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## Determining Immediate Nanay Assessment (INA) Module As an Effective Factor to the Knowledge and Self-efficacy of Barangay Health Workers

### INTRODUCTION

**A**lmost 800 women in low-income countries die every day due to pregnancy-related complications (WHO, 2012). The Department of Health (DOH) in 2012 reported that the maternal mortality rate is 0.9 per 1,000 live births increasing from 1,599 in 2009 to 1,719 in 2010 (NSO, 2013). Furthermore, it was reported that underlying causes of maternal deaths are due to delays in seeking care, detecting high-risk pregnancies, taking critical actions, making a referral and providing appropriate management (Lorenzo, 2012).

World Health Report of 2006, as further reaffirmed by the World Health Report of 2013, identified human resources as the key ingredient to decrease maternal mortality through a rational distribution of tasks among health workforce teams (WHO, 2012). In the Philippines, DOH organized Community Health Teams (CHT) that will guarantee that every family in the community is periodically visited and attended to by health providers as part of the government's efforts to achieve Universal Health Care or *Kalusugan Pangkalahatan* (DOH, 2010). The CHT mobilization aims to link the families to health service providers that will provide basic preventive and promotive health services when needed, and deliver key health messages. It is composed of professional health workers, social workers and barangay health workers (BHW).

The BHWs play a major role in the CHT because they are the primary health care providers in the community. Republic Act 7883, Sec. 3 uses the term "barangay health worker" which refers to a person who has undergone training programs under accredited government and non-government organizations and who voluntarily renders primary health services in the community after having been accredited to function as such by the local health board in accordance with the guidelines promulgated by the DOH. Functions include home visits, environmental sanitation, first aid, treatment of common ailments, health education, community development activities, and maternal and child health

(Sander, 2012). In recent years, an increase in the number of BHW in the community has been noted. Different training programs are given to them by the DOH to further increase their competence in the health care delivery system. Moreover, various professional associations like the Philippine Nurses Association (PNA) provide training programs to develop the knowledge and skills of the BHWs in providing basic health care services and affirm their commitment towards serving their communities. (Torres and Berza, 2010). Furthermore, there is no standard module designed to equip the knowledge and skills of the BHWs in providing health care services like the maternal assessment that can prevent complications leading to maternal mortality. This prompted the researcher to develop an Immediate Nanay Assessment (INA) module that will increase the knowledge and self-efficacy of the BHWs in assessing pregnant women with maternal danger signs needing an immediate referral, preventing maternal death. Moreover, little has been known about the knowledge and self-efficacy of barangay health workers on the immediate maternal assessment. Therefore, this study determined the effectiveness of Immediate INA module on the knowledge and the self-efficacy of BHWs in maternal assessment. The beneficiaries of this study are the BHWs who will be able to efficiently use a manual for assessing pregnant women needing an immediate and proper referral. This study may provide information in improving the maternal health program of the Philippines. Also, this study can serve as a relevant basis or reference to other researchers who will conduct the related study using different variables.

## **METHODS**

### *Research Design*

The study utilized a quantitative, quasi-experimental, pre and post-test design to examine the effects of Immediate Nanay Assessment (INA) module on the knowledge and the self-efficacy of the Barangay Health Workers (BHW). Burns & Grove (2013) stated that quasi-experimental design is used to examine causality in situations in which complete control is not possible. Quasi-experiments involve the manipulation of an independent variable but lacks at least one of the other two properties that characterize true experiment: randomization or a control group. In this study, it was able to have two out of three criteria namely, manipulation of the variable through the use of the module and the

presence of the control group.

### *Subjects and Setting*

San Jose is a first-class municipality in the province of Occidental Mindoro, Philippines. According to the 2010 census, it has a population of 131,188 people. San Jose is the economic, financial, cultural, and educational center of the province of Occidental Mindoro. It has the largest commercial port and airport in the province. It is named after its patron saint, St. Joseph, the worker.

San Jose is the only municipality in the province of Occidental Mindoro to have a well-organized health care delivery system. The municipality has five (5) private hospitals and one (1) public hospital. Aside from this, there is also a public diagnostic center run by the local government that provides affordable CT scan and other diagnostic procedures at a minimal cost. It has at least one health center in every barangay. These health centers are manned primarily by barangay health workers. One midwife, one public health nurse, and one public health physician are assigned to every health center cluster which is composed of 3 barangays. With this, barangay health workers are the primary health care providers that the people in the community are having frequent contacts. They are the ones who are attending to the immediate health problems that community members are having. Due to this important role that the BHWs has, the municipality has a total of 1, 325 barangay health workers present to the 30 health centers that the municipality has.

In the 2014 record of the San Jose Health Office (SJHD), 5 out of 8 health problems that the BHWs are attending in the community are prenatal complications. Most of which are having immediate maternal danger signs and bleeding. Moreover, SJHD reported that 55% of these prenatal complications experienced delayed or improper referral by the BHWs since they lack proper knowledge and training in rendering immediate maternal assessment for the different danger signs. This high incidence of delayed or improper referral accounts to the high maternal mortality and morbidity incidence of the municipality resulting in 60%.

It is evident that despite the high number of BHWs present in the municipality, it is still not an assurance that effective and proper maternal care will be given. These BHWs must still be properly educated, trained and guided so that they can be effective providers of

care and they can provide immediate maternal assessment and proper and timely referral of the maternal danger signs.

In order to establish homogeneity within the subjects, the researcher used a purposive sampling method in identifying the subjects. The subjects were divided into experimental and control groups using random assignment.

The study subjects were divided into two groups: one group for the control and another for the experimental. In order to be included in the study, the BHWs should possess the following inclusion criteria:

- (1) Appointed as barangay health workers in their respective local government unit.
- (2) Able to read and write so that they can answer a set of questionnaires to determine the effectiveness of the intervention.
- (3) Have the capacity to understand the Filipino language to ensure clarity between them and the researcher.
- (4) Must agree to participate in the study and freely sign the informed consent form to promote the autonomy of the BHW.
- (5) Must serve at least six months as BHW.
- (6) Must know how to take vital signs.

The exclusion criteria which will disqualify a subject for this study are as follows:

- (1) Had formal training or took professional bachelor's program such as nursing and midwifery.
- (2) Attended formal training on maternal assessment.
- (3) Had previous knowledge about the said study because the results will be affected.

According to Fisher (2014), a true experiment requires adherence to the rigid rules, and these rules are equivalence of group, complete control of the treatment by the researcher, a control group that receives no treatment or placebo treatment control of the environment in which the study is to be conducted, a precise measurement of hypothesized outcomes, and random sampling from individuals representative of a population. Lack of adherence to these rules will result in a quasi-experiment. Quasi-experiments lack randomization, the signature of a true experiment (Polit and Beck,

2012). However, in the study, the randomization was still practiced but control over extraneous variables was not implemented. Extraneous variables also known as contaminating or confounding variables, as started by Polit and Beck (2012) must be held constant or controlled in the context of the study so that they are not related to the independent or dependent variable. In the study, the demographics of the subjects such as years of experience was not taken. However, according to Polit and Beck (1998), it is often impossible to control all variables that affect the dependent variable, and not necessary to even do so.

The researcher used three (3) instruments for data collection such as Respondent's Profile Questionnaire, Knowledge Assessment Tool, and Self-efficacy Questionnaire.

Respondent's Profile Questionnaire. This instrument is a researcher-made questionnaire which contains information on the socio-demographic profile such as gender, years of service, educational attainment of barangay health workers. The questionnaire further took information on the number, types, and length of training they have taken in alignment with their works.

Knowledge Assessment Tool. This instrument is a thirty (30) item researcher-made questionnaire that was used to test the knowledge on immediate assessment of maternal danger signs whether they can be managed at home, at the health center or at the hospital. The knowledge assessment tool was given prior to the intervention to serve as the pretest and two weeks after the intervention as the posttest to determine the increase in the knowledge of the subjects. The subjects were given thirty (30) minutes to answer the question.

Self-efficacy Questionnaire. This instrument is a twenty-one (21) item researcher-made questionnaire that was used to examine the self-efficacy of barangay health workers in the assessment of pregnant mothers. Questions were stated in the Filipino language. Answers were scored on a four (4) point Likert scale ranging from 1 (not at all confident), 2 (hardly confident), 3 (moderately confident) and 4 (highly confident). The self-efficacy tool was given to the barangay health workers prior to the intervention and two weeks after the intervention to determine the increase in the self-efficacy of the barangay health workers.

The subjects were given fifteen (15) minutes to answer the questionnaire.

To ensure the validity and reliability of the knowledge assessment tool and self-efficacy questionnaire, a panel of experts was consulted, one (1) Barangay Health Worker Coordinator, one (1) nurse educator teaching obstetrical nursing and Board Member of the Mother and Child Nurses Association of the Philippines (MCNAP), and one (1) public health physician from the Manila Health Department (MHD), evaluated the content and construct validity of the questionnaire. Content validity examines the extent to which the measurement includes all the major elements relevant to the construct measured; furthermore, this evidence is obtained from the literature, representatives of the relevant populations and content specialist. Construct validity is concerned with the underlying attribute that the instrument produces (Burns and Grove, 2013). The experts evaluated the content and construct of the question by rating each item in the questionnaire. To ensure reliability, the questionnaire was pilot-tested to ten barangay health workers outside the population group, data were then encoded using the SPSS.

### *Intervention*

The researcher utilized the Immediate Nanay Assessment (INA) module as the intervention of the study. INA is a learning module specifically designed for BHWs on the basic assessment of the maternal danger signs and whether they need home management or referral to the health center or to the hospital. The contents of the manual were based on the identified common reasons for maternal morbidity and mortality by mothers, midwives, nurses, doctors, traditional birth attendants and community members as cited by the Department of Health in 2013.

The instructions on how to use the manual were arranged in such a way that the BHW could easily follow them as they read the manual. The language was in Filipino to facilitate a better understanding of the manual. Prior to the distribution of the manual to the experimental group, a general description of the manual and how to use it was explained by the researcher through an orientation lasting for 30 minutes.

To ensure intervention fidelity, the module was subjected to content and face validity by a panel of experts which is composed of one (1) nurse educator teaching obstetrical nursing and Board Member of the Mother and Child Nurses Association of the Philippines

(MCNAP), one (1) public health physician from the Manila Health Department (MHD), one (1) Clinical Epidemiologist and Obstetrician and Gynecologist, one (1) Board Member of the Philippine Board of Obstetrics and Gynecology (PBOG) and the President of the Philippine Obstetrical and Gynecological Society (POGS).

#### *Data Collection Procedure*

##### Preparatory Phase

1. The intervention (module) was used for the conduct of the study was submitted to experts for content and face validity.
2. The instrument (questionnaire) was used for the conduct of the study was submitted to experts for content validity.
3. Secured approval from the ethics board of the UST-College of Nursing.
4. Pilot testing was done to measure the reliability of the Knowledge Assessment Tool and Self-efficacy Questionnaire. It was conducted to eight (eight) BHWs of Barangay Balucuc, Apalit, Pampanga.
5. A letter of request was sent to the municipal mayor seeking approval to conduct the study. Upon the approval of the municipal mayor and the different barangay health centers, the researcher will coordinate with the different barangay health workers.

##### Experimental Phase

1. Screening of eligible subjects for the study was done.
2. A random sampling of subjects using draw lots was done to assign the subjects to experimental and control groups.
3. Secure informed consent and explain the nature, risks, and purpose of the study.
4. Distributed the Knowledge Assessment Tool and Self-efficacy Questionnaire for the pre-test.
5. A discussion was made regarding the normal changes of pregnancy and was given to both the experimental and control groups. This was done to minimize the effects the extraneous variables like age and previous experiences in dealing with maternal patients. Moreover, this was conducted in order to review previous knowledge and provide standard information and accurate data about the normal changes in pregnancy. The researcher let the control group go home and ask the

experimental group to stay in the venue. In order to establish control, the subjects were gathered in one conference room during the pre-test. The researcher made sure that testing conditional such as the presence of adequate chairs and tables, room temperature and the time of the day of the implementation were the same, and the same instructions were given to standardize the implementation process.

6. The researcher conducted an orientation on how to use the INA manual to the experimental group.
7. This study made use of the INA Manual. After answering the pre-test, the manual was presented to the experimental group, each of them holding a copy of the manual. The control group did not receive any treatment or intervention from the researcher, but they also took the pre-test. This was done to provide information for a comparison between the control and the experimental groups.

#### Post Experimental Phase

After two weeks, post-test on the knowledge and self-efficacy of barangay health workers was administered to both experimental and control groups.

#### *Data Analysis*

All the statistics will be calculated using the Statistical Package for Social Sciences (SPSS) by the researcher. In order for the researcher to analyze the data gathered, the researcher made use of different statistical treatments namely: One-Way Multivariate Analysis of Variance (MANOVA), Repeated Measure Analysis of Variance (RM-MANOVA) and Multivariate Analysis of Covariance, were utilized. They were used to test significant differences between the two samples (Burns and Grove, 2013). The one-way multivariate analysis of variance (one-way MANOVA) is used to determine whether there are any differences between independent groups on more than one continuous dependent variable (Burns and Grove, 2013). In the study, it would like to test whether the INA module has a continuous effect on the knowledge and self- efficacy. Furthermore, Repeated Measures ANOVA is the equivalent of the one-way ANOVA, but for related, not independent groups, and is the extension of the dependent t-test. A repeated measures ANOVA is also referred to as a within-subjects ANOVA or ANOVA for correlated samples. All these names imply the nature of the repeated measures ANOVA, that of a test to detect

any overall differences between related means (Polit and Beck, 2012). This was used to detect whether there are differences between the related means of the dependent variables. Lastly, Multivariate analysis of covariance (MANCOVA) is a statistical technique that is the extension of analysis of covariance (ANCOVA). Basically, it is the multivariate analysis of variance (MANOVA) with a covariate(s). In MANCOVA, it assesses for statistical differences on multiple continuous dependent variables by an independent grouping variable, while controlling for a third variable called the covariate; multiple covariates can be used, depending on the sample size (Polit and Beck, 2012). In other words, it was used in the study to reconfirm if there were significant differences noted in the results.

### *Ethical Considerations*

According to the American Nurses Association (ANA) in 2001 and American Psychological Association (APA) in 2001, there are five human rights that require protection in research, namely: the right to self-determination, right to privacy, right to anonymity and confidentiality, right to fair treatment and the right to protection from discomfort and harm.

Each human being is autonomous and each is free to choose how he can go on with his own life without external force controlling him (Burns and Grove, 2013). Informed consent was obtained from all subjects before pilot testing and actual implementation will take place. In order to be valid, the consent forms must be voluntarily given, free from coercive external force, the subject was able to comprehend what will be done and was provided with enough knowledge about the research procedure.

Furthermore, Burns and Groves (2013) stated that privacy is an individual's right to determine the time, extent and general circumstances under which personal information will be shared with or withheld from others. In line with this, the identities of the subjects were kept anonymous. Instead of using the names of the subjects, the researcher provided a control number so that information regarding their name will not be disclosed to other people that are not part of the research team.

Fair treatment follows the principle of justice, wherein a person receives what is due to him/her. Parallel to this, the subjects were divided into control and experimental groups

randomly using the fishbowl /draw lots method. The researcher did not look upon the socio-economic status, beliefs and cultural background of the subjects for them to be included in the study.

According to Ormrod and Casey (2004), there is a professional obligation to identify and acquire the skills needed to practice competently in a specific nursing role. As stated by the United Kingdom of Nursing and Midwifery Council (NMC) Code of Professional Conduct (2002), "To practice competently, you must possess the knowledge, skills, and abilities required for lawful, safe, and effective practice without direct supervision", In line with the role of the Barangay Health Workers, there is a need as well to use the knowledge and perform skills competently in order to provide proper service to that of the community just like nurses in the hospital setting. Furthermore, the right to non-maleficence protects the participants from any harm that the study may give. This was observed by the researcher of the study by providing the subject instructions about what to do during the implementation of the intervention.

## RESULTS AND DISCUSSION

After the conduct of the data gathering procedure, several statistical treatments were applied to the variables of this study to give a clear picture on how the tools have maximized its utility in answering the problems that were presented at the start of this study.

The data results and discussion were presented in the order of how the statement of the problems have been numbered. This will facilitate an orderly manner of presentation and will eliminate the possibility of withholding or overlooking any pertinent information that may affect the findings and details of the study.

1. *What are the pre-test knowledge and the self-efficacy scores of the control group and experimental group before the intervention?*

	<b>Group assignment</b>	<b>Mean</b>	<b>Std. Deviation</b>
Pretest knowledge	Control group	16.70	2.73
	Experimental group	16.57	2.67
Pretest self-efficacy	Control group	51.57	6.71
	Experimental group	50.53	7.22

*Table 1* Pre-test knowledge and self-efficacy scores of the control and experimental groups

Table 1 depicts the descriptive (mean and standard deviation) of the subjects in the two groups in terms of their pre-test scores (both knowledge and self-efficacy). The control group had a higher mean pre-test knowledge and self-efficacy scores than the experimental group. The higher mean scores of the control group can be associated with the extraneous variables that can have an effect on their knowledge and self-efficacy like their age, previous experiences in handling maternal clients and even their own experiences. These extraneous variables are not controlled in the conduct of the study. Moreover, even if the control group had high mean scores, the difference of their mean scores as compared to the experimental group is just minimal. From this data, the researcher inferred that the scores have a narrow difference that can be considered insignificant.

In the study made by Rajkomar in 2013, improved diagnostic accuracy is not merely based on the person's knowledge and experience are the cornerstone for an accurate diagnosis, however, a person's judgment and reasoning should also be considered as a key point to consider in making a diagnosis. According to Gladwell (2012), there are primarily two types of reasoning employed by health workers when performing. The first one employs the intuitive system in the brain. This is when the brain conducts a rapid mental comparison of the current case with an abstract prototypical picture of the common cause of a disease. He also considered that an individual learns by using his full capabilities like the integration of his past experiences, previous knowledge, and observation.

Thus, in this study, the knowledge and self-efficacy skills of the control group are compared with the experimental group after the intervention. The comparison is based on past experience and knowledge that is largely inaccessible to the conscious control or manipulation of the mind leading to an instantaneous response or identification of a problem based on a single or few symptoms because it does not fit the prototypical picture, analytical reason is used in order to come up with a diagnosis. The health worker must use both his/her knowledge and past experience as well as use external information sources in order to confirm an assumption. Although this type of reasoning is frequently very time consuming, the accuracy of the diagnosis is increased because of the presence of objective data such as scores which will support or disprove the health workers' original diagnosis of the case (Mendoza *et al*, 2014).

2. *What are the post-test knowledge and the self-efficacy scores of the control group and the experimental group after the intervention?*

	<b>Group assignment</b>	<b>Mean</b>	<b>Std. Deviation</b>
Posttest knowledge	Control group	14.30	2.28
	Experimental group	26.53	1.22
Posttest self-efficacy	Control group	51.60	6.63
	Experimental group	74.33	4.40

*Table 2* Posttest knowledge and self-efficacy scores of the control and the experimental groups

Table 2 depicts the descriptive (mean and standard deviation) of subjects in the two groups in terms of their post-test scores (both knowledge and self-efficacy). The experimental group had a higher mean pre-test knowledge and self-efficacy scores than the control group. From this, the researcher inferred that the intervention using the INA module caused the increase in the posttest knowledge and self-efficacy scores of the experimental group.

According to a study done by Lissa, Ritmala-Castre, Leino Kilpi, and Suominen, Knowledge, and skills are particularly crucial to the quality and safety of patient care, and therefore it is essential that work should constantly be done to improve and upgrade their competencies. They also emphasized that in order to increase the knowledge, skills, and self-efficacy of an individual, they must be provided by learning materials such as modules or pamphlets that can aid them in enhancing their knowledge, skills and self-efficacy. Moreover, according to David Kolb's Experiential Learning Model (1984), learning is the process whereby knowledge is created through the transformation of experience. Knowledge results from the combination of grasping experience and transforming it. It follows that if there is no source of new experience, there will be nothing to transform, and finally, no new knowledge will be generated.

3. Is there a significant difference between the pre-test and the post-test knowledge and self- efficacy scores of the control group?

	Mean square	F	Sig
Knowledge	86.40	12.62	.664
Self-efficacy	.017	.001	.986

Significant if  $p < .05$

**Table 3** Univariate Comparison of the Control Group

Table 3 above shows you the univariate comparison of the change from pre-test to post-test scores of knowledge and self-efficacy for the control group. Results showed that there was no significant difference ( $p > .05$ ) between the pretest and posttest mean scores of the control group. This means that the knowledge and self-efficacy of the subjects in the control group did not significantly vary, which could be attributed to the fact that they did not receive any intervention prior to taking the post-test.

Based on the results presented in table 4, there was no significant difference ( $p > .05$ ) between the pretest and posttest mean scores of the control group. This could be supported by Rogers (2014) who claimed that without intervention, there will be no change. Since the control group did not receive any intervention, a change is not expected from their baseline scores. In a study made by Coronado-Aliegro (2007) which measured the effects of the health care module on the knowledge and self-efficacy of undergraduate nursing students, there was no significant difference in the pre-test and post-test scores of their control group. This is already expected since the control group did not receive any intervention that can further improve their knowledge and self-efficacy scores.

4. Is there a significant difference between the pre-test and the post-test knowledge and self-efficacy scores of the experimental group after the intervention?

	Mean square	F	Sig	Partial Eta Squared
Knowledge	1490.017	301.153	.001	.912
Self-efficacy	8496.600	166.218	.001	.851

Significant if  $p < .05$

**Table 4** Univariate Comparison of the Experimental Group

Table 4 the univariate comparison of the change from pre-test to post-test scores of knowledge and the self-efficacy of the experimental group. There was a significant difference ( $p < .05$ ) in the knowledge and self-efficacy scores of the experimental group after the intervention. It can also be gleaned from the partial eta squared column that

0.912 (91.20%) of the change from pre-test to post-test, knowledge score was caused by the intervention. additionally, 0.851 (85.10%) of the change from pre-test to post-test self-efficacy was due to the intervention. this is a relatively very high effect size since the cut-off for high effect size in RM-MANOVA is 0.14 or 14%. With this high partial eta squared, the researcher inferred that a great percentage of change in the knowledge and self-efficacy of the BHWs are solely caused by the INA module used as an intervention.

Based on the data presented in table 5, there was a significant difference ( $p < .05$ ) in the knowledge and self-efficacy scores of the experimental group after the intervention. In a study by Jeste, Dunn, Folsom, and Zisook (2012), review shows that investigators believe that module has the ability to enhance education procedures especially for persons with limited literacy. This further supports the researcher's claim that the use of the module to increase the knowledge and self-efficacy of barangay health workers yields a positive effect. Also, according to Lopez (2013), 75% of all information absorbed comes visually, about 13% comes from hearing and the rest from other senses. The module contains pictures and easily understandable words that aids to a better understanding of the module that can result in comprehensive and mastery. Furthermore, the combination of words and pictures makes the content of the module appear understandable, readable and might increase the BHWs self-efficacy in understanding proper classifications and doing proper actions stated in the module.

Moreover, according to Bandura (1997), there are factors that affect the increase in self-efficacy. There are the vicarious experiences in which someone models a skill to enhance another's performance, mastery experiences in which past performance leads to expectations in the future success, social persuasion in which feedback and encouragement boost performance and physiological and emotional states, such as arousal which heightens a feeling of competence or failure.

This is further supported by a study made by Goldstein, Dugan, Trachtenberg, & Peli (2012) which also reported that they have observed an increase in knowledge and self-efficacy of patients in relation to their use of low vision assistive devices. Based on their study, they observed that there was a 0.08 and 0.15 increase in the mean post-test scores on the patient's self-efficacy after two (2) weeks and three (3) months,

respectively. The increase in the post-test scores may also be related to the increasing sense of confidence as presented by Rawson, and Dunlosky (2010). According to them, confidence increases comprehension. From the results, the researcher inferred that when the subjects read and comprehend the module for the second time, they were able to understand more accurately and correctly, that yield an increase in the posttest scores of the experimental group.

5. *Is there a significant difference between the post-test knowledge and the self-efficacy scores of the control group and the post-test knowledge and self-efficacy scores of the experimental group after the intervention?*

	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
Posttest knowledge	2224.66	652.15	.001
Posttest self-efficacy	7606.49	288.57	.001

*Significant if  $p < .05$*

*Table 5 Tests of Between-Subjects Effects*

Table 5 shows that there was a significant difference in the posttest knowledge and the self-efficacy scores of the experimental group as compared to the control group. These findings can be attributed to the usage of the INA module that was able to increase the posttest knowledge and self-efficacy scores of the experimental group that yielded a significant difference when compared to the scores of the control group who did not receive any intervention. The control group was used as a basis of comparison to evaluate if the given intervention were effective. As is shown in the table, the intervention used was effective since the knowledge and self-efficacy yielded a significant difference when the posttest scores were compared.

According to David Kolb's Experiential Learning Model (2012), learning is the process whereby knowledge is created through the transformation of experience. Knowledge results from the combination of grasping experience and transforming it. It follows that if there is no source of new experience, there will be nothing to transform, and finally, no new knowledge will be generated.

Furthermore, in a study which measured knowledge gain a one-day introductory bronchoscopy course, Colt, Davoudi, Murgu, Zamanian, and Rohani (2011) said that significant knowledge and self-efficacy gains were seen over a short time span could not

have occurred without intervention. Thus, a significant change or effect in these variables are caused by the intervention that enhances the performance of the subjects. In their study, the intervention enhanced the knowledge and self-efficacy of the subjects in the experimental group by yielding high posttest scores and significant difference when compared to the control group.

## **CONCLUSION**

Based on the results obtained through the utilization of the INA module, this study concluded that the INA module is an effective factor in increasing the knowledge and self-efficacy of the BHWs by showing a significant difference of .001 in the posttest knowledge and the self-efficacy scores of the experimental group.

## **LIMITATIONS**

This study was limited in determining the effect of the INA Module to the knowledge and self-efficacy of barangay health workers.

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