

# Non-Physician Clinicians in the Operating Room: The Difficulties of Task Shifting in African Surgery

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## Abstract

**Question:** This study seeks to identify the benefits of task shifting and training non-physician clinicians (NPC's) in surgical procedures in low income countries in Africa along with determining the challenges to utilizing NPC's in the operating room present in the literature. **Background:** The global disease burden has shifted from massive epidemiological maladies to more acute needs and many of these must be treated surgically but low income countries often have a lack of trained surgeons, and task-shifting to less trained medical professionals is seen as a viable option to increasing surgical services. **Significance:** Data already exists in the literature describing the use of NPC's in surgery and their success in increasing surgical services in resource poor countries. **Rationale:** What is less defined is the difficulty of utilizing task-shifting to both the NPC's and their co-surgeons. **Methods:** Multiple databases were searched for relevant papers and those papers were included and excluded based on specific criteria. The resulting 10 papers were critically appraised for their content. **Results:** NPC's in surgery are effective at increasing access to surgical services, many difficulties exist including a lack of training for NPC's once they begin practicing. **Conclusions:** NPC's have proven themselves effective and necessary in surgery but there is a lack of oversight and continued training once they are practicing and this is seen with distrust by many surgeons with whom they work. **Impact:** The impact of this study is to further characterize the different methods used for training and supervising surgical NPC's.

## Introduction

The use of non-physician clinicians in low-income settings is not a nuanced approach to increasing access to healthcare. During the AIDS crisis of the 1980's and 1990's in Africa, mid-level practitioners were trained in more advanced techniques to increase the healthcare workforce. Today the crisis in Africa and many rural low income countries has shifted to more acute interventions. Surgery has evolved as a medical disparity amongst poorer populations due to a gross lack of surgeons. Task shifting is now being employed to increase the volume of surgical care in many African nations.

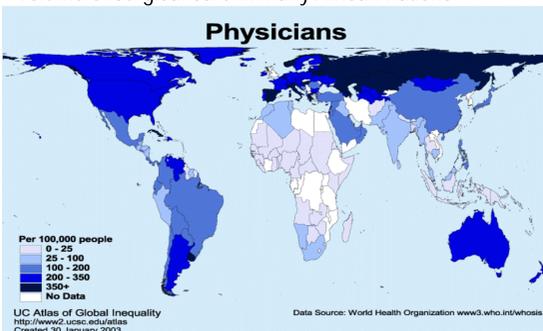


Figure 1: Worldwide disbursement of physicians.

By training mid level practitioners to carry out many of the aspects of surgical care, the classically trained surgeons are freed to carry out more complex surgery and conduct training. These programs have been enacted in many African nations and have had success in increasing surgical care. This systematic review examines selected studies in order to characterize the successes of task shifting in surgery as well as determine some of the issues associated with training mid level practitioners to operate under and alongside more classically trained surgeons in low-income nations in Africa.

## Methods

Three databases were used to collect data for this systematic review. Data were collected periodically from June 2014 through January 2017 by searching the terms: *Task shifting surgery; Task shifting surgery Africa; Task shifting value; Non-physician clinicians surgery;* in PubMed, OVID, and The Cochrane Library. Collected papers were included and excluded based on specific inclusion and exclusion criteria shown in Table 1. 340 articles resulted from initial searches and this was pared down to 10 articles that fit the exclusion and inclusion criteria. These articles were critically assessed for the advantages of task shifting and the challenges faced by the NPC's and the surgeons working with them.

Inclusion Criteria	Exclusion Criteria
Includes information regarding NPC's in Africa and their utilization in surgery or peri-surgical treatment	Study not related to surgery or peri-surgical outcomes, or to task shifting and the uses of NPC's in surgery
Includes information regarding the positive or negative aspects of utilizing task-shifting and NPC's in surgery in Africa	Study published prior to 2000
Takes into account the accounts of individual surgical task-shifting programs in African nations	Study performed in a resource-rich nation

Table 1: Table of Inclusion and Exclusion Criteria.

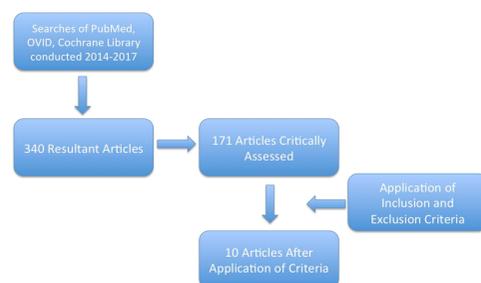


Figure 2: Process for data collection and study selection

## Results

Results are summarized in Table 2. Following critical analysis of the 10 articles spanning 8 different African Nations, it was clear that NPC's in surgery were a valuable asset that increased the volume of surgeries performed. The most common difficulty encountered was the lack of supervision that the NPC's received once they finished training and began practicing, as well as a lack of trust by the classically trained surgeons. Six of the ten studies noted adequate oversight and training as the biggest area for improvement in task-shifting for surgery.

Author	Location	Years of Analysis	Purpose of Study	Outcomes Assessed	Challenges Specific to the NPC	Results
Beard (2014)	Tanzania	2012	Document the scope of surgical practice of NPC and characterize outcomes of major surgical procedures performed by NPC	Difference in morbidity mortality compared with surgeons Effectiveness of NPC in expanding surgical care	Enthusiasm to continue training NPC's in surgery, and retaining them after they have completed training	NPC can safely perform common and sometimes complex surgery with good outcomes in rural Africa
Chu (2010)	DRC	2007-2009	Determine the scope of the types of surgeries performed and the ability of the surgical workforce including NPC to react to surgical volume	Ability of NPC and surgical workforce to respond to surgical needs of country often at war Classify the types of surgery performed	Safety in country where expatriate surgeons are unwilling to work	NPC are able to add to the surgical workforce Difficulty retaining NPC in countries where other trained surgeons are unwilling to work due to safety concerns
Chu (2011)	Somalia	2006-2009	Describe challenges of safe surgery in resource-poor country Success and limitation of task-shifting in resource-limited context	M/M of surgeries performed by NPC Usefulness of NPC in surgery Challenges of providing surgical care in country	Lack of proper training and skills to perform the type of surgery present in Somalia Lack of regular supervision or exposure to technological updates Working in isolation	Safe surgical practices can be performed in resource limited context Well-established protocols for NPC are most beneficial to the NPC Lack of regular oversight limits the training and viability of the NPC programs
Cumbi (2007)	Mozambique	2007	Examine the opinions of health professionals regarding the capacity and performance of the NPC in surgery Categorize difficulties faced by surgical NPC	Qualitative study using discussions to interview health professionals regarding the use, effectiveness and challenges of surgical NPC	Inadequate supervision during training Lack of pre/post op knowledge Informal training Subordinated to technicians	Surgical NPC are highly respected and appreciated cadre Health delivery system does not recognize and motivate them enough
Dambisya (2012)	Uganda	2009	Assess the policy and programmatic implications of task shifting in Uganda	Understand scope of all NPC in Uganda including surgical Outlined facilitating factors and barriers to task shifting in Uganda	Poor pay and conditions of service Lack of awareness or legal protection Lack of policy and guidelines Professional boundaries Heavy workload high disease burden	Need for clear policy and guidelines to regulate task shifting Future of task shifting including surgical NPC in Uganda dependent on strategy that government uses to implement protective policies and guidelines NPC's increase volume and scope of surgical care in rural Africa NPC programs and evolution to a more rigorous and decorated position would aid in retaining NPC
Gajewski (2017)	Zambia	2000-2013	Identify benefits and challenges of maintaining surgical task shifting program	Describe the role, contributions and challenges of surgical NPC's in Zambia	Inability to retain in rural areas Low morale Inadequate respect from classically trained surgeons Lack of career progression	NPC's increase volume and scope of surgical care in rural Africa NPC programs and evolution to a more rigorous and decorated position would aid in retaining NPC
Galukande (2013)	Uganda	2009-2010	Assess the views of clinicians on the use of task shifting as effective way of alleviating shortages of skilled personnel	Qualitative data on the advantages and challenges of NPC in surgical use Most commonly conducted operations	Absence of guiding directives from Ministry of Health Lack of supervision and training Practiced widely even in absence of regulation	Surgical task shifting was viewed primarily as a short-term measure Efforts to train and retain adequate numbers of NPC were widely encouraged by the existing health personnel
Linden (2012)	Uganda	2012	Examine the surgical and anesthesia capacity in low-income countries in Africa Assess the usefulness in NPC in expanding care and the complications of such	Assess the access and availability of facilities, infrastructure and equipment and use of NPC in surgery	Lack of educational guidance Lack of assistance given high volume of NPC in surgery	Volume of surgery in Uganda is impressive given lack of infrastructure Lack of assistance given high volume of NPC Area of healthcare not being addressed by national governments or international organizations
Sani (2013)	Niger	2007-2010	Evaluate quality of surgery at district hospitals staffed by NPC Assess the difficulty of implementing surgery with NPC's at DH	Surgical activities undertaken in Niger and with NPC Supervision and difficulties encountered by NPC's	Lack of support services Too dispersed throughout country to be an effective means of proper medical treatment	NPC use could be replicated in other countries to increase surgical capabilities in low-income nations Must improve the distribution of human resources by means of incentives to encourage increased training of NPC
Tyson (2013)	Malawi	2012	Examine surgical case load, complexity, outcome of cases performed by NPC Categorize abilities of NPC's in surgical theatre compared to surgeons	Feasibility of using NPC in peds surgery Compare outcome of operative intervention by physicians and NPC's	Attracting and retaining NPC Lack of sufficient oversight and supervision	Task shifting safe and feasible in pediatric surgery

Table 2: Studies included in the systematic review.

There is a defined lack of surgical access in Africa which was shown to result in an increase in morbidity and mortality. As such there is a benefit to using NPC's and practicing task shifting for surgical services as the increase in access to surgery leads to a decrease in the number of deaths. By utilizing task shifting and training lower level cadres to participate in surgery, resource poor countries were able to increase accessibility to surgical procedures.

## Discussion and Conclusions

Many studies understated the benefit of increasing access to surgical care while describing many of the difficulties of starting and maintaining a task shifting program. It was a common occurrence that many of the people who became NPC's felt as though they did not receive enough support outside of their initial training. The most common complaint from both the NPC's and the surgeons and physicians with whom they worked was that there was not enough supervision of the NPC's and that they did not receive enough support from their government or health ministries. This was often coupled with a distrust by surgeons to allow NPC's to conduct surgery alongside classically trained surgeons. Many of the studies described low morale amongst the NPC's due to a lack of upward mobility and a feeling that once they become non-physician clinicians they have no other options or chances to receive further training. This paradigm may be the most difficult to address given the fact that the reason that NPC's are so critical is because there is a generalized dearth of medical education opportunities, namely medical schools, that leads to the problem of needing NPC's in the first place. Future studies should focus on analyzing different NPC training programs and assessing the role of continued training in retaining NPC's and increasing their morale. NPC's have proven effective both in the AIDS epidemic and also in extending the reach of surgical services in low income an resource poor countries. There is a defined need for more research into the training programs of NPC's and their benefit in the operating room.

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