equal to effectiveness. Effectiveness= Efficacy x Implementation	Extent to which the intervention is implemented as intended in the real world	Organization
Maintenance	The extent to which a health promotion practice or policy becomes routine and part of the everyday culture and norm of an organization	Extent to which the program is sustained over time	Individual and organization

* The product of the 5 dimensions is the public health impact score (Population based effect)
Source: References [7, 9, 10]

Chapter 3

Method

3.1. A Definition of Mixed Methods Research

Mixed methods research is "an approach to involve philosophical assumptions from both qualitative and quantitative research to improve the overall strength of the study" [20].

3.2. The Type of Design Used and Its Definition

The design of this study uses first sequential-qualitative, and then the researcher embedded the result of the quantitative study into the result of the qualitative study. The embedded type of sequential method, with qualitative first and then quantitative, means that the second study has a different form. The respondents of the study may be the same, but their role is different.

In the qualitative study, respondents were recruited based on the criteria that they were stakeholders or actors of the occupational health program. Meanwhile, in the quantitative study, respondents were recruited from the participants of training in occupational health in 2010. The theme of both the qualitative and quantitative studies is to assess the impact of interventions in Occupational Health in Indonesia, focusing on informal sectors. There is a

possibility that a respondent in the first study is also a respondent in the second study if the individual was identified as a trainee in 2010.

3.3. Challenges in Using this Design and How They are Addressed

The Directorate of Occupational Health and Sport, Ministry of Health, Indonesia, reported a successful outcome in the implementation of occupational health among 305 community health centers in 2010 [32]. Measuring the impact of occupational health intervention in order to explain the level of success of intervention is challenging. RE-AIM was applied to assess the impact of occupational health intervention using mixed methods. The researcher conducted the first study based on qualitative design to gather stakeholders' perceptions, opinions, and expectations of effectiveness and the impact of occupational health services for informal sectors. In the second study, the researcher used quantitative methods to measure the impact of OH training among community health officers. The RE-AIM model, the gold standard of evaluation, utilized individual scores for the components: Reach, Efficacy, Adoption, Implementation, and Maintenance.

3.4. Example of Use of the Design Type

In the study of "intervention to

improve lead safety among painting contractors and their employees," the researcher used both qualitative and quantitative methods. Quantitatively, the change in employers' safety practices was measured, and qualitatively, the contractors' motivation to join safety education was explained [33].

To evaluate the impact of a child survival in an intervention program among municipalities in the State of Ceara, Northeast Brazil, the researcher applied qualitative and quantitative methods. The quantitative results were useful to set priorities for further improvement, and the qualitative results influenced decision makers to develop a program that addressed behavioral change in child survival protection [34].

3.5. References and Inclusion of Diagram

The researcher adapted the diagram of a sequential model of exploratory design by Creswell et al. to formulate the research flow [35].

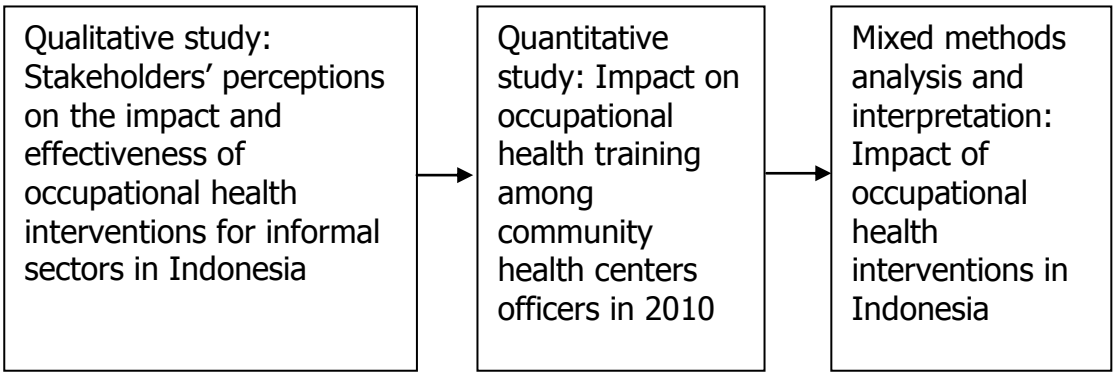

Figure 3. Diagram of the Sequence of Study
*****Modified from a Sequential Model of Exploratory Design by Creswell et. al., 2009.

3.6. Qualitative Data Collection and Analysis

The data collection activities in this qualitative study included study site, sample criteria, recruitment of the participants and data collection types.

3.6.1. Study Site

The study site was in Java, chosen because a high number of workers in informal sectors populated Java Island as well as having a high number of establishments without legal status. West Java, Central Java, and East Java Provinces were the main provinces with the highest number of existing establishments without legal status. Moreover, the Ministry of Health, Indonesia, has initiated the establishment of four *BKKM*s (or its name might have been changed as *BKTK*s or *UPTDKK*s by the local government) and most of the *POS UKK*s on Java Island.

3.6.2. Sample Selection

The selection of samples utilized a priori sampling, where the researcher defined the sample's characteristic and sampling structure before data collection and used the selection criteria and number of participants, shown in table 2. The sample selection utilized purposive methods in order to ensure that the selected key informants were in charge and/or affected the OHIS program. The researcher selected the participant based on characteristic of the participants' responsibility and engagement in OHIS program from the central government to the grassroots' level. They are were composed of the person in charge of OHIS program from the Directorate of Occupational Health – the Ministry of Health, person in charge of OHIS program at the provincial health offices, district health offices, community health centers *(PUSKESMAS)* , and occupational health post *(POS UKK)* coordinators.

Table 2. Selection Criteria and Number of Participants

No.	Criteria of Participants	#
1)	Person in charge of OHIS Program from Dir. OH	1
2)	Person in charge of OHIS Program from West Java, Central Java, and East Java Provincial Health Offices	3
3)	Person in charge of OHIS Program of 4 BKKM on Java Island	4
4)	Head of BKKM on Java Island	4
5)	District Health Officers in charge of OHIS Program of Bandung, Tangerang, Bogor, and Bekasi, where 4 BKKMs are located	4
6)	District Health Officers in charge of OHIS Program in Central Java Province: • 1 person from District Health Office with the highest number of POS UKK in Central Java Province • 1 person from District Health Office without POS UKK, but high in terms of the number of informal sector workers	2
7)	District Health Officers in charge of OHIS Program in East Java Province: • 1 person from District Health Office with the highest number of POS UKK in East Java Province • 1 person from District Health Office without POS UKK, but high in terms of the number of informal sector workers	2
8)	Community Health Centers (PUSKESMAS): • 2 *Puskesmas* officers, in charge of OHIS Program, from District Health Offices with the presence of BKKM + POS UKK, which have the greatest number of workers in informal sectors in the selected districts in West Java Province • 2 *Puskesmas* officers, in charge of OHIS Program, from District Health Offices with the presence of POS UKK, which have the greatest number of workers in informal sectors in the selected districts in Central Java and East Java Provinces • 2 *Puskesmas* officers, in charge of OHIS Program from District Health Offices without the presence of POS UKK, which have the greatest number of workers in informal sectors in the selected districts in Central Java and East Java Provinces	6
9)	POS UKK coordinators from: • 3 most active POS UKKs from West Java, Central Java, and East Java Provinces from selected Districts • 3 non-active POS UKK from West Java, Central Java, and East Java Provinces from selected Districts	6
	Total Participants	32

3.6.3. Recruitment of the Participants

The researcher selected potential participants in collaboration with the persons in charge of the OHIS programs. The researcher interviewed the person in charge of the OHIS program from the Directorate of Occupational Health, as well as provincial health officers, based on the criteria above. First, the researcher contacted potential participants via telephone and then followed up with those who were willing to participate. In case their principal required it, a permit letter was provided. The researcher made an appointment with each participant to set an interview schedule for each participant exclusively.

3.6.4. Data Collection and Analysis Types

The researcher utilized half-standardized, open-ended questions to conduct in-depth interviews. The researcher also distributed questionnaires to one district health officer, one community health officer, and one POS UKK coordinator from the area other than the selected study sites. The selection of this person was part of a mean to gather some assumptions of the variability of involvement in the OHIS program.

Based on the operability of each question during the interviews, the researcher revised some points in the questionnaire. The researcher used in-depth interview techniques, and the interviews took place in a room that assured the confidentiality of participant responses. The investigator recorded the in-depth interviews, using a digital voice recorder when the respondent agreed to the recording.

In addition, the researcher also conducted several field visits to some POS UKKs and BKKMs. The field visits' purpose was to review secondary data or documents pertaining to OHIS at each level of the study site. To enhance the data enrichment, the investigator used the photo-voice approach (photos to document the activities) for observing POS UKK activities and other activities that might relate to the OHIS program. In this method, the researcher requested several POS UKK groups to make a picture of their perceptions or expectations of the OHIS Program. The technical appendices in this study include the attachment of photo voice results to enhance the readers' appreciation and understanding of the topic.

The data analysis involved several steps, such as reading, coding, analysis, and interpretation.

1). Reading: The researcher transferred files from the voice recordings of in-depth interviews into mp3 files, and then to a Word document utilizing Sony recording software. The researcher employed verbatim transcription for the data. The researcher transcribed every utterance from the audio files, including such verbal pauses as "um," "uh," "mm," and "you know," which occasionally would not have been pertinent to a non-verbatim transcript [36].Cross checking and data enrichment were accomplished through document review.

2). Coding: The investigator developed a coding manual based on the theme of the research. Words or flagging of words were used to code. To avoid losing

some important concepts, the investigator minimized fine coding with many distinctions. There was no need to add new findings that required new codes in order to expand the analysis in new directions. Coding used computer software QSR NVivo for qualitative analysis. The researcher asked an inter-rater to code independently and then compared the two codes by the researcher and the inter-rater.

3). Analysis: The researcher edited the coding, exported the coding result into html format, and then opened "view text" from each respondent, copying each coding theme into a Word document again.

4). Interpretation: The researcher interpreted the data according to coding, the research questions, the theoretical framework, and the literature review.

3.7. Quantitative Data Collection and Analysis

The quantitative data collection of this study involved several activities such as determination of study site, sample selection, recruitment of the respondents, data analysis, and interpretation.

3.7.1. Determination of the Study Site

The study took place in West Java and Central Java Provinces. A national survey of the work force in 2011 revealed that 31% of the 117,370,485 Indonesian workers live in West Java and Central Java Provinces. In 2004, Statistic Indonesia also revealed that 38% of 17,145,244 establishments without legal sanction were located in West Java and Central Java Provinces.

These two provinces had similar characteristics. They had a higher number of health officers who participated in training (18 trainees in each province in 2010); were comparable in terms of the number of workers in informal sectors, estimated at 9 to 10 million in each province; and were comparable in terms of geographical area, demographics, and socioeconomic levels [2, 3, 25].

3.7.2. Sample Selection

West Java Province had four centers for occupational health as referral facilities for occupational health services. Until 2008, these BKKMs were the pilot project of the Directorate of Occupational Health of the central government. Then after 2008, the local governments in West Java Province took over these BKKMs since Indonesia had started to implement a decentralization system. Meanwhile, West Java was assigned as a case, while Central Java Province served as a control.

In 2010, the researcher recruited all occupational health-training participants from community health centers or 53 participants from these three provinces as the potential respondents (West Java, 27 respondents; Central Java, 26 respondents).

3.7.3. Recruitment of the Respondents

The recruitment of respondents used inclusion criteria, including the community health center (CHC) officer, who participated in OH training in 2010, facilitated by the Dir. OH and Sport. The researcher obtained a list of names and

addresses of the potential respondents from the Directorate of Occupational Health and Sport (Dir. OH & S), Ministry of Health, Indonesia, or the coordinator of training from the provincial health offices in West Java and Central Java Provinces.

3.7.4. Data Collection Types

The data collection used self-administered, standardized, close-ended questionnaires with some items containing open-ended questions to elicit a brief explanation. The researcher mailed the questionnaires prior to the visit and enclosed the IRB informed consent for the respondents to sign before they answered the questions. The researcher then visited the respondents who agreed to meet in person, to pick up the completed questionnaires, as well as to verify the answers. The purpose of this method was to anticipate incomplete responses and to minimize non-response to the questions. The RE-AIM dimension is shown in Table 3.

Table 3. RE-AIM Dimension and Questions for Evaluating Impact of Occupational Health Training among Community Health Officers in Indonesia

RE-AIM Dimension	Score Calculation
Reach: measure at individual level on a scale of 0% to 100% What percentage of potentially eligible participants (a) were excluded, (b) took part, and (c) how representative were they?	
Modified Questions: 1. How many officers in this PUSKESMAS have been trained in occupational health? …..officer 2. What is the total number of health officers who work in this PUSKESMAS? …..officer	Participation rate in training= $\frac{\text{the \# of participants (1)}}{\text{the \# of eligible to be invited (2)}} x\ 100\%$

Table 3. Continued

<table>
<tr><th>RE-AIM Dimension</th><th>Score Calculation</th></tr>
<tr><td colspan="2">Efficacy/Effectiveness: measure at individual level on a scale of 0% to 100%
What impact did the intervention have on (a) all participants who began the program, (b) on process intermediate and primary outcomes, and (c) on both positive and negative (unintended) outcomes, including quality of life?</td></tr>
<tr><td>Modified Questions:
1. Have you started to deliver the occupational health program or intervention? 0. No; 1. Yes
2. If yes, what type of program or intervention have you delivered (circle 1 or more)
1) Develop code for workers who visit PUSKESMAS
2) Implement OSH in the PUSKESMAS
3) Outreach to POS UKK
4) Delivered training to POS UKK Volunteers
5) Other, mention…</td><td>Program delivery rate in each province (rate of community health officers (CHO) who were trained in OH and deliver the OH program over the total respective CHO in each province) =

$\frac{\text{the \# of trained CHO who deliver the program}}{\text{the total \# of trained CHO in the respective prov}} x\ 100\%$</td></tr>
<tr><td colspan="2">Adoption: measure at setting level on a scale of 0% to 100%
What percentage of settings and intervention agents within these settings (e.g., schools/educators, medical offices/physicians) (a) were excluded, (b) participated, and (c) how representative were they?</td></tr>
<tr><td>Modified Questions:
1. What is the total number of workplaces or units in your area?
2. How many workplaces or units have you covered in OH intervention/promotion?
3. How many workplaces or units have adopted the OH?</td><td>Adoption rate:

$\frac{\text{the \# of coverage unit}}{\text{the total \# of unit}} x\ 100\%$

$\frac{\text{the \# of unit which adopt the program}}{\text{the total \# of coverage}} x 100\%$</td></tr>
<tr><td colspan="2">Implementation: measure at setting level on a scale of 0% to 100%
To what extent were the various intervention components delivered as intended (in the protocol), especially when conducted by different (non-research) staff members in applied settings?</td></tr>
<tr><td>Modified Questions:
1. How many units have implemented OH as guided in the OH program protocol, e.g. POS UKK
2. Please give example …</td><td>Implementation rate:

$\frac{\text{the \# of unit which implement the protocol}}{\text{the total \# of coverage}} x 100\%$</td></tr>
<tr><td colspan="2">Maintenance: measure at individual and setting level on a scale of 0% to 100%
1. (a) What were the long-term effects (minimum 6 to 12 months following intervention)? (b) What was the attrition rate, were dropouts representative, and how did attrition affect conclusions about effectiveness?
2. Setting level: (a) To what extent were different intervention components continued or institutionalized? (b) How was the original program modified?</td></tr>
<tr><td>Modified Questions:
1. Do you still engage in the OH program? If yes, give an example…

2. How many units engage in OH activities? If yes, give an example…</td><td>Maintenance rate (sustainability):
1. Individual:
$\frac{\text{the \# of CHO still engage in OH program}}{\text{the total \# of CHO}_{\text{Trained}}\ \text{OH}} x\ 100\%$
2. Setting:
$\frac{\text{the \# of unit still engage in OH program}}{\text{the total \# of coverage}} x\ 100\%$</td></tr>
</table>

Source: Reference [8] * Adopted with some modifications

3.7.5. Data Analysis

These following steps were utilized in the data analysis of the quantitative study:

1). Entry data: The researcher utilized SPSS Software to enter the data.

2). Coding: The researcher coded the variables according to the RE-AIM dimensions: reach, efficacy, adoption, implementation, and maintenance.

3). Analysis: The analysis used SAS software Version 9.3 that covered descriptive and inferential analyses. Descriptive analysis indicated the descriptive findings, the percentage, and the score using RE-AIM dimensions. Furthermore, the difference of the score in RE-AIM and other variables were statistically tested based on characteristics of the presence of BKKM in West Java Province (case) as compared to Central Java Provinces without BKKM (control).

4). The normality data was tested using Shapiro-Wilk and box plots. Data which were normally distributed were tested using t-test, while data, which were not normally distributed were tested using Wilcoxon Sum Rank Test. The Wilcoxon Sum Rank Test compared the median difference and the Wilcoxon ranked the data set according the first rank, second rank and further. The order of the rank started from the smallest to the largest observation.

5). Interpretation: The report consisted of all individual components of RE-AIM; some variables related to the respondent's background variables and the result of the t-test of the hypothesis testing.

3.8. Mixed Method Data Analysis Procedures

The analysis procedures in this mixed methods study covered the presentation of descriptive results based on qualitative and quantitative methods, some data transformations from qualitative to quantitative, a mixed methods matrix of comparison between regions with BKKM and region without BKKM. This matrix discussed the combined results of the quantitative and qualitative studies.

3.9. Validity Approach in Qualitative Research

3.9.1. Strategy for Validating Findings

The researcher maintained the integrity of this study by validating the findings and assured trustworthiness from the responses, including credibility, dependability, confirmability, and transferability.

The investigator's strong experiences in previous work related to this topic added to the credibility of this study. Moreover, this topic was conducted to continue some work mentioned in the researcher's resources and skills (Table 4) with regard to occupational health studies in Indonesia.

The expectation of the dependability of this study was drawn from the connectedness of each question to the research purpose and design. In this study, the researcher expected that the data should be parallel and consistent in responses across data sources.

Confirmability of the information given by participants was driven by employing observation and documentation based on the participants' opinions and information. If a statement showed the possibility of dual interpretations, the

researcher tried to avoid assuming an interpretation without first confirming it with the participant. The researcher confirmed that the information utilized the results of participant observation to some establishments, POS UKK, BKKM, and observation of POS UKK volunteer training that was given by a Community Health Center Officer.

Transferability is expected from the findings in the occupational health study, especially in informal sectors, because other countries have similar situations, in that a great proportion of the world's workforce falls into the informal sectors category.

3.9.2. Anticipated Ethical Issues

To anticipate ethical issues and other considerations for this study, the researcher referred to the protection of human subjects concerning interview confidentiality and respect for participants. The researcher did not make any judgmental gestures or even ask questions when the participants were reluctant to provide information. The researcher assured participants of the right to withdraw from the study at any time. Participant identity remained confidential. No participant should have any pressure or discomfort before, during, and/or after participating in the study.

3.9.3. Significance of the Study

This study is significant for initiating understanding of the success and failure of the OHIS interventions in Indonesia. The Ministry of Health, the provincial health offices, and the district health offices of Indonesia will benefit

from the information. In the future, there will be a scientific baseline for a more effective strategy with greater impact on the OHIS program.

3.9.4. Expected Outcome

The researcher expected that this study would enhance the understanding of barriers, and facilitate support in developing the OHIS program in Indonesia.

3.10. Validity Approach in Quantitative Research

3.10.1. Strategy for Validating Findings

In minimizing the threat to internal validity, the researcher recruited respondents from both cases (from regions with BKKM) and control (from region without BKKM). The inclusion of participants were respondents who attended OH training at the same period and had the same level of health service organization or community health centers (PUSKESMAS). The researcher recruited all participants for the study from three regions on Java Island with similar conditions. The researcher minimized the threat to construct validity by defining adequate and clear measurement of the variables.

3.10.2. Anticipated Ethical Issues

To anticipate ethical issues and other considerations for this study, the researcher referred to the protection of human subjects concerning interview and identity confidentiality as well as respect for participants. This means that the researcher did not make any judgmental gestures or even ask questions when the participants were reluctant to provide information. The researcher assured

participants of their right to withdraw from the study at any time. No participant should feel any pressure or discomfort before, during, and/or after participating in the study.

3.10.3. Significance of the Study

This study is significant for initiating the understanding of the success and the failure of the OHIS interventions in Indonesia. Therefore, the Ministry of Health, the provincial health offices, and the district health offices of Indonesia will benefit from this study. This study also serves as a scientific baseline for a more effective strategy to obtain a greater impact on the OHIS program in the future.

3.10.4. Expected Outcome

The researcher expected to enhance the understanding of barriers, and to facilitate supports in the development of OHIS program in Indonesia thru conducting this study.

3.11. Researcher's Resources and Skills

The researcher received both qualitative and quantitative research method training during study in the Master's of Public Health program and in the doctoral program in Public Health. In addition to field experiences, the researcher conducted several studies and surveys on Occupational Health related issues in Indonesia as shown in table 4.

Table 4. Summary of Researcher's Studies and Reports on Occupational Health in Indonesia

No.	Title	Result
1	Rapid survey on Occupational Health for Informal Sectors in Semarang Regency, 2008. Funded by Central Java Provincial Health Office [37].	Twenty-three occupational diseases based on ICD X WHO criteria are identified as potential risks related to their job tasks in their workplaces. Those are ICD X codes of C34; G62; Z57.4; L70; R11; B76; B42; B76; B42; X50; M65; J66.0; Y96; X50; Y96; M65; G56; W42; Y96; M70; M77; J62; J66.0
2	Rapid assessment on Occupational safety and health: Child and young workers in the furniture and woodworking industries in Central Java, Indonesia, 2008. Funded by ILO-IPEC, HQ, Jakarta [38].	The hazards involved in the sectors were excessive wood dust, noise, sharp objects, solvent, and paint. The less hazardous parts of production were the psychological environment of children due to working in the same room with young workers, the work climate, and monotonous work postures. It is common among workers in informal sectors that that they are not aware of hazards and non-hazards in the workplace. The use of personal protective equipment (PPEs) was only 37.5% in 152 respondents. Percentage of respondents having experience in occupational injuries and illnesses was 17.8%; accidents 18.4% among young workers below 18 years of age.
3	Rapid survey on occupational health in Kudus, 2007. Funded by Central Java Provincial Health Office [39].	The characteristics of the job tasks were very diverse. The informal sectors workers were mostly engaged in home industries and using paper recycling agents. Dust, ergonomic problems, and poor labeling on chemicals were the most notable occupational health problems.
4	Situational analysis and strategy of OHIS in 8 Provinces in Indonesia, 2007. Funded by Directorate of OH, MOH, Jakarta [40].	Occupational accidents and musculoskeletal disorders were the most frequent answers by respondents. Health seeking behavior included self-medication, visits to community health centers, consults with private clinics and nurse practitioners. Identified strategies were formulated to improve efficiency, planning, evaluation and monitoring, supervision of community health centers to improve occupational health services, and integrating OHIS in social security coverage.

Table 4. Continued

No.	Title	Result
5	Regional Strategy on Occupational Health and Safety in SEAR Countries[41]. * Researcher was a participant involved In formulating the strategy	The regional strategy served as a blueprint for the development and implementation of national strategies and a plan of action for occupational health by member countries in the region. The team used the WHO Strategic Directions and ILO Conventions in developing the strategy, using the evidence of the situational analysis on occupational health practices from the member countries.
6	Situational Analysis Of Occupational Health Practices In Indonesia [42].	Indonesia implemented a decentralization system for delivering occupational health safety and practices from the central, provincial, and local governments' administrative level, but mostly within the span of command of the Ministry of Manpower & Transmigration. The policy decisions and setting of standards with regard to occupational health generally takes place at the national level. Occupational health services at the plant or enterprise levels were available in large enterprises, but none of these services existed in small enterprises and informal sector units.
7	The Association between Maternal Exposure to Pesticides and Spontaneous Abortion in Brebes, Indonesia, 1999. Thesis of MPH funded by IDRB for MCH project in Indonesia [43].	Women who were involved in agricultural work during the 17-month period of interest were 1.6 times (95% CI: 1.11-2.24, *p*: 0.010) more likely to experience spontaneous abortion as compared to women without similar exposure. Women whose husbands applied high doses of pesticides were 2.6 times more likely to experience spontaneous abortion (95% CI: 1.73 - 3.92, *p*: 0.000) as compared to women whose husbands never used pesticides. Moreover, women who had a high index of overall pesticide exposure were likely to have 2.2 times higher odds of spontaneous abortion as compared to women who were not exposed to pesticides (95% CI: 1.42-3.39; *p*: 0.000).

3.12. Timeline for Completing the Qualitative and the Quantitative Studies

Table 5. The Qualitative Study Period: August 2010- December 2011

Activity 2010-2011	Aug – Oct10	Nov – Dec10	Jan – March11	Apr – June11	July – Sep11	Oct – Dec11
QUALITATIVE	1	2	3	4	5	6
Proposal development						
USF IRB Approval						
Diponegoro University Ethical Clearance Approval for Health Research in Human & Animal Subjects						
Recruit staff to develop code independently						
Piloting and Refining the Instrument						
Recruitment of participants						
In-depth interviews						
Data management and data analysis						
Manuscript preparation						
Report writing						
Dissemination						

Table 6. The Quantitative Study Period: January - December 2012

Activity 2012	Jan-Feb 12	March-Apr 12	May-June 12	July-Aug 12	Sep-Oct 12	Nov-Dec 12
QUANTITATIVE	1	2	3	4	5	6
Proposal development						
USF IRB Approval						
Diponegoro University Ethical Clearance Approval for Health Research in Human & Animal Subject						
Piloting and Refining Instrument						
Recruitment of participants						
Self-administered questionnaires						
Data management and data analysis						
Manuscript preparation						
Report writing						
Dissemination						

Chapter 4

Results

4.1. Qualitative

4.1.1. General Findings

This study represented our understanding of the milestones of occupational health for informal sectors in Indonesia. The variation in the level of organization among informants in this study gave insight into various aspects of the impact, success, barriers, and the voices of stakeholders' perceptions. The most prominent aspects of the occupational health interventions for informal sectors were trainings for provincial health officers, district health officers, and health workers in community health centers.

The researcher conducted participative observation in additional activities after conducting the interviews. Together with Dir. OH& Sport and Provincial Health Offices in three regions, the researcher joined some occupational health advisory activities, but conducted the activities and interviews as a separate event. The researcher observed that the community health centers, which received advisories from provincial and district health offices, were the most likely to deliver occupational health services for informal sectors. The main activities were occupational health education and workers health examination.

Based on the survey, there were various organizational aspects of occupational health for the informal sectors in Indonesia. Indonesia had implemented decentralization in 2008. Therefore, there was no standard or similarity in terms of structure or person in charge of occupational health officers at provincial health offices, district health offices, and community health centers. Each district had a specific section or division in occupational health. This phenomenon also explained the variability of occupational programs in each district, e.g., in Semarang occupational health activities were under the health promotion section, but in Bandung under the specific health services section.

There was no requirement for educational background or training in occupational health among those responsible to deliver occupational health programs. Very few providers (less than 20%) actually had a background in occupational health through formal education although some (30%) had received basic training in occupational health.

Community health centers/CHC (PUSKESMAS) and occupational health posts (POS UKK) were the two organizations that served as a backbone to provide and to empower occupational health services for informal sectors workers. The level of POS UKK consisted of our strata from lower to higher levels: (1) *Pratama*; (2)*Madya*; (3)*Purna*; and (4)*Mandiri*. The criteria were set to fit their capabilities in conducting OHIS promotion and their independence in resources. The CHC categorized the level of POS UKK in a mean to evaluate the development of each POS UKK.

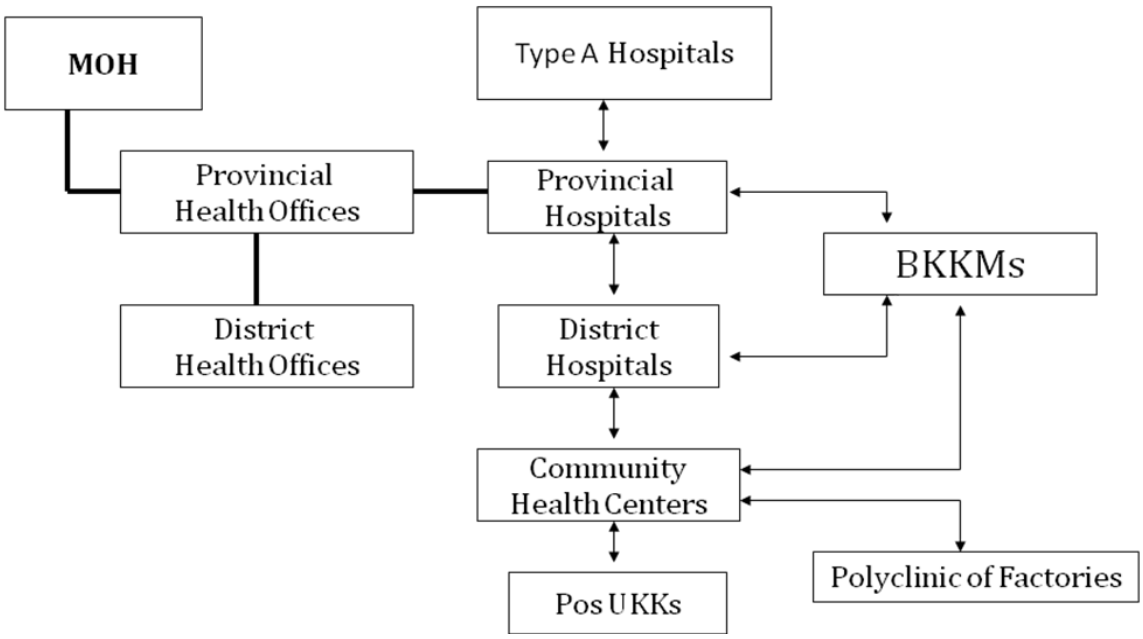

Figure 4. Occupational Health Care Network in Indonesia.
* Adopted without modification from Reference [25].

4.1.2. Specific Findings

The specific findings of the qualitative portion were meant to answer the 15 research questions concerning stakeholders' perceived effectiveness, impact, barriers, thought, adoption, implementation, maintenance resources needed, most important aspect, procurement of resources, utilization of resources, aspects of change, aspects to be strengthened, variability and its related factors. The following sections presented the specific findings of the study.

4.1.2.1. Positive Responses to Impact, Effectiveness, and Change

There were some variations in terms of responses from respondents at different levels of organization. The Directorate of Occupational Health explained that impact at the grassroots level depended on the person in charge (PIC) of

each local health office. The grassroots level persons knew how to solve their problems based on local conditions, and they needed only support and motivation. As quoted from the interview:

> *"POS UKK itu sebenarnya lebih banyak memecahkan masalah mereka sendiri sesuai kondisi yang ada pada mereka."*

The respondent's quote above meant that POS UKK played role in solving workers' problem within their own context.

The center for occupational health services *(BKKM)* officers noticed that some PUSKESMAS in their areas have assisted villages to establish POS UKK and to begin to implement OSH in their workplaces. A change has occurred in some home industries: the owners of food processing have switched from non-food to food-based additives and food coloring. Due to their hygienic practices—improvement in food processing and packaging, as well as wearing personal protective equipment while working—some home industries informed BKKM officers that their products succeeded in entering supermarkets instead of only traditional "wet" markets. The program improved the ability of PUSKESMAS in hazard identification. Furthermore, workers began themselves to recognize some incorrect practices during their work, and they demanded support in establishing POS UKK in their areas.

The provincial health officers said that OH interventions in the workplaces affected behavioral changes toward healthy habits and personal hygiene. The respondents also said that workers gained knowledge of their health needs, paid

attention to their subjective complaints, and knew how to seek help when they felt sick. As a further action, workers started to wear personal protective equipment in their workplaces. The occupational health interventions such as advice, consultation, and assistance in training improved the capability of some POS UKKs to expand their own resources for conducting OHIS activities.

The district health officers perceived that support from other institutions within local governments played an important role in sustaining occupational health services for informal sectors workers. One district health officer expressed the excitement:

> "Our long-term commitment in promoting occupational health services for informal sectors resulted in an opportunity of being selected by the Dir. OH & Sport as one of the pilot projects to be a role model in implementing occupational health and safety in the workplaces."

Other respondents said that OHIS brought positive changes in the improvement of some home industries, in that laborers were able to work better because they had a better health status. Some home industries benefitted from the better lighting assistance project. The project was conducted by the center for occupational health in collaboration with the district health office of Bogor regency. The improvement in handbag-making home industries in Bandung regency was a preventive strategy to minimize needle-stick injuries.

According to a city health officer, POS UKKs that received supervision by doctors and nurses from health centers were likely better in their performances. The once-a-month visits by physician or nurse to serve workers who wanted to

consult or obtain medication were very meaningful in sustaining the activities of POS UKK. OHIS intervention resulted in some changes in the workplaces, such as installing natural ventilation systems and conducting housekeeping activities. In other district health offices, OHIS intervention contributed to an improvement of data from PUSKESMAS.

The community health centers *(PUSKESMAS)* officers reported that many workers visited POS UKKs, improved activities in POS UKK, and workers were able to give first aid after trainings were given, and they were better prepared for emergency cases. The OHIS program contributed to reduction of illness cases among informal sectors workers although there were no statistically specific records, so the results must remain anecdotal.

The most prominent change and impact of OHIS outreach was the increase in knowledge about health hazards, for instance, switching from non-food coloring to turmeric used for coloring in food processing or from textile color to food color.

Occupational health post (POS UKK) volunteers commonly perceived the success in OHIS in terms of access to first aid and improvement of their workplaces by installing natural ventilation. Other volunteers expressed their achievements in helping the farmers to work in a safer and healthier way when dealing with pesticides. These volunteers also recognized some subjective complaints related to work and consulted to PUSKESMAS or they recommended workers to seek health examination in PUSKESMAS. As quoted from an interview:

"Setelah ada POS UKK masyarakat ada kemajuan cara menangani keluhan-keluhan atau gangguan kesehatan setelah mencampur pestisida."

"The presence of POS UKK is important to educate people to recognize subjective complaints after mixing pesticides."

The health education and promotion had a positive impact on the farmers to follow the usage direction from the pesticides label.

4.1.2.2. Negative Responses to Impact and Change

The central government explained that they had difficulty measuring the success of the OHIS program because of so many barriers, that is, the irregularity and incompleteness of reports from the local governments. In fact, the report that the central government received was mostly on funding utilization. The weakness in OHIS reporting was a focus of the OHIS problem.

Another barrier for sustainability of the OHIS program was the fast rotation of officers, since those who understood or who were trained were no longer in the position that related to the OHIS program. This was in tune with the provincial health officer's statement that some local governments responded reluctantly to sending reports on OHIS when no funding came from the provincial or central government, or the funding came from the local government itself, and difficulties in program stability resulted when new officers had no background in OH training. A notable remark came from a district health officer that in 2008, the central government thru the MOH, provided funding for OHIS.

A common situation in health promotion intervention is the fidelity of behavioral change. A quotation from the BKKM respondent reflected the situation:

"…..kalau kita datang mereka sibuk memperbaiki, kalau kita pergi kembali seperti semula…."

This means that the behavioral change only occurred when the health workers visited the sites. Additionally, a respondent stated:

"…kalau kita melihat dari dampak karena program ini kan belum.. belum …belum apa itu? eee familiar kepada masyarakat itu sehingga dampaknya juga belum… belum belum terlihat dengan jelasya…katakanlah bahwa..eee..karena apa juga dari segi regulasinya, dari segi aturan-aturan di atas itu tidak jelas sehingga juga pelaksanaan-pelaksanaan program kayak seperti melaksanakan kegiatan proyek gitu aja… apa yang ada di kegiatan…apa yang ada di proyek kita kerjakan…sepertiitu…seperti kayak itu" maksimal…sustainability nya nggak ada…jadi keberlangsungannya itu tidak… tidak… tidak jelas gitu lho…"

This perception meant that there was no clarity in term of OHIS regulation and no specific indicator to evaluate the OHIS program, therefore they could not maintain its sustainability. Moreover, it was understandable that the sustainability of the occupational health post for informal sectors depended on funding continuation, in addition to advisories and support from the government.

There was a barrier in terms of community health workers obtaining funding for the OHIS interventions. The community health workers stated that there was no specific indicator to measure the target achievement since there was no surveillance or hazard mapping in the workplaces. Therefore, they could not deliver occupational health interventions since funding was not available. The respondent said that the OHIS program should have a specific indicator to measure achievement. The respondent also indicated that workers in informal sectors at one of the study sites had no concerns about occupational health and

safety as an important need. Workers wore PPEs without knowing their benefit. The sustainability of POSK UKK among underpaid workers was questionable, and the community health workers had no exact data on how many POS UKK existed and continued to conduct their activities. Underpaid workers were powerless to improve their working conditions and practices since those efforts needed financial and other types of support.

One of the POS UKK volunteers noticed that among younger workers, there was no appreciation of POSK UKK, compared to the older generations, since the young generation focused on how to make money as much as possible.

4.1.2.3. Neutral Responses to Impact and Change

A very few respondents stated that the impact of the OHIS program were long-term, as are occupational diseases, and therefore the success of the program could not be evaluated within a short period of time.

A few neutral responses also stated that some POS UKK implemented and adopted the OHIS program, but others did not do so. At some sites, they had just started to introduce the OHIS concept to their organizations, especially PUSKESMAS, and they still had limited understanding and knowledge of OHIS. They resorted to subjective estimation and opinion with regard to measurement of their success with the OHIS program since they did not have any standardized indicator for program evaluation. The district health officer doubted the single impact was due to OHIS since they also had other participation activities in the

community. According to the respondent, other programs, such as integrated health post (POSYANDU), might also have contributed to the changes.

A respondent said that as a newly appointed person, he had no idea of the impact of OHIS since the current step of the OHIS program was merely "socialization" or introducing the program to actors and stakeholders to engage their interest. This respondent also said that in the future, he would seek data on workers who visiting PUSKESMAS, where they would record the type of job and include occupational diseases in their disease diagnosis protocol. However, they were aware that most activities run well when money is available.

4.1.2.4. Stakeholders' Perceptions of Barriers, Adoption, and Implementation of Occupational Health Services for Informal Sectors

Several barriers in delivering occupational health services for informal sectors workers were voiced by respondents from the grassroots level e.g., CHC officers, city health officers, BKKM officers, and provincial health officers. The respondents faced some typical problems such as lack of human resources, difficulties of access to certain villages due to geographical barriers, and lack of available time among workers. One of the respondents said:

> *"Kami kesulitan mencapai tempat pekerja karena letakgeografis, kemudian kalau kita akan mengadakan penyuluhan terbentur kesibukan kegiatan petani shg hrs dilakukan pembinaan mlm hari. Apalagi, SDM krn dari kami juga baru pendidikan yg masih rendah, shg apa yg akan kita sampaikan kita masih diperlukan pembinaan-pembinaan dari kabupaten."*

The respondent here expressed concerns about the difficulty of accessing workers' places, workers' difficulties in finding time to attend the OHIS sessions, and their lack of knowledge to carry out the OHIS program.

Moreover, some respondents said that lack of skill in educating workers, and lack of knowledge in OH among workers and health officers occurred too. Other barriers that hindered the OHIS delivery system were that the curative focus of CHC was preferable, there was a lack of leadership commitment in the villages and the health offices, and health officers' lacked the time to carry out even their main duties.

Additionally, difficulties in mapping the type of production to establish a POS UKK, lack of funding, difficulties in cross-sector collaboration, lack of reporting and recording in OH, workers losing their jobs, frequent job rotation among health officers, temporary workers in informal sectors, and lack of sustainability to maintain the OH program were some of other barriers. Most of the respondents said that they needed funding, training, and leadership commitments.

4.1.2.5. Resources Management, Expectations, and Stakeholders' Recommendation to Strengthen Occupational Health Services for Informal Sectors

Most of the funding to deliver OHIS programs came from the central government, since OHIS was at the pilot project stage in Indonesia. However, some local governments had started to contribute partial amounts of the budget

to deliver OHIS. However, some respondents said that OHIS mostly relied on budget disbursements from the central government.

Most of the local governments recommended to the central government that OHIS should be included in the "services standard of CHCs" in Indonesia. Thus, if the standard of CHC had the OH in required services, then the local government would be more likely to allocate funding for OHIS. As respondents said:

> *"OHIS ini akan di danai bila masuk dalam standar pelayanan minimal PUSKESMAS."*
>
> "The OHIS will be funded if it is included in the minimum standard services of CHC."

Meanwhile, the OH volunteers and CHC officers recommended that training among CHC officers and OH volunteers would strengthen and maintain the sustainability of the OHIS program.

4.2. Quantitative

4.2.1. General Findings

The structure of the health system in Indonesia begins at the central government (MOH), and moves downward to the provincial government (PHO), local government (DHO), *Kecamatan* as the sub-district administration system (PUSKESMAS), Sub-PUSKESMAS (PUSTU), village midwife clinics (POLINDES), and community participation efforts, such as Integrated Health Posts (POSYANDU) and Occupational Health Posts (POS UKK) [44, 25].

The Directorate OH 2010 annual report showed that 94.4% of 305 community health centers had assigned a person in charge (PIC) in occupational health and safety (OSH). The report further showed that 64.2% had established a team in OSH, and 42.9% had developed an Occupational Health Post (POS UKK) in their area. Meanwhile 56.4% had written policy in occupational health implementation, but only 19 % had allocated a budget for an occupational health program. Moreover, 69.8% had written a work plan in OSH, and 61.9% had evaluated their OSH program. Additionally, 75.4% had reported their OSH program, 14.8% had purchased simple equipment related to the OSH program, 100% had set up OSH guidelines, 93.1% had implemented OSH internally, and 44.9% of community health centers had carried out the OSH program, including advisory activities in POS UKKs [32].

Ninety percent of 76 Indonesian district health offices (DHOs), trained in OH had assigned PIC in OHS, and35 DHOs had set up OSH Teams. Out of the 76 DHOs, 83% have developed Pos UKK, and 63.2% have written OSH policy and program guidance. However, only 47% of 76 DHOs had allocated funding for the OSH program although 93% had written OHS program plans. Around 84% of DHOs developed OHS evaluations and reports. At least 76 DHOs of 450 DHOs in Indonesia had initiated the OSH program [32]. The selected findings were obtained from the annual internal report of the Directorate of Occupational Health, Ministry of Health Indonesia.

4.2.2. Specific Findings

The total response of answered questionnaires was 100%; 26 respondents were from Central Java Province, and 27 respondents from West Java Province.

Reach, Efficacy, Adoption, Implementation, and Maintenance scores of OH training among community health officers were the component of the RE-AIM score that is the dependent variable. Meanwhile the analysis also included a test of difference of the provinces' score from each factor of RE-AIM. Other independent variables that might explain the difference scores between the two provinces were age, education, job type, and job duration.

West Java Province, the province with the additional infrastructure of a Center for Occupational Referral Services (BKKM) showed a higher score in RE-AIM components and some individual variables.

Table 7 below showed the overall sample size, the mean, the standard deviation, the maximum and the minimum values of the frequency distribution of each research variable.

The measure of central tendency (Table 7) showed the data distribution of all samples (53 respondents) and 22 variables. It consisted of RE-AIM score as the first and RE-AIM as the second independent variable. Other independent variables were the contributor variables that might potentially related to the RE-AIM Score, i.e., Age, Education, Job Type, and Job Duration.

Table 7. Simple Descriptive Statistics According to the MEANS Procedure

Variable	N	Mean	Std Dev	Minimum	Maximum
No Resp	53	27.00	15.44	1.00	53.00
Province	53	1.51	0.50	1.00	2.00
Age	53	39.32	8.05	25.00	58.00
Age Median	53	1.47	0.50	1.00	2.00
Education Score	53	3.64	1.49	0.00	7.00
Job Type	53	10.28	3.24	1.00	13.00
Job Duration	53	69.87	77.38	4.00	372.00
Reach Score1	53	4.93	3.39	1.41	15.00
Reach Score2	53	5.00	3.37	1.41	15.00
Efficacy Score	53	94.34	2.01	92.31	96.30
Adoption Score1	53	30.15	33.70	0.00	100.00
Adoption Score2	53	51.08	47.38	0.00	200.00
Implementation Score	53	25.87	34.53	0.00	100.00
Maintenance Score 1	53	44.70	37.50	0.00	100.00
Maintenance Score 2	53	55.24	42.01	0.00	100.00
RE-AIM Score	53	38.92	16.10	11.94	74.43
Reach	53	4.96	3.38	1.41	15.00
Efficacy	53	94.34	2.01	92.31	96.30
Adoption	53	40.62	29.28	0.00	125.00
Implementation	53	25.87	34.53	0.00	100.00
Maintenance	53	49.97	32.01	0.00	100.00
RE-AIM	53	43.15	15.56	18.78	79.17

Table 8 below explained that the mean, median, minimum, and maximum values of most variables were different in the West and Central Java Provinces. The differences might provide some further explanation about the impact of occupational health interventions in Indonesia. The frequency distributions of the individual score of RE-AIM components as well as age and job duration were different between Central and West Java.

Table 8. The Comparison of Frequency Distribution of Respondents in Central and West Java Provinces

Variable	N1	N2	Mean1	Mean2	Med1	Med2	SD1	SD2	Min1	Min2	Max1	Max2
Age	26	27	38.35	40.26	39.00	39.00	7.33	8.73	25	27	53	58
Education	26	27	*	*	4	3	*	*	3	0	7	6
Job type	26	27	*	*	12	10	*	*	6	1	13	13
Job duration	26	27	38.15	100.41	33	48	25.53	96.83	5	4	132	372
Reach Score1	26	27	3.82	5.99	2.54	5.66	2.51	3.81	1.41	1.67	11.76	15
Reach Score2	26	27	3.92	6.03	2.70	5.71	2.51	3.79	1.41	1.67	11.76	15
Efficacy Score	26	27	92.31	96.3	92.31	96.3	**	**	92.31	96.3	92.31	96.3
Adoption Score1	26	27	39.88	20.79	21.88	9.26	38.37	25.87	0	0	100	100
Adoption Score2	26	27	43.94	57.96	29.16	60	40.61	52.95	0	0	100	200
Implementation Score	26	27	22.61	29.02	14.29	14.29	31.12	37.85	0	0	100	100
Maintenance Score1	26	27	45.99	43.46	50	50	41.84	33.54	0	0	100	100
Maintenance Score2	26	27	47.16	63.02	25	60	44.04	39.19	0	0	100	100
RE-AIM Score	26	27	37.45	40.32	35.01	44.74	15.43	16.89	11.94	12.45	67.41	74.43
Reach	26	27	3.87	6.01	2.54	5.71	2.50	3.80	1.41	1.67	11.76	15
Efficacy	26	27	92.31	96.3	92.31	96.3	**	**	92.31	96.3	92.31	96.3
Adoption	26	27	41.91	39.38	51.66	52.17	28.18	30.79	0	0	100	125
Implementation	26	27	22.61	29.02	14.29	14.29	31.12	37.85	0	0	100	100
Maintenance	26	27	46.58	53.24	43.75	50	34.69	29	0	0	100	100
RE-AIM	26	27	41.45	44.79	39.20	45.49	14.65	16.50	18.78	19.59	73.16	79.17

Source: Primary Data; 1=Central Java; 2=West Java;
* = Mean and SD are not applicable for the ordinal scale
**= Single score (setting base) for each province attached to individual score

The figures explained in the following sections compared the mean and the median on individual factors such as age, education, job type and job duration between Province 1 (Central Java) and Province 2 (West Java) Provinces. The difference on respondent's age, job type and job duration may explain the difference in RE-AIM score.

Moreover, the comparison also included the individual components of RE-AIM scores included Reach, Efficacy, Adoption, Implementation, and Maintenance.

4.2.2.1. The Comparative Respondents' Age Distribution between Central and West Java Provinces

The histogram and the box plots below presented in Figure 5, show the difference in age distribution between the two groups.

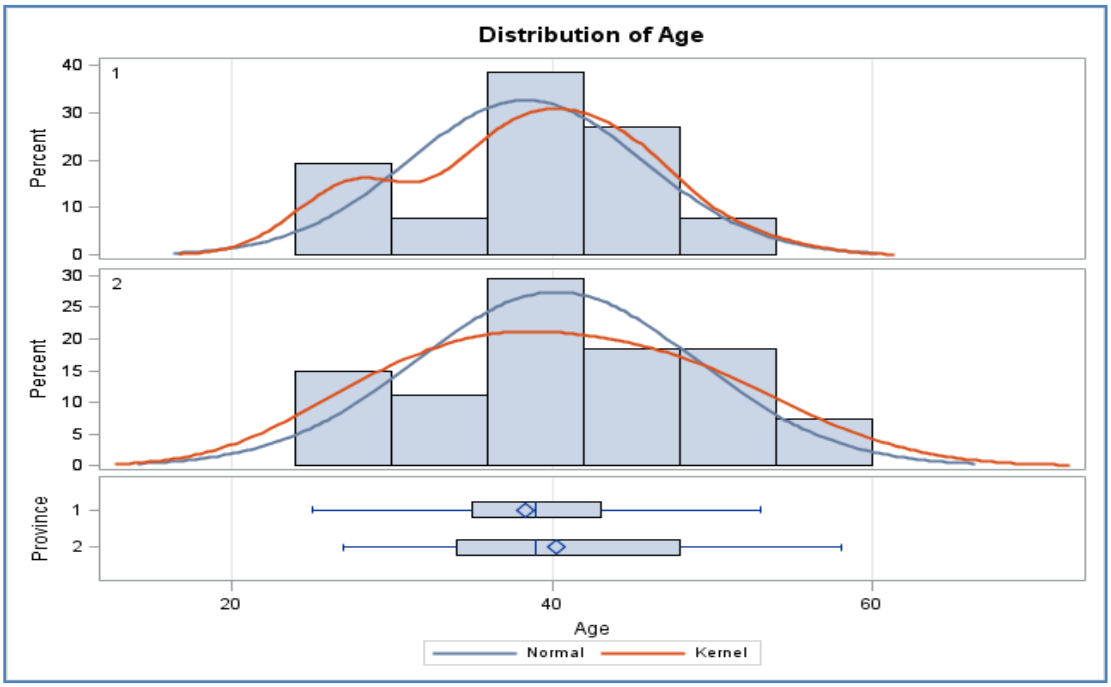

Figure 5. The Comparative Age Distribution between Central and West Java Provinces

The median of age variable between Central and West Java did not differ, but the mean of age among Central Java respondents was 2 years younger than that of West Java. The West Java Province had a wider range of respondents' ages, from 27 to 58, while the range of age of Central Java respondent was 25 to 53,a relatively younger group. The kernel curve for Central Java was narrower than that for West Java, SD: 7.33 vs. 8.73. The box plot diagram of the Central Java Province skewed to the left, while the West Java skewed to the right (Figure

5). This indicated that Central Java had more relatively younger CHC officers than West Java.

4.2.2.2. The Comparative Respondents' Educational Levels between Central and West Java Provinces

The respondents' education level was coded into seven categories, i.e. (1). High school in nursing or higher level of education other than health-related science, (2). Midwife, diploma in nursing, (3). Bachelor in public health or registered nurse or sanitarian or hygiene or occupational health safety or related sciences, (4). General physician or dentist, (5). Master of Public Health (MPH) or related sciences, (6). MPH major in Occupational Safety & Health, and (7). Physician with MPH or MOH (Major in OH/OHS).

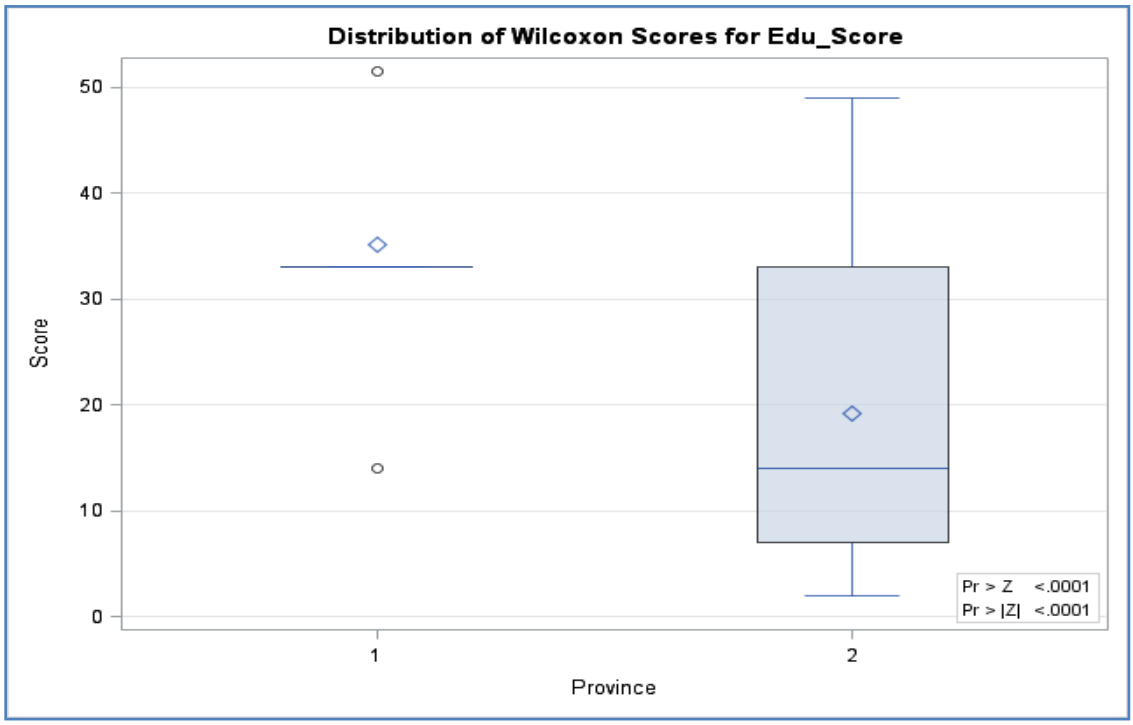

Figure 6. The Comparative Wilcoxon Score of Education between Central and West Java Provinces

Figure 6 described the difference in respondents' education levels between West and Central Java Provinces. The comparison utilized Wilcoxon Rank Sum test median score. West Java Province had more variety in terms of respondents' education, ranging from high school in nursing training and other types of education that do not relate to health sciences, up to Master's of Public Health major in Occupational Safety and Health. Figure 6 also showed that the median rank of the Wilcoxon score of education in Central Java Province was 35 vs. 19 of West Java Province.

In fact, the median level of education in Central Java Province was at "4," the general physician. Meanwhile, the median score of education in West Java was at "3" or Bachelor in Public Health, Sanitation or Bachelor's degree related to Occupational Safety and Health Sciences (Table 8).

4.2.2.3. The Comparative Respondents' Job Description between Central and West Java Provinces

Respondents' job descriptions consisted of thirteen categories ranging from administrator/*tatausaha*; general CHC staff/*staff puskesmas*; midwife/*bidan*; nurse/*perawat*; basic care and referral section staff/*yandas&rujukan*; public health program coordinator/*koordinator program*; sanitarian; general health care section/*yankes*; specific health care section staff/*yankessus*; health promoter/*penyuluhkesehatan*; OH officer/*petugasukk*; physician; and head of CHC.

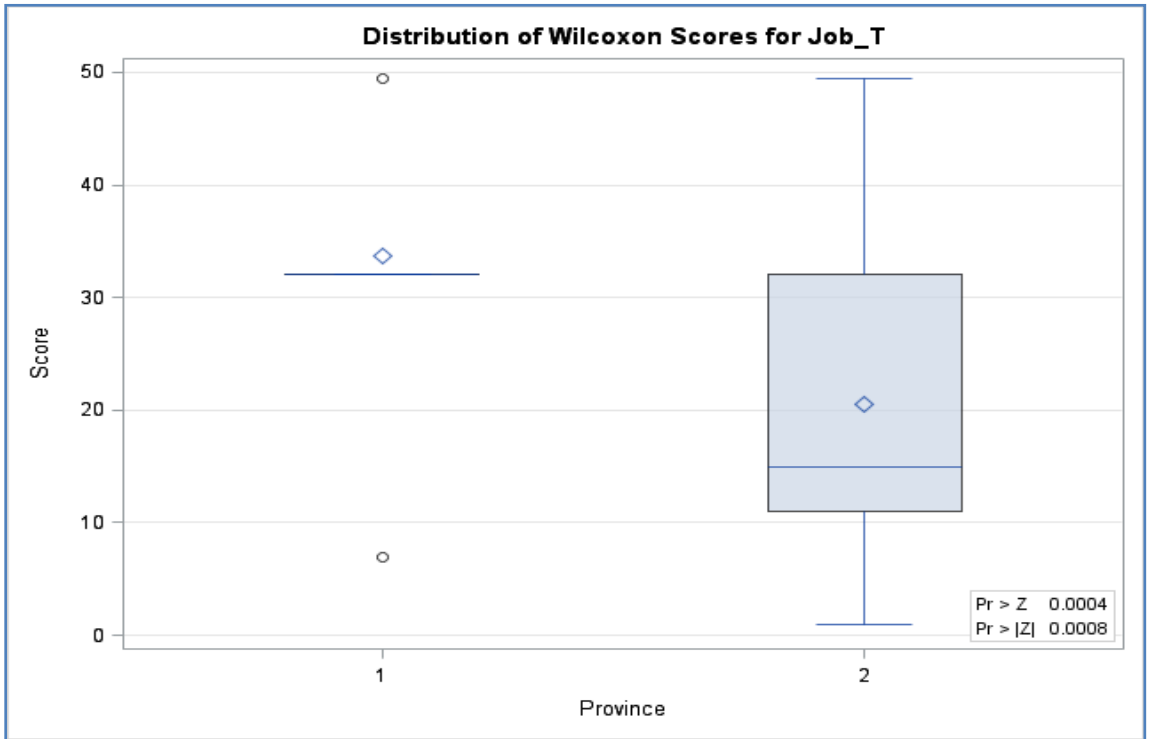

Figure 7. The Comparative Wilcoxon Score of Job Type Distribution between Central and West Java Provinces

Respondents from West Java Province had more diversity in job descriptions, starting with those who worked as administrators and heads of CHC; the lowest rank of Central Java respondents' job description was Public Health Coordinator, the highest Head of CHC. While the Central Java respondent were commonly general health care section officers.

The whisker from the box plots in Figure 7 reflected the difference in the distribution of Job Type of respondents between the two provinces. The figure 7 also showed that the whisker of West Java Province was longer than that of Central Java. The median of Wilcoxon score was differed between the 2 provinces or 32 vs. 20.5 (Figure 7).

4.2.2.4. The Comparative Job Duration between Central and West Java Provinces

Job duration (Figure 8) was measured in months according to the respondent's length of job related to the Occupational Health Services Program.

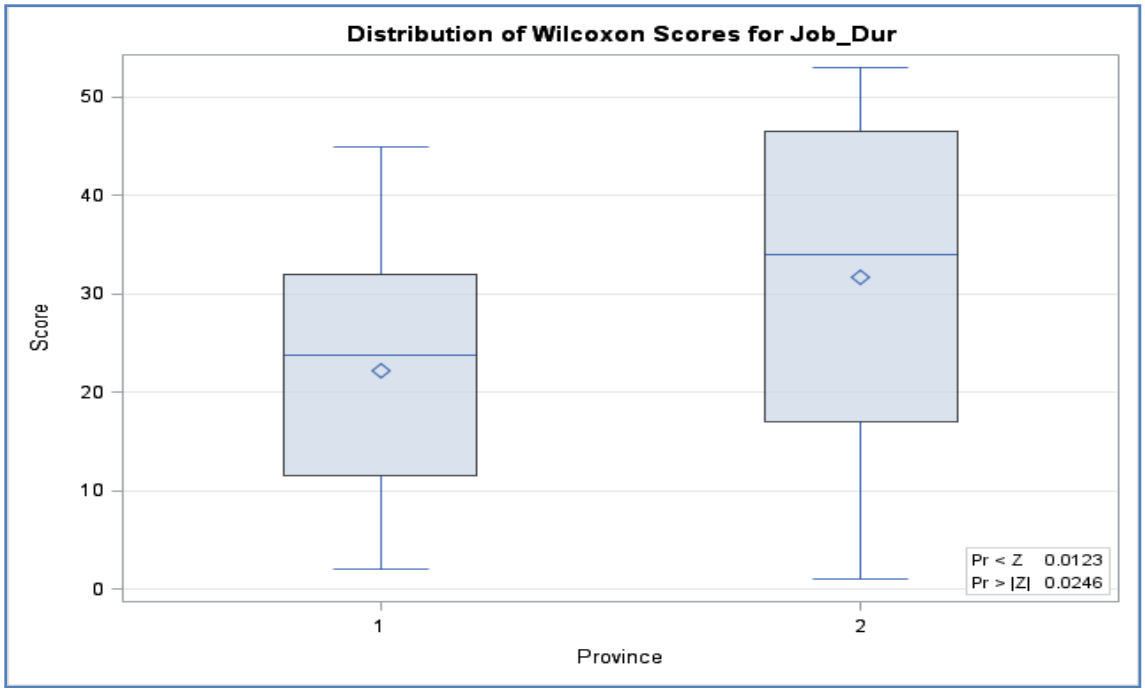

Figure 8. The Comparative Wilcoxon Score of the Job Duration between Central and West Java Provinces

The box plot whisker and the median point of West Java Province are longer. This indicates that more respondents in West Java Province had been working longer or as senior staff than that of Central Java, based on the average job duration of 100 months vs. 38 months (Table 8).

4.2.2.5. The Comparative Reach Score1 between Central and West Java Provinces

The following findings represented the individual scores of the RE-AIM. The RE-AIM score variable referred to the first RE-AIM measure consisted of Reach Score1, Reach Score2, Efficacy Score, Adoption Score1, Adoption Score2, Implementation Score, Maintenance Score1, Maintenance Score2.

The second RE-AIM or the final RE-AIM score was built upon the 5 variables: Reach, Efficacy, Adoption, Implementation, and Maintenance. Each score referred to a value of 0% to 100%.

The variable of Reach_Score_1 was the number of trained CHC officers in OH, divided by the existing total number of CHC Officers, multiplied by one hundred.

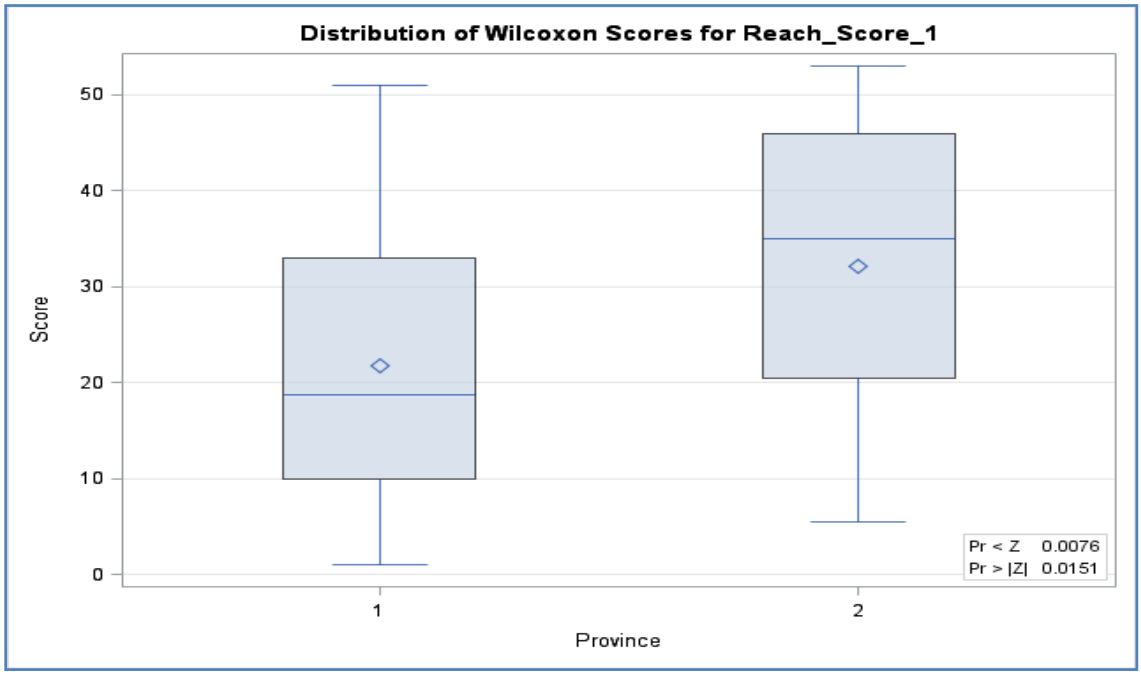

Figure 9. The Comparative Wilcoxon Scores of the Reach Score1 between Central and West Java Provinces

The whisker of the box plot of figure 9 showed that West Java had higher scores on their achievement in reaching the rate of trained CHC officers in occupational health, as compared to the existing number of CHC officers. Figure 9 showed that the Wilcoxon median score of Central Java Province was 22 while West Java Province was 32. The comparative median score between West Java and Central Java Province in Reach Score1 was 5.66 Vs. 2.54 (Table 8).

4.2.2.6. The Comparative Reach Score2 between Central and West Java Provinces

Reach Score2 was the number of trained CHC Officers in OH, divided by the average number of CHC Officers January1, 2010 to March30, 2012 multiplied by one hundred.

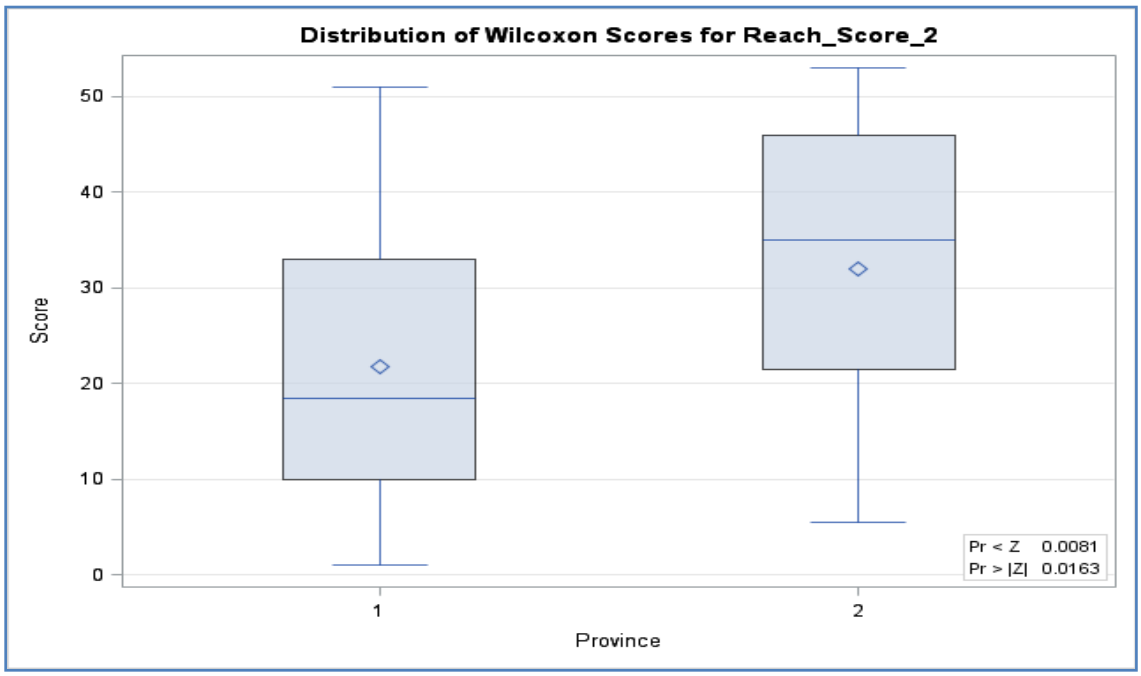

Figure 10. The Comparative Wilcoxon Scores of the Reach Score2 between Central and West Java Provinces

The performance of Reach Score2 in West Java was higher as indicated by the median, mean, minimum, and maximum values. The median score in West Java was twice the score in Central Java Province or 5.71 vs. 2.70 (Table 8).

4.2.2.7. The Comparative Efficacy Score between Central and West Java

Efficacy score as a measure of setting level or provincial level was derived from the number of trained CHC Officers in OH, over the number of those who had started the OH program in the respective province, multiplied by one hundred.

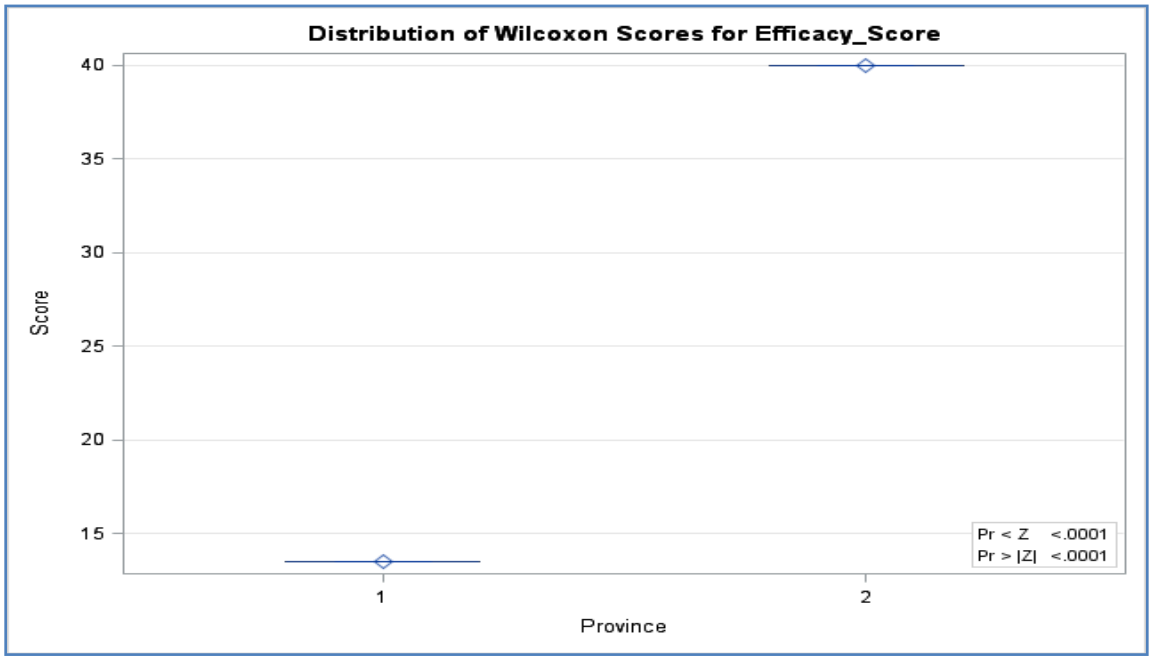

Figure 11. The Comparative Wilcoxon Scores of the Efficacy Score between Central and West Java Provinces

Figure 11 above showed the Wilcoxon score of efficacy of West Java Province was higher as compared to Central Java 39 vs. 13.

4.2.2.8. The Comparative Adoption Score1 between Central and West Java

Adoption Score1 was the proportion of the coverage number of workplaces or units, over the total number of workplaces or units, multiplied by one hundred.

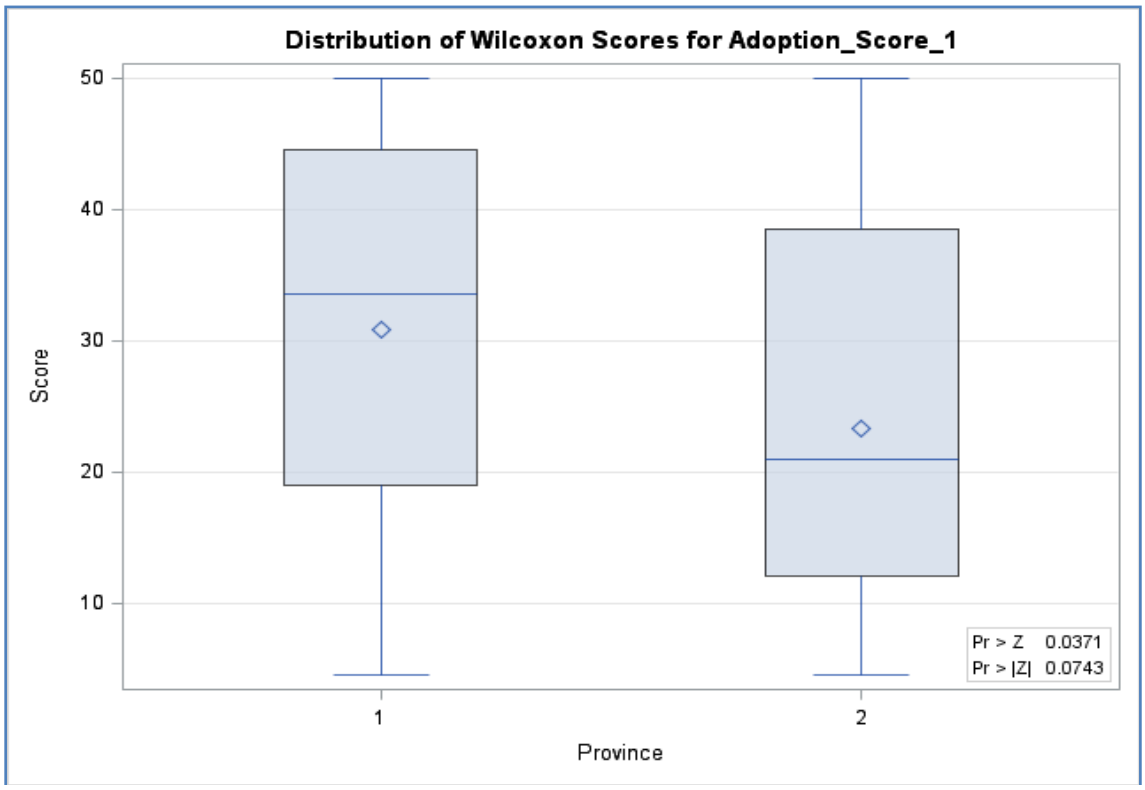

Figure 12. The Comparative Wilcoxon Scores of the Adoption Score1 between Central and West Java Provinces

The box plot diagrams of Adoption Score1 showed differences in its structure. Central Java Province had a higher median (31 vs. 23) as compared to West Java Province (Figure 12). The mean of Central Java was lower than the median, but in West Java, the mean was higher than its median. Central Java had a higher standard deviation as compared to West Java Provinces.

4.2.2.9. The Comparative Adoption Score2 between Central and West Java Provinces

Adoption Score2 was the proportion of the number of workplaces or units that had adopted OH program, over the total coverage of workplaces or units, multiplied by one hundred.

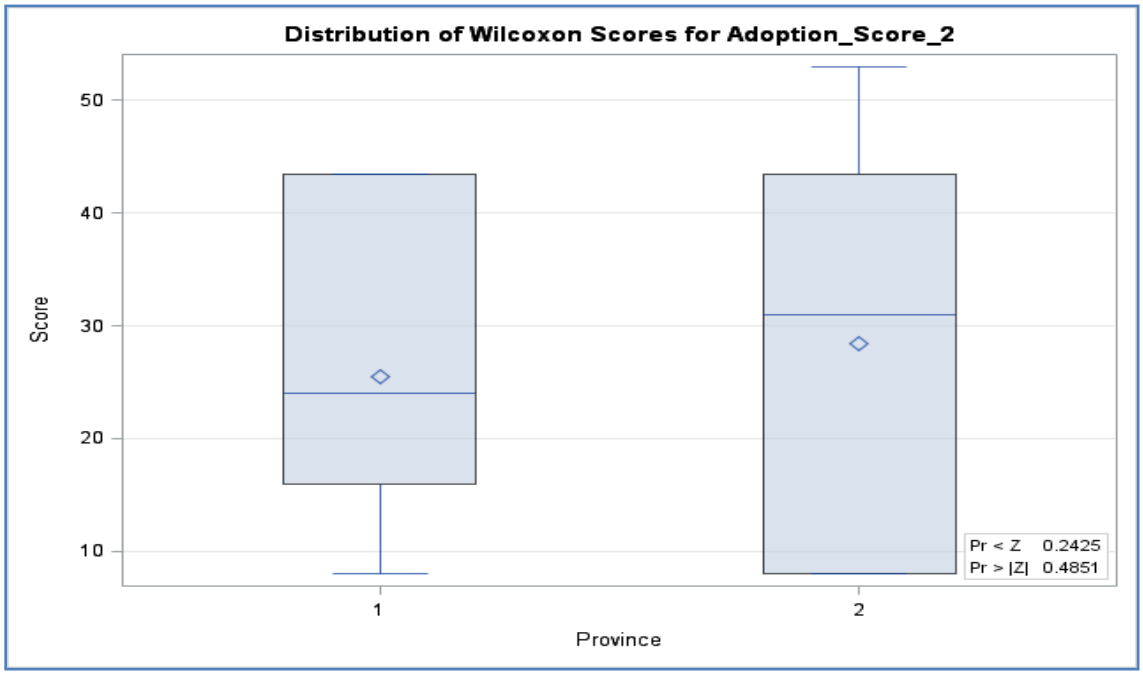

Figure 13. The Comparative Wilcoxon Scores of the Adoption Score2 between Central and West Java Provinces

The box plot diagram of Adoption Score2 showed that the Wilcoxon scores of the Adoption Score2 in Central Java was smaller that of West Java Province or 25 vs. 29 (Figure 13). Central Java Province had a lower median (21.88 vs. 9.26) and mean (39.88 vs. 20.79) as compared to West Java Province. The mean of Central Java was smaller than the median, but West Java's mean was higher than its median.

4.2.2.10. The Comparative Implementation Score between Central and West Java

The implementation score was the proportion of the number of workplaces or units that had implemented the OH program as guided, over the coverage number of workplaces or units, multiplied by one hundred.

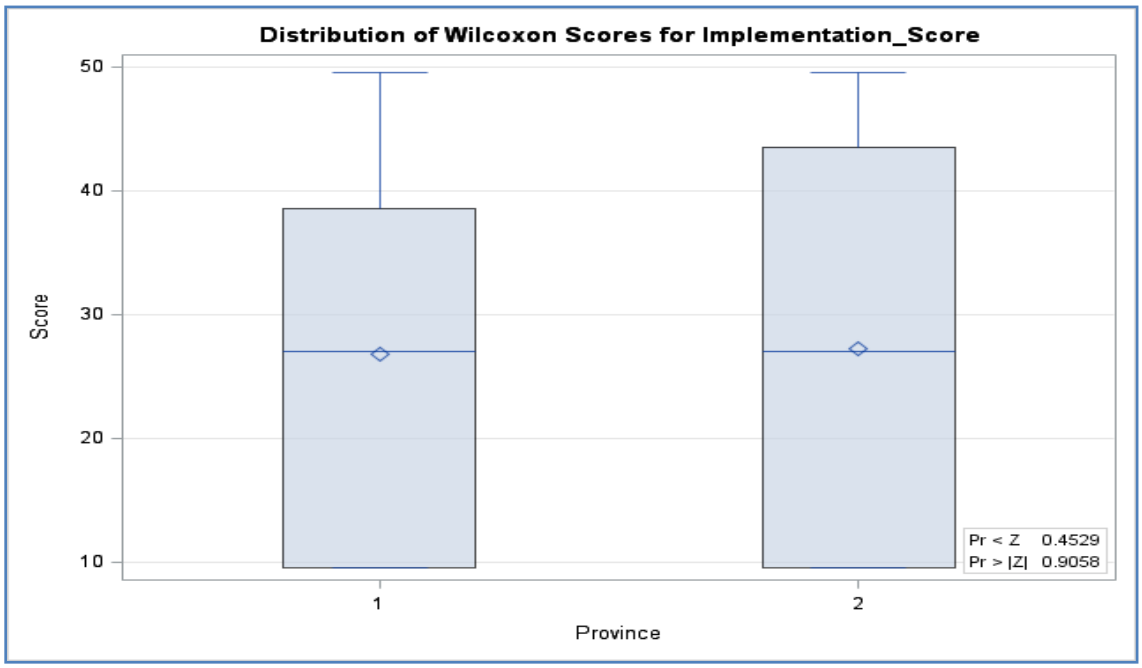

Figure14. The Comparative Wilcoxon Scores of the Implementation Score between Central and West Java Provinces

Figure 14 showed that the median and the mean of Wilcoxon scores of implementation score variable were the same at 27 in both provinces.

4.2.2.11. The Comparative Maintenance Score1 between Central and West Java

Maintenance Score1 was the proportion of the number of respondents who engaged in the OH program, over the number of trained CHC officers in OH, multiplied by one hundred.

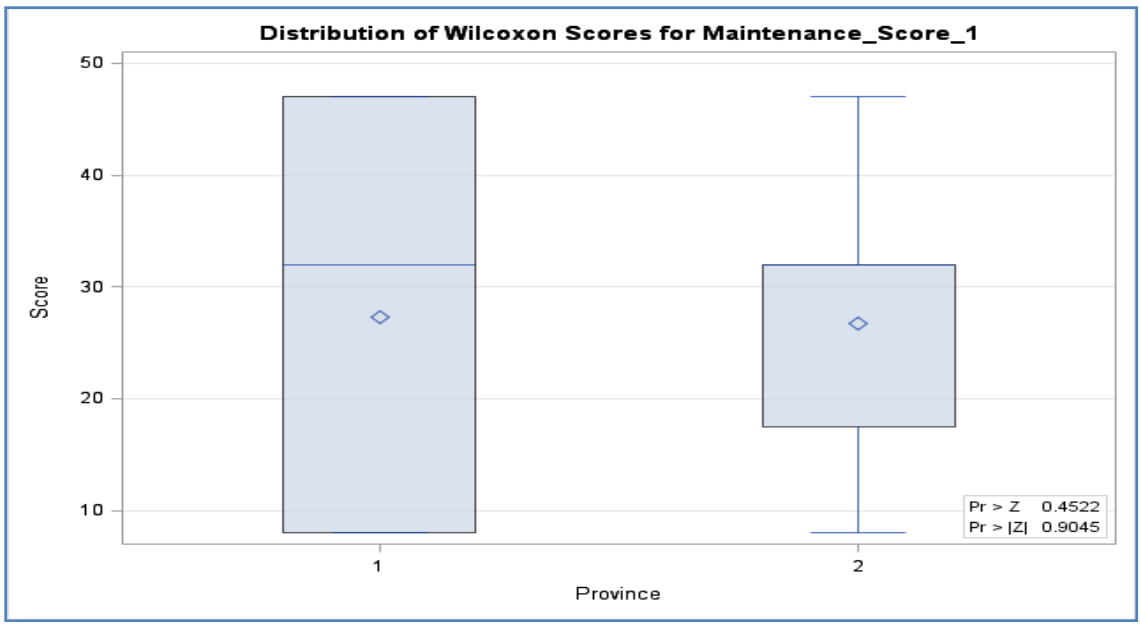

Figure 15. The Comparative Wilcoxon Scores of the Maintenance Score1 between Central and West Java Provinces

Both provinces had the same median score of 27 and the mean score 32 (Figure 15), but the standard deviation in Central Java is greater, at around 5 points, as compared to West Java (Table 8). The whisker diagram of the maintenance score in Central Java was longer than that of West Java.

4.2.2.12. The Comparative Maintenance Score2 between Central and West Java

Maintenance score 2 was the proportion of the number of OH program engagements, over the coverage number of workplaces or units, multiplied by one hundred.

Figure 16 below showed that the Wilcoxon score of the median of the Maintenance Score2 in Central Java was lower as compared to West Province (25 vs. 29).

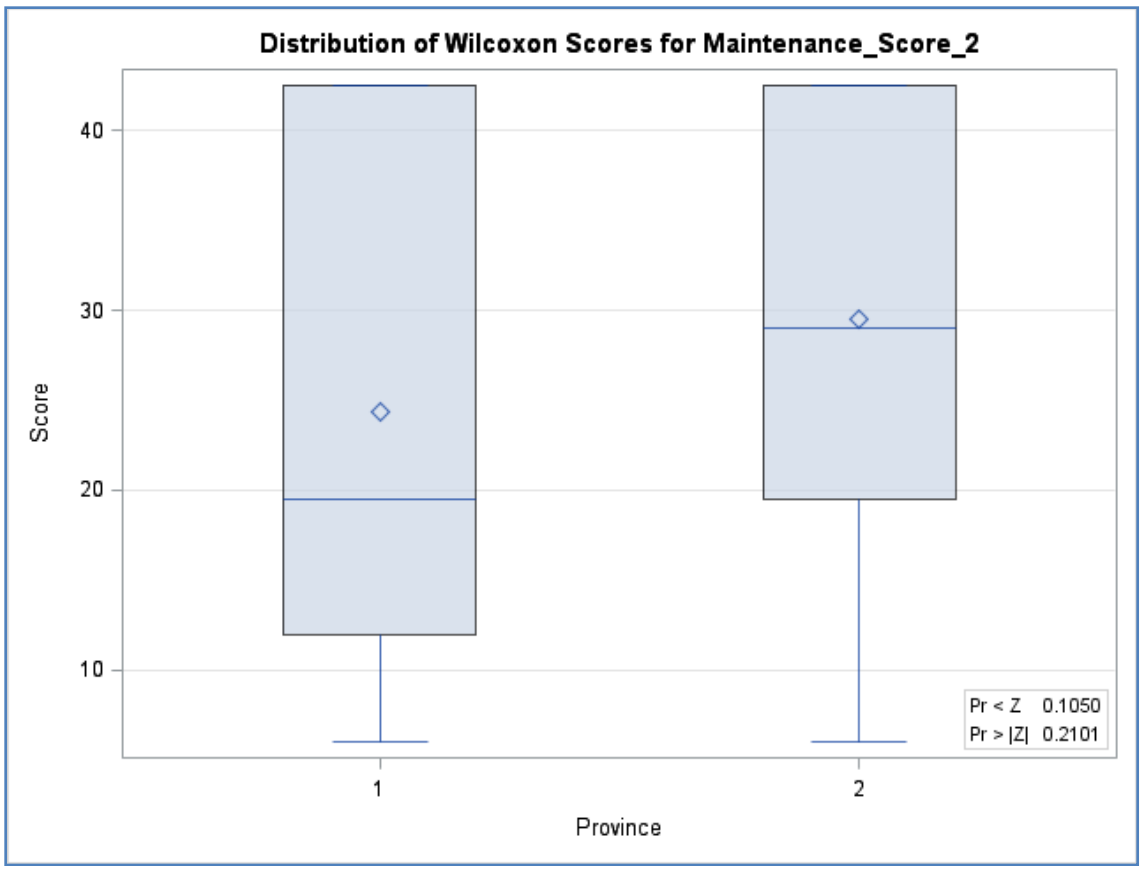

Figure 16. The Comparative Wilcoxon Scores of the Maintenance Score2 between Central and West Java Provinces

The mean (63.02 vs. 47.16) and the median (60 vs. 25) in West Java Province appeared to be much higher as compared to Central Java Province (Table 8).

4.2.2.13. The Comparative RE-AIM score between Central and West Java Provinces

RE-AIM Score was constructed from this following computation:

RE-AIM Score = (Reach Score1 + Reach Score2 + Efficacy Score + Adoption Score1 + Adoption Score2 + Implementation Score + Maintenance Score1+ Maintenance Score2):8.

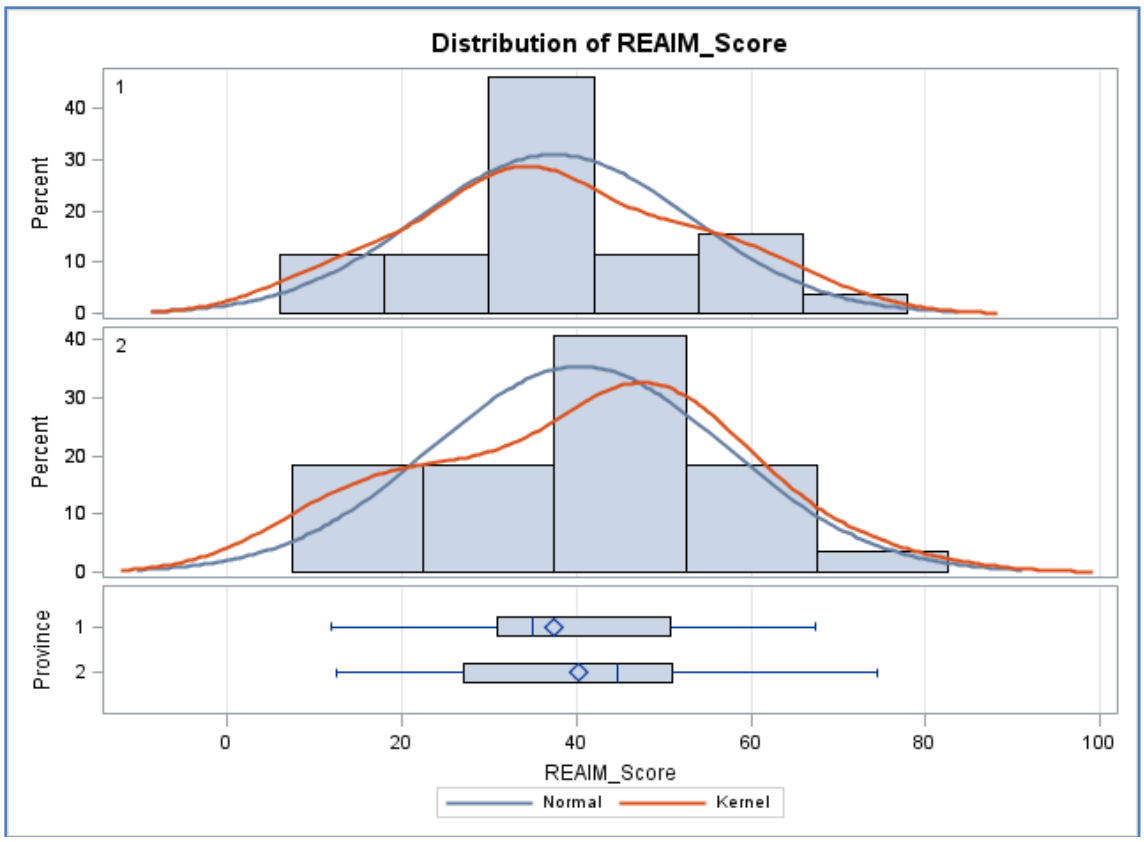

Figure 17. The Comparative RE-AIM Scores between Central and West Java Provinces

Figure 17 showed that the kernel curve of the RE-AIM score of Central Java Province skewed to the left, while West Java Province skewed slightly to the right from the normal distribution.

The RE-AIM score of West Java Province (n=27) averaged 40.32, where the additional resources of so-called BKKM or Center for Occupational Health Services were available (Table 8).

The comparison of individual component of RE-AIM Score and RE-AIM score between Central and West Java Provinces is presented in Figure 18.

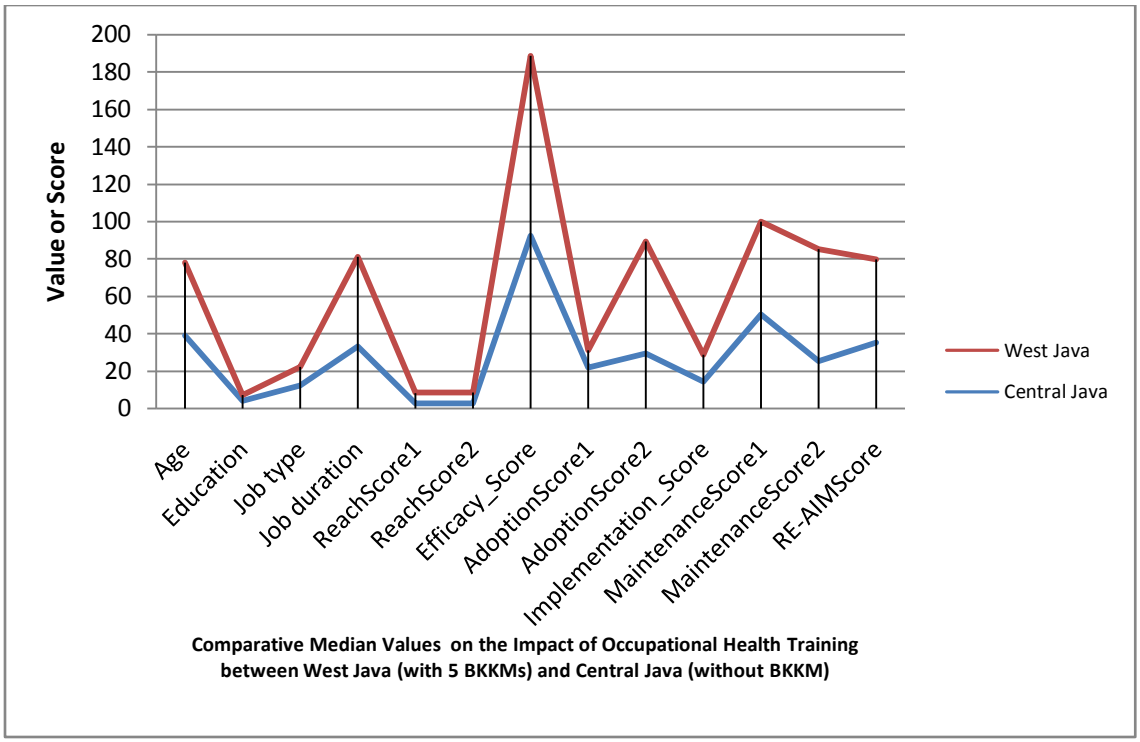

Figure 18. The Comparative Line Diagram of Individual Component of RE-AIM Score and the RE-AIM Score between Central and West Java

Figure 18 indicates that education, reach score 1, reach score 2, and adoption score 1were almost the same or overlapped between Central and West Java Provinces. However, age, level of job type, job duration, efficacy score, adoption score 2, implementation score, maintenance score_1, maintenance score 2, and the RE-AIM score were different in the two provinces.

4.2.2.14. The Comparative of Reach between Central and West Java Provinces

The sum of Reach Score1 and 2 were divided by two in order to generate reach variable as one of RE-AIM components. The purpose of transforming the

Reach Scores1 and 2 into reach variables is to assess both the existing condition (existing number of CHC officers) and the average annual condition (average of number of CHC officers) of the rate of CHC officers as the denominator of the reach score.

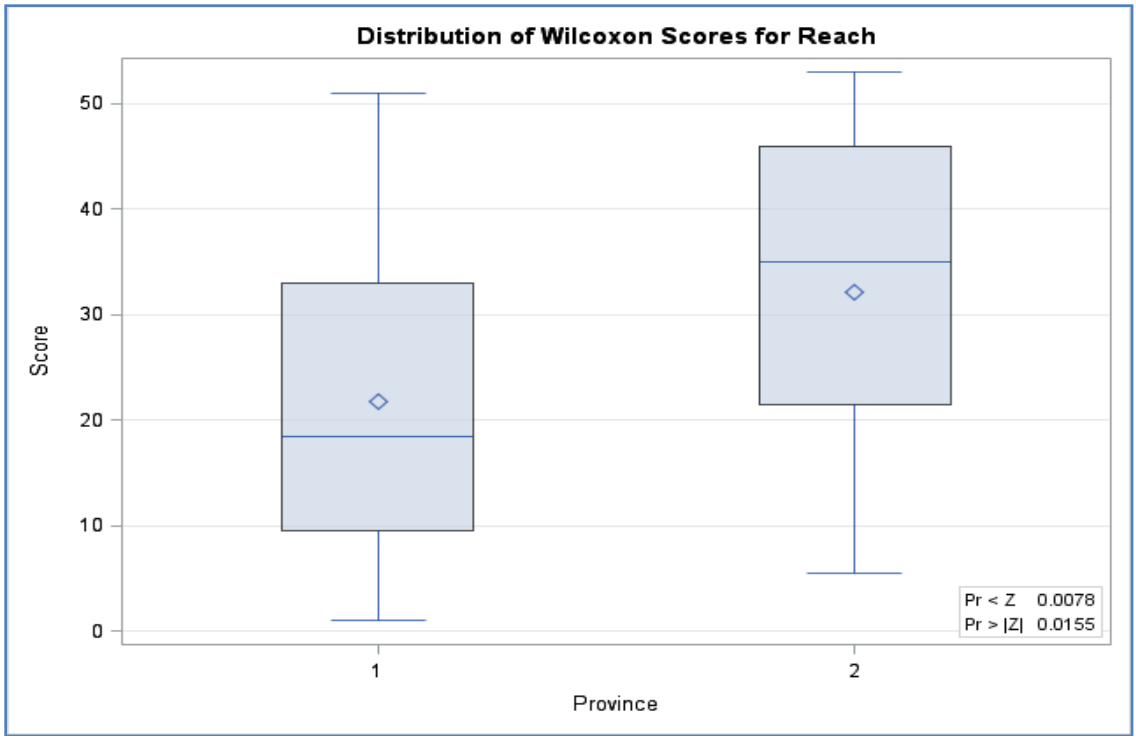

Figure 19. The Comparative Wilcoxon Scores of the Reach between Central and West Java Provinces

Figure 19 showed that the Wilcoxon score of the reach in Central Java Province was lower as compared to West Java Province (21 vs. 31).

4.2.2.15.The Comparative Adoption between Central and West Java Provinces

The sum of adoption scores 1 and 2 were divided by two, to generate adoption variables as one of the RE-AIM components. The purpose of

transforming adoption scores 1 and 2 into adoption variables is to assess both the proportion of the coverage number of workplaces or units, over the total number of workplaces or units and the proportion of the number of workplaces or units that had adopted the OH program, over the total coverage of workplaces or units.

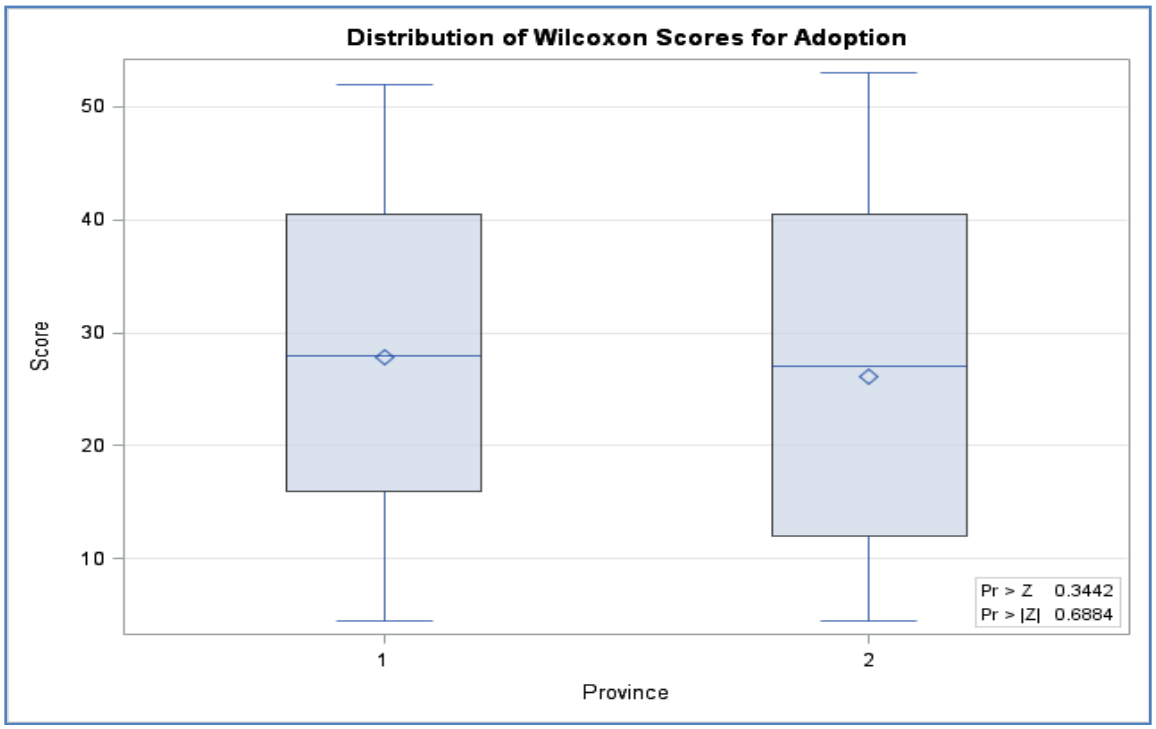

Figure 20. The Comparative Wilcoxon score of the Adoption between Central and West Java Provinces

Figure 20 showed that Central Java Province had a slightly higher median (28 vs. 26) as compared to West Java Province.

4.2.2.16. The Comparative Maintenance between Central and West Java Provinces

The maintenance variable was the sum of maintenance scores 1 and 2, in order to assess the proportion of the number of respondents who engaged in the

OH program, over the number of trained CHC officers in OH and the proportion of the number of OH program engagements, over the coverage number of workplaces or units.

Figure 21. The Comparative Wilcoxon score of Maintenance between Central and West Java Provinces

West Java Province had a higher of Wilcoxon median score as compared to Central Java Province (29 vs. 24). Similarly, West Java Province appeared to have higher maintenance aspects in the OH program for both mean (53.24 vs. 46.58) and median (50 vs. 43.75) scores as compared to Central Java (Table 8). Table 8 also showed that the standard deviation of Maintenance variable in West Java was smaller as compared to Central Java Provinces (29 vs. 34.69).

4.2.2.17. The Comparative RE-AIM between Central and West Java Provinces

The components of RE-AIM as the second independent variable were Reach, Efficacy, Adoption, Implementation, and Maintenance, the dependent variables that build the RE-AIM score.

The RE-AIM variable value was a construct calculation of the sum of Reach, Efficacy, Adoption, Implementation, and Maintenance, divided by 5 as follows:

RE-AIM = {[(Reach Score1+ Reach Score2)/2] + [Efficacy Score] + [(Adoption Score1 + Adoption Score2)/2] + [Implementation Score] + [(Maintenance Score1+ Maintenance Score2)2]}:5.

The obtained calculation of RE-AIM dimensions above provided the evaluative aspect of various performances in individual components of RE-AIM between the impact of training in OH among CHC officers in West Java as a province with the additional infrastructure of BKKM and Central Java without BKKM. The differences in the RE-AIM components performance were shown in Figure 22.

Figure 22 shows that all RE-AIM scores of individual components of West Java Province were higher than Central Java Province. The notable difference in the RE-IM scores was Efficacy.

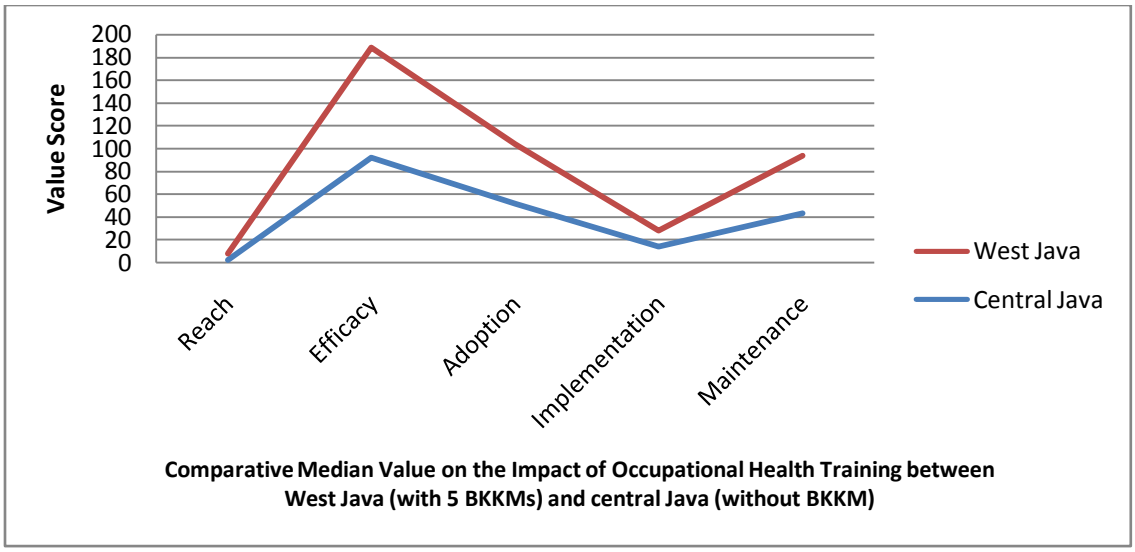

Figure 22. The Comparative RE-AIM Dimensions between Central and West Java Provinces

Tables 9 and 10 showed the summary of statistical tests for normality and test of difference.

Table 9. Test for Normality of Data Distribution

Variable	Central Java				West Java			
	Statistic		p Value		Statistic		p Value	
Age*	W	0.9621	Pr < W	0.4340	W	0.9590	Pr < W	0.3510
Education	W	0.5146	Pr < W	<0.0001	W	0.8858	Pr < W	0.0064
Job type	W	0.3686	Pr < W	<0.0001	W	0.8796	Pr < W	0.0047
Job duration	W	0.7943	Pr < W	0.0001	W	0.8409	Pr < W	0.0008
Reach Score1	W	0.8352	Pr < W	0.0007	W	0.8995	Pr < W	0.0130
Reach Score2	W	0.8475	Pr < W	0.0013	W	0.9034	Pr < W	0.0160
Efficacy Score**	W	**	Pr < W	**	W	**	Pr < W	**
Adoption_Score1	W	0.8296	Pr < W	0.0006	W	0.7731	Pr < W	<0.0001
Adoption_Score2	W	0.8240	Pr < W	0.0005	W	0.8219	Pr < W	0.0003
Implementation Score	W	0.6956	Pr < W	<0.0001	W	0.7317	Pr < W	<0.0001
Maintenance Score1	W	0.8026	Pr < W	0.0002	W	0.8633	Pr < W	0.0021
Maintenance Score2	W	0.7574	Pr < W	<0.0001	W	0.8081	Pr < W	0.0002
RE-AIM Score*	W	0.9634	Pr < W	0.4638	W	0.9442	Pr < W	0.1547
Reach	W	0.8412	Pr < W	0.0010	W	0.9020	Pr < W	0.0148
Efficacy	W	**	Pr < W	**	W	**	Pr < W	**
Adoption	W	0.9240	Pr < W	0.0558	W	0.8231	Pr < W	0.0004
Implementation	W	0.6956	Pr < W	<0.0001	W	0.7317	Pr < W	<0.000
Maintenance	W	0.9133	Pr<W	0.0315	W	0.9267	Pr < W	0.0574
RE-AIM*	W	0.9520	Pr<W	0.2583	W	0.9616	Pr < W	0.4016

Source: Primary Data 1= Central Java Province 2=West Java Province

Table 9 showed that Age, RE-AIM Score and RE-AIM variables were normally distributed. Efficacy score was obtained from setting level or single score in each province.

The distributions of age, RE-AIM Score, and RE-AIM variables were normal; thus, the T-test was the appropriate statistic to detect the difference of the mean between Central and West Java Provinces as two independent samples.

Table 10. Statistical Test of Difference between the Two Provinces

Variable	Test	*p*-value
Age	T-test	0.3911
Education*	Wilcoxon	0.0001
Job type*	Wilcoxon	0.0015
Job duration*	Wilcoxon	0.0289
Reach Score1	Wilcoxon	0.0186
Reach Score2*	Wilcoxon	0.0199
Efficacy Score*	Wilcoxon	<.0001
Adoption Score1	Wilcoxon	0.0801
Adoption Score2	Wilcoxon	0.4882
Implementation Score	Wilcoxon	0.9063
Maintenance Score1	Wilcoxon	0.9050
Maintenance Score2	Wilcoxon	0.2157
RE-AIM Score	T-test	0.5214
Reach*	Wilcoxon	0.0190
Efficacy*	Wilcoxon	<.0001
Adoption	Wilcoxon	0.6900
Implementation	Wilcoxon	0.4531
Maintenance	Wilcoxon	0.3796
RE-AIM	T-test	0.4398

Source: Primary Data * Statistically significant

Other variables, such as: Education, Job type, Job duration, Reach Score1, Reach Score2, Efficacy Score, Adoption Score1, Adoption Score2, Implementation Score, Maintenance Score1, Maintenance Score2, Reach, Efficacy, Adoption, Implementation, and Maintenance utilized a non-parametric Wilcoxon test.

Table 10 showed that Education (p: 0.0001), Job Type (p: 0.0015), Job Duration (p:0.0289), Reach Score1 (p:0.0186), Reach Score2 (p:0.0199), Efficacy Score / Efficacy (p: <.0001), and Reach (p:0.0190) were statistically significantly different between Central and West Java Provinces at α: 0.05.

Chapter 5

Discussion

The structure of the discussion consists of a general overview of the quantitative study, then goes deeper into details on the specific findings, and articulates some possible limitations of the study. The qualitative part of the study follows the same direction as the quantitative discussion, i.e., from general overview to specific findings and recognition of some potential limitations of the study.

The next discussion is on mixed methods that synthesize the quantitative and qualitative findings with the literature and references. Then, the next section discusses the implications of the study for the importance of public health, practice, and policy. Finally, the discussion proposes future directions of research to overcome the current limitations and to depict a contextually larger scope for further studies.

5.1. Quantitative

5.1.1. General Findings

The quantitative part of this study measured the impact of Occupational Health intervention on Occupational Health training among CHC officers in Central and West Java Provinces. The gold standard to measure the impact of

the intervention program was RE-AIM (Reach, Efficacy, Adoption, Implementation and Maintenance), a proposed model to evaluate public health interventions described in 1999 and developed in 2006 [7,9].

Multiple types of occupational health interventions in Indonesia included training for CHC officers. The training was conducted in compliance with the Global Plan of Action, Sixtieth World Health Assembly, WHA 60.26 on 23 May 2007 [1]. Occupational health training for CHC officers was also a realization of capacity building that was written into the Regional Strategy on Occupational Health and Safety in SEAR countries [45]. By the year 2010, MOH conducted occupational health training in 16 out of 33 provinces in Indonesia. A "province" in Indonesia refers to the local government at the second stratum of the administrative system below the central government—equal to a state in USA. Four out of the 16 provinces of occupational health training projects for CHC officers were on Java Island, where around 60% of the workforce lived.

In this study, the researcher was seeking an opportunity to see the impact of the earlier training in 2010.The training was part of capacity building, initiating the integration of occupational health services into the primary care system. Considering that the largest proportion of workers in Indonesia belongs to informal sectors, small-scale enterprises, and agriculture, then the strategy to integrate occupational health services into primary health care or community health centers is justified. Integration of occupational health into primary health care is strategically effective since the workers' health is not only determined by

hazards from their working environment, work behaviors, social factors, and individual factors, but also by access to health services.

The participants of the study were selected from the 2010 trainees to anticipate selection bias since the participants from the previous cohort (2009) were mostly transferred to other posts. The initial qualitative study in 2010, found that the 2009 trainees were not able to implement their plan as guided in the training, due to rotation of job types or different posts.

Meanwhile, the participants of the 2011-2012 training were not selected as study participants since they had not yet had a chance to propose an occupational program due to timing that did not align with the fiscal disbursement cycle. The consideration of selection of the Central and West Java Provinces was based on the facts that the two provinces were located on Java Island with similar characteristics in their geographic locations, socioeconomic status, and infrastructures.

Addressing occupational health services using community health centers (CHCs) was also implemented in Massachusetts. The Occupational Health Surveillance Program (OHSP) aimed to address the reduction in the gap of the surveillance system among the underserved working population and to disclose the need to increase awareness of occupational health concerns. The Massachusetts Occupational Health Surveillance Program provides guidance on the direction of institutionalizing occupational health data collection. Thus, in the following steps, the health provider has an effective target of intervention

activities and can reduce occupational health illnesses and injury among minority and immigrant workers in Massachusetts [46].

Besides conducting occupational health training for CHC officers, Indonesia additionally approached occupational health intervention by establishing some BKKMs in West Java Province as a pilot project. Therefore, West Java Province has additional "institutional capacities" to provide facilities for delivering the OH Program. The establishment of five BKKMs in West Java Province was a response to the Workers' Health: Global Plan of Action-Sixtieth World Health Assembly that stated:

> "Core institutional capacities should be built at national and local levels in order to provide technical support for basic occupational health services delivery, design of new interventions, dissemination of information, and provision of specialize expertise [1].'

Capacity building through BKKM as an infrastructure and facility was not enough, however. As an addition in building capacity, the MOH conducted OH training among CHC officers. The method and the quality of the training in 16 provinces in Indonesia were standardized. However, with the presence of BKKM in West Java Province as the center for occupational health and referral institution, it was expected that the performance of the OH program in West Java would be higher than that of other provinces without BKKM. Thus, Central Java Province was a comparison or control, in order to assess the impact of occupational health intervention in Indonesia, since some characteristics were similar to West Java Province.

Using RE-AIM as a dimension for measuring the impact of the occupational health interventions from a region with BKKM and another region without BKKM provided better understanding of the differences in occupational health performance in different types of interventions. Selecting the impact of training for CHC officers in order to measure occupational health performance on post training is consistent with accurately measuring performance in occupational health that "reflect[s] the specific priorities and activities" in the health care setting[47].

5.1.2. Specific Findings

As mentioned previously, RE-AIM was used as the gold standard to measure the difference in the impact of occupational health training in Central (as the control) and West Java (as the case). Some individual components such as reach, efficacy, adoption, implementation, and maintenance were responsible for the differences in the RE-AIM score. Moreover, other factors such as education, job type, and job duration were also seen as contributor variables for the differences between RE-AIM in the two provinces.

The study suggested that Efficacy and Reach variables were the two major findings of the RE-AIM scores' aggregate in contributing to the differences between Central and West Java. The efficacy variable was the greatest in making the difference between Central and West Java (p: <.0001 at α: 0.05), while the reach made a significant statistical difference at p: <.0190 at α: 0.05). This study resulted in a similar figure with the RE-AIM framework that displayed an extreme

difference between the results that showed low efficacy in low-cost intervention as compared to high efficacy in high-cost intervention [7, 9].

In this study, the researcher used a reach dimension that was similar to a conceptual model on the OHS research process and some RE-AIM frameworks for evaluating public health impacts of health promotion interventions. Reach as a mean for examining how many target audiences were touched by the intervention belongs to the implementation phase of a conceptual framework for the OHS research process [6, 7, 8, 9, 10].

A review from the worksite-health promotion programs reported that the reach dimension was the highest median score among the other RE-AIM dimensions [8]. This review is not similar to the result of this study since the highest difference in the impact of the OH training is in the efficacy variable. The voluntary participants also determine reach. Those who need the intervention usually attained the higher scores [7,8].

In this study, participants were recruited according to their participation in OH training. The participation in both Central and West Java Province were not voluntary, but based on the requirements of employment. The participants joined the training because their supervisor or their leader assigned them to do so. West Java was found to have a higher reach score, and, in fact, West Java had additional BKKM facilities. It was possible that some variables may also contributed to the difference in the reach and the efficacy scores of the impact

of occupational heath training between West Java, a province with BKKM, and Central Java, a province without BKKM.

Education was a statistically significant difference between the two provinces. West Java Province had diverse educational backgrounds of trained CHC officers in OH, while Central Java had narrow variability of participants' education. As described in the previous section, the median level of education in Central Java Province was at "4," or general physician, and the median score of education in West Java was at "3" or Bachelor's in Public Health, Sanitarian, or Bachelor's related to Occupational Safety and Health Sciences. This study suggested that higher education did not come together with high scores in one or more of the component RE-AIM scores. Other studies recognized that the group with the higher educational level gave better employment performance [48].

Educational background is one of determinants of job type for CHC officers. Bachelor's in Public Health, Sanitarian, or Bachelor's related to Occupational Safety and Health Sciences engage several areas of job types, e.g., planning, administration, education-promotion, surveillance. Since general physicians had a high demand on daily curative tasks, they did not have time to expand health services other than treating patients who visited CHC. Therefore, the result is logically expected.[a]

[a] Information from the head of CHCs and some physicians on the study sites implied that the demand in their daily curative jobs did not give them enough time and space to expand Occupational Health Services as guided by the training module or in other words, they were too busy with curative tasks. (Primary data collected during data verification)

Job type was found to differ significantly and in fact, Central Java had a higher median in job type, which referred to higher positions among OH training participants as compared to those in West Java. However, the RE-AIM score was lower. In this case, if a trained CHC officer did not pass on the knowledge or did not deliver training in OH, it was unlikely that the program has support from peers within the institution. For a certain job type, the position-holders deliver the OH program if they do not have internal support from other officers.

A head of CHC said that the training should include at least two persons with different educational backgrounds or job types from one CHC, in order to be able to execute their tasks. This is because they need to work as a team in which each member fulfills its specialization. The involvement of various job types in OH training is important in providing services of occupational health promotion, prevention, and treatment. General practitioner physicians may strengthen their role in occupational diagnoses and treatment, while public health officers may strengthen their role in prevention and promotion.

The job duration of training participants of West Java was longer than Central Java, and West Java had a better RE-AIM score. Longer job duration could result in a greater authority, more self-confidence, or more opportunity to set up a team in CHC, and therefore, those in positions longer had better achievement. Beside the formality in term of job description, seniority role was important in order to encourage peers to be involved or engage in an activity or a program.

5.1.3. Limitations

Some recall bias might have occurred for respondents who did not have data to answer questions dealing with numbers. However, the researcher tried to validate the data by using some resources to make it as valid as possible.

Small sample size is one of the limitations of this study. This could lead to selection bias. In fact, the number of key informants of the occupational health trainees from the two provinces is limited.

The actual weight of the RE-AIM score is arguably relatively dynamic since there are some variations in the intensity of the occupational health activities. This means that the answer "Yes," confirming that they conducted occupational health activities, could vary from one respondent to another. This does not mean that the measurement of RE-AIM is biased, but it is rather flexible and dynamic.

5.2. Qualitative

5.2.1. General Findings

Occupational health interventions in Indonesia are sequential activities within the framework of Basic Occupational Health Services (BOHS) enacted by the joint committee of WHO and ILO. The framework was shaped by WHO and ILO to realize an agenda item in Health for All (HFA) 1977.The framework was developed in the WHO Global Strategy of Health for All by the Year 2000. The strategy includes building infrastructure, establishing good practice, strengthening human resources, and enacting policy at the national level [23].

In the past, occupational health services for all workers focusing on small-scale enterprises and informal sectors had not yet been covered within the Ministry of Health. In 2000, the survey to update the Situational Analysis of Occupational Health Practices in Indonesia was conducted. The situational survey suggested that the integration of occupational health services into primary health care or community health services was needed to provide health services among the underserved working population, in order to tackle health problems related to work. Although several institutions had developed occupational health and safety training, emphasis on dealing with the underserved working population was not yet in place [42].

Thailand has developed a model of Integrating Occupational Health Services into Public Health Systems[24].The model is similar to the Indonesian model of occupational health services, which is in the development stage.

China also conducted several pilot projects in 10 provinces, such as workers' health surveillance, work environment surveillance, risk assessment, accident prevention in small-scale enterprises and informal sectors, and integration of occupational health services into primary health care and training. The projects resulted in some positive outcomes, i.e., occupational health guides translated from English into the vernacular, providing a profile of BOHS from a baseline survey, and gaining a political commitment from the local provincial government. The project also increased the number of health officers who were

trained in occupational health, and it gained recognition by the local government on the need to provide occupational health services at the municipal level [49].

The current focus in developing occupational health services in Indonesia is capacity building and advocacy to all levels of health systems (Figure 4). The main target of occupational health services is to expand the services for the informal sectors and small-scale enterprise workers. Thus, they are considered the underserved working population in Indonesia. The expansion of occupational health services for the underserved working population serves to fill a gap in the disparity of the health services system [25].

Meanwhile, advocacy to promote occupational health services delivery is important in facing the decentralization in the health system since 2000. Unfortunately, the publication of the occupational health program implies that Indonesia is behind Thailand in the implementation and development of occupational health. In reality, the MOH, Indonesia, has performed many activities in promoting and delivering occupational health services. Apparently, MOH, Indonesia, needs a strategy to improve the reporting, recording, disseminating and publishing of their activities at the international level.

At this writing, Indonesia is investing to build the capacity of health officers to provide occupational health services in all community health centers (CHC) [25, 32]. This effort corresponds to the finding that less than 20% of public health officers have no background of formal education in occupational health.

5.2.2. Specific Findings

The positive impact and change of occupational health interventions in Indonesia occurred at all levels of the health system. The grassroots level (POS UKK); the up-front level of health services, that is, community health centers (PUSKESMAS/CHC); the referral facilities that are centers for occupational health services (BKKM); the local to provincial health offices; and the central government at the ministerial level—all had some points about the positive impacts and changes of occupational health intervention. All these responses came from multi-level stakeholders as well as actors of the program.

To evaluate a project and develop program planning, the East Side Village Health Workers Partnership (ESVHWP) project gathered stakeholders' perspectives. This study seemed consistent with the ESVHWP project in gathering stakeholders' perspectives [50]. The approach in exploring the impact and change on the target audience came from RE-AIM via qualitative methods.

Several studies on the evaluation of health promotion have also used mixed methods. Using mixed methods generate deeper analytical result from quantitative as well as qualitative findings. Moreover, by generating quantitative data and qualitative data as well provides deeper explanation of the findings. In the qualitative part of this study, the researcher gathered larger pictures of what stakeholders and actors of the program perceived about occupational health intervention and what they said and thought about occupational health services for the informal sectors/small scale workers in Indonesia.

5.2.3. Limitations

Selection bias due to non-random selection might have occurred, and it might have caused variability in each response to the questions. However, the researcher tried to minimize irrelevant responses since the respondents were stakeholders as well as actors of the program—or simply "key informants."

Information bias might have occurred when some of the respondents asked their peers about certain issues to express their thoughts. In such cases, the researcher had no control of the process. The researcher did everything possible to maintain the research ethic that the interview process should not cause an inconvenient situation from respondents' perspectives.

5.3. Mixed Methods

The mixed methods discussion contains information on both the quantitative and qualitative strands of the findings and incorporates both strands to get an overall picture of the situation and the impact of occupational health interventions in Indonesia. The strategy to incorporate the two strands was that one method had to be explained by the method. This is consistent with the definition of mixed methods:

> "Mixed methods research is an approach to inquiry that combines or associates both qualitative and quantitative forms of research. It involves philosophical assumptions, the use of qualitative and quantitative approaches, and the mixing of both approaches in the study" [20].

From this point of view, the magnitude of the problem and the policy directions of the study findings will incorporate one another.

5.3.1. The Magnitude of the Impact of Occupational Health Interventions in Indonesia

The study articulated the magnitude of impact of occupational health interventions in Indonesia, from the perspective of the stakeholders as the ones affected, as well as from the actors of the program. Then it combined with the quantitative measures of the differences of RE-AIM scores from the study sites.

The magnitude of the impact of occupational health interventions included the community health centers had assigned a person in charge (PIC) of occupational health and safety (OSH), established a team in OSH, and developed Occupational Health Posts *(POS UKK)* in their areas. They had written policy in occupational health implementation, allocated budgets for occupational health programs, written work plans in OSH, and evaluated their OSH programs.

Additionally, they reported on their OSH program, purchased simple equipment related to the program, set up OSH guidelines, and implemented OSH internally. The community health centers carried out OSH programs including advisory activities in *POS UKKs* [32].

These efforts in occupational health in Indonesia are arguably successful as we learned from China and Thailand [24, 49]. Occupational health training and advocacy are the most effective in promoting occupational health services in Indonesia. The recommendation from the grassroots level, occupational health post volunteers *(Kader POS UKK),* and community health center officers *(Petugas PUSKESMAS)* also reflected similar needs in training as they asserted that lack of

knowledge in OH was the main barrier to delivery of the program. As they said in Bahasa, Indonesia, their human resources were of low educational levels and needed to be improved:

> *"...SDM krn dari kami juga baru pendidikan yg masih rendah, shg apa yg akan kita sampaikan kita masih diperlukan pembinaan2 dari kabupaten."*
>
> "Our human resources are not highly educated therefore we need support and advice from the local government."

The result of the quantitative study also indicated that the training improved occupational health services delivery although there were some differences in the performance of participants after training. These differences were visible in some individual components of RE-AIM scores and in some individual characteristics related to education and jobs between West Java (the province with BKKM) and Central Java (the province without BKKM).

The BKKM played roles in strengthening occupational health services delivery since they had been equipped with competent human resources, funding, and infra structures. The BKKM also supported the CHC officers in delivering the OHIS promotional activities as expressed in the interview responses from CHC officers and the BKKM officers in Bogor City of West Java Province. However, the MOH and West Java Provincial Health Office have to strengthen their roles in providing services for informal sectors. It is important to remind the BKKMs about OHIS disparity concerns since the West Java Provincial BKKM had started to expand their services among workers in formal sectors and large-scale

companies aggressively. Otherwise, the health service system in Indonesia will not be able to fulfill the core intention to minimize the health services disparity for the underserved working population.

Meanwhile, occupational health interventions had to face the challenge of procuring a full-coverage financing mechanism in community health centers. With a free financing scheme, the workers tended to take health care for granted. Some respondents raised this concern during the qualitative interview. This mindset of taking health care for granted due to lack of fees when people seek medication in the community health centers was seen as an additional challenge for health officers to promote the program. Besides the workers' factors, some CHC officers said that they were reluctant to deliver occupational health services instead of their main duties, or they felt that their skill and knowledge in OH were not sufficient.

This phenomenon is consistent with the theory that integrating occupational health services and occupational prevention services is always challenging since it is common among physicians not to see their potential role in promoting occupational health. Other challenges are the lack of skill of physicians in diagnosing occupational diseases, lack of public health officers who are capable of conducting occupational and workplace surveillance, and lack of economic incentive for prevention [51].

5.3.2. The Effectiveness of Occupational Health Interventions in Indonesia

The effectiveness of occupational health interventions from the stakeholders' perspective in the qualitative study was consistent with the quantitative results. In the qualitative study, effectiveness was seen through the establishment of POS UKK, assisted by CHC officers, and CHCs that had started to implement OHS in their workplaces. Some home-industries food processing had switched from using non-recommended food additives to safer, recommended food additives and colors.

A surprising fact was that the respondents at the grassroots level reported that their products were accepted in upper markets due to their hygienic practices and improvement in food processing and packaging, including wearing personal protective equipment while working. In addition, workers started to help themselves by recognizing some incorrect practices during their work, and they demanded support in establishing POS UKK in their areas.

Another respondent said that OHIS brought positive change in the improvement of some home industries, in that they were able to work better because they had a better health status. Some home industries benefitted from the better lighting assistance project, by the center for occupational health in collaboration with the district health office. The improvement in handbag-making home industries is a preventive to minimize needle-stick injuries.

OHIS intervention resulted in some changes in the workplaces, such as installing natural ventilation systems and conducting housekeeping activities. In other district health offices, OHIS intervention contributed to an improvement of data from PUSKESMAS.

All these positive changes and effectiveness were reflected in the quantitative study in that the efficacy in program delivery rate, or the proportion of trained CHC officers who delivered the OH program over the total trained in each province, was above 90%.

The results of the effectiveness of occupational health interventions in Indonesia were similar to the results in Thailand and China [24, 49].

5.3.3. The Difference in the Impact of Occupational Health Interventions among District Health Offices Related to the Presence or Absence of POS UKK and BKKM in Indonesia

From the qualitative results, the BKKMs' contributions to CHCs were acknowledged. Some CHCs in West Java said that the help of BKKMs in delivering occupational health services ranged from technical advisory to funding, workplace surveillances, and training.

However, there were variations on the focus of occupational health services by some BKKMs in West Java. During an interview, it was revealed that one BKKM targeted big industries to be their partner, but neglected informal sectors coverage. Their argument was that the local government targeted BKKM

as the source of local government income. Therefore, their priority in targeting large-scale industries was justified. Similarly, BKKM delivered surveillance in the workplaces, surveillance of workers' health, assessment in health, safety risks, and education. These activities were in alignment with the concepts of Basic Occupational Health Services (BOHS) [23].

Fortunately, most of the BKKMs were still keeping their commitment to assist CHCs in delivering occupational health services. In this case, they had shared funding to deliver occupational health services.

In the quantitative study, the efficacy or proportion of occupational health delivery among trained CHCs, over all trained CHCs in OH, was significantly different in Central and West Java Provinces. West Java, with BKKMs in their infrastructure, had better scores in efficacy. Similarly, the reach, or the proportion of CHC officers who participated in OH training, over the eligible CHC officers to be invited, was also higher in West Java. Although the direction of the difference was not measured, the distribution of job type, job duration, and education of the respondents in the two provinces differed; these differences could explain why West Java, a province with BKKM, had better scores on the impact of occupational health interventions.

Unfortunately, building one BKKM requires a high cost investment. The BKKMs in West Java were formerly part of a pilot project by the central government. Lately, the local governments took those BKKMs; one BKKM

belonged to provincial government while the three BKKM owned by the local governments.

Supposedly, if all provinces in Indonesia had BKKMs, then the development of the OHIS delivery system in CHCs would progress more quickly. This fact is consistent with the article that reports two different interventions resulting in different performances. Higher-cost intervention resulted in higher RE-AIM dimensions. The efficacy is higher in a high-cost intervention as compared to a lower-cost intervention [7] and the BKKM is an expensive intervention.

5.4. Consistency with the Literature

Both findings of the qualitative and the quantitative studies are consistent with the literature review. Using the RE-AIM dimensions to measure the impact of occupational health interventions in Indonesia are consistent with the proposed RE-AIM model for evaluating the impact of public health promotion, worksite health promotion research, and evaluating the impact of a health program [7, 8, 9].

The results of impact of occupational health interventions in Indonesia are similar and consistent with the results of the interventions in China and Thailand. The three countries emphasized training as the notable contribution in making changes and resulting impact on their interventions. Moreover, no institution, no health officer will be capable of delivering occupational health services without training [24, 49].

5.5. Public Health Implications

In terms of public health implications, we can see that there are some disparities in health services in Indonesia, since the provision of occupational health services in community health centers is not part of the "Minimum Services Standard" set up by the central government. Certainly, occupational health services could have a potentially positive effect on a new, different health profile in Indonesia. In the field, some CHC officers really still need to understand occupational-disease diagnoses. This situation could be a potentially misleading part of the health profile, e.g., silicosis was misdiagnosed as tuberculosis (TB). This potentially misleading and serious issue should be addressed because diseases and injury among the underserved working population should be treated effectively. We may also predict how many workers could be saved and how much loss of productivity could be prevented when workers' risks and the impact on their health-related work hazards and environment are addressed effectively.

Economically, the expansion of coverage in occupational health services would maximize an efficient health budget to allocate to the real needs of health cost for the community. Considering that, informal sectors workers or workers in small-scale enterprises are the greatest proportion of workers in the world; this study could thus initiate some idea of replicating the method in other countries with similar situations since BOHS is a global model worldwide.

This study provides the basics on improving occupational health services. It raises the mindset of health officers to know that their activities and dedication are appreciated and followed up. The interviews and data verifications also give a sense of pride among respondents that their site and their accomplishments are documented. During the interview and data verification, some respondents took the opportunity to consult about several topics in occupational health. They also expressed pleasure and gratitude to be visited by an occupational health expert. It is expected that they will continue to maintain their enthusiastic dedication to sustain, develop, and improve occupational health services in their areas.

5.6. Conclusions and Recommendations

The qualitative study elucidated the impact of occupational health intervention in Indonesia according to the perspective of stakeholders and actors of the occupational health program. The results indicated significant improvement in knowledge of occupational health among workers and health officers, increased awareness of worksite hazards, improved engagement in occupational health services, a build-up of political commitments by the local governments, and improved worker participation in occupational health promotion.

The quantitative study showed higher impact of occupational health interventions in West Java (a province with BKKM) as compared to Central Java (a province without BKKM).

The greatest challenge in maintaining the occupational health program remained in question since local government health offices and stakeholders are still relying on central government funding to deliver the program.

A strong voice from a CHC officer is to term institutionalized occupational health services as one of "minimum standard services" of CHC.

The BKKM plays a role in enhancing the occupational health delivery system. This can be seen from some higher individual RE-AIM scores in the West Java Province.

Some variables that play roles in lifting the scores are education, job type, and job duration. This knowledge may be useful to guide the next program.

The mixed methods in evaluation or measuring the magnitude of intervention in occupational health at the country level are useful, in order to gain comprehensive understanding of the magnitude of the problems indicated by the qualitative and quantitative studies.

It is recommended that Central Java and other provinces in Indonesia learn from West Java. Even though other provinces do not have BKKMs, some strategies may help to improve their health services.

It is recommended that a political commitment be initiated in the central government's appropriate directorate to include occupational health services in the "standard minimum of community health center program," in order to obtain funding allocations from the local governments.

Continued training is recommended since training improves health officers' knowledge and awareness, in turn increasing the health officers' self-efficacy in delivering occupational health services.

It is important to strengthen the role of BKKMs in providing OH services in informal sectors in order to reduce the health services disparity among workers in small-scale enterprises and the informal sectors, considering that at least one BKKM has aggressively targeted large-scale companies and has not yet prioritized its services for the informal sectors.

Continued advocacy to local governments is recommended since increased awareness may influence them to support the services.

5.7. Future Directions in Public Health Researches and Policies

For future research on evaluation study of the impact of occupational health interventions in Indonesia, the study sites should be expanded to all locations of the occupational health interventions' pilot projects.

There is a potential for this study to be replicated elsewhere in Indonesia and other countries that have similar situations in order to set up an implementable global, future direction on the policy of occupational health services for small-scale enterprises and informal sectors.

There is a need to continue training programs in occupational health for community health centers officers in Indonesia, in response to the results of this study that indicated improvement in knowledge of occupational health among

workers and health officers increased awareness in worksite hazards and improved engagement in occupational health as some impact of interventions.

There is a need to continue and strengthen the advocacy program to the local governments, considering that this study showed some increase in building up political commitments in the local governments.

There is a need to establish new occupational health posts and maintain the sustainability of existing *POS UKKs* since the stakeholders perceived that *POS UKK* played a role in improving workers' participation in occupational health promotions.

The quantitative study showed a greater impact of occupational health interventions in West Java (a province with *BKKM*) as compared to Central Java (a province without *BKKM*). In this regard, the central government could work with the local governments to expand the establishment of BKKMs in other provinces in Indonesia.

There were significant differences in the statistical distribution of educational backgrounds and job types of West Java and Central Java Provinces. In fact, West Java had a better score in impact of occupational health interventions. The educational backgrounds and job types of West Java respondents were more diverse than the Central Java province. In this case, future-training programs is expected to be more effective and will give successful impact on post training activities if the participants will be recruited from multi-educational-backgrounds and various job types.

The greatest challenge in maintaining the occupational health program remains since local government health offices and stakeholders still rely on central government funding to deliver the program. In this matter, advocacy to the local governments should be continued since the sustainability of an occupational health program for small-scale enterprises will depend on the participation and the political commitments of the local government to allocate the funding.

To respond to the endorsement from the CHC officer with regard to institutionalization of occupational health services as one of "minimum standard services" of CHCs, the national health system in Indonesia should be changed. Hence, the Ministry of Health should adopt a national policy that includes "Basic Occupational Health Services" in the minimum standard services of primary health care/CHC/PUSKESMAS. This would be strategic for national productivity since 60% of the workforce in Indonesia is comprised of workers in small-scale enterprises and informal sectors.

The Ministry of Health Indonesia should disseminate and publish their achievements in OHIS the local and international publication as well as their official website in order to get credit from the audiences.

The WHO and ILO may utilize the results of this study to strengthen their endorsement to their member countries on how BOHS should be integrated into the primary health care system.

Researchers should disseminate the results and the future directions to national and international audiences via various media, such as scientific journals, brief policy newsletters, and popular articles in daily news publications.

5.8. Abbreviations

BKKM	:	*BalaiKesehatanKerjaMasyarakat* or Center for Occupational Health Services is a referral health service under provincial governments or local governments at the district level.
BOHS	:	Basic Occupational Health Services is the model of occupational health services from the Joint ILO/WHO Committee on Occupational Health with support from the Finnish Institute of Occupational Health (FIOH)
CHC	:	Community Health Center. A CHC serves 30,000 people
CHO	:	City Health Office
DHO	:	District Health Office is the institution in the local government. Indonesia consists of 349 regencies and 91 municipalities since the decentralization policy was implemented in 1999.
Dir. OH&S	:	Directorate of Occupational Health and Sport
ILO	:	International Labour Organization
MOH	:	Ministry of Health
MOMT	:	Ministry of Manpower & Transmigration
OHIS	:	Occupational Health Services for Informal Sectors
POS UKK	:	*Pos Upaya Kesehatan Kerja* or Occupational Health Post is part of community empowerment and participation among the working population and is notable for the success of BOHS' initiation project in Indonesia
PHO	:	Provincial Health Office
PUSKESMAS	:	*Pusat Kesehatan Masyarakat* or Community Health Center
RE-AIM	:	Reach, Efficacy, Adoption, Implementation and Maintenance: a dimension to measure impact in intervention, which is developed by the RE-AIM organization. Retrieved from: www.re-aim.org/
SEARO	:	South East Asia Region
WHO	:	World Health Organization

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Appendices

The Coding Manual

The Coding Manual				
No	Variable	Definition	Category	Scale
1	No_Resp	Number of Respondent	None	Nominal
2	Province	Province	{1, Central Java}...	Nominal
3	Age	Age in year	None	Scale
4	Age_Group	Age Groups ILO	{1, 25 to 34}...	Scale
5	Age_Group1	Age group ILO1	{1, 25 to 34}...	Scale
6	Edu_Score	Score of Respondent's education based on relevancy to OH	{0, high school in nursing or higher level of education others than health related science}...	Ordinal
7	Edu_Group	Education Group	None	Scale
8	Job_T	Respondent's job description	{1, Administrator/Tata Usaha}...	Nominal
9	Job_S	Score of job relatedness to Occupational Health Activities	{0, Not related (Job_T:1 -3)}...	Ordinal
10	Job_Dur	Duration of job in month	None	Scale
11	Job_Dur_Cat	Category of Job Duration	{1, <12}...	Scale
12	Q1_Reach	Number of CHC Officer who have been trained in OH	None	Scale
13	Q2_Reach	Existing Total Number of CHC Officers	None	Scale
14	Q3_Reach	Average number of CHC Officers	None	Scale
15	Q4_Efficacy	Have started OH program	{0, No}...	Nominal

The Coding Manual				
		delivery or intervention		
16	Q5_Efficacy	Number of OH program/activity	{0, No activity}...	Ordinal
17	Q5_1_Efficacy	Specific code for worker who visit CHC	{0, No}...	Nominal
18	Q5_2_Efficacy	Implementing OH in CHC	{0, No}...	Nominal
19	Q5_3_Efficacy	Promoting and supervising OH in OH Post	{0, No}...	Nominal
20	Q5_4_Efficacy	Train OH Post Volunteers	{0, No}...	Nominal
21	Q5_5_Efficacy	Other	{0, No}...	Nominal
22	Q5_5_1_Efficacy	Name of other program or intervention	None	Nominal
23	Q5_5_1_1_Efficacy	OH Promotion/Education in enterprises/informal sectors/CHC	{0, No}...	Nominal
24	Q5_5_1_2_Efficacy	POS UKK activities/OH outreach by CHC officers/Mapping POS UKK	{0, No}...	Nominal
25	Q5_5_1_3_Efficacy	Workplace/Canteen hygiene promotion	{0, No}...	Nominal
26	Q5_5_1_4_Efficacy	Workplace hazard assessment/Fire & disaster management	{0, No}...	Nominal
27	Q5_5_1_5_Efficacy	OH promotion among workers/consultation for pregnant workers	{0, No}...	Nominal
28	Q5_5_1_6_Efficacy	OH/Occupational Diseases Diagnosis & Reporting-Recording	{0, No}...	Nominal
29	Q5_5_1_7_Efficacy	Workers' Health Examination	{0, No}...	Nominal
30	Q5_5_1_8_Efficacy	Employees wellness program	{0, No}...	Nominal
31	Q5_5_1_9_Efficacy	Enterprises clinic advisory	{0, No}...	Nominal
32	Q5_5_1_10_Efficacy	OH Program dissemination/Occupational Diseases counseling	{0, No}...	Nominal
33	Q6_Adoption	Total number of workplace/unit	None	Scale
34	Q7_Adoption	Coverage number of workplace/unit	None	Scale
35	Q8_Adoption	Number of workplace/unit adopt OH	None	Scale

The Coding Manual				
36	Q9_Implementation	Implementation as guided by OH program	{0, No}...	Nominal
37	Q10_Implementation	Number of workplace/unit which implement OH	None	Scale
38	Q11_Implementation	Number of OH implemented	{0, No Impl..}	Ordinal
39	Q11_1_Implementation	Activities of OH post	{0, No}...	Nominal
40	Q11_2_Implementation	OH outreach by CHC officer	{0, No}...	Nominal
41	Q11_3_Implementation	Hazard assessment in the workplace	{0, No}...	Nominal
42	Q11_4_Implementation	OH education and promotion	{0, No}...	Nominal
43	Q11_5_Implementation	Diagnoses of Occupational Diseases in CHC	{0, No}...	Nominal
44	Q11_6_Implementation	Occupational Diseases Reporting Recording in CHC	{0, No}...	Nominal
45	Q11_7_Implementation	Other	{0, No}...	Nominal
46	Q11_7_1_Implementation	Name of OH activity that implement as guideline	None	Nominal
47	Q12_Maintenance	Existing engagement in OH program	{0, No}...	Nominal
48	Q13_Maintenance	Example of OH program engagement	None	Nominal
49	Q13_1_Maintenance	OH Promotion/Education in enterprises/informal sectors/CHC	{0, No}...	Nominal
50	Q13_2_Maintenance	POS UKK activities	{0, No}...	Nominal
51	Q13_3_Maintenance	Workplace hygiene promotion	{0, No}...	Nominal
52	Q13_4_Maintenance	Workplace hazard assessment	{0, No}...	Nominal
53	Q13_5_Maintenance	Implement OH in CHC	{0, No}...	Nominal
54	Q13_6_Maintenance	OH/Occupational Diseases Reporting-Recording	{0, No}...	Nominal
55	Q13_7_Maintenance	Workers' Health Examination	{0, No}...	Nominal
56	Q13_8_Maintenance	Ergonomic Intervention	{0, No}...	Nominal
57	Q13_9_Maintenance	OH monitoring and evaluation	{0, No}...	Nominal

The Coding Manual				
58	Q13_10_Maintenance	OH Program dissemination/conselling	{0, No}...	Nominal
59	Q14_Maintenance	Number of OH program engagement	None	Scale
60	Reach_Score_1	Reach_Score_1=(Q1_Reach / Q2_Reach) * 100	None	Scale
61	Reach_Score_2	Reach_Score_2=(Q1_Reach / Q3_Reach) * 100	None	Scale
62	Efficacy_Score	Efficacy_Score: (Total Q1_Reach in each province/Q4_Efficacy in each province)*100	None	Scale
63	Adoption_Score_1	Adoption Rate_1: (Q7_Adoption/Q6_Adoption)*100	None	Scale
64	Adoption_Score_2	Adoption Rate_2: (Q8_Adoption/Q7_Adoption)*100	None	Scale
65	Implementation_Score	Implementation rate:(Q9_Implementation/Q7_Adoption)*100	None	Scale
66	Maintenance_Score_1	Maintenance_Score_1 (Individual):(Q12_Maintenance/Q1_Reach)*100	None	Scale
67	Maintenance_Score_2	Maintenance_Score_2 (Setting): (Q14_Maintenance/Q7_Adoption)*100	None	Scale
68	REAIM_Score	RE-AIM Score	None	Scale
69	Reach	(Reach_Score_1+Reach_Score2)/2	None	Scale
70	Efficacy	Efficacy=Efficacy_Score	None	Scale
71	Adoption	(Adoption Score_1+Adoption_2)/2	None	Scale
72	Implementation	Implementation=Implementation_Score	None	Scale
73	Maintenance	(Maintenance_Score_1+Maintenance_Score_2)/2	None	Scale
74	REAIM	(Reach+Efficacy+Adoption+Implementation+Maintenance)/5	None	Scale

The Qualitative Research Questionnaire in English

IMPACT AND EFFECTIVENESS OF OCCUPATIONAL HEALTH PROGRAMS FOR INFORMAL SECTORS IN INDONESIA:

A qualitative study on multiple stakeholders in occupational health program for informal sectors in Indonesia

Interview Guideline

Opening:

Hi, how are you? Thank for your willingness to participate in this study!

I am [Hanifa M. Denny], a PhD student in Occupational Health, College of Public Health, University of South Florida, USA and a fellowship from Diponegoro University, Semarang, Indonesia.

I am conducting a series of interviews with multiple stakeholders who are in charge of Occupational Health in Informal Sectors or equal to this position. This interview means to seek multiple stakeholder insight of the impact and effectiveness of Occupational Health Services for Informal Sectors in Indonesia.

Everything you say here will remain confidential, and your name will not be associated with anything we do here. Only my Professor, my research team, and I will have access to your responses.

I will be recording this interview to assure that I won't miss any important thing that you say. I will be taking notes throughout this interview if it is necessary. This interview will last no longer than an hour.

Do you have any questions?

I would like to start with some baselines information. Would you like to give me some detail information of

1. Your position/job:
2. Your contact address:
3. Your status related to OHIS program: (check that apply)

Check	Role related to OHIS	Educational attainment (specify)
	OHIS PIC at Dit.OH	
	OHIS PIC at Provincial Health Officer	
	OHIS PIC at District Health Officer	
	OHIS PIC at BKKM	
	OHIS PIC at Community Health Center	
	Coordinator of POS UKK	

4. Your length of service in OHIS program: ..... year ..... month

Great, let's start with the interview!

Questions:

A. The impact

1. How do you perceive impact of the OHIS program in your area?
2. What are the aspects of change in your target audience as a result of OHIS program?
3. how do you measure your achievement on OHIS program

B. The effectiveness

1. How do you perceive effectiveness of the OHIS program in your area?
2. How do you perceive barrier in delivering the OHIS program in your area?
3. What are the aspects of change at your target audience have fulfilled the purpose of the OHIS program?
4. What resources needed to support the OHIS program in your area?
5. What resources are the most needed to deliver the OHIS program in your area?
6. How do you obtain the resources for the OHIS program?
7. How do you utilize the resources?

C. The variability of OHIS Program

1. Adoption:
    a) How do you know about the OHIS program?

b) Have you received training on how to deliver the OHIS Program?

c) Tell me a little bit detail about the OHIS program that you or your institution has delivered!

Probe:

- health examination? who is the person in charge of health examination? what type of health examination?
- any training ? who is the trainer?
- What type of training?

2. Implementation:

1) In delivering those programs, how do you reach the workers?
2) How do they (workers) know about that program?
3) What is the number of OHIS program coverage:

.....village.....group.....workers

4) Could you mention about the type of job in informal sectors that is covered by the OHIS program?

3. Maintenance

1) How do you maintain the sustainability of the OHIS program in your area?
2) What part of the OHIS program in your area ought to be strengthened?

3) What do you think about the implication of BKKM and POS UKK in OHIS?
4) In overall, how do you rate your success in delivering OHIS program?
5) What do you expect for the future of OHIS program?

The Qualitative Research Questionnaire in Bahasa Indonesia

Pedoman wawancara (Bahasa Indonesia):

Dampak dan Efektifitas Program Kesehatan Kerja:

Penelitian kualitatif dari sisi pengandil program Kesehatan Kerja Sektor Informal (KKSI) di Indonesia

Pembukaan:

- Menanyakan kabar
- Ucapan terimakasih atas kesediaan di wawancara
- Perkenalan diri

Maksud tujuan penelitian:

"mengkaji efektifitas BKKM dan POS UKK dan dampak yang timbul dalam kaitannya dengan program KKSI di Indonesia."

Penjelasan:

- Apapun yang dikemukakan dijamin kerahasiaannya dan tidak akan dihubungkan dengan hal-hal lain.
- Yang akan mengakses data penelitian ini hanya peneliti utama dan tim terkait serta professor pembimbing.
- Wawancara akan direkam sehingga tidak aka nada informasi yang hilang serta bila diperlukan akan dicatat.

- Wawancara akan berlangsung selama satu jam atau bahkan bisa kurang dari satu jam.
- Menanyakan apakah ada pertanyaan sebelum wawancara.

Mengisi data awal:

1. Jabatan atau tugas didalam pekerjaan anda:
2. Alamat anda:
3. Status/peran anda terkait dengan kegiatan Kesehatan Kerja di Sektor Informal: (dicentang yang sesuai)

Centang	Peran dalam KKSI	Pendidikan terakhir
	Pelaksana Program KKSI Dit.KK	
	Pelaksana Program KKSI Dinkes Provinsi	
	Pelaksana Program KKSI Dinkes Kab/Kota	
	Pelaksana Program KKSI BKKM	
	Pelaksana Program KKSI Puskesma	
	Koordinator of POS UKK	

4. Lama terlibat/berperan dalam program KKSI: ..... tahun ..... bulan

Baiklah mari kita lanjutkan dengan wawancara tentang Program KKSI. Semua pertanyaan ini terkait dengan perasaan, pendapat dan sudut pandang anda terhadap program KKSI

Pertanyaan:

A. Dampak:

1. Bagaimana dampak dari Program KKSI di wilayah anda?

2. Aspek-aspek apakah yang berubah setelah adanya Program KKSI di wilayah sasaran program anda?
3. Bagaiamana capaian keberhasilan program KKSI di wilayah anda? Bila berhasil, aspek apa sajakah yang telah dicapai oleh masayarakat yang menjadi sasaran program KKSI tersebut? Bila tidak, apa yang terjadi?

B. Efektifitas

1. Bagaimana efektifitas (daya ungkit) program KKSI di wilayah anda?
2. Bagaimana anda memandang berbagai hambatan dalam melaksanakan program KKSI? Bila terdapat hambatan, apa sajakah hambatan tersebut?
3. Aspek-aspek perubahan apa sajakah yang telah dipenuhi oleh masyarakat yang menjadi sasaran program KKSI?
4. Sumberdaya apa sajakah yang dibutuhkan untuk membantu program KKSI di wilayah anda?
5. Sumberdaya apakah yang sangat penting dan dibutuhkan untuk membantu program KKSI di wilayah anda?
6. Bagaimana anda memperoleh sumberdaya untuk melaksanakan program KKSI di wilayah anda?
7. Bagaimana anda mendayagunakan sumberdaya tersebut?

C. Variasi program

Adopsi:

1. Bagaimana dan apa yang anda ketahui tentang program KKSI?

d) Pernahkah anda mengikuti pelatihan untuk pelaksanakan Upaya Kesehatan Kerja? (probing: pelatihan Upaya Kesehatan Kerja khusus sektor informal maupun untuk pekerja pada umunya)

e) Mohon ceritakan tentang berbagai pelaksanaan program KKSi yang telah dilaksanakan di wilayah anda!

Probing:

- Pemeriksaan/Pelayanan kesehatan kerja? Siapa yang melakukan pemeriksaan? Apakah jenis pemeriksaan kesehatan kerja yang telah dilaksanakan?
- Pelatihan? Siapa yang melatih?
- Apakah nama pelatihan tersebut?

3. Pelaksanaan

5) Bagaimana anda menjangkau pekerja yang menjadi sasaran?

6) Bagaimana pekerja mengetahui tentang program KKSI?

7) Berapa jumlah kegiatan/program KKSI yang dilaksanakan?

cakupan:

.....desa/kampung.....kelompok.....pekerja

8) Dapatkah anda menyebutkan jenis pekerjaan di sector informal yang telah dijangkau/dicakup dalam program KKSI di wilayah anda?

4. Pemeliharaan

1) Bagaimana andamemelihara kelangsungan program KKSI di wilayah anda?
2) Bagaiamanakah dari program KKSI diwilayah anda yang harus diperkuat?
3) Bagaimana menurut anda peran atau implikasi BKKM dan POS UKK dalam program KKSI?
4) Secara keseluruhan, bagaimana anda menilai kesuksesan program KKSI di wilayah kerja anda?
5) Apakah yang anda harapkan dari program KKSI dimasa yang akan datang?

The IRB Approval for the Qualitative Study

DIVISION OF RESEARCH INTEGRITY AND COMPLIANCE
Institutional Review Boards, FWA No. 00001669
12901 Bruce B. Downs Blvd., MDC035 • Tampa, FL 33612-4799
(813) 974-5638 • FAX (813) 974-5618

September 21, 2010

Hanifa Denny
Environmental and Occupational Health

RE: **Expedited Approval** for Initial Review
IRB#: Pro00001859
Title: Impact and Effectiveness on Occupational Health Interventions: A qualitative study on multiple stake holders of occupational health for informal sectors in Indonesia

Dear Hanifa Denny:

On 9/20/2010 the Institutional Review Board (IRB) reviewed and **APPROVED** the above referenced protocol**.** Please note that your approval for this study will expire on 9-20-11.

Approved Items:
Protocol Document(s):
It was the determination of the IRB that your study qualified for expedited review which includes activities that (1) present no more than minimal risk to human subjects, and (2) involve only procedures listed in one or more of the categories outlined below. The IRB may review research through the expedited review procedure authorized by 45CFR46.110 and 21 CFR 56.110. The research proposed in this study is categorized under the following expedited review category:

(6) Collection of data from voice, video, digital, or image recordings made for research purposes.

(7) Research on individual or group characteristics or behavior (including, but not

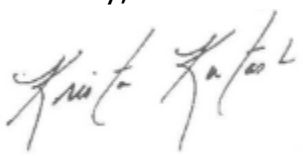
limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

Please note, the informed consent/assent documents are valid during the period indicated by the official, IRB-Approval stamp located on the form. Valid consent must be documented on a copy of the most recently IRB-approved consent form.

As the principal investigator of this study, it is your responsibility to conduct this study in accordance with IRB policies and procedures and as approved by the IRB. Any changes to the approved research must be submitted to the IRB for review and approval by an amendment.

We appreciate your dedication to the ethical conduct of human subject research at the University of South Florida and your continued commitment to human research protections. If you have any questions regarding this matter, please call 813-974-9343.

Sincerely,



Krista Kutash, PhD, Chairperson
USF Institutional Review Board

Cc: Various Menzel, CCRP
USF IRB Professional Staff

The Quantitative Research Questionnaire in English

Questionnaires IRB Study # 7531
Impact on Occupational Health Intervention in Indonesia

Questions:

General information (data will remain confidential)
Respondent ID #: _____ (Coded by researcher)
Please fill these following questions

1. Age: _____ Years old
2. Educational background: _____
3. Job description or position in this PUSKESMAS: _____
4. Duration of work in this position: _____ Year _____ Month _____Week
5. Period of training dd/mm/yy: ___ /____ / _____ to ___ /____ / _____
6. Duration of training: _____ days

Note: If you don't remember exactly, you may mention the month, year & duration of training

Reach

1. How many officers in this PUSKESMAS have been trained in occupational health from January1, 2010 to March30, 2012? _____ Officers
2. What is the current total number of health officers who work in this PUSKESMAS? _____ Officers
3. What is the average of the total number of health officers who work this PUSKESMAS from January1, 2010 to March30, 2012? _____ Officers

Efficacy/Effectiveness

4. Have you started to deliver occupational health program or intervention after you participated in OH training in 2010? If "no" then skip to Question # 6.
   _____ 0. No
   _____ 1. Yes
5. If yes, what type of program or intervention have you delivered after you participated in OH training in 2010? (circle 1 or more)
   1) Develop code for workers who visit PUSKESMAS
   2) Implement OSH in the PUSKESMAS
   3) Outreach to POS UKK
   4) Delivered training to POS UKK Volunteers
   5) Other, please mention
      .....

   ____ 1. One OH activity
   ____ 2. > 1 activity

Adoption

6. How many total number of workplaces/unit in your area from January1, 2010 to March30, 2012? ____ Workplace/unit
7. How many workplaces/units have you covered in OH intervention/promotion after you participated in OH training in 2010 to March30, 2012? ____ Workplace/unit
8. How many workplaces/units have adopted the OH after you participated in OH training in 2010 to March 30, 2012? ____ Workplace/unit

Implementation

9. Do you observe any unit that implement OH as guided in the program guideline after you participated in OH training in 2010 to March30, 2012? If "no" then skip to Question #12 _____ 0. No _____ 1. Yes
10. If yes, how many units have implemented on OH as guided in the OH program guideline after you participated in OH training in 2010 to March30, 2012? _____ Unit
11. What type of OH program or activity that have implemented on OH as OH program guideline after you participated in OH training in 2010 to March30, 2012? (circle 1 or more that apply): _____ 1. One type _____ 2. > 1 types
    1) POS UKK activities
    2) Occupational health outreach activities by PUSKESMAS officers
    3) Hazard assessment in the workplace
    4) Workplace hygiene, health and safety education and promotion
    5) Occupational diseases diagnoses in PUSKESMAS
    6) Occupational diseases reporting and recording in PUSKESMAS
    7) Other, please specify:
       _____
       _____

Maintenance

12. At present, do you still engage in OH program? ____ 0. No
    If no, skip to Question # 13 ____ 1. Yes
13. If yes, give example …….
    ……
    ……
14. How many units engage in OH activities after you participated in OH training in 2010? ____ Unit

THANK SO MUCH! END OF QUESTION

The Quantitative Research Questionnaire in Bahasa Indonesia

Kuesioner

DAMPAK KEGIATAN/PROGRAM KESEHATAN KERJA DI INDONESIA

Disetujui komite etika penelitian University of South Florida No. IRB#: Pro00007531

Informasi Umum (data akan dirahasiakan)

Responden_ID #: ____ (di kode oleh peneliti)

Diisi oleh Responden:

7. Usia: _____ tahun
8. Latarbelakang pendidikan: _____
9. Jabatan di PUSKESMAS: _____
10. Lama kerja pada jabatan ini: _____
11. Periode pelatihan KK hh/bln/th s.d hh/bln/th : ___ /____ / ___ s.d ___ /___ / ____
12. Lama pelatihan KK: _____ hari

Catt: Bila tidak ingat maka disebutkan yang paling mendekati

Catatan:

KK : Kesehatan Kerja termasuk juga keselamatan kerja

Reach (Capaian)

12. Berapakah jumlah petugas di PUSKESMAS ini yang telah di latih kesehatan kerja terhitung dari tanggal 1 Januari, 2010 s.d 30 Maret, 2012? _____ petugas
13. Berapakah jumlah total petugas yang sekarang bekerja di PUSKESMAS ini? _____ petugas
14. Berapakah rerata jumlah petugas PUSKESMAS yang bekerja di sini terhitung dari tanggal 1 Januari, 2010 s.d 30 Maret, 2012? _____ petugas

Efficacy/Effectiveness (Efektifitas)

15. Apakah anda sudah mulai melaksanakan program atau kegiatan dibidang kesehatan kerja setelah anda mengikuti pelatihan Kesehatan Kerja pada tahun 2010? _____ 0. Tidak _____ 1. Ya

Jika "Tidak" maka lompat ke pertanyaan Nomor 6.

16. Bila ya, apakah jenis program atau kegiatan yang telah anda laksanakan?
    Jawaban bisa lebih dari satu!
    6) Membuat kode khusus pasien pekerja yang datang ke PUSKESMAS
    7) Menerapkan Kesehatan Kerja di PUSKESMAS
    8) Membina KK POS UKK
    9) Melatih kader POS UKK
    10) Lainnya, silakan disebutkan
    .....

    .....
    …

____ 1. 1 kegiatan
____ 2. > 1 kegiatan

Adoption (Adopsi)

17. Berapa jumlah tempat kerja yang ada di wilayah PUSKESMAS anda berdasarkan data tanggal 1 Januari, 2010 s.d 30 Maret, 2012? ___ tempat kerja/unit
18. Berapa jumlah tempat kerja yang telah anda bina setelah anda mengikuti pelatihan KK tahun 2010 s.d 30 Maret, 2012? ___ tempat kerja/unit
19. Berapa jumlah tempat kerja yang telah mengadopsi program KK setelah anda mengikuti pelatihan KK tahun 2010 s.d 30 Maret, 2012? ___ tempat kerja/unit

Implementation (Pelaksanaan/penerapan)

20. Adakah unit/tempat kerja yang telah menerapkan sesuai buku petunjuk KK setelah anda mengikuti pelatihan KK tahun 2010 s.d 30 Maret, 2012?
    Jika "Tidak" maka lompat ke pertanyaan Nomor 12
21. Bila ya, berapa jumlah unit/tempat kerja yang telah menerapkan sesuai buku petunjuk KK setelah anda mengikuti pelatihan KK tahun 2010 s.d 30 Maret, 2012? ___ tempat kerja/unit
22. Apakah jenis kegiatan KK di unit/tempat kerja yang telah menerapkan sesuai buku petunjuk KK setelah anda mengikuti pelatihan KK tahun 2010 s.d 30 Maret, 2012?
    Lingkari 1 atau lebih yang paling sesuai:
    8) Kegiatan POS UKK
    9) Kegiatan KK yang dibina PUSKESMAS
    10) Meprakirakan bahaya di tempat kerja
    11) Higiene tempat kerja, promosi KK, pelatihan KK
    12) Diagnosis kesehatan kerja PUSKESMAS
    13) Pencatatan dan pelaporan kesehatan kerja PUSKESMAS
    14) Lainnya, silakan disebutkan

_____ 0. Tidak
_____ 1. Ya

_____ 1. 1 jenis
_____ 2. > 1 jenis

.....

.....

.....

.....

Maintenance (Pemeliharaan/Kelangsungan/Keberlanjutan)

12. Apakah sekarang anda masih memegang program/keg. KK? ____ 0. Tidak
    Bila tidak, lompat ke pertanyaan Nomor 14 ____ 1. Ya
13. Bila ya, sebutkan prog./keg tsb:

    .....

    .....

    .....

    .....

    .....
14. Berapa jumlah unit/tempat kerja yang sekarang masih melaksanakan kegiatan KK setelah anda pelatihan KK 2010? __ Unit/Tempat kerja

The IRB Approval for the Quantitative Study

USF
UNIVERSITY OF SOUTH FLORIDA

DIVISION OF RESEARCH INTEGRITY AND COMPLIANCE
Institutional Review Boards, FWA No. 00001669
12901 Bruce B. Downs Blvd. MDC035 • Tampa, FL 33612-4799
(813) 974-5638 • FAX (813) 974-5618

April 6, 2012

Hanifa Denny
Environmental and Occupational Health
13815 Kapok Court
Apartment 204
Tampa, FL 33613

RE: **Expedited Approval** for Initial Review
IRB#: Pro00007531
Title: Impact of Occupational Health Interventions in Indonesia

Dear Ms. Denny:

On 4/5/2012 the Institutional Review Board (IRB) reviewed and **APPROVED** the above referenced protocol. Please note that your approval for this study will expire on 4/5/2013.

Approved Items:
Protocol Document(s):

Study Protocol_revision_March30 3/31/2012 10:23 AM 0.05

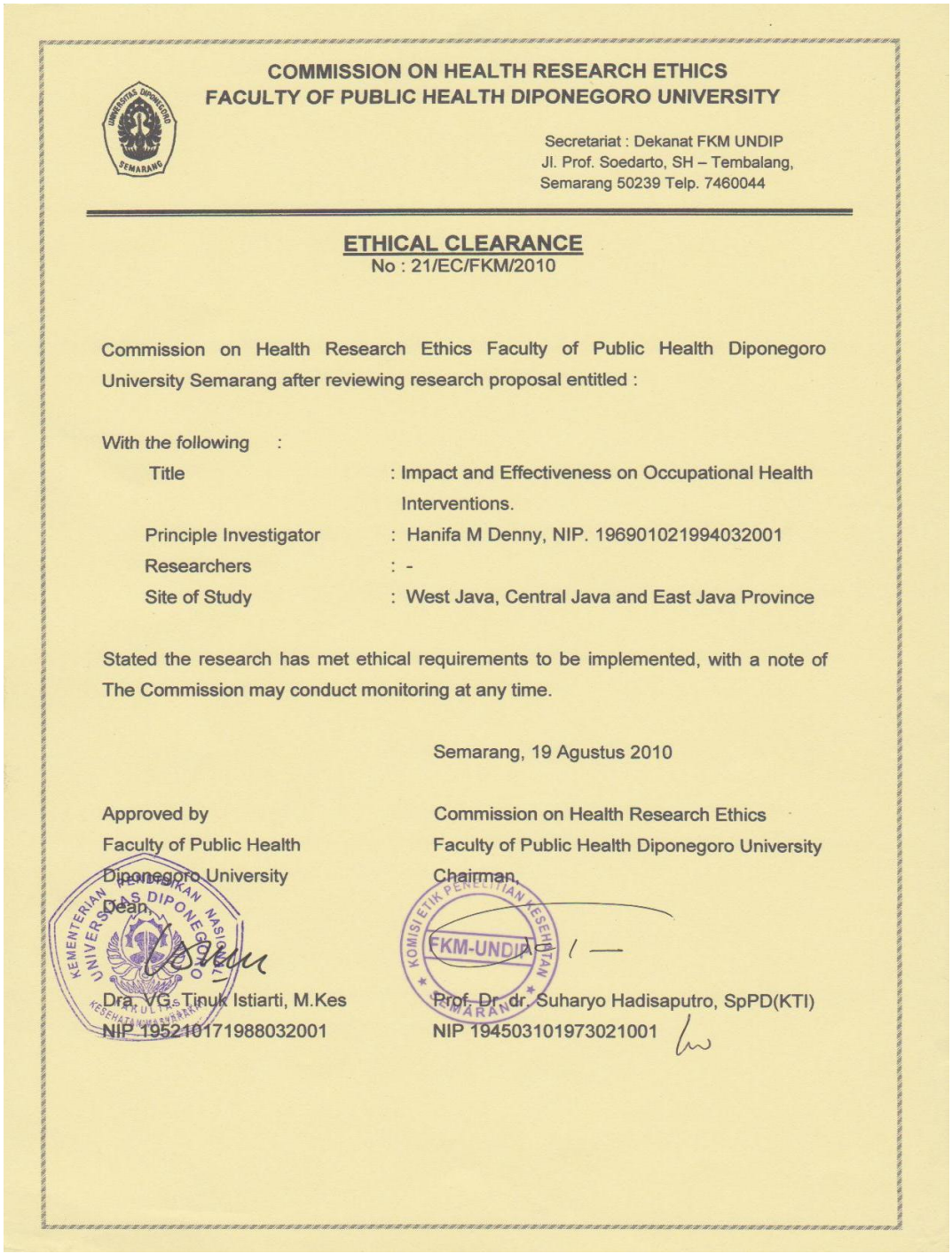
It was the determination of the IRB that your study qualified for expedited review which includes activities that (1) present no more than minimal risk to human subjects, and (2) involve only procedures listed in one or more of the categories outlined below. The IRB may review research through the expedited review procedure authorized by 45CFR46.110 and 21 CFR 56.110. The research proposed in this study is categorized under the following expedited review categories:

(5) Research involving materials (data, documents, records, or specimens) that have been collected, or will be collected solely for nonresearch purposes (such as medical treatment or diagnosis).

(6) Collection of data from voice, video, digital, or image recordings made for research purposes.

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

The Ethical Clearance from Diponegoro University in English and Bahasa Indonesia



COMMISSION ON HEALTH RESEARCH ETHICS
FACULTY OF PUBLIC HEALTH DIPONEGORO UNIVERSITY

Secretariat : Dekanat FKM UNDIP
Jl. Prof. Soedarto, SH – Tembalang,
Semarang 50239 Telp. 7460044

ETHICAL CLEARANCE
No : 21/EC/FKM/2010

Commission on Health Research Ethics Faculty of Public Health Diponegoro University Semarang after reviewing research proposal entitled :

With the following :

Title	: Impact and Effectiveness on Occupational Health Interventions.
Principle Investigator	: Hanifa M Denny, NIP. 196901021994032001
Researchers	: -
Site of Study	: West Java, Central Java and East Java Province

Stated the research has met ethical requirements to be implemented, with a note of The Commission may conduct monitoring at any time.

Semarang, 19 Agustus 2010

Approved by
Faculty of Public Health
Diponegoro University
Dean,

Dra. VG. Tinuk Istiarti, M.Kes
NIP 195210171988032001

Commission on Health Research Ethics
Faculty of Public Health Diponegoro University
Chairman,

Prof. Dr. dr. Suharyo Hadisaputro, SpPD(KTI)
NIP 194503101973021001

KOMISI ETIK PENELITIAN KESEHATAN
FAKULTAS KESEHATAN MASYARAKAT
UNIVERSITAS DIPONEGORO
Sekretariat : Dekanat FKM UNDIP
Jl. Prof. Soedarto, SH, Tlp. 024-7460044, Tembalang, Semarang 50239

KETERANGAN KELAIKAN ETIK
(ETHICAL CLEARANCE)
No. 21/EC/FKM/2010

Komisi Etik Penelitian Kesehatan Fakultas Kesehatan Masyarakat Universitas Diponegoro setelah membaca dan menelaah usulan penelitian dengan judul :

Dampak dan Efektivitas Program Kesehatan Kerja : Penelitian Kualitataif dari Sisi Pengandil Program KKSI di Indonesia.

Ketua Peneliti : Hanifa M Denny, NIP. 196901021994032001
Anggota Peneliti : -

Tempat Penelitian : Provinsi Jawa Barat, Jawa Tengah dan Jawa Timur.

Dengan ini menyatakan penelitian tersebut telah memenuhi persyaratan etik untuk dilaksanakan dengan catatan sewaktu-waktu komisi dapat melakukan pemantauan.

Semarang, 19 Agustus 2010

Fakultas Kesehatan Masyarakat Universitas Diponegoro Dekan,	Komisi Etik Penelitian Kesehatan Fakultas Kesehatan Masyarakat UNDIP Ketua,
Dra. VG. Tinuk Istiarti, MKes NIP. 195210171988032001	Prof. Dr.dr.Soeharyo Hadisaputro,SpPD(KTI) NIP. 194503101973021001

The Photos of Occupational Health Activities

Figure 1. House Keeping Education as one of POS UKK activities

Figure 2. Ergonomic Working Position as One of Problem Solutions Selected by POS UKK Member

Figure 3. Simple Practice of Occupational Health Training for POS UKK Volunteers

Figure 4. Another Name of BKKM

A BKKM has a new name after Indonesia implementing decentralization in health system, although its function remains the same. This BKKM belongs to the local government, district, or city.

Figure 5. The BKKM that belongs to Provincial Government

About the Author

Hanifa M. Denny was born in Indonesia. The author received her Bachelor of Science in Public Health from Diponegoro University, Semarang Indonesia. She obtained her Master of Public Health Major in Occupational Health from College of Public Health University of the Philippines-Manila with the scholarship from the IBRD World Bank through the Government of Indonesia. The author received her PhD in Occupational Health, College of Public Health, University of South Florida Tampa in Fall 2012 with a fellowship from the Ministry of Education Indonesia and partial financial assistance from the Department of Environmental and Occupational Health, College of Public Health, University of South Florida.

The author is currently an associate professor *(Lektor Kepala)* at the Department of Occupational Health and Safety, College of Public Health, Diponegoro University Indonesia. She has published several papers in Udayana Medical Journal in Bahasa Indonesia. She holds the current office of President of the Indonesian Public Health Union from 2009 until 2014.

The author was one of recipients of SIDA fellowship to participate in a 2-year Advanced International Course in Occupational Health & Safety and Development at the National Institute of Working Life, Stockholm, Sweden in 2002 to 2006. She was one of recipients of "5th Summer School Occupational

Health Crossing Boarders" 2012 at Ludwig Maximilians University Munich, funded by DAAD Germany. The author also received several awards from College of Public Health and from University of South Florida, viz. Student Honorary Award for Research and Practice (SHARP), Government Student Professional CGSPC), and the International Research Award from COPH USF Tampa in Spring 2012. Additionally, the author was a recipient of the Occupational Health Safety Award - James P. Keogh Scholarship - Washington, DC for one-year membership and participated as a presenter at the APHA annual meeting in 2011.