

## Effectiveness of Task Shifting in Non-Doctor Anesthesia Provider for Essential Surgical Services in Rural and Remote Hospitals of Nepal

ENHANCING RURAL HEALTHCARE

Tracking study of Non-doctor anesthesia in Nepal (2002- 2014)



# Acknowledgement:

I would like to thank all the participants (Anesthesia Assistants) for their valuable time and support in sharing information. Likewise, I would also like to acknowledge Ministry of Health and Population, Family Health Division, National Health training Center for providing essential information for completing this report as well as Research unit of NSI.

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Published by NSI

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**Abstract PR077: Effectiveness of Task Shifting to Non-Doctor Anaesthesia Providers for Essential Surgery Services in Rural and Remote Hospitals of Nepal 2002–2014**

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Anesthesia & Analgesia: September 2016 - Volume 123 - Issue 3S\_Suppl - p 104–105  
doi: 10.1213/01.ane.0000492485.45244.b0  
E Poster discussion: Education & development.

# List of Abbreviations

AA	Anesthesia Assistant
AAC	Anesthesia Assistant Course
AAU	Anesthesia Assistant upgrading Course
AHW	Auxiliary Health Worker
ANM	Auxiliary Nurse Midwife
ASBA	Advanced Skilled Birth Attendant
CEOC	Comprehensive Emergency Obstetric Care
CMA	Community Medicine Assistant
CME	Continued Medical Education
CPD	Continuing Professional Development
CS	Caesarean section
DoHS	Department of Health Services
DPHO	District Public Health Office
FEP	Follow-up Enhancement Program
GA	General Anesthesia
GoN	Government of Nepal
HA	Health Assistant
HDC	Hospital Development Committee
HSP	Hospital Support Program
HMSP	Health Management Strengthening Program
HW	Health Workers
LMICS	Low- and Middle-Income Countries
MD	Doctor in Medicine
MLP	Mid-Level Practicum
MO	Medical Officer
MoHP	Ministry of Health and Population
MSS	Minimum Service Standards
NAMS	Nepal Academy of Medical Sciences
NHRC	Nepal Health Research Council
NHTC	National Health Training Center
NSI	Nick Simons institute
PHC	Primary Healthcare Centre
SN	Staff Nurse

## Background

Surgery is an indivisible, indispensable part of healthcare. Undoubtedly, the burden of disease, disability, and mortality that can be saved by surgery is increasing worldwide which has resulted in loss of life and reduced welfare for millions of people and stunt economic development of countries. [2]. On the other paradigm, the disproportionate scarcity of human resource for surgical services in rural hospitals is another major and critical issue [6,7, 8]. In addition, the challenge of the shortage of anesthesia provider is much bigger in the Low- and Middle-Income Countries (LMICS) which has a direct effect in availability of surgery services in countries already restricted by resource and capacity. Task shifting to non-doctor anesthesia provider is a proven and acceptable alternative to address the dire shortage of Anesthesiologist in rural and remote hospitals. As a matter of fact, more than half of the world have initiated task shifting of anesthesia service to non-doctor anesthesia provider as well as proved that they are competent in providing service and effectiveness in addressing the shortage of doctor Anesthetist. [1] Nepal being a country with 83% of its population living in rural areas [10] with geographically difficult topography; in terms of location, transportation and communication; furthermore, poor retention of health worker in rural areas and not to mention, lack of anesthesia provider has hindered the Nepal Government in its objective to provide continuous operative services to the rural area. Sustaining specialist doctors including Anesthesiologist in rural areas is currently next to impossible for the GON as only about 20 out of 200 Nepali Anesthetist doctors available in GoN system. (MoHP record) Among them almost 60% (12) doctors are working at central level specialized hospital whereas about 100 public hospitals exist throughout the country including 77 district /district level hospitals.

On the other hand, less than 50% of district/district level hospitals have functioning operating theater, and within that, mostly limited to caesarian section operation (CS). Mostly the unavailability of operating team (doctor as well as anesthesia provider) is the major cause of the district hospitals for not providing operation services. As a result, Nepal also has embraced task shifting, a proven alternative, to non-doctors; (Anesthesia Assistants) to deliver rural anesthesia services to meet the shortfall of critical human resource.

The AAs were providing anesthesia service in large no of operations and all forms of anesthesia and their performance was Judged to be "very Good". [3]. AAs were

found generally competent in their knowledge, mannequin-based skills test and case discussion [4]

## General Objective

To report the development of Anesthesia Assistant (AA) training in Nepal and examine the current working location and type of their practice.

## Specific Objectives

- Update database of AAs trained in Nepal
- Track the working location and working status of AAs
- Explore the utilization of AA Training
- Identify the causes of non-working AAs to future plan

## Over the course of 13 years (2002-2014)

In service training in Anesthesia existed during 2002 but formal 6 months in-service training started in Nepal by Department of Health Services (DoHS) under National Health Training Center (NHTC) for multiple levels of nurses and paramedics in 2006 at 4 Training Sites (Patan Hospital, Maternity Hospital, Bharatpur Hospital and Tansen Mission Hospital). In 2011, the training program was upgraded to 12 months Anesthesia Assistant Course (AAC) to match the available international standards of training course for non-doctor anesthesia providers and to initiated the training under the authority of an academic institute, the National Academy of Medical Sciences (NAMS). The Nick Simons Institute (NSI) worked with NAMS to create the course and continues to support its 7 training sites.

- Intake narrowed from multiple workers to only Staff Nurse, Health Assistant and Ophthalmic Assistant. to ensure high consistent entry standard of HW.
- The 12-month training course initiated under the Academic institute, National Academy of Medical Sciences (NAMS) as the Anesthesia Assistant Course (AAC).
- Seats provided for Hospital Development Committee (HDC) supported candidates to encourage greater enrollment from rural areas of need and tied up to a specific district hospital to service.
- Sponsor seats available for Organizations/Private hospital. -as a recognition that district level surgery is often provided by non-GoN hospitals; most of these hospitals are not for profit.
- Continual professional development was initiated for working AAs in 2011. (FEP and AAU)

## Nepal's Healthcare System

Nepal's healthcare system follows a hierarchical hospital referral structure. District hospitals provide primary healthcare services and lifesaving emergency surgical services to the rural population. Zonal, Sub-Regional and Regional hospitals receive referral cases from their respective areas of the district and outside. The Central hospitals located in Kathmandu valley provide tertiary care and super-specialized services.

All districts have at least one district hospital or a referral hospital (zonal, sub-regional, regional, or central hospital). Sixty-three out of 75 districts have a district hospital. Some districts have more than one district hospital because of an upgraded Primary Healthcare Center.

## Methodology

Nick Simons Institute (NSI) keeps the updated list of the graduates from each batch of training as it supports GoN in the training of the cadre and conduct telephone follow-up of their working location for the organization advocacy purpose.

- With the support of MoHP administration section, Management division, Health infrastructure information system (HIIS), HMIS Annual Report, we first compiled
  - the list of Nepal GoN hospitals
  - list of GoN hospitals designated to provide operative services.
  - list of Anesthesiologist in GoN services.
- List of hospitals doing surgery at time of survey was compiled from Family Health Division resource and reconfirmed by telephone with the district.
- Compiled demographics of AAs trained on the two courses was updated from NSI annual follow-up database and training database.
- Conducted telephone follow up survey with structured questionnaire with all AAs in August -October 2014.

## Result of Telephone Follow-up of AAs in 2014

Out of 124 trained AAs, 9 participants were excluded in the follow up as they had just completed their training and had not resumed their duty and start practice at the time, leaving 115 to be contacted. Of the remaining 115 trained AAs, 9 could not be contacted, 6 were out of country and remaining 100 were personally interviewed using structured questionnaire by telephone making a total of 100 (87%) with practice data. (KEY POINT-high % found and interviewed).

Table 1 Number of AAs trained on the two courses.

Training period (month)	Number Trained	Percent
6	92	74.2
12	32	25.8
<b>Total</b>	<b>124</b>	<b>100.0</b>

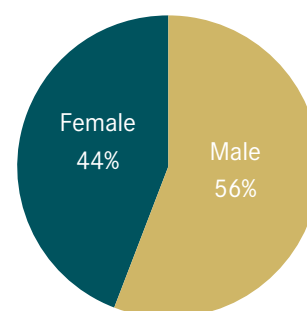
Table 2 Category for HWs recruited to AA training

Category	Number Trained	Percent
GoN	82	66.1
Private	42	33.9
<b>Total</b>	<b>124</b>	<b>100.0</b>

Table 3 Background of Aesthesia Assistant

Health worker background	Number
HA	39
SN	42
Sr. AHW	9
CMA	6
ANM	4
<b>Total</b>	<b>100</b>

Figure 1 Anesthesia Assistant's By Gender



The above Figure 1 explains the gender balance and tables 3 plots the health background which indicates the equal opportunities given to both male and female candidates. Similarly, higher number of HA and SN were trained; as only the eligible candidates for AA training after 2006, whereas fewer numbers of AHW/CMA/ANM (19) were trained on the 6 months course in earlier



Table 4 Sector-wise working location of AAs

Category	Working Location by Sector			Total
	District	Kathmandu	Study Leave	
GoN	61	6	4	71
	85.9%	8.5%	5.6%	100.0%
Private	17	12	.0	29
	58.6%	41.4%	0%	100.0%
<b>Total</b>	<b>78</b>	<b>18</b>	<b>4</b>	<b>100</b>
	78%	18%	4%	100%

The above table 4 indicates 78 % of total trained AA were located out of Kathmandu Valley among them higher number of government AAs (86%) were located out of Kathmandu valley whereas only 59% of private sector.

Figure 2 Location of AAs

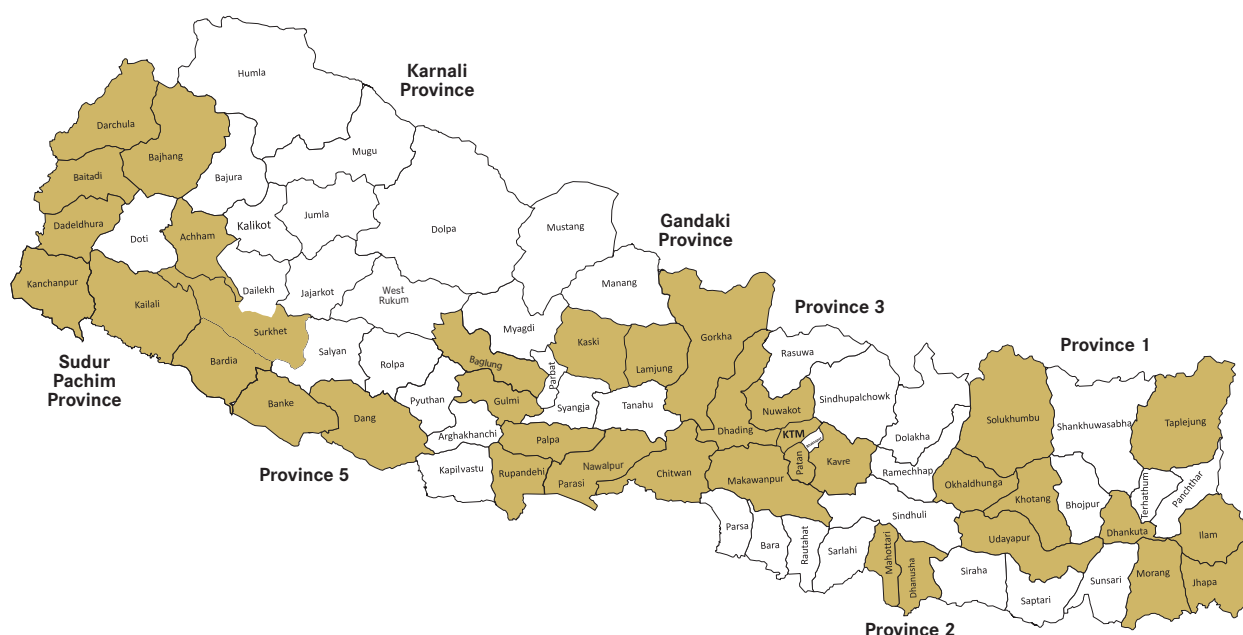


Figure 2 above shows that the AAs were working across Nepal from East to West and were located in 37 districts.

Table 5 Type of Facility that AAs are deployed

Working area	Total AAs	Working status	
		Yes	No
Central Hospital	5	2	3
Regional /Sub Regional Hospital	8	7	1
Zonal Hospitals	24	20	4
District Hospital	27	20	7
Private / Mission Hospital	17	17	0
Other*	13	0	13
Not working	2	0	2
Study Leave	4	0	4
	<b>100</b>	<b>66</b>	<b>34</b>

Out of 100 AAs, 81 AAs are working in the hospitals capable of providing surgical services and accordingly 66% (Significant number in Zonal and District Hospitals) are still actively working in operation theater providing anesthesia service.

Table 6 Working location of AAs

Category	Working Location by Sector			
	District	Kathmandu	Study Leave	Total
Yes	54	12	0	66
	81.8%	18.1%	.0%	
No	24	6	4	34
	70.5%	17.6%	11.7%	
Total	78	18	4	100
	78.0%	18.0%	4.0%	100.0%

Table 7 Reasons for not working

Sector	Total Number AA's	Number AA's working	Number AA's not working	Reasons for not working	Remark
<b>GON AAs Status</b>					
Regional/ Sub Regional (5)	7	6	1	• Other duty (1)	Rapti - Gorahi.
Zonal (12)	23	19	4	• Other duty (4)	Bheri/Koshi/Dhaulagiri/Seti
District Hospital (80)	25	18	7	• No Doctor for operation (5) • Other duty (2)	Rautahat/Syanja/Dailekh/Bajura/Siraha Lahan, Jiri/sarlahi
Central (3)	2	0	2	• Other duty (2)	Bir/Kanti
PHC/HP/DPHO/RHTC/other	10	0	10	• In appropriate posting (10)	RHTC/DPHO(Dhankutta/Lalitpur/Mustang/Jumla) PHC/HP- (Janakpur/Bara/Nawalparasi/ Siraha), FHD/Nardevi-ayurved
NA	4	0	4	• Study leave-4	Post is District Hospital.
GoN Total	71	43 (61%)	28 (39%)		
<b>Non GoN AAs</b>					
GON Hospital	7	6	1	• Other Work -1 (CAC)	Maternity Hospital
Private Hospital	17	17	0		
NA	5	0	5	• No Job -2 • Private Clinic -3	
Non-GoN	29	23 (79%)	6 (21%)		
<b>Grand Total (GON + Non GON)</b>	100	66 (66%)	34 (34%)		

Among 100 AAs, 34 % were not utilizing their skill of anesthesia due to various reasons. Similarly, the percent of not working AA is higher among GoN health worker (39%) in comparison to private (21%). The table 7 above explicates the causes of not working. The main reasons for not utilizing acquired skill by AAs are

- Inappropriate posting to non-operating facilities -10 (29%)
- No doctor in district to do Operation-5 (15%)
- Other duties - environment & Management issues-10 (29%)
- Personal health and age -5 (15%)
- Study leave-4 (12%)

Table 8 Status of anesthesia service provider in Operating GoN Hospital

Existing Gon Hospitals For Operation (Total Number)	Hospitals "Able To Provide" Surgery	Doctor Anaesthetist (Md/Mo)	AA + Anesthesiologist (Specialist)	Anesthesia Assistant the only Anaesthesia Provider
Central (3)	3	2 (MD)	1 (MD)	0
Regional (5)	5	1 (MD)	2 (MD)	2
Zonal (12)	12	0	6 (MD)	6
District Level (80)	28	6 (MO)	0	22
Total (100)	48 (48%)	9 (19%)	9 (19%)	30 (62%)

Among the 48 GoN hospitals able to provide operation services, 62% of hospitals (Specially District Hospital) have only AAs to provide anesthesia service. There are 0% specialist anesthesiologist doctor available at district/level hospital which is the first referral hospital for people living in rural and remote areas.

Anesthesiologist or trained Medical Officer for providing Anesthesia service in only 19 % of the operating hospitals whereas, a team of specialist anesthesiologist and Anesthesia Assistants (AAs) were providing anesthesia service in 19% of hospitals.

Table 9 Projection of AAs need

Working area	District (2AA/ Hospital)	Zonal (4 AA/ Hospital)	Regional/ Central (6AA/Hospital)	Total No of AAs
No of Hospitals	80	12	8	-
Estimate no required	160	48	48	256
No of AAs currently Practicing (GON Facility)	18	19	6	43
GAP	142	29	42	213

Above table gives the projection of an approximate need of AAs, considering the currently practicing GoN AAs in GoN hospitals . The possibility of increase in number of hospitals also persist which will increase the need. However, need of 213 is also huge in compare to the per years production of 24 participants.



## Key Findings

By 2014, a total of 124 AAs have been trained and among them, 100 trained AAs were contacted (87%), as 6 were out of country, 9 could not be contacted and 9 were in too early stage of their posting as most of them have not joined their service.

Among 100 trained AAs, 66 % represents government health worker and 78 % in total located out of Kathmandu valley. Similarly, 81% of AAs working in a hospital designated to provide Operative services. (Public and Private).

Two thirds of graduates (66%) are still actively working in operation theaters providing anesthesia service of which 82% were located working in hospital out of Kathmandu valley.

34% of AAs are not providing anaesthesia and not utilizing their training. The major reasons for non-utilization of skill by AAs are

- No doctor in district to do Operation
- Inappropriate posting to non-operating facilities
- Management issues

In Nepal, 48 GoN hospitals out of 100 were providing at least emergency operating facilities in 2014 and within that only 19 % the facilities have an Anesthesiologist doctor (Specialist) whereas 62% facilities have AA as their key anesthesia service provider.

## Conclusion

The initiation of task shifting to non-doctor anesthesia service provider called Anesthesia Assistant has proven effective successful model to meet the shortage of Anesthesiologist doctors to provide anesthesia service for essential and lifesaving operation services in country like Nepal.

- Twelve years after Anesthesia Assistant training/ Courses started, two thirds of graduates (66%) were still actively providing anesthesia.
- Nepal's Anesthesia Assistants work as the sole anesthesia provider in rural, district-level hospitals and are available at all levels of the national system.
- Task shifting to non-doctor providers is effective and essential for providing operative provision at rural district hospitals and need to increase the production.
- To assure the essential training does not go wasted, Aesthesia Assistants must be posted to facilities that have a complete surgical team.
- Skilled mixed team deployment, appropriate career development path and on-going professional support will support optimal utilization of the available trained human resource.

## Specific Recommendation to policy

- MoHP should increase production of Anesthesia Assistant to fulfill the need of AAs in all Hospitals.
- MoHP should address the issue of appropriate post and career development path for GoN trained AAs.
- DOHS should considered equal distribution and deployment of AAs according to the level of Operating hospital.
- DOHS should deploy AAs at right facility with appropriate team to get maximum benefit in Anesthesia service from the trained Human Resource.

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