

CHAPTER 3

MATERIALS AND METHODS

3.1 Location Of Study

Study was conducted in Balikpapan, East Kalimantan, Indonesia. Balikpapan is a city lies in the East Kalimantan Province, located between 1.0 – 1.5 south latitude and 116.5 – 117.0 east longitude. This city is bordered by Kutai Kartanegara Regency at the north side, Penajam Paser Utara at the west side, and Makassar Strait at the east and south sides. Balikpapan consist of 503.3 km² land area and 160.1 km² nautical area. The population in Balikpapan in 2016 is 625,968 people with the average of density 1,231 people per-km². There are 22 public junior high schools in Balikpapan with the total number of teachers is 858 persons (BPS, 2017).

The main reason of selection this study location is the fact that East Kalimantan is one of the prominent territories in Indonesia in drug abuse cases. Balikpapan is the main gate of Kalimantan, with the biggest airport and seaport. Balikpapan is also one of the biggest city in east Kalimantan with second highest prevalence of drug abuse cases. Data from East Kalimantan Regional Police (2016) showed that the number of drug abuse cases from January to June 2016 is 364 for Samarinda, 253 for Balikpapan, 197 for Kutai Kartanegara, 144 for Kutai Timur, 62 for Kutai Barat, 80 for Bontang, 109 for Berau, 66 people for Paser, and 67 for Penajam Paser Utara (POLDA, 2016). The current curriculum on drug abuse was only one subject matter in the subject of “Budi Pekerti”, which usually given in one session of lesson meeting. This curriculum was just implemented in 2015, before there was no curriculum about drug abuse. There is no specific preparation of teachers in term of teaching material about drug abuse and the prevention. Some teachers have accompanied students to the temporary socialization provided by the police or national narcotics board.



3.2 Study Design

This study used two group experimental design, to determine the effects of educational intervention using drug abuse prevention module towards changing and improving teachers knowledge, beliefs and practices in drug abuse prevention. In this study, the first group was given educational intervention using electronic module, and the second group received usual printed module.

Before intervention given to each group, pretest was conducted to measure teachers' knowledge, beliefs and drugs preventive behavior practice. Post test to measure teachers knowledge, beliefs and drug preventive behavior practice was conducted at one month and six months after intervention. Pretest and post test used the same instrument. Flow chart of study design was described on figure 3.1.

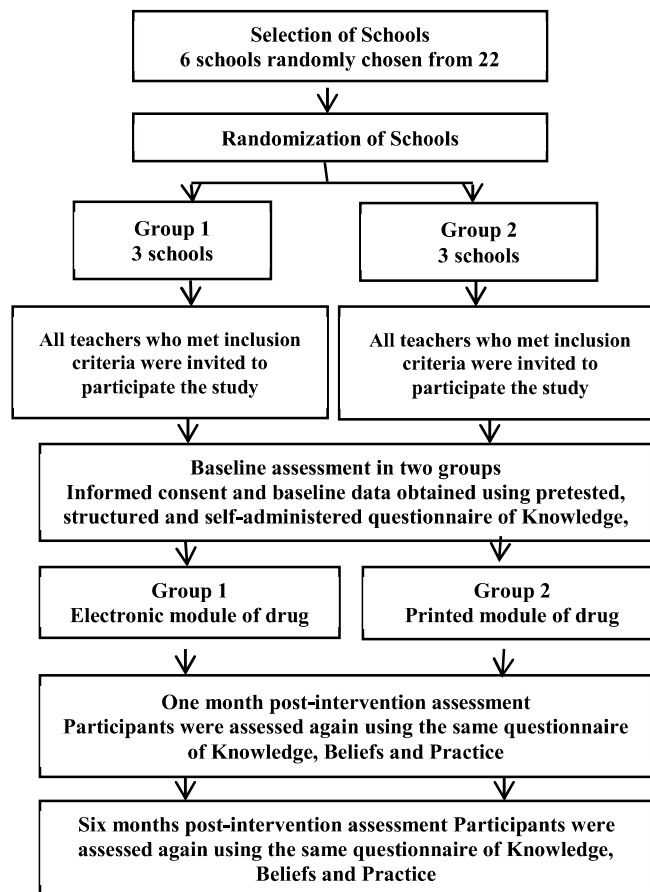


Figure 3.1. Flow chart of study design

3.3. Study population

The study population was all of public junior high school teachers in Balikpapan.

3.3.1 Inclusion and exclusion criteria

The inclusion criteria of subjects including teachers with permanent fulltimer status, having computer or smartphone, and teachers who sign consent to follow-up. The exclusion criteria including teachers who are absent on the day of data collection, teachers who will retire during study, and were pregnant more than 2 (two) months.

3.3.2 Sample Size Calculation

The sample size calculation is based on formula by Jekel et al. (2014). Table 3.1 explains the procedure used to calculate sample size. According to Jekel et al. (2014), the adequate sample size depends on α (error type 1, $\alpha=0.05$), β (error type 2, $\beta=0.20$), s^2 (variance), and d (difference to be detected between groups).

$$n = \frac{(Z\alpha + Z\beta)^2 \cdot 2 \cdot (s)^2}{(d)^2}$$
$$n = \frac{(1.96+0.84)^2 \cdot 2 \cdot 11.69}{(2)^2}$$
$$n = 45.84 \approx 46$$

The number of minimum sample size required was 46 subjects per-group. In accordance with design effect, this number of subjects was multiplied with 2 as the maximum inflation in sample size according to cluster randomized design (Eldridge, Ashby, & Kerry, 2006). Therefore the minimum sample size was 92 subjects per-group. Then with consideration of 20% attrition rate, the number of sample per-group was 115. The total number of sample according to this calculation was 230 subjects in both groups.

Table 3.1 Information Used in Sample Size Calculation

Characteristics	Assumptions
Type of study	Experimental study
Data set	Observation in two experiment groups
Variables	Knowledge, Beliefs and Practices in drug abuse prevention
S^2	$s^2=11.69$, variance of teachers' practices in drug abuse prevention (pilot study)
$Z\alpha$	$p=0.05$; therefore, 95% confidence desired; $Z\alpha=1.96$
$Z\beta$	20% beta error; therefore, 80% power desired; $Z\beta=0.84$
d	$d=2$, mean difference of practices to be detected between groups

3.3.3 Sampling frame

The list of all 22 public junior high schools in Balikpapan served as the sampling frame of the present study. Simple random sampling was done to select 6 schools out of them. The total of teachers in the 6 selected schools was 290 at the time of study period.

3.3.4 Sampling method

A cluster random sampling was used in this study to select schools. According to secondary data from the Balikpapan District Office of Education, there were 22 public junior high schools in Balikpapan, with the total number of teacher is 858, so that the average is 39 teachers per-school. Due to calculated sample size and limited resources of the investigators to undertake travel and other costs, 6 schools were considered to be adequate to fulfill the required sample size for this study.

3.3.5 Randomization

The first stage was selecting randomly using simple random sampling six out of 22 schools in Balikpapan. Each of 22 schools in Balikpapan was then assigned a number starting from 1 to 22. A random number table was used for selecting 6 schools out of 22 schools. The number of eligible participant in these 6 schools was 281 teachers, and based on informed consent 278 teachers agreed to follow study and 3 teachers refused. Then, random assignment was used to allocate each selected school to group 1 and group 2. In the purpose to prevent selection bias, a researcher assistant was requested for doing the allocation process with the instruction that she has to allocate participants to group 1 and group 2, without identity which group is experiment group and which one is control group. The result of random assignment were three schools in group 1 and three schools in group 2, with the total number of teacher who were agreed in each group was 133 teachers in group 1 and 145 teachers in group 2. These all of 278 teachers in both groups was set as participants in this study.

In the purpose to prevent biases from the subjects, this study was set as a single-blinded study, where all of participants was unaware of whether they are in the experiment or control group. All of investigators made an agreement not to inform to participants about in which group they are, throughout the period of the study.

3.4 Variables of study

The main variables of this study include independent variable and dependent variable. The independent variable of this study is educational intervention, and the dependent variables are teachers' knowledge, beliefs and practices in drug abuse prevention. The other variable that also will be observed in this study is

sociodemographic of respondents (gender, age, ethnicity, year of experience, and field of teaching).

3.5 Operational definitions of variables

1. Educational intervention: intervention that containing health promotion activities exposed to teachers with two forms, electronic module in the first group and printed module in the second group, with the intention to affect teachers' knowledge, beliefs and practices in preventing drug abuse.
2. Knowledge: What has teachers known about drugs, drug abuse and drug abuse prevention among students, that is measured using teachers' knowledge questionnaire containing 25 items with answer options "True", "False", and "Do Not Know". The right answer for each item scored 1, and the wrong or "do not know" scored with 0.
3. Beliefs: Teacher's perceptions about susceptibility and seriousness of drug abuse threat among students, and their perceptions about barriers, benefits, and self-efficacy to perform drug abuse prevention. Beliefs measured using teachers' beliefs questionnaire containing four items for perceived susceptibility, four items for perceived severity, three items for perceived benefits, three items for perceived barriers, and seven items for perceived self-efficacy. Each item with answer options Strongly Agree (SA), Agree (A), Undecided (U), Disagree (D), and Strongly Disagree (SD). The positive statements, score given with 1 (SD), 2 (D), 3 (U), 4 (A), and 5 (SA). For the negative statements, 1 (SA), 2 (A), 3 (U), 4 (D), and 5 (SD).
4. Practices: Actions done by teacher in the frame of drug abuse prevention. Practices measured using questionnaire containing 12 items, with answer options "Yes" or "No". Score 1 was given for the "Yes" answer, and 0 for the "No" answer.

3.6 Research Instruments

3.6.1 Intervention module

The intervention in this study is educational intervention using specific drug abuse module in the form of electronic for the group 1 and printed module for the group 2. These both modules was with the same containing materials. The content materials of the module was mainly adapted from BNN and NIDA (BNN, 2015; NIDA, 2014). This module developed by researcher which involved experts in drugs and drug abuse, public health lecturers, and experts in education which examined its validity. This module is developed in Bahasa Indonesia because it is intended for Indonesian research subjects.

Based on the conceptual framework in this study, intervention to improve knowledge, beliefs and then practices in drug abuse prevention based on health

belief model, the module used in this study has been developed based on the principles in health belief model. The assumption developed was by giving teachers adequate information on drugs and drug abuse prevention, the objectives of improved knowledge, perceived susceptibility, perceived severity, perceived benefits, reduced barriers, and perceived self-efficacy were achieved. In the purpose to build good awareness of teachers, especially regarding the vulnerability and severity of the dangers of drug abuse, the material on definition, factors affecting drug abuse, types of drugs commonly abused, including the latest data on the level of abuse, and the consequences of drug abuse are included as the first material in this module. Then to build good perception about the benefits and role of the teacher, how to reduce existing barriers and build self-preparedness to act, the materials on the characteristics of drug abuse, early detection strategies and prevention efforts and how the role of schools and teachers in preventing drug abuse and building a school that is free from drug abuse, is also included in the module.

The contents of intervention module are as follows:

- Section 1 : Definition and Types of Drugs
- Section 2 : Factors Affecting Drug Abuse
- Section 3 : Early Detection of Drug Abuse
- Section 4 : Usual Characteristics of Drug Abuser
- Section 5 : Effects of Drug Abuse
- Section 6 : Strategies of Drug Abuse Prevention
- Section 7 : The Role of School and Teacher in Drug Abuse Prevention in School Setting
- Section 8 : Building Free Drugs School .

3.6.2 Questionnaire

In this experimental study, questionnaire to measure knowledge, beliefs and practices of teachers in drug abuse prevention have been developed by researcher. Questionnaire is consisted of sociodemographic questionnaire, knowledge questionnaire, beliefs questionnaire, and practices questionnaire. Sociodemographic questions include gender, age, ethnicity, job duration, and field of study. This questionnaire was originally developed in Bahasa Indonesia because it was intended for Indonesian respondents. For the report purposes,, then this questionnaire is translated into English.

Knowledge questionnaire consisted of 25 items of questions and statements about drugs, drug abuse, and drug abuse prevention, with the answer options of “true”, “false”, and “do not know”. The right answer for each item scored with 1, and the wrong or “Do not know” scored with 0.

Beliefs questionnaire is consisted of Health Belief Model scales. Four statements about perceived susceptibility, four statements about perceived severity, three statements about perceived benefits, three statements about perceived barriers, and seven statements about perceived self-efficacy. The total number of items was 21 items. Each item with answer options Strongly Agree (SA), Agree (A), Undecided (U), Disagree (D), and Strongly Disagree (SD). The positive statements, score given with 1 (SD), 2 (D), 3 (U), 4 (A), and 5 (SA). For the negative statements, 1 (SA), 2 (A), 3 (U), 4 (D), and 5 (SD).

Practices questionnaire consist of 12 questions about drug abuse prevention, with the options “Yes” or “No”. Score 1 was given for the “Yes” answer, and 0 for the “No” answer.

3.7 Quality control of research instruments

3.7.1 Validity and reliability of intervention module

Three lecturers in public health and education from University of Mulawarman and Universitas Muhammadiyah Kalimantan Timur, one pharmacist, and one practitioner in preventing drug abuse from the National Narcotics Agency, assessed content validity of the module. In the purpose of assessed the face validity, this module then was pretested among 20 teachers in Samarinda who did not participate in this study for clarity of meaning, language and flow of contents. The module was created in two forms, electronic module in the format of pdf file, and printed module in the form of paper book.

3.7.2 Validity and reliability of questionnaire

The questionnaire has been examined for its validity and reliability before used in this study. An expert group discussion was conducted to determine the content validity of instruments. Three lecturers in public health and education from University of Mulawarman and Universitas Muhammadiyah Kalimantan Timur, one pharmacist, and one practitioner in preventing drug abuse from the National Narcotics Agency, assessed content validity of the questionnaire. They were asked to review the questionnaire items for clarity of items related to the thruth of the content and scope of variable to be studied. Then, the researcher revised and refined based on the comments and suggestions.

Face validity was conducted to the 6 teachers in Samarinda who did not participate in the study. They were asked to review the questionnaire for clarity of items, easy understandability of language used, numbering and formatting. Then, questions with ambiguous meaning and flow were modified following the comments from the teachers. The time required to complete the questionnaire was also noted.

After that, this questionnaire was pretested among 35 teachers in Samarinda who were fulfill the inclusion criteria but did not participate in this study, and the data was analyzed to determine the reliability. Cronbach Alpha was used to determine internal consistency reliability of questionnaires. The values of Cronbach alpha for knowledge, beliefs and practice questionnaires were 0.891, 0.701, and 0.776, respectively.

3.8 Implementation of the Intervention

3.8.1 Electronic module

Teachers in the group 1 were given an intervention in the form of an electronic module. Previously delivered an explanation to all teachers about the purpose of the study in the teacher meeting forum, and after that each teacher was asked his or her consent to be a research subject. After written approval is obtained, the next day is the initiation of measurement with a questionnaire instrument of knowledge, beliefs and practices. With an appointment before, a meeting is held individually with each teacher. Data collection in one school takes 3 days. After all the data was collected, each teacher was given an electronic module via e-mail, whatsapp and partly through the direct copy of the file on his or her computer. This route of module distribution was based on preference of the each participant. some participants prefer files via whatsapp application, some of them prefer via e-mail, and some more request to be copied directly on their computers. In the purpose to reduce the possibility of interaction bias, each participant was asked not to disseminate files and information about the module to others at least during the study period.

3.8.2 Printed module

The same process was done for the group 2. After explanation about the purpose of the study, written approval was gained from each of teachers in group 2. The next day was the initiation of first measurement of knowledge, beliefs and practices. After this data was collected for all teachers in group 2, each teacher in the group 2 were given printed module or paper book. The containing material of this printed module was the same as electronic module. One month after modules given to teachers in both groups, a measurement of knowledge, beliefs and practices using the same instruments was conducted to each of teacher with appointment before. Then six months after intervention was done the same measurement.

3.9 Compliance of participants

Both electronic and printed module group of participants received two weekly reminder messages from the researcher during study period to encourage participants to be compliant for reading the educational module was been given to them. Further, the participants in both groups were asked whether they have read the module on the time of post test measurements.

3.10 Statistical Analysis

Even though there are many data and information gathered from this study, the focus is only on the data that related to the objectives of this study. The data analysis in this study is described on table 3.3. All statistical analysis used The Statistical Package for Social Science (SPSS Version 24).

Normality test of data was done based on the values of skewness, kurtosis, and boxplots. The Common rule of thumb statistics to test normality was conducted in order to get skewness and kurtosis within -2 and +2 (George & Mallery, 2010). The data analysis was done using per-protocol analysis which all of the dropped out subjects were excluded from the analysis.

Table 3.2 Statistical Analysis

Objectives	Statistical Analysis
To determine the sociodemographic of the respondents	Percentage, mean, Standard Deviation
To compare sociodemographic and variables between groups at baseline	Chi square Mann Whitney U Test
To determine the effects of electronic-module (within groups)	Paired t test Wilcoxon signed test
To determine the effects of printed-module (within groups)	Paired-t test Wilcoxon signed test
To compare effects of electronic and printed module (between groups)	Independent t test Mann Whitney U test
To compare effects of intervention (within and between groups)	Two-way repeated measures ANOVA

3.11 Ethical Approval

This study obtained approval from District Office of Ministry of Education (Appendix C) and Jawatan Kuasa Etika Universiti Untuk Penyelidikan yang Melibatkan Manusia (JKEUPM) (Appendix D). Written informed consent was obtained from the teachers before they were recruited into the study.