CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter will begin with the studies about drug abuse and the prevention, factors influence practices in drug abuse prevention, Health Belief Model, learning module and conceptual framework of study.

2.2 Drug abuse

Drug is a term of varied usage. Drugs can have long-lasting effects on the developing brain and may interfere with family, positive peer relationships, and school performance. Most adults who develop a substance use disorder report having started drug use in adolescence or young adulthood, so it is very important to identify and intervene drug use early (NIDA, 2014). Drug abuse is the use of drug for nontherapeutic purposes to obtain the psychotropic. The psychotropic effects may include euphoric, sedative, or anxiolytic effects (Comer et al., 2013).

United Nations General Assembly Special Session on drugs (UNGASS) recognized that drug addiction is a complex multifactorial health disorder characterized by chronic and relapsing nature, that is preventable and treatable and not just as the effect of moral failure or criminal behavior. The strategies for addressing drug abuses that centered on punishment and criminal justice need to be shifted to a public health approach (Volkow, Poznyak, Saxena, Gerra, & Network, 2017). Furthermore, one of very important recommendations from this special session is the need of comprehensive public health approach in the prevention, treatment, and recovery options for drug abusers.

People are most likely to initiate abusing drugs, in term of illegal or prescription drugs, during adolescence and young adulthood ages. There are many conditions affected adolescents using drugs, including the desire for the new experiences, trying to deal with problems or performing better in school, and the simple peer influence. Attempting drugs may fulfill these developmental drives, but in the long-term it can cause very serious effects (NIDA, 2014).

Many factors may influence young people trying drugs, including the availability of drugs within their environment, community, and school and whether their friends are using them. Their family condition is also very important, especially for the presence of violence, physical or psychological abuse, or the presence of drug abuse in the household increase the likelihood young people to use drugs. The adolescence ages are the critical window of vulnerability to drug use disorders, because the brain

is still developing, and some areas of the brain are less mature than others. The prefrontal cortex and its circuit which is responsible in assessing situations, controlling emotions and making decisions, typically is not mature until the ages of 20s (NIDA, 2014)

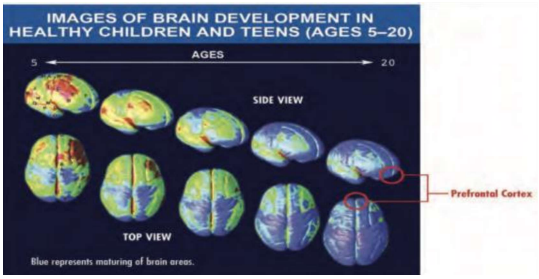

Figure 2.1 Images of brain development in healthy children
(Source: NIDA, 2014).

2.3 Drug types

Drug types are described in various ways, depending on origin and effect. They can either be *naturally occurring, semi synthetic* (chemical manipulations of substances extracted from natural materials) or *synthetic* (created entirely by laboratory manipulation). The main types of drugs which usually abused according to UNODC (2016) are opiates, cannabis, barbiturates, nonbarbiturate depressants and benzodiazepines, cocaine, amphetamine-type stimulants, and hallusinogens (lysergic acid diethylamide, phencyclidine and some types of inhalant substances) (UNODC, 2016).

2.4 Risk and protective factors

UNODC (2018) resumed the protective factors and risk factors of drug abuse among adolescences. The protective factors consist of positive caregiver involvement and monitoring, good health and neurological development (positive emotional regulation and coping skills), physical safety and social attachment, positive neighbourhoods, and positive school environments. If these factors exist and are adequate, they can prevent individuals from drug abuse.

The risk factors including trauma and childhoods abnormality (child abuse and neglect), lack of parental involvement and social support, mental health disorders, poverty status, peer drug abuse and substances availability, negative school environment, and curiosity. These factors can vary from one individual to another and not all individuals have the same vulnerability to abuse drugs. The combination

of the presence of risk factors in a person and the absence or lack of protective factors to some extent causes these individuals to abuse drugs to dangerous levels.(UNODC, 2018).

2.5 Epidemiology of Drug Abuse

2.5.1 Global perspective

The study in U.S. showed that prevalence rates of alcohol and drug addicts are 1.3% and 1.8% respectively, about one-fourth the magnitude of abuse (5.2% and 7.1%, respectively). While drug abuse in general is more common among males, females have higher rates of abusing some specific substances. For example, there are studies showed that females had greater rates of dependence on cocaine and psychotropic substances. Besides alcohol use dependences were found to be more persistent in females than males in another 14 year follow up study (Merikangas & Mcclair, 2015).

In the south part area of Iran, Opium was the most frequently abused drug (88.7% in combination with other drugs and 5.3% solely). The mean age of the first time abusing drugs was 20.66 years old, and the majority of them abusing drugs with the reason of temptation by friends (28.9%), followed by seeking for pleasure sensation (21.9%). Drug abuse history in the family was reported by 41.9% respondents (Goodarzi, F., Karrari, P., Eizadi-Mood, N., Mehrpour, O., Misagh, R., Setude, S., & Amrollahi, M., 2011).

The study among students aged 11 to 15 in England showed that 17% respondents ever used drugs (Fuller, 2007). Meanwhile, in Canada 20.6% of the students aged 12 to 19 years old reported using opioid analgesics at least once in 2009 with 6.2% using exclusively nonmedically and 14.4% using nonmedically and medically (Brands, Paglia-Boak, Sproule, Leslie, & Adlaf, 2010).

Data from United Nations Office on Drugs and Crime (UNODC) showed that in the last five years, the use of ecstasy decreased about 15% worldwide, while the use of amphetamine reported remain stable. However, the use of methamphetamine has been significantly increased (158%) in the last five years (UNODC, 2015). In addition, many types of synthetic drug emerged and developed in drug trafficking. In 2014, the new psychoactive substances (NPS) were reported in over 90 countries in the world, increased about 1.5 times than in 2009. These synthetic drugs emerge as new ‘legal high’ and replace the existing stimulant such as cocaine and ecstasy. The use of Amphetamine Types Stimulants (ATS) also increases globally since this drug type is also used to overcome opiate use disorder (UNODC, 2015).

2.5.2 Situation in Indonesia

In Indonesia, survey of the Indonesia National Narcotics Board (BNN) in 2017 estimated that the number of drug abusers in Indonesia was 3,367,154 people or 1.77% of the population aged 10-59 years. Based on drug case classification in 2017, there is an increasing trend of overall drug cases with the biggest increase is in number of psychotropic cases with an increase of 137.14%, which is from 1,540 cases in 2016 to 3,652 cases in 2017. Relevant with that finding, based on the classification of suspected drug cases in 2017, where the biggest increase occurred in psychotropic suspects at 135.85%, which was from 1,771 suspects in 2016 to 4,177 in 2017 (BNN, n.d.-b). Percentage of drug users in East Kalimantan Province in 2017 ranked third of 34 provinces nationwide, amounting to 2.12% of the population aged 10-59 years. Balikpapan ranked second in East Kalimantan after Samarinda for the largest drug user compared to other cities (BNN, 2017b).

Similarly with the pattern of drug abuse worldwide, the number of male drug abusers are higher in Indonesia, with the ratio about 4 to 1. In 2016, the prevalence of male ever used drugs was 6.4% and the female was 1.6% (BNN, 2017c). According to level of education, there is a trend that the higher education, the more risky them to drug abuses. The lowest number of prevalence is on junior high school, and the highest on the college. The number of prevalence in senior high school level is relatively similar to the college (4.3%). On the group of students, the biggest proportion of category is experimental drug users with the proportion of 85% in 2016. Based on the location, in 2016 the proportion of experimental drug abusers in municipal was 88%, higher than in regency (83%) (BNN, 2017c).

The vast majority of those who take drugs in Indonesia are young people, aged between 15 and 24 year old (Nasir et al., 2011). In the study of factors associated with drug abuse among clients with drugs use diorders in south Kalimantan (2014), there is an evidence that most of the subjects in this study (74%) started using drugs in adolescence, aged 11 to 20 years old (Kholik et al., 2014).

Negative effects of drug abuse were also identified by the survey of BNN. The facts revealed that only 24% of drug abusers who get academic score above average while the non drug abusers are 37% over the average. One of four drug abusers fail to the next grade (24%), while the non abusers are 10% (BNN, 2017c). These findings were relevant with that one of study finding in Nigeria which revealed that there is significant relationship between the effects of drug abuse and academic performance of secondary school students. Drug abuse caused failure in school achievement (Chikweru & Onyinyechi, 2018). The other effects include mental and behavioral disorder, disturbed daily activity, and social aggressivity (BNN, 2017c).

2.6 Drug Abuse Prevention

2.6.1 Global perspective

Drug abuse also plays a role in many major social problems, such as drugged driving, violence, stress, and child abuse. Drug abuse can lead to homelessness, crime, and missed work or problems with keeping a job. destroys families. There are different types of treatment for drug abuse but the best is to prevent drug abuse in the first place (NIDA, 2010). There are many studies have been conducted address to drug and substance abuse prevention, especially in two latest decades. Many of them emerged the principles of drug abuse prevention, as resumed by NIDA (2010) as follow:

1. To identify the characteristics and patterns of drug abuse.
2. To understand how genes, environment, and development influence the various risk and protective factors for drug abuse.
3. To improve and expand our understanding of basic neurobiology as it relates to the brain circuitry underlying drug abuse and addiction.
4. To apply this knowledge toward the development of more effective strategies to prevent people from ever taking drugs and from progressing to addiction if they do.

Schools are pivotal to the growth and development of healthy children, adolescents, and young adults. Young people spend large portions of theirlives in schools (Fertman & Allensworth, 2010). It is possible, and desirable, for schools to be concerned with drug abuse prevention, with the major focus on demand reduction. Schools may well be able to influence drug use behavior. However, There is a growing body of research showing that many interventions aimed at preventing the initiation of drug use (or the potential transition to drug use disorders) can be effective if they address the different personal and environmental vulnerabilities of children and young people and also factors that are largely beyond a person's control (UNODC, 2015).

A meta-analysis about the effectiveness of interactive school-based drug abuse prevention was done by Lize et al. (2017) toward 30 interventional studies from 1998 to 2014 in North America. This study concluded that the random effects pooled effect sizes for marijuana use was significant ($p<0.01$), while effect sizes for intention to use and refusal skills were not significant. This study was also indicated significant differences in program effectiveness based on instructor types, where teachers were most effective ($p=0.02$) (Lize et al., 2017).

An interventional study using computer-based drug abuse module in 21 secondary schools in Australia (2014) found that the intervention was effective in decreasing cannabis use among students who received the program rather than students who received drug education as usual. The use of computer technology as an innovative platform for the delivery of drugs prevention program in school setting was been suggested (Vogl, Newton, Champion, & Teesson, 2014). The previous

interventional study in America (2012) revealed that the addition of secondary prevention program which supplements the primary classroom-based drug abuse prevention program significantly lowering odds of alcohol use among 7th grade students who participated in the program (difference=-0.55, t=-2.32) compared to the non-participating students (Marsiglia, Ayers, Gance-Cleveland, Mettler, & Booth, 2012).

The more technologically advanced interventional study was conducted in Australia (2018), where a cartoon storyline module about ecstacy and new psychoactive substances delivered by online using internet to 714 secondary students from 5 schools. This intervention involved teachers as the facilitator of the program. The results of this study showed that students in the control group, who received drug abuse prevention program as usual, significantly more likely to intend on using synthetic drugs compared with students in intervention group (OR=3.56, p=0.01) (Champion, Newton, Stapinski, & Teesson, 2018).

The other school-based drug abuse prevention studies addressed teachers was done by Dusenbury et al. (2010), Al-Zboon (2017), Hodder et al. (2017), Giannota & Weichold (2016), Butzer et al. (2016), Onrust et al. (2016), Giles et al. (2011), Sanchez et al. (2017), Kellam et al. (2014), Hanley et al. (2009), Hansen et al. (2009). Almost all of these studies revealed the significant effects of school-based drug abuse prevention and the importance of the teachers' role in the program (Al-Zboon, 2017; Butzer, LoRusso, Shin, & Khalsa, 2017; Dusenbury et al., 2010; Giannotta & Weichold, 2016; Giles et al., 2009; Hanley et al., 2009; Hansen, Hanewinkel, Maruska, & Isensee, 2011; Hodder et al., 2017; Kellam et al., 2014; Onrust, Otten, Lammers, & Smit, 2016; Sanchez et al., 2017).

2.6.2 Situation in Indonesia

2.6.2.1 Non-school based prevention

In Indonesia, the evidence-based study about drug abuse prevention program was very limited. The efforts made by the government have been in the form of prevention and eradication of illicit drug trafficking programs. The government categorizes drug abuse and trafficking as an extraordinary crime. The activities to prevent drug abuse in the community setting including seminar, workshop, performances, arts and cultural festivals, community empowerment and community training. Efforts to involve the private sector have also been carried out by the government. Each company must make an active effort to prevent and eradicate drug, psychotropic and other addictive substances abuses in the workplace in the form of policies and implementation of prevention programs at work (BNN, 2017a).

2.6.2.2 School-based prevention

The results of the BNN survey showed that drug prevention programs in the school setting that existed in Indonesia according to student respondents were lectures,

discussions, films, seminars, anti-drug task force training, campaigns in general and pamphlets. Police institution was the institution that was considered the most appropriate for making drug prevention efforts, followed by BNN, schools and others. There was no specific intervention program aimed at teachers as parents of students at school (BNN, 2018b).

2.7 Factors Influence Practices in Drug Abuse Prevention

2.7.1 Knowledge about drug abuse and the prevention

As far as the knowledge of researchers, there were no many studies on teacher practices in preventing drug abuse and the factors that influence them. The study about the importance of appropriate knowledge about drugs among physical education students and teachers who work in health clubs was done in 2013. In this cross-sectional survey study, 117 students and 87 teachers were investigated using questionnaire. A total of 31.6% respondents have already used Anabolic-Androgenic Steroid (AAS). The main reason (75.6%) of the respondents for using AAS was to have an ideal body shape. Based on these findings, the knowledge aspect was very importants, so that this study lead us to call for the intervention of educational program that aimed to educating youth about the dangers of drug abuse (Stefanie & Souza, 2013).

Quiroga et al (2017) in his study explained that teachers play an important role in the learning process at school. Aside from being a mentor, the teacher is also required to help develop the students. Alcohol consumption and drug use, which are very easily accessible to students. While adolescence is one phase that will surely pass every human being. In that phase, adolescents are vulnerable to the search for their identity. Therefore, every teacher is required to have good knowledge in fostering social relations between students in order to prevent students from doing negative things, especially consuming alcohol, and drug abuse (Quiroga et al., 2017).

Hansen et al. (2009) studied about the impact of technological enhancements toward teachers' attitude in delivering drug abuse prevention program in U.S. This study revealed that teachers who used the enhancements found it easier to implement the program compared to others who delivered the program as usual. Furthermore, teachers' attitude about the program improved after experienced the enhancements and the majority of teachers wishing to continue using them in the future (Hansen, Bishop, & Bryant, 2009).

One of the most important education to be included in the curriculum is a drug abuse prevention program. Through this program, students are expected to be able to understand the dangers that will be caused when abusing drugs. Another hope is that students can stay away from drugs. This drug abuse prevention program can be realized in schools if the school has leaders who are able to innovate towards the

times. Innovating towards the development of the era in question is that the school is more open to change and transformation. Innovating curriculum means proposing diverse activities to integrate various aspects of student development. These results indicate that drug abuse prevention programs offer better content (Pereira & Sanchez, 2018).

Principals and teachers are strong partners for the success of the program. When they take the time and effort to implement a program on preventing drug abuse, they want students have a positive experience results for this program. The teacher has an important role in prevention efforts. When students consider the teacher to be a role model that is highly respected by students, the teacher can educate them about how to identify various types of drugs, and the dangers of using drugs (Bonn, Chie, Tam, Khairuddin, & Dang, 2016).

For the conclusion, in the context of drug abuse prevention, teachers' approach must be that of a guide, facilitator, counsellor and trusted adult for students.Teachers can be an important part of enabling and reinforcing factors for the students drug preventive behavior. Sufficient knowledge about drug and drug abuse is needed for teachers to play their role as a part of enabling factors for students, as well as attitude and practice of drug preventive behavior for their role as a part of reinforcing factors and good models for students.

2.7.2 Teachers' beliefs about drug abuse and the prevention

The previous research about association between perceived school climate and teachers' beliefs with implementation of the Positive Action Program in school setting showed that teachers' perceptions about school climate were directly related to the teachers' beliefs about prevention (standardized $\beta 1=0.61$ for year 2, and 0.34 for year 3). School climate was also significantly related to school-wide material usage (0.31 year 2, 0.25 year 3). These findings suggested that in order to ensure teachers implement the program with fidelity, school climate and teachers' beliefs about the importance of prevention program should be supporting. If school climate and tachers' beliefs were not supporting, they will be barriers for the prevention program (Beets, Flay, & Vuchinich, 2008).

Health behaviors, as important part of modifiable determinants of health, are consistently targeted by prevention effort. Teachers, as educators and role models, may play a key-role in bringing such messages to children and adolescents Teachers is not only as learned community, but also as educators, which have obligation to promote healthy behaviors, for themselves and their students (Gilbert, Richard, Lapie-Legouis, Beck, & Vercambre, 2015). However, Gilbert et al. (2015) then also explained that the reference available on teacher's health behaviors is scarce and inconsistent. For example, some studies on tobacco use have found a lower smoking prevalence in teachers compared to the general population, whereas other studies did not. Overall, indicators of health behaviors that have been considered were

inconsistently defined across studies and comparison groups have been heterogeneous.

2.8 Health Belief Model

The effective health education should be based on the appropriate health theory (Glanz, Rimer, & Viswanath, 2008). Theory is used for two purposes, those are providing the conceptual basis on which the program will be built and guiding the process of planning, implementing, and evaluating the program (Fertman & Allensworth, 2010). Furthermore, Glanz et al. (2008) explained that in order to selecting the suitable theory should be initiated with identifying the problem, goal, and units of practice.

In the context of individual health behavior as units of practice, in the 1950s, Rosenstock, Hochbaum, and others began their pioneering work to understand why individuals did or did not participate in screening program for tuberculosis in United States. This work created the development of the Health belief Model (Glanz et al., 2008). Manoj and Romas stated that Health Belief Model (HBM) is one of the first theories developed exclusively for individual health-related behaviors (Manoj & Romas, 2012). This is one of the longest established theoretical models designed to explain people's health behavior by understanding their beliefs about health (Cragg, Davies, & Macdowall, 2013). Glanz et al. stated that HBM is the one of the most commonly used health behavior theories and models since 1986 to 2005 in addition to Social Cognitive Theory, Theory of Planned Behavior, the Transtheoretical Model, Social Support and Social Networks, Community Organization, Diffusion of Innovation and others (Glanz et al., 2008).

Sharma (2011) reflected on the health belief model and its use in alcohol and drug education. He suggested that the model meets all the criteria for a behavioral theory. He argued that while the model does have limitations, it can be effective for alcohol and drug education interventions and must be used for designing interventions for alcohol and drug education. Furthermore, Sharma stated that health belief model has been utilized in alcohol and drug education to some extent. Hingson and colleagues used HBM to study beliefs about alcohol and drugs use, and unprotected sex in adolescents. Hahn used HBM to examine differences between parent alcohol and other drug users and non-users as related to health beliefs. Minugh et al. was also used HBM to study the relationship between health beliefs, health practices, and alcohol use among men and women. Welch used HBM for studying factor of substance abuse among HIV patients. Von & colleagues used HBM to predict smoking, alcohol, and other behaviors among students (Sharma, 2011).

In this present study, researcher viewed Health Belief Model as the most appropriate theoretical model to be used as conceptual basis of the educational intervention to promote teacher's health behavior. All of the constructs in HBM were suitable to explain teacher's individual health preventive behavior, the likelihood to take action,

and giving a theoretical guidance in developing intervention to improve this behavior.

According to this model, if individuals regard they are susceptible to a condition, believe that condition would have potentially serious effects and consequences, believe that the action would be beneficial in reducing either their susceptibility to or severity of the condition, and believe that the benefits of taking action outweigh the barriers (or costs of) action, they are likely to take action suggested that they believe this action will reduce their risks for getting problems (Glanz et al., 2008).

Figure 2.2 shows the interaction between several elements in the HBM. In many studies conducted between 1974 and 1984, perceived barriers is the most significant variable for explaining and predicting health-related behavior and perceived severity is the least significant variable. Health educators may find the HBM helps them to understand which people perceive themselves to be susceptible to a particular health problem and so to target their educational activity better. This is the most current evidence available as there has not been an updated evidence review of HBM studies since 1984,. A newly review would help to confirm and/or modify these conclusions (Glanz et al., 2008).

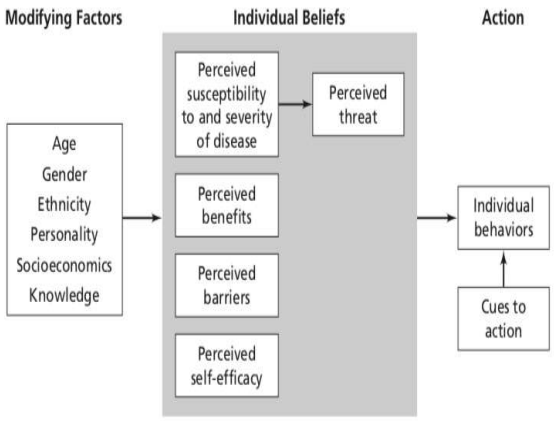

Figure 2.2 Health Belief Model
(Source**:** Glanz et al., 2008)

2.9. Health Belief Model Studies on Drug Abuse Prevention

A lot of studies have applied Health Belief Model (HBM) in various health behavior to explain or to predict individual' health behavior. However, not many studies applied HBM in relation to drug abuse and the prevention. Wye et al. (2010) investigated the perceived benefits, barriers and support among staff towards total smoking ban in a large inpatient psychiatric hospital in Australia. This cross-sectional study attended 183 clinical and non-clinical staff as respondents. Of the 33

statements regarding perceived benefits and barriers to a successful smoking ban, 11 were found to be significant at $p < 0.01$. These statements were improve patient physical health, improve working conditions, help staff stop smoking, help patients stop smoking, makes the unit safer, increase patient quality of life, improve patient mental health, increase the quality of care, smoking bans aren't sustainable, and lack of staff knowledge. Respondents who believed a smoking ban would help patients to stop smoking were approximately 23 times more likely to support a smoking ban in their units than those who did not hold this view ($p = 0.001$). According to the finding that more than half of respondents indicated a lack of knowledge to provide care in the context of total smoking ban, this study recommended the provision of health education with specific issues in smoking cessation to clinical and non-clinical staff in the hospital ("Total smoking bans in psychiatric inpatient services: a survey of perceived benefits, barriers and support among staff," 2010).

Allahverdipour et al. (2007) assessed determinant behavioral factors for drug abuse among high school students in Tehran, Iran. This survey study involved 176 public high school students, which completed a researcher-designed questionnaire individually. The results showed that self-control, perceived self-efficacy, and perceived susceptibility were related to attitudes against substance abuse (r squared = 0.27; $F = 9.09$; $p < 0.001$). These findings confirmed the protection motivation theory by Rogers (1975) which stated that if individual exposed with fear arousing messages, the two potential appraisal will be initiated, one of the threat and one of the efficacy of the intended response (Allahverdipour et al., 2007)

Sharifirad et al. (2014) conducted a cross-sectional study involved 382 male pre-college students in Isfahan, Iran, to examine the association between constructs of HBM and cigarette smoking. The results of this study stated that there were significant differences in perceived susceptibility ($p=0.03$), perceived benefits ($p=0.002$), perceived self-efficacy ($p<0.001$), and cues to action ($p=0.007$). Furthermore, chi-square test analysis showed that the smoking status of the students was significantly associated with smoking status of the family members ($p < 0.05$). These findings suggested that most of the constructs of HBM can be incorporated when examining the predictors of smoking behavior and developing smoking prevention programs among pre-college students (Sharifirad et al., 2014). The other study related to predictors of smoking behavior among secondary high school students in Iran (2017), there were found that structure of attitudes and self-efficacy are the strongest predictors of smoking among students with each P value of < 0.001 (Mohammadi et al., 2017).

Ilika et al. (2015) evaluated high-risk behaviors among female drug users based on Health Beliefs Model. This cross-sectional study involved 106 women with drug-use disorders in Iran. Results showed that level of education was significantly correlated with susceptibility ($p= 0.007$) and perceived of barriers ($p=0.014$). The higher the study level was, the more susceptible perceptions about drug and the more in perceived barriers (Ilika, Jamshidimanesh, Hoseini, Saffari, & Peyravi, 2015).

Bonar & Bohnert (2016) examined association between constructs of HBM with overdose history among Injection Drug Users (IDUs) attending NEP (Needle Exchange Programs) in the United States. This cross-sectional study involved 91 IDUs which aged 18 or more and experiencing overdoses at least once per-week during previous three months. Results of analysis showed that the older current age was significantly positively associated with number of overdoses (r=0.24). Moreover, higher perceived of overdose was associated with having fewer overdoses (r=-0.34). Negative binomial regression analysis showed that non-caucasian race was significantly associated with experiencing more overdoses ($p < 0.01$), while perceived susceptibility was also significantly associated with more prior overdoses ($p < 0.05$). Although this is a cross-sectional study, the two health beliefs findings are consistent with the hypothesis that health beliefs are factors that could influence IDUs' intentions to use overdose-related risk-reduction behaviors (Bonar & Bohnert, 2016).

In this present study, researcher assumed that teachers' knowledge and beliefs were influential factors of teachers' preventive behaviors. The modifying of teachers' knowledge and beliefs about drugs and drug abuse prevention assumed will improve teachers' practice of drug preventive behaviors.

2.10 Learning Module

Learning module is one form of teaching materials that are packaged in a systematic and interesting form, so easy to learn independently. Anwar (2010), stated the characteristics of the learning module as follows:

1. Self instructional, learn yourself, not depend on the other party.
2. Self contained, all learning materials from one unit of comp etency learned in one module intact.
3. Stand alone, developed modules are not dependent on other media or should not be used together with other media.
4. Adaptive, the module should have high adaptive power to the development of science and technology.
5. User friendly, the module should also meet the familiar rules of friendly/ familiar with the learner.
6. Consistency, consistent in the use of fonts, spacing, and layout.

2.10.1 The advantages of using modules

Learning using the module is very useful, learners can be responsible for their own learning activities. Learning with module highly appreciate individual differences, so that learner can learn in accordance with the level of ability (Anwar, 2010).

2.10.2 Electronic module

The development of information and communications technology towards the end of the 20th century has gradually shifted the Guttenberg era with its printing press and replaced it with the digital era. Information and publications that were originally documented and disseminated through paper sheets are now beginning to use electronic media as an alternate substitute. In the world of education, the utilization of information and communication technology in learning is known as e-learning. E-learning refers to learning by using electronic devices (Soekartawi, 2003).

One form of presentation of learning materials in digital or electronic format is an e-book. This electronic book or commonly known as e-book is the display of information or manuscript in book format recorded electronically by using hard disk, floppy disk, CD, or flash disk and can be opened and read by using computer or electronic book reader (e-book viewer or e-book reader) (Sitepu, 2006). The development of this e-book technology encourages the integration of printing technology with computer technology in learning activities. Various print media, one of which module, can be transformed its presentation into electronic form, so that create a new term electronic module or known as e-module.

According to Saputro (2009), comparing with printed module, electronic module has some advantages. Production cost of an electronic module is cheaper than a printed module, as well as no additional cost to reproduce it. The delivery or distribution process can be done easily by using e-mail, easy to carry everywhere no matter how many pages are there. Electronic module also more durable and not rotting with time.

In the descriptive study about the importance of e-book among university students in Kenya (2016), there were found that graduate students have a very clear understanding and awareness of e-books (mean=3.889, SD=1.129, CV=0.290). It also showed that ease of access and use of e-books improves students' interest (mean=3.63, SD=1.196, CV=0.330), there was user satisfaction with e-books (mean=3.716, SD=1.2787, CV=0.346). The conclusion of this study that technological factors are important in enhancing the effectiveness of access and usage of e-books as a mode of access to scholarly information (Mwanzu & Rodrigues Wendo, 2016).

The other studies showed that electronic books was better than paper books to influence reading comprehension (Dillon & Gabbard, 1998). On the other hand, the other studies found that paper books was better than electronic books in the same manner (Jeong, 2012). Macedo-Rouet et al. (2003), and Kang et al. (2009) found that there were no significant difference between electronic and paper books effects on reading comprehension (Dillon & Ralph Gabbard, 1998; Jeong, 2012; Kang, Wang, & Lin, 2009; Macedo-Rouet, Rouet, Epstein, & Fayard, 2003)

This present research analyzed the effects of electronic book in the experiment group and printed or paper book in the control group on teachers' knowledge, beliefs and practices in drug abuse prevention. Furthermore, researcher also studied the comparation of effects between experimentand control groups.

2.11 Conceptual Framework

Figure 2.3 shows the conceptual framework of this study. The figure describes that practices of drug preventive behavior is influenced by the socio demographic factors. Teachers' knowledge about drug abuse and the prevention can affect their beliefs about drug abuse and the prevention. The Health Belief Model (HBM) was used as a guide in the development of intervention module in this study. The objective of intervention was to improve teachers' practices in preventing drug abuse by utilizing the components of HBM model. The model suggests that change in health preventive behaviors are based on perceived susceptibility, severity, benefits, barriers, and self-efficacy.

Based on HBM teachers who believe that their students are susceptible to abusing drugs and feel that is srious condition are more likely to do drugs preventive behaviors. Moreover, teachers who perceive more benefits from drugs preventive behaviors and fewer barriers are more likely to practice these behaviors. Furthermore, those teachers who are more confident in their ability to do drugs preventive behaviors more likely to practice these behaviors.

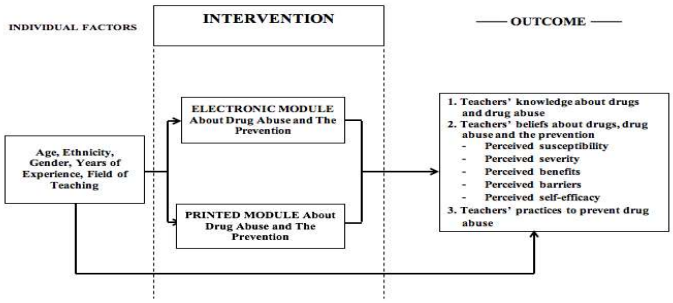

Figure 2.3. Conceptual Framework of study