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## ORIGINAL ARTICLE

## A survey of emergency medicine and orthopaedic physicians' knowledge, attitude, and practice towards the use of peripheral nerve blocks



### *Etude des connaissances, attitudes et pratiques des médecins urgentistes et orthopédistes en matière d'utilisation des blocs nerveux périphériques*

Ayalew Zewdie<sup>a,\*</sup>, Finot Debebe<sup>a</sup>, Aklilu Azazh<sup>a</sup>, Margaret Salmon<sup>b</sup>, Christian Salmon<sup>c</sup><sup>a</sup> Department of Emergency Medicine, Black Lion Tertiary Hospital, Addis Ababa, Ethiopia<sup>b</sup> University Health Network, Global Health Emergency Medicine, Toronto, Canada<sup>c</sup> Industrial Engineering and Engineering Management, Western New England University, United Kingdom

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## ABSTRACT

**Introduction:** Peripheral nerve blocks (also known as regional anaesthesia) are currently used by many anaesthesiologists and emergency physicians for perioperative and procedural pain management.

**Methods:** This is a cross sectional descriptive study conducted to evaluate knowledge, attitudes, and current practice towards use of peripheral nerve blocks for lower extremity injuries at Black Lion Hospital, a tertiary trauma centre in Addis Ababa.

**Results:** A standardised survey was conducted with 64 participants working in emergency medicine [30/64 (46.9%)] and orthopaedics [34/64 (53.1%)]. Twenty-three of 64 (35.9%) respondents had received formal training. Knowledge was acquired from didactic/workshop format for 15/23 (65.2%), followed by peer training 6/23 (39.1%). The majority, 62/64 (96.9%), believed that knowledge of general anatomy and nerve blocks are very important. Thirty-one of 64 (48%) of the respondents did not routinely perform peripheral nerve blocks. A majority, 27/31 (87.1%) stated they lacked the required skills. Ultrasound guidance of the femoral nerve 16/33 (48.5%) was the most commonly performed peripheral nerve block, followed by ankle block using anatomic landmarks 15/33 (45.5%). Almost all (15/16) ultrasound-guided nerve blocks were done by emergency medicine providers, while all anatomic landmark guided blocks were done by orthopaedic teams. A majority of the respondents (93.8%) (n = 60) were optimistic that their practice on peripheral nerve blocks would increase in future. A highly significant association was found between previous training on peripheral nerve blocks and the number of peripheral nerve blocks performed in a month; p value = 0.006.

**Discussion:** This study indicates peripheral nerve blocks are likely underutilised due to lack of training. There was a positive attitude towards peripheral nerve blocks but gaps on knowledge and practice.

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## ABSTRACT

**Introduction:** Les blocs nerveux périphériques (également connus sous le nom d'anesthésies locorégionales) sont actuellement utilisées par de nombreux anesthésistes et urgentistes à des fins de gestion de la douleur.

**Méthodes:** Cette étude est une étude descriptive cross sectional menée afin d'évaluer les connaissances, attitudes et pratiques actuelles en matière d'utilisation des blocs nerveux périphériques pour les blessures aux extrémités inférieures au Black Lion Hospital, un centre de traumatologie tertiaire à Addis-Abeba.

**Résultats:** Une étude standardisée a été menée auprès de 64 participants travaillant en médecine d'urgence [30/64 (46,9%)] et en orthopédie [34/64 (53,1%)]. Vingt-trois sur les 64 (35,9%) personnes

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\* Corresponding author.

E-mail address: [ayalew.zewdie@gmail.com](mailto:ayalew.zewdie@gmail.com) (A. Zewdie).<http://dx.doi.org/10.1016/j.afjem.2017.04.003>

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interrogées ont bénéficié d'une formation formelle. Les connaissances ont été acquises sous forme didactique/d'atelier pour 15/23 (65,2%) d'entre eux, suivies d'une formation par les pairs pour 6/23 (39,1%) d'entre eux. La majorité, 62/64 (96,9 %) d'entre eux, considérait que les connaissances en anatomie générale et les blocs nerveux comme très importantes. Trente et un sur 64 (48%) personnes interrogées ne réalisaient pas régulièrement des blocs nerveux périphériques. Une majorité 27/31 (87,1%) de participants a indiqué ne pas disposer des compétences requises. Ultrasound guidance of the femoral nerve 16/33 (48,5%) était le bloc nerveux périphérique réalisé le plus fréquemment, suivi du ankle block using anatomic landmarks 15/33 (45,5%). La quasi-totalité (15/16) des blocs nerveux ultrasound-guided étaient réalisés par des emergency medicine providers, while all anatomic land mark guided blocks étaient réalisés par des équipes d'orthopédistes. Une majorité de personnes interrogées (93,8%) (n = 60) indiquaient être optimistes quant au fait que leur pratique sur les blocs nerveux périphériques augmenterait à l'avenir. Une association hautement significative a été trouvée entre la formation antérieure sur les blocs nerveux périphériques et le nombre de blocs nerveux périphériques réalisés au cours d'un mois; p value = 0,006.

*Discussion:* Cette étude indique que les blocs nerveux périphériques sont probablement sous-utilisés en raison d'un manque de formation. On a pu observer une attitude positive à l'égard des blocs nerveux périphériques, mais des lacunes en matière de connaissances et de pratique.

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## African relevance

- Pain management appears to be neglected in African acute care settings.
- Regional anaesthesia is an easily, accessible pain management option in low-income settings.
- Ultrasound is a helpful aid when performing nerve blocks in resource-limited settings.

## Introduction

Soft tissue injuries, fractures, burns, and wound infections are a leading cause of morbidity and mortality in low-income African countries, yet 80% of injured persons receive inadequate or no pain treatment [1,2]. Failure to treat acute pain can impact disease recovery and increase the risk of developing chronic pain, which is associated with profound physical psychological and social disability. Untreated pain has also financial impact [3,4].

Peripheral nerve blocks (PNBs) (also known as regional anaesthesia, RA), are currently being used by anaesthesiologists and emergency physicians in more northern settings for perioperative and procedural pain management. PNBs are safe procedures that provide site-specific, rapid pain relief and minimise use of opioid analgesics and associated side effects [5–10]. Use of ultrasound to guide PNB (USPNBs) has increased in the past decade and has been shown to increase accuracy and improve safety and success of regional anaesthesia overall [11,12].

USPNBs have been shown to facilitate recovery, decrease intensive care unit (ICU) and hospital length of stays, and reduce the rate, severity, and duration of delirium associated with acute injury and/or opioid use through good pain control, and are also cost effective [13,14,8,9]. Several randomised trials including Barker et al. (2008) reported a single femoral nerve block resulted in earlier reduction of pain, was an easy and safe technique to perform, and caused minimal delays in other steps to patient care [15].

At this time, the frequency of PNB or USPNB use in emergency centres (ECs) in low-resource settings is unknown, but what little evidence there is suggests minimal use [16]. An extensive literature search resulted in only a few studies found. A cross-sectional descriptive survey carried out among Kenyan anaesthesiologists is representative. 26.2% of respondents stated their training in PNBs was “poor.” Of these, 18.5% and 59.3% of respondents respectively reported “no exposure” and “inadequate exposure” to the procedure during their medical training in anaesthesiology. Additionally, 27.7% reported that they had not

performed a PNB in their careers to date, and only 6.2% routinely performed 10 or more per month [17].

Emergency medicine is new and emerging field in Ethiopia, a low-income country located in the eastern part of Africa. An emergency medicine residency and Masters of Science in emergency medicine along with critical care nursing were established in 2011 in Addis Ababa, home to the national referral trauma centre at Black Lion Hospital (BLH). In 2013, faculty with specialty training offered 14 of the new emergency medicine residents and two orthopaedic staff physicians an intensive course in USPNBs. The course focused on femoral, popliteal, and forearm blocks based on injury patterns of the area [18]. At that time, pain management consisted of either non-steroidal medications like diclofenac or paracetamol or a mild narcotic like tramadol. If procedural sedation and analgesia for procedures were required, a combination of pethidine and diazepam were used, often without cardiac monitoring. Although there were no case reports published, medical records show there have been poor outcomes including cases of respiratory arrest in the BLH emergency centre with this use of unmonitored sedation. In the two years post course, 384 PNB were recorded. Unfortunately, no further procedures have been documented since 2015 as many of the course physicians have transitioned out of residency and moved to other hospitals in the last year.

In preparation for a repeat course and in order to understand how to achieve a more sustainable skill transfer, this study/survey was conceived to assess current knowledge, attitude, and practice of PNBs among emergency medicine and orthopaedics physicians and residents. The study is a qualitative cross-sectional survey. We hypothesised that current use of PNBs is underutilised but that the procedure will be perceived as important to patient care. We also hypothesise a highly significant association between previous training and the number of procedures performed and no significant association between level of training and number of PNBs done per month.

## Methods

We conducted a cross-sectional descriptive survey with paper forms using a questionnaire developed by study investigators. The study population was all emergency centre staff and resident physicians (Year 1–3), and orthopaedics residents (Year 1–4) listed by hospital administration as currently active in their respective departments at Black Lion Hospital in Addis Ababa, Ethiopia. It was felt that BLH would be the best site to survey as it is a specialised trauma centre and national referral hospital for the

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