THE EFFECT OF METHADONE MAINTENANCE TREATMENT IN IMPROVEMENT OF QUALITY OF LIFE FOR HEROIN USERS IN HAI PHONG CITY, VIETNAM

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ABTRACT

To determine the effectiveness of methadone maintenance treatment (MMT) on the lives of heroin users, this study aims to assess improvement in quality of life (QoL) among heroin users who enrolled for 6 months in MMT. A cohort study was conducted at 3 clinics in Hai Phong city. The QoL of heroin users was measured by the WHOQOL-BREF 26 item version and separated into 4 domains (physical health, psychological health, environment, and social domain). This study used paired sample t-test to compare the mean of QoL scores at the baseline and at the 6 month follow-up. Four hundred and fifty eight heroin using males were enrolled in the MMT program, and 440 (96.1%) remained in treatment at for the entire 6 months. Following treatment, statistically significant improvement quality of life scores were found in all four domains ($p<0.001$).

Additionally, this study also determined individual factors affecting improvement in QoL. The major results of binary logistic regression showed improvement in QoL regardless of the heroin users' individual factors.

Emphatically, the findings point out that methadone maintenance treatment is helpful in improving the QoL for heroin users in Hai Phong city.

KEY WORDS: QUALITY OF LIFE/METHADONE MAINTENANCE TREATMENT/HEROIN USERS/HAI PHONG CITY/VIETNAM

43 pages

CONTENTS

CONTENTS (cont.)

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

AIDS	Acquired Immunodeficiency Syndrome
FHI	Family Health International
HIV	Human Immunodeficiency Virus
IDUs	Injecting drug users
MMT	Methadone maintenance treatment
MOH	Ministry of Health
MOLISA	Ministry of Labour, Invalids and Social Affair
UNODC	United Nations Office on Drugs and Crime
VAAC	Vietnam Administration of HIV/AIDS Control
WHO	World Health Organization

CHAPTER I
INTRODUCTION

1.1. Background and rationale

In recent years, drug abuse, particularly heroin, has become a significant problem in the world because of its harmful effects. In 2007, the number of people who used opiates at least once is estimated at between 15 and 21 million people at the global level. More than half of the world's population using opiate live in Asia. The highest levels of use (in terms of the proportion of the population aged 15-64 years) are found along the main drug trafficking routes close to Afghanistan. In East and South-East Asia, it was estimated that 2.8- 5.0 million persons aged 15-64 years used opiates in the past year (UNODC, 2009).

It is well known that heroin is a highly addictive drug, and its abuse has repercussions that extend far beyond the individual user. They alter the function of the human brain and have an impact on behavior (Volkow, 2005). The drug users must increase doses of heroin or choose a different use such as injection to get the same physical effect. According to recent report of UNODC (2009), the number of injecting drug in 148 countries and territories account for 95% of the world's population in 2008

When drug users become dependent to heroin or enter into a status of addiction, they will not concern themselves HIV prevention or other blood transmitted diseases. Consequently, injecting drug users (IDUs) are the main population for an increasing proportion of HIV infections in many parts of the world, including countries in Eastern Europe, South America and East and South-East Asia. HIV infection among people who inject drugs has been reported in 120 countries, and the prevalence of HIV among IDUs varies dramatically. Midpoint HIV prevalence is reported to be between 20 and 40 percent in five countries: Spain (39.7%); Russian Federation (37.2%); Viet Nam (33.9%); Cambodia (22.8%) and Libyan Arab Jamahiriya (22.0%) (UNODC, 2009).

Vietnam is a country in the Golden Triangle where the main illicit opium production site exists. As a consequence, the number of dependent heroin users are increasing in Vietnam. According to MOLISA, the total number of heroin dependent individuals in Vietnam was 146,731 people as of December, 2009. More than 80% are opiate addicts among the drug users and among those over 80% are injectors (MOLISA, 2009). Injecting drug users continue to be the main group involved in the transmission of HIV in Vietnam. It is estimated that the national level of HIV-infection among the IDUs population has been steady at around 30% since 2007 and is projected to maintain at this level until 2012 (MOH, 2009).

Although, there were many preventive programs to prevent the increase of HIV infection among IDUs such as peer education, community outreach, IEC, and needle and syringe exchange for IDUs in Vietnam but the coverage of these program has been limited. Moreover, these program have been not reduced number of heroin dependent people, therefore, it is nessesary to develop diverse and comprehensive treatment services for drug-dependent people. The objective of drug dependence treatment is the achievement and maintenance of physical, psychological and social well-being through reducing the risk-taking associated with drug use, through reducing levels of drug use, or through complete abstinence from drug use (WHO, 2005). In term of reducing heroin use, criminal activity, and protection against HIV infection, methadone maintenance treatment (MMT) has been proven an effective therapy for heroin abuse (Goldstein, et al, 1995).

In 2006, there were HIV prevention and improvement quality of life among people who enrolled in MMT due to substantial reduction heroin use. Indeed, the Vietnam Administration of AIDS Control (VAAC), Ministry of Health (MoH) began to develop a pilot program on opiate addiction treatment using methadone in two cites.

Hai Phong, is a city in the Northern region in Viet Nam with a population over 1,800,000. This city not only has the highest number of heroin dependent people but also has the highest prevalence of HIV within the IDU population. The first HIV-infected case was discovered in Hai Phong from mid-1990s. The HIV epidemic is concentrated among IDUs with prevalence nearly 60% at the end of the 1990s and remained still high in 2006 at about 40%. According to the data of Department of Labor, Invalids and Social Affairs, the number of drug users in Hai Phong was 9,500

people in 2007, among those over 75% are injectors. That is why Hai Phong was chosen to pilot methadone maintenance treatment as an intervention among IDUs. Although there have been many other studies, which have evaluated the effects of using methadone as a treatment for opiate addiction in the world (Vanaga. et al, 2004; Xiao et al, 2010), nevertheless, up to now there has never been a study interested in the effectiveness of this program among the opiate users in Hai Phong.

In the recent decades, quality of life has become an importance outcome measure in both social scientific studies and medical trial. QoL evaluation represents an assessment of the impact of maintenance treatment on addicted patient's functioning and well-being, pertaining to physical, emotional and social aspects as well as everyday life activities (Arnold et al, 2004). To determine the effectiveness of MMT on the lives of heroin users, this study aimed to assess quality of life changes among heroin users who enrolled in MMT for a period six months.

1.2. Research question:

Have heroin users improved their quality of life by methadone maintenance treatment?

1.3. Objectives

1.3.1. Ultimate objective

To help program administrators to understand the effectiveness of using methadone maintenance for heroin users in Hai Phong city, Vietnam

1.3.2. Immediate objectives:

To assess the improvement in quality of life for heroin users after 6 months of Methadone Maintenance Treatment

To determine factors affecting the improvement in quality of life among heroin users who entered Methadone Maintenance Treatment

CHAPTER II
LITERATURE REVIEW

2.1. Quality of life (QoL)

2.1.1. Definition and concept of quality of life

Quality of life has been studied worldwide for several decades with many definitions related to quality of life. Gotay et al., (2005) defined QoL as a state of well-being which is a composite of two components: the ability to perform everyday activities which reflect physical, psychological, and social well-being and patient satisfaction with level of functioning and control of disease and/or treatment related symptoms. According to the Lipscomb's definition (2005) quality of life is an experience that makes life meaningful and the conditions that allow people to have experiences. (Lipscomb et al, 2005)

The World Health Organization states that quality of life is defined as an individuals' perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectation, standards, and concerns. It is a broad concept affected in a complex manner by a person's physical health, psychological state, level of independent, social relationships, personal beliefs and their relationship to salient features of their environment. (WHO, 2004)

2.1.2. Measurement of quality of life

QoL measurements range from the broad level of community well-being to the evaluation of a single individual in specific contexts. Cummins (1996) found more than 100 instruments measuring and defining QoL in different ways. The instruments may be global, generic or specific. Deciding which to develop will be dependent on the aims, methodological concerns, and practical constraints of the investigation (Vanagas et al, 2004)

Global measures are those designed to measure quality of life in the most comprehensive or overall manner which may be a single question that asks the person to rate his/her overall life quality.

Generic QoL measures have much in common with global measures and were designed primarily for descriptive purposes. In health care they try to delineate full impact of a disease or its symptoms on the patient's life. Generic measures summarize a spectrum of domains and dimensions of health that apply equally and broadly to diverse conditions or populations, and usually contain the domains of physical, mental, and social health and are applicable to a wide range of populations. (Vanagas et al, 2004)

Specific measures were developed to monitor the response to treatment or to detect small, meaningful changes in specific conditions to which generic measures may be insensitive (Mendlowics, 2000). They can be divided as disease or population specific and dimension specific measures.

In many situations all types of QoL measures are of value and can be used in combination to facilitate the investigator's ability to compare between populations (generic) and identify specific areas of problems for different patient groups (disease or dimension specific). Several validated generic and specific instruments can be regarded as adequate QoL measures for drug addicted patients (Vanagas et al, 2004). Guyatt and others (1993) notes that there were two basic approaches to quality of life measurement such as generic instrument that provide a summary of health-related QoL, and specific instruments that focus on problems associated with single disease states, patient groups or areas of function (Guyatt et al, 1993)

The WHOQOL is one generic instrument can form part of the evaluation of treatment. By using the WHOQOL instrument to look at changes in the person's well being over the course of treatment, a much fuller picture can be gained (WHO, 1997).

2.1.3. Relevant conceptual model of QoL

Zhan. (1992) developed a model of quality of life which is a multi-dimensional concept that cannot be completely measured by either subjective or an objective approach. She identified dimensions of QoL as life satisfaction, self concept,

health and functioning, physical well-being, and social-economic factors. According to this model, QoL is also influenced by one's personal background, social situation, culture, environment and age (Zhan, 1992).

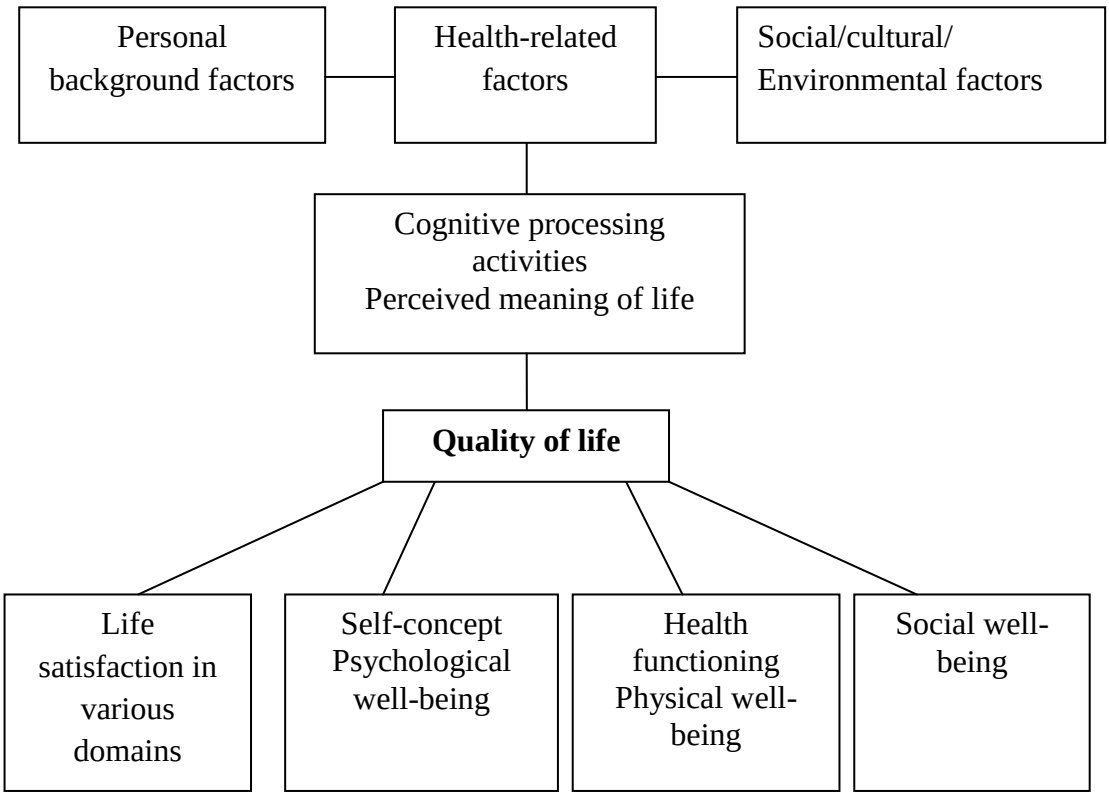


Figure 2.1: Conceptual model of Quality of Life

Source: Zhan L. Quality of life: Conceptual and measurement issues: Journal of Advanced Nursing 1992; 17: 795-800

Mental health (psychological) is described by WHO as an integral component of health, and as a state of well being in which the individual realizes his or her own abilities, can cope with normal stresses of life, can work productively and fruitfully and is able to make a contribution to his or her community. Physical health is viewed as an objective indicator of the QoL and it is measured according to daily living activities, pain and discomfort, sleep and rest, and work capacity. Social relationships include facets such as personal relationships, social support and sexual activity. Environment refers to aspects of financial resources, freedom, physical safety and security, transport (WHO, 2005).

2.2. Heroin

2.2.1. Definition of heroin:

Heroin is a form kind of morphine synthesis which acts mainly on special receptors in the brain. The body's natural way of responding to this excess of opiates is to reduce the number of opiate receptors in the brain. As a result, heroin users use larger and larger doses or change the way they use such as injection leading to dependence on heroin **(**Levelle, 2003). Heroin dependence is a chronic relapsing condition characterized by compulsive self-administration of heroin despite adverse consequences (Brown, 2004)

2.2.2. Harmful effect of heroin on quality of life:

People who are dependent on heroin often lead extremely stressful and chaotic lives, and frequently experience serious health social problems as a result of their dependence (Health Canada, 2002). There are many harmful effect of heroin use such as physical, mental health problems, and social problems.

In term of physical health problems, drug users have higher rates of morbidity and mortality than people of the same age who do not use drugs because they are at high risk of premature death from accidental drug overdose and drug-related violence. Moreover, drug injection is also a significant risk factor for infectious disease transmission, especially HIV and hepatitis (A, B, C).

Heroin-dependent users also present metal health problems such as anxiety, personality disorders, and depression.

Social problems linked to drug consumption are not limited to users themselves: family dysfunction, violence, and crimes are all complications associated with illicit drug use **(**Health Canada, 2002; Carsley, 2005)

2.3. Methadone

2.3.1. The impact of methadone

Methadone works by alleviating the symptoms of opioid withdrawal. A stable and sufficient blood level of methadone is about 24 – 36h, and can reduce

individuals craving for heroin. This lead to a decrease in number of times seeking out buying, and using heroin for drug users (Ward, 1999; Health Canada, 2002)

2.3.2. The effectiveness of methadone on quality of life

A review of several studies indicates that methadone maintenance treatment is consistently associated with improvement in quality of life for opiate users. Joseph and others found that methadone maintenance reduces and/or eliminates the use of heroin, reduces the death rates and criminality associated with heroin use, and allows patients to improve their health and social productivity. In addition, enrollment in methadone maintenance has the potential to reduce the transmission of infectious diseases associated with heroin injection, such as hepatitis and HIV (Joseph et al., 2000).

According to Xiao L and others, they were compared quality of life for drug addicts in MMT clinics, communities, and compulsory detoxification institutions (CDI). They found that MMT and compulsory detoxification might be beneficial to quality of life for drug addicts, and MMT contributes most. In another study, he explores the quality of life (QOL) changes in MMT clinic outpatients in the first 3 months of treatment. He notes that physical health and mental health improved significantly during the second and third month using methadone, whereas social and environment scores did not significantly improve. He concluded that MMT is helpful in improving the QoL of outpatients in MMT clinics in China (Xiao et al., 2009; Xiao et al., 2010). Consistently with study in Lithuania, MMT have effect improvement psychological health, psychological health and environmental after 6 months, but no statistically significant improvements were found in social QoL (Padaiga et al., 2007)

Based on another study, the purpose of this study is to assessed the quality of life (QoL) of heroin users starting and following a 4 or 8 months MMT program using buprenorphine and methadone. The results of this study show beneficial effects of the maintenance treatment program using both buprenorphine and methadone with regard to satisfaction of QoL and all specific life domains among heroin-dependent outpatients, with methadone having an earlier onset than buprenorphine (Ponizovsky et al., 2007)

2.4. Individual factors affecting outcome treatment

A variety of factors influence the effectiveness of MMT as described by the Office of Controlled Substances, Health Canada (2002), as they reviewed relevant individual factors affecting the effectiveness of MMT. This document notes that individual factors may affect treatment outcomes either positively or negatively. Older age was the characteristic most consistent with better outcomes, and regarding marital status, being married was associated with better outcomes. Employment status was one of the factors associated with better chance of success for patients (Health Canada, 2002). In contrast, Chen et al (2009) found that there were no specific socio-demographic variables such as gender, age, education level, marital status, or working status that could be attributed to promoting the impact of MMT. On other hand, the effectiveness of MMT was not related to socio-demographic variables.

2.5. Research hypothesis:

- There are difference quality of life between pre-treatment and after 6 months of treatment methadone for heroin users
- There are influences of individuals factors (*age, education level, marital status, employment status, duration using opiate, and HIV status)* on improvement of quality of life

2.6. Conceptual framework:

2.6.1. Methadone maintenance treatment

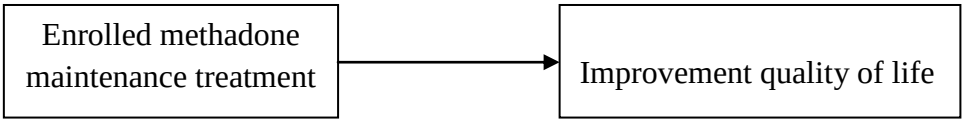


Figure 2.2. Conceptual framework 1

2.6.2. Individual factors affecting improvement quality of life

The part of the Conceptualization Model (Zhan, 1992) will be applied in this study to examine the relationship between individual factors and improvement of QoL scores among heroin users who enrolled in a MMT program for 6 months

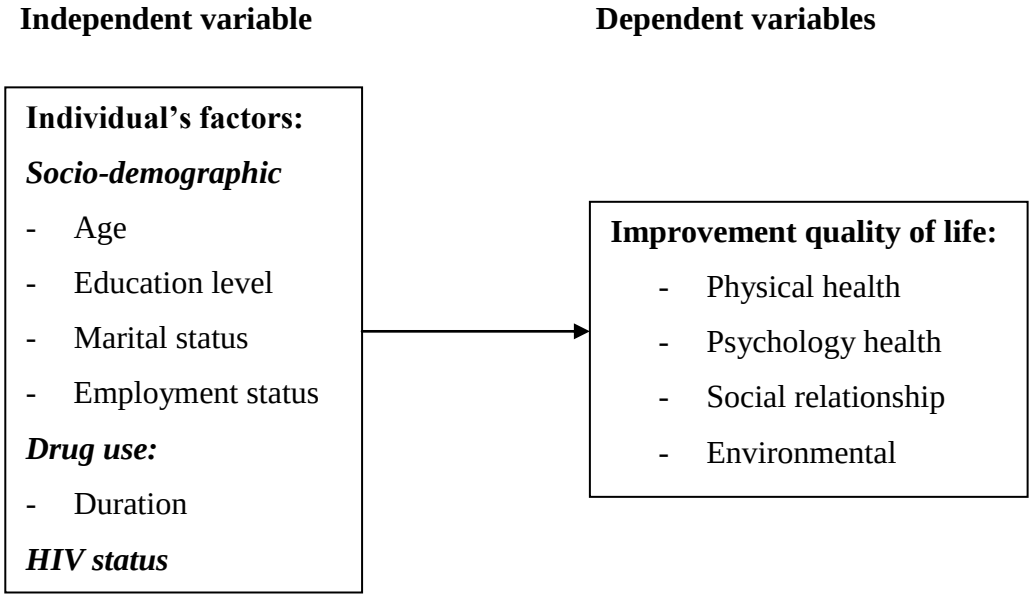


Figure 2.3. Conceptual framework 2

CHAPTER III
MATERIALS AND METHODOLOGY

3.1. Data source

The data for this study came from a cohort-study "The effectiveness evaluation of the pilot program for treatment of opiate dependence by methadone in Hai Phong city and Ho Chi Minh city". The research was conducted by the Vietnam Administration of HIV/AIDS control, Provincial AIDS in Hai Phong, Committee of HIV/AIDS in Ho Chi Minh, and Family Health International, during January and September, 2009. This study will focus on male respondents who live in Hai Phong because there were only nine respondents involved in this study. All male respondents in this study have been used heroin.

3.2. Eligibility criteria to enroll in MMT program

For recruitment into the methadone pilot program, the following eligibility criteria was used for heroin users

- Those who have been addicted for 3 years or more
- Being defined as an opiate addict according to diagnosis criteria issued by Ministry of Health
- No less than 18 years old at the date of enrollment
- Being mentally-aware and able to provide informed consent.

3.3. Eligibility criteria to enroll in the research

Participants enrolled in the MMT program have the following eligibility criteria:

- Volunteer to participate in the study;

- Currently reside in HCMC or Hai Phong with no plan to move out of the city within next the 12 months;
- Currently not be participating in any other HIV prevention/ drug abuse programs;
- Not currently using any other drug detoxification method;
- Have no other serious medical condition that requires hopitalization or extensive medical care; and,
- Not on probation or awaiting sentence for a crime.

3.4. Research instrument

The structured questionnaire was used for data collection. The same questionnaire was used to interview at baseline and follow up at 6 months treatment with methadone. There were 8 sections in this study: social-demographic, locator information, quality of life, history and current use of opiates, involvement in criminal activity, severity of addiction, injecting and sexually related behaviors, and physical health status. This study selected some questions related to quality of life and individual characteristics (age, marital status, education level, employment status, duration using opiate, and HIV status). The details are presented in the Appendix.

3.5. Sample design and size

The research recruitment process occurred on the day the MMT pilot program began. Once enrolled, participants were administered data collection forms, provide a urine, and blood sample for heroin and HIV tests. Following 6 months of MMT, there were 440 male heroin users who lived in three districts (Ngo Quyen, Le Chan, and Thuy Nguyen) in Hai Phong city. The most appropriate method for data collection was face to face interview.

3.6. Quality of life

This study used the WHO Quality of life – short version (WHOQOL-BREF) questionnaire to assess QoL at baseline and 6 month follow-up. This questionnaire comprised 26 items grouped under four domains. The items under the domains were:

- Physical health: dependence of treatment, energy and fatigue, activities of daily living, mobility, presence of pain and discomfort, sleep and rest, and perceived working capacity
- Psychological health: bodily image and appearance, affect, positive self-concept, negative feelings, higher cognitive functions, and spirituality
- Social relations: social contacts, family support, and sexual activity
- Environment: freedom, quality of home environment, physical safety and security, involvement in recreation activity, quality of health and social care, and accessibility to services

Domain scores were scaled in a positive direction with higher scores denoting higher quality of life. Summation and calculation of the mean score for each domain was completed, with the item scores ranging from 1 to 5, with a higher score indicating a better QoL on the corresponding item. Because the numbers of items are different for each domain, the domain scores were calculated by multiplying the average of the scores of all items in the domain by the same factor of 4. Thus, the domain scores would have the same range from 4 to 20. This study used the WHOQOL transformation table to calculate domain scores on a 100 point-scale. (WHO, 1998).

3.7. Operational definition of variables

3.7.1. Operational definition of dependent variables

There are four dependent variables regarding quality of life: Physical health, Psychological health, Social relationships, and Environmental domain.

Physical QoL: Physical health domain refers to opiate users' physical status in term of activities of daily living, pain and discomfort, and work capacity. There are 7 items related to physical health.

Psychological QoL: Psychological health was defined as feeling of fear, sadness, angry, worry, and trouble sleeping of opiate users. There are 6 items in psychological health domain.

***Social relationships QoL*:** Social relationships refer to personal relationships, social support and sexual activity. There are 3 items in this domain.

Environment QoL: Environment was regarding aspects as financial resources, freedom, physical safety and security, transport. There are 8 items in this domain

According to WHO guidelines, transformation of domain scores from 0 to 100 were for each domain. In this study, the data collected in 2 phases: baseline and post 6 months treatment. Therefore, quality of life was calculated in 2 phases for each domain. Changes in scores by for each domain were computed by taking the score at post 6 months, minus the score at baseline. Improvement scores of physical, psychological, social relationships, and environment were classified into two levels: "decrease or stable score" and "increase score". A "decrease or stable scores" was given for changes in score as negative numbers or a zero. An "increase scores" was given for changes of the score as a positive number.

3.7.2. Operational definition of independent variables

Age: refers to age of opiate users at the time of doing research. Age group were classified into four categories: less than 24 years old, 25 – 34 years old, 35 – 44 years old, and over 45 years old

Marital status: the current marital status of heroin users, and it was classified into three categories: single; married/remarried/cohabiting; separated/divorced/widowed.

Education level: refers to the highest completed level of heroin users that finished. That were classified into two categories: Illiterate and primary school; secondary school and higher

Employment status: refers to situation of having a job or not at the time of doing survey. This status were classified into two categories: employment; unemployment

Duration using opiate: refers to number of years that an heroin users has been used heroin. The duration were classified into three categories: less than 10 years; 10 – 19 years; and over 20 years

HIV status: refers to HIV status of opiate users at time of doing research. The status was confirmed by blood testing, and classified into two categories: negative; and positive

Table 3.1. Categories and level of measurement of variables

Variables	Categories	Level of measurement
Dependent variables		
Improvement physical QoL	Changes of physical health scores after 6 month treatment: 0 = decrease or stable scores 1 = increase scores	*Nominal*
Improvement psychological QoL	Changes of psychological health scores after 6 month treatment: 0 = decrease or stable scores 1 = increase scores	*Nominal*
Improvement social relationships QoL	Changes of social relationship scores after 6 month treatment: 0 = decrease or stable scores 1 = increase scores	*Nominal*
Improvement environment QoL	Changes of environment scores after 6 month treatment: 0 = decrease or stable scores 1 = increase scores	*Nominal*
Independent variables		
Age	1 = ≤ 24 2 = 25 – 34 3 = 35 – 44 4 = ≥ 45	*Ordinal*
Marital status	1 = single 2 = married/remarried/cohabiting 3 = separated/divorced/widowed	*Nominal*
Education level	0 = illiterate or primary school 1 = secondary school and higher	*Nominal*
Employment status	0 = unemployment 1 = employment	*Nominal*

Variables	Categories	Level of measurement
Duration using opiate	1 = ≤ 9 years 2 = 10 – 19 years 3 = ≥ 20 years	*Ordinal*
HIV status	0 = Negative 1 = Positive	*Nominal*

3.8. Data analysis:

In the empirical analysis, three statistics methods including univariate analysis, bivariate analysis and multivariate analysis are applied. Firstly, univariate analysis analyzes the frequency, percentage, mean, and standard deviation to describe individual characteristics. Secondly, bivariate analysis was used to examine the differences in quality of life for each domain between pre-treatment and after 6 months of treatment. The paired sampled t-test is appropriate for repeated measurement. Lastly, Multivariate analysis was used to determine influences on individual factors on changes in quality of life. Binary logistic regression model is appropriate to apply because the dependent variables have two categories.

3.9. Ethical aspects:

The protocol, site-specific informed consent forms, participant education and enrollment materials, and other requested documents — and any subsequent modifications — were reviewed and approved by the Institutional Review boards (IRBs) of FHI, titled the Protection of Human Subjects Committee of FHI (PHSC), and the IRB of Hanoi School of Public Health.

The Ethical Committee of Hanoi School of Public Health serves as PHSC for many studies, which have been conducted by local institutions including the Ministry of Health and the Vietnam Administration of AIDS Control.

3.10. Limitation of study

The study reflects characteristics of heroin users who enrolled in an MMT program, therefore, the data in this study should not be taken as representative of the whole heroin users population in Hai Phong city.

CHAPTER IV
FINDINGS AND DISCUSSION

The results of data analysis are presented in three sections: univariate analysis, bivariate analysis and multivariate analysis. The univariate section provides an overview of characteristics of male opiate drug users who enrolled in MMT programs. The bivariate analysis section shows whether the QoL scores changed in the 6 month follow-up phase compared to those in the baseline phase. The multivariate section shows the determinants of change in QoL scores.

4.1. Univariate analysis

There were 458 male heroin-dependent users in the MMT program. After 6 months, there were 440 males that remained, while 18 male participants approximately 4.1 percent dropped out of the program.

Individual characteristics such as age group, level of education, marital status, duration using heroin and HIV status of heroin-dependent users are presented in Table 4.1. The majority of participants were in the age group of 25 – 34 years old which accounted for 46.8 percent, followed by the participants in the age group of 35 – 44 and over 45 years old 33.9 and 10.7 percent respectively. The mean age of participants was 34 years. Approximately 45 percent of participants had never been married and the percentage of participants who had married or re- married was 41.6 percent.

Nearly half of respondents (46.6%) had completed high school and over, followed by secondary school (44.3%), while about 9% reported no education and primary school. Rate of unemployment among heroin-dependents was 32.5 percent.

Regarding duration of using heroin, about 45 percent of respondents used less than 9 years, 36.6% used 10-19 years, and 18% used more than 20 years. Percentage distribution of HIV status among heroin users shows that there were 27.6 percent of participants who have positive HIV infection, and 72.6 percent of respondents who have negative HIV infection.

Table 4.1: Percentage distribution of characteristics among opiate drug users who enrolled methadone maintenance treatment program

Variables	Frequency	Percent
Age		
- <= 24	38	8.6
- 25 – 34	206	46.8
- 35 – 44	149	33.9
- >= 45	47	10.7
- *Total*	*440*	*100.0*
Mean		34±7.5
Marital status		
- Never been married	192	43.6
- Married/re-married/cohabiting	183	41.6
- Separated/divorced/widowed	65	14.8
- *Total*	*440*	*100.0*
Education level		
- Illiterate/primary school	40	9.1
- Secondary school	195	44.3
- High school and over	205	46.6
- *Total*	*440*	*100.0*
Employment status		
- Employment	247	67.5
- Unemployment	193	32.5
- *Total*	*440*	*100.0*
Duration using opiate		
- <= 9 year	199	45.2
- > = 10 – 19	161	36.6
- >= 20	80	18.2
- *Total*	*440*	*100.0*
Mean		11.7 ±8.4
HIV status*		
- Negative	309	72. 6
- Positive	117	27.5
- *Total*	*426*	*100.0*

**Missing 14 cases*

4.2. Bivariate analysis

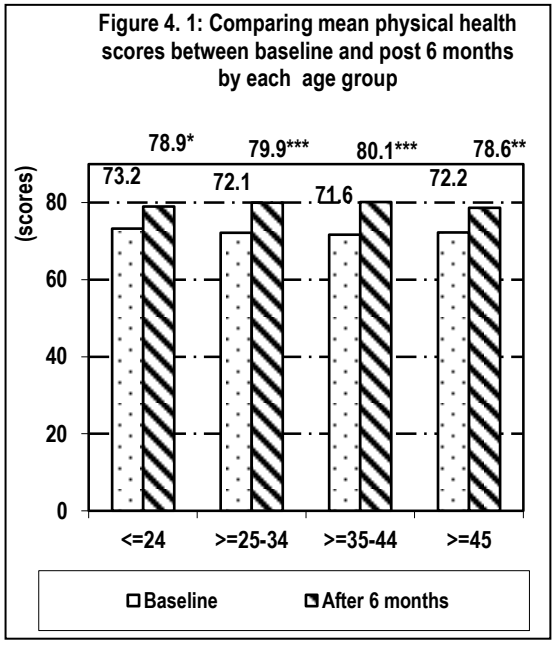
Table 4.2: Comparisons of QoL among heroin users between baseline and 6 month follow-up MMT

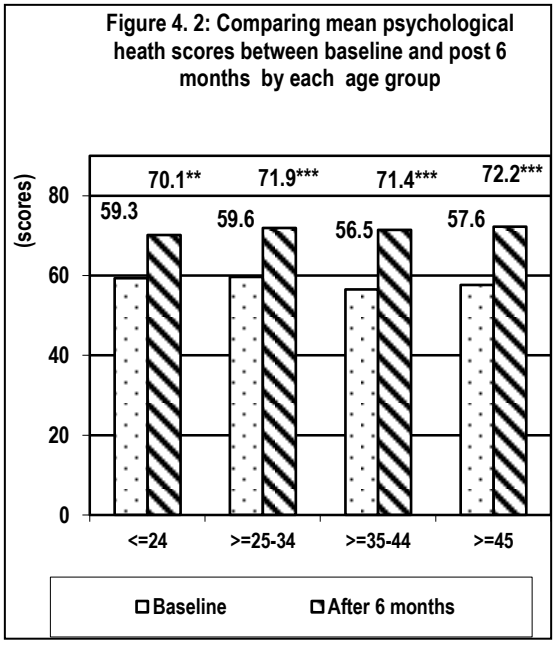
Figure 4.2 indicates that the different QoL scores of respondents includes four domains physical, psychological, social, and environmental between at pre-treatment and after 6 months.

Variables	Baseline	6 months follow-up	Comparison of mean score	
			t	P value
Physical QoL	72.06 ± 11.9	79.72 ± 9.29	10.56	< 0.001
Psychological QoL	58.38 ± 14.3	71.66 ± 9.98	16.57	< 0.001
Social QoL	51.93 ± 13.5	55.87 ± 12.2	4.72	< 0.001
Environmental QoL	57.54 ± 9.46	65.41 ± 8.33	13.56	< 0.001

Following 6 months of MMT, figure 3.2 shows the significant improvement in physical health QoL, psychological health QoL, social QoL and environment QoL ($p<0.001$). The average of psychological health score increased more than other components of QoL after 6 month follow-up. Conversely, the mean score of social QoL increased less than other domains of QoL.

Based on the results, we can conclude that patients under methadone maintenance treatment had statistically significant improvement in quality of life in all domains.



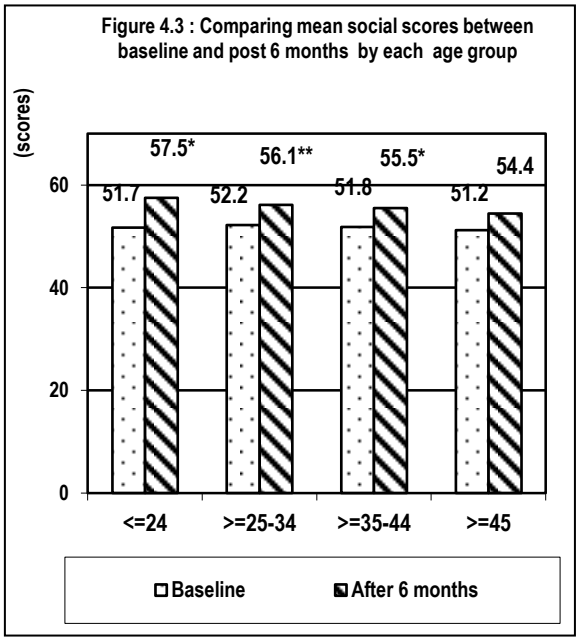


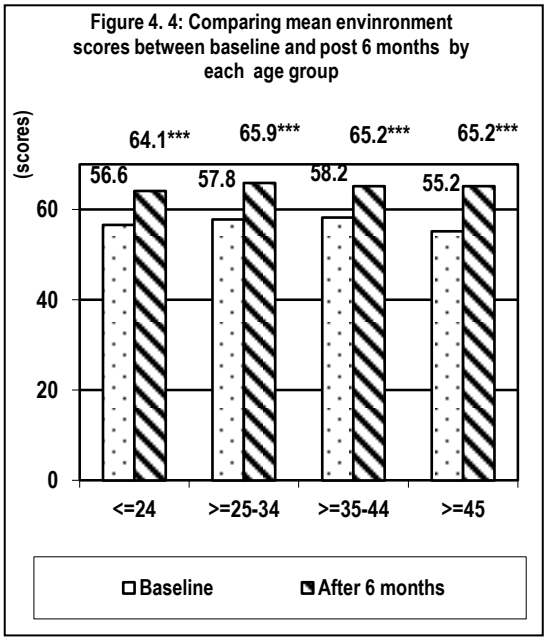
*p<0.05; **p<0.01; ***p<0.001

Figure 4.1 illustrated change in mean physical QoL scores by each age group. The physical health QoL score of respondents who are younger than 24 years had increased significantly from a score of 73.2 at baseline to 78.9 at 6 months follow-up at the 0.05 level. A significant difference in average number of physical health QoL scores was found between baseline and post 6 months among 35 – 44 aged group (72.2 scores and 78.6 scores respectively). Regarding age group over 45 years old of respondents, the mean physical health QoL score were higher than the score at baseline. It seems that the increases in physical health QoL scores of patients aged 25 – 34 and 35 – 44 were higher than those of other age groups.

Similarly, figure 4.2 described changes in psychological health QoL score by each age group. The average score of psychological health at baseline among participants who are younger than 24 years were lower than the score after 6 months, with this difference statistically significant at 0.001 level. Figure 2 also shows that the psychological health QoL of respondents aged 25 – 34 and 35 – 44 increased more than other respondents.

In summary, the improvement in physical health score and psychological health score after treatment in all age group.



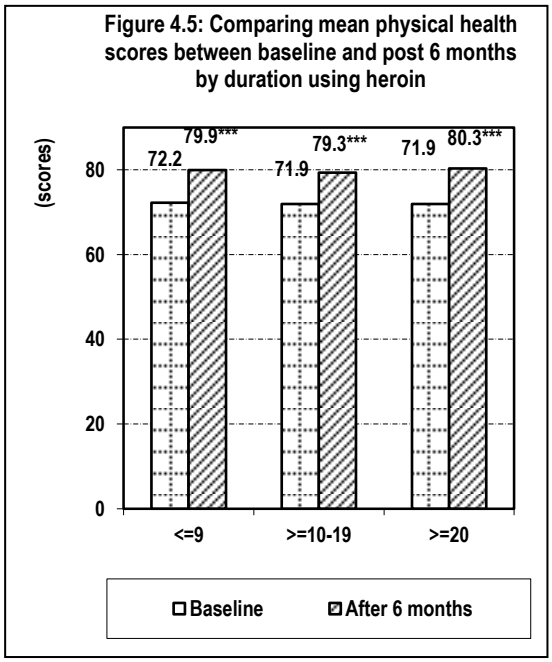


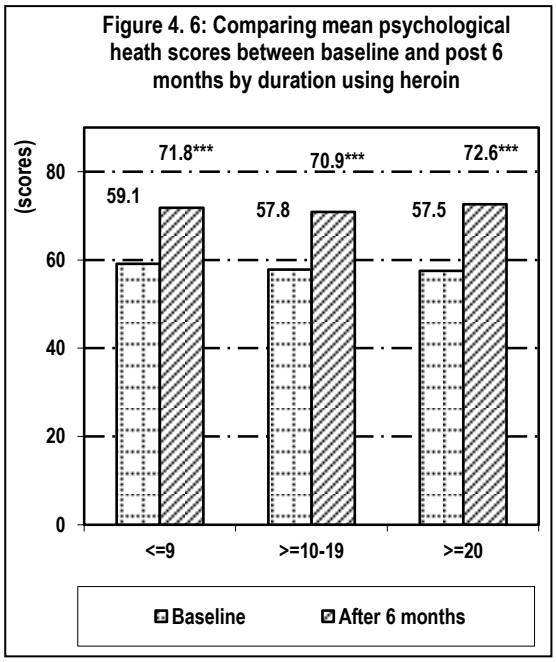
*p<0.05; **p<0.01; ***p<0.001

Figure 4.3 and figure 4.4 describes change in social QoL scores and environmental QoL scores after treatment for each age group of respondents. These figures show that after treatment by methadone, the average number social QoL score and environmental QoL scores increased in all age groups. The differences mean in social QoL score and mean environmental QoL score were statistically significant.

After treatment by methadone, the changes in social QoL scores of patients were less than the changes in environmental QoL score. From Figure 4.3, the mean social QoL scores of respondents who are younger than 24 years had increased more than other respondents. However, looking at figure 4.4 the mean environment QoL score of patients who are older than 45 years had increased more than other respondents.

Figure 4.1, 4.2, 4.3 and 4.4 notes that all age groups had increased quality of life scores including physical health, psychological health, social, and environmental scores after treatment. On other hand, quality of life scores after treatment increased in all respondents regardless of respondents' age.



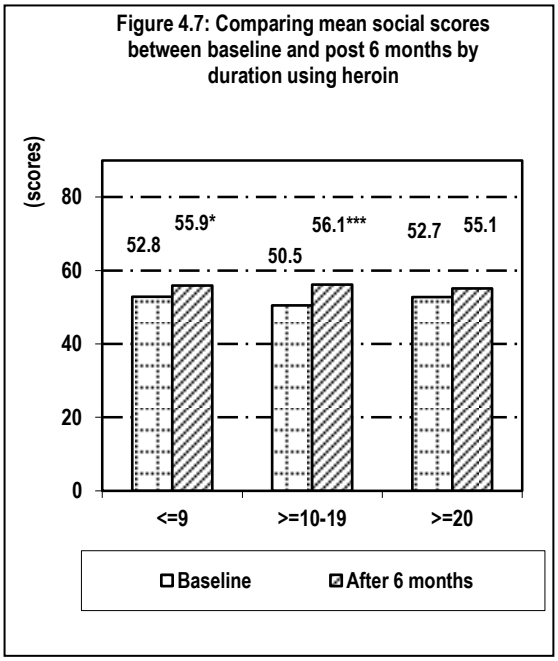


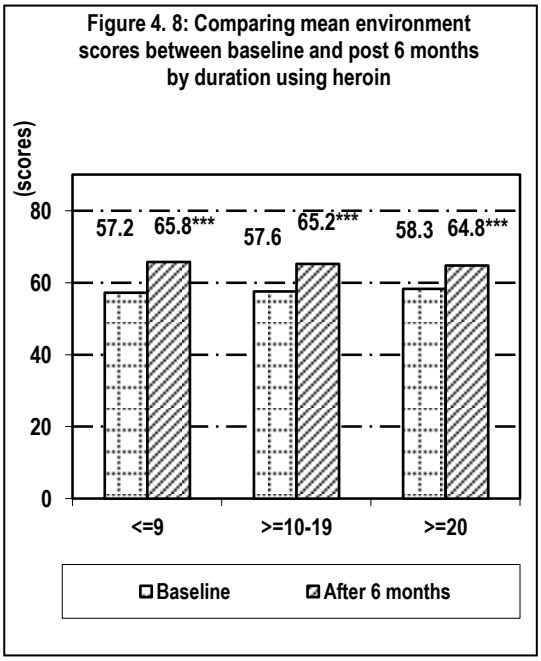
*p<0.05; **p<0.01; ***p<0.001

Figure 4.5 and figure 4.6 illustrate change in physical health QoL and psychological health scores after treatment by duration using heroin. These charts notes that after 6 months treatment by methadone, the mean physical health and psychological health score had significantly increased for all respondents and irrespective of their duration of using heroin. However, looking at two charts, the mean physical health QoL scores of patients had increased less than the mean psychological health QoL scores.

From figure 4.5, the average of physical health scores among respondents who have less than 9 years using heroin at post treatment is higher than the mean of physical scores of respondents at pre-treatment. This difference is statistically significant at the 0.001 level. Similarly, the average physical health scores among respondents who have 10 – 19 years and over 20 years of using heroin also are higher at end-line than those at baseline.

Figure 4.6 reveals that there are statistically significant differences in the mean psychological health scores at baseline and end-line among participants who have less than 9 years using heroin. Figure 4.6 also shows that the mean of psychological health scores who have more than 20 years using heroin had increase more than respondents who have less than 20 years using heroin.





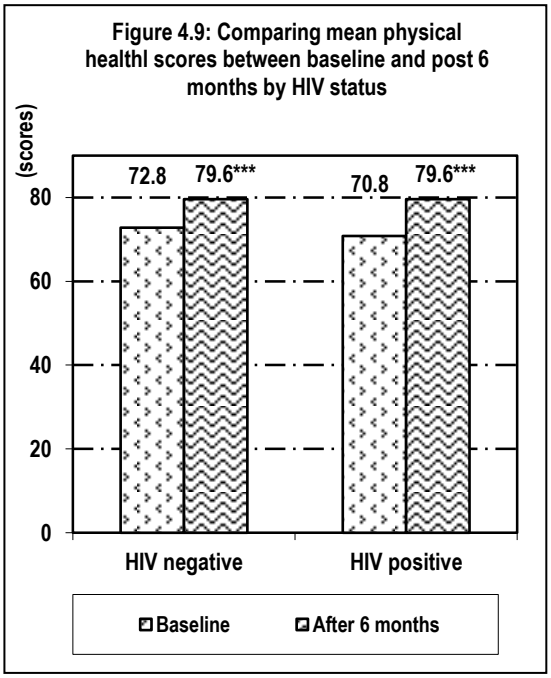
*p<0.05; **p<0.01; ***p<0.001

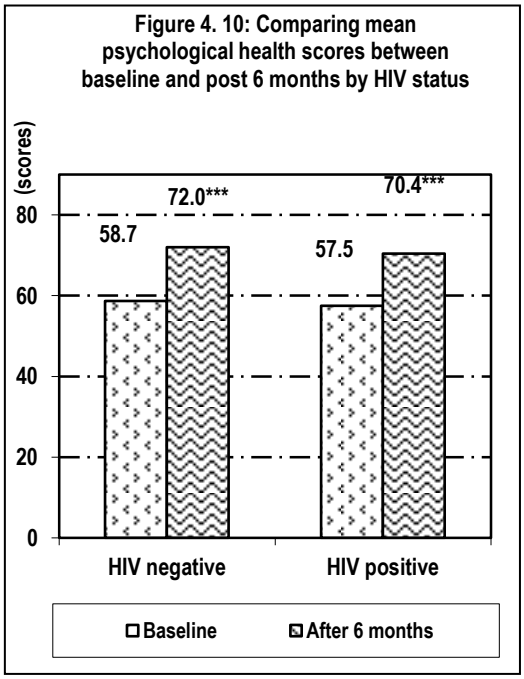
The figure 4.7 and figure 4.8 shows comparing mean between baseline and end-line by duration of using heroin of respondents.

From Figure 4.7, the mean social scores among respondents who had 10 - 19 years using heroin had improvement more than other respondents. There were not significant different mean social scores between baseline and post 6 month among respondents who had over 20 years using heroin. Based on duration of using heroin, it seems that social scores did not change too much after treatment

Figure 4.8 reveals that there were statistically significant differences the mean environment scores between baseline and end-line among participants who had less than 10 years using heroin. Figure 4.8 also shows that the mean environmental scores of those who had less than 10 years using heroin increased more than the mean environment scores of respondents who have more than 10 years using heroin.

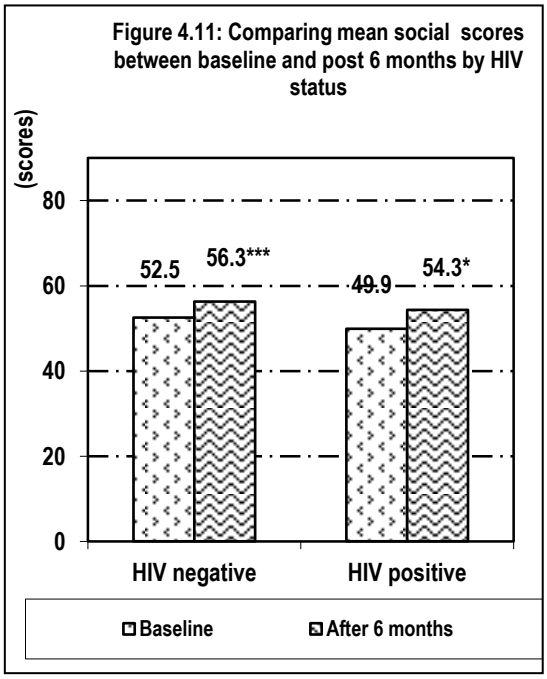
Figure 4.5, 4.6, 4.7, and 4.8 confirmed that the improvement quality of life scores after treatment regardless of duration of using heroin. Methadone had a positive effect on improving quality of life.

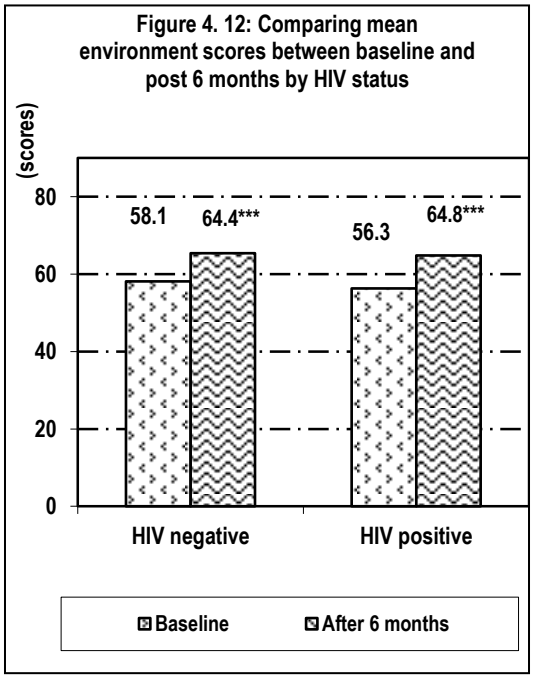




*p<0.05; **p<0.01; ***p<0.001

Figure 4.9 and figure 4.10 displayed the comparison of the mean of physical health QoL score and psychological health QoL score between pre-treatment and post-treatment by respondents' HIV status. These charts note that the mean physical health QoL score and psychological health QoL score had significant improvement after treatment no matter their HIV status. These charts show that the change in psychological health QoL score was more than change in physical health QoL score.





*p<0.05; **p<0.01; ***p<0.001

From figure 4.11 and figure 4.12, shows the comparison of mean social QoL score and environmental QoL score at baseline and end-line by HIV status of respondents.

Figure 4.11 notes that the mean social QoL scores among respondents who were HIV negative at pre-treatment were lower than those at post treatment. This difference was statistically significant at the 0.05 levels. Within respondents who were HIV positive, the average social QoL score had significantly increased after treatment by methadone.

Figure 4.12 reveals that there were statistically significant differences in the mean environment QoL scores at baseline and end-line among participants who were HIV negative. The average number environmental QoL score among heroin users at post 6 months was higher than those at pre-treatment, this difference is statistically significant at the 0.001 level.

Figure 4.9, 4.10, 4.11 and 4.12 confirmed that the mean physical health QoL, psychological health QoL, social QoL, and environment QoL scores had significant increased after treatment by methadone, regardless of respondents' HIV status

4.3. Multivariate analysis

Table 4.3.1 Odds ratios of improvement quality of life by individual factors among opiate drug users who enrolled methadone maintenance treatment

Variables	Physical health	Mental health
	Odds ratios (n=425)	Odds ratios (n=425)
Age		
- <= 24	1.32	0.53
- 25 – 34	1.06	0.93
- 35 – 44	1.14	0.91
- >= 45 *(ref)*		
Marital status		
- Unmarried *(ref)*		
- Married/re-married/cohabiting	1.23	1.21
- Separated/Divorced/Widowed	1.31	1.22
Education		
- Illiterate and primary *(ref)*		
- Secondary and higher	1.12	0.78
Employment		
- Unemployment *(ref)*		
- Employment	1.12	1.08
Duration using opiate		
- <= 9 years *(ref)*		
- > = 10 – 19 years	1.17	1.08
- >= 20 years	1.47	1.73
HIV status		
- Negative *(ref)*		
- Positive	1.26	1.17
LR chi square	3.97	9.08
Pseudo R square	0.0071	0.0184

ref: Reference

Table 4.3.2 Odds ratios of improvement quality of life by individual factors among opiate drug users who enrolled methadone maintenance treatment (continue)

Variables	Social QoL	Environment QoL
	Odds ratios (n=425)	Odds ratios (n=425)
Age		
- <= 24	1.86	0.31†
- 25 – 34	0.83	0.51
- 35 – 44	0.78	0.41*
- >= 45 *(ref)*		
Marital status		
- Unmarried *(ref)*		
- Married/re-married/cohabiting	0.85	1.06
- Separated/Divorced/Widowed	1.46	0.57†
Education		
- Illiterate and primary *(ref)*		
- Secondary and higher	1.59	0.56
Employment		
- Unemployment *(ref)*		
- Employment	1.30	1.29
Duration using opiate		
- <= 9 years *(ref)*		
- > = 10 – 19 years	1.42	0.62†
- >= 20 years	1.35	0.49†
HIV status		
- Negative *(ref)*		
- Positive	1.05	0.94
LR chi square	11.07	16.54†
Pseudo R square	0.019	0.031

†p<0.10 *p<0.05; *ref:* Reference

To examine the effect of individual factors including age, marital status, education level, HIV status, and duration of using heroin on improvement of quality of life by each domain, the binary logistic regression was used. There are four models for the four domains of QoL, model A, B, C, and D focused on the effect of individual factors on improvement physical health QoL, psychological health QoL, social QoL, and environment QoL respectively. The results of these models are presented in Table 4.3.1 and Table 4.3.2.

Looking at model A, B, and C, all of the individual factors including age, marital status, education level, HIV status, and duration using heroin were not statistically significant with improvement in physical health QoL, psychological health QoL, and social QoL.

Model D examined the effect of individual factors of heroin users with environmental QoL. The findings indicated that age of participants was significantly associated with improvement in the environment QoL. The age group 35-44 of heroin users was 59% less likely to improve environment QoL than respondents who were 45 years or over at the 0.05 level. Marital status, education level, employment status, duration using heroin and HIV status did not show any significant relationship with improvement in environmental QoL at the 0.05 level. However, the participants who are separated, divorced, or widowed were 43% less likely than those who have never been married at the 0.1 levels. The respondents who had longer duration using heroin were less likely to improve than those who had shorter time using heroin. The respondents who used heroin, 10 -19 years and over 20 years were 38% and 51% less likely to improve their environmental QoL than respondents who used heroin less than 9 years at the 0.1 level. This model could explain 3.1% variation of improvement in the environmental QoL among heroin users who enrolled in Methadone Maintenance Treatment program at 0.1 level.

4.4. Discussion

The findings from this study shows that methadone maintenance treatment contributed to improvements in quality of life in the 4 domains (physical health, psychological health, social relationships, and environment)

Physical health in this study referred to 7 components such as daily activities, work capacity, pain or discomfort, dependence on medicinal substances or medical aids, energy for activities as well as mobility of opiate dependents. The result of this study indicates that physical health of opiate dependent significant improved after 6 months treatment by methadone maintenance ($p<0.001$). Similarly, a study on heroin dependent in Lithunia showed that following 6 months of methadone maintenance treatment, significant improvements in physical health was found ($p=0.004$) (Padaiga et al., 2007). In another study in China which was conducted in 5 methadone maintenance treatment clinics, the results showed that physical health of outpatients improved continuously from day 1 to day 90 (Xiao et al., 2010).

After 6 months treatment by methadone maintenance, the finding indicates that psychological health of heroin users significantly improved ($p<0.001$). This result was consistently with others studies, and MMT have effect improvement psychological health after 6 months (Padaiga et al; 2007; Xiao et al, 2010). The psychological health QoL included information about self-esteem, positive or negative feelings, and memory of heroin users. The heroin users have poor psychological health such as depression, and anxiety disorders. After MMT, they became independent with heroin, they got self-esteem again (Xiao et al, 2010).

In this study, after 6 months treatment the social relationship score also improved significantly ($p<0.001$). However, the social score was less increased than other domain. Because the social domain has three items included personal relationship, social support, and sex activity. In Vietnam society, heroin users are referred to as “social evils” or criminals, since they destroy the core values of family and society. Therefore, heroin users usually receive less social support than non – users. This finding was consistently with another study in China, heroin dependents in a MMT program improved their social relationships scores, and they received more social support from day 1 to day 30. However, this improvement did not continue from day 30 to 90, although this decrease was not significant. On the contrary, a study in Lithunia found no statistically significantly improvement in social domain of quality of life after 6 months treatment.

Regarding environment QoL, the result of this study found that heroin users under MMT program had statistically significant improvements in environment

QoL ($p<0.001$). Consistent with other studies in Lithinia and China, they found that MMT is the effective in environmental component.

This study also used paired sample t-test to compare mean quality of life scores including physical health, psychological health, social, and environment by age, duration using heroin, and HIV status of heroin users. These results confirmed that methadone had a positive effect on their lives no matter to age, duration using heroin and their HIV status.

This study determines the individual factors that affect improvement in quality of life. The binary logistic regression showed that all individual factors did not have a significant effect on all three domains of quality of life such as physical health, psychological health, and social QoL. However, only age of opiate dependents had effect on environment QoL. The older opiate dependents were more likely to improve environment scores than younger opiate dependents. Similarly, another study found that the older age is associated with better outcome (Health Canada, 2002). This study found a significant improvement in all four domains of QoL among opiate dependents involved in MMT program regardless of their individual factors. Therefore, our findings suggest that these improvements in quality of life among heroin users may be due to methadone maintenance treatment.

CHAPTER V
CONCLUSION AND RECOMMENDATION

5.1. Conclusion

The overall objective of the study is to explore the improvement in quality of life for heroin users after 6 months of enrolment in a MMT program in Hai Phong city. The data for this study was obtained from a pilot program for treatment of opiate dependence by methadone in Hai Phong city, Vietnam, conducted in 2009.

According to the comparison of quality of life scores between baseline and 6 months follow-up by using paired sample t-test for repeated measurement, significant improvements in physical health ($p<0.001$), psychological health ($p<0.001$), social relationships ($p<0.001$) and environment domain ($p<0.001$) were found. We can conclude that methadone has a positive effect on QoL for heroin users. This study also examined the differences in score of quality of life at pre-treatment and post-treatment by age, duration using heroin, and HIV status of heroin users. These results note that there are statistically significant differences quality of life scores for physical health, psychological, social, and environmental QoL between baseline and end-line regardless of age, duration using heroin, and HIV status.

The results demonstrate that individual characteristics were not significantly associated with improvements in quality of life. This result also suggests that the improvement in quality of life among heroin users might be due to participation in methadone maintenance treatment.

5.2. Recommendation

Firstly, the findings of this study will advocate policy makers and stakeholders in understanding the effect of methadone maintenance treatment for heroin users, particularly regarding its improvement in their QoL. According to the data of Ministry of Labour, Invalid and Social Affair Vietnam, nearly 200,000 drug

users were estimated in 2009. Therefore, they should expand this program not only in Hai Phong city but also other provinces. With such a program one could foresee a positive effect in users lives, their family and society.

Secondly, six months follow-up may not be long enough to assess the outcome of MMT. Therefore, further studies should continue to collect information on opiate dependents to measure long-term effectiveness of methadone treatment programs.

Finally, the results revealed that methadone has a positive effect on improvement of quality of life for heroin users no matter their individual characteristics. Our study focused on only improvements of QoL among heroin users who enrolled in MMT, but MMT can improve other outcomes. Therefore, we suggest that further studies focus on other outcome such as reduction in heroin users, reduction in risky injecting behavior, and in risky sexual behavior, as well as reduction in drug-related criminal involvement. It would be necessary to improve our understanding of the effect methadone maintenance treatment to advocate policy makers and stakeholders.

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APPENDIX

Some selected questions from questionnaire that are used in this study

SOCIO-DEMOGRAPHIC

Code of question	Questions	Code of anwers
B1	When were you born?	☐☐/☐☐/☐☐☐☐ Date/Month/Year
B2	Education level 0. Illiterate 1. Primary school (1-5) 2. Secondary school (6-9) 3. High school (10-12) 4. Immediate 5. College/Bachelor 6. Graduate	☐ *(Enter fit code on blank)*
B3	What is current occupation ? 1. Unemployment 2. Labor freedom 3. Farmer 4. Workers 5. Officer 6. Driver 7. Servicer, restaurants 8. Pupil or student 9. Others (specific…….....)	☐ *(Enter fit code on blank)*
B4	Your currently marital status: 1. Single (nerver married) 2. Married 3. Re-married 4. Living with your partner but not married 5. Separated 6. Divorce 7. Widower	☐ *(Enter fit code on blank)*
B5	In what year did you start using heroin?	☐☐ *(Enter fit code on blank)*

QUALITY OF LIFE

In the last two week,…	Very poor	Poor	Neither poor nor good	Good	Very good
Q1. How would you rate your quality of life	1	2	3	4	5

	Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very Satisfied
Q2. How satisfied are you with your health	1	2	3	4	5

In the last two weeks	Not at all	A little	A moderate amount	Very much	An extreme amount
Q3. To what extend do you feel that physical pain prevent you from doing what you need to do?	1	2	3	4	5
Q4.How much do you need any medical treatment to function in your daily life?	1	2	3	4	5
Q5. How much do you enjoy life?	1	2	3	4	5
Q6. To what extend do you feel your life to be meaningful?	1	2	3	4	5
Q7. How well are you able to concentrate?	1	2	3	4	5
Q8. How safe do you feel in your daily life?	1	2	3	4	5
Q9. How healthy is your physical environment?	1	2	3	4	5

In the last two weeks,	Not at all	A little	A moderate amount	Very much	An extreme amount
Q10. Do you have enough energy for everyday life?	1	2	3	4	5
Q11. Are you able to accept your bodily appearance?	1	2	3	4	5
Q12. Have you enough money to meet your needs?	1	2	3	4	5
Q13. How available to you is the information that you need in your day to day life?	1	2	3	4	5
Q14. To what extend do you have the opportunity for leisure activities?	1	2	3	4	5

In the last two weeks,	Very poor	Poor	Neither poor nor good	Good	Very good
Q15. How well are you able to get around?	1	2	3	4	5

In the last two weeks,	Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very Satisfied
Q16. How satisfied are you with your sleep?	1	2	3	4	5
Q17. How satisfied are you with your ability to perform your daily living activities?	1	2	3	4	5

In the last two weeks,	Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very Satisfied
Q18. How satisfied are you with your capacity for work?	1	2	3	4	5
Q19. How satisfied are you with yourself?	1	2	3	4	5
Q20. How satisfied are you with your personal relationship?	1	2	3	4	5
Q21. How satisfied are you with your sex life? **(If the interviewee answers not having sex, did they satisfy with their status?)**	1	2	3	4	5
Q22. How satisfied are you with the support you get from your friends?	1	2	3	4	5
Q23. How satisfied are you with the conditions of your living place?	1	2	3	4	5
Q24. How satisfied are you with your access to health services?	1	2	3	4	5
Q25. How satisfied are you with your transport?	1	2	3	4	5

In the last two weeks,…	Never	Seldom	Quite often	Very often	Always
Q26. How often do you have negative feeling such as blue mood, depair, anxiety, depression?	1	2	3	4	5

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