INSOMNIA EXPERIENCE, INSOMNIA MANAGEMENT, AND INSOMNIA OUTCOMES IN AIDS PATIENTS

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INSOMNIA EXPERIENCE, INSOMNIA MANAGEMENT, AND INSOMNIA OUTCOMES IN AIDS PATIENTS.

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ABSTRACT

Insomnia, a common problem associated with HIV/AIDS patients, is most likely caused by a multiplex of factors. This research aims to study the insomnia experience, management, and outcomes in AIDS patients. The samples was 160 AIDS patients who had been treated in the Medical-OPD unit and Rehabilitation Unit at Bumrasnaradul Institute, Nonthaburi Province. The data was collected from November to December 2003. The research instrument was a set of interview questionnaires which consisted of 3 parts. Part 1 was demographic data. Part 2 was insomnia perception modified from The Pittsburgh Sleep Quality Index (PSQI). Part 3 was insomnia management. The value of Cronbach's Alpha Coefficient was .89. Descriptive statistics were used to present the research.

The research data showed that the mean age of sample was 36.25 years and most were male (61.25%). The most opportunistic infection was pulmonary tuberculosis and cryptococcosis (53.13% and 21.25% respectively). The most common symptoms were insomnia and fatigue/tiredness (100%), followed by skin rash (56.23%). Most of the patients reported very bad insomnia. In addition, the perception of insomnia was fatigue or excessive daytime sleepiness 3 or more times per week and patients felt that the severity of the insomnia limited their ability to perform daily life activities at a high level. The basis of the cause of insomnia was stress (100%), followed by skin itching, fever, cough, shortness of breath, and headache. Insomnia management strategies that the most patients performed was environmental management e.g. clean bed accessories and arranging proper room temperature. The second was sleep promoting behaviors e.g. abstaining from alcohol, caffeine and smoking before bedtime. However, most of them reported insomnia outcome after managing was fairly bad because they did performed very little on management strategies to eliminate the causes of insomnia both physical and psychological causes.

The findings support the need for health care providers to consider factors that contribute to impaired sleep. Effective insomnia management strategies include assessing the causes of and evaluating the intervention given to HIV/AIDS patients.

KEY WORDS : AIDS PATIENT / INSOMNIA EXPERIENCE / INSOMNIA MANAGEMENT / INSOMNIA OUTCOME

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ประสบการณ์การมีอาการ การจัดการกับอาการและผลลัพธ์ของการมีอาการนอนหลับไม่เพียงพอในผู้ป่วยเอดส์ (INSOMNIA EXPERIENCE, INSOMNIA MANAGEMENT, AND INSOMNIA OUTCOMES IN AIDS PATIENTS)

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บทคัดย่อ

อาการนอนหลับไม่เพียงพอเป็นปัญหาซึ่งพบได้ทั่วไปในผู้ติดเชื้อเอชไอวีและผู้ป่วยเอดส์ โดยส่วนใหญ่เกิดได้จากสาเหตุต่างๆร่วมกัน การวิจัยครั้งนี้จึงมีวัตถุประสงค์เพื่อศึกษาถึงประสบการณ์การมีอาการ การจัดการกับอาการและผลลัพธ์ของการมีอาการนอนหลับไม่เพียงพอในผู้ป่วยเอดส์ กลุ่มตัวอย่างเป็นผู้ป่วยเอดส์ จำนวน 160 คนจากแผนกผู้ป่วยนอกอายุรกรรมและแผนกฟื้นฟู สถาบันบำราศนราดูร จังหวัดนนทบุรี เก็บข้อมูลช่วงเดือนพฤศจิกายนถึงเดือนธันวาคม พ.ศ. 2546 เครื่องมือที่ใช้เป็นแบบสัมภาษณ์ ประกอบด้วย 3 ส่วน ส่วนที่ 1 เป็นข้อมูลทั่วไป ส่วนที่ 2 เป็นการรับรู้ถึงอาการนอนหลับไม่เพียงพอ พัฒนามาจากแบบสอบถาม The Pittsburgh Sleep Quality Index (PSQI) ส่วนที่ 3 เป็นการจัดการกับอาการนอนหลับไม่เพียงพอ มีค่าความเชื่อมั่นสัมประสิทธิ์อัลฟ่าของครอนบาค = 0.89 และใช้สถิติเชิงบรรยายในการนำเสนอข้อมูล

ผลการวิจัยพบว่า กลุ่มตัวอย่างส่วนใหญ่เป็นเพศชายร้อยละ 61.25 มีอายุเฉลี่ย 36.25 ปี โรคติดเชื้อฉวยโอกาสที่พบบ่อยคือ วัณโรคปอดและเชื้อราที่สมอง (ร้อยละ 53.13 และ 21.25 ตามลำดับ) อาการแสดงในปัจจุบันที่พบบ่อยคือ นอนหลับไม่เพียงพอและอ่อนล้า ร้อยละ 100 รองลงมาคือ ผื่นผิวหนัง ร้อยละ 56.23 ผู้ป่วยส่วนใหญ่มีอาการนอนหลับไม่เพียงพออยู่ในระดับไม่ดีเลย กลุ่มตัวอย่างรับรู้ถึงอาการนอนหลับไม่เพียงพอในลักษณะอ่อนล้าและง่วงนอนช่วงกลางวันมากที่สุด และประเมินระดับความรุนแรงอยู่ในระดับมากเพราะทำให้ไม่สามารถปฏิบัติกิจวัตรประจำวันได้ สาเหตุซึ่งรบกวนทำให้เกิดอาการมากที่สุดคือภาวะเครียด (ร้อยละ 100) รองลงมาคือคันผิวหนัง ไข้ ไอ หายใจเหนื่อย และปวดศีรษะ กลยุทธ์ในการจัดการกับอาการพบว่าส่วนใหญ่มีการจัดการกับสิ่งแวดล้อมที่รบกวน ได้แก่ การทำความสะอาดเครื่องนอน และการดูแลปรับอุณหภูมิห้องให้เหมาะสมมากที่สุด รองลงมาคือการปฏิบัติพฤติกรรมส่งเสริมการนอนหลับ ได้แก่ การไม่ดื่มเครื่องดื่มที่มีแอลกอฮอล์ คาเฟอีน และไม่สูบบุหรี่ก่อนนอน สำหรับผลลัพธ์ของการมีอาการหลังการจัดการส่วนใหญ่ยังอยู่ในระดับไม่ดีเลย เนื่องจากผู้ป่วยปฏิบัติกลยุทธ์เพื่อจัดการกับสาเหตุรบกวนจากอาการทางกายและจิตใจในระดับน้อยมากจากผลการศึกษา เจ้าหน้าที่ดูแลสุขภาพสามารถนำไปใช้ประกอบการพิจารณาถึงปัจจัยร่วมต่างๆซึ่งรบกวนการนอนหลับ ดังนั้นเพื่อให้การจัดการกับอาการนอนหลับไม่เพียงพอในผู้ติดเชื้อเอชไอวีและผู้ป่วยเอดส์สัมฤทธิ์ผล ควรมีการประเมินค้นหาสาเหตุของอาการร่วมกับประเมินผลกลยุทธ์ต่างๆ ซึ่งใช้ในการจัดการ

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CHAPTER 1
INTRODUCTION

Background and Significance

At present, AIDS remains a significant public health and social problem in Thailand as it is incurable and is constantly spreading to various groups of the population. The overall result of monitoring HIV in 2002 was the trend of infectious HIV in various groups of population was decreased or unchanged. No obvious evidence indicates the increased frequency of HIV infection in any group of the population. However, some groups of the population require serious and constant monitoring to assess the actual infectious status. For instance, drug addicted people have constantly shown a high frequency of HIV infection and been capable or able to spread out HIV to others. Moreover, the pregnant group indicates that the decrease of HIV infection shows in the primiparous or young mothers. HIV infection seems to be increased in 2nd pregnancy or up or in mothers aged over 30 years old. The report on AIDS in Thailand since 1984 until June 30, 2003, showed total HIV positive was 300,421 people classified into 81,040 people with symptomatic HIV infections and 219,381 people with AIDS (Bureau of Epidemiolgy, 2003).

As the result of the spread of HIV infection, many AIDS patients have been found. Particularly, most of them had to provide self-care at home to diminish their current symptoms and prognosis. Most HIV infected patients had physical, psychological, psychosocial and spiritual effects; especially the pathology of the disease caused obvious physical effects as abnormal immunity lead to physical weakness and possible complications (Sangkard K., 1994). HIV infection and opportunistic infections create many kinds of torture to patients. The study on the Out - Patient Department, HIV infected person and AIDS patients showed over 50% of subjects claimed to have at least one or more symptoms such as dyspnea, cough, dried mouth, nausea, anorexia, weight loss, fever, headache, anxiety, depression, fatigue and insomnia (Reilly, et. al., 1997: Fortain, et. al., 1999). Insomnia was frequently found in most HIV infected patients. The HIV Symptom Index (Whalen, et. al., 1994)

indicated 12 symptoms which occurred in HIV infected patients. Sleep disturbance (insomnia or daytime sleepiness) was selected for the Index because it was common, being reported in thirty percent or more of the patients. In addition, it was associated with HIV disease category (chisquare for trend <0.05) meaning that it occurred more often in patients with AIDS than in symptomatic and asymptomatic HIV patients. Consequently, the study of Lenderking, et. al. (1994) stated that insomnia was one symptom that offered high torture to patients.

Insomnia can be often found in all stages of HIV infected person or AIDS patients. It is a diagnosed indicator of the primary stage of HIV infectious disease. HIV infected patients have changed sleep pattern such as prolonged sleep onset, less sleep efficiency and duration, and longer awakening period. Insomnia was found 3 or more nights a week (Phillips and Skelton, 2001) because Rapid Eye Movement (REM) and Non Rapid Eye Movement (NREM) sleep were disturbed. Cerebral and neurological infections from HIV caused insomnia. Neurological vulnerability is related to the sleep controlled mechanism; the opportunistic infection and cancers released the secretion of cytokines that played a big role in sleep control and led to the disturbed sleep mechanism. Likewise, a side effect of antiviral medicines like AZT could invade through blood brain barrier and disturb sleep mechanism in brain (Moeller, et. al., 1991). Uncomfortable symptoms such as fever, pain, diarrhea, night sweat, depression, anxiety, social factors, environment, and personal behavior for instance, roommates, light, noise, room temperature, caffeine consumption, alcohol drinking and smoking offered the effects of disturbing the sleep (Nokes, Chidekel and Kendrew, 1999).

Unsolved chronic insomnia has caused impacts threatening to the daily lives of people in many ways. It created uncomfortable feelings, frequent awakenings at night, early morning awakening and daytime fatigue, eye and muscular exhaustion, many winks, malfunction, no energy to do activities, slow reaction, low work efficiency, less ability of coping with stress, increased expenses of health care and less quality of life. Those made HIV infected person and AIDS patients suffer the most (Darko, et. al., 1992; Lenderking, et. al., 1994 ; Guilleminault and Labanonwski, 1995; Simon and Vonkorff, 1997;). Additionally, a significant impact like immune deficiency of HIV infected person and AIDS patients is associated with the increase in

mortality rate. People with insomnia gained a lesser amount of CD4 than people without insomnia (White, et.al., 1995). HIV infection combined with stress from insomnia stimulated the secretion of cytokines agents in the blood steam that led to compressive immunized functions, accumulated opportunistic infection and cancers (Phillips and Skelton, 2001).

Hence, aiming to diminish torture from presented impacts and to elevate better health status with longevity, good symptom management of insomnia is significant. Symptom management began with the initial perception of individuals about any changes as life threats (Dodd, et. al., 2001: 673). They would realize the changes or present symptoms and identify essential information that could support the selection of strategies and the evaluation of the results of proper symptom management (Larson, et. al., 1994: 274) as well as insomnia in HIV infected persons and AIDS patients. Ferris, et. al. (1995) indicated the concept of symptom management of insomnia for HIV infected person and AIDS patients as self-care in sleep hygiene assisting in good sleep e.g. reading books, listening to music, drinking warm beverages, no caffeine drinks, going to bed on time and so forth; relaxing technique; environmental management; and drug administration for diminishing uncomfortable symptoms and sleep loss. Those strategies of insomnia management could be the same or different from other kinds of patients. The study of Engstrom, et. al. (1999) in cancer patients demonstrated that the selected strategy to enhance easy sleeping was to read books combined with the administration of sleeping pill (33%) or other strategies such as prayer, limited water intake before going to bed, going to bed when sleepy and so forth.

Hence, in proper symptom management with the right group of patients and the possibility of effective results, nurses took a significant role of health care providers in caring and supervising the supports for patients. Their perception and evaluation of insomnia assisted them in order to select proper strategies of symptom management for themselves. The symptom management should be combined with the evaluation of self-implementation, expecting to see constant effective performance and the short- and long-term results on a decrease in insomnia (Dodd, et. al., 2001). Likewise, nurses should offer the advice if the selected strategies did not work out well or if they required a combination of medical strategies. They also should be the

supervisors of patient's family members or relatives for effective participation in the strategy utilization and good family relationship (Larson, et. al., 1994). Consequently, nurses should essentially have good understanding of insomnia, the effects of insomnia and symptom management.

The study on insomnia experience, insomnia management, and insomnia outcomes in AIDS patients is crucial. Because it presents overall care for patients, the enhancement of good sleep quality, the decrease of supportive factors of poor prognosis, the promotion of longevity and the accumulation of life quality in both physical and psychological aspects. Those are the major purposes of all medical professionals. Likewise, nurses also have a sense of self-esteem from their optimum caring performance serving the demands of patients and promoting professional nursing career. From the literature review, the studies on insomnia experience, insomnia management, and insomnia outcomes in AIDS patients are few, particularly in Thai society. Hence, the researcher is interested in the study on insomnia experience, insomnia management, and insomnia outcomes in AIDS patients by using the symptom management model of Dodd, et. al. (2001) and proposes to use the results as clues in continuous education and to modify those strategies from suggestions or to plan the proper nursing practice for this group of patients.

Research Questions

1. How did AIDS patients experiences insomnia ?
2. How did AIDS patients manage insomnia ? And what were the outcomes of insomnia after managing the symptom status ?

Purposes of the study

1. To study insomnia experience in AIDS patients.
2. To study insomnia management strategies by patients and/or their family and outcomes of management on symptom status in AIDS patients.

Conceptual framework

The original Symptom Management Model was developed by the University of California, San Francisco School of Nursing (UCSF), Symptom Management Faculty Group (1994). Later the UCSF School of Nursing Symptom Management revised the Symptom Management Conceptual Model (Dodd, et.al., 2001: 668-676) that is used as a conceptual framework in this survey study. The revised Symptom Management Model encompasses three dimensions: symptom experiences, symptom management strategies, and symptom outcomes as a conceptual framework: insomnia experience, insomnia management, and insomnia outcomes, all of which are interrelated as shown in Figure 1.

When AIDS patients percieved their sleep pattern changed from the way they usually feel or behave, they will evaluate their sleep quality and insomnia by making judgements about the severity, cause, treatability, and the effect of insomnia on their lives. And respond to insomnia which includes physiological, psychological, sociocultural, and behavioral components. The understanding about the relationship of these three dimensions is needed to have effective insomnia management. AIDS patients can explore symptom experience, learn, and take part in symptom management in order to find the most appropriate management strategy for themselves. Self-management strategies used include sleep promoting behavior, environmental management, psychological management and physical symptom management. These are dynamic processes, often requiring change in strategies over time or in response to a patient's acceptance of the strategy. After performing different insomnia management strategies, AIDS patients will assess the outcome of each strategy and all, to see whether it is effective or not. Insomnia outcomes are expressed by symptom status. The effectiveness can be seen from severe degree of symptom to sleep well. The outcomes of the strategies will affect three dimensions of symptom experience. AIDS patients, then, have to find the strategies to cope with insomnia again or quit when realizing that there are no symptoms anymore.

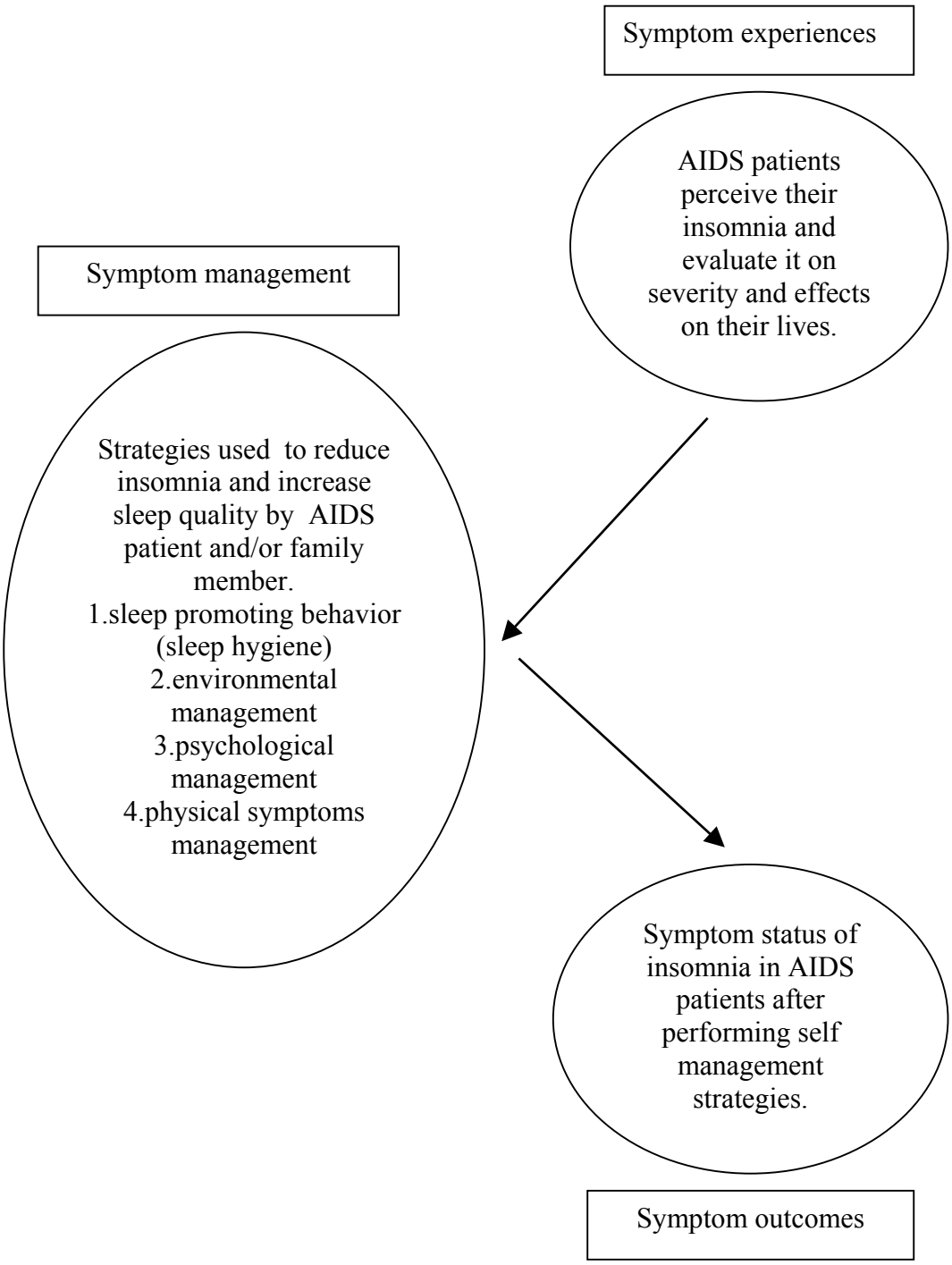

Figure 1 : Conceptual Framework (Modified from Revised Symptom Management Model of Dodd,et. al., 2001)

Expected outcomes and benefits

1. Nurses will have a better understanding about insomnia, insomnia experience, insomnia management strategy, and insomnia outcomes in AIDS patients. This information can lead to improved nursing practice to manage insomnia at clinics for AIDS patients.
2. This basic knowledge about insomnia will be a guideline to develop a protocol for patients to have good management strategies for continuously performing at home.
3. To provide basic information for further related studies.

Scope of the study

This was a survey study on insomnia experience, insomnia management, and insomnia outcomes in AIDS patients. These patients received treatment at the Out-patient Department and the Ambulatory Care Center at Bamrasnaradul Institute, Nontaburi.

Definition of terms

Insomnia in AIDS patients refer to an experience of inadequate or poor quality sleep in AIDS patients characterized by one or more of the following: difficulty falling asleep, difficulty maintaining sleep, waking up too early in the morning, nonrestorative sleep. It is evaluated by an interview questionnaire of sleep quality. The interview questionnaire is modified from The Pittsburgh Sleep Quality Index: PSQI (Smyth, 1999) and developed from the literature review by the researcher.

Insomnia experience refer to the AIDS patient' s perception of characteristic that mean insomnia, the evaluation of causes and severity of insomnia and the physical, psychological, emotional, and behavioral responses to insomnia. It is evaluated by an interview questionnaire of management of insomnia that was developed from the literature review by the researcher.

Insomnia management refer to the methods that AIDS patients and/or their family member use in order to reduce, or delay the negative effects of insomnia and increase sleep quality. Self management strategies used included sleep promoting

behavior, environmental management, psychological management , and physical symptom management. It was evaluated by an interview questionnaire of management of insomnia that was developed from the literature review by the researcher.

Insomnia outcomes refer to the insomnia status in AIDS patients after performance of different insomnia management strategies. Insomnia status was the perception of sleep quality and evaluation of sufficient sleep. It was evaluated by an interview questionnaire of management of insomnia that was developed from the literature review by the researcher.

CHAPTER 2
LITERATURE REVIEW

This research was conducted as a survey research aimed to study the management of insomnia in AIDS patients by gathering and reviewing related literatures as well as clues of the study with the associated topics:

1. AIDS Patients
2. Sleep
3. Insomnia
4. Insomnia in HIV Disease
5. Symptom Management Model
6. Insomnia Experience in AIDS Patients
7. Insomnia Management in AIDS Patients
8. Insomnia Outcomes in AIDS Patients

1. AIDS Patients

1.1 Definition

The Center for Disease Control and Prevention: CDC (USA) gave the definition of AIDS patients as any infectious HIV infected patient who had the level of CD_4 lower than 200/microlitre (normal $CD_4 \geq 1000$/microlitre) including any serious HIV infectious patient. The most common indicator of AIDS patients was the sickness from opportunist infections (OI) that had not been found in normal people. In AIDS patients, the infection was sometimes more severe and a cause of death because the immune system was destroyed by the HIV, so there is no immunity to fight any bacteria, virus, parasite and other germs (National Center for Infectious Diseases Division of HIV/AIDS, et.al., 1993).

In Thailand, the definition of AIDS patients was modified from the CDC's definition. The Ministry of Public Health announced a revised definition of AIDS patients in 2003 categorized into 3 types and most of them has confirmed HIV

infection by the laboratory (Division of Epidemiology and AIDS Division, Ministry of Public Health, 2003).

1.1.1 Type 1: Most groups of AIDS patient showed indicators of AIDS or Severe HIV Disease. The criteria of AIDS diagnosis (in both adults and children) was to find the HIV infection combined with an indicative disease at least 1 of the 28 following diseases:

- Candidiasis of bronchi, trachea or lungs, Candidiasis, esophagus
- Cervical cancer, invasive
- Coccidioidomycosis, disseminated or extrapulmonary
- Cryptococcosis, extrapulmonary
- Cryptosporidiosis, chronic intestinal (greater 1 than month's duration)
- Cytomegalovirus disease (other than liver, spleen or nodes) in pediatric patients aged over 1 month
- Cytomegalovirus disease (other than liver, spleen or nodes) in any patients aged over 1 month
- HIV encephalopathy or HIV dementia or AIDS dementia or subacute encephalitis that was confirmed the HIV infection.
- Herpes Simplex: chronic ulcer(s) (greater than 1 month's duration); or bronchitis, pneumonitis, or esophagitis in any patient age over 1 month
- Histoplasmaosis, disseminated or extrapulmonary
- Isosporiasis, chronic intestinal (greater than 1 month's duration)
- Kaposi's Sarcoma in all groups of patients
- Lymphoma, Burrkitt's (or equivalent term)
- Lymphoma, immunoblastic (or equivalent term)
- Lymphoma, primary in brain
- Mycobacterium avium complex or M.Kansasii, disseminated or extrapulmonary

- Mycobacterium, other species or unidentified species, disseminated or extrapulmonary
- Mycobacterium tuberculosis, pulmonary or extrapulmonary
- Recurrent pneumonia (Bacteria), over one time a year
- Pneumocystis carinii pneumonia
- Infection of Penicillium marneffei
- Progressive multifocal leukoencephalopathy
- Salmonella septicemia, recurrent (over 1 time a year)
- Toxoplasmosis in brain in pediatric patients aged over one month
- Wasting syndrome due to HIV
- Nocardiosis
- Rhodococcosis
- Serious bacterial infection, recurrent or multiple

1.1.2 Type 2: most groups with AIDS diagnosed by CD_4 count < 200 μlt were considered to have HIV infection and the CD_4 level < 200 μlt was found at least twice in asymtomatic HIV with no indicator of immuno deficiency syndrome.

1.1.3 Type 3: HIV infants infected from biological mothers, some are diagnosed at the age under 15 months with neither immune deficiency from others nor severe malnutrition. The diagnosis of AIDS would be declared if 2 major signs and 2 minor signs were found.

Some patients indicated HIV infection with some symptoms but had not reached the criteria of Type 1-3 and were called symptomatic HIV patients.

1.2 Pathology

Physical changes in HIV infectious disease are as follows: (Ministry of Public Health, 1989 cited in Thanasilp, S., 1995: 22)

1.2.1 HIV infected into human body penetrating into cells. It established its DNA and embraced with the DNA of those cells. At this period, there was no noticeable physical change. This period might take 3 weeks until 3 years after the HIV infection.

1.2.2 Phase 2: 4-6 weeks after HIV infected

Hidden HIV in cells duplicated and released a tremendous virus through the blood steam causing viremia. Blood examination e.g. blood culture could detect the virus.

1.2.3 Phase 3: 6 weeks after HIV infected and over

The human body would start to build up viral antibodies as well as a self-defense mechanism aiming to eliminate any aliens or foreign bodies and clean up the blood stream. At this phase, antibodies could be found that could also confirm the HIV infection in that person. Generally, the antibody of HIV was established in the 6^{th} to 12^{th} week except in some people it was longer.

1.2.4 HIV in blood steam: It could be difficult to detect while the body was still building up the HIV antibody. HIV might hide in cells for a long period of time with no expressive symptoms. This incubation period might last long 2-15 years.

1.2.5 Final phase: Viral duplication was tremendous leading to the CD_4 impairment and the decrease of antibodies. Those offered the occurrence of opportunistic infection (OI) and cancer that could cause death.

1.3 Phases of HIV infection

In clinical term, the infection of HIV and AIDS is categorized regarding the symptoms, complications and CD_4 including T-Lymphocytes. Those criteria were beneficial for the accurate diagnosis and effective treatment plan. Central Disease Control (CDC) of the USA categorized HIV infection into 5 phases as follows: (Rongrungrouen, Y., 1998: 18.5-18.12; Ungavarski and Flaskend, 1999)

1.3.1 Acute or primary HIV infection

After contacting and being infected with HIV, most patients had no noticeable symptoms. In the meantime, some infected patients expressed some symptoms like acute retroviral syndrome or seroconversion illness. Clinical and hematological characteristics were familiar with the infectious mononucleosis from the Epstein-Barr Virus (EBV). However it was called the mononucleosis-like illness because its cause was not from EBV. This phase was counted from the moment of contacting HIV until the establishment of HIV antibodies. Signs and symptoms of this

phase were non-specific. Acute expressive symptoms were fever, weakness, sweat, muscular exhaustion, cold sore, nausea, anorexia, diarrhea, rash, large lymph nodes and tonsillitis.

1.3.2 Asymptomatic HIV infection

This phase began with the detection of HIV antibodies. Patients showed asymptomatic HIV infection. If patients had ever expressed acute retroviral syndrome, it would disappear. Some patients might be coincidentally found with large lymph nodes with no pain by the physical examination. Most HIV infected patients had been detected within this phase.

1.3.3 Early symptomatic HIV infection

Patients in this phase constantly obtained one or more symptoms for at least 3 months for instance, intermittent or constant fever over 37.8°C, weight loss over 10% of previous weight, noticeable lymph nodes, diarrhea, oral or vaginal Candida infection, oral hairy leukoplakia and opportunistic infections e.g. Herpes Simplex, Teriary Tuberculosis, bacterial pulmonary infection or idiopathic thrombocytopenia purpura.

1.3.4 Advanced HIV disease or AIDS

This phase was severe immune deficiency that generates high chances of opportunistic infections and some cancers. Diseases and AIDS symptoms were such as Candidiasis of esophagus and internal or external pulmonary infection.

1.3.5 Final AIDS phase

The survival rate of AIDS patients was quite low in this phase. The cause of death was mostly directed to AIDS itself. Patients would have multi-opportunistic infection or even in the same organ. AIDS patients in the final phase normally showed severe malnutrition, anemia, dehydration, pH imbalance and dysfunction at the end.

1.4 Signs and symptoms

During the progress of HIV infection and AIDS, many researchers conducted studies on frequently found signs and symptoms that were the life threats or irritation of HIV infected or AIDS patients as follows:

Fontaine, et. al. (1999) studied the signs from the existing reports of 118 HIV infected patients. Frequent signs and symptoms, were 70% had fatigue,

anxiety/worry, depression/sadness, insomnia, coughing, dried mouth and nausea/ vomiting.

The study of Vogl, et. al. (1999) indicated that 70% of 504 AIDS patients had irritable signs and symptoms e.g. anxiety, depression, pain, irritation and difficulty in falling asleep.

The research of Khalife, Shea and Schuman (1998) on the torture and self-care in 35 female HIV infected patients implied that skin itchiness or skin problems, insomnia, fatigue and negative mood changes were the most irritable matters.

Reilly, et. al. (1997) stated that frequent signs and symptoms, in over 50% of 207 HIV infected patients, were e.g. shortness of breath, fatigue, coughing, weakness, dried mouth, insomnia, anorexia, weight loss and headache.

The study of Breitbart, et. al. (1996) on the OPD AIDS patients reported the most irritable signs and symptoms of those patients were fatigue (86%), sleep disturbance (74%) and the effect of dried mouth (69%).

Coons, et. al. (1995) studied the physical signs and symptoms including depression in 25 female HIV infected and AID patients. The frequent symptoms found in AIDS patients were tiredness, forgetfulness, insomnia, shortness of breath, chills and other symptoms.

The study of Lenderking, Worth and Beckett (1994: 57-60) in a total of 63 HIV infected and AIDS patients declared that insomnia, nausea, vomiting, neurological symptoms, shortness of breath, diarrhea, fatigue and depression generated high torture to them.

The research of Holzemer, et. al. (1994) on the comparison between the reported signs of AIDS patients to nurses that presented frequent top ten signs regarding the reports of 50 AIDS patients were exhaustion, fatigue, dyspnea with supine position or doing activity, dried mouth, coughing, weight loss, headache, thirst, and insomnia.

In the HIV Symptom Index (Whalen, et. al., 1994), 12 selected symptoms of HIV infected patients were fatigue, fever, paresthesias, imbalance, headache, memory loss, depression, sleep disturbance (insomnia or daytime sleepiness), nausea, diarrhea, coughing and skin problems. The Index had 3 categories and the reasons supported the selection of those signs for illustrating the HIV Symptom Index were as in Figure

2. The common symptoms referred to 30% or over of HIV infected patients who reported them. And some of those common symptom were also among those indicated by patients as one of the most bothersome symptom. The symptoms associated with the HIV infection refered to those symptoms in AIDS patients which were found more often than in the systemic HIV infected patients. Insomnia or daytime sleepiness was combined with common symptoms and symptoms associated with the category of HIV infection.

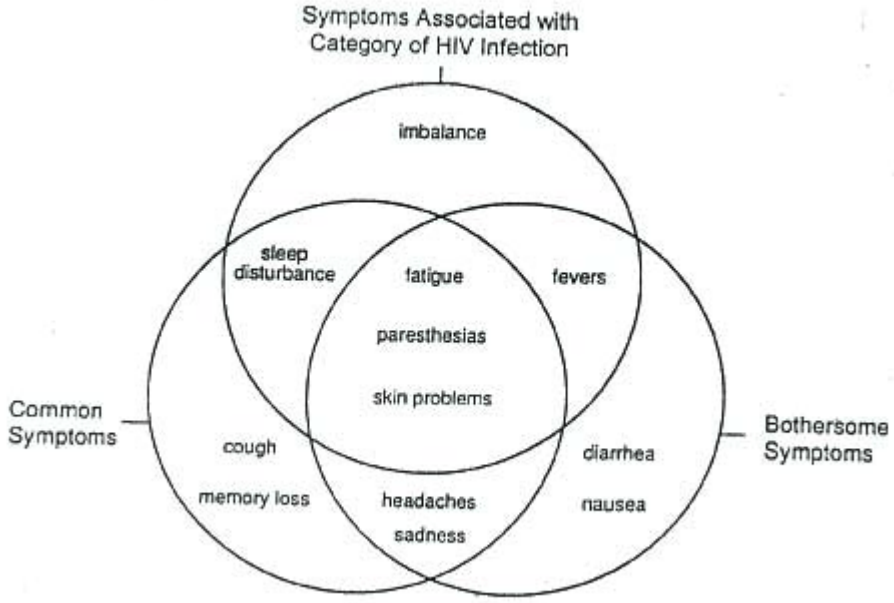

Figure 2: Illustration on the supportive reasons of 12 selected symptoms of HIV infected and AIDS patients in HIV Symptom Index (Whalen, et. al., 1994)

The sleep disturbance of AIDS patients created dissatisfaction and became a major problem for them. Hence, the complaint or mention about it often occurred. Insomnia can be detected in each phase of HIV infection or AIDS. Furthermore insomnia can be assumed as an indicator of the initial HIV infection phase. It also is a threat that generates high annoyance or torture in HIV infectious and AIDS patients. To have good sufficient regular sleep is essential.

2. Sleep

2.1 Definition

Sleep has been in the interests of many scientists and medical science experts. Various definitions of sleep are as follows:

Guyton (2001) and Berger and Williams (1999) defined sleep as the state when a person lost consciousness but could be aroused by sufficient stimulation.

Shneerson (2000) defined sleep as recognizable by its contrast to wakefulness. It is a state of reduced awareness and responsiveness, both to internal and external stimuli.

Potharos, D. (1996) stated that sleep or decreased consciousness presented less or no response to arousal or physical movement with silence and closed eyes. That situation was temporary and easy to change. The awakening could occurr from proper arousal. Individuals required individual sleep duration regarding physical, psychological, emotional and social conditions, lifestyle, adaptation, self-satisfaction and so forth.

Rojchanakitti P. (2001: 14) defined sleep as the fundamental physical processes that were complex and worked along with biological rhythms. Quality and quantity of sleep were individual requirements. As to sleep, the anatomical changes of all organs were directed to relaxation. The characteristics of sleep were less consciousness, less or no response to arousal, less or no physical movement that presented closed eyes, quietness, stopped breathing sometimes, and slower heart rate. Those were temporary uncertain situations so the awakening could be done by proper arousal.

In summary, sleep is a complex multidimentional physiological process. It is a state of reduced awareness and responsiveness. That situation was temporary and individual.

2.2 Physiology of the sleep

The scientific study on sleep is Polysommography that recorded the anatomical changes in the form of electric currents during sleep combined with electroencephalogram: EEG, eletroocculogram; EOG and electromyelogram: EMG. The characteristics of sleep are summarized as follows (Purves, D., et.al., 1997 ; Reimer, 2000):

2.2.1 The phase of Non-Rapid Eye Movement Sleep: NREM sleep consisted of 4 sub-stages as follows:

1st stage: Transitional State was the stage of stupor that came from awakening in a sleeping period. It started from stupor, eyes closed, muscular relaxation, slow eye movement, constant regular breathing, lower pulse and blood pressure and the electroencephalogram indicating a mixed wave between low-voltage beta and theta wave. In this 1st stage, people still had environmental recognition, were easy to wake up and felt it difficult to sleep after waking up.

2nd stage: Light sleep was a deeper sleep than the sleep in the 1st stage. It demonstrated less physical movement, much muscular relaxation, remained slow eye movement, lower metabolism and body temperature, regular respiratory rate, poorer environmental recognition but people were still easy to wake and they might feel they were having a day dream. In this 2nd stage, two kinds of electroencephalogram were spindle wave and k-complex wave.

3rd stage: Medium depth sleep or slow wave sleep: SWS presented slight muscular relaxation with some tension, regular respiratory rate, constant regular pulses but slower than the alert phage and lower metabolism with the release of growth hormone and serotonin. This was the stage of the body saving energy and protein synthesis. The electroencephalogram showed 20% Delta waves but not over 50% of total recorded waves. Waking-up was difficult and dreams were involved in this stage. After waking up, people might think their dreams appeared very real.

4th stage: Deep sleep or slow wave sleep: SWS demonstrated perfect muscular relaxation with lower body temperature, pulse, blood pressure, urine volume and oxygen consumption. Growth hormones were released the most. Protein synthesis and body energy saving were also found in this 4th stage. The electroencephalogram expressed Delta waves as over 50% of total recorded waves. It was very difficult to wake someone up in this stage. Confusion to whatever they did was found after waking up. Snoring might be noticeable.

Adults normally spent 50-60% and 20% of sleeping time for the 1st and 2nd stages and the 3rd and 4th stages, respectively.

2.2.2 The phase of Rapid Eye Movement Sleep: REM Sleep or Orthodox Sleep was the deepest sleeping phase with the most muscular relaxation and very slight muscular tension. Body movement was often found without any response to arousal except ocular muscles. Sympathetic nervous system had much workload leading to an increase of blood pressure and pulse rate but irregular respiration. In this phase, the thermal control mechanism was dysfunctional by presenting no sweat, no vibration or any other thermal controls. Blood circulation was raised to supply brain and genital organs. Cortisol hormone, Glucagon and Catecolamine were released. Short-term memory became long-term memory. The electroencephalogram seemed to be like while awakening, consisting of rapid low voltage waves. Saw tooth waves were intermittently interrupted. It is difficult to wake someone up in this sleeping phase. After waking up, people could clearly remember their dreams as well as imagination. Generally, adults spent time for REM sleep of 20-25%.

2.2.3 Sleep cycle

In each sleeping, the duration of NREM and REM sleep was in a cycle. It started with the 1st stage followed by 2nd, 3rd and 4th stages of NREM sleep respectively and then reversed to the 3rd and 2nd stages of NREM sleep for the approximate duration of 70-100 minutes before moving to REM sleep for 2-3 minutes. Furthermore the cycle turns back to the 2nd stage by skipping the 1st stage of NREM Sleep. The 3rd and 4th stages of NREM Sleep are long in the initial sleep. The REM Sleep is not longer than 10 minutes. In continuous sleep, the 3rd and 4th stages are shorter than before and in the meantime, REM Sleep is longer, 15-40 minutes in the last round. During the sleep, middle awakenings are found 2-3 times in the average sleeping duration of 7-8 hours. Hence, there are 4-5 sleeping cycles with 90-110 minutes per cycle.

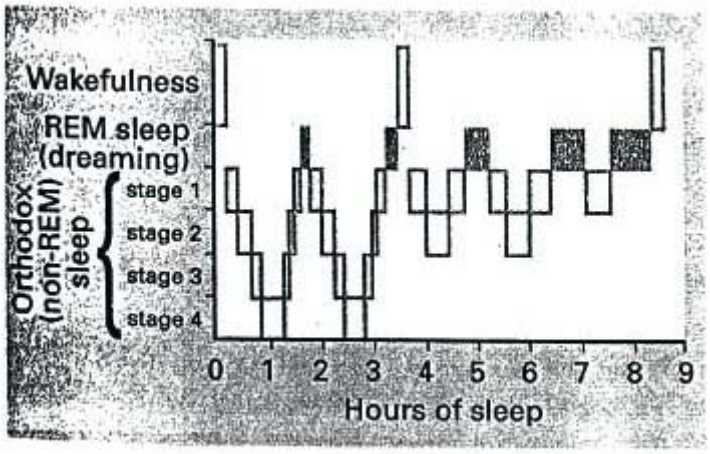

Figure 3 : Sleep cycle : Cycles of REM and non-REM sleep. Each cycle lasts roughly 90 minutes; slow wave sleep predominates during the first third of the night and REM sleep during the last third.

2.3 Significance of sleep

Sleep is a complex anatomical process working along with the biological rhythms that could cause the consciousness loss but proper arousal could invade the sleep. It was a regular happening presented by silence and less response to arousal when compared with the awakening period (Guyton, 2001). It also was both physical and psychological rest because of less consciousness and less body functions. Human beings spend 1/3 of their lifetime sleeping, aiming to obtain good physical and psychological health. In sleep, the body consumed less energy but created high energy saving in cells in the form of adinosintriphosphate. In the mean time the deep sleep phase or non-rapid eye movement-NREM sleep had a high release of growth hormones from the pituitary gland through the blood steam 70% of total growth hormone is release in 24 hours, particularly in the initial 90 minutes of the sleep. Growth hormone enhanced amino acid into cells and increased free lipid acid that is the internal energy source of cells leading to elimination of amino acid, enhancement of protein synthesis and Ribonucleic acid, RNA. Likewise the production of somatomedins from the liver helped the procreation of bone marrow resulting in multiple duplication of bone marrow and stronger cartilage. At the same time, hormones relating to the food decomposition to energy e.g. corticosteriod, cortisol,

glucagon and catecolamine were released leading to less energy consumption of the body, energy saving and enhancement of the growing process including defective repair. Those occurred during the sleep 3 times more than when alert. The decrease of cortisol hormone promoted effective immunity because it compressed the functions of lymphocyte and granulocyte. Both lymphocyte and granulocyte influenced the inability of infectious prevention. REM Sleep aggravated the development and the repair of encephalic tissues. In this phase, a more effective parasympathetic nervous system generated higher blood circulation to the brain and more effectiveness of the central nervous system for repeating and gathering of daily-perceived physical and psychological information that accomplished the memory. Dreams as well as imagination are normally found in REM sleep which promoted pleasure. Hence sufficient sleep offered the sleepers both physical and psychological health. Inversely, insufficient sleep created less energy saving, lower energy production, poorer immunity, less concentration, more panic, less endurance and adaptation to stress. Prolonged insomnia might generate neuropsychosis, for instance, disorientation, paranoia, hallucination, visual disorder, uncontrollable behavior and so forth (Shneerson, 2000: 16-32; Shapiro and Flanigan, 1993: 383-385). Sleep is very significant to the survival of human beings with both physical and psychological health.

2.4 Demand of sleep quantity

Generally, human beings have an individual practical style of sleep regarding to their habits, familiarity, responsibility and their own lifestyles. They normally required a daily average sleeping duration of 6-8 hours but nobody could point out the actual required sleep quantity. The required sleep quantity depended on individual physical conditions and general hygiene. Someone may need only two to three hours of perfect natural relaxing sleep as well as sufficient sleep or good quality sleep that was better than many sleeping hours induced by the sleeping pills (Hodgson,1991). However some people required lees than 6 or 8 hours of sleep in a day, for instance, people who obtained happy lives with self-esteem, good social adaptation, effective working performance and good life patterns. Some elders needed only 4 hours of sleep. People who could relax anywhere also required less sleeping hours (Taylor, et. al., 2001). Inversely, some needed more than 9 sleeping hours a night, if not they

might feel fatigue for instance, people with high anxiety, confusion or no life patterns, and patients who had operations or illness (Blare and Myers, 1994: 383).

The assessment of sleeping quantity could determine the sleeping duration as the following details (Buysse, et. al., 1989 cited in Ramsiri, S., 2000: 14 ; Backhaus,et.al.,2002)

i) Period of going-to-bed until sleep was claimed as the duration since people went to bed until they completely fell to sleep. People with good sleeping quality would take less than 15 minutes in this period because they could perfectly go through all sleeping phases. If this period took over 20 minutes, it demonstrated the occurrence of difficult sleep.

ii) Duration of every night sleep included the time from the beginning of sleep until waking up except total interrupted time during the night. The required sleeping time depended on those presented factors. Likewise aging interval influenced the sleeping duration. Children needed to sleep many hours a night. Those hours would decline when they got older. In the adulthood, if any adults could sleep longer than 7 hours a night, it referred to good sleeping quality.

iii)Efficiency of habitual sleep was the ratio between actual sleeping hours a night divided by duration (hours) of staying in bed compared with 100. Good sleeping quality was determined by the efficiency of habitual sleep of over 85%.

2.5 Demand of sleep quality

This referred to sleep with no disturbance which sleepers could recognize. For instance, good habitual sleep, easy falling to sleep that took 20-30 minutes for the time since going to bed until actual sleep, deep constant sleep with perfect NREM and REM sleep of at least 90 minutes or few wakenings during the sleep and could continue to sleep in a few minutes. Good sleeping quality enhanced the fresh feeling after awakening. People will be able to effectively perform. Considering time proportions between total duration of staying in bed and actual sleeping duration, the sleeping duration earned many hours than other one with less wasted time (Hattherat S., 1991: 26; Espie, 1993: 510). The sleeping quality was the behavior and the perception of the sleep since going to bed until awakening. The “good” or “bad” sleeping quality could be measured by individuals (Synder-Halpern and Verren, 1987 ; Fuller and Schaller-Ayers,2000).

Quality measurement of sleeping quality contains details as follows: (Buysse, et. al., 1989 cited in Ramsiri K., 2000: 15-16 ; Backhaus,et.al.,2002)

i) Descriptive sleeping quality was the measurement of overall sleeping quality. It could be defined by the sleeper as "good" or "bad".

ii) Sleeping disturbance referred to the inconstant sleep. Sleep-wake pattern changed from individual habits and created the diversion of sleeping quality and quantity.

iii) Taking sleeping pills indicated an existing sleeping problems. In some studies, sleeping pills disturbed the REM sleep. Difficult sleep, many awakenings during the night and difficulty in going back to sleep were found after taking them and it offered an impact on sleeping quality.

iv) Daily activities, and poor sleeping quality generated a sleepy feeling, no enthusiasm, falling asleep instantly or daytime naps, fatigue, no concentration, depression, irritability and less activity performance.

Hence the management of insufficient sleep in this group of patients is very significant aiming to prohibit or eliminate the negative results. Nurses play a major role, as well as medical professionals, regarding the pattern of management toward symptoms of insufficient sleep. The good cooperation of nurses in the management of insufficient sleep illustrates the good attention to patients as overall aims of enhancing better life quality.

3. Insomnia

3.1 Definition

Insomnia is a condition of subjectively inadequate or nonrestorative sleep. Insomnia may be experienced as difficulty in falling asleep (sleep onset insomnia) , frequent or prolonged awakenings from sleep (sleep maintenance insomnia) , or nonrestorative sleep. (Walsh, et.al.,1994: 219)

Insomnia is a heterogeneous complaint reflecting reduced quality, duration, or efficiency of sleep. The subjective complaint may or may not be corroborated by objective evidence from polysomnography or observations by others. Insomnia may involve trouble falling asleep, problems staying asleep, such as frequent or prolonged nocturnal awakenings, or early morning awakening with an inability to resume sleep.

The complaint may also be of nonrestorative sleep or diminished sleep quality, resulting in a feeling of being unrefreshed in the morning and having low energy during the daytime. Difficulties intiating and maintaining sleep are not mutually exclusive, and the pattern of insomnia may also shift over time. (Morin,et.al.,1999 : 1134-1156)

Insomnia is not a disease or a diagnostic category in itself; it is a symptom, like fever or chest pain, that requires a careful differential diagnosis. In fact, many sleep experts refer to the complaint of insomnia, because the problem is a subjective experience of daytime fatigue, disrupted functioning, or disturbed mood attributed to insufficient sleep at night. (Hohagen, et. al., 1994: 551-554; Chesson, et. al., 1999: 1128-1133).

The term ‘insomnia’ is often felt to be inadequate because it is used to cover a variety of sleep problems, including abnormal sleep latency, difficulty maintaining sleep, nonrestorative sleep, and early-morning awakening with inability to resume sleep. (Intraphokha, B.,1999 ; Bonnet and Arand, 1996)

Insomnia may be defined as a disturbance or perceived disturbance of the usual sleep pattern of the individual that has troublesome consequences. These consequences may include daytime fatigue and drowsiness, irritability, anxiety, depression, and somatic complaints. Categories of disturbed sleep are inability to fall asleep, inability to maintain sleep, and early awakening. (NIH Technology Assessment Panel, 1996 : 313-318 ; Srisuraphanont, M., and Disayavanich, J., 1999)

Insomnia is an experience of inadequate or poor quality sleep characterized by one or more of the following : difficulty falling asleep, difficulty maintaining sleep, waking up too early in the morning, nonrefreshing sleep. Insomnia also involves daytime consequences, such as tiredness, lack of energy, difficulty concentrating, irritability. (Goldstein, et. al., 1987; Espie, 1993: 509-511; National Center on Sleep Disorders Research, 1999: s402-s408; Zorick, 2000: 615).

In summary, insomnia is a symptom expressing problems of sleeping, insufficient sleep in both quality and quantity with the perception and experience of difficult sleep, frequent awakening during the night, early morning awakening and a cheerless feeling since awakening for the whole day.

4. Insomnia in HIV disease

Although modest in quantity, there have been some recent reports regarding the prominent sleep changes in relation to HIV infection. Sleep disturbances have been reported to occur as an early symptom and may even serve as an early marker to the disease (Norman,et.al.,1992 ; White,et.al.,1995). The sleep changes become even more severe with advanced HIV infection (Darko,et.al.,1995 ; Norman,et.al.,1990 ; Rothenberg, Zozula, Funesti, and McAuliffe,1990). The changes seen during the chronic asymptomatic phase of the illness include increased percentage of slow wave sleep shifted to the latter part of the night, an increased number of shifts to Stage 1 sleep, a lower percentage of Stage 2 sleep, a decreased percentage of REM sleep, an increase in the number of REM periods, and a decrease in the mean duration of REM periods (Darko, et.al., 1992 ; Henriksen,et.al.,1995 ; Norman, et.al.,1990). Wheatley and Smith (1994) and Wiegand, Moller, Schreiber, Kreig, and Holsboer (1991) found a greater delay in sleep onset , earlier morning awakening, more frequent arousals and awakenings during the night, reduced total sleep time, and a poorer well-being on awakening. This progressive impairment of sleep quality is influenced by a multitude of physiological and psychological factors.

Numerous conflicting reports have appeared in the literature regarding the relationship between CD4+ cell count and HIV-RNA viral load and sleep quality. It has been well documented that CD4+ cell count decreases, whereas viral load increases with the progression of HIV disease (Darko,et.al.,1995 ; Norman,et.al.,1990 ; Rothenberg,et.al.,1990). Many researchers believe that because quality of sleep worsens along the course of the disease, it may be related to CD4+ cell count and viral load as well. Some have found an inverse relationship between CD4+ cell count and the frequency of sleep onset problems and sleep maintenance problems (Darko,et.al.,1992 ; Rothenberg,et.al.,1990). However, others have found no such relationship between sleep quality and CD4+ cell counts or viral load (Breitbart, McDonald, Rosenfeld, Monkman, and Passik, 1998 ; Lee, Portillo, and Miramontes, 2001 ; Nokes, Chediak, and Kendrew, 1999 ; Rubinstein and Selwyn,1998).

Physical symptoms of HIV infection normally affect sleep with progression of the disease. The etiology of sleep disturbances can include symptoms such as pain,

abdominal cramping, diarrhea, incontinence, itching, burning, fever, night sweats, cough and dyspnea (Lashley,1999). Nokes and Kendrew (2001) found less overall symptom severity to be a correlate of better sleep quality. Specifically, pain contributes to the nonrestorative sleep experienced by persons with HIV disease (Gardner, Petrin, Collier, and Paauw,1997). Phillips and Skelton (2001) found that greater pain was associated with poorer sleep quality and that acupuncture was effective in promoting better quality of sleep and the relief of pain.

Fatigue is a major complaint that affects quality of life in those infected with HIV (Justice, Rabeneck, Hays, Wu, and Bozzette,1999 ; Nokes,et.al.,1999 ; Norman,et.al.,1992 ; Rubinstein and Selwyn,1998 ; Sarna, Van Servellen, Padilla, and Brecht,1999). Fatigue is also well represented in the literature as a correlate of inadequate sleep (Adinolfi,2001). Paradoxically, Lee,et.al. (2001) found that a group of women with HIV who had less fatigue, took less time to fall asleep and had better sleep efficiency when compared with a high-fatigue HIV-infected group of women. Darko and associates (1992) found that sleep-disturbed participants were significantly more likely to feel fatigued throughout the day. Darko, Mitler, and Miller and found that poor sleep and daytime fatigue were present during all stages of HIV disease.

Daytime sleepiness is a common physical symptom associated with fatigue. It occurs in the early stages of HIV as well and may even be a presenting symptom of the disease (Aldrich, Rogers, and Angell,1988). Decreased nocturnal sleep quality associated with HIV disease may create feelings of sleepiness throughout the following day. Therefore, poor sleep quality has been found to correlate with daytime sleepiness (Darko,et.al.,1995 ; Nokes and Kendrew,2001). The decrease in alertness that has been documented in participants with HIV infection is of particular importance due to resulting limitations in basic activities of daily living (Cleary,et.al.,1993).

HIV-infected individuals often contend with a number of psychological stressors causing symptoms of mental distress. The signs and symptoms of depression are similar in HIV-infected and noninfected patients, but patients with HIV infection may more frequently have sleep disturbances (Penzak, Reddy, and Grimsley,2000). Many have found sleep to be significantly affected by depressive symptoms (Mock, Phillips, and Sowell,2002 ; Nokes and Kendrew,2001). Some researchers, however,

have found it unlikely that sleep architectural changes are psychological in etiology. Darko and colleagues (1995) reported it unlikely that depression is associated with structural changes in sleep because they occur prior to any evident medical pathology. Norman and colleagues (1992) found that HIV-infected individuals with complaints of sleep difficulty exhibited greater levels of depression ; however, in that study they still scored below the limit for mild depression.

In addition to heightened levels of depression, HIV-positive patients often have difficulties dealing with anxiety. High-anxiety participants take longer to fall asleep, have a smaller percentage of slow-wave sleep, and have more transitions into non-REM sleep (Fuller, Waters, Binks, and Anderson,1997). Nokes and Kendrew (2001) found a less anxious personality and temporary mood state to be a correlate of better sleep quality. Others, however, have found that disruptions in quality of sleep cannot be explained by anxiety (Darko,et.al.,1995 ; Norman,et.al.,1990).

Environment can also negatively influence one's quality of sleep. Physical and social aspects of sleeping arrangements such as sleeping alone and sleeping in a noisy room have been studied in their relation to sleep quality (Nokes and Kendrew,2001). The relationship between sleep and the number of additional people in the household, including adults and children, however, has not been considered. The changes in sleep quality manifested by these reported changes in sleep underscore the significance of research that addresses interventions aimed at improving sleep quality in persons with HIV disease.

5. The Symptom Management Model

The Symptom Management Model (Dodd,et.al.,2001) that is used as a conceptual framework in the study on insomnia experience, insomnia management, and insomnia outcomes in AIDS patients is follows:

5.1 Overall model

A symptom is defined as a subjective experience reflecting changes in the biopsychosocial functioning, sensations, or cognition of an individual. In contrast, a sign is defined as any abnormality indicative of disease that is detectable by the individual or by others. In the University of California, San Francisco UCSF model, sign are incorporated when they are needed to assess disease status and to evaluate and

verify the effectiveness of management strategies. Both signs and symptoms are important cues that bring problems to the attention of patients and clinicians. Ideally, patients should be taught the importance of signs, which may have little relevance to the layperson until their meaning and relationship to an underlying cause is understood. The absence of signs or symptoms, however, does not necessarily imply the optimal health and well-being of an individual.

The UCSF School of Nursing Symptom Management Model is based on the premise that effective management of any given symptom or group of symptoms demands that all three dimensions be considered. The interelatedness of these three dimensions of symptom management is rarely taken into account in research, even though its importance is acknowledged. Findings from recent research will be used to demonstrate the interrelatedness of the symptom experience, symptom management strategies, and outcomes.

Relationships within the model

The dimensions of the symptom management model have conceptualized relationships to one another depicted in both the original and revised model shown with bidirectional arrows (Figure 3). The relationships among these dimensions were revised based on research and experiential findings and on further conceptualizations by the faculty and graduate students of the UCSF Symptom Management Center.

Model assumptions

The symptom management model is based on five assumptions :

i) That the gold standard for the study of symptoms is based on the perception of the individual experiencing the symptom and his/her self-report.

ii) That the symptom does not have to be experienced by an individual to apply this model of symptom management. The individual may be at risk for the development of the symptom because of the influence (impact) of a context variable such as a work hazard. Intervention strategies may be initiated before an individual experiences the symptom.

iii) That nonverbal patients (infants, poststroke aphasic persons) may experience symptoms and the interpretation by the parent or caregiver is assumed to

be accurate for purposes of intervening. That all troublesome symptoms need to be managed.

iv) That management strategy may be targeted at the individual, a group, a family, or the work environment.

v) That symptom management is a dynamic process ; that is, it is modified by individual outcomes and the influences of the nursing domains of person, health/illness, or environment.

5.2 The domains of nursing science as they relate to the model

In the revised model the recognized domains of nursing science, person, health/illness, and environment are contextual variables influencing all three dimensions of the model: symptom experience, management strategies, and outcomes.

5.2.1 Person domain – demographic, psychological, sociological and physiological – are intrinsic to the way an individual views and responds to the symptom experience. Developmental variables include the level of development or maturation of an individual. When the model is used, person variables may be expanded or contracted depending on the symptoms and the population of interest.

5.2.2 Health and illness domain - The domain of health and illness is comprised of variables unique to the health or illness state of an individual and includes risk factors, injuries, or disabilities. Individuals may be at risk for symptoms related to such environmental factors as occupational hazards, or from the side-effects of treatment for a disease. These symptoms can be anticipated, prevented, or diminished through intervention. In addition, the model allows for the assessment of factors that may influence the perception, evaluation and response of an individual at risk for potential symptoms.

5.2.3 Environment domain - The environment refers to the aggregate of conditions or the context within which a symptom occurs; that is, it includes physical, social and cultural variables. The physical environment may encompass home, work and hospital. The social environment includes one' s social support network and interpersonal relationships. Cultural aspects of the environment are those beliefs, values and practices that are unique to one's identified ethnic, racial, or religious group.

In summary, in the revised model, the three domains of nursing science person, health/illness and environment affect and modify all three dimensions of the UCSF symptom management model. This revision is an expansion of the theory base underlying the model and is based on original research.

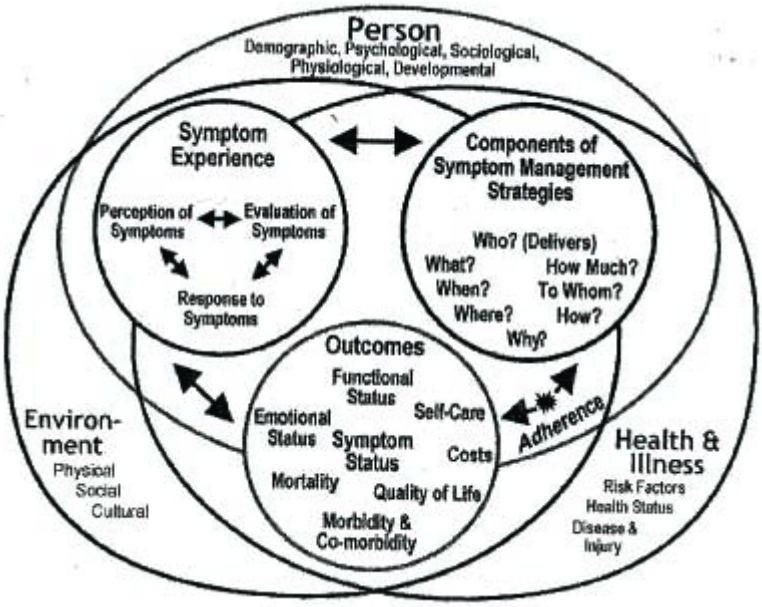

Figure 4 Revised Symptom Management Conceptual Model (Dodd,et.al., 2001)

5.3 Symptom experience

The symptom experience includes an individual's perception of a symptom, evaluation of the meaning of a symptom and response to a symptom. Perception of symptoms refer to whether an individual notices a change from the way he or she usually feels or behaves. People evaluate their symptoms by making judgements about the severity, cause, treatability and the effect of symptoms on their lives. Responses to symptoms include physiological, psychological, sociocultural and behavioural components. Understanding the interaction of these components of the symptom experience is essential if symptoms are to be effectively managed.

There are bi-directional relationships among the components of the symptom experience dimension. For example, both evaluation and response can modify perception. If an individual believes that the symptom has ominous significance, the perception of intensity may well be heightened. In the revised model these processes are conceived to be iterative and may occur simultaneously.

5.4 Symptom management strategies

The goal of symptom management is to avert or delay a negative outcome through biomedical, professional and self-care strategies. Management begins with assessment of the symptom experience from the individual's perspective. Assessment is followed by identifying the focus for intervention strategies. The intervention strategies may be targeted at one or more components of the individual's symptom experience to achieve one or more desired outcomes. Symptom management is a dynamic process, often requiring changes in strategies over time or in response to acceptance or lack of acceptance of the strategies devised.

The revised model, includes the specifications of what the nature of the strategy, when, where, why, how much intervention does, to whom recipient of intervention and how delivered. Researchers and clinicians consider these questions as they design, develop and prescribe symptom management strategies. The specifications should greatly aid in replications of intervention studies. The nature of the intervention depends on the state of the science for the particular symptom. In the evolution of the research on symptom management strategies, developers of the model have moved from targeting only the individual "to whom" in the model to including family members and experienced former patients as recipients of the intervention.

5.5 Symptom Outcomes

Outcomes emerge from symptom management strategies as well as from the symptom experience. In the revised model the outcomes dimension focuses on eight factors. A new outcome-cost-includes financial status and health services utilization dimensions of the original model as well as receipt of workers compensation. The costs of poorly managed symptoms include missed professional opportunities for advancement at work, or comparable 'costs' with the individual's personal life.

In the revised model there are no arrows indicating directionality between the multidimensional indicators and symptom status. Rather, all outcomes may be related to each other as well as to symptom status.

The duration of symptom evaluation depends upon its persistence, need for continued intervention and response to treatment. When a symptom is successfully treated and completely resolved, the model is no longer relevant. But, if continued intervention is necessary to control recurring symptoms, then the model continues to be applicable and direct management and measurement of outcomes continues.

6. Insomnia Experience in AIDS Patients

6.1 Perception of insomnia in AIDS patients

Perception of insomnia in HIV infected patients and AIDS patients was normally expressed in terms of complaint about sleeping problems or a changed sleeping pattern. The study of Darko, et.al.(1992) on the assessment of sleep and sleeping habit of 62 HIV infected patients stated that there were much sleep, many naps, early morning awakening and a cheerless feeling in the morning. Whealley and Smith (1994) indicated that many HIV infected patients declared they had difficult sleep, early morning awakening, and frequent awakening during the night including depressive feelings after wakening. The study of Norman, et.al.(1988) on 8 asymptomatic HIV infected patients reported that frequent awakenings were from many kinds of disturbances creating the problem of prolonging the sleeping duration. Similarly, Cohen, et. al. (1996) studied 50 HIV infected patients and Norman, et. al. (1992) studied 14 HIV infected male patients. Those studies showed that most patients complained of poor sleeping, many times of awakening and having a short sleeping time. Rubinstein, et.al.(1998) indicated that 39% of the sampling group of 115 HIV infected patients took sedatives 3 times a week helping their sleep but only a half of them had successful sleeps with those sedatives. From those kinds of perception, the summary can be that HIV infected patients and AIDS patients have problems in sleeping and spend more time awakening (Wiegand, et. al., 1991). From patients' perception, insomnia can be categorized as follows (Piemmongkol, P., 1993: 90; Srisuraphanond, M., 1999: 334):

i) Sleep onset or initial insomnia referred to difficulty in going to sleep since going to bed. It took over 30 minutes to sleep but if actual sleep was done, it could last long until dawn. This problem was found in people with anxiety, sleeplessness phobia, high level of arousal, medications, sleeping hygiene and environmental disturbances.

ii) Sleep interruption or middle insomnia or sleep maintenance insomnia represented the problem of being able to sleep but awakening in the middle of the night like 1:00 or 2:00 a.m. and then it could be possible or impossible to get back to sleep again. This problem is usually involved with sleep apnea syndromes, uncomfortable symptoms e.g. pain, cough, breathlessness, tachypnea etc., nocturia, migraine, nocturnal asthma, peptic ulcer, seizure, medications and environment.

iii) Early morning awakening or terminal insomnia referred to the sleep with earlier awakening, 1-2 hours than usual for instance. Normal awakening time was 6 o'clock in the morning but with this symptom the awakening time would be 4 or 5 o'clock in the morning. It was hard to get back to sleep after awakening. It might be related to elderly age, depression, medications and environment.

Some people may have any of those symptoms or some may have all of them.

6.2 Evaluation of Insomnia

This is the assessment to verify the causes, frequency and/or severity of insomnia including threats or impacts on life.

6.2.1 Cause of insomnia in HIV infected and AIDS patients

6.2.1.1 Direct HIV infection - Neurotransmitters, optic peptides, hormones and cytokines are crucial agents of maintaining sleep. The relationship between those agents affected physical factors in HIV infected patients as follow (Phillips, 1999: 93-97): vital changes in HPAA in HIV infected patients by increasing cytokine release so great amount of cytokines were detected in blood steam. There are 3 kinds of cytokines relating to sleep e.g. IL-1-B, IL-6 and TNF-Alpha.

IL-1-B and IL-6 stimulate the release of CRF and Increased CRF aroused ACTH release. The result of increased ACTH was to secrete cortisol so a high level of cortisol could be detected in the blood of HIV infected patients. The increased cortisol motivated frequency of awakening or difficult sleep, caused lighter sleep or NREM sleep phase II, and decreased REM sleep, short wave sleep (SWS) or

NREM sleep phase III and VI or deep sleep that declined actual sleeping time. Therefore 6-times increased TNF-ALPHA in HIV infectious patients caused increased delta wave sleep particularly in the severe HIV infected period that made them have sensitive sleep and easy awakening.

6.2.1.2 HIV infection of the central nervous system - HIV cells could catch CD4 that are in T-lymphocyte and macrophage. There is a belief that HIV infected CNS in the initial HIV infection and was a cause of changes and abnormal functions of the nervous system thus harming life (Cohen, et. al., 1996). The study of Koralnik, et. al. (1990) testing electrical physical reactions demonstrated that most physical reactions addressed the indicators of having nervous injury. Hence spreading HIV infection to CNS created severe damage of nervous functions in AIDS patients. Nervous dysfunction could come from AIDS dementia complex in cortical and subcortical segments with less to severe damages. The damage of CNS created cognitive impairment resulting in SWS declined, short deep sleep and easy awakening including disturbed sleeping pattern in HIV infected and AIDS patients (White, et. al. 1995). Rubinstein and Selwyn (1998) showed that AIDS patients earned cognitive impairment and had sleep problem at 100%. Some patients reported sleepy feeling and much sleep because CNS was damaged. However damaged CNS could cause insomnia as the sleeping cycle was changed.

6.2.1.3 Physical symptoms or symptoms distress - Uncomfortable symptoms were from direct HIV infection or opportunistic infection and cancers for instance, febrile, fatigue, sweat at night, diarrhea, headache, muscular exhaustion, tachypnea, skin itchy and so forth. Those uncomfortable symptoms disturbed the sleep of patients, created insomnia or difficult sleep or waking up during the night while having those symptoms (Phillips, 1999: 93-97). Examples of sleep disturbance were normally found from sepsis e.g. fever expressed infection that could be found in all phases of HIV infection. Fever disturbed the sleep with many awakenings at night because temperature affected REM sleep. High temperature decreased SWS and REM sleep (Zorick,2000). Additionally, fever created physical discomfort because it generally happened with headache, muscular exhaustion and increased metabolism that produced fatigue, weakness and sleep disturbance (Leampetch, V., 2001).

Pain, particularly headache occurred in the patients with opportunistic infection to brain or meningitis. It was a symptom disturbing sleep of the patients because discomfort and irritation aroused sympathetic functions making physically alertness and difficult sleep (Closs, 1999). Cough and dyspnea caused from opportunistic infection that infected the respiratory tract of AIDS patients disturbed the sleep. Coughs could wake the patients up and constant coughing might make difficult sleep (Ramsiri, S., 2000). Dyspnea that patients faced made them feel nervous and be afraid to sleep because breathing was a basic sign of living. Hence actual sleeping time was decreased (Goldney,et.al.,2003). Diarrhea was one disturbance from GI tract infection and skin itchiness was the other disturbance that made patients have to go to the toilet many times and scratch at itch locations. Frequent awakenings caused them to have less phases of deep sleep. Patients would wake up with a cheerless feeling (Phillips, 1999). Cohen, et. al. (1996) studied about awakening during the middle of sleep and most samples (over 70%) reported awakenings during the night more than 1 time. One patient mentioned diarrhea was a cause of awakening. Two subjects presented sweat at night and needed to change sleeping suit. Some claimed to wake up because of pain.

6.2.1.4 Side effects of Anti-viral medicines - Side effects of Anti-viral medicines used to treat HIV infection e.g. Azidothymidine, Zidvudine, Zalcitabine, Efavirenz, particularly AZT that could pass through the blood-brain barrier and disturb nervous system relating to the sleep. The evidence showed HIV patients with the treatment of AZT reported more and different sleep disturbances with a statistical level of significance more than others with no AZT medicine-the controll group. Sleep disturbance was a side effect of AZT (Moeller, et. al., 1991). In addition, Nunez,et.al.(2001) identified efavirenz plasma levels as the predictor of insomnia in their participants. Levels above 3.5 microgram/ml were surpassed by the majority of patients experiencing grade 3-4 insomnia.

6.2.1.5 Emotional and psychological status - Stress aroused the release of corticosteriod and adrenaline that alerted sympathetic nervous system (Guyton, 2001). That promoted physical alertness and awaken system creating difficulty of sleep, frequency of awakening, decreased deep sleep, much sleep which felt insufficient sleep, and early awakening with a cheerless feeling. Depression

increased monoamine oxidase. This enzyme vanished noradrenaline and 5-hydroxy tryptamine, 5-HT offering difficult sleep and frequent awakenings (Buysse,2004). The study of Anusasnand, B. (1993) stated that fear and anxiety had a negative correlation with satisfaction of the sleep. That meant people with abnormal emotional and psychological status from stress, fear, and anxiety gained poorer sleep than people with good emotional and psychological status. HIV infectious and AIDS patients normally had high level of stress, anxiety and depression caused from the perception it was an incurable disease with final death found, as well as they had guilt about immoral behavior (Srisuraphanont, M., 1999). Rubinstein and Selwyn (1998) indicated that 32% of HIV infected patients had anxiety, 55% of them showed depression measured by the HAD model. Both groups had negative correlation with sleep and it could be a predicted factor of insomnia. Therefore sleep disturbance from nightmares could be found in AIDS patients associated with abnormal psychological status e.g. anxiety, depression, stress from family and environment etc (Hunsberger, 1989) or from Anti-viral medicines (Rukrungtham, K., 1998). Nightmares stimulated physical vigilance by arousing the sympathetic nervous system, and sometimes patients were afraid and could not sleep (Carole-Rae, 1997).

6.2.1.6 Behavioral cause - Behaviors that could disturb the sleep were personal habits, difficult sleep, unpunctual bedtime or more naps that might agitate the sleeping cycle and affect ability to sleep at night (Piummongcol, 1993). Smoking before going to bed affected the sleep because high nicotine stimulated the sympathetic nervous system causing physical alertness, difficulty of sleep and low quality of sleep (Ramsiri, 2000). It was the same as soft drinks with caffeine such as tea, coffee, chocolate and so forth. Caffeine attached to adenosine in our bodies and adenosine had the action of prohibiting agent of brain stimuli. Hence having no prohibiting agent of brain stimuli the brain would be aroused reflecting alertness. Caffeine action lasted 12 hours after lunch and could disturb the sleep that night (Stradling, 1993 ; Dreher,2003). Alcoholic drinks assisted sleep at first but stimulated the body at the end. They disturbed REM sleep resulting in awakening during the sleep and early awakening in the morning (Miller, 1999).

6.2.1.7 Environmental disturbance - Generally people could sleep in a familiar environment. Activities before going to bed and changing

sleeping location affected the sleep in every phase (Taylor, et. al., 2001). Darkness, brightness or behavioral indicators e.g. bedtime, mealtime, social activity, and night shift with daytime sleep created changes in the bio-physiological cycle. Constant light approach offered an uncomfortable feeling resulting in difficult sleep or poor sleep (Lingberg, et. al., 1998). Tone level < 45 decibel could interrupt the sleep (Fontaine, 1993 ; Schnelle,et.al.,1999). Noise promoted frequency of awakening (Tanchaisawas, V., 1993). Room temperature over 75 and under 54 Degree Fahrenheit caused less NREM sleep in phase 3 and 4, and less REM sleep including frequent awakenings. More body mobilization also disturbed the sleep (Morton, 1993 ; Bach,2002). Cleanness of bed accessories, bugs and animals particularly a hard mattress motivated frequent body movement and more awakening but it assisted in longer NREM sleep than a soft mattress did (Dhamhivej, N., 1996). Consequently, HIV infected mothers generally showed insomnia because they needed to frequently wake to care for their children at night (Sithichai, K., 1997).

6.2.3 Frequency and severity of insomnia

Insomnia was an indicator of insufficient sleep. Generally, most people experienced some insufficient sleep from stress, excitement or anxiety. Temporary poor sleep had no severe further impact. Inversely, routine insomnia affected poor physical situation. Most people with the effects of insomnia usually complained of bad performance, fatigue, irritation, emotional fluctuation, poor adaptation, low working effectiveness and sleepiness during the day (Walsh, et. al., 1994).

Severity of insomnia was determined by many components such as frequency, severity and duration of difficult sleep, including the effects on regular duty during the day–emotion and quality of life. The study on the result of treatment of insomnia emphasized the definition of sleep latency and duration after awakening during the night over 30 minutes that was consistent with sleep efficiency (ratio between sleep and time in bed times 100) at less than 85%. Sleep disturbances occurred 3 nights a week (Morin, et. al., 1999). Periods of insomnia were categorized in 3 groups (Walsh, et. al., 1994: 219) as follows:

i) Transient insomnia occurred from immediate stress or travelling to some locations with time difference (jet lag). Insomnia would probably be 2-3 nights.

ii) Short-term insomnia happened from periodical stress e.g. changing to a new job, illness or environmental factors. This insomnia might last 2-3 nights up to a month.

iii) Persistent insomnia was from factors with severe impacts such as psychological abnormality from some medicines that agitated sleeping cycle. The cause of short-term insomnia was consistent with having constant insomnia over 1 month.

Nokes, et. al. (1996) studied 56 HIV infected patients about sleep quality. The result was of 39 patients, 51% had sleep latency over 30 minutes and 28 patients, 85% had sleep efficiency of less than 85%. Twenty-two samples, 40% reported sleep disturbances occurred more than 3 nights a week. It could be summarized that most HIV infectious patients like the sampling group had severe insomnia.

Hence severity of insomnia depended on individual perception of sleep quality, feeling of restlessness and feelings since awakening until the whole day. The study of Cohen, et. al. (1996) of 50 HIV infected patients about sleeping showed that 26% of the subjects had poor perception of sleep quality, 60% stated a moderate feeling of restless, and 40% of the samples claimed to have fatigue in the morning.

6.2.3 Impacts or life threatening

Insufficient sleep, difficult sleep, and interrupted sleep indicated excessive daytime sleepiness. Patients felt sleepy, cheerless, less energy, fatigue, boredom, and inability of memory and data gathering that caused ineffective working performance. Micro-sleep attacks could be found in people with severe insomnia while studying, working and immobilized activities that could create negative result in the study or job. Consequently, micro-sleep attacks during driving were dangerous and created accidents with life harm (Intraphokha, B., 1999).

6.3 Response to insomnia

Insomnia from any cause or within any period of sleep offered decreased sleep quality, efficiency and continuity; discomfort, poor ability of doing routine

activities, and affected quality of life in physical, psychological and social aspects. People faced with insomnia really wanted some solutions prior to it becoming worse and became persistent insomnia or a psychological disorder. Different responses were found regarding individual and intermittent NREM sleep or REM sleep or all sleeping phases (Taylot, et. al., 2001). The summaries of effects of insomnia in each phase of sleep are as follows:

i) Effects of NREM sleep impairment occurred from many disturbances that created a low immune system because of higher cortisol that reduced tissue repair. NREM sleep phase 3 and phase 4 was the period of releasing high growth hormones particularly NREM sleep phase 4 had the greatest growth hormone release in the 24-hour round. Growth hormones assisted the body to develop and repair some damaged tissues. Impairment of those phases of NREM sleep decelerated the development and repairing process of the body so recovery of illness could be slow. Fatigue could be found and activities were limited. Those NREM sleep impairments were associated with decreased body weight. The impairment of NREM sleep phase 4 over 24 hours made people feel nausea, constipation or diarrhea, headache, malfunction of muscles, neck-muscle exhaustion, weakness and less muscular strength (Evans and French, 1995).

ii) Effects of REM sleep impairment occurred when volume of sleeping at night declined with early awakening (Littrell and Schuman, 1989). The impairment of this REM sleep over 24-48 hours created the changes of CNS functions that reflected psychological and emotional fluctuations e.g. inertness, environmental ignorance, unsteady emotions and behavior, easy frustration and irritation, depression or paranoia and so forth (Closs, 1999). Physical changes were the decrease in steroid hormones. Steroid hormones are neuro-transmitting agents that are used in the synthesis of other hormones. The decrease of steroid hormones affected the imbalance of other hormones (Evans and French, 1995).

Sleep disturbance over 48 hours made people express with yawns first. If no substitute sleep was made, obvious emotional expressions would be presented e.g. aggressive and irritated manners, confusion, fatigue, nausea, headache, half-closed eyes, hand tremor, and darkness around the eyes. If unsolved insomnia was constantly over 40-64 hours, it could transfer to be a psychological disorder (Closs, 1999).

According to the study of physical, psychological and behavioral reactions of people with insomnia or sleeping problem, the summaries (Carpenito, 1993 ; Stepanski,et.al.,2000 ; Alapin,et.al.,2000 ; Douglas,et.al.,2002) are as follows:

i) Physical responses were the complaints of headache or nausea, red or sore eyes, darkness around the eye area, swelling eyelids, half-closed eyes and hand tremor. The physical examination indicated low body temperature, some changes in cardiovascular system, tiredness, arrhythmia, hand tremor, less reflex, slow thinking and poor decision, poor vision and hearing, changes of ocular span and higher electroencephalogram. Likewise fatigue, weakness, headache and neck pain including muscular pain could be found because there were more muscular tension and no inhibition of motor nervous system during the sleep. Constant muscular constriction during the sleep created waste congestion in muscles (Potter and Perry, 1993).

ii) Psychological, emotional and behavioral responses were irritation, frustration, alertness, lack of enthusiasm, neglect, slow response, broken speech, less memory of speech, less interest, less reasonable decisions, more anxiety, easier tiredness, muscular exhaustion, sleepiness and yawning. Severe psychological symptoms were hallucination, paranoia, visual disorientation, and schizophrenia.

7. Insomnia Management Strategies in AIDS Patients

Preventive methods aiming to have sufficient sleep, promote sleep quality and prevent temporary insomnia were self-care as follows (Kirton, et. al., 2001; Newshan and Sherman, 1999; Nokes, et. al., 1999; Ropka and Williams, 1998; Cohen, et. al., 1996):

7.1 Sleep promoting behavior

a) Verifying and solving causes of insomnia by understanding those causes e.g. changing sleep location or bedtime. Good adaptation with those causes may offer regular sleep.

b) Spending time in bed for sleep only, not for reading books or watching television or eating things except having sexual activity. It is a good practice for the intention to go to bed.

c) Time settled for going to bed and awakening by using alarm-clock to keep daily regular wake-up time and steady sleeping cycle.

d) Patients should immediately go to bed when they felt tired or sleepy as it could help fast falling to sleep. Avoiding naps during the day or having small naps of less than half an hour should be done.

e) Patients should select and perform boring activities such as uninteresting books or TV series before going to bed. If they stayed in bed for 10-15 minutes and could not sleep, they should get up and redo boring activities until feeling sleepiness but they should not do any interesting activities that kept them awake. Uninteresting activities decreased alertness and promoted relaxation.

f) A cup of warm milk or water or light snack might help sleeping because L-tryptophan in milk was an amino acid acting like a natural sleeping agent discovered in food. L-tryptophan increased serotonin and brought serotonin into the brain leading to sleep.

g) All beans should be prohibited because they created more gas in the digestive tract resulting in discomfort. High fat diet should be avoided because it made digestive tract work hard and resulted in difficult sleep.

h) Any agents that stimulated the nervous systems 4-6 hours before bedtime e.g. caffeine diet or drink–tea, coffee, chocolate, soda and so forth should not be consumed. Caffeine action was to alert the nervous systems making sleep difficult, particularly with over dose consumption like 500 milligrams in 24 hours or 3 cups of coffee. Caffeine endurance was individual. Nicotine in cigarettes showed the same action as caffeine, especially smoking a cigarette and drinking coffee might create difficulty in sleeping. Alcohol drinking combined with smoking and drinking coffee should not be done.

i) Regular exercise decreased stress and emotional fluctuation. It offered cheerful emotions that could make good sleep by decreasing stress as well as a cycle. No exercise 3 hours before going to bed should be concerned.

j) 24-hour sleeping should be recorded by monitoring sleeping pattern such as bedtime-wakening time, total duration of sleep, body movement during the sleep, naps and so forth. A regular sleeping pattern should be kept.

7.2 Environmental management

Arranging a proper environment for the sleep should be done e.g. clean sleeping accessories, no big disturbance, good ventilation, proper room temperature, sufficient light and no noise disturbance.

7.3 Psychological management

a) Muscular relaxation should be done for approximately 10 minutes, this could decrease stress. Some activities should help relaxing such as a warm bath, back massage, reading books, listening to light music, prayer and meditation. Choosing a comfortable position in bed was necessary.

b) Mental relaxation and self-concentration by counting forward and backward from 1-100 until sleep should be performed because repeatedly doing it seemed to promote relaxation and concentration that made good sleep.

c) Massage was a systematic physical approach. It created a good feeling in patients and prevented physical stress also it motivated anxiety relief because muscular tension and anxiety normally came together. Massage made patients feel comfortable and pleasant (Richards,et.al.,2003).

d) If these mentioned problem solving methods did not work, special relaxing techniques according to physician's or health related professional's suggestions should be employed such as self-hypnosis, imagery training, reflecting reaction, muscular relaxing training for each part of the body and so forth.

7.4 Physical symptom management

a) Taking medicines for eliminating uncomfortable feelings such as fever, pain, coughing, tachypnea and so forth. The experimental research of Phillips and Skelton (2001) on the correlation between acupuncture and sleep quality in 23 HIV infectious and AIDS patients stated that pain or ache had a negative correlation with sleep quality with a statistical level of significance. Sleep quality was increased after having acupuncture with a statistical level of significance. In the analysis, the researcher believed the acupuncture helped in reducing pain and that made patients have better sleep. Hence eliminating discomfort promoted good sleep.

b) Using self-management strategies for eliminating physical symptoms or symptom distress such as a tepid sponge for fever, hot or cold compress for pain, warm water drink for cough, etc. Physical comfort promoted good sleep quality.

7.5 Sedative/hypnotics

Consulting physicians for accurate diagnosis and proper treatments such as sedative. It is harmful to take sedatives without any prescription. Sedatives were beneficial for only temporary insomnia. Prolonged sleeping-pill administration led to drug addiction.

Sedative/hypotics was used to treat temporary insomnia. Popular medicines in the group of Bezodiazepines were Estazolam, Flurazepam, Quazepam, Temazepam and Triazolam. Those had effective actions treating insomnia with little side effects. Those medicines declined sleep latency and increased sleep continuity with good sleep quality. Selecting a proper sedative that was suitable for the actual sleeping problem decreased the problem of drug over dose. Proper doses of sedatives are as follow (Srisuraphanund, M., 1999):

Triazolam = 0.125-0.25 mg at bedtime

Temazepam = 15-30 mg at bedtime

Flurazepam = 15-30 mg at bedtime

Sedative antidepressants - antidepressants and doses of them could be taken as well as sedatives (categorized from severe to light sleepiness) as follow (Srisuraphanund, M., 1999):

Amitriptyline HCL = 10-50 mg at bedtime

Doxepine HCL = 10-50 mg at bedtime

Imipramine HCL = 10-50 mg at bedtime

Trazodone HCL = 25-50 mg at bedtime

Desipramine HCL = 10-75 mg at bedtime

7.6 Other strategies

Likewise other methods of eliminating insomnia were to be tried in adjusting the sleeping behavior to have sufficient sleep that might need to be combined with those mentioned methods (Morin, et. al., 1999) as follows:

7.6.1 Stimulus control therapy

Training of arousal control was a training aiming to help people with insomnia as well as difficult sleep with long sleep latency over 30 minutes but having

a consistent sleep-wake pattern. Using bed and bedroom including reducing sleep disturbances to assist good sleep the patients should do as follows:

a) go to bed only when sleepy

b) Use the bed and bedroom only for sleep and sex, not for reading books or watching TV or eating things. This was good for establishing the intention to sleep.

c) get out of bed and go into another room whenever unable to fall asleep or return to sleep within 15-20 minutes, and return to bed only when sleepy again

d) maintain a regular arising time in the morning regardless of sleep duration the previous nights.

e) avoid daytime napping

7.6.2 Sleep restriction

To limit sleeping duration was a basic method that was used with the group having sleep efficiency of less than 85%. It helped patients to have deep sleep by limiting the time in bed equal to actual sleeping time. Then they could slowly increase time in bed and maintain 85% of sleep efficiency until actual sleeping time was 7-8 hours or as much as the body needed.

7.6.3 Chronotherapy

Training to adjust the sleeping cycle was a method that was used in people with irregular bedtimes such as night-shift staff or those who had many hours of nap. Its purpose was to be able to sleep at night as usual. Patients had to be in bed 3 hours later than normal until the time of going to bed was the same as sleeping time. To prevent the same problem, maintaining a constant daily bedtime and wake-up time should be performed.

The above indicate many problem-solving methods for sleeping disorders. One or combined methods may be probably used according to the situation.

8. Insomnia Outcomes in AIDS Patients

Whereas insomnia occurs at night it affected people all 24 hours. Prolonged insomnia influenced living and emotional patterns of people. It also caused to poor

health, bad personal relationships, poor working performance, less social activities and routine pleasure. The perception of low or no self-capability came from the basis of losing life control. Feeling isolation was happened when awakening in the middle of the night and being unable to go back to sleep or having poor sleep quality. Furthermore they encountered difficulty in expressing their sleeping problems because people with good sleep might not understand and push them to sleep quickly or give them general suggestions that could not help them (Goldstein, Krasner and Garfield, 1987).

People stimulating themselves could prolong excessive daytime sleepiness but they also could sleep or be very sleepy while doing immobilizing activity. Insufficient sleep made them frustrated, irritated, aggressive, have fatigue and depression. The following result had a negative impact on family or personal relationships. Most people with insomnia claimed to have uncomfortable feelings and reported psychological problems, chronic and recurrent illness. Those people experienced frequent and prolonged hospitalization more than others without insomnia experience. People with insomnia often had to change jobs or limit their working responsibility because of health problems. A lot of people having sleeping difficulty reported that they needed to work so hard for the successful sleep if there were some disturbances. People with poor sleep normally had problems of working performance that required high intention and high motivation for completing their work. Particularly, hard work might need special skills for instance, a rush task needed rapid thinking, resourcefulness and intelligence and an editing job or job related to numbers required accuracy (Glodstein, Krasner and Garfield, 1987).

Similarly, after HIV infectious and AIDS patients eliminated sleeping disorders and had sufficient sleep, those experiences of insomnia will be gone. The new experience of good sleep indicates good sleep quality that differs from previous insufficient sleep.

Summary

The symptom management model according to Dodd, et. al. (2001) consists of 3 related dimensions as follows: insomnia experience, insomnia management strategies and insomnia outcomes. It can be a guideline of insomnia management in

AIDS patients. Insomnia is mostly found in all stages of HIV infected and AIDS patients. Insomnia is expressed as sleep latency over 30 minutes, awakening during the night and time of difficulty in going back to sleep of over 30 minutes, poor sleep, early morning awakening, a cheerless feeling after awakening and excessive daytime sleepiness. The cause of insomnia may directly be from HIV infection. Other causes of insomnia are symptoms of other illnesses, side effects of medications, emotional and psychological disturbances, behavior and environment, frequency and severity of sleep disorder of 3 nights and over per week. Insomnia affects routine life and decreases performance of activities. Physical effects are headache, nausea, sore and red eyes. Psychological effects are boredom, discouragement, irritation, frustration, inertness, no enthusiasm and loss of interest. Management strategies to eliminate insomnia are mixed strategies that assist in having sufficient sleep by adjusting behaviors that promote sleeping, environmental management, self-practice or under supervision of relaxing techniques, and taking sedatives according to physician's prescription. Those two mentioned dimensions help in being successful in the third dimension: outcomes of insomnia and eliminating all negative effects such as physical malfunctions, bad health, illness causing hospitalization, poor working performance, poor economy, bad social relationships and poor interpersonal relationships. The management strategies of insomnia have to be harmoniously used in all three dimensions together. Consequently, the pattern of insomnia management can be taken as a foundation for introduction of nursing care aiming to eliminate insomnia for AIDS patients.

CHAPTER 3
METHODOLOGY

This descriptive research was conducted to study the insomnia experience, insomnia management, and insomnia outcomes in AIDS patients using the revised symptom management model of Dodd, et. al. (2001), details as follow:

Population and Sample

The population of this research was patients with confirmed diagnosis of Anti-HIV or positive HIV. They had opportunistic infections, regarding the 28 diseases of the criteria of the Ministry of Public Health that indicated AIDS. They were also treated in Bumrasnaradul Institute, Nonthaburi Province.

Samples were selected by a purposive sampling method with inclusion criteria as follow:

- Male or female aged 15 years old or older
- Had known about HIV infection for 3 or more months
- Had experience of the counseling process
- No symptoms that could have a communication barrier
- Being able to hear, speak and understand the Thai language
- Had insomnia experience for last 3 months before the interview

The sample size representing the population for this study was determined by the table of Yamane (1967 cited in Kanjanavasi, S., et. al. (1997). From the documentary statistics, the population that had been treated was approximately 1,500 patients per month. According to the confidence ratio of 95% with error (E) = ± 15%, the sample size was equal to 159 patients. Hence the researcher provided the sample size of this study of 160 patients.

Setting

The setting of this study was at the Out-Patient Department in Bumrasnaradul Institute, Nonthaburi province. This institute is a study center and provides medical

cares and treatments for general patients including HIV infectious disease and AIDS patients. From the statistics of this institute, AIDS patients had been treated at the OPD and ambulatory care unit in July 2003, and there were 918 male patients and 551 female patients. There were 908 male patients and 570 female patients in August 2003. There are isolated units for providing special care for those patients. At present, no strategy of insomnia management for HIV infected person and AIDS patients can be offered in the same direction.

Research Instruments

The interview questionnaires were constructed with regard to the scope of the curriculum, experience and the literature review, and details are as follows:

Part 1: Demographic data consisted of 3 sections:

Section 1 Personal data e.g. gender, age, religion, marital status, education level, family monthly income

Section 2 Environmental data e.g. family relationship, personal relationship

Section 3 Health and Illness data e.g. time of infection known; opportunistic infections; laboratory results–CBC, CD4, CD8, viral load; underlying disease, and treatments current received

Part 2 : Interview questionnaires associated with insomnia and insomnia experience were developed by modifying the Pittsburgh Sleep Quality Index (PSQI) (Smyth, 1999) combined with the literature review. A rating scale was applied for this questionnaire and separated into 3 sections :

Section 1 Sleep patterns and sleep quality consisted of 5 items about

1. Frequent bedtimes and awakening are in the 1st and 3rd question of the questionnaire. Habitual sleep efficiency is applied by computing (number of hours of sleep duration) / (number of hours of staying in bed times) x 100. The rating scores are as follows: 0 = > 84.99%, 1 = 75.00-84.99%, 2 = 65.00-74.99, 3 = < 65.00%.

2. Sleep latency is in the 2nd question of the questionnaire. It involves time in minutes from going to bed until sleep. The scores are rated as

follows: 0 = < 16 minutes, 1 = 16-30 minutes, 2 = 31-60 minutes and 3 = > 60 minutes.

3. Sleep duration is the 4th question in the questionnaire. It asks about actual sleeping hours in a night (that is used with the calculation of habitual sleep efficiency). The scores are rated as follows: 0 = > 7hours, 1 = 6-7 hours, 2 = 5 hours - 5 hours 59 minutes and 3 = < 5 hours.

4. Subjective sleep quality is the 5th question in the questionnaire. The question relates to patient's opinions about their sleeping. The scores are rated as follows: 0 = very good, 1 = fairly good, 2 = fairly bad and 3 = very bad.

The total insomnia was calculated by summing the patients' sleep pattern to each of the five items above. The potential range of scores was from a low of 0 to a maximum of 15. The mean score and standard deviation could be interpret as follows:

Mean	**Interpretation of level of insomnia**
0	Very good
0.01 – 1.00	Fairly good
1.01 – 2.00	Fairly bad
2.01 – 3.00	Very bad

Section 2 Perception of insomnia comprised 6 items

Sentences are Provided expressing characteristics of insomnia regarding patient's perception and the literature review e.g. difficult sleep taking over 30 minutes, feelings of having no deep sleep, have a cheerless feeling in the morning, have excessive daytime sleepiness and so forth. Frequency of insomnia is asked in this part. The scores are rated as follows: 0 = never occurred, 1 = occurred < 1 time/week, 2 = occurred 1-2 times/week and 3 = occurred 3 or more times/week.

Section 3 Cause of insomnia included 19 possible causes and item 20 was an open ended question about one more possible cause that was not included above

This assessment is used to verify sleep disturbances creating insomnia in most patients. Following the literature review, the causes comprised physical and psychological discomforts e.g. fever, pain, dyspnea, nightmare, stress and anxiety; environmental disturbances e.g. light, noise, bugs, high/low temperature; including behavioral factors e.g. waking up to use restroom during the night, nap during the day, consuming tea or coffee, . The question asked patients about frequency of those disturbances by rating scores as follows: 0 =never occurred, 1 = occurred < 1 time/week, 2 = occurred 1-2 times/week, and 3 = occurred 3 or more times/week.

Part 3 : Interview questionnaires about insomnia management and insomnia outcomes were developed by the researcher from the literature review and divided into 4 sections as follows:

Section 1 Severity evaluation of insomnia was composed of 3 questions.

It involved the perception of patients associated with insomnia and severity of it. The rating scores were as follow: 0 = a little or not at all, 1 = moderate, 2 = severe and 3 = very severe.

The total insomnia severity was calculated by summing the patients' evaluation of insomnia in each of the three items above. The potential range of scores was from a low of 0 to a maximum of 9. The mean score and standard deviation could be interpreted as follows:

Mean	Interpretation of level of insomnia severity
0	A little or not at all
0.01 – 1.00	Moderate
1.01 – 2.00	Severe
2.01 – 3.00	Very severe

Section 2 Physical, psychological, emotional and behavioral responses to insomnia composed of 6 items

Physical, psychological, emotional and behavioral responses to insomnia according to the literature review were categorized as physical responses in the 1st and 2nd question, psychological response in the 3rd question, emotional response in the 4th question and behavioral responses in the 5th and 6th question. This section asked about frequency of responses by rating the scores as follow: 0 = never occurred, 1 = occurred < 1 time/week, 2 = occurred 1-2 times/week, and 3 = occurred 3 or more times/week.

Section 3 Insomnia management strategies of patients composed of 24 items of possible strategies

It was related to all activities of self-care that patients took to manage insomnia according to the literature review by categorizing behavioral adjustment for promoting good sleep and referring cause of insomnia as follows:

- 8 items (Item 1st-8th) about promoting sleep behavior e.g. regular bedtime, no caffeine drinks etc.
- 4 items (Item 9th-12th) about environmental management e.g. clean bed accessories, proper light arrangement etc.
- 9 items (Item 13th-21st) about psychological management e.g. reading books, listening to light music, meditation etc.
- 2 items (Item 22nd-23rd) about physical discomforts symptoms management
- 1 item (Item 24th) about sedatives used
- 1 item (Item 25th) about others

A rating scale is applied in each behavior as follows:

Behavior	Score
"Never done" refers to patients had never performed it before.	0
"Had sometimes done" refers to using that kind of management to eliminate insomnia but not using every time of insomnia	1
"Had done every time" refers to using that kind of management to eliminate every time of insomnia	2
"Everyday done" refers to using that kind of management to eliminate insomnia everyday	3

Fill-up questions mostly asking for patient's opinions on insomnia management were a maximum of 3 questions. Multiple-choice questions asked about the sources of insomnia management and more than one answer could be chosen. Comments could also be added.

Section 4 Insomnia outcomes after managing was composed of 11 items which included

This section was involved with perception and evaluation of patients about post management of insomnia. Questions 1st-4th were about quality and quantity of sleep. Questions 5^{th}-11^{th} related to perception of sufficient sleep. A rating scale was applied for choosing the answer that was closest to the opinion in each question as follows:

Sleep latency (1^{st} Question): 0 = < 16 minutes, 1 = 16-30 minutes, 2 = 31-60 minutes and 3 = > 60 minutes.

Sleep duration (2^{nd} Question): 0 = > 7hours, 1 = 6-7 hours, 2 = 5-5 hours 59 minutes and 3 = < 5 hours.

Subjective sleep quality (3^{rd} Question): = very good, 1 = fairly good, 2 = fairly bad and 3 = very bad.

Decreased severity of insomnia (4^{th} Question): 0 = very much, 1 = much, 2 = moderate and 3 = little or none

Sufficient sleep (5^{th}-11^{th} Questions): 0 = much agreed, 1 = moderately agreed, 2 = mildly agreed and 3 = disagreed

The total insomnia outcomes were calculated by summing the patients' perception and evaluation after managing each of the nine items ; subjective sleep quality 1 item, decrease of insomnia 1 item, and sufficient sleep 7 items. The potential range of scores was from a low of 0 to a maximum of 27. The mean score and standard deviation could be interpreted as follows:

Mean	**Interpretation of insomnia status after managing**
0	Very good
0.01 – 1.00	Fairly good
1.01 – 2.00	Fairly bad
2.01 – 3.00	Very bad

Instrument testing

1. Validity: a set of data collection was verified for content validity by 5 experts e.g. 2 specialists with experience of treating HIV infected person and AIDS patients, 2 nursing instructors with expertise on symptomatic management and 1 registered nurse with at least 5-year experience of caring for HIV infectious and AIDS patients. Then the researcher modified the instrument according to experts' comments and advice.

2. Reliability: after modifying the instrument, it was tested with 30 patients, who had the same inclusion criteria as the sample. The data collection was performed at Bumrasnaradul Institute, Nonthaburi province. The gathered data were used to calculate the reliability of the instrument by using Cronbach's alpha coefficient (Srisathitnarakul, B., 2001). The formula is as follows:

$$\alpha = \frac{n}{n-1}\left(1 - \frac{\Sigma S_i^2}{S_t^2}\right)$$

α = Reliability coefficient

S_i^2 = Variance of scores in each item

S_t^2 = Variance of total scores of the whole set of questions

The questionnaire about insomnia management had reliability = 0.89. It did not include the scores in the sections of causes and strategies because they had open end questions with one more answer.

Data Collection

The researcher, herself collected data through the following process:

1. The researcher brought the reference and introduction letter from the Faculty of Graduate Studies, Mahidol University to the Director of the Medical Research Center: Bumrasnaradul Institute.

2. After permission, the introduction to the nursing department, nurses and medical staff in the Out-Patient Department was made with details of the researcher, research objectives, procedures of data collection and research benefits including establishing good relations with nursing staff for good cooperation in data collection.

3. Data collection was performed Monday to Friday from 7:00 a.m.–12:00 a.m. as follows:

3.1 Samples were from OPD medical clinic that is operated from 7:00 a.m.–12:00 a.m. as follows:

Monday	General medical clinic and Skin clinic
Tuesday	General medical clinic and TB clinic
Wednesday	General medical clinic, Urology clinic and Anti-viral medicine clinic
Thursday	General medical clinic and Skin clinic
Friday	General medical clinic

Data collection was performed while patients were waiting for their appointment at 7:00 a.m.-10:00 a.m. by using examination room no. 8 that offered privacy for the interview. The researcher collected data from 1-2 patients per day.

3.2 Samples from the Ambulatory care unit was done by performing bedside interviews because patient's room had sufficient privacy. The data collection was provided at 10:00 a.m.-12:00 a.m. The researcher collected data from 3-5 patients per day.

4. To select samples that reached the inclusion criteria, the researcher approached potential subjects individually in the room and established a good relationship by introducing the researcher and objectives. The researcher had to asked his/her permission to participate in this study, and then asked the patient to sign the consent form to confirm the agreement of participation and with concern for human rights protection.

5. To gather data, the researcher performed the interviews by using the questionnaire of insomnia management taking an approximate time 20-30 minutes.

6. Samples had rights to ask questions until they had no doubts. The researcher had to inform samples with proper behaviors or related interesting issues raised by the samples.

7. The researcher verified the accuracy and completeness of answers. If some were missing, the researcher would interview again until completion.

8. After completing data from 160 samples, those data would be analyzed and interpreted with statistical methods.

Protection of Human Rights

Realizing about the research ethics, the use of gathered data was concerned with honor, value and the effects that might occur to the samples. The introduction, research objectives, data collecting procedure, expected research benefits and samples' human rights were provided, before starting the study, to the samples. All collected data would be kept confidential and be reported as group data. The data would be used in the further development and modification of healthcare for patients. The right of participating in this study belonged to the samples at all time. They were free to withdraw anytime from the study without any restriction and any effect on their future treatments. This study was open for all inquiries. Samples had to sign the consent form and the protection human rights to confirm their decision of participating in this study.

Data Analysis

The steps of data analysis was as follows:

1. When preparing data for analysis, the researcher confirmed the completeness of the data in each set of questionnaires. Coding and recording in the diskette were done. The Statistical Package for Social Sciences for Windows (SPSS/FW) was applied for the research analysis.

2. Descriptive statistics (frequency, percentage, mean, and standard deviation) were used to describe demographic data, data of insomnia experience, insomnia management and insomnia outcomes in AIDS patients classified into individual aspects and items.

CHAPTER 4
RESULTS

The study on insomnia experience, insomnia management and insomnia outcomes in 160 AIDS patients, who were treated at the Medical OPD and Rehabilitation unit of Bumrasnaradul Institute, Nonthaburi Province obtained the results presented in this chapter. The data collection was conducted in November and December 2003. The results are presented in tables with description and are categorized into 5 parts as follows:

Part 1: Demographic data

Part 2: Sleep patterns and sleep quality

Part 3: Insomnia experiences

Part 4: Insomnia management strategies

Part 5: Insomnia outcomes after managing

Part 1: Demographic data

1. Personal data

The personal data consisted of gender, age, religion, marital status, education level, occupation, family monthly income, and adequacy of family income in Tables 1 and 2.

Table 1: Number and percentage of the samples classified by gender, age, religion, and marital status (n=160)

Personal data	Frequency	Percentage
Gender		
Male	98	61.25
Female	62	38.75
Age (years)		
15 – 25	10	6.25
26 – 35	70	43.75
36 – 45	61	38.13
More than 45	19	11.88
Mean = 36.25 S.D.= 8.02 Range = 21-67		
Religion		
Buddhism	154	96.25
Islam	5	3.13
Christian	1	0.63
Marital status		
Single	39	24.38
Married	61	38.13
Separated / divorced / widowed	60	37.50

Table 1, showed the 160 AIDS patients were 61.25% male and 38.75% female. The most common age range (43.75%) was 26-35 years. The most common religion of the samples was Buddhism, 96.25%. The most common marital status, 38.13%, was married.

Table 2: Number and percentage of the samples classified by educational level, occupation, family monthly income, and adequacy of family income (N=160)

Personal data	Frequency	Percentage
Educational level (years)		
No education	3	1.88
Primary school (1-6 years)	66	41.26
Secondary school (7-9 years)	35	21.88
High school/Occupational school (10-12 years)	36	22.50
Diploma/certificate (13-14 years)	8	5.00
Bachelor's degree (15-16 years)	12	7.50
Occupation		
Unemployed	94	58.75
Merchant/Private officer	17	10.63
Employee	29	18.13
Government officer	13	8.13
Government enterprise staff	3	1.88
Farmer	4	2.50
Family monthly income (baht)		
0 – 3,500	30	18.75
3,5.01 – 7,000	41	25.63
7,001 – 10,000	47	29.38
More than 10,000	42	26.25
Adequacy of family income		
Inadequate	105	65.63
Adequate	55	34.38

Table 2 illustrated that the educational level was mostly primary school, 41.26%. Most samples reported unemployment at 58.75%. In the employed group, employee was the most popular occupation of the samples, 18.13%. Average family monthly income was 7,001-10,000 baht at 29.38%. Most subjects in this study, 65.63% claimed to have inadequate family income.

2. Environmental data

Recent environmental data is defined by who they are living with, family relationship and relationship with colleagues and neighbors (Table 3)

Table 3: Number and percentage of the samples classified by environmental data (n=160)

Environmental data	Frequency	Percentage
Living condition		
Alone	13	8.13
With family	106	66.25
With cousin	18	11.25
With friends / foundations	23	14.38
Relationship with family		
Good	27	16.88
Isolated	133	83.13
Relationship with colleagues and neighbors		
Good	107	66.88
Isolated	53	33.13

Table 3 showed that most subjects lived with their family, 66.25%. The family relationship was good at 83.13%. The relationship between colleagues and neighbors was isolated, 66.88%.

3. Health and illness data

Data of health and illness are taken from the patient files combined with the interviews. The data was categorized in time of infection, numbers of CD4/CD8, numbers of viral load, blood count, opportunistic infections, recent symptoms, underlying disease and medications currently taken, see Table 4-6.

Table 4: Number and percentage of the samples classified by time of infection, numbers of CD4/CD8, a numbers of viral load and blood count (n=160)

Health and illness data	Frequency	Percentage
Numbers of months HIV status known		
Less than 12	31	19.38
12 – 60	89	55.63
61 – 120	34	21.25
More than 120	6	3.75
Mean = 3.60 S.D.= 3.43 Range = 3-192		
CD4 level (cells / m^3)		
Had the test	93	58.10
Less than 50	57	61.29
50 – 100	13	13.98
101 – 150	9	9.68
151 – 200	4	4.30
More than 200	10	10.75
Mean = 90.19 S.D.= 156.32 Range = 1-883		
CD8 level (cells / m^3)		
Had the test	84	52.50
Less than 500	32	38.09
500 – 1,000	38	45.24
More than 1,000	14	16.67
Mean = 680.30 S.D.= 460.32 Range = 37-2537		
Viral load level (copies/ml)		
Had the test	26	16.30
Less than 1,000	8	30.77
1,000 – 10,000	1	3.85
10,001 – 100,000	4	15.38
100,001 – 500,000	8	30.77
More than 500,000	5	19.23
Mean = 239878.27 S.D.= 277549.31 Range = 50-750,000		

Table 4: Number and percentage of the samples classified by time of infection, numbers of CD4/CD8, numbers of viral load and blood count (n=160)(continue)

Health / illness data	Frequency	Percentages
Hemoglobin level (mg %)		
Had the test	90	56.30
Less than 12	68	75.56
12 or more	22	24.44
Mean = 10.19 S.D.= 2.50 Range = 4.70-15.40		
Hematocrit level (%)		
Had the test	90	56.30
Less than 35	63	70.00
35 or more	27	30.00
Mean = 30.72 S.D.= 7.40 Range = 14-47		
White blood cell count (x 10^3 cell/mm^3)		
Had the test	90	56.30
Less than 5.0	45	50.00
5.0 – 10.0	38	42.22
More than 10.0	7	7.78
Mean = 5.54 S.D.= 3.10 Range = 1.19-16.80		

In Table 4, most samples, 55.63% knew their about HIV infection for 12-60 months. The samples, 58.10% said they had CD4. Most samples, 61.25% were found to have a CD4 level of less than 50 cells/µl. The outcome indicated the CD8 at 52.50% and most common level of CD8 was 500-1,000 cells/µl as 45.24%. The positive result of viral load was 16.30%, and 30.77% mostly fell into 1,000 copies/ml and 100,001-500,000 copies/ml. Most subjects, 90% had positive results of hemoglobin, hematocrit and white blood cells. The most common hemoglobin level, 75.56% was less than 12mg%. Hematocrit was mostly less than 35%, 70% and white blood cell was in the most common range of less than 5.0 cell/mm^3 for 50% of the sample.

Table 5: Number and percentage of the samples classified by most commonly found opportunistic infection, recent signs and symptoms, medications currently taken and underlying disease (n=160)

Health / illness data	Frequency	Percentage
Most commonly found opportunistic infection *		
pulmonary tuberculosis	85	53.13
cryptococcosis	34	21.30
pneumocystis carinii pneumonia	34	21.30
extrapulmonary tuberculosis	32	20.00
wasting syndrome	13	8.13
cytomegalovirus	12	7.50
Most commonly found recent signs and symptoms *		
Fatigue / Tiredness	160	100.00
Skin rash / papules	90	56.25
Coughing / Shortness of breath	74	46.25
Lack of appetite / Nausea / Vomiting	72	45.00
Oral white patches	69	43.13
Fever	59	36.88
Headache	54	33.75
Medications currently taken *		
Supportive signs and symptoms	74	46.25
Anti-retroviral	79	49.38
Antibiotic	117	73.13
Anti-fungal	126	78.75
Underlying disease		
No	127	79.38
Yes	33	20.63

* one patient may have more than one answer

Table 5 illustrated that the most frequently found opportunistic infection was pulmonary tuberculosis at 53.13% followed by cryptococcosis, 21.25% and pneumocystis carinii pneumonia at 21.30%. The most commonly found sign and symptom was fatigue/tiredness at 100% followed by skin rash/papules at 56.25%. Most patients reported to administering anti-fungal medicine and antibiotics at 78.75% and 73.13% respectively, for preventing and treating opportunistic infection. Underlying disease demonstrated that 79.38% had no evidence of other previous illness.

Part 2: Sleep pattern and sleep quality

Table 6: Number and percentage of the samples classified by sleep pattern involved with bedtime and waking-time (n=160)

Sleep pattern	Frequency	Percentage
Bedtime		
05.00 – 07.59 p.m.	19	11.88
08.00 – 10.59 p.m.	113	70.63
11.00 p.m. or later	28	17.50
Waking-time		
12.00 p.m. – 04.59 a.m.	19	11.88
05.00 – 07.59 a.m.	120	75.00
08.00 a.m. or later	21	13.13

In Table 6, most samples, 70.63% presented the most common sleep pattern as having the bedtime at 8.00 p.m.-10.59 p.m. Seventy-five percent of the samples stated the awakening time at 05:00 a.m.-07:59 a.m.

Table 7: Number and percentage of the samples classified by sleep quality involved with sleep latency, sleep duration, habitual sleep efficiency and subjective sleep quality (n=160)

Sleep pattern	Frequency	Percentage
Sleep latency		
Less than 15 minutes	0	0
15 – 30 minutes	10	6.25
31 – 60 minutes	34	21.25
More than 60 minutes	116	72.50
Sleep duration		
More than 7 hours	1	0.63
6 hours 1 minute – 7 hours	1	0.63
5 – 6 hours	27	16.88
Less than 5 hours	131	81.88
Habitual sleep efficiency		
More than 85 %	1	0.63
75 – 85 %	5	3.13
65 – 74.99 %	6	3.75
Less than 65 %	148	92.50
Subjective sleep quality		
Very good	0	0
Fairly good	4	2.50
Fairly bad	70	43.75
Very bad	86	53.75

In Table 7, most samples, 72.50% had sleep latency of over 60 minutes. The subjects, 81.68% claimed to have less than 5 hours of sleep duration a night. Habitual sleep efficiency or percentage of sleep duration hours toward time in bed less than 65% was stated by 92.50%, and 53.75% had poor sleep quality.

Table 8 : Mean, standard deviation, and interpretation of sleep quality classified by items and overall

Data	Mean	S.D.	Interpretation
Item			
Sleep latency	2.66	0.59	Very bad
Sleep duration	2.80	0.46	Very bad
Habitual sleep efficiency	2.88	0.45	Very bad
Subjective sleep quality	2.51	0.55	Very bad
Overall	2.71	0.51	Very bad

Table 8, showed that the mean scores of each item and overall of sleep quality ranged from 2.01 to 3.00 (S.D.=0.51). This demonstrated most samples had very bad sleep quantity and sleep quality or these samples had insomnia.

Part 3: Insomnia experiences

To gather information about experience of insomnia, the researcher analyzed data of perception of insomnia, evaluation of insomnia causes and severity of insomnia and responses toward the insomnia in the past 3 months, details are in Tables 9-17.

Table 9: Number and percentage of the samples in perception of insomnia characteristic classified by frequency of insomnia occurrence (n=160)

Perception of characteristics of insomnia	Frequency of insomnia occurrence						mean	S.D.
	Less than once a week		Once or twice a week		Three or more times a week			
	f	%	f	%	f	%		
Item								
1.Feelings of daytime fatigue and / or sleepiness	0	0	9	5.63	151	94.38	2.94	0.36
2.Feelings of morning tiredness	0	0	13	8.13	147	91.88	2.92	0.23
3.Difficulty falling asleep/sleep latency of more than 30 minutes	9	5.63	11	6.88	140	87.50	2.82	0.51
4.Feelings of no deep sleep	15	9.38	29	18.13	116	72.50	2.63	0.68
5.Frequent or prolonged nocturnal awakenings	18	11.25	27	16.88	115	71.88	2.61	0.68
6.Early morning awakening	40	25.00	41	25.63	76	47.50	2.19	0.88
Overall							2.68	0.36

Table 9 illustrated that the perception of insomnia characteristics in the samples was able to indicate the frequency of insomnia signs. Most patients, 87.50% perceived fatigue or excessive daytime sleepiness 3 or more times a week. The second was cheerless in the morning or insufficient sleep followed by sleep latency of over 30 minutes, awakening during the night and repeated sleeping time of over 30 minutes, no deep sleep, and early morning awakening at 91.88%, 87.50, 72.50, 71.88, and 47.50, respectively. Mean score of insomnia perception was 2.68 (S.D.=0.36).

Table 10: Number and percentage of the samples classified by severity of insomnia (n=160)

Evaluate severity of insomnia	Frequency	Percentage	mean	S.D.
Severity level				
Moderate	30	18.75		
Severe	82	51.25		
Very severe	48	30.00	2.11	0.69
Life threatening level				
Moderate	40	25.00		
Severe	75	46.88		
Very severe	45	28.13	2.03	0.73
Use of sleeping medication				
Never	103	64.38		
Less than once a week	14	8.75		
Once or twice a week	21	13.13		
Three or more times a week	22	13.75	0.76	1.13
Overall			1.64	0.40

In Table 10, the samples rated the severity and life threatening of insomnia in the severe level at 51.25% and 46.88%, respectively. Most of them, 64.38% denied using sedatives. However, 13.75% of patients claimed to use a sedative three or more times a week. Mean score of insomnia severity was 1.64 (S.D.=0.40).

Table 11: Number and percentage of the samples classified by physical, psychological, emotional and behavioral responses toward the insomnia (n=160)

Response to insomnia	Frequency of response to insomnia occurrence						mean	S.D.
	Less than once a week		Once or twice a week		Three or more times a week			
	f	%	f	%	f	%		
Items								
Behavioral								
1.Sleepiness, yawning, and naps	0	0	11	6.88	149	93.13	2.93	0.25
2.Inert, no enthusiasm	0	0	14	8.75	145	90.63	2.90	0.32
Psychological								
1.Less endurance and more boredom, discouragement, stress	3	1.88	30	18.75	127	79.38	2.61	0.62
Emotional								
1.Irritable	9	5.63	41	25.63	109	68.13	2.78	0.46
Physical								
1.Headache-dizziness and nausea	20	12.50	52	32.50	88	55.00	2.43	0.71
2.Red and itchy eyes	35	21.88	68	42.50	56	35.00	2.12	0.76
Overall							2.63	0.40

Table 11 illustrated that physical, psychological, emotional and behavioral responses toward the insomnia were mostly sleepiness, yawning and naps during the day three or more times per week at 93.13%. The second was inert or less enthusiasm followed by irritable, less patience, more boredom, stress, discouragement, headache and nausea at 90.63%, 79.38%, 68.13% and 55.0% respectively. Red and itching eyes were found 1-2 times a week at 42.50%. Mean score of insomnia response was 2.63 (S.D.=0.40).

Table 12: Number and percentage of the samples classified by psychological, physical symptom and behavioral causes of insomnia (n=160)

cause of insomnia	Frequency	Percentage
Psychological		
Stress / Anxiety	160	100.00
Nightmares	13	8.13
Physical symptom / symptom distress		
Skin itching	126	78.75
Cough	77	48.13
Fever	74	46.25
Shortness of breath / Dyspnea	63	39.38
Headache	49	30.63
Behavioral		
Using the toilet during the night	85	53.13
Daytime naps	74	46.25
Prolonged time of awakening in bed	33	20.63
Irregular bedtime and waking-time	29	18.13
Drinking tea and/or coffee	20	12.50
Drinking alcohol and/or smoking	16	10.00

Table 12, illustrated the causes of insomnia that caused the most sleep disturbance was stress at 100.00% followed by itching, fever, cough, shortness of breath, and headache at 78.75%, 48.13%, 46.25%, 39.38% and 30.63%, respectively. For behavioral causes, the samples declared the most disturbance was frequently using the toilet during the night at 53.13% and long time napping at 46.25%.

Table 13: Number and percentage of the samples classified by the causes of insomnia such as environment, disease and treatments, and others (n=160)

cause of insomnia	Frequency	Percentage
Environment		
Noise	29	18.13
Hot or cold bedroom	5	3.13
Insects or bad smell	3	1.88
Light	2	1.25
Baby	2	1.25
Uncomfortable bed or mattress	1	0.63
Sleeping alone	1	0.63
Disease and treatments	16	10.00
Sleep difficulty had worsened since HIV diagnosis	13	8.13
Easy awakening had worsened since HIV diagnosis	8	5.00
Anti-retroviral medication	4	2.50
Other medication		
Others	7	4.38

Table 13 showed the most common environmental disturbance was noise at 18.13%. As of disease and treatments, sleep difficulty and easy awakening were the most important problems of the samples at 10% and 8.13%, respectively.

Table 14: Number and percentage of insomnia in the samples classified by gender (n=160)

Gender	Insomnia		
	Fairly good	Bad	Very bad
	f (%)	f(%)	f (%)
Male	1 (1.0)	6 (6.1)	91 (92.9)
Female	0	5 (8.1)	57 (91.9)

Table 14, showed most samples in both genders had very bad insomnia, particularly it was found in males more than females at 92.9% and 91.9%, respectively.

Table 15: Number and percentage of insomnia in the samples classified by age (n=160)

Age (years)	Insomnia		
	Fairly good	Bad	Very bad
	f (%)	f(%)	f (%)
15-25	0	1 (10.0)	9 (90.0)
26-35	0	5 (7.1)	65 (92.9)
36-45	1 (1.6)	5 (8.2)	55 (90.2)
> 45	0	0	19 (100.0)

Table 15 illustrated that most subjects in all age groups presented very bad insomnia. The samples aged over 45 years claimed to have it at 100.0%.

Table 16: Number and percentage of insomnia in the samples classified by education level (n=160)

Education level	Insomnia		
	Fairly good	Bad	Very bad
	f (%)	f(%)	f (%)
No education	0	0	3 (100.0)
Primary school	0	3 (4.55)	63 (95.45)
Secondary school	0	3 (8.6)	32 (91.4)
High school	0	2 (5.56)	34 (94.44)
Diploma / certificate	0	3 (37.5)	5 (62.5)
Bachelor degree	1 (8.3)	0	11 (91.7)

Table 16 demonstrated that most samples in all education levels had very bad insomnia, particularly in subjects with no education at 100.0% and with primary school level at 95.45%.

Table 17: Number and percentage of insomnia in the samples classified by numbers of months HIV status known (n=160)

Numbers of months HIV status known	Insomnia		
	Fairly good	Bad	Very bad
	f (%)	f(%)	f (%)
< 12	0	0	31 (100.0)
12 - 60	1 (1.1)	8 (9.0)	80 (89.9)
61 - 120	0	3 (8.8)	31 (91.2)
> 120	0	0	6 (100.0)

In Table 17, most samples in all durations of knowing HIV infection had very bad insomnia, particularly the subjects who knew the HIV infectious result for less than 1 years and over 5 years at 100.0%.

Part 4: Insomnia management

This research showed the analysis of actual strategies to manage the insomnia employed by patients and families in the aspects of sleep promoting behaviors, environmental management, relaxing techniques, physical symptom management and medications under physician's order, see details in Table 18-20

Table 18: Number and percentage of the samples classified by performance of the management strategies of insomnia in terms of environmental management and sleep promoting behavior (n=160)

Strategies for promoting sleep	Performance (n=160)			
	Sometime		Every time	
	f	%	f	%
Environmental management				
-Clean bed accessories	0	0	160	100.00
-Proper bedroom light	2	1.25	158	98.75
-Proper bedroom temperature	3	1.88	156	97.50
-Proper bedroom noise	1	0.63	138	86.25
Sleep promoting behavior				
-No alcoholic drink before bedtime	4	2.50	150	93.75
-No caffeine drink after noon	0	0	143	89.38
-No smoking before bedtime	2	1.25	140	87.50
-No daytime naps	11	6.88	58	36.25
-Regular bedtime and waking up time	3	1.88	35	21.88
-Drinking warm milk before bedtime	16	10.00	24	15.00
-Regular physical exercise	23	14.38	16	10.00
-If unable to fall asleep, go to another room until drowsy	19	11.88	8	5.00

Table 18 illustrated that environmental management strategy of cleaning bed accessories was the most common, 100%. Next were proper light, temperature and no noise arrangement at 98.75%, 97.50% and 86.25%, respectively. The most common behavioral management strategy of insomnia that was performed every time of insomnia was no alcoholic drink before bedtime at 93.75%. The second were no caffeine drink after noon, no smoking before bedtime and no nap during the day as 89.38%, 87.50% and 36.25%, respectively.

Table 19: Number and percentage of the samples classified by performance of the management strategies of insomnia in terms of physical symptom management and psychological management (n=160)

Management strategies to eliminate the causes of insomnia	Performance			
	Sometime		Every time	
	f	%	f	%
Physical symptom management (n=148)				
-Taking medication under physician's order	11	6.88	88	55.00
-Other methods	10	6.25	33	20.63
Psychological management (n=160)				
-Praying before sleep	18	11.25	12	7.50
-Watching TV. before sleep	18	11.25	11	6.88
- Meditating before sleep	16	10.00	8	5.00
-Listening to soft music before sleep	20	12.50	6	3.75
-Body massage	5	3.13	4	2.50
-Reading a book before sleep	14	8.75	3	1.88
-Using sedatives	34	21.25	13	8.13

Table 19, most subjects, 55.00% claimed to use medications under physician's order to eliminate physical symptoms every time of having insomnia. The most common psychological management strategy, (7.5%) every time was praying before sleep followed by watching TV, 6.88% and meditation before sleep at 5.00%.

Table 20: Number and percentage of the samples classified by data sources of insomnia management (n=160)

Data source of insomnia management strategies *	Frequency	Percentage
No source	147	91.88
Health care provider	14	8.75
Various communication	4	2.50
Family member	2	1.25
Handbill / Board	2	1.25
Friends	1	0.63

* one patient may have more than one answer

Table 20 illustrated that the samples, 91.88% said they had no source that offered them the information of insomnia management. However health care provider was the most frequent source of insomnia management at 8.75%.

Part 5: Insomnia outcomes after managing

The analysis of insomnia outcomes was in the aspects of insomnia status after managing strategies of insomnia. Symptom status is defined by subjective sleep quality, decrease in insomnia severity, and perceptions on characteristics of sufficient sleep, see details in Table 21-23

Table 21: Number and percentage of the samples classified by subjective sleep quality and the decrease of insomnia severity after performance of insomnia management strategies (n=160)

Insomnia status after managing	Frequency	Percentage
Subjective sleep quality		
Very good	1	0.63
Fairly good	25	15.63
Fairly bad	73	45.63
Very bad	61	38.13
Severity of insomnia decreased…		
Much	13	8.13
Moderately	29	18.13
A little or steady	118	73.75

Table 21 showed most samples, 45.63% obtained subjective sleep quality at the fairly bad level after performance of the insomnia management strategies. The severity of insomnia was decreased a little or steady at 73.75%.

Table 22: Number and percentage of the samples classified by perception on characteristics of sufficient sleep after performance of the insomnia management strategies (n=160)

Perception on characteristic of sufficient sleep after managing insomnia	Much agreement		Moderate agreement		Mild agreement		Disagreed	
	f	%	f	%	f	%	f	%
1.Easy falling asleep / Sleep latency of less than 30 minutes	8	5.00	17	10.63	19	11.88	116	72.50
2.Daytime lively	0	0	19	11.8	32	20.00	109	68.13
3.Morning awakening energetic	3	1.88	24	15.00	30	18.75	103	64.38
4.Staying asleep	4	2.50	32	20.00	30	18.75	94	58.75
5.Deep sleep	4	2.50	47	29.38	24	15.00	85	53.13
6.Morning awakening	12	7.50	62	38.75	25	15.63	61	38.13
7.Using sedative	25	15.63	38	23.75	78	48.75	19	11.88

In Table 22, most samples disagreed on the characteristics of sufficient sleep after performance of the insomnia management strategies e.g. sleep latency of less than 30 minutes, 72.50% followed by daytime lively, morning awakening energetic, staying asleep, deep sleep, morning awakening, and using sedative at 68.13%, 64.38%, 58.75%, 53.13%, 38.13%, and 11.88%, respectively.

Table 23 : Mean, standard deviation, and interpretation of insomnia outcomes after managing classified by items and overall

Symptom status after managing	Mean	S.D.	interpretation
Items			
1.Subjective sleep quality	2.21	0.72	Very bad
2.Severity of insomnia decreased…..	2.67	0.62	Very bad
3.Easy falling asleep / Sleep latency of less than 30 minutes	2.52	0.88	Very bad
4.Daytime lively	2.56	0.70	Very bad
5.Morning awakening energetic	2.46	0.82	Very bad
6.Staying asleep	2.34	0.88	Very bad
7.Deep sleep	2.19	0.95	Very bad
8.Morning awakening	1.84	1.03	Fairly bad
9.Using sedatives	1.43	0.89	Fairly bad
Overall	2.25	0.83	Very bad

Table 23, showed that the mean score overall of insomnia outcomes after managing ranged from 2.01 to 3.00 (S.D.=0.83). This demonstrated most samples had very bad outcomes after management of insomnia, or symptom status of these samples after managing was very bad.

CHAPTER 5
DISCUSSION

The study on symptom experience, symptom management, and symptom outcomes in AIDS patients was conducted with a sample of 160 AIDS patients who were treated at the Medical Outpatient Department and Rehabilitation Department of Bumrasnaradul Institute, Nonthaburi Province. Data collection was performed from November to December 2003. The results of the study are discussed according to the purposes of the study under four aspects as follows:

Part 1: Demographic data

Demographic data of the sample are classified in terms of person, environment, health and illness with details as follows:

Personal data

In Table 1-2, most samples offered similar personal data with the given information, as well as in the observation of lists of AIDS and HIV symptomatic patients from government and private medical institutes in Bangkok from 1984 to December 2003 recorded by AIDS Control Division, Bangkok Health Department and Bureau of Epidemiology, Department of Disease Control, Ministry of Public Health. Most subjects, 43.75% were in the reproductive age range of 26-35 years. There were more males than females, 61.25% and 38.75, respectively. Most of them had married status, 38.1%, and 41.26% had a primary school level education. The samples, 58.75%, claimed unemployment, whereas 18.13% were employee. This demographic data indicated that there was evidence of epidemic disease in males of reproductive ages and being workers, because this group was high risk of HIV infection whether by contaminated needles or sexual intercourse without condoms (AIDS Control Division, 2003). Likewise this epidemic disease was found in the group with low economic status and low education level. That group had less or no opportunity to receive information about this epidemic disease, had no counsel about or misunderstood

proper behaviors in epidemic protection and less cognition of the problems of AIDS and HIV infectious diseases (Viriyasombat, R., 1997).

Environmental data

According to the Table 3, most samples, 66.25% stayed with their families, referring to parents, spouses or children. The subjects, 29.38% showed a monthly income of the family between 7,000-10,000 baht. Those families claimed insufficient monthly income at 65.63% but they, 83.13% usually took good care of the subjects who were HIV infected person or AIDS patients. Isolated relations between neighbors or colleagues was 66.88%. This was similar to the study of Pongsomboon, C., (1996) and Kaewsawang, K. (1997) which found family monthly income of AIDS patients of 2,000-7,000 baht was insufficient. Viriyasombat, R. (1997) reported that HIV infected patients living with their families gained the most care from their family members but only a little care from relatives or friends. As in previous environmental studies, Thai society still has extended families with relative bonding. They have strong belief in the institutional family that is very important and it is the shield for all problems threatening any family members. Bonding among parents, children, husband and wife is a major key to promote the acceptance and support of the family for patients (Viriyasombat, R., 1997). Distrust from colleagues and neighbors made patients have an isolated situation. The patients also isolated themselves after learning about their HIV infection because they were afraid of social defense (Nansilp, P., and Tantisirintr, P., 2000).

Health and Illness data

In Table 4-5, most samples, 55.63% knew their infection for approximately 1-5 years (12-60 months). There was numbers of CD4 under 50 cells/µl at 61.25%. The number of CD8 of 500-1,000 cells/µl was 45.24%. The viral load of 100,001-500,000 copies/ml was 30.77%. The numbers of Hb was 75.56% at less than 12mg%. The Hct less than 35% was 70%. The WBC, 50% was less than $5.0x10^3$ cells /mm^3. The most common opportunistic infection was pulmonary tuberculosis at 53.13%. The next opportunistic infections were crytococcosis and pneumocystis cainii pneumonia at 21.25% each. Current symptoms were mostly found to be fatigue and tiredness at 100%. The next common symptoms were skin rash and cough with dyspnea at 56.25% and 46.25%, respectively. Consistently, the Department of Disease

Control, Ministry of Public Health and the study of Viriyasombat, R. (1997) stated that knowledge of the infection duration was 1-5 years, and fatigue as a symptom was mostly found. Bundhitchit, P. (2001) atated that most samples in AIDS phase knew their infection for over 48 months and had CD4 equal to 0-100 cells/µl. Similarly, the studies of Pongsomboon, C. (1996) and Kaewsawang, K. (1996) demonstrated that most subjects were in AIDS phase with CD4 of less than 200 cells/µl. As in the study on data of health and illness, the samples of this study were in the AIDS phase where the prognosis was to have fast duplication of HIV virus leading to the damage of the CD4 cells so CD4 level was decreased. At the same time, the antibody level also declined resulting in impaired immunity that offered the opportunity of opportunistic infections and cancers being life threats. Fighting with diseases required high metabolism so fatigue occurred combined with the dysfunction of several organs and changes in red and white blood cells (Ungvarski,et.al.,1999).

Part 2: Insomnia

Sleep Pattern

In Table 6, most samples, 70.63% went to bed around 8:00 p.m.-10:59 p.m. and 75.00% woke up around 5:00 a.m.-7:59 a.m. That was consistent with the study of Phudphanphaisan, C. (2001) on the sleep quality in heart failure patients. The results showed that the bedtime of most subjects was around 8:00 p.m.-10:00 p.m. and awakening time was 5:00 a.m.-5.59 a.m. Prasertphol, P. (2001) and Anussanand, B. (1993) studied the sleep quality of elders and claimed the bedtime of most elders was 9:00 p.m. In this study, because most patients worked all day and rested at night, their daily life was to finish work in the evening, complete daily activities, watch TV a little and then go to bed in order to awake freshly in the morning (Kahawong, W. et. al., 1996). Furthermore considering the physiology of sleep associated with the circadian rhythm of sleep and wakefulness, the proper time of melatonin production of human adult that motivated the sleep mechanism was 9:00 p.m.-10:00 p.m. (Kowittarapong, P., 2002).

In this research, the proper time of awakening was the time when they were ready to perform daily activities and go to work in time. In addition, some of patients (49.38%) were administered anti-retroviral medicine and that could be a reason for

awakening in the morning to have breakfast and medicines at 8:00 a.m. everyday. It is similar to the effective behaviors of taking anti-retroviral medicines and preventing irresponsible reaction to them. Punctual drug administration could not be postponed over one hour e.g. anti-retroviral medicines would be taken twice a day every 12 hours. If breakfast and medicine were taken at 8:00 a.m., the next medicine time should be 8:00 p.m. in everyday (Kirton, 2001).

Sleep quality

In Table 7, most samples (72.50%) had the sleep latency over 60 minutes, and 81.88% reported actual sleep duration of less than 5 hours a night. Habitual sleep efficiency or percentages of sleep duration compared with time in bed, less than 65%, was 92.50%. Rubinstein and Selwyn (1998) stated that most samples of HIV infected patients reported the mean of sleep latency at 61.5 minutes and sleep duration at 5.7 hours. Lee et. al., (2001) discovered that actual sleep duration was 53 minutes to 10.2 hours. The mean of sleep duration at 6.5 hours was 74.7%. In these results, the sample showed poor sleep quality and sleep quantity because good sleep quality should have the sleep latency of less than 30 minutes with sleep duration of 7 constant hours a night and habitual sleep efficiency should be over 85% (Backhaus,et.al.,2002 ; Buysse, et. al., 1989). Furthermore most sleep quality by the self-assessment of the sample (53.73%) was at a very bad level. The second was fairly bad at 43.75%. Finally, the mean score of each item and overall of sleep quality ranged from 2.01-3.00 score (table 8). This demonstrated most samples had very bad sleep quantity and sleep quality. Poor sleep quality and quantity generated insomnia (Reimer, 2000). According to the inclusion criteria of the purposive sampling in this study, insomnia of the samples occurred from physical, psychological, behavioral, environmental, and/or other disturbances (Kenneth and Phillips, 1999).

Part 3: Insomnia experiences

Perception of Insomnia

In Table 9, most samples had the perception of insomnia in all characteristics. The characteristics indicated that insomnia in the perception of most samples were fatigue and excessive daytime sleepiness at 94.38%. The next were cheerless or insufficient sleep after morning awakening, sleep latency of over 30 minutes, no deep

sleep, awakening during the night and taking over 30 minutes to go back to sleep and early morning awakening at 91.88%, 87.50%, 72.50%, 71.88% and 47.50%, respectively. Other studies associated with sleep problems in the patients declared that most subjects reported insomnia. Sleep difficulty was the most. The next were no deep sleep, awakening during the night and taking a long time to go back to sleep, early morning awakening, cheerless after morning awakening and excessive daytime sleepiness (George and Baylift,2003 ; Phillips and Skelton, 2001; Shochat, et. al., 1999; Cohen, et. al., 1996; Darke, et. al., 1992). The perception of insomnia of the samples in this study can be defined by individual perception on sleep quality as proper sleep was the sleep that made those people feel fresh after awakening, sufficient sleep and full energy to work all day (Fuller and Schaller-Ayse, 2000). Following physiological explanation, the sleep cycle would begin with the 1^{st}, 2^{nd}, 3^{rd} and 4^{th} continuous phases of NREM sleep followed by the 3^{rd} and 2^{nd} of NREM sleep and REM sleep and then the phase 2, 3 and 4 of NREM sleep were constantly followed as well as a cycle if no awakening interrupted (Landis,2002). The mean of sleep duration should be 7-8 hours or 4-5 sleep cycles a night. The patients who had long sleep latency might be late at the beginning of stage of sleep and have an incomplete sleep cycle when awakening(Spiegel,et.al.,1999). Particularly the final period of sleep (4^{th} or 5^{th} sleep cycle) was the period of longer REM sleep than NREM sleep that had the effects on emotions, learning, memory and adaptation (Taylor, et. al., 2001) and made the patients feel dizzy and inert with unstable emotions and behavior (Closs, 1999). Awakening in the middle of the night or at the beginning of the sleep or at NREM sleep made people need to always start with the 1^{st} phase of NREM sleep of sleep cycle(Shneerson,2000). Hence many times of awakening during the night and difficulty to go back to sleep were the guards of deep sleep so the feeling after morning awakening would seem like having no sleep at night (Berger and Williams, 1999), fatigue, cheerless and having decreased ability of daytime performance (Kupfer,1999).

Evaluation of severity of insomnia

Table 10 showed 51.25% of the samples indicated severity of insomnia at the severe level. Most samples evaluated sleep latency of over 60 minutes leading to have sleep duration of less than 5 hours a night. Prolonged awakening time at night while

other people are sleeping combined with the torture of difficult sleep made the subjects evaluate that they had severe insomnia (Alapin, et. al., 2000). If there were more than one problem in one sample e.g. having long sleep latency plus early morning awakening, the subjects would rate their insomnia at the severe to very severe level (Rosa and Bonnet,2000). Normal human beings should sleep all night but the majority of the sample, 77.61% had insomnia less than 3 nights a week. It is consistent with the categorization of insomnia patients as follows: occasional or acute insomnia have sleep problems once a week or less than once a week; short-term insomnia have sleep problems over one week to one month; and chronic insomnia– have sleep problems over one month (Walsh, Hartman and Kowall, 1994). The life threatening level of insomnia toward the daily life of sample was in the severe level, 46.88%. It can be explained that a cheerless feeling after awakening and excessive daytime sleepiness made them unable to do effective performance (Intaraphokha, B., 1999).

Regarding the evaluation on the severity of insomnia from the frequency of sedative usage in the research, most samples, 64.38% reported no need to use sedatives in the past of 3 months prior to the interview. Nokes and Kendrew (1996) also stated that most AIDS patient used no sedative for helping their sleep a few months before the study. Conversely, the study of Rubinstein and Selwyn (1998) indicated that HIV infected patients with insomnia reported taking sedatives 3 times a week to assist their sleep. In this study, the sample claimed to use as few sedatives as they could because they often attended the clinics and received information about the side effects of sedatives so drug addiction was in their mind. They took some antihistamine instead of sedatives that could help them sleep (National Center on Sleep Disorder Research, 1999).

Response of physical, psychological, emotional and behavioral aspects toward insomnia

In Table 11, the most common response toward insomnia in the sample was the behaviors of sleepiness, yawning, and naps at 93.13%. The next responses were behavior of inertness, no enthusiasm, psychological aspects of less endurance, more boredom, more discouragement, emotional aspects of more stress, irritability, and physical aspects of headache-dizziness and nausea at 90.63%, 79.38%, 68.13%,

55.00% and 42.50%, respectively. The least common physical response was red and itchy eyes, 35%. The study on the signs and symptoms of patients with insomnia (Douglas, et. al., 2002; Stepanski, et. al., 2000; Alapin, et. al., 2000) showed that the patients mostly complained of fatigue, decreased alertness, sleepiness, inability to nap, irritability, tension, hyperarousal, depressed mood, impaired memory functioning, decreased ability to concentrate, social aversion, anergia, and disabilities in work and social life. Excessive daytime sleepiness was the initial response toward insomnia (Lee-Chiong,et.al.,2002) because substitute sleep was required when people had insufficient sleep. Sleepiness was always expressed. One hour of Insomnia every night would accumulate and caused multiple excessive daytime sleepiness (Intaraphokha, B., 1999). The causes of psychological and emotional response in the sample were prolonged sleep latency and short sleep duration at night or deficiency of REM sleep. There are psychological and neurological repairs, the release of growth hormone and the decrease of metabolism and oxygenation during the REM sleep (Purves,et.al.,1997). Deficiency of REM sleep over 24-48 hours was reflected in changes of CNS functions, biochemistry changes, decrease of epinephrine and acetylcoline (Closs, 1999) and this altered psychological and emotional aspects. The samples showed the least physical responses because samples woke up during the night or had less insufficient NREM sleep. The defect of NREM sleep led to the decrease of growth hormone, less physical repairing process, and higher metabolism. Deficiency of NREM sleep over 24 hours caused nausea, headache, fatigue and muscular weakness (Evan and French, 1995). Therefore the sympathetic nervous system and other systems worked less during the sleep but more work of parasympathetic nervous system was the energy saving for activities during the day (Guyton, 2001). Prolonged awakening referring to daytime plus night time was found in higher release of cortisol, glucagon and catecolamine that acted to convert nutrient to energy in cells (Purves,et.al.,1997). Insomnia in any NREM or REM sleep, and over production or over energy saving made the samples feel fatigue, energy loss, and have ineffective performance.

Evaluation of the causes of insomnia

Frequent causes of insomnia in the sampling group were found in psychological, physical, behavioral, and environmental aspects. Details of each aspect follow:

Psychological aspect Illustrated in Table 12, stress and anxiety were the most common disturbance of sleep in this sample at 100%. It means that most samples had experience of difficult sleep, awakening during the night, or early morning awakening from stress at least once a week. In the study, stress, anxiety and depression showed a negative correlation with sleep quality of HIV infected person and AIDS patients (Nokes and Kendrew, 2001; Rubinstein and Selwyn, 1998; Nokes and Kendrew, 1996; Norman, et. al., 1992). In this study, most single subject said they had at least one case of stress or anxiety. The cases included disease and treatments, family/parents/children, and social and family acceptance. Consistently, Nanasilp, P. and Tantisirintr, P. (2000) stated that AIDS patients reported the most stress in the family. The second was disease and treatments. Family and social acceptance was the third. In this study, the learning of patients that AIDS was incurable and pictures of AIDS severity expressed in other AIDS patients made them fear and be worried for themselves (Chaijaroen, K., 2000). Physical changes, a skeletal figure and skin lesions were the evidence of their AIDS sickness that could create social objection because people who had inadequate knowledge about AIDS might be afraid of infectious transfer from human to human (Rattanasombat, S., 1997). Likewise family or spouse of the patient had to give more care and they might also get social objection (Homsab, T., 1994). Stress and anxiety had a high correlation between sleeping problems, sleeping difficulty and early morning awakening (Cruess,et.al.,2003). Those were constant disturbances. The stress or anxiety aroused the function of sympathetic nervous system to release catecolamine, glucagon and cortisol–steroid hormones influencing the central nervous system leading to restless, frustration, rapid breathing, hypertension and high muscular tension (Greene, 1997). Those also stimulated the function of reticular activating system (RAS) that guarded all phases of sleep cycle, increased sleep latency, difficult sleep and decreased sleep efficiency including raised numbers of awakenings during the night (Robbins,et.al.,2004).

Physical aspect In Table 12, skin itching was found in 78.75% of the samples. Bender, et. al. (2003) stated that the patients who reported skin itching problems had poor sleep, difficult sleep, and awakening during the night and it was hard to fall asleep. Frequent skin problems in HIV infected patients could be caused whether they had opportunistic infections or no infection at all. Quite itchy skin disturbed their sleep (Singh and Rudikoff, 2003). The study of Kachamat, V. (1997) claimed that skin rash generated high torture in AIDS patients. Consistently, Singareddy, et. al. (2003) declared that skin itchiness related to anxiety and poor sleep. Itchy skin itchy created stress and anxiety leading to poor sleep.

Coughing was the second most common disturbance of the sleep at 48.13%. The subjects as 74.43% gave the history of respiratory infection as well as an opportunistic infection. Coughing was a major symptom that was worse most of the time at night so it disturbed the sleep of the samples. Coughs could wake patients up. Continuous coughing caused failure of sleep (Ramsiri, K., 2000 ; George,2000). This was consistent with Yilan (2000) that cough interrupted patient's sleep at night.

Fever or Febrile, 46.25% was the third disturbing symptom to sleep. Most samples in this study were in AIDS phase so the direct infection by HIV and the opportunistic infection generated fever (Florence, et. al., 2002). Fever created physical discomfort combined with muscular exhaustion, headache, chill and fatigue (Leampetch, V., 2001). Miller (1999) stated that discomfort from anything was the major factor disturbing the sleep.

Shortness of breath or dyspnea disturbed the sleep of 39.38% of the subjects. Dodge, et. al. (1996) showed that episodes of insomnia had a correlation with cough, and dyspnea. Similarly, the study of Klink, et. al. (1994) stated that dyspnea was a cause of insomnia at 39.1%. The percentage was increased to 52.8% if dyspnea and cough were together. Besides insomnia from dyspnea, the samples may have fear and anxiety because breathing was the basic sign of living (Goldney,et.al.,2003). In addition, samples needed to sleep in the head-up or sitting position because of their difficult breathing. Improper sleeping position created the discontinuous sleeping and frequent awakening (Thumhives,N.,1996).

Headache disturbed the sleep of 30.63% of this sample and may come from the opportunistic infection, particularly the second was cryptococcosis. It could occur

with the febrile symptom. Rubinstein and Selwyn (1998) reported that 25% of HIV infected patients, claimed to have sleep disturbance from headache. Other studies about sleep quality and pain symptom presented that pain symptom interrupted sleep and made poorer sleep quality. Pain symptoms were associated with long sleep latency and numerous awakening during the night or no deep sleep (Garden, et. al., 1997; Phillips and Skelton, 2001). Headache was a frequent symptom found in HIV infected patients (Ever,et.al.,2000). It also generated both physical and psychological torture. Pain was usually related with an irritable feeling so it was a cause of sleep disturbance (Morin, et. al., 1998).

Behavioral aspect In Table 12, behavior of samples that disturbed them the most was frequent usage of the toilet during the night at 53.13%. Awakening for using the restroom was a behavioral problem that pushed the patients to begin the sleeping cycle again. If it combined with the sleep difficulty or long sleep latency and less sleep duration it made the patients have an initial sleep phase without a phase of deep sleep that increased poor sleep quality (Spiegel,et.al.,1999). It is consistent with the study of Cohen, et. al. (1996). HIV infected patients reported interrupted sleep because of awakening during the night at least once a night. The most cause usual of awakening was many uses of the toilet at night that could be from diarrhea or some medications leading to polyuria. Anti-retroviral and antibiotic medicines for treating opportunistic infection required consumption of much water (Kirton, 2001).

The other behavioral problems were daytime naps, prolonged time of awakening in bed and irregular times of going to bed and waking-up at 46.25%, 20.63% and 18.13%, respectively. Those behaviors cause disruptions in the sleep-wake rhythm that have the opposite effect of leading to more problems with sleep. For example, the sleepiness at the daytime made it is difficult to sleep in the night time (Goldstein, Krasner, and Garfield, 1987). The perception of patients about their serious illness requiring much rest and sleep caused those behaviors in the sample. Viriyasombat, R. (1997) declared that patients realized some physical and psychological changes after knowing about their HIV infection. Likewise, poor sleep quality in the previous night had affected on fatigue and sleepiness (Intaraphokha, B., 1999). Napping during the day had the effect on the sleep cycle of the next sleeping-awakening period.

Environmental aspect Table 13 illustrated that most samples reported the most environmental disturbance as noise, 18.13%. It is consistent with the study of Nokes and Kendrew (2001) that poor sleep quality of the sample, HIV infected patients had a correlation with the noise through the bedroom. In this study, the sample claimed that noise came from their neighbors. Sometimes they came back from work or had a party at the same time as the sample's bedtime or initial sleeping time. Those first and second phases of NREM sleep were easy to stimulate even if it was noise from normal talking (Lee, 1997). If the patients did not yet sleep, noise was able to arouse the function of reticular activating system leading to physical alertness and guard falling to any phases of sleep cycle (Schnelle,et.al.,1999).

Demographic data and insomnia

Table 14-17, depicted the level of insomnia categorized by demographic data e.g. gender, age, marital status, education level, family monthly income, living condition and duration of knowing about HIV infection. Most subjects reported very bad insomnia; males more than females 92.9% and 91.9%, respectively. Aged over 45 years at 100.0%, with no education at 100.0%, and claimed to know about their HIV infection for less than one year and over 5 years, 100.00%. That indicated the prevalence of insomnia or poor sleep in both quality and quantity that was mostly or easily found in those subjects. Consistently, a survey study on prevalence of insomnia in some groups of population revealed that male patients declared more insomnia prevalence than females in dialysis patients (Unruh, et. al., 2003). Patients with myocardial infarction in older ages reported more insomnia than in younger ages (Milross,et.al., 2002 ; Karacan and Williams, 1983). Likewise, the samples with low education or primary school education (Ohayon, et. al., 1997) demonstrated frequent insomnia. HIV infected patients who knew about the infection for along time related to the decrease of sleep quality (Nokes and Kendrew, 2001). In contrast, Blais, et. al. (2001) study in general population and Cohen, et. al. (1996) study of HIV infected patients revealed that there was a decrease of sleep quality in females more than in males. In this study, the problem of insomnia in men occurred more than in women because the efficiency of sleep in males dramatically decreases in ages over 30 years and further decrease until elderly. In women, tremendous decrease of sleep efficiency is shown in the age after 49 years (Reimmer, 2000). This was consistent with the

samples in this study whose ages were 26-45 years. Male subjects had less deep sleep, more disturbance, frequent awakening and sleep difficulty that made them have less quantity of sleep than female subjects did (Blackman, 2000). Although, the sample stayed in the AIDS stage with equal disturbances male subjects were disturbed easier than female subjects. Older ages would have insomnia, often awakening, and long sleep latency after awakening because higher stimulation index caused the increased physical alertness when the ages were older (Verran and Snyder-Halpernm 1987). Older ages generated more degenerative central nervous system causing the limit of reaction to extrinsic alarm and dysfunction of biorhythm and the release of melatonin substance. Decrease of melatonin caused more severe insomnia along with greater age (Blackman, 2000).

Other information may affect unequal insomnia prevalence in all groups because of different psychological disturbance. A study on stress and anxiety revealed that HIV infected patients with low education and taking antiviral medicines gained more anxiety, depression and fear than other groups (Pozzi, et. al., 1999; Kemppainen, et. al., 2003). In this study, the subjects with no education might have anxiety about less or no opportunity to receive information about the disease, consultation and misunderstanding proper behaviors (Viriyasombat, R., 1997). They were capable of less reasonably analyzing information than the ones with higher education (Orem, 2001). The duration of knowing HIV infection of less than one year was a period of denying and avoidance of the actual test result. The subjects knowing about HIV infection for less than 1 year reported much stress, anxiety, frustration, irritation and anger about incurable and socially unacceptable diseases (Srisupanond, M. and Dhitvanich, J., 1999). The patients knowing about the HIV infection for over 5 years typically faced physical distress. They also had seen the pictures of HIV severity with others that made them fear to have the same (Chaicharoen, K., 2000). Hence, the prevalence of insomnia can be found in all stages of HIV infection, particularly the AIDS stage has severe insomnia.

Conversely, some research revealed that insomnia occurred in women more than in men because in those studies there were obvious psychological factors relating to insomnia between men and women. However, this study stated few different

psychological impacts but different physical factors of different gender obviously influenced sleep.

Part 4 : Insomnia management

Management strategies of insomnia can be categorized as strategy for promoting the sleep and the strategy for eliminating disturbances as follows:

Strategies for promoting sleep for instance, sleep promoting behaviors and environmental management, are daily strategies aiming to have good quality sleep every night.

Table 18 illustrated that the most common strategy of promoting the sleep that the subjects used everyday or every time they encounted insomnia was the environmental management, over 95%–clean bed accessories, proper bedroom light and temperature. The second strategy of promoting the sleep was by prohibiting alcohol, coffee or tea, or no smoking before going to bed which was 85-95%. Kahawong, W. (1995) and Ramsiri, K. (2000) expressed that most sleep promoting behaviors in elders was the avoidance of alcohol drinking after dinner, sedatives, and of smoking, and tea or coffee; and the environmental management strategies were the good arrangement of room temperature, light and ventilation. As in this study, those strategies promoting sleep are consistent with health promoting behaviors (Pender, 2002). The samples had history of regularly visiting their doctors and were in AIDS phase. Consequently, direct experience of opportunistic infections and supervision from physicians and nurses about health promotion and prognostic prevention offered patients the perception of their health status, severity of disease, risk factors of AIDS, and knowledge of disease control that promoted intensive healthcare behaviors (Pender, 2002). Sithichai, K (1997) stated that the perception of health status in AIDS patients showed a positive correlation with health promoting behaviors. The study of Binthachit, P. (2001) illustrated that health-promoting behaviors of AIDS patients e.g. cleanliness of residence, no sedative drug using, and no tea or coffee were at a good level. In the sample of this study, the management of no light disturbance and proper room temperature are the elimination of disturbances and discomfort motivating good sleep (Kahawong, W., 1995). No nicotine and alcohol that aroused the central nervous

system relating to the awakening system offered a constant sleeping cycle with no interruption (Dreher,2003).

There is no evidence of other strategies that were performed as in the study of Kahawong, W. (1995). The strategy: no nap during the day failed because the sample was so tired from insomnia that a nap was unavoidable (Intaraphoka, B., 1999). Sithichai, K. (1997) said that mothers with HIV infection having insomnia had fatigue and tried to nap during the day for around 1-2 hours. The strategy of drinking warm milk before bedtime also failed because some AIDS patients reported diarrhea and some had inadequat income to buy milk for drinking e.g. homeless people staying in temples or foundations. The strategy of regular physical exercise was ignored because some patients were in the AIDS phase and had many recent symptoms (Table 6) that cause fatigue, weakness and tiredness. Moreover, they did not understand the way to do the physical exercise because of their low educational background (Binthachit, P., 2001). The samples who had jobs claimed to have no time to exercise and they thought that daily work was exercise (Homsab, T., 1995). The strategy of regular bedtime and awakening time was neglected because they did not know it influenced sleep difficulty. The strategy of doing something if unable to sleep until sleepiness was inconvenient because they did not want to disturb other roommates (Chaicharoen, K., 2000). And sometime the sample had physical symptoms for instance, febrile, headache, dyspnea and so forth which caused difficult sleep, so they needed to stay in bed until falling to sleep. The strategy of eliminating noise disturbance was not under the control of the samples because it was an extrinsic factor that was hard to change e.g. noise from neighborhood (Ramsiri, K., 2000). Besides, Thai people are not familiar with using earplugs.

Management strategies to eliminate the causes of insomnia for instance, psychological management and physical symptoms management are the strategies that are recommended when they encounter insomnia. Those may assist them to promote good sleep quality and diminish sleep disturbances.

Table 19 illustrated that most samples, over 70% reported no usage of the management strategy to eliminate the causes of insomnia as mentioned. It is consistent with the study of Kahawong, W. (1995) that most subjects declared no activities of relaxation and sedative administration before going to bed. Ramsiri, K.

(2000) said that eliminating discomfort and the administration of sedatives were not done but pray and meditation were successful particularly in elders. Most elders in the sample took the religious principles to give them relief. In this study, most samples (Table 20) denied having knowledge from anywhere about insomnia management (91.88%) so they had no ability to do a relaxing technique. Orem (2001) stated that knowledge mostly influenced self-care behaviors because proper sufficient knowledge would lead people to have proper healthcare activities, appropriate behaviors, and safety including health promotion. Most subjects refused to use sedatives because of the fear of drug addiction. Some samples indicated that they sometimes took some antihistamine medication assist their sleep. The National Center on Sleep Disorder Research (1999) stated that drugs that antagonize central histamine- 1 receptors have sedative effects. The most common was antihistamine used for treating insomnia. The AIDS patients could use it under physician' s orders.

Considering management strategies of eliminating sleep disturbances associated with physical symptoms or symptom distress, most samples declared taking medications according to the physician's order. Some claimed physical factors were the cause of their sleep difficulty and when it was gone, they could sleep without using sedatives. It means that the samples are facing torture and want them to be eliminated (Viriyasombat, R., 1997). Promotion of optimal physical function and general good health, and its overall effects on physical and psychological fitness can benefit sleep (Davis, 2003). Physical management declined the stress and fear about the disease leading patients to have quality sleep (Ramsiri, K., 2000). The study of Phillips and Skelton (2001) indicated that acupuncture assisted in decreasing the pain and increasing the sleep quality of the sample.

Part 5: Insomnia outcomes after managing

The outcomes of insomnia after performance management strategies according to the revised symptom management model of Dodd, et. al. (2001) because this study conducted and gathered information for the last 3 months before the interview date. The results of the study are as follow:

Table 21-23 illustrated that most samples defined fairly bad sleep quality after performance management strategies at 45.63%. Some indicated very bad at 38.13%. Those determined that severity of insomnia in the samples decreased a little or remained the same at 73.75%. Others, over 50% disagreed on the perception of sufficient sleep experience (Table 22). According to the revised symptom management model of Dodd, et. al. (2001), this study indicated that managing strategies should be regularly performed and modified for gaining the appropriate and decreasing negative effects of those symptoms. The samples were in AIDS phase and have obvious AIDS symptoms. They had high stress. High sleep disturbances required them to have strong intention to constantly perform the management strategies to eliminate physical symptoms and promote sleep quality. Sufficient knowledge and mandatory practice of those management strategies will offer the effective results on sufficient sleep with good sleep quality. Insomnia needed both a management strategy on promoting sleep quality and a strategy of eliminating sleep disturbances to diminish negative outcomes. Health care providers need to assess causes and evaluate the proper one or more intervention for AIDS patient individuals with insomnia.

CHAPTER 6
CONCLUSION

Conclusion

This descriptive research aimed to study the insomnia experience, insomnia management and insomnia outcomes in AIDS patients. The sample in this study was 160 AIDS patients who had been treated in Medical OPD and Rehabilitation Unit at Bumrasnaradul Institute, Nonthaburi Province. The data collection was conducted during November to December 2003. The purposive sampling method was employed with inclusion criteria.

The research instruments consisted of interview questionnaires established according to the scope of the curriculum, experience and the literature review. The part 1 of the research instrument was categorized into 3 sections: Section 1: Personal data e.g. gender, age, religion, marital status, education level, income; Section 2: Environmental data e.g. family relationship and personal relationship; and Section 3: Health and illness data e.g. time of infection, opportunistic infections, current symptoms, laboratory results CBC, CD4, CD8, viral load, underlying diseases, and medication currently taken. The part 2 of the research instrument: the interview questionnaire of patients with insomnia was established and modified from The Pittsburgh Sleep Quality Index (PSQI) (Smyth, 1999) and the literature review. It had questions relating to sleep pattern e.g. regular bedtime and awakening time, sleep quality e.g. sleep latency, sleep duration, habitual sleep efficiency, and subjective sleep quality; insomnia experience e.g. perception of insomnia and evaluation of causes of insomnia by rating scale. The part 3 of the research instrument: the interview questionnaire associated with insomnia management comprised the evaluation of insomnia severity; physical, psychological, emotional and behavioral response toward insomnia; insomnia self-management strategies that were measured by a rating scale, and the patients suggested their strategies and sources of insomnia management information. They could choose more than one sentence and comment on

their own opinions. Insomnia outcomes on insomnia status after performance of insomnia management strategies employed a rating scale to measure it. For the instrument test, 5 experts did the content validity. The reliability test was completed with 30 subjects similar to the inclusion criteria of the sample and the value of Cronbach's Alpha Coefficient was .89. (it did not include the scores in the sections of causes and strategies) Finally, the Statistical Package of Social Sciences for Windows (SPSS/FW) was employed in the research analysis and interpretation and was presented by descriptive statistics e.g. frequency, percentage, mean and standard deviation.

Findings of the study

1. Most patients, 61.25%, were male with 43.75% aged 26-35 years. They were 96.25% Buddhist, 38.1% of married status, 41.26% of primary school education, 58.75% were unemployed. Employee was the most usual occupation. Average monthly income of the family was 7,001-10,000 baht, 29.38% and it was inadequate, 65.63%.

2. Most patients, 66.25% reported being with their families. Their family relationship was good, 83.13%. Isolation was the relationship between colleagues or neighbors at 66.88%.

3. Most patients, 55.63% claimed to know about their HIV infection for around 1-5 years. The result of CD4 at 58.10% and they reported to have less numbers of CD4 than 50 cells/µl at 61.25% and the result of CD8 at 52.50% including CD8 500-1,000 cells/µl at 45.24%. The finding of viral load was 16.30% of the samples. The most result common viral load was found in the range of less than 1,000 copies/ml and 100,001-500,000 copies/ml for 30.77% of the samples. Ninety percent of the samples stated the indicator in the CBC test. The samples, 75.56% showed hemoglobin of less than 12 mg%. Most 70% had hematocrit less than 35% and 50% had white blood cells less that 5.0 cell/mm^3. The most common opportunistic infection was mycobacterium pulmonary tuberculosis at 53.13% and cryptococcosis at 21.25%. The most common current symptom was insomnia and fatigue/tiredness at 100% and skin rash at 56.23%. The samples, 79.38% reported no underlying disease.

4. Most patients declared having the sleep patterns with their bedtime as 08.00 p.m.-10.59 p.m., their awakening time as 05.00 a.m.-07.59 a.m., sleep latency of over 60 minutes, sleep duration a night of less than 5 hours, habitual sleep efficiency of less than 65% and poor subjective sleep quality. Mean score of each item and overall sleep quality ranged from 2.01 to 3.00 (S.D.=0.45-0.59). This demonstrated most samples had very bad sleep quantity and sleep quality or these samples had insomnia.

5. The most common perceptions of insomnia in the patients were excessive daytime sleepiness, followed by a feeling of cheerless in the morning or insufficient, difficulty to sleep or sleep latency of over 30 minutes, a feeling of no deep sleep, awakening during the night and taking over 30 minutes to go back to sleep, and early morning awakening. The mean score of insomnia perception was 2.68 (S.D.=0.36).

6. The evaluation of insomnia severity indicated a severe level of severity and was life threatening toward the patients but most of them denied using sedatives for their sleep. The mean score of insomnia severity was 1.64 (S.D.=0.40).

7. In the evaluation of causes of insomnia, the most common sleep disturbance was stress (100%). The other sleep disturbances were skin itching, fever, cough, shortness of breath, and/or headache followed by behavioral causes which were using toilets at night and taking a long nap during the day, and the environmental cause was noise.

8. The most common response toward insomnia in the patients was behavioral response e.g. sleepiness, yawning, naps during the day, and inert. The second responses were psychological responses e.g. less endurance, more boredom and discouragement, and stress followed by emotional responses e.g. irritable, and physical responses e.g. headache-dizziness, nausea, and itchy eyes. The mean score of insomnia response was 2.63 (S.D.=0.40).

9. All items in the insomnia experience (perception, evaluation, and response) occurred over three times per week.

10. High prevalence insomnia in the patients was associated with males, aged over 45 years, no education, and patients who knew about the HIV infection for less than 1 year and for over 5 years.

11. The insomnia management strategies that were implemented the most were environmental management e.g. clean bed accessories and arranging proper room temperature. The second were promoting sleep behavior e.g. no alcohol drink, no caffeine drink and no smoking before bedtime followed by physical symptom management e.g. taking medication under physician' s order and/or using others method by themselves, and psychological management e.g. praying, watching T.V., listening to soft music before sleep. The patients performed strategies sometime at insomnia occurrence and most patients declared they had no information of insomnia management from any sources.

12. Regarding the insomnia outcomes after managing, most samples reported to have poor subjective sleep quality, a little or no decreased insomnia severity level after performance of the insomnia management strategies. They disagreed they had sufficient sleep in the terms of sleep latency of less than 30 minutes followed by daytime liveliness, morning awakening energetic, staying asleep, deep sleep, morning awakening, and using sedatives. Mean scores of most of the items and overall of insomnia outcomes after managing ranged from 2.01 to 3.00 (S.D.=0.62-1.03). This demonstrated most sample had very bad outcomes after management of insomnia or symptom status of these samples after managing was very bad.

Recommendations

The recommendations from this research are as follows:

Nursing intervention

1. The research results confirm the situation of the AIDS patients having severe insomnia that generate negative impacts on their routine lifestyle. Hence nurses and healthcare providers should realize the significance of good sleep by assessing the sleep quality and sleep quantity in every AIDS patient as possible.

2. The interrelationship between physical, psychological, behavioral, environmental, and demographic factors as causes of insomnia is indicative of the complexity of the problem. These findings support the need for health care providers to consider factors that contribute to disturbed sleep when developing effective management strategies for HIV infected persons and AIDS patients.

3. The research results pointed out the cause of insomnia was stress. Hence counselors for AIDS patients and families should be provided to discover problems and provide proper solutions that could motivate the acceptance and strong practice of insomnia management strategies. It will also be an opportunity to encourage AIDS patients for their good living with their families in society.

4. The finding showed most AIDS patients had sometimes done insomnia management strategies and had very bad outcomes after managing because of the insufficient knowledge of proper strategies and incapability of selecting strategies for eliminating insomnia. Health care providers need to create a proper plan of advice which should be provided for promoting good understanding and knowledge of insomnia management strategies for HIV infected individuals with insomnia.

5. Nurses and nursing students should be taught about the significance of sleeping pattern, behaviors of promoting sleep and possible sleeping problems of AIDS patients and patients with chronic disease. The details of the course should include sleep pattern, possible problems of insomnia, insomnia, insomnia management strategies and sleep promoting strategies. They should have an opportunity to learn both theoretical and practical sessions of caring for AIDS patients and patients with chronic disease.

Further researches

1. A descriptive research should be done to investigate the prevalence and correlates of insomnia in all stages of HIV infectious disease patients.

2. A comparative study on the prevalence and severity of insomnia between HIV infected patients with and without physical symptoms disturbing sleep should be done.

3. A comparative study on outcomes after performance between each insomnia management strategy or between a controlled and experimental group should be done.

4. A study on the relationship between the experience of insomnia, insomnia management strategies and the outcomes of insomnia toward various factors or the study on intrinsic dimension of managing pattern of insomnia combined with predicted factors of sleep quality in AIDS patients and patients with chronic disease should be conducted.

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APPENDIX

Appendix A
List of Experts

There are five experts who have validated the content validity of structured reviewing questionnaires for insomnia experience, insomnia management, and insomnia outcomes in AIDS patients. There are :

1. Assistance Professor Anuwat Keerasuntonpong, M.D., MPH&TM, Dip. Amer. Brd. Int. Med., Sub-Board of Infectious Diseases
   Faculty of Medicine, Siriraj hospital
   Mahidol University
2. Mr. Methee Chayakulkeeree, M.D., Dip. Thai Brd. Int. Med.
   Faculty of Medicine, Siriraj hospital
   Mahidol University
3. Ms. Sompis jantarottephol, R.N.
   Bamrasnaradul Institute
   Nonthaburi province
4. Associate Professor Suvimol Kimpee, B.Sc.(Nursing), M.Ed.
   Department of Surgical Nursing
   Faculty of Nursing
   Mahidol University
5. Assistance Professor Tipa Toskulkao, B.Sc.(Nursing),
   M.Sc.(Physiology),Ph.D.(Neuroscience)
   Department of Surgical Nursing
   Faculty of Nursing
   Mahidol University

Appendix B

แบบฟอร์มการยินยอมและพิทักษ์สิทธิ์ของผู้เข้าร่วมวิจัย

ดิฉันนางสาวขวัญนภา ขวัญสถาพรกุล เป็นนักศึกษาหลักสูตรปริญญาโท คณะพยาบาลศาสตร์ มหาวิทยาลัยมหิดล สนใจศึกษาประสบการณ์การมีอาการ การจัดการกับอาการและผลลัพธ์ของการมีอาการนอนหลับไม่เพียงพอในผู้ป่วยเอดส์ ท่านเป็นผู้หนึ่งที่ดิฉันคิดว่าจะสามารถเข้าร่วมในการศึกษาครั้งนี้ และถ้าท่านยินยอมที่จะเข้าร่วมการศึกษา ดิฉันขอให้ท่านตอบแบบสัมภาษณ์ 1 ชุด ซึ่งประกอบด้วย แบบบันทึกข้อมูลทั่วไป แบบสัมภาษณ์อาการนอนหลับไม่เพียงพอ และแบบสัมภาษณ์การจัดการกับอาการนอนหลับไม่เพียงพอ ซึ่งใช้เวลาในการตอบแบบสัมภาษณ์นี้ประมาณ 20-30 นาที

ท่านมีสิทธิ์ที่จะปฏิเสธหรือยกเลิกการตอบแบบสัมภาษณ์ได้ตลอดเวลา โดยไม่มีผลกระทบต่อการดูแลและการรักษาที่ท่านได้รับแต่อย่างใด ผลการศึกษาครั้งนี้อาจไม่เป็นประโยชน์โดยตรงแก่ตัวท่าน แต่ผลการศึกษาครั้งนี้จะสามารถพัฒนาคุณภาพงานทางการพยาบาล

ข้อมูลที่ได้รับจากท่าน ดิฉันจะเก็บเป็นความลับและนำมาใช้ในการศึกษาครั้งนี้เท่านั้น หากท่านมีข้อสงสัยใดๆในระหว่างตอบแบบสัมภาษณ์ ท่านมีสิทธิ์ที่จะถามดิฉันได้ ถ้าท่านตกลงที่จะเข้าร่วมการศึกษา กรุณาลงชื่อในแบบฟอร์มนี้ ขอขอบพระคุณในความร่วมมือในครั้งนี้

ขวัญนภา ขวัญสถาพรกุล
ผู้ดำเนินการวิจัย

สำหรับผู้เข้าร่วมงานวิจัย
ดิฉัน / กระผม ได้รับการอธิบายข้อมูลเกี่ยวกับการศึกษาครั้งนี้เรียบร้อยแล้ว ดิฉัน / กระผม มีความยินดีที่จะให้ความร่วมมือในการศึกษาครั้งนี้
ลงชื่อ……

Appendix C

แบบสัมภาษณ์ประกอบการวิจัย

เรื่อง

ประสบการณ์การมีอาการ การจัดการกับอาการและผลลัพธ์ของการมีอาการนอนหลับไม่เพียงพอในผู้ป่วยเอดส์

<u>คำชี้แจง</u>

แบบสัมภาษณ์ ชุดนี้ ผู้วิจัยจัดทำขึ้นโดยมีวัตถุประสงค์เพื่อศึกษาประสบการณ์การมีอาการ การจัดการกับอาการและผลลัพธ์ของการมีอาการนอนหลับไม่เพียงพอในผู้ป่วยเอดส์ ทั้งนี้เพื่อเป็นข้อมูลในการหาแนวทางให้การพยาบาลส่งเสริมให้ผู้ป่วยเข้าใจถึงสาเหตุของอาการ และกลยุทธ์การจัดการกับอาการนอนหลับไม่เพียงพอได้อย่างมีประสิทธิภาพ

ในการนี้ ผู้วิจัยใคร่ขอความร่วมมือจากท่านในการตอบแบบสัมภาษณ์ตามความเป็นจริง เมื่อผู้วิจัยรวบรวมและนำข้อมูลทั้งหมดมาวิเคราะห์ จะนำเสนอผลการศึกษาในภาพรวมซึ่งจะเป็นประโยชน์ในการพัฒนาแนวทางการดูแลผู้ป่วยเมื่อมีอาการนอนหลับไม่เพียงพอเกิดขึ้น ขณะที่ท่านตอบแบบสัมภาษณ์ ท่านมีสิทธ์ที่จะขอหยุดได้เมื่อท่านต้องการ ซึ่งคำตอบจากการตอบแบบสัมภาษณ์ของท่านทุกข้อผู้วิจัยจะเก็บไว้เป็นความลับ และเมื่อท่านมีข้อสงสัยเกี่ยวกับการวิจัยท่านสามารถสอบถามผู้วิจัยได้ทันที

แบบสัมภาษณ์ทั้งหมด ประกอบด้วย 3 ส่วน ดังนี้ คือ

<u>ส่วนที่ 1</u> แบบบันทึกข้อมูลทั่วไป

<u>ส่วนที่ 2</u> แบบสัมภาษณ์อาการนอนหลับไม่เพียงพอในผู้ป่วยเอดส์

<u>ส่วนที่ 3</u> แบบสัมภาษณ์การจัดการกับอาการนอนหลับไม่เพียงพอในผู้ป่วยเอดส์

ผู้วิจัยใคร่ขอความร่วมมือจากท่านในการตอบแบบสัมภาษณ์ให้ครบทุกข้อ และท้ายที่สุดนี้ผู้วิจัยขอขอบพระคุณทุกท่านที่กรุณาให้ความร่วมมือในการตอบแบบสัมภาษณ์ครั้งนี้เป็นอย่างดี

นางสาวขวัญนภา ขวัญสถาพรกุล
นักศึกษาปริญญาโท สาขาการพยาบาลผู้ใหญ่
คณะพยาบาลศาสตร์ มหาวิทยาลัยมหิดล

ส่วนที่ 1 แบบบันทึกข้อมูลทั่วไป

คำชี้แจง ให้ผู้วิจัยสัมภาษณ์ผู้ป่วยแล้วบันทึกข้อมูล โดยทำเครื่องหมาย "✓" ลงใน ( ) หน้าข้อความที่ตรงกับคำตอบของผู้ป่วยหรือเติมข้อความลงในช่องว่างที่กำหนด

ตอนที่ 1 ข้อมูลด้านบุคคล

1. เพศ ( ) 1.ชาย ( ) 2.หญิง

2. อายุ……ปี

3. ศาสนา

( ) 1.พุทธ ( ) 2.อิสลาม ( ) 3.คริสต์ ( ) 4.อื่นๆ ระบุ……

4. สถานภาพสมรส

( ) 1.โสด ( ) 2.คู่ ( ) 3.ม่าย/หย่า/แยกกันอยู่

5. ระดับการศึกษา

( ) 1.ไม่ได้รับการศึกษา ( ) 2.ประถมศึกษาปีที่…..

( ) 3.มัธยมศึกษาปีที่….. ( ) 4.อนุปริญญาหรือเทียบเท่า

( ) 5.ปริญญาตรีหรือเทียบเท่า ( ) 6.สูงกว่าปริญญาตรี

6. แหล่งรายได้ (ตอบได้มากกว่า 1 ข้อ)

( ) 1.คู่สมรส/บุตรหลาน/บิดามารดา ( ) 2.เงินสะสม

( ) 3.การประกอบอาชีพ ระบุ…….

( ) 4.อื่นๆ ระบุ……

7. รายได้……บาทต่อเดือน

8. ความเพียงพอของรายได้

( ) 1.ไม่เพียงพอ ( ) 2.เพียงพอ

9. ผู้รับผิดชอบค่ารักษาพยาบาล

( ) 1.ผู้ป่วยเอง ( ) 2.คู่สมรส/บุตรหลาน/บิดามารดา ( ) 3.เบิกต้นสังกัด/ประกันสังคม

( ) 4.บัตรทอง 30 บาท ( ) 5.อื่นๆ ระบุ…….

ตอนที่ 2 ข้อมูลด้านสิ่งแวดล้อม

10. ปัจจุบันท่านอาศัยอยู่ร่วมกับ

( ) 1.อยู่คนเดียว ( ) 2.อยู่กับครอบครัว (บิดามารดา/สามี/ภรรยา/บุตร)

( ) 3.อยู่กับญาติ ( ) 4.อยู่กับเพื่อน

11. สัมพันธภาพกับครอบครัว

( ) 1.ต่างคนต่างอยู่ ( ) 2.รักใคร่ให้การช่วยเหลือกันดี ( ) 3.อื่นๆระบุ……..

12. สัมพันธภาพกับเพื่อนบ้าน/ผู้ร่วมงาน

( ) 1.ต่างคนต่างอยู่ ( ) 2.รักใคร่ให้การช่วยเหลือกันดี ( ) 3.อื่นๆ ระบุ……

ตอนที่ 3 ข้อมูลด้านสุขภาพ-การเจ็บป่วย (สัมภาษณ์ร่วมกับข้อมูลที่ได้จากแฟ้มผู้ป่วย)

13. ระยะเวลาที่ทราบว่าติดเชื้อ……ปี……..เดือน

14. จำนวน CD4+/CD8+ ช่วง 3 เดือนที่ผ่านมา ( ) 1.ไม่มี ( ) 2.มี ระบุ……

15. จำนวน viral load ช่วง 3เดือนที่ผ่านมา ( ) 1.ไม่มี ( ) 2.มี ระบุ…….

16. ผลการตรวจ complete blood count (CBC) ( ) 1.ไม่มี ( ) 2. มี ระบุ Hb……..

Hct…….WBC…….อื่นๆ ……..

17. โรคติดเชื้อฉวยโอกาสที่เคยมีและมีในปัจจุบัน คือ……

18. อาการและอาการแสดงในปัจจุบัน (ตอบได้มากกว่า 1 ข้อ)

( ) 1.ฝ้าขาวในปาก/ลิ้น ( ) 2.น้ำหนักลด/เบื่ออาหาร

( ) 3.ไอ/หายใจเหนื่อย ( ) 4.มีไข้

( ) 5.ถ่ายเหลว ( ) 6.ตุ่ม/ผื่นตามตัว

( ) 7.ปวดศีรษะ ( ) 8. แขนขาอ่อนแรง/ชาปลายมือปลายเท้า

( ) 9.อ่อนเพลีย/นอนไม่หลับ ( ) 10.อื่นๆ ระบุ……..

19. โรคประจำตัวอื่นๆ

( ) 1.ไม่มี ( ) 2.โรคติดต่อทางเพศสัมพันธ์ ( ) 3.ไวรัสตับอักเสบ

( ) 4.อื่นๆ ระบุ……

20. การได้รับยา

( ) 1.ยากลุ่ม NRTIs คือ □AZT □d4T □3TC □Abacavir □ddC □ddI

( ) 2.ยากลุ่ม NNRTIs คือ □NVP □DLV □DMP-226 □LVD □ EFV

( ) 3.ยากลุ่มPIs คือ □SQV □IDV □RTV □NFV □APV

( ) 4.ยารักษาและป้องกันโรคติดเชื้อฉวยโอกาส □Bactrim □Fluconazole

□อื่นๆระบุ……..

( ) 5.ยาอื่นๆ ระบุ…….

21. การสูบบุหรี่/ดื่มสุรา/การใช้สารเสพติด

( ) 1.ไม่มี ( ) 2.มีแต่ไม่ประจำ ระบุ…….

( ) 3.มีเป็นประจำ ระบุ…….

ส่วนที่ 2 แบบสัมภาษณ์อาการนอนหลับไม่เพียงพอ

<u>ตอนที่ 1</u> รูปแบบการนอนหลับ

<u>คำชี้แจง</u> ให้ผู้วิจัยสัมภาษณ์ผู้ป่วยแล้วทำเครื่องหมาย “✓” ลงใน ( ) หน้าข้อความหรือเติมข้อความในช่องว่างที่กำหนดซึ่งตรงกับการนอนหลับส่วนใหญ่ของผู้ป่วย ในระยะ3 เดือนที่แล้ว

1. ส่วนใหญ่ท่านเข้านอนเวลาประมาณ……น.
2. ท่านนอนหลับได้หลังจากเข้านอนแล้วประมาณ…….นาที

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<u>ตอนที่ 2</u> การรับรู้อาการนอนหลับไม่เพียงพอ

<u>คำชี้แจง</u> ให้ผู้วิจัยสัมภาษณ์ผู้ป่วยแล้วทำเครื่องหมาย “✓” ลงในช่องว่างที่ตรงกับความถี่ของการเกิดอาการนอนหลับไม่เพียงพอของผู้ป่วยในลักษณะต่างๆตามข้อความที่กำหนด ในระยะ 3 เดือนที่แล้ว

ข้อ	ลักษณะแสดงถึงอาการนอนหลับไม่เพียงพอ	ความถี่ในการเกิด			
		ไม่เคยเลย	น้อยกว่า 1 ครั้ง/สัปดาห์	1 – 2 ครั้ง/สัปดาห์	3 ครั้งขึ้นไป/สัปดาห์
1	นอนหลับยากใช้เวลามากกว่า 30 นาทีจึงจะหลับ				
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<u>ตอนที่ 3</u> การประเมินเกี่ยวกับสาเหตุของการเกิดอาการนอนหลับไม่เพียงพอ

<u>คำชี้แจง</u> ให้ผู้วิจัยสัมภาษณ์ผู้ป่วยแล้วทำเครื่องหมาย " ✓ " ลงในช่องว่างที่ตรงกับความถี่ของการรบกวนการนอนหลับของผู้ป่วยจากสาเหตุเหล่านี้ในระยะ 3 เดือนที่แล้ว

ข้อ	ท่านมีปัญหาเกี่ยวกับการนอนหลับไม่เพียงพอเนื่องจากสาเหตุเหล่านี้บ่อยเพียงใด	ความถี่ในการเกิด			
		ไม่เคยเลย	น้อยกว่า 1ครั้ง/สัปดาห์	1 – 2 ครั้ง/สัปดาห์	3 ครั้งขึ้นไป/สัปดาห์
1	ต้องลุกขึ้นมาเข้าห้องน้ำกลางดึก				
2	อาการไข้				
.	…				
.	…				
.	…				

ส่วนที่ 3 แบบสัมภาษณ์การจัดการกับอาการนอนหลับไม่เพียงพอ

<u>ตอนที่ 1</u> การประเมินระดับความรุนแรงของอาการนอนหลับไม่เพียงพอ

<u>คำชี้แจง</u> ให้ผู้วิจัยสัมภาษณ์ผู้ป่วยแล้วทำเครื่องหมาย " ✓ " ลงใน ( ) หน้าข้อความซึ่งตรงกับความคิดเห็นของผู้ป่วย ในระยะ3 เดือนที่แล้ว

1. อาการนอนหลับไม่เพียงพอของท่านมีความรุนแรงในระดับใด

( ) มากที่สุด ( ) มาก ( ) ปานกลาง ( ) เล็กน้อย/ไม่มี

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<u>ตอนที่ 2</u> การตอบสนองของร่างกาย จิตใจ อารมณ์และพฤติกรรมต่ออาการนอนหลับไม่เพียงพอ

<u>คำชี้แจง</u> ให้ผู้วิจัยสัมภาษณ์ผู้ป่วยแล้วทำเครื่องหมาย " ✓ " ลงในช่องว่างที่ตรงกับความถี่ ของการเกิดอาการหรือพฤติกรรมเหล่านี้กับผู้ป่วยมากที่สุดในระยะ 3 เดือนที่แล้ว

ข้อ	อาการหรือพฤติกรรม	ความถี่ในการเกิด			
		ไม่เคยเลย	น้อยกว่า 1 ครั้ง/สัปดาห์	1 – 2 ครั้ง/สัปดาห์	3 ครั้งขึ้นไป/สัปดาห์
1	ปวดมึนศีรษะ คลื่นไส้				
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<u>ตอนที่ 3</u> วิธีการจัดการกับอาการนอนหลับไม่เพียงพอ

<u>คำชี้แจง</u> ให้ผู้วิจัยสัมภาษณ์ผู้ป่วยแล้วทำเครื่องหมาย " ✓ " ในช่องคำตอบเกี่ยวกับวิธีการจัดการกับอาการนอนหลับไม่เพียงพอที่ผู้ป่วยปฏิบัติจริง กำหนดให้

ไม่ได้ปฏิบัติ หมายถึง วิธีการนั้นผู้ป่วยไม่ได้กระทำเลยเมื่อมีอาการนอนหลับไม่เพียงพอ

ปฏิบัติ แบ่งเป็น

เมื่อมีอาการบางครั้ง หมายถึง วิธีการนั้นๆผู้ป่วยกระทำบางครั้งที่มีอาการนอนหลับไม่เพียงพอ

เมื่อมีอาการทุกครั้ง หมายถึง วิธีการนั้นๆผู้ป่วยกระทำทุกครั้งที่มีอาการนอนหลับไม่เพียงพอ

ทุกวัน หมายถึง วิธีการนั้นๆผู้ป่วยกระทำเป็นประจำทุกวัน

ข้อ	วิธีการจัดการกับอาการนอนหลับไม่เพียงพอ	การปฏิบัติ			
		ไม่ได้ปฏิบัติ	เมื่อมีอาการบางครั้ง	เมื่อมีอาการทุกครั้ง	ทุกวัน
1	เข้านอนและตื่นนอนตรงเวลา				
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<u>คำชี้แจง</u> ให้ผู้วิจัยสัมภาษณ์ผู้ป่วยแล้วเติมข้อความหรือทำเครื่องหมาย " ✓ " ลงใน ( ) ที่ตรงกับผู้ป่วยมากที่สุด

- ท่านคิดว่าวิธีการจัดการกับอาการนอนหลับไม่เพียงพอข้อใดมีผลช่วยทำให้นอนหลับเพียงพอมากที่สุด (ตอบได้มากกว่า 1 ข้อแต่ไม่เกิน 3 ข้อ)

1……2……3……

- กลยุทธ์ในการจัดการกับอาการนอนหลับไม่เพียงพอส่วนใหญ่ท่านได้รับคำแนะนำจากแหล่งใด (ตอบได้มากกว่า 1 ข้อ)

( ) 1. เจ้าหน้าที่สุขภาพ เช่น แพทย์ พยาบาล เป็นต้น

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<u>ตอนที่ 4</u> ผลลัพธ์ของการมีอาการเกี่ยวกับสภาวะอาการนอนหลับไม่เพียงพอหลังการจัดการ

<u>คำชี้แจง</u> ให้ผู้วิจัยสัมภาษณ์ผู้ป่วยแล้วเติมข้อความหรือทำเครื่องหมาย " ✓ " ลงใน ( ) ที่ตรงกับผู้ป่วยมากที่สุด หลังการจัดการกับอาการนอนหลับไม่เพียงพอแล้ว

3. ท่านนอนหลับได้หลังจากเข้านอนแล้วประมาณ.....นาที

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<u>คำชี้แจง</u> ให้ผู้วิจัยสัมภาษณ์ผู้ป่วยแล้วทำเครื่องหมาย " ✓ " ลงในช่องว่างที่ตรงกับคำตอบของผู้ป่วยมากที่สุด เกี่ยวกับความคิดเห็นของผลลัพธ์หลังจากจัดการกับอาการนอนหลับไม่เพียงพอแล้ว กำหนดให้

เห็นด้วยมาก	หมายถึง	ข้อความนั้นตรงกับความคิดเห็นของท่านอย่างมาก
เห็นด้วยบางส่วน	หมายถึง	ข้อความนั้นตรงกับความคิดเห็นของท่านบางส่วน
เห็นด้วยเล็กน้อย	หมายถึง	ข้อความนั้นตรงกับความคิดเห็น ของท่านเล็กน้อย
ไม่เห็นด้วย	หมายถึง	ข้อความนั้นไม่ตรงกับความคิดเห็น ของท่านเลย

ข้อ	ข้อความ	ผลลัพธ์หลังการจัดการกับอาการนอนหลับไม่เพียงพอ			
		เห็นด้วยอย่างมาก	เห็นด้วยบางส่วน	เห็นด้วยเล็กน้อย	ไม่เห็นด้วย
5	ท่านสามารถนอนหลับได้ง่ายขึ้นใช้เวลาน้อยกว่า 30 นาทีก่อนหลับ				
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BIOGRAPHY

NAME	Miss. Kkwannapha Khwansatapornkoon
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