

# Baseline Evaluation of Pain Management Practices and Teaching in Health Facilities and Health Training Schools in Ethiopia

**FINAL REPORT**  
**April, 2011**



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Federal Democratic Republic of Ethiopia  
Ministry of Health



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## Table of Contents

FORWARD MESSAGE.....	3
ACKNOWLEDGMENT.....	5
ACRONYMS.....	6
SUMMARY .....	6
I. BACKGROUND .....	8
II. LITERATURE REVIEW .....	9
Research Questions.....	12
III. OBJECTIVES.....	12
IV. Metedology.....	12
V. RESULT.....	23
5.1 Background information about the study participants .....	23
5..2. Knowledge of health workers towards pain assessment an management .....	25
5..3. Attitude of health workers about pain assessment and management.....	29
5.4. Practice of pain assessment and management by health workers.....	37
V.5. Availability, Prescription, and Storage of Pain Relieving Drugs.....	43
V.6. Pain relieving drugs management (selecting, procuring, storing, dispensing) and regulation.....	54
V.7. Perceived barriers to proper management of pain by health care workers .....	55
V. 8 Attitude of health workers towards opioid use .....	57
V.9 Pain Assessment and Management in Medical Schools.....	57
VI. DISCUSSION .....	61
VII. CONCLUSIONS .....	66
VII. REFERENCE.....	70

## Forward Message

Pain which is defined as “an unpleasant sensory or emotional experience associated with actual or potential tissue damage “affects the physical, mental, emotional and spiritual aspects of the patient’s life. Every day around 3.5 million people suffer from cancer related pain and it is the second most common symptom in ambulatory persons with HIV/AIDS. Chronic pain has thus evolved as a major public health concern/ issue including in Ethiopia. Pain management is one of the very challenging areas of medical practice.

*Cognizant of the gravity of the problem, the Federal MoH had issued a National Pain Management Guideline in 2007 with the objective of among others “ensuring the safety and effectiveness of pain management. The guideline was supposed to reach and used by the primary targets ie. Health care providers at all levels of the health care delivery system. However no systematic effort was made to follow-up on the use of the guideline, assess how pain management was addressed and to review how pain was addressed in the curricula of medical schools.*

As a timely response, the EPHA undertook this systematic evaluation on Pain Assessment and management Practices for which it has to be commended.

The assessment has generated a wealth of information on the important areas of the knowledge, attitude and practice related to pain assessment and management among health workers, the emphasis given to pain management in the pre-service training in medical schools; the availability, storage, and prescription of different pain management drugs, barriers to the proper management of pain by health care workers etc .This assessment is the first of its kind in the country.

The **MoH** will to exert all efforts to critically appraise the findings and recommendations from this systematic assessment and apply them to further popularize and ensure the availability and use of the national pain management guideline, review and update it, Improve the curriculum and training, and the drug supply chain management system and ultimately the quality of service and lives of the victims,

For the MoH



## **Acknowledgment**

*This assessment was technically and financially supported by the US Center for Disease Control and Prevention (CDC-E) for which we are very much grateful.*

*EPHA would like to thank the MoH for supporting the assessment review and approval of the final report.*

The ACIP particularly the research team deserve special thanks for their remarkable professional contribution for the realization of the survey which is the first of its kind in the country.

EPHA is indebted to and extends its gratitude and appreciation for all the health workers including pharmacy professionals who directly and actively participated in the research whose expressed views and responses shaped the ultimate findings and recommendations.

The Ethiopian Public Health Association

March 2011.

## ACRONYMS

AIDS:	Acquired immune deficiency syndrome
AA	Adis Abeba
ART:	Anti- retroviral treatment
CDC:	Center for disease control
DACA:	Drug administration and control authority
DD	Dire Dawa
EPHA:	Ethiopian Public Health Association
FMoH:	Federal Ministry of Health
GP:	General Practitioner
HAPCO:	HIV/AIDS prevention and control office
HO:	Health Officer
IRB:	Institutional Review Board
SNNPR:	Southern Nation's, Nationalities and People Region

## SUMMARY

### BACKGROUND

Pain management is one of the very challenging areas of medical practice. Mismanagement of pain and patient dissatisfaction are not uncommon. These days the HIV epidemic is generating a large number of patients requiring chronic care in many developing countries including Ethiopia. Thus, the need for carrying out a systematic assessment of pain management practices and providing appropriate guidelines has become greater than ever before.

### OBJECTIVE

To assess knowledge, attitude and practice related to pain assessment and management by health workers **practicing** at different levels of health care facilities; to assess the emphasis given to pain management in the pre-service training in medical schools **and** evaluate the availability, storage, and prescription of different pain management drugs in facilities.

### METHODS

The evaluation used a cross-sectional study design supplemented with qualitative method and had four components: health workers survey, medical school survey, pharmacy survey, and desk review and synthesis. The study was conducted in selected facilities in all regions of Ethiopia. The study participants were health **professionals working in hospitals, health centers, pharmacies and staff members from medical schools**. A total of 673 health workers, 132 pharmacy professionals and 38 medical school staff participated in the study. A multistage sampling was used for **health workers** survey while pharmacies were selected using purposive sampling.

### RESULT:

From the 673 health workers surveyed only 30.6% (206) of them were aware of important pain assessment scales; and drug therapy was the most popular pain management modality mentioned by 98.8% (665) of the participants. Only 27% (119) of these had correct knowledge of the contraindications of opioid drugs. Twenty eight percent (187) of the participants were aware of the national pain management guideline while 23.5% (158) knew the WHO protocol for pain management. Forty eight

percent (327) of the health workers were satisfied with the service they are providing to patients with pain and believed that pain management is given equal or higher priority relative to other components of patient management. Except for management **of withdrawal symptoms of pain** relieving drugs and the use of a combination of drugs for pain, the participants were comfortable with the pain management procedure in their facilities. The commonest 44.3% (297) cause of pain **complaint was acute medical illness.**

Verbal rating was the most commonly used pain assessment scale by health workers 44% (294) and drug therapy was almost the only pain management modality practiced by 97.6% (657) of them. Simple analgesics were the most frequently prescribed drugs by 85.6% (576) of health workers while strong opioids were never prescribed by 55.4% (373) of them. Lack of knowledge {63.6% (482)} or appropriate training, {93% (626)} on pain management was the important perceived barrier to the proper management of pain in health facilities. The availability of drugs varied across the groups of drugs; opioids and anti-depressants were less available; for instance simple analgesics were available in more than 80% of pharmacies and strong opioids such as morphine was available in only 19.8% (25) -pharmacies. The stock out was reported for almost all kinds of pain relieving drugs. More frequently, valproic acid 53.8% (7), phenetoin 52.6% (41) and codeine 59.6% (34) were commonly reported for stock out. None of the medical schools clearly showed pain management as a major component of the curricula.

## **CONCLUSION:**

Most health workers are not aware of the standard pain assessment scales and management modalities and are rarely practicing them. Wrongly perceived ideas are wide spread among health workers; the drug prescription practice followed by health workers was more likely to be affected by the perception they have about the opioid and adjuvant drugs and their professional level. Availability of drugs was also a problem. Few (28%) had knowledge of the national pain management guideline and the WHO protocol (23%). Practice pertaining to prescribing weak and strong opioids and anti-depressant was minimal, although they commonly treat patients with chronic illness. Pain management is not given a formal place in the medical curricula and thus get inadequate attention during the training of medical students.

## **I. BACKGROUND**

Chronic pain has been associated with impaired body faculties, change in mood, and decreased involvement in social activities. Chronic pain that impairs physical functions, can lead to an emotional crisis such as depression, and can even result in a suicidal behavior (1, 2). Pain is one of the commonest complaints among chronically sick individuals like AIDS patients; in the later case pain is often due to opportunistic infections, neoplasms, or medication-related neuropathy (2). Relieving pain of chronically sick persons can substantially improve their quality of life and restore bodily functions (1). However, pain is one of the symptoms that is poorly managed by health facilities of developing countries mainly because of:

- improper assessment of the cause of pain,
- ignoring the impact of pain on the patient's quality of life,
- not setting realistic case management goal (a realistic goal has three steps: initially; achieving a pain free full night's sleep, then making the patient pain free when awake and alert, and finally achieving pain free movement )
- not doing regular re-assessment to detect changes in pain severity, fear of using strong analgesics (opioids)
- misdiagnosis of cause of pain mechanism
- lack of awareness about the various treatment options by health workers
- unavailability of drugs and lack of training of health workers and
- not taking a holistic approach to pain management(2, 3).

In Ethiopia, the need for developing a national guideline for pain assessment and management has been given a high priority and one was prepared in 2007. The guideline was supposed to be distributed to all health facilities level and intended for their use. However, no proper assessment was done whether the guideline has in fact reached the intended target. The need for an assessment is growing because of the large number of people living with chronic illnesses especially with the expanded availability of ART for people living with HIV/AIDS.



## II. LITERATURE REVIEW

Pain is the most common symptoms in all kinds of illnesses but it is a prominent problem among patients who live with chronic illnesses such as HIV/AIDS and cancer. It **is defined as “an unpleasant sensory or emotional experience associated with actual or potential tissue damage”**. It affects the physical, mental, emotional and spiritual aspects of a patient's life; besides it is an overwhelming and all-consuming experience not only for the patient, but also for health care providers (2, 4).

Based on its duration, pain is classified as acute and chronic type. Acute pain may be a sign of life threatening condition and require immediate attention while chronic pain impairs not only the physical but also the emotional function of the persons with chronic illnesses (2). World-wide, chronic pain is the most frequent cause of suffering and disability that seriously affects the quality of life; and according to WHO every day 3.5 million people suffer from cancer related pain(2). Pain is the second most common symptoms in ambulatory persons with HIV/AIDS and according to a study in a New York cohort of 500 AIDS patients, the prevalence of pain was observed to significantly increase with the progression of the disease from early stage HIV to full blown AIDS(5) Nearly half of the pain in HIV is neuropathic, reflecting injury to the central or peripheral nervous system from direct viral infection, infection with secondary pathogens, or neurotic side effects of drug therapy. (2,5).

In Africa, each year 2.5 million people die from HIV/AIDS and more than 0.5 million die from cancer and many of these deaths are accompanied by suffering that could be avoided or relieved if adequate palliative care were provided(6, 7). Each year in five countries of Africa including Ethiopia, 610,000 people die from HIV/AIDS and 80,800 from cancer thus at least 0.5% of the total population in these countries need palliative care(8). In Ethiopia, the commonest concern raised by families of bedridden patients is the pain associated with illness mentioned, by 76% of participants and in most of the cases, care takers complain that adequate measures are not taken to relieve pain, and other impairing symptoms associated with terminal illnesses .(8).

Pain management is a combination of patient's pain assessment through taking proper history, examining the patient and provision of appropriate treatment for the pain. Pain

management is considered adequate if there is congruence between the patient's reported level of pain and the appropriateness of the analgesic therapy(2).

The Pain management includes both pharmacologic and non-pharmacologic treatment. According to the Ethiopian pain management guideline, the non- pharmacological therapy includes educating both the patient and care giver, psych-therapy( psychological and behavioural therapy), physical and rehabilitative therapies, complementary and alternative medicine, and other physical and invasive modalities (2). Usually less emphasis is given for psychological component of pain and non-pharmacological treatment of pain usually used as adjuvant with other treatment (9). **The national pain management guideline of Ethiopia, did not address non-drug management of pain separately, some modalities are addressed while addressing management of chronic pain and cancer pain.** However, as chronic pain is complex it demands a multimodal approach. The treatment also involves several types of health care approaches. (10). **Providing pharmacological treatment coupled with appropriate non-drug therapy is known to maximize the patients' ability to deal with chronic pain(11).**

Pain associated with chronic illnesses such as cancer and HIV/AIDS is known to be undertreated worldwide especially in developing countries. According to a meta analysis of 26 studies conducted to assess the level of under-treatment in cancer, one in two patients is under treated or poorly managed (4). Another study on the under treatment of pain in ambulatory AIDS patients documented that under treatment of pain exceeding 80% (12). Many studies conducted to assess cancer pain management tried to identify the reasons for its poor management which among others include: poor or improper assessment of the cause of pain, ignoring the impact of pain on the patient quality of life, not setting a realistic case management goal, not doing regular re-assessment to detect changes in pain severity, fear of using strong analgesics (opioids), misdiagnosis of cause of pain mechanism, lack of awareness about the various treatment options by health workers, and not taking a holistic approach to pain management and factors associated with the availability of resources such as drugs (as a result of legal restrictions (2, 13, 14). Most of these factors are correctable if proper and adequate attention is given to implement a standard protocol and provide appropriate training and supervision for the health care providers.

Most of the factors mentioned above are putting significant hindrance in managing pain of AIDS patients. In addition, AIDS patients' reluctance to report pain and the fact that AIDS patients are often from underserved populations with less access to adequate health care poses serious problems in managing pain(12).

Lack of proper training of health workers and myths held by some health workers that make them refrain from prescribing strong pain medications are also reasons for improper pain management (14). Health care providers also indicated that their general training in pain management in medical school is to blame for the poor pain assessment in their medical practice(14) The current medical education systems appear to address pain as a symptom that leads to a diagnosis rather than a symptom that by itself requires treatment. This comes from the fact that the teaching of pain management and related topics are fragmented and dispersed throughout the curriculum and important topics are poorly covered (13). The inadequate training often produces practitioners that are less confident and reluctant to use the full range of options available for pain management; they are often reluctant to prescribe opioid analgesics to patients because of a lack of standard indications, fear of addiction, and fear of side effects (12-14).

The tough regulations instituted in many developing countries are mentioned as reasons for not using opioid drugs for pain management (14, 15); however, continued reluctance to prescribe opioid among health professionals was observed despite relaxation of regulation on opioid availability for pain relief in AIDS patients in Uganda (16). Although the need for proper pain management is increasing in Ethiopia, it has yet to get the attention it deserves apart from the attempt to develop a national guideline. Little is known about the pain management knowledge, attitude and practice of health care workers in the country. No systematic efforts have been made to investigate how pain is addressed in the curricula used by medical schools. Therefore, it was imperative to conduct this assessment which will be a pioneer in providing basic information on these issues.

## **Research Questions**

- 1) What does the knowledge, attitude and practice of health workers at different levels of health care facilities regarding pain management look like?
- 2) Is pain assessment and management given adequate emphasis in the pre-service medical school training?
- 3) Are there adequate pain management drugs in the health system?
- 4) Is storage of pain relieving drugs a problem?
- 5) Are pain relieving drugs prescribed regularly in the health care system?
- 6) What are the barriers to proper management of pain by health care workers?
- 7) How is the attitude of health workers towards opioid use for pain management?

## **III. OBJECTIVES**

The objectives of the evaluation were:

- 1) assess knowledge, attitude and practice related to pain assessment and management by health workers working at different levels of the health care facilities;
- 2) Review the emphasis given to pain assessment and management courses in pre-service medical schools;
- 3) Evaluate the availability, storage, and prescription of different pain management drugs in the facilities;
- 4) Identify barriers to proper management of pain by health care workers; and
- 5) Analyze the attitude of health care workers towards opioid use for pain management.

## IV. METODOLOGY

### 4.1. Components

The evaluation had many objectives and a mix of methodologies was used to address each of the specific objectives. Accordingly, the evaluation had four components that are related to the specific objective:

- Health workers survey,
- Medical school survey,
- Pharmacy survey; and
- A desk review and synthesis as shown in Table 1.

### 4.2. Study Area

The study was conducted in all the regional states and two special city administrations of Ethiopia. From each regional state the actual assessment was done in selected health facilities providing pre-ART and ART services, and in universities with health/medical colleges<sup>1</sup>. The list of health facilities were obtained from HAPCO official website.

### 4.3. Target Populations

The target populations for each of the three components are described below:

- A. **Health Facility Survey:** The evaluation was done in randomly selected health facilities providing pre-ART and ART services in all regions of Ethiopia. Eligibility criterion for inclusion of health facilities was having a patient load **of at least 300 a month**. Based on the AIDS resource Center's latest updates (which was as of December 2009), there were 60 hospitals and 54 health centers in Ethiopia which serve more than 300 ART clients per month. In some regions health facilities with no ART service were replaced by the nearby health facility with ART service.

Whenever the number of health workers in a facility was not adequate in that case health workers from the nearby health facilities were interviewed. In regions where there was no option at all (like Harari) health facilities which did



not have ART service or ART client load of less than 300 were included in the survey. The actual study population for the health facility survey included physicians with different specialty category, nurses, and health officers.

- B. ***Health Training Schools Survey***: the evaluation focused on those schools ng training medical **doctors and health officers**; these are the universities of Addis Ababa, Gondar, Haremaya, Jimma, Mekele, Hawassa, Dilla, and Bahir Dar. From each facility 3 to 6 individuals from clinical, basic science departments and course coordinators were interviewed; where there was no course coordinator department/faculty heads were interviewed.
- C. ***Pharmacy Survey***: All pharmacies in all health facilities selected for the study were included in the survey. In addition, one nearby non-public pharmacy was also selected. In hospitals and health center pharmacies the pharmacist in-charge of the unit was interviewed and only in his/her absence the next person in the unit was interviewed. In a community pharmacy, the person who was responsible for dispensing drugs was interviewed. Pharmacies from the nearby town were surveyed whenever there were no community pharmacies in the towns where hospitals were surveyed.

**Table1. Objectives, designs and target population for the study**

	<b>Objectives</b>	<b>Design</b>	<b>Target population</b>
A.	To assess knowledge, attitude and practice related to pain assessment and management among health workers working at different levels of health care facilities  To Identify barriers to proper management of pain by health care workers  To assess the attitude of health care workers towards opioid use for pain management	Cross-sectional study using a multi-stage sampling strategy  (Health workers survey)	Health workers(Physicians, health officers, nurses,
B.	To review the emphasis given to pain assessment and management course in medical schools	Cross-sectional study (Medical school survey)	Medical schools: review of curriculum and interview of key informants
C.	To evaluate the availability, storage, and prescription of different pain management drugs in health facilities	Cross-sectional study (Pharmacy survey)	Pharmacies: hospital and health centers
D.	To identify policy gaps regarding opioid use in Ethiopia and make recommendations for policy revision.	Document review and synthesis (Desk review and synthesis)	DACA, FMoH, and Regional Health Offices

#### **4.4. Sample Size and Sampling**

Survey sample size was calculated based on conservative assumptions, as there was no prior study focusing on the subject of this evaluation: 50% prevalence of positive attitude about opioid drugs for pain management, a 95% confidence level, and with a 5% level of precision. The total sample size for the survey was 680 individuals; 377 plus a 20% extra for non-response and design effect of 1.5.

All hospitals with at least 300 ART patients a month regardless of their ownership status were eligible for the survey. At the time of the proposal development the number of hospitals fulfilling this criterion was 60. A multi-stage sampling technique was used;

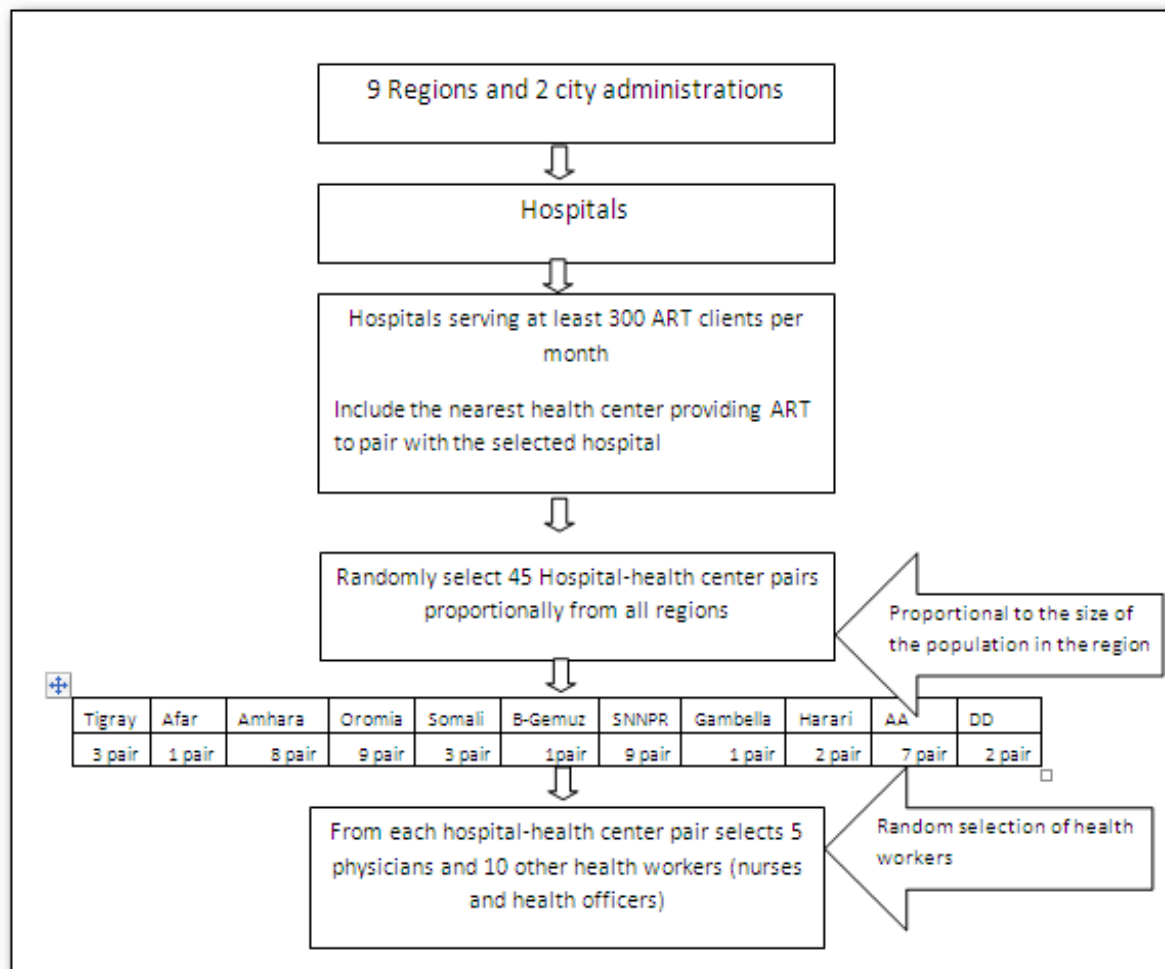
the total sample size calculated for the study was divided into all regions proportional to the size of the reported number of physicians. Then, actual selection of physicians and nurses was done in a randomly selected 45 hospitals and in one of the nearest health centers<sup>2</sup> within a fifty kilometers radius. The ratio of the physician to other professional categories was taken as 1:2.

In each pair of health facilities (pair consists of the randomly selected hospital and the nearest ART providing health center) five physicians (ART physicians plus randomly<sup>3</sup> selected physicians working in other units of the health facilities) were interviewed. From the other category of health workers, ten were selected randomly after obtaining the list of health workers from the facility authorities. Figure 1 shows the sampling procedure and share of each region in detail.

The medical school survey was conducted in all training facilities where physicians and health officers are trained. Addis Ababa, Gondar, Jimma, Hawassa, Mekelle, Haramaya, and Dilla were thus included in the survey. The academic program officers (the dean/department head/or relevant instructor) responsible for training coordination, one instructor from basic sciences Pharmacology/pharmacy department, and a minimum of two instructors from clinical departments (internal medicine, surgery, obstetrics/Gynecology, pediatrics, and anesthesia) were included in the survey.

The pharmacy survey was conducted in all pharmacies where the facility survey was conducted; without any further sampling procedure. The community pharmacies nearest to the surveyed health facility were included in the survey.

**Figure 1. Sampling Procedure**



#### 4.5. Operational Definitions

**Pre-service training:** any undergraduate level training in health science before joining the working force.

**Pain relieving drugs:** drugs used to relieve pain either prescribed by a health worker or purchased from pharmacy without prescription. These ranges from simple analgesics to strong opioids and other adjuvant medications

**Numeric Rating Scale (NRS):** rating pain on a 0-10 scale by the patient (0 = no pain and 10 = worst imaginable pain).

**Visual analogue scale (VAS):** pain severity as indicated by marking along the line from no pain to maximum possible pain.

**Verbal Rating Scale (VRS):** this is a categorical scale for rating pain based on the patient's description. The response range is: none, mild, moderate, or severe.

**Pediatric face pain scale:** rating pain by observing a child's face (when verbal or language abilities are absent).

**Drug available in the last six month:** presence of the specific drugs in the pharmacy during the past six months preceding the survey irrespective of the amount available

**Knowledge:** it is assessed for a set of knowledge questions and those who respond with a correct answer for each question are considered as having knowledge of the particular issue on subject.

**Attitude:** this is measured by a Likert scale and ranges from 1 to 4 and as the number increases the attitude is more positive

**Satisfaction:** this is when individuals respond to attitude question as satisfied.

#### 4.6. List of Variables

##### Knowledge variables

- pain management modalities
- pain assessment scales
- opioid contraindication
- use of combination of drugs
- knowledge of the national pain management guideline



### **Attitude variables**

- attitude towards the service provision
- attitude towards patient satisfaction with the service
- attitude towards pain relieving drugs
- attitude towards patient's pain
- attitude towards pain management practice in the health system
- perceived barriers for pain management
- attitude towards opioid drugs

### **Practice variables**

- drug availability
- drug stock out
- drug expiry
- drug prescription

### **Qualitative variables**

- Priority given for pain management training
- Presence of a subject or a section of a subject addressing pain management
- Attention given for pain management training

## **4.7. Data Collection**

Data collection tools were developed for the various components of the study based on the available literature and previously used assessment tools elsewhere. The various tools were developed to obtain appropriate information to address the objectives of the study (see Table 2). Data from health workers was collected using structured questionnaire. For pharmacy survey semi-structured questionnaire was used and for the medical school survey an interview guide was prepared. Review of the curriculum was part of the medical school survey and the content of the curriculum was assessed to strengthen the response of the medical staff regarding their curricula. The data collection instrument was developed in English based on international experiences, and then it was translated into the local language (Amharic). The **panel of experts who developed the pain management guideline assessed the evaluation tools for**

**content and translation clarity.** The survey instrument was refined based on the experience obtained during training and pre-test. The Amharic version of the questionnaire was used for the actual data collection from health workers and pharmacy professionals while the key informant interview was conducted using the English version interview guide.

Appropriate training was provided to the data collectors on the methods and the various tools to be used during the survey including the sample selection procedure. No record was taken out of the site and no identifying information was collected on any of the tools to maximize participation of health workers and health facilities. A pre-test was conducted in Addis Ababa before the actual assessment and the experience from first phase of data collection in four hospital health center pair in Oromia was also taken to make minor modifications on the tools and helped evaluate the actual circumstance in which the data collection was carried out.

Data collectors were organized to conduct interviews in the health facilities and pharmacies. Because the study respondents were very busy professionals handling patients, interviews and observations were scheduled according to the timetable that suits their daily work load. The key informant interviews with medical school staff were also conducted by the team of experts from ACIPH using the interview guide. The curriculum of each university was reviewed for the presence of subject matter or a session in a subject which specifically addressed pain management.

Appropriate data quality assurance mechanisms were established to ensure data quality during the collection period; supervision was given during data collection by the investigators, the team supervisors received the filled questionnaires on a daily basis, reviewed for their completeness and reported to the data collectors when ever a problem was encountered with the data quality collected.

**Table 2 Data Collection Tools for the Baseline Assessment**

Component	Objectives	Design	Data Collection Tools
A.	<ul style="list-style-type: none"><li>• Assess knowledge, attitude and practice related to pain assessment and management of health workers practicing at different levels of health care facilities</li><li>• Identify barriers to proper management of pain by health care workers</li><li>• Assess the attitude of health care workers towards opioid use for pain management</li></ul>	Cross-sectional study using a multi-stage sampling strategy  (Health workers survey)	Questionnaire for health workers
B.	To review the emphasis given to pain assessment and management courses in medical schools	Cross-sectional study and document review  (Medical school survey)	Interview guide
C.	To evaluate the availability, storage, and prescription of different pain management drugs in health facilities	Cross-sectional study  (Pharmacy survey)	Interview and observation Checklist

#### **4.8. Data Analysis**

Data were transferred from the study sites as soon as the data collection was completed during supervision. A double data entry system was established and the data entered accordingly. At all points in the process, appropriate precautions to ensure the physical security of the data from loss or access by unauthorized personnel was maintained. Data were managed using EPI Info statistical software. Cleaned datasets were prepared

in EPI Info and transferred to SPSS formats for data analysis. Cleaned data were analyzed by the specific objectives of the evaluation to provide relevant information. The sampling of health facilities was allocated proportional to patient load and to health workers distribution and then selected randomly; Cthus it had a self-weighted component. The statistical analysis was done at national level using percentage, chi square and one way ANOVA. Data were presented using summary tables and figures. The qualitative data were organized and analyzed manually, each interview was considered in doing a thematic analysis. Some themes were pre-identified while a few themes were identified during the analysis process.

#### ***4.9. Ethical Considerations***

The evaluation obtained ethical clearance from IRB at EPHA and protocol was approved by CDC. Informed consent was taken from all individuals participating in the study, while all information collected was kept confidential and participation in the study was strictly voluntary. Participants were free to withdraw at any stage of the data collection process. No direct benefits were provided to the participants of the study.

All information obtained during the course of the study was held securely in a locked cupboard and rooms. To ensure confidentiality data were analyzed in groups without providing details at the individual or institutional levels. Names were not recorded in the results of the survey and no one outside of the study team had access to any of the information collected.

## V. RESULT

### 5.1 Background information about the study participants

**Health facility survey:** a total of 673 health professionals had participated in the study from all the regions and the two administrative cities of the country, with the response rate of 99%. Out of these 33.7 % ( 227) were from health centers and the rest from hospitals. Around fifty percent were less than 30 years of age; 52.7 % (354) were nurses, and 34 % (222) were general practitioners and specialists. Among the specialists 34.3 % ( 24) were surgeons; 44.3% (297) were working in different OPDs of the health facilities while 24% (161) were working in in-patient units. More than forty percent of the participants had work experience of 1 to 5 years (Table 3); the mean years of experience was 10 years (SD=9).

**Pharmacy Survey:** For this component, data were collected from 132 individuals 85 of whom were from government facilities, 44 from private and the rest from NGOs facilities. A total of 45 hospital, 45 health centers, and 41 community pharmacies were surveyed. Among the participants, 59.1% (78) were pharmacists, 64.1% (84) had work experience of 1 to 5 years, and more than seventy percent **of the participants** worked for 1 to 5 years in the same pharmacy (facility) they were interviewed (Table 4). The mean years of experience as pharmacy professional was 6.5 years (SD=6.9).

**Medical school survey:** a total of 38 individuals were interviewed from eight medical schools. Among them, 24 were from clinical departments, 11 from basic science, and 3 from community health departments. There were 17 clinical specialists and 9 general practitioners, and 2 had PhD degree. Concerning the responsibility of the professionals, 19 were department heads in addition to teaching.



**Table3. General information of health facility and Health workers surveyed for assessment of pain management in Ethiopia, April 2010**

Characteristics	Number	Percent
Types of facility N= 673		
Health center	227	33.7
District hospital	58	8.6
Zonal hospital	150	<b>22.3</b>
Regional hospital	76	11.3
Referral hospital	152	22.6
Other	10	1.5
Ownership N=662		
Government	609	92.0
Private	30	4.5
NGO	23	3.5
Age N=671		
<30 years	340	50.7
30 – 39 years	163	24.3
>40 years	168	25.0
Profession N= 672		
Nurse	355	52.8
Health officer	96	14.3
General practitioner	152	22.6
Specialist	69	10.3
Department/unit N= 671		
OPD	297	44.3
In-patient	161	24.0
ART clinic	104	15.5
TB and Leprosy	36	5.4
Emergency room	47	7.0
Other	26	3.9
Years of experience		
< 1 year	3	0.4
1-5 years	303	45.0
6-10 years	114	16.9

11-15 years	61	9.1
>15 years	192	28.5

**Table 4. Background information of pharmacy professionals surveyed for assessment of pain management in Ethiopia, April 2010**

Characteristics	Number	Percent
Professional category N=132		
Pharmacist	78	59.1
Pharmacy technician	9	6.8
Druggist	42	31.8
Other	3	2.3
Years of experience in this profession N=131		
<1 year	3	2.3
1-5 years	84	64.1
6-10 years	19	14.5
>10 years	25	19.1
Year of employment in this pharmacy N=117		
<1 year	4	3.4
1-5 years	87	74.4
6-10 years	14	12.0
>10 years	12	10.3

## 5.2. Knowledge of health workers towards pain assessment and management

The practicing health workers in the health facility survey were asked to evaluate their knowledge without mentioning the different choices. So they were asked if they know any pain management modality. According to their responses, drug therapy was the most popular pain management modality mentioned by 98.8 % ( 665) followed by psychological therapy **which was mentioned** by 73.8% (497) of the participants (Table 5). Concerning the knowledge of participants on pain assessment scales, 30.6% (206) said they were aware of pain assessment scale. Of those who reported having awareness about pain management scale only 47.6% (98) mentioned specifically one type of scale while another 22.8% (47) mentioned two scales by name. No specialist

was able to identify three pain assessment scales at a time as compared to 9.3% (7) nurses, 4% (1) health officer and 6.3% (5) general practitioners (Table 6). The most popular pain assessment scale mentioned by the participants was the verbal rating scale by 59.7% (123) of them. Moreover, the percentage difference in mean score of knowledge of main management and assessment modality was significantly associated with P-value of 0.021 and 0.0001 respectively (Table 7). More than 50% of the participants said that the patient is the best judge of the intensity of his or her pain (Table 5).

Another question posed to assess their knowledge was whether the participants knew the contraindications of strong opioids. About 77% (518) of participants said they were aware of the contraindications. Among those participants who said they know the contraindications for strong opioids, 84% (434) of them mentioned specific contraindications that they knew. The most commonly mentioned contraindications by the participants include respiratory distress, cardiac illnesses, hypertension, hypotension, and coma. Only 27% (119) of the respondents had correctly stated the contraindications for strong opioids (Table 5). Check???

Regarding the appropriateness **of using a combination** of pain relieving drugs to manage pain, only 30% (202) of participants approved its use. Most participants were not aware of any specific guidelines that were available for managing patients with pain. Only 23.5% (158) knew about the WHO pain management protocol and 27.9% (187) knew the national pain management guideline (Table 5).

**Table 5 Knowledge of health workers about pain assessment and management surveyed for assessment of pain management in Ethiopia, April 2010**

Characteristics	Number	Percent
Knowledge about drug therapy N= 673		
No	8	1.2
Yes	665	98.8
Knowledge about psychological treatment N= 673		
No	176	26.2
Yes	497	73.8
Knowledge about physical and rehabilitation therapy N= 673		
<b>No</b>	<b>525</b>	<b>78</b>
Yes	148	22
Knowledge about radiotherapy N=673		
<b>No</b>	<b>665</b>	<b>78</b>
Yes	8	1.2
Knowledge about traditional therapy N= 673		
<b>No</b>	<b>661</b>	<b>98.2</b>
Yes	12	1.8
Knowledge of pain assessment scale N=673		
<b>No</b>	<b>467</b>	<b>69.4</b>
Yes	206	30.6
Pain assessment scale N=206		
None	47	22.8
1 scale	98	47.6
2 scales	47	22.8
3 scales	13	6.3
4 scales	1	0.5
<b>Judging pain severity of patient N=671</b>		
Attending health worker	267	39.8
Patients themselves	383	57.1
Family/caretaker	21	3.1
Use of combination pain relieving drugs N=673		
<b>No</b>	<b>471</b>	<b>70</b>
Yes	202	30

Knowledge of contraindications of strong opioids N= 673		
No	155	23
Yes	518	77
WHO pain management protocol N= 673		
<b>No</b>	<b>515</b>	<b>76.5</b>
Yes	158	23.5
<b>National pain management guideline N= 671</b>		
<b>No</b>	<b>484</b>	<b>72.1</b>
Yes	187	27.9

Regarding the distribution of knowledge score by professional category, 66.5% (236) of nurses, 72.9% (70) of health officers, 71.7% (109) of general practitioners and 58% (40) of specialists were able to mention two pain management modalities. The percentage of individuals with knowledge of two and three pain management modalities increased across the professional categories as the level increased. (Table 6)

**Table 6. Knowledge of pain management and assessment modalities by health professionals' category surveyed for assessment of pain management in Ethiopia, April 2010**

Variables	Professional categories			
	Nurses No (%)	Health officers No (%)	General practitioners No (%)	Specialist No (%)
Knowledge of pain management modalities				
None	2 (0.6%)	1 (1.0%)	1 (0.7%)	0 (0%)
One modality	81 (22.8%)	11 (11.5%)	10 (6.6%)	12 (17.4%)
Two modalities	236 (66.5%)	70 (72.9%)	109 (71.7%)	40 (58%)
Three modalities	36 (10.1%)	14 (14.6%)	28 (18.4%)	74 (20.3%)
Four modalities	0 (0%)	0 (0%)	4 (2.6%)	3 (4.3%)
Total( 672)				

Knowledge of pain assessment scale				
None	20(26.7%)	4 (16.0%)	13 (16.3%)	10 (38.5%)
One modality	36 (48.0%)	13 (52.0%)	36 (45%)	13 (50%)
Two modalities	12 (16.0%)	7(28.0%)	25 (31.3%)	3 (11.5%)
Three modalities	7 (9.3%)	1 (4.0%)	5 (6.3%)	0 (0%)
Four modalities	0(0%)	0 (0%)	1 (1.3%)	0 (0%)
Total (206)				

**Table 7: Mean distribution of knowledge of pain assessment and management by professional category, surveyed for assessment of pain management in Ethiopia, April 2010**

Characteristics	Mean	SD	SE	F	Sig.
Knowledge of pain assessment scale					
Nurse	5.0800	0.89684	0.10356	3.321	0.021
Health Officer	5.2000	0.76376	0.15275		
General practitioner	5.3125	0.86557	0.09677		
Specialist	4.7308	0.66679	0.13077		
Total	5.1408	0.85801	0.05978		
Knowledge of pain management modality					
Nurse	6.8079	0.57556	0.03059	14.762	0.0001
Health Officer	6.9792	0.54249	0.05537		
General practitioner	7.1579	0.59917	0.04860		
Specialist	7.1143	0.73313	0.08763		

### **5..3. Attitude of health workers about pain assessment and management**

The participants were asked to grade the priority given for the management of pain in their health facility; 41.5% (279) believed that it was given high priority while 39.1% (263) said less priority. Of all respondents, 48.6% (327) said that they were often satisfied with the service given to patients with pain, and 56.2% (378) believed that

patient with pain were often satisfied with the service given in the health facility **(Table 8)**.

The participants were specifically asked to give their opinions about certain aspects of pain relieving drugs; accordingly 50.8% (342) agreed (including strongly agree) that people get addicted to pain relieving drugs easily while the rest disagreed(including strongly disagreed); 42.6% (287) disagreed that enduring pain is not easier than enduring side effect of drugs; 42.9% (289) agreed that pain relieving drugs should be withheld until the pain gets severe while 36.6% (246) disagreed; 53.3% (359) agreed that patients need to be encouraged to endure pain before using opioids; 47% (316) disagreed saying certain vital signs as reliable indicators of the intensity of pain in a patient while 26.9% (181) agreed; 33.9% (228) agreed that patient may sleep in spite of severe pain they are feeling while 46.8% (315) disagreed; 33.9% (228) agreed that patients who get distracted easily from their pain actually did not have severe pain in the first place while 53.9% (362) of the participants disagreeing with that.. **(Table 6)**

The above mentioned attitude related to questions were graded out of seven and only 10.5% (63) were scored six and above out of seven. The mean values of the attitude score was maximum for the general practitioners and the observed difference by professional category was statistically significant with p-value 0.0001(F= 20.663) **(figure 2)**.

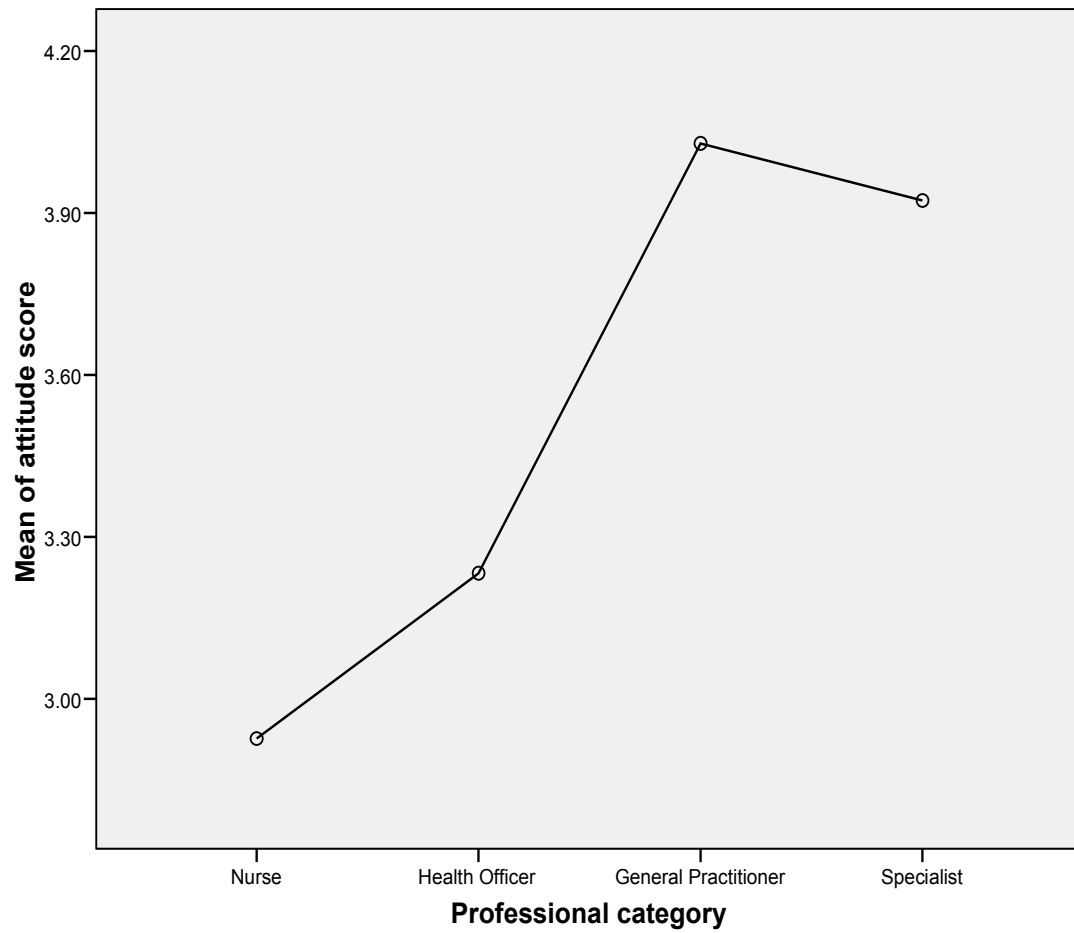


Figure 2: Mean score of attitude about the pain management practice of their respective health facility by professional category, April 2010, in Ethiopia



**Table 8 Attitude of health workers regarding pain assessment and management surveyed for assessment of pain management in Ethiopia, April 2010**

Characteristics	Number	Percent
Priority given to pain management N=673		
No priority	28	8.9
Less priority	263	39.1
Equal priority	103	15.3
Higher priority	279	41.5
Satisfaction with the service given for patients with pain N=673		
Never	20	3.0
Occasionally	318	47.3
Often	327	48.6
Not sure	8	1.2
Patient`s satisfaction with the service N=673		
Never	10	1.5
Occasionally	268	39.8
Often	378	56.2
(No follow up) Unable to assess	17	2.5
People get addicted to pain relieving drugs N=673		
Strongly disagree	45	6.7
Disagree	271	40.3
Agree	284	42.2
Strongly agree	58	8.6
Not sure	15	2.2
Enduring pain is easier than enduring drug side effects N=673		
Strongly disagree	71	10.6
Disagree	287	42.6
Agree	268	39.8
Strongly agree	38	5.6
Not sure	9	1.3
Pain relieving drugs should be withheld until the pain gets severe N= 673		

Characteristics	Number	Percent
Strongly disagree	49	7.3
Disagree	246	36.6
Agree	289	42.9
Strongly agree	86	12.8
Not sure	3	0.4
Patients encouraged to endure pain before using opioid N=673		
Strongly disagree	29	4.3
Disagree	167	24.8
Agree	359	53.3
Strongly agree	101	15.0
Not sure	17	2.5
Vital signs are reliable indicators of the intensity of patient pain N=673		
Strongly disagree	60	8.9
Disagree	316	47
Agree	181	26.9
Strongly agree	109	16.2
Not sure	7	1.0
Patient may sleep in spite of severe pain N=673		
Strongly disagree	80	11.9
Disagree	315	46.8
Agree	228	33.9
Strongly agree	32	4.8
Not sure	18	2.7
Patient distracted from pain do not have it N=672		
Strongly disagree	51	7.6
Disagree	362	53.9
Agree	228	33.9
Strongly agree	19	2.8
Not sure	12	1.8

When asked about the practice of assessing the cause and the severity level of pain in their facility, 54.9(369) said the level of assessing pain was good (very good included), while 42.1% (283) said that level of assessment of severity of pain to be at least good (very good included).

Regarding choosing the appropriate drug and appropriate route of administration 36.4% (245) and 41.5% (279) agreed that their management was good respectively; Determining the starting dose and maintaining or adjusting it was believed to be well( good) managed by 42.5% (286) and 35.1% (236) of participants respectively (Table 9). Managing the side effects of pain relieving drugs was reported to be at least good (very good included) by 48.6% (327). Concerning management of withdrawal symptoms of opioids about half of the participants reported that they did not know how that was managed and only 15.0% (101) reported that it was good (very good included). The use of combination of drugs for relieving pain was also reported to be largely unknown or unsatisfactory with only 15.2% (102) respondents reporting it to be either good or very good (Table 9).

**Table 9: Attitude of health workers towards the service given to patients complaining of pain, surveyed for assessment of pain management in Ethiopia, April 2010**

Characteristics	Number	Percent
Assessing cause of pain N=673		
Not satisfactory	110	16.3
Fair	192	28.5
Good	240	35.7
Very good	129	19.2
Do not know	2	0.3
Assessing severity of pain N=673		
Not satisfactory	179	26.6
Fair	204	30.3
Good	209	31.1
Very good	74	11.0
Do not know	7	1.0
Choosing drug appropriate for pain N=673		
Not satisfactory	105	15.6
Fair	171	25.4
Good	245	36.4
Very good	149	22.1
Do not know	3	0.4
Choosing appropriate route of administration for the drug N=673		
Not satisfactory	41	6.1
Fair	143	21.2
Good	279	41.5
Very good	206	30.6
Do not know	4	0.6
Selecting starting dose N=673		
Not satisfactory	82	12.2

Characteristics	Number	Percent
Fair	144	21.4
Good	286	42.5
Very good	148	22.0
Do not know	13	1.9
Adjusting doses after drug therapy started N= 673		
Not satisfactory	148	22.0
Fair	143	21.2
Good	236	35.1
Very good	136	20.2
Do not know	10	1.5
Managing side effects of pain reliving drugs N=673		
Not satisfactory	158	23.5
Fair	154	22.9
Good	222	33.0
Very good	105	15.6
Do not know	34	5.1
Managing withdrawal symptoms of opioids N= 673		
Not satisfactory	143	21.2
Fair	102	15.2
Good	74	11.0
Very good	27	4.0
.Do not know	327	48.6
use of a combination of pain relieving drugs N=672		
Not satisfactory	226	33.6
Fair	96	14.3
Good	70	10.4
Very good	32	4.8
Do not know	248	36.9

## 5.4. Practice of pain assessment and management by health workers

### 5.4.1. Pain Assessment

Regarding patient flow with chronic illness, 36.3% (244) of participants said that they treated patient with chronic pain almost daily and 62.6% (421) said they treated patients with chronic pain rarely. However, 38.2% (256) of the participants said that they treat patient with chief complaint of pain almost daily. The most commonly reported cause of pain in the preceding 12 months was acute medical illnesses with 44.3% (297).

Verbal rating scale was the most commonly used scale to assess the intensity of pain in a patient ( 44% (294) and the use of the verbal rating scale across the different levels of professional categories was statistically **significant** with p-value 0.006; more (54.6%(83) general practitioners reported use of verbal rating scale compared to others. The other pain rating scales were rarely practiced and statistically significant difference was observed in percentage of utilization of numeric rating scale (P-value= 0.045), and pediatric scale (P-value= 0.006) (Table 10).

### V.4.2. Management modality

Drug therapy was the most commonly practiced management modality compared to the others with 97.6% (657) and the second common was psychological therapy with 45.3% (305)(Table 10). Radiotherapy was rarely recommended by health workers; only 2.1% (2) of health officers recommending it compared to other level of professional category. There was a statistically significant difference in the percentage of health workers recommending radiotherapy for pain management across the different levels of professional categories (P-value=0.007) (Table 10).

**Table 10: Pain assessment and management practice by professional category, Surveyed for assessment of pain management in Ethiopia, April 2010**

Characteristics	Professional Category				P-value
	Nurse	HO	GP	Specialist	
Use of numeric rating scale N= 672					
1. No	344 (97.2)	94 (97.9)	141 (92.8)	69 (98.6)	0.045*
2. Yes	10 (2.8)	2 (2.1)	11 (7.2)	1 (1.4)	
Use of visual Analog scale N=672					
1. No	341 (96.3)	91 (94.8)	146 (96.1)	66 (94.3)	0.822
64 Yes	13 (3.7)	5 (5.2)	6 (3.9)	4 (5.7)	
Use of verbal rating scale N=672					
1. No	218 (61.6)	54 (56.3)	69 (45.4)	35 (50)	0.006**
2. Yes	136 (38.4)	42 (43.7)	83 (54.6)	35 (50)	
Use pediatric face scale N= 672					
1. No	338 (95.5)	93 (96.9)	134 (88.2)	67 (95.7)	0.006**
2. Yes	16 (4.5)	3 (3.1)	18 (11.8)	3 (4.3)	
Use of all depending on the situation N=672					
1. No	142 (40.1)	27 (28.1)	75 (49.3)	30 (42.9)	0.011*
2. Yes	212 (59.9)	69 (71.9)	77 (50.7)	40 (57.1)	
None of the above but my clinical judgment N= 672					
1. No	316 (89.3)	92 (95.8)	146 (96.1)	68 (97.1)	0.008**
2. Yes	38 (10.7)	4 (4.2)	6 (3.9)	2 (2.9)	
Recommend drug therapy N= 672					
1. No	11 (3.1)	1 (1)	0 (0)	4 (5.8)	0.035*
2. Yes	344 (96.9)	95 (99)	152 (0)	65 (94.2)	
Recommend psychological therapy N= 672					
1. No	192 (54.1)	50 (52.1)	87 (57.2)	38 (55.1)	0.858
2. Yes	163 (45.9)	46 (47.9)	65 (42.8)	31 (44.9)	
Recommend physical and rehabilitation therapy N= 672					
1. No	335 (94.4)	85 (88.5)	138 (90.8)	62 (89.5)	0.173
2. Yes	20 (5.6)	11 (11.5)	14 (9.2)	7 (10.1)	
Recommend radiotherapy N=671					
1. No	354 (100)	94 (97.9)	152 (100)	69 (100)	0.007**
2. Yes	0 (0)	2 (2.1)	0 (0)	0 (0)	
Recommend traditional therapy N=672					
1. No	352 (99.4)	95 (99)	151 (99.3)	69 (100)	0.857
2. Yes	2 (0.6)	1 (1)	1 (0.7)	0 (0)	
Ever use of the national guideline N= 671					

1. Never	320(90.1)	79(83.2)	115 (76.2)	55 (79.7)	0.0001**
2. Rarely	27 (7.6)	11(11.6)	10 (6.6)	6 (8.7)	
3. Regularly	2 (0.6)	0 (0)	11 (7.3)	2 (2.9)	
4. Always	6 (1.7)	5 (5.3)	15 (9.9)	6 (8.7)	
Ever use of WHO steps approach on pain management N=672					0.0001**
1. Never	191 (54)	46 (47.9)	64 (42.1)	39 (56.5)	
2. Rarely	19 (5.4)	8 (8.3)	35 (23)	7 (10.1)	
3. Regularly	7 (2)	5 (5.2)	26 (17.1)	11 (15.9)	
4. Don't know	137 (38.7)	37 (38.5)	27 (17.8)	12 (17.4)	

NB. \* below 0.05, \*\* below 0.01.

**Table 11A. Practice related to patient assessment and management of pain, surveyed for assessment of pain management in Ethiopia, April 2010 (all group)**

	Number	Percent
Use of numeric rating scale N= 673		
No	649	96.4
Yes	24	3.6
Use of visual analog scale N=673		
No	645	95.8
Yes	28	4.2
Use of verbal rating scale N=673		
No	377	56
Yes	294	44
Use of pediatric face scale N= 673		
No	633	94.1
Yes	40	5.9
Use all depending on the situation N=673		
No	274	40.7
Yes	399	59.3
None of the above but my clinical judgment N= 673		
No	623	92.6
Yes	50	7.4
*Choice of pain management modality N= 673		
Drug therapy	657	97.6
Psychological therapy	305	45.3
Physical exercise and rehabilitation	52	7.7
Radiotherapy	2	0.3
Traditional therapy	4	0.6
Pain management option practiced N=672		
One option	360	53.6
Two options	279	41.5
Three options	33	4.9

\*Multiple answers were possible.



### V.4.3. Usage of guideline

Among the participants, 90% (320) nurses, 83.2 % ( 79) health officers, 76.2% (115) general practitioners and 79.7 % ( 55) of specialists had never used the national pain management guideline and this was statistically significant with the p-value= 0.0001; 79.5% (534) said there was no any other pain management guideline in their health facility and 82.4% (554) had never used the WHO pain management protocol. In the health facilities, 68.4% (457) of the participants said there was no pain specialist or trained person on pain management. About 50% of the respondents reported referring patents for further pain management (Table 10).

**Table 11B Practice related toue of guidelines for ASSESSMENT AND MANAGEMNT OF PAIN surveyed for assessment of pain management in Ethiopia, April 2010 on usage of guideline**

	Number	Percent
<b>Ever use of the national guideline N= 671</b>		
<b>Never</b>	<b>570</b>	<b>84.9</b>
Rarely	54	8.0
Sometimes	15	2.2
Regularly	32	4.8
<b>Presence of additional protocol on pain management N=672</b>		
No	534	79.5
Yes but not used	23	3.4
Yes and used always	19	2.8
Do not know	96	14.3
<b>Ever use of WHO steps approach on pain management N=672</b>		
<b>Never</b>	<b>554</b>	<b>82.4</b>
Rarely	69	10.3
Regularly	49	7.3
<b>Presence of guideline for management of chronic pain in HIV/AIDS patients N= 671</b>		
<b>No</b>	<b>229</b>	<b>34.1</b>
Yes	175	26.1
Do not know	267	39.8
<b>Presence of pain specialist N=667</b>		
No	457	68.5
Yes	98	14.7
Do not know	112	16.8
<b>Patient referred to other facilities for pain management during the last 12 months N= 673</b>		
No	330	49.1

Yes	336	49.9
Do not know	7	1.0
*Reason for referral N=298		
Lack of drug	24	6.4
Failure to control pain	118	31.5
For further investigation	207	55.2
Further specific treatment	216	57.6
Other	6	1.6

\*Multiple answers were possible.

Concerning practice related to prescribing analgesics, 85.6% (576) of the participants prescribed simple analgesics frequently; 29.5% (196) and 53.2% (358) of the participants have ever prescribed weak opioids and strong opioids during the last 12 months respectively. The rate of using weak opioid with or without simple analgesics and that of strong opioid increased in relation to the level of professional category and this was statistically significant with p-value of 0.0001 (table 12). Anti-depressants were frequently prescribed during the last twelve months by 10.3% (69) of the participants.

Concerning the availability of drugs, during the last twelve months, 64.6 % (254) reported lack of weak opioids, 56% (218) lack of strong opioids and 92.9% (365) reported lack of anti depressant in their health facility or pharmacy (Table 12). Similarly ever use of antidepressants increased with the increasing level of professional category and it was statistically significant (p-value= 0.0001).

**Table 12. Practice related to prescribing analgesics, surveyed for assessment of pain management in Ethiopia, April 2010**

Characteristics	Nurse	HO	GP	Specialist	Total	P-value
	No (%)	No (%)	No (%)	No (%)	No (%)	
Ever use of simple analgesics N=658						
No	1(0.3)	0 (0)	1 (0.7)	0(0)	2 (0.3)	0.760
Yes	345(99.7)	94 (100)	147(99.3)	69(100)	656 (97.7)	
Use of simple analgesics in the last 12 months N=673						
Never	3(0.8)	0(0)	0(0)	3(4.3)	6(0.9)	0.004
Rarely	6 (1.7)	1(1)	3(2)	1(1.4)	11(1.6)	
Sometimes	56 (15.8)	11(11.5)	9(5.9)	4(5.7)	80 (11.9)	
Commonly	289(81.6)	84 (87.5)	140(92.1)	62(88.6)	576 (85.6)	
Ever use of weak opioids with other analgesics N=664						
No	303 (86.3)	75 (78.1)	70 (47.3)	19 (27.9)	468 (70.5)	0.0001
Yes	48 (13.7)	21 (21.9)	78 (52.7)	49 (72.1)	196 (29.5)	
Use of weak opioids with other analgesics in the last 12 months N=671						
Never	325 (92.3)	81(84.4)	80 (52.6)	32 (45.7)	519 (77.3)	0.0001
Rarely	8 (2.3)	6 (6.3)	33 (21.7)	18 (25.7)	65 (9.7)	
Sometimes	19 (5.4)	9 (9.4)	36 (23.7)	17 (24.3)	81(12.1)	
Commonly	0 (0)	0(0)	3 (2)	3 (4.3)	6 (0.9)	
Ever use of weak opioids N=666						
No	242 (68.6)	54 (56.3)	41 (27.7)	3 (4.3)	340 (51.1)	0.0001
Yes	111 (31.4)	42 (43.8)	107	66(95.7)	326 (48.9)	
Use of weak opioids in the last 12 months N= 672						
Never	285 (80.5)	67 (69.8)	52 (34.2)	20 (28.6)	424 (63.1)	0.0001
Rarely	36 (10.2)	16 (16.7)	46 (30.3)	23 (32.9)	121 (18.0)	
Sometimes	33 (9.3)	11(11.5)	49 (32.2)	24 (34.3)	117(17.4)	
Commonly	0(0)	2 (2.1)	5 (3.3)	3 (4.3)	10 (1.5)	
Ever use of strong opioids N=664						
No	235 (66.8)	53 (55.2)	16 (10.9)	2 (2.9)	306 (45.5)	0.0001
Yes	117 (33.2)	43 (44.8)	131	66 (97.1)	358 (53.2)	
Use of strong opioids in the last 12 months N=673						
Never	266 (75.1)	66 (68.8)	23 (15.1)	18 (25.7)	373 (55.4)	0.0001
Rarely	44 (12.4)	18 (18.8)	64 (42.1)	22 (31.4)	149 (22.1)	
Sometimes	40 (11.3)	11 (11.5)	58 (38.2)	24 (34.3)	133 (19.8)	
Commonly	4 (1.1)	1 (1)	7 (4.6)	6 (8.6)	18 (2.7)	
Ever use of anti-depressant N=666						
No	249 (70.7)	43 (44.8)	22 (14.9)	10 (14.5)	325 (48.8)	0.0001

Yes	103 (29.3)	53 (55.2)	126	59 (85.5)	341 (51.2)	
Use of anti-depressant in the last 12 months N=673						
Never	265 (74.9)	47 (49)	24 (15.8)	30 (42.9)	367 (54.5)	0.0001
Rarely	28 (7.9)	22 (22.9)	25 (16.4)	11 (15.7)	86 (12.8)	
Sometimes	45 (12.7)	20 (20.8)	66 (43.4)	20 (28.6)	151 (22.4)	
Commonly	16 (4.5)	7 (7.3)	37 (24.3)	9 (12.9)	69 (10.3)	
Drugs unavailable to be ordered in the last 12 months N=673						
No	183 (51.7)	28 (29.2)	44 (28.9)	25 (35.7)	281 (41.8)	0.0001
Yes	171 (48.3)	68 (70.8)	108	45 (64.3)	392 (58.2)	
Simple analgesics unavailable to be ordered in the last 12 months N=393						
No	41 (23.8)	18 (26.5)	77 (71.3)	42 (93.3)	178 (45.3)	0.0001
Yes	131 (76.2)	50 (73.5)	31 (28.7)	3 (6.7)	215 (54.7)	
Weak opioids unavailable to be ordered in the last 12 months N=393						
No	132 (76.7)	50 (73.5)	55 (50.9)	17 (37.8)	254 (64.6)	0.0001
Yes	40 (23.3)	18 (26.5)	53 (49.1)	28 (62.2)	139 (35.4)	
Strong opioids unavailable to be ordered in the last 12 months N= 393						
No	130 (76)	48 (71.6)	32 (29.9)	8 (18.2)	218 (56.0)	0.0001
Yes	41 (24)	19 (28.4)	75 (70.1)	36 (81.8)	171 (44.0)	
Anti-depressants unavailable to be ordered in the last 12 months N= 393						
No	161 (93.6)	66 (97.1)	96 (88.9)	42 (93.3)	365 (92.9)	0.208
Yes	11 (6.4)	2 (2.9)	12 (11.1)	3 (6.7)	28 (7.1)	

## V.5. Availability, Prescription, and Storage of Pain Relieving Drugs

### V.5.1. Availability

Among the respondents of the pharmacy survey, 51.5% (68) of the pharmacists reported that there were times when they were not able to dispense pain relieving drugs to their clients. The most commonly mentioned reason for not dispensing the prescribed pain-relieving drugs was unavailability of the drugs (85.3%) followed by improperly written prescription paper (19.1%).

Participants in the pharmacies were also asked about the availability and possible stock out of pain relieving drugs in the last 6 months; among the simple analgesics except Ketorolac, all other drugs were available in the last 6 months in more than 90% of the facilities. However, stock out was more often reported for Ibuprofen (31.5% of the

facilities reported stock out) compared to the other simple analgesics. At the time of the survey, except for Indomethacine, availability of simple analgesics was higher in community pharmacies.

Weak opioids were less frequently available in the health facilities compared to the simple analgesics. Among the weak opioids, Tramadol was the most commonly available drug (50.8%) followed by Codeine (43.9%); stock out in the last 6 month was more for Pentazocine (62.5%) followed by Codeine (59.6%). During the survey, Codeine was more available in hospital pharmacies while Tramadol was commonly available in community pharmacies (Table 14A &B).

With regard to strong opioids, both Meperidine and Morphine were equally available in the last 6 months (19.7%) while stock out was more for Meperidine (35.7%). During the survey, none of the health center pharmacies had these strong opioids. In general, strong opioids were least frequently available in the health facilities. Except for Tramadol (90.2% of community pharmacies) availability of weak and strong opioid was higher for hospitals compared to community and health center pharmacies. Nortriptyline was the **least** available drug from the group (1.5%) in the last six month preceding the survey and stock out was more for Desipramine (40%). Phenytoin was the most available drug from the group (60.6%) followed by Carbamazepine (53.8%) while stock out was more for Valporic acid (53.8%) (Table 13A & B). At the time of the survey, Amtriptyline (in 88.9% hospital pharmacies) and Phenytoin (82.5% of community pharmacy) were the most commonly available drugs from their respective groups (Table 14A &B,

**Table 13 A. Availability and stock out of pain relieving drugs in the last 6 months  
in the surveyed pharmacies, from March to April 2010, in Ethiopia**

Drugs	Availability in the last 6 months		Stock out in the last 6 months	
	Number	Percent	Number	Percent
Aspirin	N= 132		N= 125	
No	7	5.3	109	87.2
Yes	125	94.7	16	12.8
Ibuprofen	N= 132		N=124	
No	9	6.8	85	68.5
Yes	123	93.2	39	31.5
Acetaminophen	N=132		N=132	
No	0	0	123	93.2
Yes	132	100	9	6.8
Indomethacine	N=132		N=124	
No	9	6.8	86	65.2
Yes	123	93.2	38	28.8
Ketorolac	N=132		N= 12	
No	125	94.7	8	69.4
Yes	7	5.3	4	33.3
Codeine	N=132		N=57	
No	74	56.1	23	40.4
Yes	58	43.9	34	59.6
Tramadol	N=132		N=67	
No	65	49.2	39	58.2
Yes	67	50.8	28	41.8
Pentazocine	N=132		N=8	
No	127	96.2	3	37.5
Yes	5	3.8	5	62.5
Meperidine	N=132		N=28	
No	106	80.3	18	64.3
Yes	26	19.7	10	35.7
Morphine	N=132		N=27	
No	105	79.5	18	13.6
Yes	27	19.7	9	6.8

**Table 13B. Availability and stock out of pain relieving drugs in the last 6 months in the surveyed pharmacies for assessment of pain management in Ethiopia, April 2010**

Drugs	Availability in the last 6 months		Stock out in the last 6 months	
	Number	Percent	Number	Percent
Amtriptyline	N=132		N=94	
No	37	28	61	64.9
Yes	95	72	33	35.1
Desipramine	N=132		N=5	
No	127	96.2	3	60
Yes	5	3.8	2	40
Nortriptyline	N=132		N=2	
No	130	98.5	0	0
Yes	2	1.5	2	100
Phenytoin	N=132		N=78	
No	52	39.4	37	47.6
Yes	80	60.6	41	52.6
Carbamazepine	N=132		N=70	
No	61	46.2	41	58.6
Yes	71	53.8	29	41.4
Gabapentine	N=131		N=4	
No	130	99.2	2	50
Yes	1	0.8	2	50
Lamotrigine	N=132		N=3	
No	132	100	2	66.7
Yes	0	0	1	33.3
Valporic acid	N=132		N=13	
No	121	91.7	6	46.2
Yes	11	8.3	7	53.8

### **V.5.2. Expiry**

The expiry of drugs was also one of the important pieces of information the participants gave; accordingly, 35.6% (47) of them reported expiry of pain relieving drugs in the last 6 months of which 78.7% (37) reported expiry of simple analgesics, 12.8% (6) and 12.8% (6) reported expiry of weak and strong opioids respectively; anti-depressants were the least expired drugs 6.4% (3). The most common reason for expiry of drugs was excess acquisition (52.2%) followed by under prescription (50%) (Table 14A).

In addition, observation was made to make sure whether the drugs were actually available in the facilities at the time of the study and each pain relieving drugs available in the facilities were checked for their expiry date. Accordingly, it was observed that simple analgesics were widely available at the facilities while the opioids were not. Surprisingly, very few expired drugs were found in this assessment. Expired drugs were reported for Aspirin (2.3%), Codeine (1.6%), Tramadol (0.8%), Morphine (1.6%), Lamotrigine (0.8%) and Valporic acid (0.8) (Table 14A &14B).



**Table 14A Availability of Pain Relieving Drugs at the time of the study,  
Surveyed for assessment of pain management in Ethiopia, April 2010**

Characteristics	Total No (%)	Types of Health Facility pharmacies		
		Hospital pharmacy	Health center pharmacy	Pharmacy outside of HF
Aspirin	N=132			
No	15 (11.4)	5 (11.1)	8 (17.8)	2 (4.9)
Yes, expired	3 (2.3)	1 (2.2)	1 (2.2)	1 (2.4)
Yes, not expired	114 (86.4)	39 (86.7)	36 (80)	38 (92.7)
Ibuprofen	N=132			
No	19 (14.4)	7 (15.6)	12 (26.7)	0 (0)
Yes, expired	0 (0)	0 (0)	0 (0)	0(0)
Yes, not expired	113 (85.6)	38 (84.4)	33 (73.3)	41(100)
Acetaminophen	N=132			
No	1 (0.8)	0 (0)	1 (2.2)	0(0)
Yes, expired		0(0)	0 (0)	0(0)
Yes, not expired	131 (85.6)	45 (100)	44 (97.8)	41 (100)
Indomethacine	N=132			
No	14 (10.6)	2 (4.4)	10 (22.2)	2 (4.9)
Yes, expired	0 (0)	0 (0)	0 (0)	0 (0)
Yes, not expired	118 (89)	43 (95.6)	35 (77.8)	39 (95.1)
Ketorolac	N=126			
No	117 (64.1)	37 (90.2)	42 (95.5)	37 (92.5)
Yes, expired	0 (0)	0 (0)	0(0)	0(0)
Yes, not expired	9 (7.1)	4 (9.8)	2 (4.5)	3 (7.5)
Codeine	N=128			
No	82 (64.1)	15 (33.3)	37 (86)	30 (76.9)
Yes, expired	2 (1.6)	2 (4.4)	0 (0)	0 (0)
Yes, not expired	44 (34.4)	28 (62.2)	6 (14)	9 (23.1)
Tramadol	N=128			
No	71 (55.5)	23 (52.3)	40 (93)	8 (20)
Yes, expired	1 (0.8)	1 (2.3)	0 (0)	0(0)

Yes, not expired	56 (43.8)	20 (45.5)	3 (7)	32 (80)
Pentazocine	N= 125			
No	123 (98.4)	40 (97.6)	43 (100)	40(100)
Yes, expired	0 (0)	0(0)	0(0)	0(0)
Yes, not expired	2 (1.6)	1(2.4)	0(0)	0(0)
Meperidine	N=126			
No	106 (84.1)	30 (71.4)	43 (100)	33 (82.5)
Yes, expired	0 (0)	0 (0)	0 (0)	0 (0)
Yes, not expired	20 (15.9)	12 (28.6)	0(0)	7(17.5)
Morphine	N=126			
No	99 (78.6)	18 (41.9)	43 (100)	37 (94.9)
Yes, expired	2 (1.6)	2 (4.7)	0 (0)	0 (0)
Yes, not expired	25 (19.8)	23 (53.5)	0(0)	2 (5.1)

**Table 14B. Availability of Pain Reliving Drugs at the time of the study in the Surveyed for assessment of pain management in Ethiopia, April 2010**

Drugs	Total	Types of pharmacies		
	No (%)	Hospital pharmacy	HC pharmacy	Pharmacy outside HF
Amitriptyline	N=131	No (%)	No (%)	No (%)
No	46 (35.1)	5 (11.1)	35 (79.5)	6 (14.6)
Yes, expired	0 (0)	0 (0)	0(0)	0(0)
Yes, not expired	85 (64.9)	40 (88.9)	9 (20.5)	35 (85.4)
Desipramine	N=124			
No	119 (96)	39(95.1)	43 (100)	36 (92.3)
Yes, expired	0 (0)	0 (0)	0(0)	0(0)
Yes, not expired	5 (4)	2 (4.9)	0(0)	3 (7.7)
Nortriptyline	N=125			
No	124 (99.2)	40 (97.6)	43 (100)	40 (100)
Yes, expired	0 (0)	0(0)	0(0)	0(0)
Yes, not expired	1 (0.8)	1 (2.4)	0(0)	0(0)
Phenytoin	N=127			

No	55 (43.3)	7 (27.3)	40 (93)	7 (17.5)
Yes, expired	0 (0)	0(0)	0(0)	0 (0)
Yes, not expired	72 (56.7)	32 (72.7)	3(7)	33(82.5)
Carbamazepine	N=129			
No	63 (48.8)	12 (27.3)	38 (88.4)	12 (29.3)
Yes, expired	0 (0)	0 (0)	0 (0)	0 (0)
Yes, not expired	66 (51.2)	32 (72.7)	5 (11.6)	29 (70.7)
Gabapentine	N= 126			
No	124 (98.4)	40 (95.2)	43 (100)	40 (100)
Yes, expired	1 (0.8)	1 (2.4)	0 (0)	0(0)
Yes, not expired	1 (0.8)	1 (2.4)	0 (0)	0(0)
Lamotrigine	N= 125			
No	124 (99.2)	40 (97.6)	43 (100)	40 (100)
Yes, expired	1 (0.8)	1 (2.4)	0 (0)	0 (0)
Yes, not expired	0 (0)	0 (0)	0 (0)	0 (0)
Valporic acid	N= 120			
No	120 (96)	37 (88.1)	43 (100)	39 (100)
Yes, expired	1 (0.8)	1 (2.4)	0 (0)	0 (0)
Yes, not expired	4 (3.2)	4 (9.5)	0 (0)	0 (0)

### **V.5.3. Prescription practice**

Concerning the prescription practice of pain relieving drugs, they were commonly prescribed with other medications and 27.7% (36) of the participants said that almost all the prescriptions they received per day had simple analgesics. More than 60% of participants said they received no prescriptions containing Codeine in a week while 74% (71) of the participants said they received no prescription containing strong opioids in a week. The median number of prescriptions containing weak and strong opioid was zero. The participants were asked if they had any concern about the prescriptions containing the pain relieving drugs they were receiving. Accordingly

- drug side effect was the commonest concern regarding simple analgesics mentioned by 37.1% (49) of the participants;
- regarding weak and strong opioids, addiction was the most commonly stated concern by 29% (38) and 37.4% (49) of the participants respectively (Table 15A &B).

Regarding the practice of dispensing drugs without any prescription, 39.4% (52) of the participants said they never dispensed simple analgesics without prescription while 72.7% (96) and 66.7% (88) of the participants said they never dispensed weak and strong opioids drugs without prescriptions respectively (Table 15A &B).

**Table 15 A Pain relieving drug prescription practices and the concerns among Pharmacy professionals surveyed for assessment of pain management in Ethiopia, April 2010**

Characteristics	Number	Percent
Simple analgesics containing prescriptions per day N= 130		
1-19%	4	3.1
20- 39%	15	11.5
40-59%	32	24.6
60-79%	43	33.1
Almost all	36	27.7
*Concerns about prescriptions containing simple analgesics N=132		
No concern at all	27	20.5
Dosage frequency and duration	29	22
Route of administration	17	12.9
Addiction	11	8.3
Side effects	49	37.1
Other	41	31.1
Codeine containing prescription per week N=107		
None	69	64.5
1-5 prescriptions	34	31.8
> 5 prescriptions	4	3.7
*Concerns about prescriptions containing codeine N= 131		
Do not get codeine containing prescription	49	37.4
No concern at all	26	19.8
Dosage frequency and duration	4	3.1
Route of administration	8	6.1
Addiction	38	29
Side effects	13	9.9
Other	19	14.5

\*Multiple answers were possible.

**Table 15 B. Pain relieving drug prescription practice and concerns of pharmacy professionals, Surveyed for assessment of pain management in Ethiopia, April 2010**

Characteristics	Number	Percent
Strong opioids containing prescriptions per week N=96		
None	71	74
1-5 prescriptions	18	18.8
6-10 prescriptions	4	4.2
>11 prescriptions	3	3.1
*Concern about prescriptions containing strong opioids N= 131		
Do not get strong opioids containing prescription	49	37.4
No concern at all	15	11.5
Dosage frequency and duration	6	4.6
Route of administration	7	5.3
Addiction	49	37.4
Side effects	10	7.6
Other	30	22.9
OTC practice of simple analgesics N= 132		
Never	52	39.4
Occasionally	26	19.7
Commonly	23	17.4
Always	31	23.5
OTC practice of weak opioids N=132		
Never had the drugs	27	20.5
Never	96	72.7
Occasionally	2	1.5
Always	7	5.3
OTC practice of strong opioids N=130		
Never had the drugs	19	14.6
Never	88	66.7
Occasionally	1	0.8
Always	22	16.9

\*Multiple answers were possible.

## **V.6. Pain relieving drugs management (selecting, procuring, storing, dispensing) and regulation**

### **V.6.1. Drug selection**

The participants from the pharmacy survey (N=132) reported several issues and concerns regarding drug management and the regulations in their facilities. Regarding drug selection (N=128), 64.8% (83) said there was no problem at all and the rest stated the following concerns:

- Lack of the selected drugs on the market
- preference to certain brands of drugs by both health workers and clients, selection was done based on demand; however for some drugs there was little or no demand,
- lack of adequate budget, and
- lack of responsible expert group for drug selection in the facility.

### **V.6.2. Procurement**

In procuring drugs (N=132), 18.2% (24) of the pharmacy workers reported no problem , while the following were mentioned as the main constraints in procuring:

- 52.3% (69)lack/ unavailability of drugs on the market,
- 7.6% (10) restriction of drug procurement (only from government agency), and
- 4.5% (6) transportation problem and lack of budget.

### **V.6.3. Storage**

Regarding this 100 participants forward their opinion out of whom 64 individuals said there was no problem, lack of adequate space, and/ or ventilation was reported by 17 individuals while shortage of lockable cup-boards to keep the opioids in a safe lockes, shortage of shelves, lack of thermometer and ventilator were the major expressed concerns. On dispensing drugs, 45.4% (59) of pharmacy workers said no problem in dispensing; while 15.9% (21) said prescriptions were incomplete with important information missing; 4.6% (6) said some prescriptions were written wrongly; and 3.8%

(5) said frequent prescriptions of simple analgesics encourage abuse by the community. Regarding drug regulation and control, (N=128) 53 % (68) said that there was no problem at all. However 18% (23) of the participants said that the drug regulations are not strong enough and asked for stronger drug regulations; similar points which touch upon drug regulations were mentioned, these were lack of lockable cupboard for opioids 3.9%(5), use of wrong prescription for opioids or shortage of prescriptions 4.7%(6), and drugs either prescribed or dispensed by unauthorized person 3.1% (4).

### **V.7. Perceived barriers to proper management of pain by health care workers**

The participating health workers were asked for the most important barriers to proper management of pain in the health facilities they are working in. Overall, 93% (626) of the study health workers reported lack of training on pain management as an important barrier while lack of knowledge was reported as barrier by 63.3% (428) of the participants, fear of drug side effect by 46.1% (311), strong regulations on opioids by 38.8% (261), fear of patient's addiction by 65.5% (441), and mis- judgment of patients' severity of pain by 50.5% (340) (Table 13).

Concerning both pre-service and in-service training, the following were the responses. About 93% (624) participants reported taking some kind of general courses on pain management during their pre-service training but clearly reported that pain management was not addressed as a specific course. About 54% (341) said the pre-service training they received was grossly inadequate. Only 16.2% (109) of the participants reported that they had taken lessons on how to manage pain during their in-service trainings, and 67.9% (74) of them said the adequacy of the training was at least good. Among those participants that have received training on pain management, more than 53.7% (58) of them had taken the training in the last twelve months. Only 2.4% (16) of the study

Health workers reported that they attended in-service training dedicated only to pain management.



**Table 16. Perceived barriers to proper pain management by health workers**  
**Surveyed for assessment of pain management in Ethiopia, April 2010**

Characteristics	Number	Percent
Lack of adequate training N= 673		
Strongly disagree	8	1.2
Disagree	34	5.1
Agree	307	45.6
Strongly agree	319	47.4
Not sure	5	0.7
Health workers' lack of knowledge about pain management N= 673		
Strongly disagree	24	3.6
Disagree	214	31.8
Agree	331	49.2
Strongly agree	97	14.4
Not sure	7	1.0
Fear of drug side effects N=671		
Strongly disagree	21	3.1
Disagree	243	36.1
Agree	311	46.2
Strongly agree	74	11
Not sure	22	3.3
Strong regulation on opioid drugs N=673		
Strongly disagree	30	4.5
Disagree	313	46.5
Agree	198	29.4
Strongly agree	63	9.4
Not sure	69	10.3
Fear of patients addiction N=672		
Strongly disagree	20	3
Disagree	183	27.2
Agree	334	49.6
Strongly agree	107	15.9
Not sure	28	4.2
Disbelieve of patient's pain severity N=673		
Strongly disagree	29	4.3

Disagree	295	43.8
Agree	300	44.6
Strongly agree	40	5.9
Not sure	9	1.3

## V. 8 Attitude of health workers towards opioid use

In order to answer this, questions were specifically posed to the study health workers; more than sixty percent of the participants believed that patients should be allowed to endure pain before they were put on opioids. Regarding their practice related to opioid prescription, 63.2% (425) and 55.4% (373) of participants did not prescribe weak and strong opioids, respectively in the last 12 months (Table 12). From among the pharmacy professionals 37.4 % expressed that addiction was their most common concern or worry from strong opioid containing prescriptions

Besides the pharmacy professionals also reported their worry about strong opioid containing prescriptions which came to their pharmacy with 37.4% expressing that addiction as being their most common concern (Table 15.A&B). A considerable number of the pharmacists believed that the regulation on drugs should be strengthened and opioids should be put in a lockable cupboard. On top of this, participants from medical schools believed that the irrational fear towards opioid drugs and their side effects that professionals had, can affect the proper management of pain based on its intensity.

## V.9 Pain Assessment and Management in Medical Schools

Interestingly, all the medical schools included in the survey appeared to use more or less the same curriculum for training of medical doctors and health officers. The teaching approaches are also largely similar although there are some minor variations because of **differences** in the experiences of their staff.

According to the individual informants there is no structured special topic on pain management in any of the universities surveyed and most agreed that the curriculum poorly addressed pain management (28/38). Pain management is addressed either as part of disease specific management or in some courses such as pharmacology, physiology, anesthesia, surgery and obstetrics and gynecology and these courses were reported to offer students knowledge about the mechanisms of pain, drugs for pain

relief, and pre- and post operation management of patients. Informants from the departments of surgery and obstetric and pharmacology mentioned that there are special topics related to the management of pain and believed pain is addressed satisfactorily in the curriculum.

The participants were asked to rate the attention given to pain management in the medical school training compared to other subjects; 30 individuals, out of 38, rated the attention given to pain management training from poor to fair. The reasons for the obvious low rate/skepticism were:

- Lack of courses or sessions that are dedicated specifically to pain management in the curriculum, lessons were fragmented across many courses and students do not get a complete picture of how pain should be managed;
- Most instructors (including the seniors ones) **do not** address patients' pain seriously, they do not even have a standard way of managing pain and lack such knowledge to pass on to their students/. The students do not also acquire practical experiences
- Lack of instructors that are specifically trained on pain management which indicated the clear lack of priority for the subject matter,
- Pain management skill is not subjected to evaluation in the medical school, and
- Patients are often left untreated for their pain until the final diagnosis is made.

Most of the participants (33/38) have also emphasized that pain management **course** should be given as a session in an organized manner having a formal place in the curriculum. According to the participants this will fill the gaps observed in patient's pain management and reduce individual variations. All clinical courses except dermatology and radiology, and the basic sciences courses such as pharmacology and physiology are dealing with pain in one way or another but not with emphasis on systematic approaches adapted for managing pain. However, there is no textbook or required reading materials that are dedicated to pain management for students. Besides, a few said that they do not have the time to read even the available textbooks where pain management is discussed as a chapter.

The majority of the participants said that the quality of training on pain management was similar to other medical schools as the curriculum is the same across medical schools in the country. Regarding performance of graduates only seven out of 22 respondents from schools that have graduated rated as good or very good; the participants from Haremaya, Dilla and Bahir Dar were not able to comment on their graduates' performance as there are no medical graduates yet. About 58% of the participants (22/38) were unaware of either the national pain management guideline or WHO's three step approach to pain management and they were not able to comment if the training on pain management was up to those standards; while those who know the guidelines said the medical curriculum poorly (10/15) fulfill the expectations of the national guideline and WHO protocol.

The management of pain in the teaching hospitals was evaluated from the participants' side; some informants from the pharmacology departments and those from Bahir Dar University were not able to comment because pharmacology instructors had a limited role in the teaching hospitals and the hospital in Bahir Dar was not yet under the university administration as there were **no** students for the clinical year. Out of 27 participants 20 rated the pain management for patients with chronic pain in the teaching hospital as poor or fair. Barrier to management of pain in the teaching hospitals can be categorized as factors related to health facility, health professionals, patients and policy.

#### **Health facility related barriers**

- patient load and limited human resource to respond to
- limited availability of pain relieving drugs and procedure sets to administer drugs such as Para-cervical block set, cost of drugs and lack of prescription papers; **for strong opioids such as pethidin, morphine, Tramadol; and weak opioids such as codeine, anti-depressants such as Amtriptyline, IV Fentanyl, nerve blockers with their sets.**
- there is no guidelines for pain management that health professionals are expected to follow

#### **Health professionals related barriers**

- lack of knowledge about the pain relieving drugs, mechanisms of pain and management
- irrational fear of the pain relieving drugs especially for cancer patients
- irrational fear of pain relieving drugs especially strong opioids side effects and addiction
- more focus on underlying pathology than relieving the pain
- lack of proper communication between pharmacy professionals and health workers contributing to a limited **access to** or non use of drugs while available in the stock
- subordinate health professionals fail to follow order given by doctors
- attitude of health professionals towards pain and its management
- negligence from the health professional's side to manage pain

#### **Patients related barriers**

- lack of demand for pain management from patient's side
- Patients are not aware of their right to be free of pain.

#### **Policy related barriers**

- strict drug regulation and need for special prescriptions
- no teaching materials and standard treatment guidelines are available in the schools as the guidelines are produced and distributed by external bodies
- failure of updating the pre-service training curriculum regularly, priority is given to management of underlying pathology; it is forgotten that one of the outcome of modern medicine is enhancing the quality of life by providing palliative care
- No mechanism of updating health professionals such as on-the-job training on pain management as well as palliative care.

## **VI. Discussion**

This was a nationally representative evaluative survey **on the assessment of knowledge**, attitude and practice of pain management in the health system and the emphasis given for pain management in the medical school training. The evaluation covered the four components of health workers survey, medical school survey, pharmacy survey, and desk review and synthesis. The study was conducted in selected facilities in all regions of Ethiopia. The study participants were health professionals working in hospitals, health centers, pharmacies and staff of medical schools. A total of 673 health workers, 132 pharmacy professionals and 38 medical school staff members participated in the study.

### **Knowledge of pain assessment and management**

One of the important sectors assessed in this study was the knowledge of health workers on pain assessment and management. Most health workers were not aware of the different types of pain management and assessment modalities. Higher percentage of general practitioners reported knowledge of more than one pain assessment and management modalities compared to other category of professionals. Other studies have suggested that failure to evaluate the severity of pain by using the different types of pain management and assessment modalities had resulted in under treatment of pain in patients(17).

This study has also identified poor knowledge of contraindication of opioids . Only one third of the participants approved the use of a combination of drug therapy. It is suggested that poor knowledge of opioid pharmacology, failure to use adjuvants were recognised as important factors which affect administration of appropriate drug for the right patient (18). In this regard the lack of awareness about the presence of the national pain management guideline, and the WHO pain management protocol are reflections on low level of knowledge on pain assessment and management.

## **Attitude of Health workers regarding pain assessment and management**

The majority of the participants were positive that pain management was given high priority attention in their health facility and their patient were often satisfied with the services provided. It seems that the health workers are satisfied with the service they are providing and they are not aware of the gaps in their practice.

The participants hold some misconception about patients regarding pain and its management. In this regard, patient addiction to pain relieving drugs; appropriateness of withholding any kind of pain relieving drugs and specifically opioids till the pain gets worse /severe were reported by a good number of participants. These misconceptions might have emanated from lack of appropriate knowledge regarding the pharmacology of the drugs. Such knowledge-gap about the pharmacology of drugs was reported by other studies too (18). Besides, the mean attitude score for different professional categories showed that general practitioners are more likely to have a better score of attitude.

Attitude of health workers on the components of pain assessment and management practice in the health system was also an important aspect that might motivate people for change in practice. Though the health workers appreciated most part of the pain management components, they were not comfortable with management of drug side effect and administration of a combination drug therapy. This showed that health workers were comfortable only with the first stage of pain assessment and appropriate drug administration; further follow-up of patients on pain relieving drug and managing side effects accordingly were poorly practiced.

## **Practice of pain assessment and management by health workers**

The participants reported pain related with acute medical illness was often reported in their health facility; and majority of health workers reported that they rarely attended patient with chronic pain. This might be because patients with acute pain could be not recognized because of the acuteness and fatality of the underlying pathology. Besides, patient's demand for pain management played important role in getting the service; patient failure to report pain was reported as reason for under treatment of chronic pain(12).

The use of different pain assessment scales and treatment modalities of pain were reported to be poor and this can be explained by the knowledge gap observed in this study. Besides, poor use of the national pain management guideline and WHO protocol can also be explained by a lack of awareness about the presence of these documents

Regarding prescription of pain **relieving drugs**, simple analgesics were prescribed by almost all health workers irrespective of their professional category; however, is not true for other drugs such as opioids and adjuvants. The level of professional category clearly affects prescription of drugs such as opioids and adjuvant; except for pethidin, these groups of drugs are not allowed to be used at the health centre level where most middle and low level health professionals are practicing in Ethiopia (19).

### **Availability of pain relieving drugs**

The availability of pain reliving drugs was evaluated as availability and stock-out of drugs in the last six month prior to the survey, and availability at the time of the survey. Except for simple analgesics, overall availability of drugs in the six month prior to the survey was low for opioids, antidepressants and anticonvulsants. Stock out in the last six month prior to the survey was also higher for opioids, antidepressants, and anticonvulsants as well. Variation in the availability of opioid and adjuvant also varied depending on the type of pharmacy (hospital, health centres or community pharmacy); hospital pharmacies were more like to have opioid and adjuvants compared to the community pharmacies while health centre pharmacies had little or did not have it at all.

This study identified a clear gap in the availability of pain relieving drugs except simple analgesics. Lack of these drugs at the health centre pharmacies can be justified since these pharmacies are not allowed to procure and dispense the drugs. However, the problem in community pharmacies showed clear lack of the drugs. The availability of pain relieving drugs is a very important aspect which affects appropriate management of pain across the health system, especially in developing countries.

Regarding pain drug management, the most important problems regarding drug selection and procurement were lack of drugs on the market and shortage of budget that eventually affect drug availability in the health facilities and pain management in



general. The pharmacy professionals are also worried about the restriction of drug procurement from government distributors only. Their fear is that the availability of drugs in variety is limited in government distributors which again affects supply of drugs in the pharmacies. Incomplete prescriptions and the use of wrong prescriptions for drugs were also important factors which affect drug dispensing for the patient with pain; this is more important for drugs which required especial prescription paper such as opioids. The pharmacy professionals also complained about the weak drug regulation and demanded for the stronger.

### **Perceived barriers to pain management at the health facilities**

Lack of training, lack of knowledge among health professionals, fear of patient addiction to pain relieving drugs, mis- judgment of patients pain severity, fear of drug side effect and strong drug regulations were the barriers mentioned by the health workers. Lack of training was also supported by the fact that only few participants mentioned that they attended in-service training dedicated to pain management. Lack of adequate knowledge about pain assessment was mentioned as an important barrier in other literatures as well and linked to inadequate training (12, 18, 20). Fear of patients' addiction and drug side effect were also important barriers indicated in other literature(13). Moreover, this study has also identified that health workers attitude regarding opioid drugs, coincided with their fear of patient addiction to drugs. Most health workers' believed that a patient should endure more pain before receiving opioid drugs.

The problem with regulatory scrutiny was also perceived as a barrier expressed by health workers. While the pharmacy professionals demanded for stronger; the other health workers were worried about the existing regulations that affected use of opioid drugs for patients. Similar studies have also identified that these regulatory means limited health workers from prescribing opioids(21).

### **Emphasis given for pain management in medical school training**

According to the respondents from the medical schools, training on pain management was not given adequate attention during pre-service training; no appropriate place was given to pain management in the medical school curricula. The health workers also

mentioned its inadequacy. The review of the curricula of the medical school revealed that there was no formal place for pain management courses. Accordingly, the deficiency was observed in both clinical and pre-clinical training(13). This was also mentioned as a problem in other studies in the USA. This may be because the curriculum of the local medical schools shared some similarity with certain western medical school curriculum (may be it is adopted from the western experience.) Similarly, as the patient care approach was disease based not symptom based; the pain management issue was addressed as part of individual disease management. Similar findings were observed in other literature(13, 18).

In general, this study tried to identify some of the important issues in pain assessment and management, from the respective groups who are involved in patient management. Though the use of a mix of methodologies gave the study strength, it was not without limitation. As the study was designed to provide a national estimate, the findings may not show the regional difference in terms of pain management service provision. This study did not include patients' perspective which eventually affects pain management. However, as this study is the first in its kind in the country, the findings could be used as an input for improving the service and training, upgrading the guideline and as a spring board for other research to further evaluate the problem in depth.

## VII. CONCLUSIONS

The following conclusions are drawn based on the facts that were obtained from this assessment:

- Most health workers are not aware of the standard pain assessment scales and they rarely practiced them; and they tended to believe their own judgment of the intensity of pain rather than using the standard scales. Service providers identified lack of appropriate training as a main barrier to the lack of proper management of pain in health facilities.
- Wrongly perceived ideas were highly prevalent in the health facilities. Most health workers believed withholding opioid drugs till the patient gets into absolutely intolerable pain is necessary and the restriction on opioids be tight, while pharmacy professionals promoted further strengthening of the drug regulations and control mechanisms to restrict the use of especially strong opioids.
- Drug therapy is the most commonly known and practiced pain management modality followed by psychological therapy. However, most health workers lack adequate knowledge on the use of combination of drugs for pain management and the contraindication for opioid drugs leading to unnecessary withholding of drugs and inadequate management of pain.
- A great majority of the service providers were not aware of the existence of the national pain management guideline and the WHO protocol as only less than one third of the participants had knowledge and a few participants reported using them.
- Contrary to what was found in terms of the limitation of knowledge and the lack of standard treatment guidelines; the majority of the health workers believed that pain is given either equal or more priority in the health facilities. This is a major drawback in improving pain management for chronically ill patients including those with HIV/AIDS.
- Most of the participants routinely prescribed simple analgesics for their patients; however, their practice pertaining to prescribing weak and strong opioids and antidepressants was minimal, although they frequently treated patients with chronic illness.

- Lack of strong pain relieving drugs in the health facilities as well as in the markets is a major barrier to effective pain management; opioids and anti-depressants were less available compared to simple analgesics and interruptions or stock outs were also reported for almost all kinds of pain relieving drugs.
- The majority of pharmacy professionals had no problems with regulations and management of pain drugs; however, drug unavailability on the market was an important factor that affects both drug selection and procurement; wrongly written and incomplete prescription paper affect drug dispensing.
- Lack of proper knowledge and appropriate training of the health workers posed major barriers to effective management of pain in the health facilities.
- Pain management is not given a formal place in the medical curricula and thus the medical students received inadequate training.
- Medical school instructors are neither well trained specifically on pain management nor aware of the national and WHO guidelines for pain management.

## VIII. RECOMMENDATIONS

- Improve the current knowledge and practice of service providers in pain **management through on- the-job training and by providing basic job aids**. This can help them understand the expectations and the gaps that exist in managing pain in the health facilities. **Involving health training institutes in designing in-service training can greatly help assimilate new ideas and procedures into the health system.**
- Popularize and ensure the availability and use of the Standard protocols including the national pain management guideline by all health workers, pharmacy professionals, and health training schools.
- Encouraging and supporting the use of all possible modalities of pain management by health workers depending on the needs of the patient can help improve the quality of service and reduce the dependency on pain drugs.
- Update the curriculum and course outline on pain management in medical schools and other training facilities .
- Engaging training facilities/ schools in updating their curricula and improving the quality of instruction is very critical in ensuring sustained change in the management of pain in the health system that has high turnover of staff and uses a “flooding strategy” to populate health facilities with fresh graduates<sup>4</sup>. In-service training can not be regarded as a sustainable strategy to alleviate the problem in such a system
- Effective engagement of training schools should primarily target instructors as a change agent. Without fully and effectively engaging instructors introducing guidelines and changing curricula may not necessarily bring the desired change.
- A full range of pain drugs should be available in the health facilities that provide services for and stock out should be monitored carefully to ensure continuity. If health facilities are encouraged to take responsibility for AIDS drugs, which are potentially risky in the sense of spreading resistant strains in the community, they should also be allowed to use a full range of pain drugs.

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<sup>4</sup> Currently all medical schools (the old and new ones) are training unusually very high number of medical students.

- Strengthening the system of pain drug procurement, distribution and storage is essential to ensure the continuous availability of quality drugs.
- Health programs such as those connected to HIV/AIDS need to support actively the improvement of pain management in health facilities by providing the necessary supply of drugs and by offering technical support.

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