Assessment of Analgesic Use among Motor Vehicle Mechanics in Egor Local Government Area, Benin City

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A Dissertation Submitted To the Department of Community Heath, College of Medical Sciences, School of Medicine, University of Benin, Benin City, Edo State

February, 2021

DECLARATION PAGE

I hereby declare that the following work is original except otherwise stated and has not been presented or published in part or full for any other examination anywhere else

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CERTIFICATION

This is to certify that the research project was carried out by the aforementioned student, in partial fulfillment of the requirement for the award of Master of Public Health (MPH), in the Department of Community Health, Benin City, College of Medical Sciences, University of Benin, Benin City, Edo State Nigeria.

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DEDICATION

This work is dedicated to God Almighty, Jesus Christ and the Holy Spirit who make all things beautiful in His time.

ACKNOWLEDGEMENT

I give thanks unto the Lord, the Father of Our Lord and Savior, Jesus Christ, who I dedicate this work to. He is good and His mercies endure forever-I appreciate Him for the grace to embark upon this programme and this research and to complete it.

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LIST OF ABBREVIATIONS

AN	Analgesic nephropathy
CPC	Consumer Protection Council
FDA	Food and Drug Administration
MAREs	Misuse and Abuse Related Events
MMH	Manual material handling
MHL	Manual handling of loads
NAFDAC	National Agency for Food and Drugs Administration and Control
NPC	National Population Commission
OTC	Over-the-counter
POMs	Prescription only medications
PPMV	Patent and proprietary medicine vendor

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ABSTRACT

Background: Inappropriate use of analgesics is becoming a serious public health problem in many parts of the world with a number of factors contributing to this problem including unrestricted access to drugs.

Aim: To assess the pattern of analgesic use among motor vehicle mechanics in Egor L.G.A. Benin City, Edo State in order to contribute evidence for interventions/measures to curtail inappropriate practices.

Methodology: This study was carried out among motor vehicle mechanics in Egor Local Government Area of Edo State. A mixed method was employed-The quantitative part of the study was Cross Sectional in nature to investigate the knowledge, attitude and practice of analgesic use while Focused Group Discussions was used to validate findings.

Results: Three hundred and seventeen respondents were enrolled into the study. Knowledge of analgesic was good in 43.2% of respondents. Secondary level of education showed to be a strong predictor of positive knowledge of analgesic use. Up to 57.4 % had a poor attitude to analgesic use while 30.3 % and 12.3 % had good and fair attitude respectively. Apprentices had a significantly more positive attitude and good knowledge of analgesics was a strong predictor of good attitude towards analgesic use. There was a high (84.2%) occurrence of self-prescription and the commonest indications for self-prescription were body pain and headaches with paracetamol being the most common analgesic taken by self-prescription. Inappropriate dosing was observed in 77.9 % and their main sources were pharmacies and chemists. This study showed various forms of misuse, adverse effects and features of addition and dependence were also reported.

Conclusion: Inappropriate use of analgesics is still a problem in Egor L.G.A of Edo State and Health education will go a long way to address this problem.

Key words: Analgesic, Misuse, Abuse, Motor Mechanics

OPERATIONAL DEFINITION OF TERMS

Abuse/An abuse-related event: This is any intentional, non-therapeutic use of a drug product or substance, even once, for the purpose of achieving a desirable psychological or physiological effect.

Diversion: Diversion is any intentional act that results in transferring a drug product from lawful to unlawful distribution or possession.

Misuse/ A misuse-related event: This is defined as any intentional therapeutic use of a drug product in an inappropriate way. They exclude those events that meet the definition of an abuse-event indicator.

Job demands: All physical, psychological, social or organizational aspects of a job that require continuous physical and/or psychological (i.e., cognitive or emotional) effort.

Tampering: This is inappropriate manipulation of a drug product (i.e. crushing tablets or emptying capsules)

Withdrawal: Withdrawal is described as the occurrence of symptoms or clinical signs due to the decline in blood concentration of a drug product after dose reduction, at the end of a dosing interval, after discontinuing treatment or due to administration of an antagonist.

Overdose: Any act that result in drug exposure exceeding the generally recommended or medically accepted dose.

CHAPTER ONE

INTRODUCTION

1.1 Background

Inappropriate use of analgesics is becoming a serious public health problem in many parts of the world. Different factors contribute to this problem including unrestricted access to drugs. In Nigeria, most analgesics including "prescription only" analgesics can be obtained without prescriptions (over-the-counter). While many analgesics are particularly effective, they are also not without certain side effects. It is therefore essential that analgesics and all other medicines are taken within the proper indication with specific and clear patterns of prescription. Outside this, abuse could occur and can result in dire consequences that can adversely affect health.

Analgesics have been used for the treatment of pain for many years. In earlier times, the opium and opium derivatives were discovered by the ancient Greeks to have analgesic properties and were used as medicines.[1] With the advancement of time, other medicines were developed and played a vital role in pain management. In addition to their use in pain management, some medicines classified as analgesics have other beneficial effects- they are used and prescribed for their antipyretic and anti-inflammatory effects and part of the management of certain conditions due to their antiplatelet effects for instance aspirin. Among their valuable uses, analgesics are often taken to manage acute or chronic pain. Furthermore, headaches and fever (which are common symptoms of various medical conditions) are usually managed with simple analgesics.

As a result of their varied therapeutic uses, there is a widespread prescription and use of analgesics for persons of all age groups. Analgesics are administered to neonates for the treatment of febrile conditions and to geriatric patients for pain management and antiplatelet activity. A study of the

drug prescription pattern in a Nigerian Teaching Hospital reported that analgesics were the most frequently prescribed medications with prescription rate of 50.89%. [2]In the United States of America retail pharmacies dispensed 245 million prescriptions for opioid pain relievers in 2014 alone.[3, 4] Unfortunately, the extent of misuse of analgesic is also very great. It had been estimated that in the United States about 25 million people initiated non-medical use of pain relievers between 2002 and 2011.[5] The number of deaths per year attributed to prescription opioid medications was 16,651 in 2010.[6] In Nigeria, 74% of persons in Laoso village in Ondo State,(67 % of who were farmers) took mixtures of unknown analgesics with 12.2% taking these mixtures for at least one year.[7] In Abuja, 20.65% of adults exceeded the maximum daily doses of paracetamol and ibuprofen.[8] Prescription and over-the-counter analgesics may be abused in various ways. First a person may take a medication that has been prescribed for someone else. Secondly, the medication may be taken in a different manner or a different quantity than is recommended or that has been prescribed. Thirdly, a drug may be taken for another purpose other than that for which it is indicated or has been prescribed.

Generally, pain is one of the most common reasons patients seek treatment from physicians.[9] It can accompany diseases, or it can occur following events encountered during a person's normal day to day activity. Sometimes, pain can actually be a protective response of the body (for instance pain that occurs when in contact with a very hot object). Nevertheless, irrespective of the cause, persistent or unrelieved pain can frustrate both the person suffering from it and the physician trying to alleviate it[9] and in certain situations, poorly treated acute pain can progress to chronic pain. Both acute and chronic pain can also cause adverse and undesirable physiological and emotional effects which can be appropriately prevented or managed with adequate pain relief. However, there are

alternative non-pharmacologic methods that can equally be used to treat pain and other simple ailments.

Use and abuse of analgesics have been found to be higher among persons of certain occupations.[7,10-12] Basically, occupations differ in terms of their unique requirements and demands. Some jobs are physically more demanding while others are mentally demanding; others entail a combination of these demands. Typically, certain jobs involve manual handling of loads (MHL) and or manual material handling (MMH). Manual handling of loads (MHL), manual material handling (MMH) involves the use of the human body to lift, lower, fill, empty, or carry loads.[12] People engaged in these jobs are often at risk of pain, injury and fatigue.[12] Again persons that perform jobs characterized by high physical demands or have peculiar hectic requirements may resort to certain unhealthy practices. There are other reasons for taking analgesics. These include the treatment of colds, flu, fever and headache and they are possible reasons for the use and potential misuse of some over-the-counter analgesics (OTC).

Unrestricted access to some medications including analgesics is a common reason for drug misuse and abuse. Likewise regulation of assess to medications can curtail wrongful uses. In Nigeria, virtually analgesics can easily be obtained over-the-counter, both from pharmacies and patent and proprietary medicine vendor (PPMV) outlets.[13] Drugs including analgesics are rarely sold directly from manufacturers to retailers or consumers.[14] The dynamic link between manufacturers and consumers is bridged by a network of intermediaries, scattered across different countries. The distribution chain consists of open markets, patent medicine stores, and community pharmacies, private and public hospitals. This complexity in the distribution chain makes drugs extremely

vulnerable and easily accessible. In Nigeria, most analgesics can be accessed at any one of these points. Consequently, the Federal Government of Nigeria established regulatory agencies to dictate how pharmaceuticals produce, promote, price and distribute their products. These agencies include the National Agency for Food and Drugs Administration and Control (NAFDAC) which regulates foods, drugs and cosmetics; the Pharmacists Council of Nigeria which details the standards required for professional practices in line with international codes and Consumer Protection Council (CPC) provides speedy redress to consumer complaints and seeks ways and means of removing or eliminating, hazardous products from the market and replacing such products with safer and more appropriate alternatives.[14] Therefore in view of the increasing misuse use and abuse of analgesics, it is advisable that status of most OTC analgesics be changed to prescription only medications (POMs) sold in pharmacies rather than retail outlets.

A good understanding of the extent and pattern of analgesic use is fundamental to solving the problem of analgesic abuse in Nigeria. It can be a basis for educating people about the appropriate use of these drugs in order to reduce the associated morbidity, mortality and adverse effects on public health. Since jobs entailing manual material handling are associated with factors that predispose to analgesic use, this study seeks to assess the pattern of analgesics use and identify possible abuse among motor vehicle mechanics in Egor Local Government Area, Benin City, Edo State.

1.2 Statement of the Problem

Drug misuse and abuse has become a serious problem with significant effects on public health. In Nigeria, health care services have been fraught with diverse challenges. Fragmentation of services, dearth of resources, including drug and supplies, inadequate and decaying infrastructure, inequity in resource distribution and access to care are among the major issues plaguing the health sector.[15] Although numerous efforts have been made to make health care services physically accessible in Nigeria, especially through Primary Health Care services, the greatest impediment to health care accessibility has been related to the high prevalence of poverty such that sometimes people that live close to hospitals cannot afford it.[16] In recent times, financial difficulties due to the lingering economic problems have driven a number of people to poor health care seeking behavior and practices that are ultimately precarious to health. Self-medication with resultant drug misuse and abuse are among these dangerous practices.

In developing countries most illness are treated by self-medication.[17] Self-medication can be defined as the use of drugs to treat self-diagnosed disorders or symptoms or the intermittent or continued use of prescribed drug for chronic or recurrent disease or symptoms.[18] A major shortfall of self-medication is the lack of clinical evaluation of the condition by a trained medical professional which could result in missed diagnosis and delay in appropriate treatment.[19] This poor practice of out of prescription use of medications coupled with poor regulation of medications use, presence of pharmacy quacks, local unauthorized vendors contribute to the misuse of analgesics.

In Nigeria, analgesics are among the most common drugs vended and self-medicated.[15] They are often taken to treat headaches, various types of pain or discomfort, febrile illness and other ailments. Unfortunately, most analgesics are taken inappropriately resulting in problems of great

concern.[8] Abuse of analgesics has been associated with various medical complications such as gastritis/gastric ulceration and also hepatic, renal and cardiovascular complications.[20,21] Specifically chronic consumption of analgesics has been found to be contributory to the increased incidence of renal failure. Furthermore, abuse of analgesics can led to dependence, addiction, psychosis, violence, road traffic accidents and premature deaths from unintentional overdose.[21]

From available literature, very little is known about the use analgesics among motor vehicle mechanics. It is supposed that as a result of their highly physically demanding jobs and additional ailments requiring treatment with analgesics, they could be taking various analgesics mostly self-prescribed. It will be expedient to assess this group of workers and find out if they follow acceptable prescription patterns. A few studies have assessed the abuse of analgesics among adults and other populations in different areas in and outside Nigeria. [7,10-12] However, there is insufficient information about analgesic drug use among the population of motor vehicle mechanics. This study aims to fill this void of knowledge and contribute to literature regarding the use of analgesics in developing countries. Since this study will be carried out among Nigerian vehicle mechanics, it could give an insight into analgesic drug use of persons with similar job characteristics. It will also provide data that form a foundation to address issues of drug misuse if present. It is against this background that this study aims to assess the use of analgesics among motor vehicle mechanics in Egor Local Government Area, Benin City, Edo State.

In this study, the commonly used and abused medications will be identified. The extent of the abuse of analgesics among motor vehicle mechanics whose jobs are characterized by manual handling of loads and or manual material handling will be assessed and the factors associated with

misuse and abuse determined. In addition, the health consequences and the public health significance of complications following analgesic abuse will be deduced.

Information obtained from this study can contribute data on pattern of drug use and abuse in Nigeria so that the current practice patterns of drug dispensing can be reevaluated. In addition, data obtained will be beneficial to governmental and non-governmental stakeholders in the healthcare sector and the recommendations in this study will assist in planning and implementing practicable and sustainable policies towards checking the misuse of analgesics. Furthermore, information will assist advocacy groups and enable them know the extent of the abuse of analgesics among motor vehicle mechanics so as to plan effective strategies to curb ill practices. Finally the findings from this study will serve as a resource to researchers and students and can serve as a basis for further research and interventions in Nigeria.

1.3 Research Questions

This study will provide answers to the following:

1. What are the types of analgesics commonly used by motor vehicle mechanics in Egor Local Government Area?
2. What are the indications for analgesics use among motor vehicle mechanics in Egor Local Government Area?
3. What is the pattern of analgesic use among the motor vehicle mechanics in Egor Local Government Area?
4. Is there abuse of analgesics by these motor vehicle mechanics in Egor Local Government Area?
5. Is there any relationship between the respondents' socio demographic and analgesic abuse?
6. What are the associated factors, adverse events and complications of analgesics by these motor vehicle mechanics?

1.4 Objectives

1.4.1 General Objective

To Assess the pattern of analgesic use among motor vehicle mechanics in Egor Local Government Area, Benin City, Edo State in order to contribute data for interventions/measures to curtail inappropriate practices.

1.4.2 Specific Objectives

1. To determine the knowledge and attitude of motor vehicle mechanics in Egor Local Government Area, Benin City Towards Analgesic Use.
2. To assess the types and dosage pattern of analgesics taken among this group.
3. To identify the factors associated with analgesic use among motor vehicle mechanics in Egor Local Government Area, Benin City.
4. To determine adverse effects and any complications associated with misuse or abuse of analgesics such as withdrawal symptoms, dependence, addiction or symptoms suggestive of organ compromise.

1.5. Justification for the Study

Abuse of medicines is a serious public health problem and important issue of concern in many parts of the world including Nigeria. Self-medication, poor adherence to prescriptions coupled with lack of information is contributory to this problem. These wrong practices are harmful to health and associated with dire consequences. Therefore, a strategic approach to curtail these practices must be adopted which will include health education and behavior change. In order for these to be effective the exact scope and magnitude of the problem must be known, and the specific associated factors identified. Additionally, the impact on public health needs to be determined.

Information obtained from this study identified the extent of misuse and abuse of analgesics among motor vehicle mechanics whose jobs are characterized by manual handling of loads and or manual material handling. The determined factors associated with misuse and abuse could be used to employ a more directed and focused approach to educating this population. In addition, the identified health consequences and public health significance of the complications could be used to create awareness and present advocacy to government on the need for review of policies regarding drug accessibility without limiting their availability when needed.

1.6. Hypotheses

1.6.1. Null Hypothesis (HO): There is no significant misuse/abuse of analgesics among motor vehicle mechanics in Egor Local Government Area, Benin City, Edo State.

1.6.2. Alternate Hypothesis (HA): There is significant misuse/abuse of analgesics among motor vehicle mechanics in Egor Local Government Area, Benin City, Edo State.

CHAPTER TWO

LITERATURE REVIEW

2.1. Background

Analgesics are drugs that relieve pain without causing the loss of consciousness. According to the International Association for the Study of Pain (IASP), pain is defined as "an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage."[22] Drugs that are classified as analgesics are mostly used to treat mild, moderate or severe pain from various causes. They are also used to treat headache, cramps and trauma. Additionally, because of their different mechanisms of actions, some of the drugs classified as analgesics also have anti-inflammatory and antipyretic properties and are therefore used to treat fever and reduce inflammations. The anti-inflammatory effects of some have even been found useful in reducing the risk of endometrial cancer, breast and colorectal cancers. [23]Furthermore, the antiplatelet activity of certain types of analgesics make them useful in the prevention and treatment of coronary artery disease.[24]

Analgesics are broadly classified into two groups-opioid analgesics and non-opioid analgesics. Opioids are analgesics which bind to opioid receptors in the body. They include alkaloids found in the opium plant as well as derivatives of these alkaloids. Opium is formed from the latex (i.e., sap) released by lacerating (or "scoring") the immature seed pods of opium poppies (Papaversomniferum). The opium latex contains up to 16 percent morphine, [1] as well as codeine and non-narcotic alkaloids, such as papaverine and noscapine. Heroin (diacetylmorphine or diamorphine) is a semi-synthetic opioid synthesized from morphine. Codeine is an alkaloid found

in opium but can also be synthesized from morphine through the process of O-methylation. Codeine is the most widely used opiate in most countries. Other subclasses of opioids are the semisynthetic opioids (e.g. oxycodone, hydrocodone dihydrocodeine, hydromorphone and oxymorphone) as well as the fully synthetic opioids such as pethidine, methadone, tramadol, pentazocine, buprenorphine, fentanyl and other fentanyl derivatives. Tramadol and buprenorphine are considered to be partial agonists of the opioid receptors. Opioids are strong analgesics use in treating chronic as well as moderate to severe pain. They are particularly effective and are regarded as the most potent analgesics, but they have undesirable side effects and are associated with tolerance, dependence and addiction.

Non-opioids can be divided into salicylates (e.g. aspirin and those related to aspirin), acetaminophen, and the non-steroidal anti-inflammatory drugs (NSAIDs). Acetaminophen (paracetamol) is a popular analgesic and antipyretic drug used for managing headaches, fever, and mild to moderate pain. It is also used in combination with other medications and analgesics. The exact mechanism of action of paracetamol is not known but it is thought to acts as a selective inhibitor of the cylooxygenase enzyme isoform, COX-3, found in the brain and spinal cord.[25] It exhibits its antipyretic effects by modulating the thermo-regulating centre in the brain. Aspirin and the NSAIDs inhibit cyclooxygenase, leading to a decrease in prostaglandin production thereby reducing pain and inflammation.[25] Non-steroidal anti-inflammatory drugs inhibit COX-1 and COX-2 isoenzymes to various degrees. Undesired effects arise primarily from undesired inhibition at these enzyme sites.[26] NSAIDs can be further classified as non-selective NSAIDs and COX-2 inhibitors. Examples of non-selective NSAIDs include ibuprofen, mefenamic acid and diclofenac while COX-2 inhibitors include celecoxib and etoricoxib.

The various classes of analgesics are not only structurally different they also differ in terms of their adverse effects on different systems in the body. Characteristically the opioids and opioids derivatives, which act primarily on the opioids receptors in the central nervous system, have psychoactive effects. They are therefore at risk of being misused or abused and are therefore regulated as prescription drugs.

2.1.1 Sources of Analgesics

The two main mechanisms by which an individual can legally obtain medications including analgesics are by direct purchase (over-the-counter) from medicine outlets or by prescription. Basically, medicines are categorized into these two groups based on their use and their potential/ likelihood for misuse. This is important because all medications have potential risks and adverse effects and the response to various drugs is mostly individualized. These factors are taken into consideration and the potential benefits, weighed against the possible risks before these medications are prescribed or taken.

A prescription drug is a drug available to the public only upon prescription written by a physician, dentist or other practitioner licensed to do so.[27] It can also be described as a pharmaceutical drug that legally requires a medical prescription for it to be dispensed. This is in contrast to over-the-counter medicines (also referred to as non-prescription medicines) which can be sold directly to a customer without a prescription from a doctor.

Basically, over-the-counter medications are used to treat minor non-life threatening medical conditions that are transient e.g. headache or some mild chronic conditions e.g. allergies. They are

also taken to treat conditions that do not need care from a heath care professional and that have been proven to have high safety standards with self-medication.[30] Often, reliefs from simple symptoms are sought from medications available at local pharmacies. This saves people the trouble of having to visit the hospital to see a doctor for a prescription medicine. The ability of an individual to purchase medicines directly has been said to offer benefits in terms of convenient access to, and choice of, medicines as well as involving individuals as active participants in their own health and the treatment.[30] The range of medications is though restrictive compared to prescribed medicines and there are often limitations to the type of medication, indications and the dose. For instance, a simple analgesic of a lower strength is allowed for OTC use; a higher strength of the same medication e.g. ibuprofen will require a prescription. There has been trend towards increasing deregulation of certain medicines from prescription to OTC supply and most recently from Internet pharmacies.[30] This access can have some disadvantages.

Non-prescription analgesics include oral acetaminophen, non-steroidal anti-inflammatory drugs (ibuprofen and naproxen), and salicylates (aspirin, magnesium salicylate, and sodium salicylate). Topical analgesics are also available as non-prescription medicines and include menthol, camphor, capsaicin, trolamine salicylate and other salicylates. Non-prescription analgesics are available in brand and generic formulations in tablets, capsules, gelcaps, powders, creams, ointments, suppositories, sprays, and patches.

Extent of Use of Prescription and OTC Analgesics

In Nigeria, paracetamol is routinely taken by some individuals at the least sign of pain, stress or discomfort. Some combine paracetamol with other analgesics like Ibuprofen or aspirin.[7] Also in the United States of America acetaminophen, ibuprofen, and aspirin are among the most frequently

utilized medications, used by approximately 17 % to 23 % of the population each week.[28] Chronic OTC analgesic use has been reported to be most common in the elderly, many of who take non-steroidal anti-inflammatory drugs or acetaminophen for relief of pain. In addition, a survey reported that approximately 50 % of adults classified as having high cardiovascular risk status take low-dose aspirin.[29]

2.2 Attitudes towards Analgesic Use

One of the factors that make the practice of self-medication with analgesics common is of the widespread availability and perceived safety of OTC analgesics.[28] There is a tendency for the public to believe that OTC medicines are safer than prescription medicines.[30, 31] This is partly due to information from popular media and other advertisement sites which often demonstrate a degree of uncertainty about the beneficial versus harmful effects of analgesics.[10] Conversely, analgesics have not only benefits but also the potential to cause harm. Many persons are unaware of the potential for toxicity and adverse drug interactions associated with the long-term and inappropriate use of analgesics. They may use analgesics in higher-than-recommended doses or in combinations that magnify the risk of adverse interactions. The incidence of analgesic misuse/abuse is increasing worldwide and is reported to be between 4.7 % and 22 %.[37,44] A cross-sectional survey [8] was carried out to assess the misuse of analgesics in Abuja. It was reported that while 10.1% respondents who misused or abused analgesics agreed that analgesic misuse/abuse was risky, 66.03% were not aware of the risks involved. In another study[7] the relationship between musculoskeletal pain and analgesics consumption in a rural Nigerian community was assessed. The results showed that over 12% of the subjects had used analgesics daily for one year while 5.2% had used daily for at least 10 years suggesting the lack of awareness of the adverse effects of analgesics and constant exposure to causes of musculoskeletal pain among the subjects. In

another study[17] carried out among outpatients in the Federal Medical Centre, Owo, two hundred consenting respondents were selected by simple random sampling and interviewed with the aid of semi structured questionnaires. Any history of self-medication, drugs used and the reasons for resorting to self-medication were obtained. The results showed that a majority of the respondents (85%) admitted to self-medication and that drugs utilized were either single, usually analgesics (26.5%) or anti-malaria (15.9%) or a combination, usually antimalaria-analgesics (22.4%), antimalarial-analgesic- antibiotic (15.3%) and antibiotic-analgesic (10.0%). The reasons cited by respondents for self-medication were that their perception of their complaints been minor enough to be amenable to self-medication (54.7%) and financial constraint (22.4%). A survey of university students in Aston found that they lacked understanding of the risks, contraindications and the types of analgesic contained in popular brand.[10]

2.3 Types and Dosage Pattern of Analgesics Misused or Abused

A number of specific OTC medicines have been implicated in being misused and abused. These include analgesics, stimulants, laxatives, sedatives and dissociative substances.[33] Among the analgesics, the types may vary depending on the person's perception of efficacy of the particular drug for a certain medical condition. Analgesics are either used alone or in combination with other drugs without prescription. Antimalarial may be taken in combination with analgesics as malaria is endemic in the tropics. Paracetamol which is an over-the-counter analgesic is routinely taken by some Nigerians at the least sign of pain, stress or discomfort. Some combine paracetamol with other analgesics like Ibuprofen or aspirin. In the study to assess the misuse of analgesics, [8] paracetamol and ibuprofen were the most common analgesics abused. About twenty percent of the respondents exceeded the maximum dose per day of acetaminophen and ibuprofen. Some took the analgesics once a day (25.48%), others twice daily (17.84%) and some three times a day (14.72%);

16.03% were combined analgesic misusers/abusers. Among students who abused analgesics, paracetamol was also the most common one implicated.[10]

An observational prospective study[34] was carried out to assess paracetamol use/misuse in children in Enugu, Nigeria. The study involved 231 children aged 6 weeks to 16 years. The result showed that most of the caregivers relied on past experience (71.2%) rather than on enclosed information leaflet to decide the appropriate dosage. Half of the children also received other medications, mainly anti-malarials and antibiotics. Paracetamol misuse was found in only in 1.7% of cases, majority of them are aged between 6 weeks−5 years. This study was however among children unlike the intended study.

Prescription patterns by medical practitioners also seem to favour certain types of analgesics. In a prospective cross sectional (descriptive) drug utilization study in a community hospital in Nsukka,[35] patients who had both medical and surgical procedures were reviewed with regards to the types of analgesics prescribed for them. It was reported that acetaminophen was the most frequently used analgesic (50.1%), followed by metamizole (11.1), ibuprofen (8.0%), pentazocine (6.2%), diclofenac sodium (4.5%) diclofenac potassium (4.4%), piroxicam (4.0%) , pethidine (2.9%), tramadol (2.00%), indomethacine (1.5%) and acetylsalicylic acid (0.9%). Oral administration was the most frequent means of administration (65.3%), followed by intramuscular injection (30.5%) and intravenous administration (4.2%). This study was carried out among hospital patients with hospital prescription unlike the intended study which will be based on the self-medication pattern of drug use. However it is known that some patients “copy” the medications that were given by a medical practitioner at a point during their illness only to self-

administer the same medications when they have similar symptoms at a later date outside the hospital setting.[21]

In a community survey carried out in Zawan B ward in Jos, the common analgesics regularly consumed were paracetamol in 58.1%, analgesic mixtures 28.9% and NSAIDS 13%.[36] Common indications for use of these drugs were musculoskeletal pains, headache, fever and stress. Analgesic abuse was present in 22.6% of the respondents. The study was carried out among persons of different occupations unlike the intended study.

In Southwest Nigeria, pain relief is sometimes obtained with a crude combination of different types of analgesic agents. They are commonly sold as a mixture of different analgesic preparations and/or brands which usually include Non-Steroidal Anti-inflammatory Drugs (NSAIDs), acetaminophen, caffeine, and/or codeine. This mixture is popularly referred to as "asapo" (or "akapo") or "mixture" in Pidgin English.[7]They are peddled by hawkers or patent medicine dealers. Their rationale is that such combinations offer better efficacy than when used singly. Unfortunately, some of these mixtures contain two or more NSAIDs which can lead to toxicity as a result of their similar and thus cumulative effects.

Prescription and OTC drugs may be abused in one of three major ways.[33] One way is by taking a medication that has been prescribed for another person. Sometimes people are unaware of the dangers of sharing medications since drugs are prescribed by a doctor based on the patients' particular condition, taking into consideration the possible side effects, adverse reactions and drug interactions. It has been reported that most teenagers that abuse prescription drugs were initially given them for free by a friend or relative.[33] Secondly, drugs can be abused by taking a medication

in a higher quantity or in another manner than prescribed. For instance, some medications dispensed as tablets are specially formulated in slow release formulations. Consequently, crushing, snorting or injecting the powder could hasten the absorption of the drug and its entry into the blood stream and the brain amplifying its effects. Again, abuse can be in form of taking a medication for another purpose than it is prescribed e.g. because of the psychoactive effects which include euphoria or other psychological effects.

The terms "misuse" and "abuse" are sometimes used interchangeably. However, they are usually specific and different terms. In order to unify information and interventions it is advised that accurate and consistently defined terminology is used. The terminology for drug misuse, abuse, and related events (MAREs) has been evolving since the 1950s[37]; presently, consensus definitions are lacking. For example, MARE terminology has been used heterogeneously in the diagnosis of clinical diseases such as substance use disorders, in medicolegal and regulatory applications, epidemiologic surveys, and patient care and in research.[37] For uniformity, definitions given by the Analgesic, Anesthetic, and Addiction Clinical Trials, Translations, Innovations, Opportunities, and Networks (ACTTION) classification system are recommended.[38] According to these definitions,[38] misuse/ a misuse-related event is defined as any intentional therapeutic use of a drug product in an inappropriate way. They exclude those events that meet the definition of an abuse-event indicator. Abuse/an abuse-related event are defined as any intentional, non-therapeutic use of a drug product or substance, even once, for the purpose of achieving a desirable psychological or physiological effect.

2.4 Factors Associated with Misuse/ Abuse of Analgesics

People with certain occupations have been known to require analgesics comparatively more and are at a higher risk of drug misuse/ abuse or substance abuse. These include truck drivers, athletes,

those in the entertainment industry, laborers and service men. [7,10-12, 37] Those with high demand and or stressful jobs have also been found to take some medication inappropriately.

Manual material handling tasks could expose workers to physical risk factors.[12] If these tasks are performed repeatedly or over long periods of time, they can lead to fatigue and injury. The main risk factors, or conditions, associated with the development of injuries in manual material handling tasks include: awkward postures (e.g., bending, twisting), repetitive motions (e.g., frequent reaching, lifting, carrying), forceful exertions (e.g., carrying or lifting heavy loads), pressure points (e.g., grasping [or contact from] loads, leaning against parts or surfaces that are hard or have sharp edges), static postures (e.g., maintaining fixed positions for a long time). Repeated or continual exposure to one or more of these factors initially may lead to fatigue and discomfort. Over time, injury to the back, shoulders, hands, wrists, or other parts of the body could occur. Injuries may include damage to muscles, tendons, ligaments, nerves, and blood vessels (musculoskeletal disorders). In addition, poor environmental conditions, such as extreme heat, cold, noise, and poor lighting, may increase the workers' chances of developing other types of problems.[12] Motor vehicle mechanics encounter most of these physical risk factors in the course of carrying out their duties. Therefore, they are prone to the aforementioned conditions which can result in pain, stress and fatigue. There is however paucity of literature regarding analgesic use among motor vehicle mechanics.

Jeffery and colleagues[11] reviewed military personnel regarding opioid use. Nearly one-third of active duty service members received at least one prescription for opioids, central nervous system depressants, or stimulants, while 26.4% received at least one prescription for opioids. About 0.7%, 1.4%, and 0.6% of the total force received a greater than 90-day prescriptions for opioids, central

nervous system depressants, or stimulants, respectively. Battlefield injury, receipt of psychotropic medications, and substance abuse adverse events were predictive of greater than 90-day supply of opioids. About 0.7% of the total force had documented known drug abuse for prescribed drugs compared to 0.4% for illegal drug abuse. Because of the nature of their duties, most of these participants were on prescription opioids unlike the intended study.

Other socio-demographic features may also contribute to inappropriate analgesic use. In a study involving adults presenting at community pharmacies, government hospitals and clinics with pains of minor illnesses, there was a strong correlation between socio-demographics and analgesics misuse/abuse.[8] Abuse occurred more among younger and less educated persons. The occupation of respondents in the aforementioned study was diverse. It would be good to find out misuse/abuse in a uniform population. Less abuse of analgesics has been reported among academic professionals including those with Master's and doctorate degrees.[21] A high perception of prescription medicine abuse was also reported among health workers in another study.[35]

Abuse can be contributed by attitudes and practices of community pharmacies and patent and proprietary medicine vendor (PPMV) outlets.[13] The study carried out among drug vendors demonstrated knowledge deficits when they were questioned on side effects of analgesics and appropriate drug selection in hypothetical scenarios. There were problems with both the analgesics recommended, and the counselling provided for these medicines by drug vendors within the Zaria community. While both pharmacies and patent medicine outlets had shortcomings in several of the areas assessed by simulated patients, the pharmacies performed better. Majority of the drugs prescribed were oral analgesics and contained NSAIDS either alone or in combination with other agents. In addition, customers were asked to buy chlorzoxazone a skeletal muscle relaxant

combined with paracetamol. Diclofenac (alone or in combination) was the most often recommended analgesic in patent medicine stores (59.8%) compared to Ibuprofen in 40% of pharmacies. Less than half of both patent medicine outlets and pharmacies (26.7% and 40% respectively) provided the simulated patient with information on duration of therapy, and asked the patient questions about their past medical and medication history (30% and 33.3% respectively). All analgesics purchased from the pharmacies were registered with the Nigerian drug regulatory agency and had expiry dates compared to only 66.7% and 90% of those bought from patent medicine outlets. Interviewed drug vendors admitted to obtaining a large amount of their knowledge on analgesics from drug information leaflets and prior learning. This study is indicative of drug misuse/abuse but does not reflect the direct use of analgesics by the end-users of the medication. Nevertheless, the results are indirectly indicative of the use of analgesics by the various customers. Generally people prefer to obtain their analgesics from drug shops because of geographical accessibility, shorter waiting times, more reliable drug stocks, longer opening hours, greater confidentiality, more personable social interaction, ease of seeking advice, lower cost and flexible pricing policies and no separate fee charged for advice. [39]

Another factor that contributes to the abuse of an analgesic is the type of analgesic involved. The opioids exert their analgesic effects predominantly by binding to the mu-opioid receptors which are densely concentrated in brain regions that regulate pain perception (peri aqueductal gray, thalamus, cingulate cortex, and insula), including pain-induced emotional responses (amygdala), and in brain reward regions (ventral tegmental area and nucleus accumbens) that underlie the perception of pleasure and well-being. This explains why opioid analgesics canproduce analgesia, euphoria and have rewarding effects.[40] Their rewarding effects are accentuated most when the drugs are delivered rapidly into the brain.[41] This is why diverted opioids that are taken for their

rewarding effects are frequently injected. Opioids not only directly activate these brain analgesia and reward regions but also concurrently mediate a learned association between receipt of the drug and the physiological and perceptual effects of the drug. [41] Repeated intakes of opioids strengthen these learned associations; over time, this results in craving for the both analgesic and pleasure effects of opioids.[42] For a patient in chronic pain, even mild levels of pain can trigger the learned associations between pain and drug relief, which are manifested as an urge for relief. Such a conditioned urge for relief from even mild pain can lead to the early, inappropriate use of an opioid outside prescribed scheduling.[43,44] In most parts of Africa including Nigeria, the sale of some opioid analgesics e.g. tramadol hydrochloride is largely unregulated in Africa. In addition to sale at pharmacists, they are also peddled by hawkers (door-to door, roadside, market square and in commercial buses) and patent medicine dealers who are mostly business men with have no formal training in pharmaceutical practice.

2.5 Adverse Effects and Complications Associated with Abuse of Analgesics

Medicines including analgesics are not without side effects or adverse effects; inappropriate dosing can also lead to toxicity. It is therefore imperative that medicines are taken according to the approved indications, the recommended doses, at the appropriate time intervals and for the correct duration. Also, formulations are better taken unaltered (as manufactured) as some tablets may have protective coatings while others may be specially made slow-release formulations. Outside this, abuse or misuse is said to have occurred. Certain analgesics are associated with adverse effects associated with misuse or abuse of analgesics such as withdrawal, dependence or addiction symptoms. There could also be symptoms suggestive of organ compromise.

Acetaminophen (paracetamol) which is one of the most commonly used over the counter analgesics, is the leading cause of acute liver failure in the United States.[45] Furthermore, more than 50% of paracetamol-related acute liver failure cases are due to unintended chronic overdoses.[45] Factors responsible for paracetamol-induced acute liver failure include repeated dosing in excess of recommended doses, using multiple products that contain paracetamol, and use of alcohol. The FDA reports that some consumers typically take more than the recommended dosage, which increases the potential for adverse reactions.[45] Paracetamol has also been implicated in suicide and nonfatal poisoning.[46]

The use and abuse of NSAIDs are associated with many side effects and morbidities relating to different systems. While it is known that NSAID use can elevate blood pressure and cause heart failure, there is new evidence linking them with an increased risk of cardiovascular disease. NSAID use have been found to increase the chances of developing heart attacks or strokes even following short term use.[47] This is important due to the change in pattern of disease in developing countries such as Nigeria where there is an increase in Non-communicable diseases especially cardiovascular diseases, coronary heart diseases and sudden cardiac death.

Another problem with the misuse/abuse of NSAIDs is its association with renal damage especially when they are used in combination with other nephrotoxic drugs. There is a global increase in the incidence of kidney diseases partly due to analgesic-nephropathy.[48] Analgesic nephropathy (AN) is a non-specific, potentially preventable, and slowly progressive chronic renal disease. The prevalence varies from 1% in the United States to 22% in South Africa.[48] Analgesic nephropathy (AN) is a slowly progressive disease resulting from daily consumption of an analgesic over several years. It is usually preceded by pain that prompts daily use of analgesics or analgesic containing

medications. It is initially asymptomatic, and diagnosis is usually late. However, patients can be detected early during screening and occasionally, incidentally while managing other non-renal related ailments.

There is paucity of literature regarding analgesics use among vehicle mechanics. This study therefore aims to add to current knowledge and understanding about the range and scale of analgesic use misuse/abuse, identify the different types of analgesics implicated and the characteristics of those affected. Also, the harms associated with analgesic misuse/abuse will be identified and approaches to dealing with the problems recommended in terms of policy and interventions.

CHAPTER THREE

METHODOLOGY

3.1. STUDY AREA

This study was carried out in Egor Local Government Area, Benin City, Edo State which is in the south geopolitical zone of Nigeria. Egor Local Government Area is one of the eighteen Local Government Areas in Edo State. It is one of the three Local Government Areas that make up Benin City. Egor Local Government Area has a land area of 93 km² and a total population of 3,233,366 (1,633,946 males and 1,599,420 females).[49] The geographical coordinates are Latitude: 6°22'25.68, Longitude: 5°36'42.84. It has ten wards. The major ethnic groups in Egor Local Government Area are Bini, Etsako and Esan. Majority are Christians while a fewer number practice Islam and African Traditional Religion. There is a good mixture of different class of workers including motor vehicle mechanics who are registered with the local Automobile Repairers Association in Egor Local Government Area.

3.2. STUDY DESIGN

A mixed method was used. i.e. a quantitative and qualitative design. The quantitative part of the study was Cross Sectional in nature to investigate the knowledge, attitude and practice of analgesic use while the qualitative aspect involved Focused Group Discussions which was used to validate the findings from the quantitative study.

3.3 SCOPE OF THE STUDY

This study was carried out in Egor Local Government Area among the automobile mechanics. In this study, the knowledge and attitude of vehicle mechanics was assessed. In addition, the study

assessed the use of analgesics among this population and the misuse or abuse of these medications. Possible complications were also identified as well as any associated factors.

3.4 STUDY POPULATION

The study population was adult mechanics working in Egor Local Government Area, Edo State. There are about 822 registered mechanics in the Automobile Repairer's Association in Egor Local Government Area, Edo State.[50]

3.5 SELECTION CRITERIA

3.5.1. Inclusion Criteria

1. Motor vehicle mechanics that gave informed consent to participate in the study; aged less than 60 years old.
2. Motor vehicle mechanics that possessed formal training (completed or currently in-training) for their work.
3. Those working as full-time motor vehicle mechanics.

3.5.2. Exclusion Criteria

1. Motor vehicle mechanics who had recent fractures or major injuries.
2. Those that had ongoing febrile illness.
3. Those receiving any form of drug rehabilitation.
4. Those with severe illness incapacitating to their work

3.6 STUDY DURATION

The entire study lasted for twelve months. Planning and proposal writing took five months, the data collection 3 months, analysis, write up and submission 4 months. (See Appendix VI for Gantz chart).

3.7 SAMPLE SIZE DETERMINATION

The minimum sample size required for the assessment of the use of analgesics among motor vehicle mechanics in this study was calculated using the Cochran's Formula[51] for minimum sample size determination for a population less than ten thousand-

$$n=\frac{z2pq}{d2}$$

Where:

n = Minimum sample size

z= standard normal deviate

p= population in a standard population estimated that misuse analgesics

d= level of precision

q= 1.0-prevalence

The abuse of analgesics has been found to be as high as 24.6% among respondents in Jos, Nigeria.[36]

Thus using a prevalence of 24.6 % the minimum sample size was as follows:

z= 1.96 for 95% C.I.

p= 24.6 % (0.246) of respondents in Nigeria[36]

d= 0.05 at 95% C.I

q = 1.0-0.246

Therefore

$$n = \frac{1.96^2 \times 0.246 \times (1.0 - 0.246)}{0.05^2}$$

$$= \frac{3.841 \times 0.246 \times 0.754}{0.0025}$$

$$= 284.9$$

$$= 284.9 = 285$$

To make up for attrition, 10% of the sample size was added to make up for non-responses

$$n_f = \frac{n}{1-nrr}$$

n_f = final sample size

n = minimum sample size

n_{rr} = non-response of 10%

$$n_f = \frac{285}{1-0.1}$$

$$= \frac{285}{0.9}$$

n_f = 316.6

Therefore, final sample size = 317

3.8 SAMPLING TECHNIQUE

The sampling technique that was used for this study was a multistage sampling technique.

3.7.1 Selection of Mechanics for Questionnaires

Step 1: Selection of Wards- Wards selected by simple random sampling- balloting without replacement.

Step 2: Selection of Workshops. Using simple random sampling technique, workshops were selected by table of random numbers; a total of 20 auto mechanic workshops were selected.

Step 3 Selection of Mechanics: in each mechanic workshop selected, individuals were selected by simple random sampling -balloting without replacement.

3.7.2 Select of participants for Focused Group Discussions

A total of eight Focused Group Discussions was conducted in this study- two in each of four wards in Egor L.G.A. Each FGD consisted of 6 to 8 respondents who were purposively selected from the mechanics in this study. The qualified mechanics was grouped differently from the apprentice mechanics.

3.8 METHODS FOR DATA COLLECTION

A combination of quantitative and qualitative data collection (mixed) was used to elicit information and data relevant to the study objectives.

3.8.1 DATA COLLECTION TOOLS

Tool 1: Questionnaire

Tool 2: FGD Guide

QUESTIONNAIRE: A semi- structured questionnaire was used to collect information from the participants. The questionnaire was researcher administered for uniformity. Following identification and randomization of eligible participants and obtaining informed consent, the participants were presented the structured questionnaires. The questionnaire design included both close-ended and open-ended questions. Interviews were also used.

For clarity and uniformity all questions were explained to them and they were asked to fill them appropriately. For those with reading or writing challenges, the questions were read out and the

appropriate answers filled by the investigator /assistants (who were trained regarding the questions).

Data Collection: Socio-demographic data, relevant data and responses were recorded using the structured questionnaires.

FGD GUIDE: The FGD guide was used to provide more light on the use of analgesics among the motor vehicle mechanics. Eight sessions of FGDs were carried out (2 in each of four selected wards). The discussion was carried out in venues conducive for the participants.

Each FGD session comprised of 6 to 8 respondents for varied, interesting and sustained conversation. Participants were selected based on two levels- qualified mechanics and mechanics in training (apprentice). The FGD was conducted by the researcher and 2 assistants who took notes and audio recordings of the discussions. It was conducted with purposeful interacting guide designed to meet the objectives of this study. Opening and probing questions were asked, and they were used to stimulate interest in the group process and to elicit the participants initial Perception about the general theme. The sitting arrangement at each session was such that allowed for easy eye contact and hearing between the principle facilitator and the participants. The participants were encouraged to talk freely and spontaneously. Each discussion lasted for about 60 to 90 minutes. Thereafter notes and recordings were transcribed.

At the end of data collection in any particular mechanic workshop, a brief education about analgesics, appropriate uses and dangers of inappropriate uses was delivered to mechanics in the workshop- both participants and non-participants.

3.8.2 Research Assistants:

Two research assistants, who are graduates of the Institute of health technology, UBTH were trained for 2 weeks on adequate and proper filling of the questionnaires and recruitment of respondents after informed consent had been obtained. The training was on the study theme, and how to administer the tools to the respondents and receive accurate data for analysis. They were also trained on the consent procedure- how to explain the study to the participants and obtain written informed consent.

3.8.3. Pretesting of research tools:

The tools were pre-tested on the field using 10% of the sample size (a total number of 30 respondents) in a smaller population from a different location. They were administered to respondents in Oredo which is a Local Government Area in Edo State that has similar socio-economic characteristics as Egor Local Government area, where this study is to be carried out. Pre-testing is carried out to determine the effectiveness in data collection. Adjustments and modification was made to ensure that the tools were efficient during the study and data collection.

3.9 DATA ANALYSIS

Data was analysed using Statistical Package for Social Sciences (SPSS) version 20.0 software. Categorical data such as age group, sex, education and marital status were presented as frequencies and proportions while continuous data like age was presented as mean and standard deviation.

Proportions were used to show the prevalence of analgesic use among respondents, the knowledge and attitude of respondents to analgesic use and types of analgesics used and forms of misuse reported among study participants.

At the end of the questions, appropriate answers were scored; each correct answer was given a score of one. They were then graded in categories of poor, fair and good.

Chi-squared test was used to test the association between socio-demographic and occupational characteristics and knowledge of analgesics among study respondents.

Chi-squared test was also used to test the association between socio-demographic and occupational characteristics and attitude to analgesic use among study respondents.

Chi-squared test was used to test the association between socio-demographic and occupational characteristics and actual analgesic use by study respondents.

Binary logistic regression was modelled to identify predictors of respondents' knowledge of analgesic use and attitude to analgesic use.

Binary logistic regression was also used to identify significant predictors of analgesic use by respondents.

The level of significance was set at $p < 0.05$. The results are presented using statements, frequency distribution tables and charts in relation to the specific objectives of the study.

3.10 ETHICAL CONSIDERATIONS

3.10.1 Institutional Ethical Approval

Ethical approval was obtained from the Ethics and Research Committee of the University of Benin Teaching Hospital. Approval was also obtained from the Department of Community Health, University of Benin.

3.10.1 Individual Informed Consent

Eligible persons were identified at their various workshops and the study explained to them. Written informed consent was obtained from those willing to participate in the study.

3.10.2.1 Voluntary Participation: Participation in this study was voluntary. Those who declined were not excluded from benefits of education concerning analgesics at the end of data collection.

3.10.2.2. Confidentiality: All information obtained in the course of this study was treated with confidentially. Participants were not identified by name during the analysis of the data. Information obtained with the questionnaire was encoded in the investigator's personal computer and pass worded.

3.10.2.3. Benefits: Following collection of Data, participants was taught about various analgesics, indications and risks associated with misuse and abuse of these medications.

3.10.2.4. Risks: There was no attendant risks to the participants expected during participation in this study.

3.11. LIMITATIONS OF THE STUDY

Respondents could not describe all analgesics in generic terms and therefore the exact analgesics may not be properly estimated. In addition, they could not remember exact frequency of drug use.

3.12 RESOURCES: This research was funded solely by the principal investigator.

CHAPTER FOUR

RESULTS

A total of 317 respondents were interviewed for the purpose of the study. Eight interviews were also assessed using Focused Group Discussions (FGDs). The results are presented in line with the objectives of the study.

Table 1: Socio-Demographic Characteristics of the Study Population

Variable	Frequency (n = 317)	Percent
Age group (years)		
< 18	35	11.0
18-29	155	48.9
30-39	58	18.3
40-49	38	12.0
≥50	31	9.8
Mean ± SD Age(years)	29.8 ± 12.7	
Sex		
Male	309	97.5
Female	8	2.5
Marital status		
Single	208	65.6
Married	107	33.8
Separated	2	0.6
Religion		
Christian	305	96.2
Islam	9	2.8
Others	3	0.9
Ethnicity		
Benin	163	51.4
Urhobo	46	14.5
Igbo	35	11.0
Yoruba	33	10.4
Esan	30	9.5
Others	10	3.2
Level of Education		
No formal	6	1.9
Primary	63	19.9
Secondary	230	72.6
Vocational/technical	13	4.1
Tertiary education	5	1.6

A higher proportion of one hundred and fifty–five (48.9%) of the respondents were between the ages 18 to 29 years while 35 (11.0%) respondents were below 18 years. The mean age (sd) of respondents was 29.8 (12.7) years. Three hundred and nine (97.5%) of respondents were male while 8 (2.5%) of respondent were female.

One hundred and seven (33.8%) respondents were married while 208 (65.6%) respondents were single. Majority of the respondents, three hundred and five (96.2%) were Christian while 9 (2.8%) of respondents practiced Islam. One hundred and sixty-three (51.4%) respondents were Benin while 46(14.5%) were of Urhobo ethnicity.

Tertiary level of education was attained by five (1.6%) respondents, while 230 (72.6%) and 63 (19.9 %) had attained Secondary and Primary levels of education respectively.

Table 2: Occupational Characteristics of the Study Population

Variable	Frequency (n = 317)	Percent
Duration in service		
< 1 year	34	10.7
1-2 years	60	18.9
3-5 years	80	25.2
6-10 years	44	13.9
>10 years	99	31.2
Type of Mechanic		
Auto-mechanic	282	89.0
Auto-electrician	17	5.4
Auto panel beater	9	2.8
Others	9	2.8
Category of technician		
Apprentice	159	50.2
Completed training	158	49.8

Eighty (25.2%) respondents spent between 3 to 5 years in service while 99 (31.2%) had spent more than 10 years. Two hundred and eighty-two (89.0%) respondents were Auto-mechanics while 17 (5.4%) were Auto-electricians. One hundred and ninety-nine (50.2%) respondents were apprentice while 158 (49.8%) were certified mechanics having completed training.

Table 3: Variables for knowledge of analgesics among study population

Variable	Frequency n (%)
Definition of analgesics	
Correct	304 (95.9)
Incorrect	13 (4.1)
Correctly named analgesic	
Yes	293 (92.4)
No	24 (7.6)
Appropriate use as pain reliever	
Yes	304 (95.9)
No	13 (4.1)
Appropriate use to treat fever	
Yes	183 (57.7)
No	134 (42.3)
Appropriate use to treat headache	
Yes	272 (85.8)
No	45 (14.2)
Treatment of any condition	
Correct	291 (91.8)
Incorrect	26 (8.2)
Analgesics are used daily	
Correct	164 (51.7)
Incorrect	153(48.3)
Appropriate use as regards dosing	
Correct	270 (85.2)
Incorrect	47 (14.8)
Pharmacy as source to obtain dosage	
Correct	280 (88.3)
Incorrect	37 (11.7)
Friends as source to obtain dosage	
Correct	262 (82.6)
Incorrect	35 (17.4)
Dosing depends on intensity of pain	
Correct	254 (80.1)
Incorrect	63 (19.9)
Dosage depends on individual	
Correct	263 (83.0)
Incorrect	54 (17.0)
Pain medications have side effects	
Correct	166 (52.4)
Incorrect	151 (47.6)
Taking medicine causes long time effects	
Correct	149 (47.0)
Incorrect	168 (53.0)

Three hundred and four (95.9%) respondents had correct definition of analgesics while 293 (92.4%) were able to correctly name analgesics. Furthermore, 304 (95.9%) respondents reported the appropriate use analgesics as pain reliever while 183 (57.7%) reported the appropriate use analgesics to treat fever and 272 (85.8%) reported the appropriate use analgesic to treat headache.

Two hundred and ninety-one (91.8%) respondents reported correctly use analgesics to treat other health conditions; 164 (51.7%) reported the correct daily use of analgesic and 270 (85.2%) reported the appropriate use analgesic with respect to dosage.

Two hundred and eight (88.3%) respondents reported that dosage of analgesics should be obtained from the pharmacy; 262 (82.6 %) reported that dosage could be obtained from friends while 254 (80.1%) reported that dosage is dependent on intensity of pain. Two hundred and sixty-three (83.0%) respondents reported that dosage depends on each individual while 166 (52.4%) respondents reported correctly that analgesics had side effects while 149 (47.0%) of reported long time effects from prolonged use of analgesics.

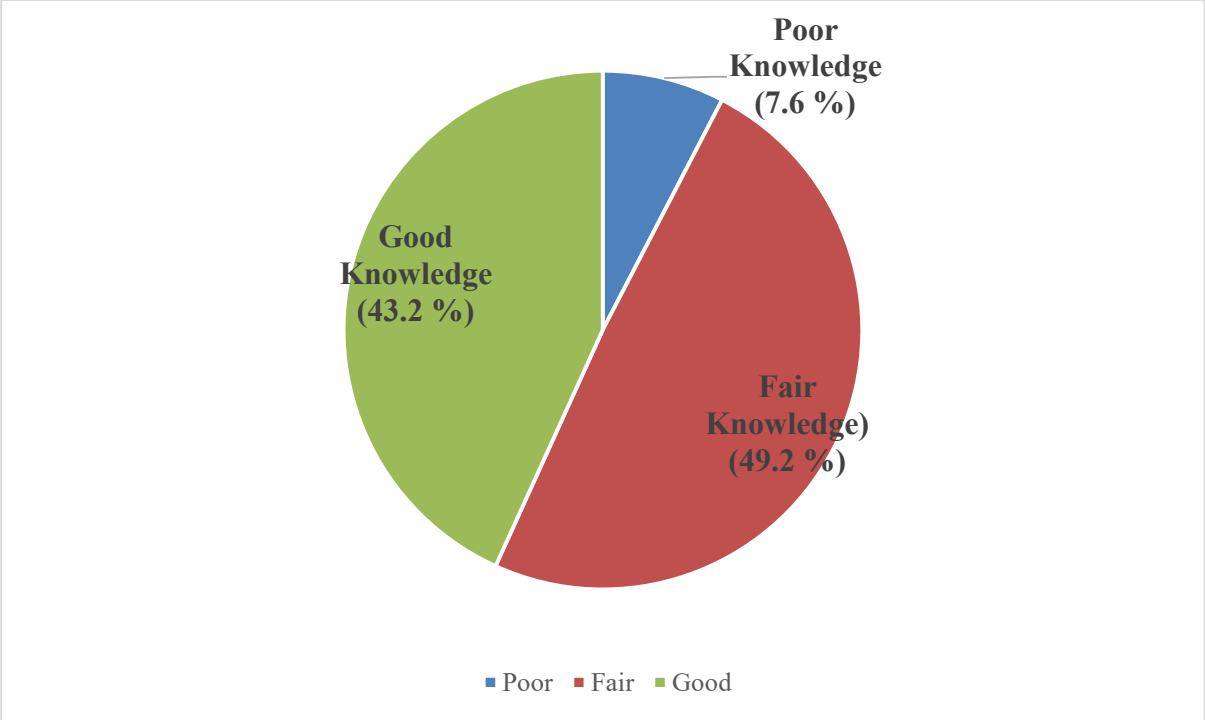


Figure 1: Composite knowledge scores of analgesic use among study population

Almost half of respondents had fair knowledge of analgesic use (49.2%) while (43.2%) had good knowledge. Only 7.6 % of the respondents had poor knowledge of analgesic use.

Table 4: Socio-demographic and occupational characteristics and knowledge of analgesic use among study population

Variable	Knowledge of analgesic use (n = 317)		Test statistics	p–value
	Good n(%)	Poor n(%)		
Age group (Years)				
<18	35 (100.0)	0 (0.0)	Fisher's exact = 7.125	0.085
18 – 29	146 (94.2)	9 (5.8)		
30 – 39	51 (85.0)	9 (15.0)		
40 – 49	33 (86.8)	5 (13.2)		
≥50	28 (90.3)	3 (9.7)		
Sex				
Male	285 (92.2)	24 (7.8)	Fisher's exact = 0.672	1.000
Female	8 (100.0)	0 (0.0)		
Marital status				
Single	196 (94.2)	12 (5.8)	Fisher's exact = 6.170	**0.040**
Married	96 (89.7)	11 (10.3)		
Separate	1 (50.0)	1 (50.0)		
Level of education				
No formal	3 (50.0)	3 (50.0)	Fisher's exact = 10.304	**0.025**
Primary	57 (90.5)	6 (9.5)		
Secondary	216 (93.9)	14 (6.1)		
Vocational/Technical	12 (92.3)	1 (7.7)		
Tertiary education	5 (100.0)	0 (0.0)		
Duration in service				
< 1 year	33 (97.1)	1 (2.9)	Fisher's exact = 6.030	0.181
1-2 years	58 (96.7)	2 (3.3)		
3-5 years	75 (93.8)	5 (6.2)		
6-10 years	41 (93.2)	3 (6.8)		
>10 years	86 (86.9)	13 (13.1)		
Type of mechanic				
Auto-mechanic	263 (93.3)	19 (6.7)	Fisher's exact = 4.121	0.165
Auto-electrician	14 (82.4)	3 (17.6)		
Auto panel beater	8 (88.9)	1 (11.1)		
Others	8 (88.9)	1 (11.1)		

Category of mechanic				
Apprentice	153 (96.2)	6 (3.8)	χ^2= 6.574	**0.011**
Completed training	140 (88.6)	18 (11.4)		

One hundred and forty-six (94.2%) respondents aged 18 to 29 years of age had good knowledge of analgesic use compared to 28 (90.3%) above 50 years. The association between age of respondents and knowledge of analgesic use was not statistically significant (p = 0.085).

Two hundred and eighty-five (92.3%) male respondents had good knowledge of analgesic use compared to 8 (100.0%) female respondents. The association between sex of respondents and knowledge of analgesic use was not statistically significant (p = 1.000).

One hundred and six (94.2%) respondents who were single had good knowledge of analgesic use compared to 96 (89.7%) respondents who were married. The association between marital status of respondents and knowledge of analgesic use was statistically significant (p = 0.040).

Fifty-seven (90.5%) respondents who had primary level of education had good knowledge of analgesic use compared to 5 (100.0%) respondent with tertiary level of education. The association between level of education of respondents and knowledge of analgesic use was statistically significant (p = 0.025).

Seventy-five (93.8%) respondents whose duration service was between 3 – 5 years had good knowledge of analgesic use compared to 96 (86.9) who had spent more than 10 years. The association between duration of service of respondents and knowledge of analgesic use was not statistically significant (p = 0.181).

Two hundred and sixty-three (93.3%) respondents who were auto-mechanic had a good knowledge of analgesic use compared to 14 (82.4%) respondents who were auto-electrician. The association between types of mechanic and knowledge of analgesic use was not statistically significant (p = 0.165).

One hundred and fifty-three (96.2%) respondents who were apprentice had a good knowledge of analgesic use compared to 140 (88.6%) respondent who were certified mechanics. The association between category of mechanic and knowledge of analgesic use was statistically significant (p = 0.011).

Table 5: Predictors of knowledge of analgesic use among study population

Variables	B (regression coefficient)	p value	Odds ratio	95% C.I. for Odds ratio	
				Lower	Upper
Age (years)	0.025	0.412	1.025	0.966	1.088
Sex					
Male*			1		
Female	-1.455	0.254	0.233	0.019	2.843
Marital status					
Single*			1		
Married	-0.151	0.819	0.860	0.236	3.129
Separate	-2.497	0.131	0.082	0.003	2.112
Educational status					
No formal education*			1		
Primary education	0.550	**0.020**	9.626	1.424	65.078
Secondary education	0.199	**0.003**	19.072	2.796	130.098
Vocational/Technical education	0.311	0.076	12.632	0.764	208.742
Tertiary education	0.136	0.691	1.803	0.099	32.914
Duration of service					
< 1year*			1		
1-2 years	-0.813	0.550	0.443	0.031	6.379
3-5 years	-1.610	0.199	0.200	0.017	2.335
6-10 years	-1.503	0.311	0.223	0.012	4.063
>10 years	-2.229	0.136	0.108	0.006	2.021
Type of mechanic					
Auto-mechanic	0.081	0.953	1.084	0.076	15.383
Auto-electrician	-1.538	0.309	0.215	0.011	4.168
Auto panel beater	-0.524	0.764	0.592	0.019	18.052
Others*			1		
Category of mechanic					
Apprentice*			1		
Completed training	-0.389	0.651	0.678	0.126	3.657

*Reference category, R^2 (coefficient of determination) = 7.1% to 16.4%

With one-year increase in age, respondents were more likely to have good knowledge of analgesic use with an odds' of 1.025. This association was not statistically significant (p = 0.412) (95%CI = 0.966 – 1.088).

Female respondents compared to male were less likely to have good knowledge of analgesic use with an odds' of 0.233. This association was not statistically significant (p = 0.254) (95% CI = 0.019 – 2.843).

Married respondents compared to singles were less likely to have good knowledge of analgesic use with an odds' of 0.860. This was association as not statistically significant (p = 0.819) (95% CI = 0.236 – 3.129).

Respondents with secondary level of education compared to those with no formal education were more likely to have good knowledge of analgesic use with an odds' of 19.078. This association was however statistically significant (p = 0.003) (95% CI = 2.796 – 130.098).

Respondents who had spent more than 10 years in service compared with those who had less than one year were less likely to have good knowledge of analgesic use with an odds' of 0.108. This association was not statistically significant (p = 0.136) (95% CI = 0.006 – 2.021).

Respondents who were auto-electrician compared with others types of mechanics were less likely to have good knowledge of analgesic use with an odds' of 0.215. This association was not statistically significant (p = 0.309) (95% CI = 0.011 – 4.168).

Respondents who are certified mechanic compared with those who are apprentice were less likely to have good knowledge of analgesic use with an odds' of 0.678. This association was not statistically significant (p = 0.651) (95% CI = 0.126 – 3.657).

Table 6: Variables for attitude to analgesic use among study population

Variable	Agree Frequency n (%)	Disagree Frequency n (%)	Do not know Frequency n (%)
Analgesics can be used for relaxing	114 (36.0)	213 (64.0)	0 (0)
Analgesics can be used to make one happy	218 (68.8)	96 (30.2)	3 (1)
Analgesics can give strength	108 (34.1)	209 (65.9)	0 (0)
Analgesics can be used to boost strength	107 (33.8)	200 (63.1)	10 (3.2)
Analgesics can be used to increase duration of work	113 (35.6)	201 (63.4)	3 (1)
There is possibility of drug overdose	164 (51.7)	149 (47.0)	4 (1.3)
Overdose can cause complications	172 (54.3)	145 (45.7)	0 (0)
There is a possibility of addiction to analgesics	165 (52.0)	152 (48.0)	0 (0)

One hundred and forty-four (36.0 %) respondents believed that analgesics could be used for relaxation while 218 (68.8 %) believed that analgesics could be used to make respondents happy. One Hundred and thirteen (35.6 %) respondents believed that analgesics could be used to help increase duration of work. A hundred and sixty-four (51.7 %) believed that there could be the possibility of overdose from analgesic use while 172 (54.3%) believed that analgesic overdosing can cause complications and 165 (52.0%) believed the possibility of being addicted to analgesic use.

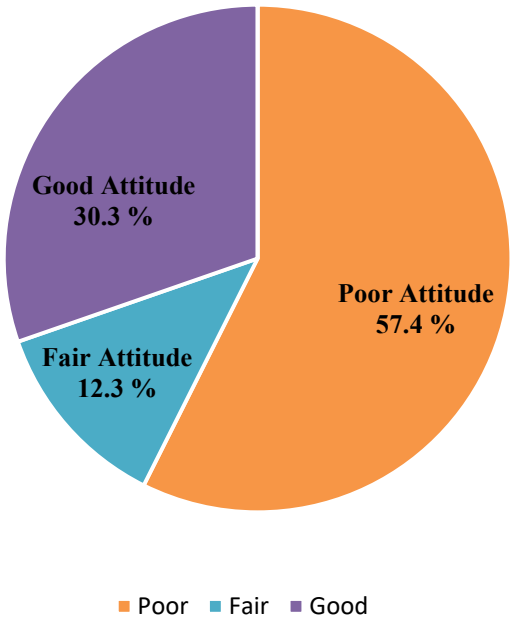


Figure 2: Composite score for attitude to analgesic use among study population

More than half, (57.4%) of respondents had poor attitude to analgesic use while about a third (30.3%) had good attitude to analgesic use. Only 12.3 % of the respondents had a fair attitude to analgesic use.

Table 7: Socio-demographic and occupational characteristics and attitude to analgesic use among study population

Variable	Attitude to analgesic use (n = 317)		Test statistics	p–value
	Positive n (%)	Negative n (%)		
Age group (Years)				
<18	17 (48.6)	18 (51.4)	χ^2= 1.656	0.800
18 – 29	66 (42.6)	89 (57.4)		
30 – 39	23 (39.7)	35 (60.3)		
40 – 49	14 (36.8)	24 (63.2)		
≥50	15 (48.4)	16 (51.6)		
Sex				
Male	134(43.4)	175 (56.6)	Fisher's exact = 3.038	0.145
Female	1 (12.5)	7 (87.5)		
Marital status				
Single	87 (41.8)	121 (58.2)	Fisher's exact = 1.384	0.553
Married	48 (44.9)	59 (55.1)		
Separate	0 (0.0)	2 (100.0)		
Level of education				
No formal	1 (16.7)	5 (83.3)	Fisher's exact = 4.248	0.381
Primary	25 (39.7)	38 (60.3)		
Secondary	98 (42.6)	132 (57.4)		
Vocational/Technical	8 (61.5)	5 (38.5)		
Tertiary education	3 (60.0)	2 (40.0)		
Duration in service				
< 1 year	11 (32.4)	23 (67.6)	χ^2= 4.456	0.350
1-2 years	32 (53.3)	28 (46.7)		
3-5 years	33 (41.3)	47 (58.7)		
6-10 years	18 (40.9)	26 (59.1)		
> 10 years	41 (41.4)	58 (58.6)		
Type of mechanic				
Auto-mechanic	126 (44.7)	156 (55.3)	Fisher's exact = 5.502	0.132
Auto-electrician	5 (29.4)	12 (70.6)		
Auto panel beater	1 (11.1)	8 (88.9)		
Others	3 (33.3)	6 (66.7)		

Category of mechanic				
Apprentice	72 (45.3)	87 (54.7)	χ^2= 0.094	0.364
Completed training	63 (39.9)	95 (60.1)		
Knowledge of analgesic				
Good	3 (12.5)	21 (87.5)	χ^2= 9.613	**0.002**
Poor	132 (45.1)	161 (54.9)		

Sixty-six (42.6%) respondents aged 18 to 29 years of age had positive attitude of analgesic use compared to 15 (48.4%) above 50 years. The association between age of respondents and attitude to analgesic use was not statistically significant (p = 0.800).

One hundred and thirty-four (43.4%) male respondents had positive attitude of analgesic use compared to 1 (12.5%) female respondents. The association between sex of respondents and attitude to analgesic use was not statistically significant (p = 0.145).

Eighty-seven (41.8%) respondents who were single had positive attitude of analgesic use compared to 48 (44.9%) respondents who were married. The association between marital status and attitude to analgesic use was not statistically significant (p = 0.553).

Twenty-five (39.7%) respondents with Primary level of education had a positive attitude of analgesic use compared to 3 (60.0%) respondent of Tertiary level of education. The association between level of education and attitude to analgesic use was not statistically significant (p = 0.381).

Thirty-three(30.4%) respondents who had a duration of service less than one year had a positive attitude of analgesic use compared to 41 (41.4%) who had spent more 10 years. The association between duration of service and attitude to analgesic use was not statistically significant (p = 0.350).

One hundred and twenty-six (44.7%) respondents who were auto-mechanic had a positive attitude of analgesic use compared to 5 (19.4%) respondents who were auto-electrician. The association between types of mechanic and attitude to analgesic use was not statistically significant (p = 0.132).

Seventy-two (45.3%) respondents who were apprentice had a positive attitude of analgesic use compared to 63 (39.9%) respondent who were certified mechanics. The association between category of mechanic and attitude to analgesic use was statistically significant ($p = 0.002$).

Three (12.5%) respondents with good knowledge of analgesia had a positive attitude of analgesic use compared 132 (45.1%) with poor knowledge of analgesia. The association between knowledge and attitude to analgesic use was statistically significant ($p=0.002$).

Table 8: Predictors of attitude to analgesic use among study population

Variables	B (regression coefficient)	p value	Odds ratio	95% C.I. for Odds ratio	
				Lower	Upper
Age (years)	-0.001	0.959	0.999	0.964	1.036
Sex					
Male*			1		
Female	-1.846	0.096	0.158	0.018	1.390
Marital status					
Single*			1		
Married	0.396	0.333	1.487	0.666	3.317
Separate	1.276	0.435	3.581	0.146	87.841
Educational status					
No formal education*			1		
Primary education	0.774	0.517	2.169	0.209	22.551
Secondary education	0.881	0.457	2.413	0.237	24.540
Vocational/Technical education	1.819	0.171	6.167	0.455	83.550
Tertiary education	1.279	0.392	3.594	0.192	67.125
Duration of service					
< 1 year*			1		
1-2 years	0.590	0.216	1.805	0.708	4.600
3-5 years	0.210	0.657	1.233	0.489	3.113
6-10 years	0.392	0.538	1.480	0.425	5.152
>10 years	0.648	0.347	1.912	0.495	7.381
Type of mechanic					
Auto-mechanic	0.184	0.801	1.202	0.288	5.017
Auto-electrician	-0.264	0.774	0.768	0.127	4.657
Auto panel beater	-1.753	0.179	0.173	0.013	2.234
Others*			1		
Category of mechanic					
Apprentice*			1		
Completed training	-0.546	0.227	0.579	0.239	1.405
Group of knowledge					
Poor knowledge*			1		
Good knowledge	1.774	**0.008**	5.895	1.600	21.728

With one-year increase in age, respondents were less likely to have good attitude to analgesic use with an odds' of 0.999. This association was not statistically significant (p = 0.959) (95%CI = 0.964 – 1.036).

Female respondents compared to male were less likely to have good attitude to analgesic use with an odds' of 0.158. This was however not statistically significant (p = 0.096) (95%CI = 0.018 – 1.390).

Married respondents compared to singles were more likely to have good attitude to analgesic use with an odds' of 1.487. This was however not statistically significant (p = 0.333) (95%CI = 0.666 – 3.317).

Respondents with Vocation/Technical level of education compared to those with no formal education were more likely to have good attitude to analgesic use with an odds' of 6.167. This was however not statistically significant (p = 0.171) (95%CI = 0.455 – 83.550).

Respondents with 1 – 2 years in service compared with those with less than one year were more likely to have good attitude to analgesic use with an odds' of 1.805. This was however not statistically significant (p = 0.216) (95%CI = 0.708 – 4.600).

Respondents who were panel-beaters compared with others were less likely to have good attitude to analgesic use with an odds' of 0.173. This was however not statistically significant (p = 0.179) (95%CI = 0.013 – 2.234).

Respondents who are certified mechanic compared with those who are apprentice were less likely to have good attitude to analgesic use with an odds' of 0.579. This was however not statistically significant (p = 0.227) (95%CI = 0.239 – 1.405).

Respondents with good knowledge compared to those with poor knowledge more likely to have good attitude to analgesic use with an odds' of 5.895. This was statistically significant (p = 0.008) (95%CI = 1.600 – 21.728).

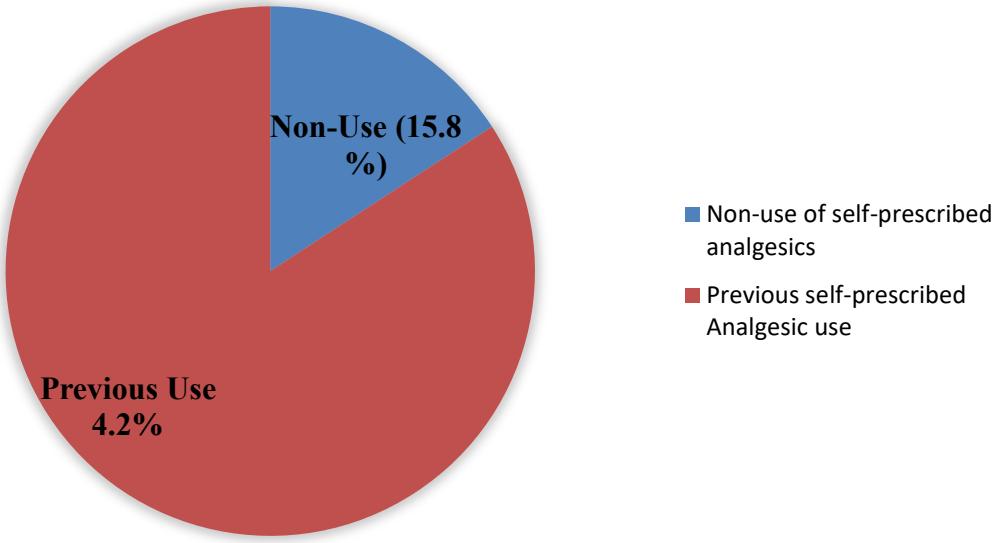


Figure 3: Self-prescription of analgesics among study population

Two hundred and sixty seven (84.2%) respondents had used self-prescribed analgesics while 50 (15.8%) had not used self-prescribed analgesics.

Table 9: Types and indications for self-prescribed analgesics among study population

Variable	Frequency	Percent
Type of self-prescribed analgesic		
Paracetamol	196	73.4
Tramadol	24	9.0
Ibuprofen	11	4.1
Others/Combinations	36	13.5
	(n=267)	
Reasons for self-prescription		
Body pains	125	46.8
Headaches	86	32.2
Feverish conditions	29	10.9
Tiredness	8	3.0
Weakness	3	1.1
Body pain and headache	5	1.9
Body pain and tiredness	3	1.1
Not sure	6	2.2
Others	2	0.7
	(n=267)	
Previous Self-prescriptions for pain		
Yes	245	77.3
No	72	22.7
Previous Self-prescriptions for fever		
Yes	81	25.6
No	236	74.4

The most common analgesic taken by self prescription was paracetamol (73.4 %), tramadol was taken by twenty four (9.0 %) respondents while 36 (13.5 %) of the respondents took a combination of self-prescribed analgesics.

Out of the two hundred and thirteen (84.2 %) respondents that had taken self-prescribed analgesics, 125 (46.8%) and 86 (32.2%) respondents indicated that the commonest and most recent reasons were for body pain and headaches respectively. Two hundred and forty-five (77.3%) respondents had previously taken self-prescribed analgesics for pain while 81 (25.6%) had previously taken self-prescribed analgesics for fever.

Table 10: Dosing and Regularity of self-prescribed analgesics among study population

Variable	Frequency	Percent
Dosing		
Correct dosing	59	22.1
Inappropriate dosing	208	77.9
	(n=267)	
Regular Intake of self prescribed analgesics		
Yes	50	18.7
No	217	81.3
	(n=267)	
Analgesics taken on regular basis		
Ibuprofen	2	4.0
Paracetamol/ 'panadol'	8	16.0
Tramadol	4	8.0
Combinations	36	72.0
	(n=50)	
Reasons for regular intake		
To treat body pains	17	34.0
To prevent body pains	8	16.0
To feel strong	8	16.0
To treat tiredness / weakness	10	20.0
To prevent headache and tiredness	7	14.0
	(n=50)	

Fifty nine (22.1 %) of the respondents took the appropriate doe of the self-prescribed analgesics while 208 (77.9 %) took an inappropriate dose. Up to fifty (18.7 %) of the respondents reported to take self-prescribed analgesics on a regular basis and a combination of analgesics (72.0 %) was the most common type taken regularly followed by paracetamol (16.0 %). The most common reason for taking these analgesics regularly was to treat body pain (34.0 %).

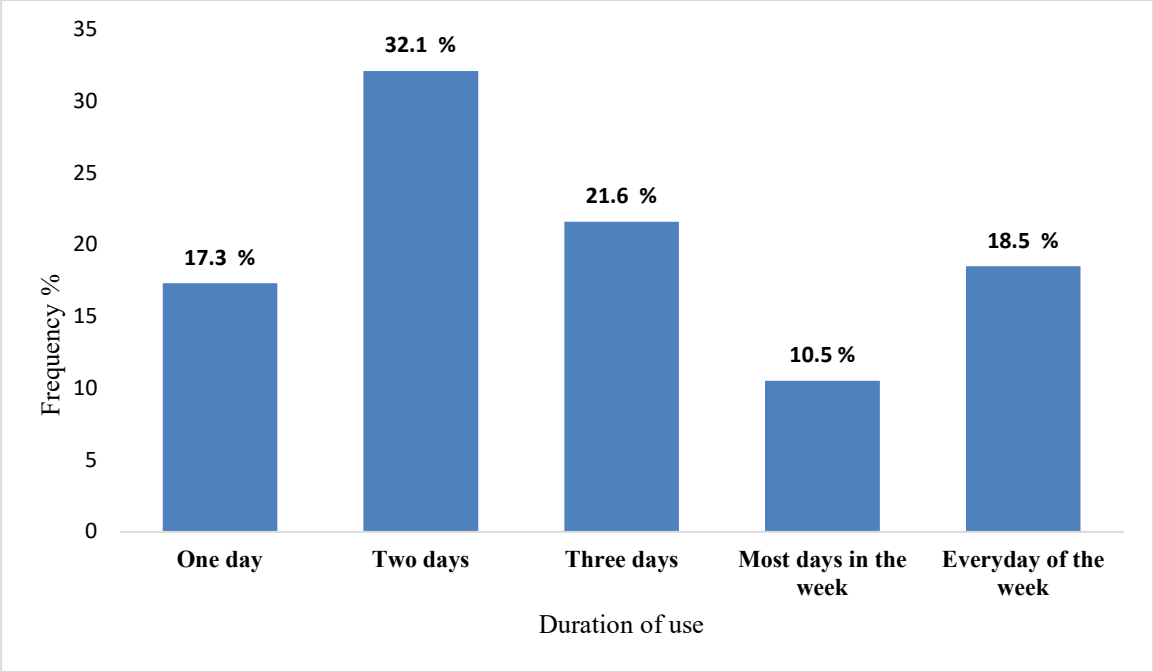


Figure 5: Duration of use of self-prescribed analgesic among study population

More respondents (32.1%) used analgesic for an interval of two days while 18.5% of respondents used analgesic every day of the week. A smaller proportion (10.5%) of respondents used analgesics most days in the week.

Table 11: Source of Self-prescribed analgesic by study population

Variable	Frequency	Percent
Source of self-prescribed analgesics		
Pharmacy	130	48.7
Chemist	131	49.1
Hawkers	2	0.7
Others	4	1.5
	(n = 267)	
Secret sources of pain medicine		
Yes	13	4.1
No	304	95.9
Personal supply of pain medicine		
Yes	6	1.9
No	311	98.1
Purchase of self-prescribed analgesic with previous prescription		
Yes	32	10.1
No	285	89.9
Analgesic purchased with previous prescription		
Paracetamol	7	21.9
Ibuprofen	1	3.1
Name not known*	24	75.0
	(n=32)	
Use of another person's prescription To purchase analgesics		
Yes	29	9.1
No	280	88.3
I cannot remember	8	2.5
Obtained analgesics from somebody else friend or, relative etc		
Yes	86	27.1
No	231	72.8
Purchase of tramadol without prescription		
Yes	44	13.9
No	273	86.1

One hundred and thirty (48.7 %) respondents reported that their source of pain medicine was from a pharmacy while 131 (49.7%) respondents listed a chemist as the source. Thirteen (4.1%) of the respondents had a secrete source of analgesic medicines while 6 (1.9%) had a personal supplier of analgesics. Thirty-two (70.1%) respondents had purchased analgesics with an old prescription. Twenty-nine (9.1 %) used another person's prescription to purchase analgesics while 86 (27.1 %) obtained their prescription from a friend or relative. Up to 44 persons (13.9 %) were able to purchase tramadol without a prescription.

Table 12: Basis for dose/duration of analgesic use among the study population

Variable	Frequency (n = 317)	Percent
Source of knowledge regarding the dose		
Chemist /Patent Medicine Vendor	281	88.6
Friend	25	7.9
Relative	1	0.3
Others	10	3.2
Duration of use		
As advised by health personnel	130	41.0
As long as pain remains	117	36.9
Once a week	38	12.0
Everyday	16	5.0
Based on individual preference	10	3.2
No ne*	6	1.9

*No dosage/duration was reported by respondents'

The most common dosing for analgesics was 2 tablets twice daily which was reported by 70 (43.5%) respondents followed by 2 tablets thrice daily reported by 51 (31.7%) respondents.

One hundred and thirty (41.0 %) of respondents reported that the dose/duration of use of analgesics was determined by the advise by health personnel while 117 (36.9%) reported that the dose/duration of analgesic use was determined by the persisting nature of pain. Seventy respondents (22.1 %) reported that the dose/duration of analgesic use was based on their personal preference.

Table 13: Types and indications for prescription analgesics among study population

Variable	Frequency	Percent
Prescription analgesic		
Yes	40	12.6
No	277	87.4
Name of prescription analgesic		
Paracetamol	17	42.5
Tramadol	8	20.0
Diclofenac	6	15.0
Ibuprofen	2	5.0
Others	2	5.0
Names not known	5	12.5
	(n=40)	
Indication for which analgesic was prescribed		
Pain	21	52.5
Headache	9	22.5
Feeling unwell	4	10.0
Fever/chills	3	7.5
Combination of symptoms	3	7.5
Duration of treatment		
1-3 days	10	25.0
4-6 days	7	17.5
7-9 days	5	12.5
10-12 days	1	2.5
Others	2	5.0
Prescription renewed by doctor		
Yes	5	12.5
No	35	87.5
Purchase of a prescribed drug at a later date		
Yes	14	35.0
No	26	65.0
Transferred prescription meant to someone else		
Yes	10	25.0
No	30	75.0

Seventeen (42.5 %) of respondents reported obtaining paracetamol prescriptions from a doctor while 20.0 % and 15.0 % of the respondents obtained tramadol and diclofenac via prescriptions from a doctor. Only 5.0 % of the respondents obtained their prescription of ibuprofen from a doctor.

Indications for prescription analgesics reported by respondents included pain relief (52.5 %), headaches (22.5 %), feeling unwell (10.0 %) and fever/chills (7.5 %); three respondents were prescribed analgesics for a combination of symptoms.

Five (12.5 %) of respondents reported that their prescriptions had been renewed by a doctor; 14 (35.0 %) of the respondents purchased a similar prescription of analgesics at a later date using the same prescription while ten (25.0 %) of the respondents had transferred their prescription to someone else.

14: Socio-demographic and occupational characteristics and analgesic self-prescription among study population

Variable	Analgesic use (n=267) Freq. (%)	Non–analgesic (n=50) Freq. (%)	Test statistics	p-value
Age group (Years)				
<18	29 (82.9)	6 (17.1)	χ^2= 1.572	0.821
18 – 29	130 (83.9)	25 (16.1)		
30 – 39	47 (81.0)	11 (19.0)		
40 – 49	33 (86.8)	5 (13.2)		
≥50	28 (90.3)	3 (9.7)		
Sex				
Male	259 (83.8)	50 (16.2)	χ^2= 1.537	0.365
Female	8 (100.0)	0 (0.0)		
Marital status				
Single	175 (84.1)	33 (15.9)	Fisher's exact = 2.168	0.357
Married	91 (85.0)	16 (15.0)		
Separate	1 (50.0)	1 (50.0)		
Level of education				
No formal	6 (100.0)	0 (0.0)	Fisher's exact = 1.611	0.770
Primary	53 (84.1)	10 (15.9)		
Secondary	193 (83.9)	37 (16.1)		
Vocational/Technical	10 (77.0)	3 (23.0)		
Tertiary education	5 (100.0)	0 (0.0)		
Duration in service				
< 1 year	25 (73.5)	9 (26.5)	χ^2= 4.359	0.362
1-2 years	50 (83.3)	10 (16.7)		
3-5 years	71 (88.8)	9 (11.2)		
6-10 years	38 (86.4)	6 (13.6)		
> 10 years	83 (83.8)	16 (16.2)		
Type of mechanic				
Auto-mechanic	243 (86.2)	39 (13.8)	Fisher's exact = 7.723	**0.036**
Auto-electrician	12 (70.6)	5 (29.4)		
Auto panel beater	6 (66.7)	3 (33.3)		
Others	6 (66.7)	3 (33.3)		
Category of mechanic				
Apprentice	136 (85.5)	23 (14.5)	χ^2= 0.410	0.541
Completed training	131 (82.9)	27 (17.1)		

Knowledge of analgesic use				
Good	253 (86.3)	40 (13.7)	Fisher's exact = 13.105	**0.001**
Poor	14 (58.3)	10 (41.6)		
Attitude to analgesic use				
Positive	111 (81.6)	25 (18.4)	χ^2= 1.221	0.280
Negative	156 (86.2)	25 (13.8)		

One hundred and thirty-one (83.9%) respondents aged 18 to 29 years of age had self-prescribed analgesics compared to 28 (90.3%) above 50 years. The association between age of respondents and self-prescribed analgesic use was not statistically significant (p = 0.821).

Two hundred and fifty-nine (83.8%) male respondents had used self-prescribed analgesics compared to 8 (100.0%) female respondents. The association between sex of respondents and self-prescribed analgesic use was not statistically significant (p = 0.365).

One hundred and seventy-five (84.1%) respondents who were single had used self-prescribed analgesic compared to 91 (85.0%) respondents who were married. The association between marital status of respondents and self-prescribed analgesic use was not statistically significant (p = 0.357).

Fifty-three (84.1%) respondents with Primary level of education had used self-prescribed analgesic compared to 5 (100.0%) with tertiary level of education. The association between level of education of respondents and self-prescribed analgesic use was not statistically significant (p = 0.770). Seventy-one (88.8%) respondents who had spent between 3 – 5 years as mechanics had used self-prescribed analgesics compared to 83 (83.8) who had spent more than 10 years. The association between duration as a mechanic and self-prescribed analgesic use was not statistically significant (p = 0.362).

Two hundred and forty-three (86.2%) respondents who were auto-mechanic had used self-prescribed analgesics compared to 12 (70.6%) respondents who were auto-electrician. The association between type of mechanic and analgesic use was statistically significant (p = 0.036).

One hundred and thirty-six (85.5%) respondents who were apprentice had used self-prescribed analgesic compared to 131 (82.9%) respondent who were certified mechanics. The association

between category of mechanic and self-prescribed analgesic use was not statistically significant (p = 0.541).

Two hundred and fifty-three (86.3%) respondents with good knowledge of analgesic use had used self-prescribed analgesics compared to 14 (58.3%) respondents with poor knowledge. The association between knowledge of analgesic use and self-prescribed analgesic usage was statistically significant (p = 0.001).

One hundred and eleven (81.6%) respondents with positive attitude to analgesic use had used self-prescribed analgesic compared to 156 (86.2%) respondent with negative attitude. The association between attitude to analgesic use and self-prescribed analgesic usage was not statistically significant (p = 0.280).

Table 15: Predictors of self-prescribed analgesic use among study population

Variables	B (regression coefficient)	p value	Odds ratio	95% C.I. for Odds ratio	
				Lower	Upper
Age (years)	0.023	0.361	1.023	0.974	1.074
Sex					
Male*			1		
Female	0.474	0.684	1.606	0.165	15.660
Marital status					
Single*			1		
Married	-0.480	0.377	0.619	0.214	1.794
Separate	-1.142	0.470	0.319	0.014	7.083
Educational status					
No formal education*			1		
Primary education	-0.322	0.799	0.725	0.060	8.689
Secondary education	-0.223	0.859	0.800	0.068	9.344
Vocational/technical education	-0.607	0.674	0.545	0.032	9.209
Tertiary education	-0.747	0.660	0.474	0.017	13.156
Duration in service					
< 1 year*			1		
1-2 years	0.812	0.154	2.253	0.738	6.880
3-5 years	1.265	**0.036**	3.545	1.089	11.538
6-10 years	1.603	0.061	4.966	0.928	26.581
>10 years	1.431	0.106	4.183	0.737	23.735
Type of mechanic					
Auto-mechanic	1.037	0.207	2.820	0.563	14.112
Auto-electrician	0.376	0.709	1.456	0.203	10.449
Auto panel beater	0.002	0.999	1.002	0.115	8.728
Others*			1		
Category of mechanic					
Apprentice*			1		
Completed training	-0.736	0.242	0.479	0.140	1.643

Knowledge of analgesic use					
Poor*			1		
Good	1.850	**<0.0001**	6.357	2.373	17.032
Attitude to analgesic use					
Negative*			1		
Positive	-0.536	0.122	0.585	0.297	1.154

*Reference category, R^2 (coefficient of determination) = 7.8% to 13.2%

With one-year increase in age, respondents were more likely to use self-prescribed analgesics with an odds' of 1.023. This was not statistically significant (p = 0.361) (95%CI = 0.974 – 1.074).

Female respondents compared to male were more likely to use self-prescribed analgesics with an odds' of 1.606. This was not statistically significant (p = 0.684) (95%CI = 0.165 – 15.660).

Married respondents compared to singles were less likely to use self-prescribed analgesics with an odds' of 0.619. This was not statistically significant (p = 0.377) (95%CI = 0.214 – 1.794).

Respondents with tertiary level of education compared to those with no formal education were less likely to use self-prescribed analgesics with an odds' of 0.474. This was not statistically significant (p = 0.660) (95%CI = 0.017 – 13.156).

Respondents who had spent 3 – 5 years in service compared with those with less than one year were more likely to use self-prescribed analgesics with an odds' of 3.545. This was statistically significant (p = 0.036) (95%CI = 1.089 – 11.538).

Respondents who were auto-mechanic compared with others were more likely to use self-prescribed analgesics with an odds' of 2.820. This was not statistically significant (p = 0.207) (95%CI = 0.563 – 14.112).

Respondents who are certified mechanic compared with those who are apprentice were less likely to use self-prescribed analgesics with an odds' of 0.479. This was however not statistically significant (p = 0.242) (95%CI = 0.140 – 1.643).

Respondents with good knowledge compared to those with poor knowledge were more likely to use self-prescribed analgesics with an odds' of 6.357. This was statistically significant (p = <0.0001) (95% CI = 2.373 – 17.032).

Respondents with good attitude compared to those with poor attitude were less likely to use self-prescribed analgesics with an odds' of 0.585. This was however not statistically significant (p = 0.122) (95% CI = 0.297– 1.154).

Table 16: Forms of analgesics misuse reported among study population

Variable	Frequency (n=317)	Percent
Method of taking analgesic		
Wrapped inside "eba"	201	63.4
Swallowing with water	83	26.2
Crushing or grinding	20	6.3
Pouring into soft drinks	3	0.9
Emptying the capsules	2	0.6
Pouring into alcohol	2	0.6
Smoking	1	0.3
Others	5	1.6
Take analgesic with alcohol		
Yes	16	5.0
No	301	95.0
Take analgesic with other herbal preparations		
Yes	50	15.8
No	267	84.2
Take other medication along with analgesics		
Yes	26	8.2
No	290	91.8
Combine 2 or more pain medicines		
Yes	23	7.3
No	293	92.7
Take substance along with analgesics		
Yes	18	5.7
No	299	94.3

Two hundred and one (63.4%) respondents took medications wrapped inside 'eba'. Sixteen (5.0%) respondents took analgesics with alcohol, 50 (15.8%) take analgesic with herbal preparations, 26 (8.2%) take other medication along with analgesics while 23 (7.3%) combine two or more pain medicine and 18 (5.7%) respondents take other substances along with analgesics.

Table 17: Other uses of analgesics reported by the study population

Other uses of analgesics	Frequency (n=317)	Percent
To relief stress		
Yes	121	38.2
No	196	61.8
To feel happier		
Yes	60	18.9
No	257	81.1
To relieve depression		
Yes	60	18.9
No	257	81.1

One hundred and twenty one (38.2%) respondents use analgesics to relieve stress while 60 (18.9%) use analgesics to feel happier and another 60 (18.9%) respondents use analgesics to relieve depression.

Table 18: Adverse effects of analgesics as reported by study population

Variable	Frequency	Percent
	(n=317)	
Adverse effects from analgesics		
Yes	32	10.1
No	284	89.9
	(n=32)	
Analgesic responsible for adverse effects		
Tramadol	8	25.0
Paracetamol	5	15.6
Ibuprofen	1	3.1
"Novalgin"	1	3.1
Not named*	17	53.2
	(n=32)	
Adverse effect experienced		
Vomiting	9	28.1
Nausea	7	21.9
Itching	5	15.6
Epigastric pain	4	12.5
Not named*	7	21.9

*Respondents could not name any option

Thirty-two (10.1%) respondents experienced adverse effects from analgesic use; tramadol was responsible for adverse effects in 8 (25.0%) individuals and paracetamol in 5 (15.6%) respondents. Adverse effects reported included abdominal discomfort (12.9%), sleeping problems (9.4%) and vomiting (9.4%).

Adverse effects experienced included vomiting (28.1%) nausea (21.9%) and itching (15.6%). Twenty-seven (8.5%) respondents accidentally consume overdose of analgesics (33.3%) ingested paracetamol in overdose quantity and 1 (3.7%) ingested ibuprofen.

Table 19: Overdose of analgesics reported by study population

Variable	Frequency (n=317)	Percent
Accidental overdose of analgesic		
Yes	27	8.5
No	290	91.5
Analgesic ingested in overdose quantity	**(n=27)**	
Paracetamol	9	33.3
Tramadol	2	7.4
Boska	1	3.7
Ibuprofen	1	3.7
Not named*	14	51.9
Overdose resulting in hospitalization		
Yes	8	2.5
No	309	97.5
Overdose resulting in home stay		
Yes	20	6.3
No	297	93.7
Reported consequences of overdose	**(n=27)**	
Stomach pain	10	37.1
Altered consciousness	5	18.5
Itching	4	14.8
Others	8	29.6

*Respondents could not provide name of medication

Twenty-seven (8.5%) respondents accidentally take an overdose of analgesic out of which 9 (33.3%) ingested paracetamol in overdose in quantity and 2 (7.4%) of overdose analgesic could not be named.

Eight (2.5%) respondents reported that analgesic overdose resulted in hospitalization of which10 (37.1%) respondents reported stomach pain as the adverse effect of overdose.

Table 20: Features of Dependence on analgesics reported by study population

Variable	Frequency (n=317)	Percent
Feeling of need to increase the dose of analgesic		
Yes	14	4.4
No	303	95.6
Feeling of depression after stopping analgesic		
Yes	15	4.7
No	302	95.3
Feeling of continuing analgesic despite adverse effects		
Yes	14	4.4
No	303	95.6
Feeling of unwell after stopping analgesic		
Yes	18	5.7
No	299	94.3
Feeling of need to use analgesic daily		
Yes	12	3.8
No	305	96.2
Analgesics have resulted in arguments at home		
Yes	8	2.5
No	309	97.5

Fourteen (4.4%) respondents reported feeling the need to increase the dose of analgesic; 15 (4.7%) reported having feelings of depression after stopping analgesic while14 (4.4%) respondents had feelings of continuing analgesic use despite adverse effects.

Eighteen (5.7%) respondents feeling unwell after stopping analgesic, 12 (3.8%) reported feeling the need to use analgesic daily while 8 (2.5%) reported that analgesic use had resulted in arguments at home.

Table 21: Features of addiction to analgesics reported by study population

Variable	Frequency (n=317)	Percent
Feeling of 'being addicted' to any analgesic		
Yes	14	4.4
No	303	95.6
Complaints by others about 'analgesic addiction' by respondent		
Yes	18	5.7
No	299	94.3
Problems discontinuing analgesic use		
Yes	14	4.4
No	303	95.6
Unexplained desire to take analgesics		
Yes	15	4.7
No	302	95.3
Feeling ill on discontinuing analgesics		
Yes	12	3.8
No	305	96.2
Observing abnormal symptoms when analgesics use is discontinued		
Yes	14	4.4
No	303	95.6
Having medical problems after taking analgesics		
Yes	10	3.2
No	307	96.8
Have any medical condition		
Peptic ulcer	10	3.2
Allergies	29	9.1
None	278	87.7
Kidney Disease	0	0

Fourteen (4.4%) respondents reported feeling addicted to any analgesic, 18 (5.7%) had complaints about addiction to analgesic, 14 (4.4%) respondents reported problems discontinuing analgesic use and 15 (4.7%) respondents reported unexplained desire to take analgesics. Twelve (3.8%) respondents reported feeling ill on discontinuing analgesics while 14 (4.4%) respondents reported observing abnormal symptoms when analgesic use is discontinued; 10 (3.2%) reported having medical problems after taking analgesic and 29 (9.1%) respondents reported having allergies.

FOCUSED GROUP DISCUSSION

Knowledge about Analgesic Drugs:

Focus group comprises of 8 mechanic groups, a total of 35 mechanics, age ranges from 17- 56 years. Each FGD session comprised of 6 to 8 respondents for varied, interesting and sustained conversation. Participants were selected based on two levels- qualified mechanics and mechanics in training (apprentice). The FGD was conducted by the researcher and 2 assistants who took notes and audio recordings of the discussions. Most of the mechanics were open and willing to participate at every stage of the discussion. From the discussion, it was discovered that participants of the FGDs expressed a substantial basic understanding of what of Analgesic drugs. During the interview, individual occupational group heads expressed their knowledge about analgesic drugs

Level of Awareness on the Use Of Analgesics or Pain Medicines By Mechanics

"I have heard about tramadol and pain killers and I also dey use am, they are pain killers, and we dey use the drugs when tired or weak after working. The pain killer, sometimes I don't even see the reason why people take pain killers because as for me, for a year now, I never take paracetamol or panadol. But tramadol, I haven't seen it before and I haven't tried it before. We dey work sometimes without drugs but it get time wey the drug dey help us".

-Comment by mechanic 1 (qualified mechanic) in the 1st session.

"The drugs help to reduce body pains. I use drugs, and the pain reliever I use is ibu-profen, and I think exercising can take the place of these drugs and also a good night rest or sleep, if you wake up in the morning you feel better. I know one of my friends that did not use paracetamol to work at all and he still did his work well".

-Comment by mechanic 2 (mechanic in training) in the 2nd session.

"The drugs wey I know na for pain na this panadol and paracetamol, also tramadol. Some of the pain relief drugs for pain, an tramadol, but e get wey paracetamol no work, we come dey get ibuprofen. I know say we dey use these drugs very well. You see some of our boys take tramadol to boost their energy".

-Comment by mechanic 1(qualified mechanic) in the 3rd session

"I nor too much know about the drugs but na only panadol I dey take. If I sleep and wake up take drugs. But in some shops I dey go, the boys that are very agile, they take tramadol to give them power.if you are so weak you take tramadol, and you can pull this car very well. Normally if we want to take it, we take 2 and it works for us very much".

-Comment by mechanic 2(mechanic in training) in the 4th session

"Like pain killers, are drugs people dey take when they get pain for body. if they take am, e dey make your body calm, but some people, if they take am, e dey relax your nerves, then all the place wey you dey feel pains, they dey feel better after they take am? I think say majority of mechanics dey take am so that they go dey active".

-Comment by mechanic 1(qualified mechanic) in the 5th session

"I don't believe say plenty mechanics dey take pain killers, some people e nor dey work for am, for some people, them just dey lazy, and if they use am, e no go work for am like for other people. I think say whether you take am or not, e nor dey work for them, for some people, e dey make them

high, but after the drug don finish, them go dey feel useless after they do am. I no believe say e get any use."

-Comment by mechanic 2(mechanic in training) in the 6th session

"Analgesic drugs are basically pain killers, they are also drugs that can boost your energy to do some certain types of job e.g power hoise is a type if drug that I use. I think a mechanic can work without pain medicine including me, it just depends on the type of work I am doing".

Comment by mechanic 1 (qualified mechanic) in the 7th session

"I don't have much idea about it; the only drug I know is panadol. Mechanics that take this drug that take this drug according to doctor's prescription is the right way but if not, it is the wrong way. It is not good to take this drug regularly and it should be taken according to doctor's prescription."

-Comment by mechanic 2 (mechanic in training) in the 8th session

Effects on the Use of Analgesic drugs

"Some mechanics take according to prescription while others don't. The wrong use is based on the individual. I think it is not wrong to take pain medicine for a long period of time because our bodies cannot pain you for that long. Mechanics take this drug wrongly due to lack of rest. Taking drugs regularly can lead to drug abuse. I know that there are side effects to theses drug abuse, but I don't know of any side effect. It is very wrong for mechanics to be addicted to these drugs and it has a very long term effect on them in their head, like psychologically".

-Comment by mechanic 1(qualified mechanic) in the 1st session.

"It is wrong to use pain medicine for a long period of time because if it is not prescribed by the doctor during that time, then, it wouldn't work. I think different mechanics take it wrongly due to lack of knowledge. Mostly people do not take the correct dose of pain medicine because there are now fake drugs in the market that are produced and sold to us. The side effects that I know of are insanity, weight loss, blindness, loss of appetite, damage of body cells and untimely death. When people constantly take these drugs, it increases their work speed."

-Comment by mechanic 2(mechanic in training) in the 2nd session

"if person dey take these drugs too much, the thing dey cause more harm than good for the body. I no really advice anybody to drug drugs all the time because not all pain need drugs, some pain just need sleep. Mechanics dey take am well because when they see their fellow guy dey take am, them go join them. Not all my people dey take the right dose for the drug, depending on their wisdom. Mechanics dey take drug outside doctor's prescription, it nor suppose to be so. Side effects plenty like nasea, sleepless night, and even addiction. I think

mechanics suppose try limit their drug in take to save their lives because too much of it dey affect their body system. Without this drug now, some of them no go concentrate for their work".

-Comment by mechanic 1(qualified mechanic) in the 3rd session

"When people dey take these drugs wrongly, na drug abuse.i no advice for mechanics to take this drug but it depend on the person wey dey take am. If person dey take drug, na according to their doctor's prescription. To me, this drugs no dey affect me, but for some other people, some effects like nausea, sleeplessness, itching and even madness dey affect them. If person dey constantly turn to drug instead of sleep for some cases, the person no go fit do without am. Some boys get this problem because after some time, they go dey behave anyhow. My advice to my fellow mechanic be say make them stay away, prevention is better than cure and those wey addiction don happen, make them try to stop am".

-Comment by mechanic 2(mechanic in training) in the 4th session.

"Reasons why some people dey take this drug na because say they want to high. The drug also dey help this people work well. Some of them dey do 2 day job in one day because of tramadol. The abuse on this drug is high and I think the Government suppose place laws around this drug. If person wan buy the drug, they need prescription. My advice to people wey dey abuse this drug be say make them follow doctor's prescription.If person dey use this drug for long, it

no good and the thing dey cause body system damage. Some people dey get old fast because of these drugs. People wey already get addiction from tramadol should stop it .

-Comment by mechanic 1(qualified mechanic) in the 5th session.

"The long use of this drug, is a poison everyday so the more you take the more you endanger your life. It is advisable to take under Doctor's prescription. I think mechanics like taking this medicine continuously and it is because of the nature of the drug. This drug abuse has side effect and it can be properly managed over time. For me, I have not noticed any of these side effects. I know say it can destroy the person internal organs. Mechanics should abstain from these drugs and take it only when needed because we don't know these side effects, and if we get old, we don't know how to manage them".

-Comment by mechanic 2 (mechanic in training) in the 6th session.

'It depends on the person taking this drug. It is better to exercise than to use a drug that can be cured without you putting chemicals in your body. I don't know of any side effects to taking this drug. I heard of someone having kidney damage from taking pain medicine and also Mechanics should do their work according to their strength and should not do it using the drug".

-Comment by mechanic 1 (qualified mechanic) in the 7th session

"Based on the side effects of these drugs, Taking under doctor's prescription, is safer to reduce of drug abuse and it is safe. Abusing the drug regularly can cause serious side effects, because too much of everything is bad,. I think the long use of drug can endanger your life. It is very

wrong to take drugs without doctor's prescription. Anyone that takes drugs without is is at their own risk. People that take these drugs continuously should stop it and follow Doctor's prescription if they want to live long".

- Comment by mechanic 2 (mechanic in training) in the 8th session.

CHAPTER FIVE

DISCUSSION

This study investigated the use of analgesics among motor vehicle mechanics in Egor Local Government Area, Benin City. Globally, inappropriate use of analgesics has been identified as a public health problem of serious concern. This is also a dilemma in developing countries with largely unrestricted access to medicines. Motor vehicle mechanics engage in manual material handling tasks which have the potential to expose workers to physical strain and injuries. As a result, analgesic use is common among this group of workers.

In this study, a higher proportion (48.9%) of the respondents were between the ages 18 to 29 years followed by 30 - 39 years and then 40-49 years. These consists young and middle-aged adults which make up a major part of working age group of the Nigerian population.[52] The mean age of respondents was 29.8 + 12.7 years. This was similar to that reported in a study among battery charging artisans in Lagos and Ibadan, (South West Nigeria) where the mean age was 29.0 ± 0.1 years.[53] The age distribution in this study therefore alludes to the view that young and middle aged adults constitute a major part of work that involves manual material handling. Regarding sex distribution, a majority of the motor vehicle mechanics that participated in this study were males (97.5 %) with only 8 females representing 2.5 % of the study population. This is a typical finding in most jobs that are physically exerting. However in recent times, a few females are identified in some predominantly male professions which were practiced solely by men.[54,55] A study of battery workers in Lagos reported 2.7 % of females[54], while another in Ghana reported up to 5.8 % among motor vehicle mechanics.[55]

A greater majority (65.6%) of the respondents were single; only 33.8 % of the respondents were married. This may be because a higher proportion of the respondents were between the ages of 18 and 29 years reflecting the rising age at first marriage observed in some parts of Nigeria and most parts of the world.[56] The intersection of later age at first marriage and urban migration, may be as a result of socio-economic difficulties experienced in urban setting in which this study was carried out. In this study, most of the participants had secondary level of education, followed by primary level of education. Similar findings in respect of roadside mechanics were reported from studies in urban areas in Nigeria.[57] Also in Tanzania, a majority of workers in informal sector (including vehicle repair workshops) were primary school leavers.[54] This finding in this study may reflect a positive change in attitude and the assenting value Nigerians place on formal education. In the past, non-formal apprenticeship programs alone were provided in many areas such as auto-mechanics, tailoring, hair weaving and iron bending, carpentry, brick laying, auto-body repairing, air conditioner maintenance, tyre vulcanising, electrical installing, furniture making, welding/ fabrication, and foundry.[58] However, individuals who undergo these trainings now undertake prior formal education which, in Nigeria, is organised under the direction of schools and runs from primary to the university level. It includes, in addition general/academic education and specialised programs for full technical and professional training.[58,59] Majority of the respondents, were Christian while 2.8% of respondents practiced Islam. The distribution in terms of religious affiliations is also a reflection of the religion that is more practiced in Benin City with Christianity being the more frequently practiced religion.

Auto-mechanics formed a large part of the respondents (89.0 %) while other groups (auto-electricians, auto panel beaters, and others such as air-conditioner repairers) comprised 11 %. In a

study by Saliu et al,[60] forty three percent consisted of auto mechanics while Abu and co-workers[55] reported that only 26.3% of their vehicle mechanics were auto mechanics.

Less than half, (45.1 %) of these workers had spent 6 years to over ten years on the job. A similar study in South West Nigeria reported that 53 - 60 % of auto mechanics had 5 to 10 years of experience excluding apprentices.[61] A large proportion (31.2%) of the subjects had spent more than 10 years on the job. This group is often referred to as the "ogas" or "masters." Conversely, Saliu and colleagues[60] reported that a greater majority of their subjects had spent more than 10 years on the job as "masters." (62.4% were roadside mechanics while 85.5% were organized group of mechanics). [61] In this study, more than half of the respondents were apprentices and were still in training while the others (49.8 %) had completed training.

This study showed that up to 43.2% of the motor mechanics had a good basic knowledge of analgesics and their uses, almost half of respondents had fair knowledge of analgesic use while only 7.6 % of the respondents had poor knowledge of analgesic use. Although there was paucity of information with which to make comparisons, this finding can be considered assuring because misuse and abuse of medications often stems from poor knowledge regarding analgesics. However, the questions that were asked to assess knowledge in this study were basic questions e.g. definition of analgesics and their common indications. A study by Oyerinde *et al*,[62] on the knowledge of non-narcotic analgesics and their use among non-medical students of the University of Lagos, revealed a combination of paucity of knowledge of analgesics among the non-medical undergraduates of University of Lagos and high level of self-medication. This was associated with

analgesic misuse and abuse which has the potential of exposing students to untoward effects of these drugs thereby compromising their health. The difference in the results between this study and that reported by Oyerinde *et al,*[62] may be that the questions regarding knowledge of analgesics and their uses were quite technical, for instance they were asked, "Which do you think contains paracetamol?", "At what age is it appropriate to take aspirin when needed?", "Which painkiller do you think reduces swelling?", "Which of the painkillers do you think is associated with a small risk of heart disease/ stroke?", "In what condition is ibuprofen not normally appropriate?", "Which painkiller is most likely to cause addiction?", and "When you feel the need to take painkillers while you are on other regular medications, what do you do?". Conversely, this study asked basic questions in order to determine the basic knowledge of analgesics. It is possible that motor mechanics would not have been able to answer these technical questions. Currently, there are no known standardized questions regarding the assessment of knowledge of analgesic use. Questions may be based on researchers' objectives and their population.

In this study, marital status of the respondents, level of education and category of mechanic (weather apprentice or certified mechanics) was associated with a positive knowledge of analgesic use. With regards to marital status, it is possible that married respondents get information from their spouses. Studies have shown an association between marital status and health; that marriage has a positive influence on an individual's health.[64,68] Most married persons have children and often give them analgesics and antipyretics. Knowledge of analgesics can also be acquired when couple mange the ailments of their children.

When assessing the predictors of knowledge of analgesic use among the study population, it was determined that with one-year increase in age, respondents were more likely to have good

knowledge of analgesic use, this was not statistically significant. Females were less likely to have good knowledge of analgesic use when compared to males, married respondents were less likely compared to singles, respondents with secondary level of education more likely compared to those with no formal education, those with more than 10 years in service were less likely compared with those with less than one year, auto-electrician less likely than others and certified mechanic were less likely to have good knowledge of analgesic use compared with those who are apprentice. Apart from level of education, other variables did not show statistical significance. Therefore, secondary level of education compared to no formal education showed to be a strong predictor of positive knowledge of analgesic use among motor vehicle mechanics.

Information was sought to determine the attitude of the respondents regarding analgesic use. The concept of attitude entails a psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor. [63] This is important with regards to analgesic use because it goes a long way to influence practice and invariably can contribute to or discourage misuse or abuse. In this study, more than half, (57.4 %) of respondents had poor attitude to analgesic use while about a third (30.3 %) had good attitude to analgesic use. Only 12.3 % of the respondents had a fair attitude to analgesic use. The overall position among those who had a negative attitude regarding analgesic use was that analgesics intake can be extended for other purposes beside that for which it is therapeutically meant for. Saengcharoen and colleagues[64] carried out a survey in Thailand to determine public knowledge and factors associated with inappropriate analgesic use. They reported that poor knowledge, positive attitudes towards high dose or high frequency of analgesic consumption, and the patterns of using drugs were associated with inappropriate analgesic use especially that of paracetamol.

In this study, older individuals had a more positive attitude towards analgesic use. However, this was not statistically significant ($p = 0.800$). Again, males had a more positive attitude compared to female respondents, but this was also not statistically significant ($p = 0.145$). Other variables that were assessed included marital status, level of education, years in service, category and qualification of mechanic. Although singles rather than married, primary school holders compared with tertiary education holders, auto-mechanics compared with other category of mechanics and those with less years in service all had a more positive attitude towards analgesic use, these were not statistically significant. On the other hand, apprentices had a significantly more positive attitude towards analgesic use ($p = 0.002$).

Notably, only 12.5 % of the respondents with good knowledge of analgesia had a positive attitude of analgesic use while 45.1% with poor knowledge also had a good attitude towards analgesic use. This association between knowledge and attitude of analgesic use was statistically significant. This finding proposes an assumption that limited knowledge on analgesics may be associated with a good attitude towards its use in some instances. An explanation may be that certain individual may be more cautious with substances that they are not too familiar with. Ger and co-workers[65] reported a disparity between knowledge and attitude of analgesic use; they noted that a majority of physicians (66%) in two hospitals surveyed in Taiwan had a good knowledge of analgesics but exhibited significantly more negative attitudes toward analgesic medication.

In this study however, further analysis showed that good knowledge of analgesics was a strong predictor of good attitude towards analgesic use. This finding is supported by other studies where poor knowledge was associated with negative attitude towards analgesic use.[65]

This study showed that a large proportion (84.2%) of the respondents had used self-prescribed analgesics indicating a high occurrence of self-prescription of analgesics among motor vehicle mechanics in Egor Local Government Area of Edo State. Generally, self-prescription and self-medication is a common practice in Nigeria and in other developing and developed countries.[67,68] However it is higher in developing countries, due to wider increase of drug availability without prescription.[69] This practice has advantages and disadvantages.[66,67] One of the disadvantages include an increase in the possibility of drug abuse and drug dependency and masking the signs and symptoms of more serious underlying diseases, hence complicating the medical conditions and delaying diagnosis.[70] Fidelis et al[66] reported a similar incidence of self-prescription of non-opioid analgesics of 85.9% of which 6.8% of the respondents had a positive history of treatment for non-opioid analgesic overdose.

In a study by Mohammadi et al,[71] the prevalence of self-medication of analgesics was 56.1 % and the most common reason for self-medication was severe pain (35.3%). In another study among patients with dental pain, the prevalence of self-medication with analgesics was 29.4 % and up to 95.6 % of the participants reported to take analgesics whenever it was necessary.[72] Another cross-sectional population-based study (National Survey on Access, Use and Promotion of Rational Use of Medicines, PNAUM) showed an overall prevalence of analgesic use of 22.8%. [73] One reason for the very high prevalence of analgesic use among this population of motor mechanics in this study could probably be the nature of their job. Out of the two hundred and thirteen (84.2 %) respondents that had taken self-prescribed analgesics, 46.8% and 32.2% respondents indicated that the commonest and most recent reasons for taking self-prescribed analgesics were for body pain and headaches respectively. Up to 77.3% of the respondents had previously taken self-prescribed analgesics for pain while 25.6% had previously taken self-prescribed analgesics for fever. Fidelis

and co-workers[66] reported that the subjects' most common use of self-prescribed analgesics was the relief of headaches. This may be because their population involved health workers who are burdened with not only the physical strain of their jobs but also, the mental stress associated with this profession.

In a study by Torp et al.,[74] concerning musculoskeletal symptoms (MSS) among car mechanics in different garages, almost all the mechanics had the problem of MSS at work in the past year. The most common MSS were pain in the low back, neck, head and shoulders. Most mechanics reported that low back pain, pain in the upper back and pain in the shoulders and neck were most troubling. They further observed that shoulders, low back and upper back pain were associated with absence from work due to MSS (OR = 4.2, 2.3 and 2.1 respectively). Mechanics between the ages of 30 and 40 reported significantly more shoulder symptoms than both younger and older colleagues ($p < 0.001$). They noted that back and shoulders symptoms could restrain car mechanics' work more than any other MSS. They concluded that the mechanics' most common working postures may have contributed to the development of back and shoulder symptoms. Al-Otaibi[75] reported occupations involving heavy lifting, driving, and vibration of the whole body are linked to occupational back pain. Research has identified demographic, behavioral, health and work-related factors associated with low back pain and the considerable implications.[76] This included jobs with manual materials handling which entail repetitive and strain associated tasks of mechanical falls under.

In this study, the most common analgesic taken by self-prescription was paracetamol (73.4 %); tramadol was taken by 9.0 % of the respondents while 13.5 % of the respondents took a combination of self-prescribed analgesics. In the study by Fidelis et al,[66] paracetamol was also

reported to be the most common (79%) self-prescribed analgesic among the subjects. This finding was also reported by Oyerinde et al[66] where the most used analgesic was paracetamol (71.7%); this was followed by ibuprofen and felvene which are Non-Steroidal Anti-Inflammatory analgesics. In this study, ibuprofen accounted for only 4.1 % of the prescribed analgesic. This is in contrast to the study by Abdu-Aguye et al,[13] where a majority of the oral analgesics contained NSAIDS either alone or in combination with other agents. Other studies have also shown that paracetamol is the most common self-prescribed analgesic.[77, 78,79] Basically, paracetamol is an effective analgesic, indicated for pain and fever. It plays an important role in the multimodal approach to pain relief. Although it has a high safety profile, overdose of paracetamol may cause liver damage. Paracetamol is a common option most patients requiring over-the-counter analgesics compared with NSAIDs. Among the NSAIDs, ibuprofen has fewer NSAID related side-effects such as gastrointestinal bleeding when taken at an appropriate dose.

In this study, paracetamol was also the most commonly prescribed analgesic given by medical doctors to the mechanics. Fehintola and Ganiyu[80] in a secondary health facility in Ibadan, Paracetamol was the most commonly prescribed analgesic drug accounting for 55.7% of all analgesic drugs. In another study by Azodo and Umoh,[81] paracetamol was also found to be the most commonly prescribed analgesic accounting for 39.1% of the analgesic prescribed. In their study, the factors that influenced the choice of prescribed analgesics among the respondents were severity of pain, patients' medical condition, age of the patient, and patient request.

Some respondents in this study admitted to taking a combination of analgesics (13.5 % of respondents). The use of analgesic combinations has been reported to be particularly prevalent within the Nigerian setting raising several safety concerns.[82,83] Usually, caffeine is a common

ingredient found in many analgesic combinations, and is believed to act mainly by lowering gastric acidity and improving absorption of the main analgesic.[84] A meta-analysis by Derry et al.[84] found that the addition of caffeine in doses of 100 mg or over to a standard dose of several commonly used analgesics provided a small increase in the proportion of participants who experienced a good level of analgesia. Although combining paracetamol with various NSAIDS produces better pain relief, [85] a major concern with these combinations is the inadvertent combination of more than 2 NSAIDs which can lead to untoward side effects such as gastritis and renal impoairment.[86]

With regards to the dosage pattern of analgesics taken among this group, it was observed that less than one quarter (22.1 %) of the respondents took the appropriate doe of the self-prescribed analgesics while a greater majority (77.9 %) took an inappropriate dose. Specifically, a small proportion of respondents used analgesics most days in the week; one respondent had actually used analgesics daily for one year. Also, more than one third of the respondents reported that the dose/duration of analgesic use was determined by the persisting nature of pain while some of them reported that the dose/duration of analgesic use was based on their personal preference. Fundamentally, inappropriate dosing of medications can have serious health consequences. Wilcox and colleagues[87] studied the use of OTC analgesics especially NSAIDs and reported that 44% of their respondents consumed more than the recommended dosage; they concluded that OTC analgesics including NSAID were widely used and are frequently taken inappropriately. Fendrick et al, [29] also noted that often, OTC analgesics are taken in higher-than-recommended doses. Inappropriate dosing was also reported in a study[7] in a rural Nigerian community. However, in that study, 12 % of the subjects had used analgesics daily for one year while 5.2% had used daily for at least 10 years. This result indicated analgesic misuse. Also, in line with this study, the FDA study[45] reported that some consumers typically take more than the recommended dosage, which

increases the potential for adverse reactions. Since inappropriate dosing is associated with serious adverse effects, it is recommended that various sources for health education should be employed to correct this wrong practice,

Generally, sources of analgesics include pharmacies, chemist, drug vendors, and even hawkers in Nigeria. In this study, 48.7 % of the respondents reported that their source of pain medicine was from a pharmacy while slightly higher number (49.7%) listed a chemist as the source. Up to 4.1% of the motor mechanics had a secrete source of analgesic medicines while a few had a personal supplier of analgesics. In a related study,[13] it was reported that virtually analgesics can easily be obtained over the counter, both from pharmacies and patent and proprietary medicine vendor (PPMV) outlets. Typically, the source of analgesic can be associated with analgesic misuse and abuse. This is because pharmacists and chemists with adequate training are usually in a position to advice on the appropriate dose and duration of the medications. On the other hand inappropriately, trained persons may not be equipped with this information and would not be able to give well informed advice. Therefore, it is recommended that analgesics should only be obtained from authorized sources such as licensed chemists and pharmacies.

In this study, different variables were evaluated in order to determine those that were associated with self-prescription of analgesic use among respondents. These included the age of the respondents, sex, marital status, level of education, years in service, type of motor mechanic, and qualification of the motor mechanic (weather apprentice or certified mechanics). It was observed that increasing age, female sex, married status, tertiary level of education, fewer years in service, auto-mechanic category, apprentices and a negative attitude to analgesic use were associated with self-prescription of analgesics but these were not statistically significant. However the association

between knowledge of analgesic use and self-prescribed analgesic usage was statistically significant ($p = 0.001$).

When assessing the predictors of self-prescription of analgesics, it was determined that with one-year increase in age, respondents were more likely to use self-prescribed analgesics. This was not statistically significant. In addition, females, auto-mechanics and respondents with tertiary level of education compared to those with no formal education were more likely to use self-prescribed analgesics. These were not statically significant. On the other hand, married respondents compared to singles, certified mechanics compared with those who are apprentice and respondents with good attitude compared to those with poor attitude were less likely to use self-prescribed analgesics. There were also not statistically significant. A strong predictor of a less likelihood of self-prescription was mechanics with 3-5 years in service when compared with those with less than one year in service.

Although the term abuse and misuse of medicines is often used interchangeably, they are specific and diverse terms. While misuse is defined as any intentional therapeutic use of a drug product in an inappropriate way abuse is any intentional, non-therapeutic use of a drug product or substance, even once, for the purpose of achieving a desirable psychological or physiological effect. Diversion of medications is a form of drug misuse. Diversion is defined as any intentional act that results in transferring a drug product from lawful to unlawful distribution or possession. Other forms of drug misuse include wrong route of administration. e.g. topical instead of oral administration, wrong formulations e.g. crushing certain preparations, inappropriate doses and

inappropriate duration and inappropriate combinations with e.g. alcohol or with the wrong medicines. This study showed various forms of misuse such as wrong methods of intake such as wrapping the medicine inside "eba", swallowing without water, crushing or grinding, pouring into soft drinks, emptying the capsules, pouring into alcohol, and even smoking. Five percent of the respondents admitted to taking analgesics with alcohol while some reported that they took analgesic with other herbal preparations. About seventy percent of the respondents accepted that they purchased analgesics with an old prescription. In a study to assess the misuse of analgesics in Abuja, Nigeria, paracetamol and ibuprofen were the most common analgesics misused with 20.65% of adults exceeding the maximum daily doses of paracetamol and ibuprofen.[8] Some took the analgesics once a day (25.48%), others twice daily (17.84%) and some three times a day (14.72%); 16.03% were combined analgesic misusers/abusers.[8] While 10.1% respondents who misused or abused analgesics agreed that analgesic misuse/abuse was risky, 66.03% were not aware of the risks involved.

Various forms of analgesic abuse were recorded in this study and included the use analgesics to relieve stress, as a mood enhancer and as an antidepressant. The study in Abuja revealed that analgesic drug abuse occurred more among younger and less educated persons.[8] Another study reported that most teenagers who abuse prescription drugs were initially given them for free by a friend or relative.[68] While the high rate of opioid misuse in the US and other developed countries has been emphasized, the rate in developing countries like Nigeria is also on the increase and may be largely under-reported.[87] These separate studies echo the fact that analgesic drugs are mostly abused by young people who gets the dose of self-prescribed analgesics from unusual sources.

In this study, more than one third of the respondents experienced adverse effects from analgesic use; tramadol was responsible for adverse effects in eight individuals and paracetamol in five respondents. Adverse effects reported included abdominal discomfort, sleeping problems, vomiting, nausea, and itching. Side effects commonly associated with chronic administration of various classes of analgesic medications include gastrointestinal (e.g., nausea, vomiting, indigestion, constipation), central nervous system (e.g., drowsiness, difficulty concentrating, hallucinations/nightmares, lightheadedness, poor coordination, lack of energy), and autonomic nervous system (e.g., urinary retention) effects. [88] Some of these symptoms were reported in this study.

Eight and half percent of the respondents reported that they had experienced accidental overdose following misuse of analgesics. In more than half of these cases, the respondents did not know the names of the medication. Among those that were named, paracetmaol overdose was reported in 33.3 % of the individuals. This was followed by overdose of tramadol and Ibuprofen. The reported symptoms were stomach pain, itching and, altered consciousness. Eight of the respondents claimed that this problem had resulted in hospitalization. Dodd and Graham[89] described unintentional overdose of analgesics in an attempt to relieve pain. They noted that patients are largely unaware of the risks imposed by excessive self-administered analgesia. A similar study showed that some members of the general public lack of awareness of the potential risks of excessive self-medication.[90] The prior study showed that most cases occur with paracetamol or compound analgesics.[90]

Symptoms of dependence were reported in some respondents who had abused and misuse analgesics. These included- feeling of need to increase the dose of analgesic, feeling of depression after stopping analgesic, feeling of continuing analgesic despite adverse effects, feeling of unwell after stopping analgesic medications, feeling of need to use analgesic daily, use of analgesics resulting in arguments at home. Features of addiction to analgesics were also reported and these included feeling of 'being addicted' to any analgesic, complaints by others about 'analgesic addiction' by the respondent, problems discontinuing analgesic use, unexplained desire to take analgesics, feeling ill on discontinuing analgesics, and observing abnormal symptoms when analgesics use is discontinued. Thirty-nine of the respondents claimed that they had medical conditions attributable to chronic analgesic use. Ten had developed peptic ulcer while twenty-nine reported allergies. One of the definition of addiction is the dependence on a substance or activity.[91] It is reported that addicted individuals are dependent on a particular set of experiences, following the reactions to specific chemical substances, in spite of harm to themselves or others. Addiction can be behavioural or chemical or substance addiction.[92] Researchers emphasize that in order to make a diagnosis of behavioral addiction, functional impairments must be present at work or in social relationships, or in other social situations.[93] In general the addiction can lead to diverse health and social harms and is a public health problem of great concern.

CONCLUSION

This study showed that the knowledge of analgesic use among motor vehicle mechanics in Egor Local Government Area of Edo State was good in a large number (43.2%) of respondents. almost half (49.2%) of respondents had fair knowledge while only 7.6 % of the respondents had poor knowledge. The association between marital status of respondents, level of education and category of mechanic (weather apprentice or certified mechanics) and positive knowledge of analgesic use was statistically significant. Secondary level of education compared to no formal education showed to be a strong predictor of positive knowledge of analgesic use.

More than half, (57.4 %) of respondents had poor attitude to analgesic use while about a third (30.3 %) had good attitude to analgesic use. Apprentices had a significantly more positive attitude towards analgesic use and good knowledge of analgesics was a strong predictor of good attitude towards analgesic use.

The prevalence of self prescription of analgesics was quite high (84.2%) while the commonest indications for self-prescription were body pain and headaches. the most common analgesic taken by self prescription was paracetamol (73.4 %) followed by a combination of self-prescribed analgesics. tramadol was self-prescribed by 9.0 % of the respondents. inappropriate dosing was observed in 77.9 % and their main sources were pharmacies and chemists. The association between good knowledge of analgesic use and self-prescription was statistically significant while a strong predictor of a less likelihood of self prescription was mechanics with 3-5 years in service compared with those with less than one year in service. This study showed various forms of misuse. adverse effects and features of addition and dependence were also reported.

RECOMMENDATIONS

It is recommended that:

1. The Federal and State Ministries of Health and their agencies and also Local government authorities should provide sources of health education to improve knowledge and attitude towards analgesic use and also to correct wrong practices,
2. Analgesics should only be obtained from authorized sources such as licensed chemists and pharmacies.
3. The findings from this study should be published in peer-reviewed Journals and international conferences as this will facilitate knowledge-sharing with health personnel, stake holders and health care decision-makers so that the statistics could be used as tools for practice change.
4. The available policies and guidelines that have been formulated to guide the proper use of analgesics should be implemented. Implementing them will go a long way to change practice.
5. Operational recommendations should be disseminated to stake holders though policy briefs, fliers, and newsletters

REFERENCES

1. Ballantyne JC, Mao J. Opioid analgesics therapy for chronic pain. The New England Journal of Medicine. 2003; 349:1943-1953.
2. Sodipo OO, Adedokun A, Adejumo O. Drug prescription pattern in a Nigerian Teaching Hospital Nigerian Journal of Family Practice. 2015; 8 (4): 29-33.
3. Levy B, Paulozzi L, Mack KA, Jones CM. Trends in opioid analgesic-prescribing rates by specialty, US, 2007-2012. Am J Prev Med. 2015; 49: 409-413.
4. National Institute on Drug Abuse. The latest prescription trends for controlled prescription drugs. 2015 (http://www.drugabuse.gov/news-events/meetings-events/2015/09/latest-prescription-trends-controlled-prescription-drugs).
5. Dart RC, Surratt HL, Cicero TJ, Parrino MW, Severtson GS, Bucher-Bartelson B, Green JL. Trends in Opioid Analgesic Abuse and Mortality in the United States. The New England Journal of Medicine. 2015; 372: 241-248.
6. National Vital Statistics System. Multiple cause of death file. Atlanta: Centers for Disease Control and Prevention, 2012 (http://www.cdc.gov/nchs/data/dvs/Record_Layout_2012.pdf).
7. Akinbodewa AA, Abolarin OS, Yakubu PT, Osho OP, Okunola O. Relationship between musculoskeletal pain and analgesics consumption in a rural agrarian community in south-west Nigeria: Implications for renal function and health policy formulation. World Journal of Pharmaceutical and Medical Research. 2017; 3(6): 37-44.
8. Okpalugo JI, Inyang US, Ibrahim K, Ukwe CV, Aguwa NC. Misuse of some OTC analgesics in Abuja, Nigeria. International Journal of Natural and Applied Sciences. 2010;6(1): 125-130.
9. Galluzzi KE. Management of Neuropathic Pain. The Journal of the American Osteopathic Association. 2005; 105: S12-S19.
10. Golar SK. Use and understanding of analgesics (painkillers) by Aston university students. Bioscience Horizons: The International Journal of Student Research. 2011; 4:71–78.
11. Jeffery DD, May L, Luckey B, Balison BM, Klette KL. Use and abuse of prescribed opioids, central nervous system depressants, and stimulants among U.S. active duty military personnel in FY 2010. Mil Med. 2014; 179(10):1141-1148.

12. Zin C, Hight R, Jackson K, Patel J, Wagner F. Ergonomic Guidelines for Manual Material Handling National Institute for Occupational Safety and Health. DHHS Publication 2007-131. 2007; 131.
13. Abdu-Aguye SN, Shehu A, Ahmad UI. Management of musculoskeletal pain in retail drug outlets within a Nigerian community: A descriptive study. Pharm Pract (Granada). 2017; 15(1): 873.
14. Onwubiko N, Dike ON, Onah JO. A Partnership Model for the Control of Unethical Marketing of Medical Drugs in Nigeria. European Journal of Business and Management. 2013; 5: 1-14.
15. Blot WJ, McLaughlin JK. Over the counter non-steroidal anti-inflammatory drugs and risk of gastrointestinal bleeding. J Epidemiol Biostat. 2000; 5:137–142.
16. Yusuff KB, WassiSanni A. Itinerant vending of medicines inside buses in Nigeria: vending strategies, dominant themes and medicine-related information provided. Pharmacy Practice. 2011; 9(3):128-135.
17. Ibiwoye A, Adeleke IA. Does National Health Insurance promote access to quality health care? Evidence from Nigeria. Geneva Papers on Risk and Insurance - Issues and Practice. 2008; 33: 219-233.
18. Omolase CO, AdelekeOE, Afolabi AO, Afolabi OT. Self-medication amongst general outpatients in a Nigerian community hospital. Annals of Ibadan Postgraduate Medicine. 2007; 5(2): 64-67.
19. World Health Organization: Guidelines for the regulatory assessment of medicinal products for use in self-medication WHODEDM/QSM/001, 2000.
20. Hamel MJ, Odhacha A, Roberts JM, Deming MS. Malaria control in Bungoma District, Kenya: A survey of home treatment of children with fever, bednet use and attendance at antenatal clinics. Bull World Health Organ. 2001; 79 (11):1014-1023.
21. Cipolat L, Loeb O, Latarche C, Pape E, Gillet P, Petitpain N. (2017). Acetaminophen: Knowledge, use and overdose risk in urban patients consulting their general practitioner. A prospective, descriptive and transversal study. Therapie. 2017; 20 (17): 3036-3037.
22. Adogu POU, Njelita, IA, Egenti, NB, Ubajaka, CF and Modebe, IA. Awareness, Knowledge, Perception and Attitude towards Prescription Medicines Abuse among

Medicines Prescribers and Dispensers in Nnewi Nigeria. Pharmacology and Pharmacy 2015; 6: 254-266

23. "Part III: Pain Terms, A Current List with Definitions and Notes on Usage" in Classification of Chronic Pain, IASP Task Force on Taxonomy. Merskey H, Bogduk N. Editors. Second Edition, IASP Press, Seattle, 1994. 209-214.
24. Verdoodt F, Friis S, Dehlendorff C, Albieri V, Kjaer SK, Non-steroidal anti-inflammatory drug use and risk of endometrial cancer: A systematic review and meta-analysis of observational studies. Gynecologic Oncology. 2016; 140 (2): 352-358.
25. Myocardial infarction with ST-segment elevation: The acute management of myocardial infarction with ST-Segment elevation. NICE Clinical Guidelines (167). 17.2. Aspirin 2013.
26. Chandrasekharan NV, Dai H, Roos KL, et al. COX-3, a cyclooxygenase-1 variant inhibited by acetaminophen and other analgesic/antipyretic drugs: Cloning, structure, and expression. Proc Natl Acad Sci 2002; 99: 13926–13931.
27. Schug SA, Garrett WR, Gillespie G. Opioid and non-opioid analgesics. Best Pract Res Clin Anaesthesiol. 2003; 17(1):91-110.
28. Prescription drug. Medical Dictionary, 2009 Farlex and Partner. https://medical-dictionary.thefreedictionary.com/Prescription+drugs Assessed 25th October 2017
29. Fendrick AM, Pan DE, Johnson GE. OTC analgesics and drug interactions: Clinical implications. Osteopathic Medicine and Primary Care. 2008; 2: 2.
30. Kaufman DW, Kelly JP, Rosenberg L, Anderson TE, Mitchell AA. Recent patterns of medication use in the ambulatory adult population of the United States: the Slone survey. JAMA. 2002; 287: 337–344.
31. Cooper RJ. Over-the-counter medicine abuse – A review of the literature. Journal of Substance Use. 2013; 18 (2):82-107.
32. Hughes, L, Whittlesea, C, Luscombe, D. Patients' knowledge and perceptions of the side-effects of OTC medication. Journal of Clinical Pharmacy Therapeutics. 2002; 27, 243–248.
33. Lessenger, JE, Feinberg, SD. Abuse of prescription and over-the-counter medications. Journal of the American Board of Family Medicine. 2008; 21(1), 45–54.
34. NIDA. Prescription and Over-the-Counter Medications. National Institute on Drug Abuse Website. https://www.drugabuse.gov/publications/drugsfacts/prescrition-over-ther-counter-medications. November 2015. Assesses October 6th 2017.

35. Obu HA, Chinawa JM, Ubesie AC, Eke CB, Ndu IK. Paracetamol use (and/or misuse) in children in Enugu, South-East, Nigeria. BMC Pediatrics 2012; 12:103
36. Builders MI, Okonta JM, Aguwa CN. Prescription Patterns of Analgesics in a Community Hospital in Nsukka. Journal of pharmaceutical sciences and research. 2001; .3(12), 1593-1598
37. Agaba EI, Agaba PA, Wigwe CM. Use and abuse of analgesics in Nigeria: A community survey. Niger J Med. 2004; 13 (4):379-82.
38. Savage SR, Joranson DE, Covington EC, Schnoll SH, Heit HA, Gilson AM. Definitions related to the medical use of opioids: evolution towards universal agreement. J Pain Symptom Manage. 2003; 26(1):655–67
39. Smith SM, Dart RC, Katz NP, Paillard F, Adams EH, Comer SD, et al. Classification and definition of misuse, abuse, and related events in clinical trials: ACTTION systematic review and recommendations. Pain. 2013; 154: 2287–2296.
40. Brugha R, Zwi A. Improving the quality of private sector delivering of public health services: challenges and strategies. Health Policy Plan. 2002, 13: 103-120.
41. Butler SF, Black RA, Cassidy TA, Dailey TM, Budman SH. Abuse risks and routes of administration of different prescription opioid compounds and formulations. Harm Reduct J 2011; 8:29-29
42. Miguez G, Laborda MA, Miller RR. Classical conditioning and pain: conditioned analgesia and hyperalgesia. ActaPsychol2014; 145:10-20.
43. Ewan EE, Martin TJ. Analgesics as reinforcers with chronic pain: evidence from operant studies. Neurosci Lett 2013;557 Pt A:60-64
44. Volkow ND, McLellan AT. Opioid Abuse in Chronic Pain — Misconceptions and Mitigation Strategies. N Engl J Med 2016; 374:1253-1263
45. Yoon E, Babar A, Choudhary M, Kutner M, Pyrsopoulos N. Acetaminophen-Induced Hepatotoxicity: a Comprehensive Update. Journal of Clinical and Translational Hepatology. 2016; 4(2):131-142.
46. Gunnell D, Murray V, Hawton K. Use of paracetamol (acetaminophen) for suicide and nonfatal poisoning: worldwide patterns of use and misuse. Suicide Life Threat Behav. 2000; 30(4):313-26.

47. Food and Drug Administration. FDA Drug Safety Communication: FDA strengthens warning that non-aspirin non-steroidal anti-inflammatory drugs (NSAIDs) can cause heart attacks or strokes. Available at: http://www.fda.gov/Drugs/DrugSafety/ (Accessed on 25 October 2017).
48. Okafor UH, Unuigbe EI. Onwuchekwa AC, Emem-Chioma P. Analgesic nephropathy as a cause of end-stage renal disease in a 55-year-old Nigerian. Nigerian Journal of Clinical practice. 2012; 15: 231-234.
49. National Population Commission. Annual Abstract of Statistics (2012). 32
50. Onyeka N. (Personal Communication, 2017) Information obtained from the Register of Motor Vehicle Mechanics in Egor Local Government Area, Edo State.
51. Cochran, W. G. (1977). Sampling techniques (3rd ed.). New York: John Wiley & Sons.
52. Reed HE, Mberu BU. Capitalizing on Nigeria's demographic dividend: reaping the benefits and diminishing the burdens Etude Popul Afr. 2014; 27(2): 319–330.
53. Abiola O. P. Total blood and urinary lead levels in battery charging artisans in two metropolitan cities of South West Nigeria. Journal of Applied Biosciences. 2009; 14:796–799.
54. Alayande R. A. The effect of health education and work environment of battery chargers in Lagos State [Fellow Medical College Public Health dissertation] National Postgraduate Medical College of Nigeria; 2000.
55. Abu EK, Boadi-Kusi SB, Opuni PQ, Kyei S, Owusu-Ansah A, Darko-Takyi C. Ocular Health and Safety Assessment among Mechanics of the Cape Coast Metropolis, Ghana. J Ophthalmic Vis Res. 2016;11(1):78–83.
56. Smith DJ. Promiscuous Girls, Good Wives, and Cheating Husbands: Gender Inequality, Transitions to Marriage, and Infidelity in Southeastern Nigeria. Anthropol Q. 2010;83(1):10.
57. Awoyemi A. O. Awareness about occupational hazards among roadsides auto mechanics in Ilorin, Nigeria. Journal of Community Medicine & Primary Health Care. 2002; 14:27–33.
58. Uwameiye R, Omofonmwan G.O. The perceived objectives of roadside mechanic apprenticeship programs in mid-western Nigeria. Australian Journal of Adult Learning. 2004; 44 (1), 84-94.

59. Audu R. Retraining needs of motor vehicle mechanics teachers at technical college level. 2014; Vol. 6 (1), 1-12.
60. Saliu A, Adebayo O, Kofoworola O, Babatunde O, Ismail A. Comparative assessment of blood lead levels of automobile technicians in organised and roadside garages in Lagos, Nigeria. J Environ Public Health. 2015; 2015: 976563. doi:10.1155/2015/976563
61. Jinadu MK Occupational health problems of motor vehicle mechanics, welders, and painters in Nigeria. R Soc Health J. 1982 Jun; 102(3):130-2.
62. Oyerinde O. O, Akinola A.A, Adepitan .V.K. Knowledge of Non-Narcotic Analgesics and their Use among Non-Medical Students of the University of Lagos Phillips KA, Johnson FR, Maddala T. Measuring what people value: a comparison of "attitude" and "preference" surveys. Health Serv Res. 2002; 37 (6):1659–1679.
63. Saengcharoen W, Buasri N, Khantapokha B, Lerkiatbundit S. Public knowledge and factors associated with inappropriate analgesic use: a survey in Thailand. Int J Pharm Pract. 2016; 24 (1) : 22-9.
64. Ger L, Ho S, Wang J. Physicians' Knowledge and Attitudes Toward the Use of Analgesics for Cancer Pain Management: A Survey of Two Medical Centers in Taiwan. Journal of Pain and Symptom Management 2000; 2 (5): 335 - 344.
65. Fidelis C. Kanmodi KK, Olajolumo J. Prevalence, sources and purpose of self-prescribed non-opioid analgesic among health professionals in Sokoto metropolis, Nigeria: a cause for concern. Curr. Issues Pharm. Med. Sci. 2018; 31 (1): 13-17.
66. Esan DT, Fasoro AA, Odesanya OE, Esan,TO, Ojo EF, Faeji CO. Assessment of Self-Medication Practices and Its Associated Factors among Undergraduates of a Private University in Nigeria. Journal of Environmental and Public Health. 2018; 3: 1-7.
67. Afolabi A. Factors influencing the pattern of self-medication in an adult Nigerian population. Annals of African Medicine. 2008; 7 (3): 120–127.
68. Klemenc-Ketis Z, Hladnik Z, Kersnik J. Selfmedication among healthcare and non-healthcare students at university of Ljubljana, Slovenia. Medical Principles and Practice. 2010; 19 (5): 395–401.
69. Calabresi P. Cupini L. M. Medication-overuse headache: similarities with drug addiction," Trends in Pharmacological Sciences. 2005; 26 (2): 62–68.

70. Mohammadi N, Dehghani M, Emad S, Dehghani Z, Abedi S, et al. Prevalence of Self-Medication with Analgesics Among People Referring to Outpatient Dental Clinics in an Iranian Population, Int J High Risk Behav Addict. 2019; 8 (3): e89423.
71. Mittal P, Chan OY, Kanneppady SK, Verma RK, Hasan SS. Association between beliefs about medicines and self-medication with analgesics among patients with dental pain. PLOS ONE; 2018 13(8): e0201776.
72. da Silva Dal Pizzol T, Turmina Fontanella A, Cardoso Ferreira MB, Dâmaso Bertoldi A, Boff Borges R, Serrate Mengue S. Analgesic use among the Brazilian population: Results from the National Survey on Access, Use and Promotion of Rational Use of Medicines (PNAUM). PLoS ONE; 2020: 15(2): e0229039.
73. Torp S, Riise T, Moen BE. Work-related musculoskeletal symptoms among car mechanics: a descriptive study. Occup Med (Lond). 1996; 46(6): 407-413.
74. Al-Otaibi ST. Prevention of occupational Back Pain. J Family Community Med. 2015;22(2):73–77. doi:10.4103/2230-8229.155370
75. Vassilaki M, Hurwitz EL. Insights in public health: perspectives on pain in the low back and neck: global burden, epidemiology, and management. Hawaii J Med Public Health. 2014 Apr; 73(4):122-6.
76. Abdu-Aguye SN, Shehu A, Ahmad UI. Management of musculoskeletal pain in retail drug outlets within a Nigerian community: a descriptive study. Pharm Pract (Granada). 2017; 15(1):873. doi:10.18549/ PharmPract.2017.01.873.
77. Elbur AI, Saad S. Knowledge and attitudes on paracetamol and non-steroidal anti-inflammatory drugs: electronic survey in Taif Kingdom Saudi Arabia. J Sci Res Pharm, 2018; 7(9):109-113.
78. Kochhar A, Gupta T. Pattern of Self Prescribed Analgesic Use in a Rural Area of Delhi: Exploring the Potential Role of Internet. J Clin Diagn Res. 2017;11(7): UC04–UC07. doi:10.7860/JCDR/2017/27685.10179.
79. Fehintola FA, Ganiyu AA. Prescriptions involving analgesic drugs at a secondary health facility in Ibadan, Nigeria. Ann Ib Postgrad Med. 2008; 6(2):34-8.
80. Azodo CC, Umoh AO. Analgesics prescription in Nigerian dental healthcare services. Niger J Basic Clin Sci. 2013;10 (2): 86-90

81. Awofisayo OS, Awofisayo OA, Iferi II, Akpan OE. The pattern of sale and use of non-steroidal anti-inflammatory drugs in rural and urban centres in Nigeria. Trop J Pharm Res. 2008;7(3):1013–1018.
82. Okpalugo JI, Inyang US, Ibrahim K, Ukwe CV, Aguwa NC. Misuse of some OTC analgesics in Abuja, Nigeria. Int J Nat Appl Sci. 2010; 6(1):125–130.
83. Derry CJ, Derry S, Moore RA Caffeine as an analgesic adjuvant for acute pain in adults. Cochrane Database Syst Rev. 2014 Dec 11; (12):CD009281.
84. Ong CK, Seymour RA, Lirk P, Merry AF. Combining paracetamol (acetaminophen) with non-steroidal anti-inflammatory drugs: a qualitative systematic review of analgesic efficacy for acute postoperative pain. Anesth Analg. 2010 Apr 1; 110(4):1170-9.
85. Molloy P, Chambers R, Cork T. How well are national guidelines relating to the general sales of aspirin and paracetamol, adhered to by retail stores: a mystery shopper study. BMJ Open. 2016 Jan 18; 6(1):e010081.
86. World Health Organization. Tramadol Update Review Report. Geneva, Switzerland: (2014).
87. Villars P, Dodd M, West C, et al. Differences in the prevalence and severity of side effects based on type of analgesic prescription in patients with chronic cancer pain. J Pain Symptom Manage. 2007; 33(1):67–77.
88. Dodd, M., Graham, C. Unintentional overdose of analgesia secondary to acute dental pain. Br Dent J. 2002; 193, 211–212.
89. Preshaw PM, Meechan JG, Dodd MD. Self medication for the control of dental pain: what are our patients taking? Dent Update 1994; 21: 299–304.
90. Widyanto L, McMurran M. The psychometric properties of the internet addiction test.Cyberpsychol Behav. 2004 Aug; 7(4):443-50.
91. Alavi SS, Ferdosi M, Jannatifard F, Eslami M, Alaghemandan H, Setare M. Behavioral Addiction versus Substance Addiction: Correspondence of Psychiatric and Psychological Views. Int J Prev Med. 2012; 3(4):290–294.
92. Widyanto L Laura, Griffiths M. 'Internet Addiction': A Critical Review. Int J Mental Health Addict. 2006; 4:31–51.

APPENDIX I

RESEARCH INSTRUMENT -QUESTIONNAIRE
ON
Assessment of Analgesic Use among Motor Vehicle Mechanics in Egor Local Government Area, Benin City

Dear Respondent,
Thank you for participating in this survey. This questionnaire is aimed at obtaining information on *Assessment of Analgesic Use among Motor Vehicle Mechanics in Egor Local Government Area, Benin City*-A research project to be completed in partial fulfillment of the award of Master of Public Health.

You are expected to indicate your responses by filling in the correct answers or selecting by the most appropriate response. We guarantee you absolute confidentiality regarding information supplied and your co-operation will be highly appreciated.
Thank you
INSTRUCTION: Please indicate your response to each of the questions below by ticking (X)

SECTION A

PERSONAL INFORMATION

Section A) Socio-Demographic Conditions of the Respondents

S/N	Items	Responses
1	Sex	1. Male [ ] 2. Female [ ]
2	Age	_____ Years (as at last birthday)
3	Marital status	1. Single [ ] 2. Married [ ] 3. Separated [ ] 4. Divorced [ ] 5. Widowed [ ]
4	Religion	1. Christianity [ ] 2. Islam [ ] 3. African Traditional religion [ ] 4. No religious affiliation [ ] 5. Others …….
5.	Ethnic group	6. …….
5	Educational level	1. No education 2. Primary Education 3. Secondary Education 4. Vocational or technical Education [ ] 5. University Education [ ] 6. Postgraduate [ ]
6	Years in Service of present vocation (As vehicle Mechanic)	……years

6	Type of mechanic (what do you repair)	……

Section B) Information Regarding Knowledge and Attitude Regarding Analgesic Use

Please select the **BEST** option that describes your answer by ticking X in the appropriate column

KNOWLEDGE

1. What are analgesics?
    a. They are also called pain medicines
    b. They are also called "fever medicines"
    c. They are also called malaria medicines

2. List the analgesics that you know……..
   ……
3. Pain medicines can be used to treat pain. Yes [ ]; No [ ]
4. Some Pain medicines can be used to treat fever .Yes [ ]; No [ ]
5. Some Pain medicines can be used to treat headache? Yes [ ]; No [ ]
6. Pain medicines can be used to treat almost any medical condition Yes [ ]; No [ ]
7. Pain medicines can be used to treat other conditions Yes [ ]; No [ ]

8. You can take pain medicines every day Yes [ ]; No [ ]
9. Pain medicine have a dose Yes [ ]; No [ ]

10. The dose for pain medicines can be obtained from the patent medicine stores or pharmacies Yes [ ]; No [ ]
11. You can get the dose from friends Yes [ ]; No [ ]
12. You can take any dose depending on the amount of pain you are feeling Yes [ ]; No [ ]
13. The dose for pain medicines depends on what the person decides? Yes [ ]; No [ ]
14. Pain medicines can have side effects Yes [ ]; No [ ]
15. Taking medicines for a long time can have side effects Yes [ ]; No [ ]

ATTITUDE

		Agree	Disagree	I do not know
9.	Pain medicines can be used for other purposes e.g. to relax			
10.	Some Pain killers can be used to make you happier when you are			
11.	Pain medicines can give you strength			
12.	Pain medicines can be used to make somebody stronger/boost strength.			
13.	Pain medicines can help you work for longer hours			

14.	It is possible for someone to take overdose of pain medicines.			
15.	Overdose of Pain medicines can cause complications.			
16.	Someone can be dependent or addicted to pain medicines.			

Section C) Information Regarding the types and dosage pattern of self-prescribed analgesics

1. Name/Names of analgesic(s) self-prescribed(Which analgesics or pain medicine have you taken before)? …….
2. Why did you taking it or taking them (Indication for which it was taken) ……
……
3. Self-Prescription/ purchase of analgesics for pain? Yes [ ]; No [ ]
4. Self –Prescription/ purchase of analgesic for fever? Yes [ ]; No [ ]
5. Other reasons for Self –Prescription/ purchase of analgesic……..
6. How do you take it or them (Dose and interval of prescription)…….
……
7. Number of day/months / years on the medication…….
8. Do you take pain medicines regularly Yes [ ]; No [ ]
9. If yes which analgesic (s) do you take regularly? ……
10. How often do you take it? ……..
11. Why did you continue taking it?.....

12. Number of day/months / years on regular pain medication……

13. What is your source of pain medicines? Pharmacy [ ]; Chemist [ ]; Hawkers [ ]; others [ ] Please state…….
14. Do you get any of your pain medicines from secrete sources? Yes [ ]; No [ ]
15. Do you have anybody who supplies you your pain medicines? (brings them to meet you)
16. Yes [ ]; No [ ] Sometimes [ ]
17. Do you have a steady supply of pain medicines? Yes [ ]; No [ ], Sometimes [ ]
18. If yes, which one?.....
19. Do you purchase any pain medicine with a previous prescription Yes [ ]; No [ ]; Sometimes [ ]
20. If yes, which one?.....
21. Do you buy tramadol without a prescription? Yes [ ]; No [ ]

Section d) Information regarding the types and dosage pattern of prescription drugs

1. Name/Names of analgesic(s) prescribed by a doctor…….
2. Indication for which it was prescribed……
3. Dose and interval of prescription……

4. Number of day/months / years on the prescription…….
5. Prescription renewed by doctor? Yes [ ]; No [ ]
6. Purchase of same drug because of similar symptoms at a latter date Yes [ ]; No [ ]
7. Have you given this prescription to someone else? Yes [ ]; No [ ]

Section E) Information regarding the dosage patterns/duration of analgesics

1. How do you know the dose of self-prescribed analgesics? I ask a friend for the dose [ ]; I ask the chemist man/woman for the dose [ ]; I ask my friend or relatives for the dose [ ]; I take it based on what I think is the dose [ ]; Others ways you determine the dose (please specify)…….
2. Regarding the duration :- You take pain killers once a week [ ]; You take pain killers every day [ ]; You take pain killers according to the duration advised by the health personnel (doctor, nurse, chemist, pharmacist) [ ]; I take it for as long as I feel/like [ ]; I take it for as long as I have pain [ ]; I take it for ……number of day (please specify the drug(s) and their duration)..... ……
3. If you take pain medicines regularly, why?.....
4. Have you ever collected any pain medicine from another person e.g. friend or, relative etc. Yes [ ]; No [ ]
5. If yes, which one?.....
6. Have you ever given the pain medicines you were given in a hospital to another person Yes [ ]; No [ ]
7. If yes , which one? .....
8. Have you ever give the pain medicines you bought from a pharmacy or chemist were given in a hospital to another person Yes [ ]; No [ ]
9. If yes, which one? .....
10. Have you used another person's prescription to buy medicines? Yes [ ]; No [ ]
11. If yes, which one? .....

Section F) Information Regarding the misuse of analgesics

1. **How do you take pain medicines?** a) Crushing or grinding [ ]; b) Smoking [ ] c) Emptying the capsules [ ]; d) pouring into soft drinks, malt, juice or minerals [ ]; e) Pouring into beer or alcohol [ ]; f) Wrapping inside Eba or "swallow" [ ]; f) Please state other ways you take the pain medicines apart from swallowing whole…….. ……
2. Do you take pain medicines at the same time with alcohol or beer? Yes [ ]; No [ ]
3. Do you take pain killers with other native preparations? Yes [ ]; No [ ]
4. If yes which?.....
5. Do you take analgesics for other reasons apart from pain, headache or fever?Yes [ ]; No [ ]
6. If yes, what other reason…….
7. Do you take any other medication along with the analgesics Yes [ ]; No [ ]
8. Do you take 2 or more pain medicines at the same time? Yes [ ]; No [ ]
9. If yes, please state the names……..
10. Do you take any other substance along with the analgesics Yes [ ]; No [ ]

11. Do you take any other drugs e.g. “igbo” along with the analgesics Yes [ ]; No [ ]
12. If yes, which substance?.....

Section G) Information Regarding factors affecting improper analgesic use

1. Do you take pain medicines to relieve stress? Yes [ ]; No [ ]
2. Do you take pain medicines because you want to feel happier? Yes [ ]; No [ ]
3. Do you take pain medicines because you are depressed? Yes [ ]; No [ ]
4. Do you have any family history of excessive alcohol consumption? Yes [ ]; No [ ]
5. Does anyone in your family use drugs such as cannabis, cocaine, others? Yes [ ]; No [ ]
6. If Yes, Which?.....
7. Do you have any family history of addition? Yes [ ]; No [ ]
8. If yes, to what? ……
9. Do you have any family history of seizures? Yes [ ]; No [ ]
10. Do you have any family history of mental diseases? Yes [ ]; No [ ]
11. Do you have any family history of any psychiatric illness? Yes [ ]; No [ ]

Section H) Complications from Wrong Use of Analgesics

1. Have you ever developed side effects or unexpected effects from pain medicines? Yes [ ]; No [ ]
2. If yes, name of the pain killer that caused it …….
3. Please state the side effect…….
4. Have you ever developed any of the following after taking pain medicines? Nausea- a feeling to vomit [ ] Vomiting [ ], itching ‘scratching’ [ ] Epigastric pain ‘pain in the upper central part of your abdomen’ [ ]
5. Have you ever accidentally taken an overdose of any pain medicine? Yes [ ]; No [ ]
6. If yes, which medicine ……..
7. Did the overdose result in hospital admission? Yes [ ]; No [ ]
8. Did the overdose result in you staying at home? Yes [ ]; No [ ]
9. If yes, name of the pain killer that caused it……..
10. Please state other consequences of the overdose e.g. Stomach pain [ ]; Unconsciousness [ ]; Vomiting [ ]; Itching [ ]; Others please Specify……
11. Do you feel unwell any time you stop taking pain medicines after taking it for a long time? Yes [ ]; No [ ]
12. Do you feel depressed any time you stop taking pain medicines after taking it for a long time?
    Yes [ ]; No [ ]
13. Do you feel you must take pain killer in spite of any negative effects on you? Yes [ ]; No [ ]
14. Do you need to keep increasing the dose of pain killers in order to relieve pain
    Yes [ ]; No [ ]
15. Do you need to increase the dose for any other reason? Yes [ ]; No [ ]
16. If yes, please state the reason…….
17. Has the use of any pain killer cause disagreements in your home? Yes [ ]; No [ ]
18. If yes, name of the pain killer that caused it …….

19. Is there any pain medicine you feel you must take every day or every week or regularly in order to do your work well? Yes [ ]; No [ ]
20. If yes, which one? ……
21. Do you sometimes feel you are addicted to any pain killers? Yes [ ]; No [ ]
22. If yes, which? ……..
23. Has anyone complained you are addicted to a pain killer? Yes [ ]; No [ ]
24. Do you have any problems when you discontinue the analgesics? Yes [ ]; No [ ]
25. Do you have an unexplained desire or need to take analgesics? Yes [ ]; No [ ]
26. Do you feel you will be ill if you discontinue these medications? Yes [ ]; No [ ]
27. Do you observe any abnormal symptoms when you atop certain pain killers? Yes [ ]; No [ ]
28. If yes to above please state the name or names of the medicine…… ……..
29. Do you develop any medical problem after taking the analgesics? Yes [ ]; No [ ]
30. Do you have kidney disease [ ]; peptic ulcer [ ]; allergies [ ]; None [ ]

APPENDIX II

RESPONDENTS INFORMED CONSENT

Dear Respondent,
You are being asked to participate in a research study. In order to decide whether or not you should agree to be part of the research study, you should understand enough about the research to make an informed judgment. This consent form gives detailed information about the study which the investigator will discuss with you. Once you understand the study, you will be asked to sign this form if you wish to participate. The research study being proposed to you is an Assessment of Analgesic Use among Motor Vehicle Mechanics in Egor Local Government Area, Benin City

Purpose of the Study: The purpose of the study is to assess the pattern of analgesic use (pain medicines) among motor vehicle mechanics in Egor Local Government Area, Benin City, Edo State

Statement of Confidentiality: The information provided in this study shall be treated with utmost confidentiality. The investigators will be the only persons to have access to the questionnaire and data to be collected in a safe and protected place.

What will be done in order for you to participate in this study? You will be given a questionnaire with some questions written on it and you will be asked to fill in the answers. Questions that will be asked will be those related to the pain killers (medications for pain also known as analgesics) that you normally take by any method including swallowing, taking injections in your vein or muscle , smoking, inhaling or any other method of administration. Questions about your general health will also be asked.

Compensation: There will be no financial compensation for participating in this study and it shall be solely voluntary.

Benefits: The findings from this research shall be beneficial. It will help researcher to know if there are any issues that need to be addressed regarding the use of pain killers among people in your profession and those in similar or other professions. In addition following collection of data, participants will be taught about various analgesics, what they are used for (the indications), how to avoid taking them wrongly (misuse and abuse) and dangers (risks) associated with misuse and abuse of these medications.

Risk: There will be no attendant risks to the participants expected during participation in this study.
Refusal/ Withdrawal from the Study: In order to decide whether or not you should agree to be part of the research study, you should understand enough about the research to make an informed judgment and you are free not to participate in the study if you so desire. Your refusal or withdrawal from the study will not in any way affect your participation in the health education interaction(regarding safety and correct use of pain medicines) that will be given to mechanics at your workshop at the end of the study.

Concerns: Any serious concerns related to the study should be reported to the Ethics and Research Committee of the University of Benin Teaching Hospital.

I have read the above statement and was able to ask questions and express concerns which have been satisfactorily responded to by the investigator. The purpose of the study as well as the benefit and the possibility of concerns have been adequately explained to me and I have voluntarily accepted to participate. I hereby give my informed consent to participate in this study.

Name and signature / Thumb print of subject ……. Date……

Name and signature of
investigator…….……Date……

Name and signature of
witness…….Date……

Contact Information

Ekwere, Ifeoma Toyin
Department of Community Medicine,
University of Benin, Benin City.
Phone number 07030867523

Ethics committee:

The Chairman,
Ethics committee
University of Benin Teaching Hospital,
Benin City. Edo state.

APPENDIX III

ETHICAL APPROVAL

UNIVERSITY OF BENIN TEACHING HOSPITAL
P.M.B. 1111 BENIN CITY NIGERIA

Telephone: 052-600418
Telex: 41120 NG
Website: ubth.org

CHAIRMAN, BOARD OF MANAGEMENT: **CHIEF ADEDOJA ADEWOLU, MFR**

CHIEF MEDICAL DIRECTOR: **PROF. DARLINGTON E. OBASEKI**
MBBS (Benin), FMCPath
E-mail: darlobaseki@gmail.com

DIRECTOR OF ADMINISTRATION: **M.O. JIMOH-KADIR**
B. Sc, (Hons)FJPMD, Dip. Theo. AHAN

ETHICS AND RESEARCH COMMITTEE APPROVAL

PROTOCOL NUMBER: ADM/E 22/A/VOL. VII/14732

PROPOSAL TITLE: **"ASSESSMENT OF ANALGESIC USE AMONG MOTOR VEHICLE MECHANICS IN EGOR LOCAL GOVERNMENT AREA, BENIN CITY"**

PRINCIPLE INVESTIGATOR(S): **EKWERE IFEOMA TOYIN**

DEPARTMENT/INSTITUTION: **DEPARTMENT OF HEALTH, COLLEGE OF MEDICAL SCIENCES, SHOOL OF MEDICINE, UNIVERSITY OF BENIN, BENIN CITY, NIGERIA**

DATE CONSIDERED MARCH 25TH, 2019

DECISION OF THE COMMITTEE: APPROVED

THIS APPROVAL DATES 25/3/2019 TO 25/3/2020. IF THERE IS DELAY IN STARTING THE RESEARCH, PLEASE INFORM THE E&RC SO THAT THE DATES OF APPROVAL CAN BE ADJUSTED ACCORDINGLY

REMARK:

CHAIRMAN: PROF. (MRS) A.N. OFILI **SIGNATURE & DATE** Sign..... Date 25/3/19

UNIVERSITY OF BENIN TEACHING HOSPITAL ETHICS & RESEARCH COMMITTEE BENIN CITY P.M.B. 1111

SUPERVISOR(S): PROF. (MRS) A.N. OFILI

DECLARATION BY INVESTIGATOR(S):
PROTOCOL NUMBER (please quote in all enquiries)
Note that no participant accrual or activity related to this research may be conducted outside of these dates. All informed consent forms used in this study must carry the E&RC assigned number and duration of E&RC approval of the study. In multiyear research, endeavor to submit your annual report to the E&RC early in order to obtain renewal of your approval and avoid disruption of your research. No changes are permitted in the research without prior approval by the E&RC except in circumstances outlined in the Code. The E&RC reserves the right to conduct compliance visit your research site without previous notification.

Signature & Date 14/4/19

APPENDIX IV

FOCUSED GROUP DISCUSSION QUESTIONS

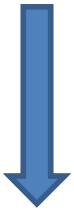
RESEARCH INSTRUMENT
ON
Assessment of Analgesic Use among Motor Vehicle Mechanics in Egor Local Government Area, Benin City

1. What do you know about Analgesics or pain medicines?
2. Can mechanics work without pain medicines?
3. Do you think mechanic take pain medicines in a wrong or right way?
4. What is your opinion regarding regular intake of pain medicines among mechanic?
5. What is your opinion regarding wrong use of pain medicines among mechanic?
6. Is it wrong to take pain medicines for a long time?
7. Why do you think mechanic take pain medicines wrongly?
8. Why do you think mechanic take pain medicines regularly?
9. Do you think people take the correct dose of pain medicine is?
10. Why do you think mechanic take the wrong dose of pain medicines?
11. Do you think taking pain medicines wrongly have side effects or adverse effects?
12. Do you think people can have complications from wrong use of pain medicines?
13. In your opinion can a mechanic be addicted to pain medicines?
14. How will you know that someone is addicted to a pain medicine?
15. Do you know that people can be addicted to Tramadol?
16. What is your opinion concerning the wrong use of Tramadol?

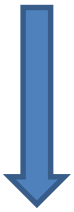
APPENDIX V

GNATZ CHART

5 MONTHS



3 MONTHS



4 MONTHS