

Education, Practice, and Competency Gaps of Anesthetists in Ethiopia: Task Analysis

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Purpose: This study assessed the needs and gaps in the education, practice and competencies of anesthetists in Ethiopia.

Design: A cross-sectional study design was used.

Methods: A questionnaire consisting of 74 tasks was completed by 137 anesthetists who had been practicing for 6 months to 5 years.

Findings: Over half of the respondents rated 72.9% of the tasks as being highly critical to patient outcomes, and reported that they performed 70.2% of all tasks at a high frequency. More than a quarter of respondents reported that they performed 15 of the tasks at a low frequency. Nine of the tasks rated as being highly critical were not learned during pre-service education by more than one-quarter of study participants, and over 10% of respondents reported that they were unable to perform five of the highly critical tasks.

Conclusions: Anesthetists rated themselves as being adequately prepared to perform a majority of the tasks in their scope of practice.

Keywords: anesthesia, nursing, task analysis, Ethiopia.

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GLOBAL PERIOPERATIVE MORTALITY has declined by almost 90% in the past 50 years, with the greatest decline in developed countries.¹ However, many people in low-resource settings do not have access to safe and affordable surgical care, in part because of a shortage of health workers to provide these services.²

Ethiopia requires a sizable and competent health workforce providing surgical care, given its population of approximately 96 million,³ and an estimated average of 43 operations per 100,000 conducted within a district hospital catchment population.⁴ A caesarian section rate of 1.5% suggests a huge unmet need,⁵ and a high rate of road traffic injuries,⁶ also

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Conflict of interest: None to report.

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1089-9472

<http://dx.doi.org/10.1016/j.japan.2017.02.001>

point to the necessity for surgical services. Anesthesia professionals in Ethiopia can either be anesthesiologists, who are medical specialists with 9+ years of university training, or anesthetists, a cadre with 4 years of university training or 1 year of additional training for nurses. This study focuses on the anesthetist cadre only.

The Ethiopian government has made significant efforts in the last decade to address the shortage of anesthesia professionals by expanding education and training opportunities for anesthetists. The number of public tertiary institutions providing anesthesia education increased from three universities in 2005 to 26 institutions in 2016, including 12 universities and 14 Regional Health Science Colleges (RHSCs).

RHSCs offer a 1-year program leading to a diploma in anesthesia, and universities provide a 4-year Bachelor of Science degree (BSc) in anesthesia. Additional education leading to a master's degree in anesthesia is available and adds to the scope of work for the anesthetists. Information regarding the level of competence that graduating anesthetists bring to their work place is limited. A recent study⁷ indicated that some graduating anesthesia students were unable to successfully perform key skills during an observed structured clinical examination.

Data-driven decision making regarding improvements in the pre-service education and in-service training for this cadre is critical in this context. Educators, human resource managers, policy makers, and other stakeholders require evidence to guide decisions regarding curricula revisions, continuing professional development, and on-the-job supervision and coaching.

The Strengthening Human Resources for Health (HRH) Project (2012 to 2017), funded by the United States Agency for International Development, is implementing various interventions at all levels in the health system in Ethiopia. Project objectives include increasing the availability of qualified anesthetists, and building local capacity for continuing professional development, licensure, deployment, regulation, and retention of this cadre. The HRH Project conducted a task analysis study to generate relevant information about the anesthetist cadre.

Task analysis is a descriptive study methodology that can be used to explore the practice of a health profession. Originally used in industry to improve work efficiency, it is used to identify gaps in education, regulation, and practice of health workers, and to provide information for updating curricula, scope of practice documents, and development of licensing examinations.^{8,9} Task analysis data are collected from currently practicing workers, which provides a level of detail not available from curricula, job descriptions, or scope of practice documents. There is limited literature on the use of this methodology for this cadre of anesthesia providers; the authors found only one published study¹⁰ that reported using task analysis to inform government modifications to the education, training, and practice of anesthetic tasks by medical licentiates in Zambia.

The aim of this task analysis study was to provide information to assess needs and gaps in the education, practice, and competencies of anesthetists in the country. The objectives of the study were to identify tasks performed by anesthetists that should be (1) prioritized during pre-service education and in-service training and (2) emphasized during licensure examinations.

Methods

A cross-sectional study design was used. A draft list of expected tasks performed by anesthetists was developed from existing national anesthesia training curricula, job descriptions, national occupational standards for anesthesia, and the scope of practice for anesthetists. A panel of subject matter experts comprising of university and college anesthesia faculty, currently practicing senior anesthetists, and representatives from the Ethiopian Federal Ministry of Health and the Ethiopian Association of Anesthetists reviewed the draft task list. Based on their knowledge of the local context either as educators or practitioners, the experts reviewed the items for inclusion and finalized a list of 74 items of anesthesia-related skills, which comprised the task list for the study tool. The tool also included questions related to basic socio-demographic variables. The tool was translated from English to four local languages (Amharic, Oromifa, Tigrigna, and Somali languages) by a translating firm.

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