



## **A Cross Sectional Study of Newly Qualified Doctors' Knowledge on Pain Management in South Western Nigeria**

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### **Authors' contributions**

*This work was carried out in collaboration between all authors. Author OAO designed the study, performed the statistical analysis, data interpretations and wrote the first draft. Author OOA designed the study, performed the statistical analysis, data interpretations, wrote the final draft and typed the manuscript. Author MLA designed the study, coordinate and managed the analysis of the study. Author DAO managed the literature search and analysis of the study, data interpretations and wrote the protocol. Authors TAA and OOO coordinate data collection and managed the analysis of the study. All the authors read and approved the final manuscript.*

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### **ABSTRACT**

**Background:** Pain is the leading cause of disability. Several studies have implicated lack of adequate knowledge of health care professionals on pain management as a major factor to poor pain control.

**Aim:** This study investigated the knowledge of newly qualified doctors on pain management.

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**Place and Duration of Study:** The study was carried out in Ladoke Akintola University of Technology Teaching Hospital Ogbomoso and Bowen University Teaching Hospital Ogbomoso between April 2015 and October 2016.

**Methodology:** The study enrolled newly qualified doctors who were appointed for the post of internship training. Relevant data were obtained through questionnaires from the participants within two weeks of resumption.

**Results:** A total of 129 respondents were enrolled. The mean age of the respondent was 26.9 ( $\pm$  3.8) years. Majority 106 (82.2%) of the respondents believed that analgesia should be avoided in neonate. One hundred and twenty six (97.7%) of the respondents believed that analgesia should be withheld in acute abdomen until definitive diagnosis is made. One hundred and seventeen (90.7%) respondents believed that opioid analgesia are better avoided in patients with chronic pain such as cancer pain, so as to avoid risk of addiction. However, only seven (5.4%) respondents claimed to have seen cases of opioid addiction. One hundred and twenty one (93.8%) of the respondents were unable to differentiate between tolerance and physical dependence from psychological and behavioural dependence, The entire respondents would deny or withdraw opioid analgesia in patients with hypothetical clinical scenario of physical dependency. Seventy-two (55.8%) of the respondents would combine narcotics with narcotics antagonist. Only nineteen (14.7%) of the respondents had previous lecture on pain management.

**Conclusion:** Our study revealed deficit of knowledge of newly qualified doctors on pain management. We thus recommend that the stakeholders that are involved in medical students training and postgraduate residency training should take into cognisance this aspect of patients' care.

*Keywords: Knowledge; newly qualified doctors; pain management; medical education.*

## 1. INTRODUCTION

Pain is the most common complaint of patients visiting hospitals and leading cause of disability [1]. Several studies have implicated lack of adequate knowledge on pain management coupled with poor attitude of the health care professionals as major contributory factors to poor pain control in the hospitals [2,3,4]. This frequently results from inadequate teaching of pain and pain management in the medical schools. Lack of dedicated education on pain, resulting in poor knowledge of medical students, doctors, nurses and other health care professionals had been identified as contributory factor to unsatisfactory relief of cancer pain [5]. Recognition of this problem led the World Health Organization (WHO), government agencies and many other health regulatory bodies to come out with various guidelines/protocols for pain management [6,7,8,9]. The hierarchical order of reviewing patients in hospitals especially in tertiary health care centres where the most junior doctors who sometimes are the newly qualified doctors (house officers) to be the patients' first point of contact. In order for patients' pain to be adequately and properly managed this group of doctors that constitutes the first point of contact need to be well knowledgeable about the complex nature of pain and pain management. Understanding the various theories surrounding pain and complexities of pain, as well as

comprehensive knowledge of fundamental pharmacological and clinical principles guiding selection and choice of medications for management of pain, will assist clinicians in appropriate and careful selection of drugs from various alternatives in management of pain. Previous studies have shown inadequate knowledge of health care professionals on pain management [10] a finding comparable to Weinstein and co-workers report in a study on medical students' knowledge on pain management which found out a gross and alarming deficiency in their knowledge on pain management [11]. For more than a decade, American Pain Society (APS) has laid emphasis on pain and pain related education as their main agenda in realisation of deficit of knowledge among clinicians on pain management. This study investigates depth of knowledge of newly qualified doctors on pain management.

## 2. METHODS

This prospective study was carried out at Ladoke Akintola University of Technology Teaching Hospital Ogbomoso and Bowen University Teaching Hospital Ogbomoso. The study enrolled newly qualified doctors who were appointed for the post of internship training. A paper based questionnaire was designed by the authors to assess certain specific area on pain and pain management. The questionnaires were

then pre-tested as a pilot study on some newly qualified doctors who satisfied our inclusion criteria but were excluded from the study. This initial pilot study was to ensure uniformities in interpretations of the questions by the intending respondents for the study. The enrolled doctors were asked to fill a pre-tested paper based proforma questionnaires within two weeks of resumption into their respective units. The questionnaires were administered by designated doctors. The enrolled newly qualified doctors herein further referred to as the respondents completed the questionnaires unmonitored. The data collected included socio demographic data, months/year(s) post qualification, date of filling the form, date of resumption to their respective units, university/medical school attended, any previous organised formal teaching/lecture on pain and pain management, where if yes, previous assessment on pain and any previous practice as a qualified doctor since post qualification. Other data collected included: data to access the depth of their knowledge about analgesia, analgesia prescription, and were also asked how they will respond to hypothetical clinical scenario of a patient with chronic back pain who developed tolerance and physical dependence to opiod analgesia. The respondents were giving the following clinical scenarios to prescribe their analgesia of choice for a 52 kg man for the first 24 hours to include dosage, route of administration and frequency: post appendectomy, post repair of inguinal hernia, following below knee amputation, following partial gastrectomy, caesarean section and in patient with closed femoral fracture. Our exclusion criteria are incompletely filled questionnaires and questionnaires from respondents with previous practice of medicine prior to employment in our centre and total post qualification practice duration greater than two weeks at the time of filling the questionnaires. The data collected were analysed using SPSS version 17 and the results were expressed in the form of percentages, and charts.

### 3. RESULTS

A total of 160 newly appointed house officers were enrolled into the study over a 4 year period. Thirty one questionnaires were not analysed after editing for completeness and disqualification of some questionnaires for various reasons as depicted in our exclusion criteria. Seventy four and forty seven respondents graduated from state and federal university medical schools in Nigeria respectively; two and five respondents graduated

from foreign medical schools in South American and Asia respectively. The mean age of the respondent was 26.9 ( $\pm$  3.9) years.

One hundred and twenty four (96.1%) of the respondents agreed that pain is the most common reason why patients visit hospitals while five respondents disagreed.

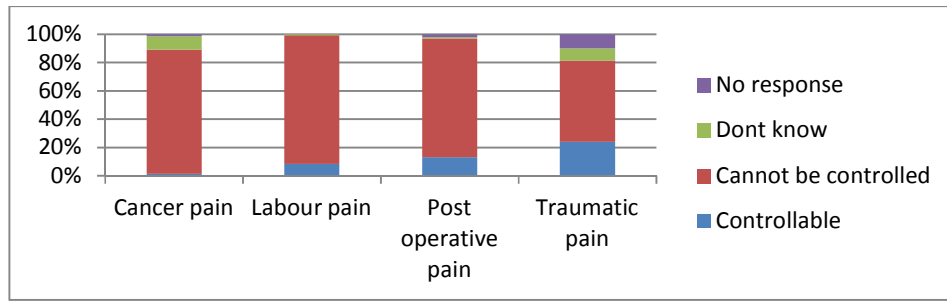
Eighty seven (64.4%) of the respondents agreed that neonates' sensation and experience of pain is lower compared to older children and adults and rarely requires analgesia as compared to adults. Concerning the use of analgesic in neonate, majority 106 (82.2%) of the respondents believed that analgesia should be avoided in neonate, eight (6.2%) were in support of the use of analgesia whereas 13 (10.1%) respondents were not sure and no response in four (3.1%) of the respondents.

When respondents were asked about the role of analgesia in management of acute abdomen 126 (97.7%) respondents believed that analgesia should be withheld in patients with acute abdomen until definitive clinical diagnosis is made, as not to mask the clinical sign and symptoms, whereas two (1.6%) respondents were of the opinion that analgesia need not be withheld and one (0.8%) respondent did not answer the question.

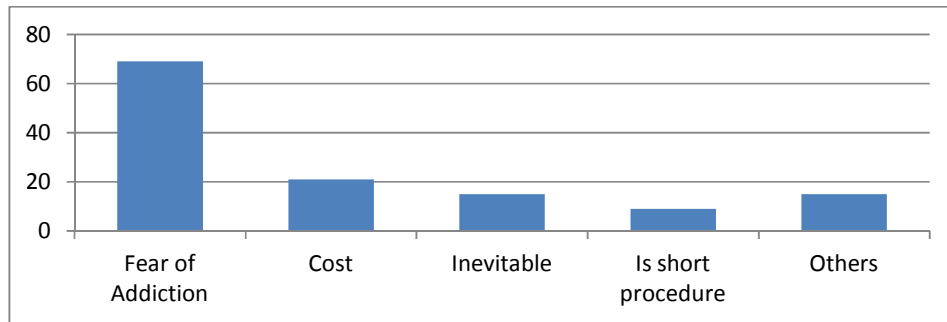
Assessment of respondents on pain control in certain clinical conditions revealed that most of the respondents are of the opinion that pain cannot be controlled in certain clinical conditions as is inevitable in such situation (Fig. 1).

Assessment of the knowledge of the role of analgesia prior to dressing of extensive burn injury in patients with burn revealed that 93 (72.1%) respondents disagreed with the use of analgesic for various reasons (Fig. 2). Twenty-three (17.8%) respondents support the use of pre procedural analgesic with no response in 11 (8.5%) and two (1.6%) respondents did not know.

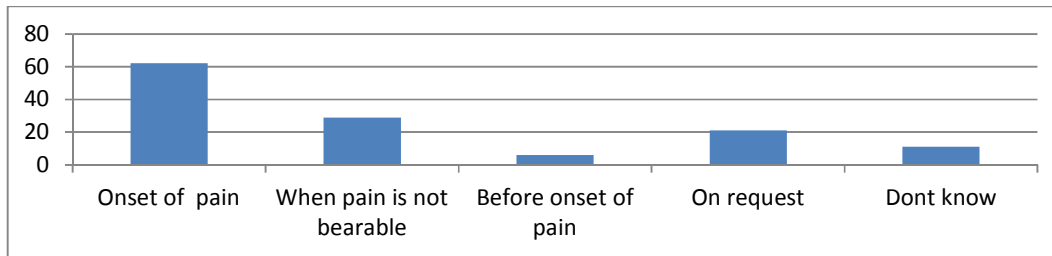
Assessment of respondents' knowledge on the use of opiod analgesia in patients with chronic pain from metastatic cancer showed that 117 (90.7%) respondents believed that opiod analgesia are better avoided in such patients to avoid risk of addiction. However, only seven (5.4%) of the respondents have seen cases of opiod addiction in sickle cell patients addicted to pentazocine. One hundred and twenty one (93.8%) of the respondents were unable to



**Fig. 1. Views of the respondents about pain control in certain clinical conditions**



**Fig. 2. Showing various reasons for not supporting use of pre procedural analgesia for burn dressing**



**Fig. 3. Showing the respondents responses to appropriate time to commence post operative analgesia in patients that underwent operative procedures**

differentiate between tolerance and physical dependence from psychological and behavioural dependence and eight (6.2%) respondents didn't respond. The entire respondent would deny or withdraw opioid analgesia from patients with hypothetical clinical scenario of physical dependency following tolerance to opioid analgesia.

None of the respondents had heard about the concept of narcotics equivalence index and narcotic conversion normogram.

Fig. 3 above shows respondents' responses to appropriate time to commence post operative

analgesia in patients that underwent operative procedures.

Further assessment of patient's knowledge about the use of analgesic in certain clinical diagnoses revealed that most of the respondents will not prescribed analgesic in the management of pneumonia, acute abdomen prior to diagnosis, urinary tract infection and viral hepatitis (Fig. 4).

Most respondents lack understanding of the principle behind analgesic combinations as a very high percentage 72 (55.8%) of the respondents wrongly combines narcotics with narcotics antagonist/ partial antagonist (Table 1).

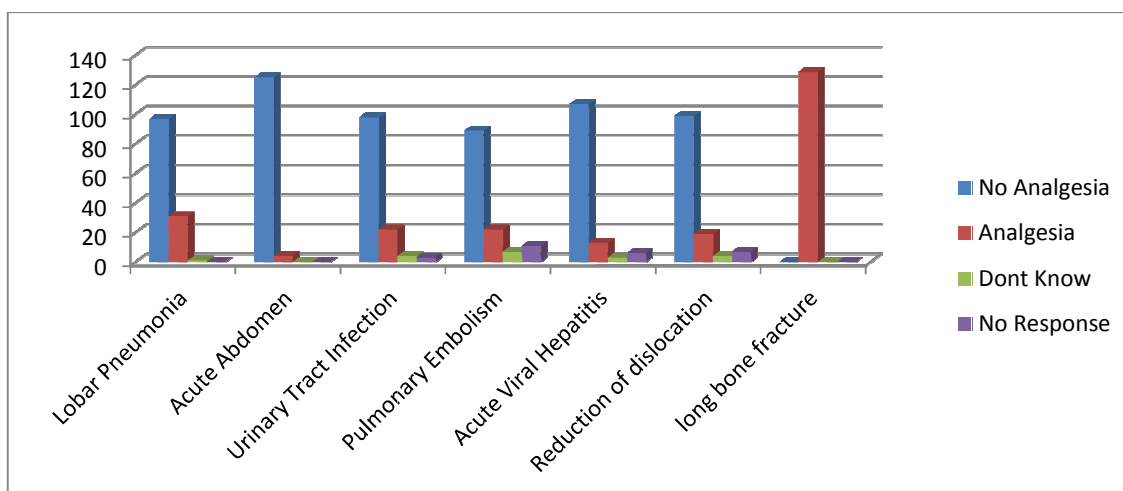


Fig. 4. Showing respondent view about role of analgesic in various clinical conditions

Table 1. Showing respondents pattern of analgesic combinations

Analgesic combinations	Frequency of occurrence (n=129)	Percentage
Morphine and Naloxone	13	10.1
Morphine and Pentazocine	59	45.7
Diclofenac and Aspirin	37	28.7
Morphine and Diclofenac	20	15.5

When the respondents were asked to prescribe analgesia of their choice for the following painful clinical state : post appendectomy, partial gastrectomy, post inguinal hernia repair, following below knee amputation, post caesarean section and following femoral fracture, none of the respondents was able to prescribe correctly, taking route, dosage and efficacy of the prescription into consideration. Seventy-nine (61.2%) of the respondent prescribed oral agents for patients who had partial gastrectomy within 24 hours following procedure. Forty six (35.7%) of the respondents do not varied their prescriptions for different clinical scenarios whereas 24 (18.6%) of the respondents varied their prescriptions, 27 (20.93%) of the respondents did not know what to prescribe and 21(16.3%) of the respondents didn't respond.

Assessment on NSAID analgesia prescription revealed that 91(70.5%) the respondents will prescribe NSAID to patients with renal

impairment; seventy-six (58.9%) respondents will support the use of NSAID in lactating mother with lactational mastitis who is breast feeding a neonate with jaundice, however most 128 (99.2%) of the respondents will avoid NSAID in patients with platelet dysfunction.

When respondents were asked about adjuvant agents used in pain management only 11 (8.5%) of the respondents had heard about such agents, however only 2(18.2%) out of the eleven respondents who had heard about adjuvant agents were able to list at least one example of such agents. Ninety-five (73.6%) of the respondents were not aware of such agents and no response in 29 (22.5%) of the respondents. Twenty-three (17.8%) of the respondents know about pain rating but none of the respondents have ever rated pain in the course of their interaction with patients while in medical schools.

Nineteen (14.7%) of the respondents claimed to have previous formal organised and dedicated lecture on pain management while in anaesthesia posting throughout the course of their training in medical schools. However none of them has ever been assessed on pain management to test their adequacy of knowledge while in school in any form.

#### 4. DISCUSSION

Our study revealed poor knowledge of newly qualified doctors on pain management a comparable finding to a previous study which showed that health care professionals lack adequate on pain management [5]. The effects of

poor knowledge on pain management in our newly qualified doctors were revealed in their beliefs and intending practices on analgesia prescription when compared to current practices on the use of analgesic in pain management.

Most of the respondents agreed that pain is the most common reason patients visit hospital, however control of pain seems not to be a priority among the respondents a reflection from their poor knowledge and understanding of principle and practice of pain management.

Majority of the respondents believed that sensation of pain is lower in neonate a reflection of their intending practice as about 82% of the respondents believed that neonates rarely require analgesia even for supposedly painful procedures. This erroneous belief of withholding analgesic in neonate have been reported from other studies [12,13]. A similar review of paediatric orthopaedic injury revealed that little attention is paid to pain management in paediatrics age groups [13].

The old time honoured practice of withholding analgesic in patients with acute abdomen as depicted in the first edition of Cope's Early Diagnosis of the Abdomen [14,15] was observed in intended practice of analgesia prescription in acute abdomen among the respondents in accordance with previous reports [16,17,18] as majority (98%) of the respondents still in support of such practice. This practice can no longer withstand current evidenced based practice of use of analgesic in patients with acute abdomen as the benefit of use of analgesia in acute abdomen has been shown to outweigh the risk in several studies [19,20,21]. Cope's old time honoured principle has even been shifted in the 20<sup>th</sup> edition towards administration of analgesic in patient with painful abdominal conditions [22]. A similar study on clinical diagnosis following administration of analgesic to children has shown that relieving abdominal pain did not influence the clinicians' recognition of children with surgical abdomen [23].

More than half of the respondents believe that pain cannot be controlled in some clinical conditions such as cancer, labour, post operative setting and in traumatic patients. This will in no doubt affect the respondents' practice of analgesia and disposition to the concept of zero tolerance to pain in such groups of patients as the fundamental belief of most of the

respondents is that pain is inevitable in those clinical states.

A high percentage (72.1%) of the respondents were not in support the of use of analgesic prior to painful procedure exemplified by dressing of burn injury, as dressing is naturally considered by respondents to be an inevitable painful procedure.

One hundred and six of the respondents were in support of opiod withdrawal from patients with chronic pain as to avoid risk of opiod addiction and dependency. This phenomenon of opiphobia has been a well documented reason for withdrawing opiod analgesia from patients from several studies [24,25]. The fear of addiction from the use of opiod analgesic has also been reported in the management of post operative pain among patients, nurses and doctors, [26,27] despite the available evidence in support of use of opiod analgesia with minimal risk of addiction in post operative setting. A similar retrospective review of incidence of addiction in patients on narcotics by Porter and Jick showed that addiction behaviour is rare in medical patients with no previous history of addiction [28]. All the respondents were unable to differentiate between physical dependency resulting from tolerance (a natural occurrence in patients on opiod for chronic pain) from psychological dependency that actually results into psychological addiction. This lack of distinction was reflected in their intending prescription practices as all the respondents would not agree to increase the opiod dose in patients with clinical scenario of physical dependency and other patients with chronic pain to avoid addiction.

The concept of narcotics equivalence index and narcotic conversion normogram are completely alien to all the respondents, a deficit of knowledge that will cause confusion in converting or changing from one opiod analgesic to another.

Only about 5% of the respondents got right the appropriate time to commence postoperative analgesia.

The use of analgesic was not recognised by all the respondents in the management of pneumonia, acute abdomen prior to diagnosis, urinary tract infection and viral hepatitis. However all the respondent agreed with the use of analgesic in patients with long bone fractures.

Further analysis on prescription revealed that about 16% of the respondents wrongly combined NSAID and NSAID, a finding consistent with previous report [29]. This NSAID-NSAID combination is not advisable. However, if such an occasion for combination of analgesic should arise due to severity of the pain the rational alternative is NSAID in combination with other class of analgesia such as opiod or paracetamol which has minimal adverse effect on gastrointestinal mucosa [30,31]. Further assessment on analgesic combination revealed that 22% and 35% of the respondents would combined opiod/opiod antagonist and opiod / opiod partial antagonist respectively.

Our study revealed that most 110 (85.3%) of the respondent have no previous dedicated education in form of lectures or any organised teaching on pain management. A similar findings was reported in a study on management of cancer pain where acetaminophen and meperidine constituted about 85% of analgesic prescribed by health care providers in a community hospital affiliated to a university [32]. The importance of education of health care providers on pain management had previously been emphasised, as this important aspect of patients' care often become responsibility of interested individual health professional to equip him or herself about pain management knowledge or unconsciously following the pattern of analgesic prescription of the senior doctors by default. This method of passive knowledge acquisition by the junior doctors from senior doctors who probably themselves were not equipped with current knowledge on pain management will be grossly inadequate or even be more confusing for the junior doctors. This method of knowledge transfer seems to be the major means of knowledge acquisition by the newly qualified doctors in our setting while in medical schools and in training as house officers as most of the responses from these junior doctors were similar to the responses gotten from the registrars on pain management in our previous study [33,34].

About 82% of the respondents were not aware of methods of rating pain and none of the respondents have ever rated pain before, this lack of knowledge on pain assessment and pain rating has previously been associated with factors implicated in failure of adequate pain control [35,36,37]. Assessing and rating patients' pain will in no doubt assist us not only in choice

of analgesia in relation to patients' pain severity but also in subsequent assessment of improvement of patients' pain severity and need for further interventions.

Lack of dedicated formal education on pain management was reported in a previous survey of medical students by Weinstein et al. [11] a finding supported by our study. The few who had previous lecture were never tested to even assess their knowledge. All the respondents agreed to poor knowledge as regards to pain management a similar finding to survey of physicians who implicated poor training and continue medical education as one of the responsible factor [38]. For this deficit of knowledge on pain management to be bridged with current practices and concepts on pain management there is a need for inclusion of pain and pain management in lecture schedule and curriculum of our undergraduate and postgraduate medical education in our medical schools and postgraduate training. Previous prospective studies had shown the positive effect of education of health care workers in improving their analgesic practice and patients satisfaction [39,40]. Changing the style and pattern of practice of older doctors are difficult as a previous study on the effect of newly formulated guidelines on management of chest and back pain showed little or insignificant change in pattern of practice/behaviour of already practicing physicians [41,42]. We also advocate need for the examination bodies and other certification bodies for doctors and all other health care professionals to emphasise the aspect of pain management. A similar approach has been suggested by Pilowsky [43]. We also suggest need for setting up of an acute pain team in our hospitals and make it a compulsory unit for the house officers to rotate through in the course of their training to consolidate the knowledge gained from medical school, this will further serve to strengthen the knowledge on pain management as direct practical instruction on the ward are more likely to be successful [44]. The importance and advantages of acute pain team and education of health care workers has previously been noted [45,46]. We also advocate a flexible hospital based protocol and policy on management of pain especially acute pain management in form of easily accessible concise guidelines which is more likely to improve compliance to its use [47]. Introduction of acute pain team and pain clinics in hospitals will also help to bridge some of these deficits. And house officers should be mandated to rotate through

this unit apart from the four core clinical specialities (Surgery, Internal Medicine, paediatrics and obstetrics and gynaecology) house officer generally rotating through presently in our hospitals.

## 5. STUDY LIMITATIONS

The major limitation of our study is the relatively small sample size, but we believed this study has objectively shown deficit of knowledge among newly qualified doctors and it may serve as eye opener for larger nationwide studies and if confirmed, in a larger size studies need to take into cognizance this aspect of medication education at every available opportunities.

## 6. CONCLUSION

Our study showed paucity of knowledge of our newly qualified doctors on pain and pain management and we suggest that, for a positive change towards better management of pain we should focus on medical students and our post graduate programmes. It is important to take into cognizance this aspect of patients care in our medical school curriculum, postgraduate residency training and during our routine clinical rounds and teaching, as this group of doctors are often the first line of contact.

## CONSENT

Informed consents were obtained from the respondents.

## ETHICAL APPROVAL

All the authors further confirmed that this study is not against the public interest, or that the release of information is allowed by legislation and has been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki.

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## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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