Can training, in advanced clinical skills in obstetrics, neonatal care and leadership, of non-physician clinicians, in Malawi, impact on clinical services improvements (The ETATMBA Project): A process evaluation

Supplementary appendix

The setting
For the ETATMBA project in Malawi the districts in the central and northern region of the country were randomised to intervention or control groups. There are 14 districts in these regions. Lilongwe district has a population more than double that of any other district so for the project it was divided into two sections geographically taking into account health care facilities. One section was randomised to receive the intervention and the other to be in the control group. Fifty NPCs working in emergency obstetric and new-born care (EmONC) were drawn from the eight intervention districts to undertake the training. The process of recruiting the NPCs was undertaken by the Ministry of Health in Malawi. NPCs were required to have at least three years of experience in the role and to apply for a place on the training. Recruitment aimed for a minimum of two NPCs who worked in each hospital in the intervention districts.

The training programme
The programme involved five week-long intensive training sessions in advanced obstetrics, neonatal care, leadership, understanding research evidence and critical appraisal combined with in-service training of two six-month periods on enhanced teaching, training and audit, supported by tutors via the Internet. In addition, two obstetricians at specialist registrar level with 5 years of clinical experience worked alongside the NPC, each for two weeks in each district providing peer support and sharing of skills and knowledge. At the start of the programme there was assessment and examination of knowledge, competence and performance and further assessment of knowledge, competence and performance at the end. Each trainee is working towards a University of Warwick undergraduate degree requiring successful completion of a number of assessments: two audits, reflective practice, two professional projects and training others, e.g. other NPCs, nurse midwives and nurses. Further detail is on the ETATMBA website. (http://www2.warwick.ac.uk/fac/med/about/global/etatmba/about/)
We undertook data collection for this process evaluation from the start of the training so we could use the early data collected to inform adjustments to the training delivery. For example, early interviews revealed problems with Internet access so additional provision was arranged. In order to complete data analysis before the trial results became available we ceased data collection before the end of the training programme with the trainees still to complete another taught module and a final professional project.

The team delivering the intervention were not involved in the interview data collection or data analysis. Authors DD, JPoH and FK are members of the intervention delivery team. They contributed to the design of the process evaluation, provided advice on content and timing of interviews and reviewed the final analysis to consider its implications.

Below we present the unedited versions of the quotations that are presented in the main paper.

A trainee recalling, unprompted, components of the training modules

When we are resuscitating a new born we gave up very easily because people were saying a new born who cannot breath after ten minutes then that one will be useless. But we have found that given time and given good extra time, you find that it could be done. I have learnt that time and improved knowledge on how to resuscitate a new born can make a difference to the life of the baby. [T33:1]

Early implementation
Examples from second set of interviews exploring the seeds of training and knowledge imparted by ETATMBA being used in practice.
This course has really helped me to change the way I am interacting with my colleagues ..., because the approach to colleagues is very important. Sometimes you can talk to colleagues while angry or even with a sense of contempt, but with this training we have learnt how we can talk with colleagues. It has changed me because I know how I can talk to my bosses at work. If we have an issue as clinicians and nurses which we need to present to the DHO (District Health Officer), now we are taught that we must have facts and we must approach him humbly. We can start with the positives and end with the negatives, so that has really changed me, this is now how I work, both with my colleagues and the DHO. [T46: 2]

District Health Officers reported that the trainees were taking leading roles in improving health care practice:

I have seen a couple of them doing neonatal and maternal deaths audits and sharing those experiences with other health care workers. Also advocating for change in practice, change in attitude. They have taken a leading role to ensure that prenatal care scales up in this district. [DO 2]

Cascadee interviews reveal areas where the trainees have passed on training and new knowledge to colleagues. We find that this is not just specific skills from the ETATMBA training it also includes ‘good practice’ like hand washing and aseptic techniques.

I also learnt as a new thing, clearly defined steps of how to do resuscitation of the baby. [CA 10] I see myself improving in these areas.... like vacuum extraction, the timing itself. Previously we were just rushing in doing vacuum extraction in women where it was not supposed to be done, just to run away from procedures like caesarean section. After that training we have learnt something on how we can do it in proper time and the benefits of doing caesarean section when it is supposed to be done. [CA 5]

That equipment, the Kiwi (vacuum extraction equipment), we were just leaving things because we didn’t know how to use it. These guys (the trainees) they helped us to use these things, which had been just staying in the labour ward but we didn’t know how to use them. [CA 12]

New techniques like the condom tamponade, it was quite new to me, at school we did not learn anything about condom tamponade. [CA 3]

We didn’t know that when somebody is suffering pre-eclampsia they gave her magnesium sulphate. Since this is a health centre we didn’t have magnesium sulphate but after the training now we have it in the labor ward. When the patient just arrives, it should be, see the condition of a patient and if it is needed we give magnesium sulphate, then we refer the patient. That is how we are working. [CA 14]

Take the example of eclamptic case, everybody was afraid to use magnesium sulphate but now everybody is capable of using magnesium sulphate. [CA 6]

In things like PPH (postpartum haemorrhage), I was trying to tell them memory is not good enough. When you want to remember something you put it on the wall so you don’t have to memorise. It is easy for you to see and say ok, PPH we need .......medicine. For them they found this difficult, so what I did was, in two hospitals I actually had to get them to write their posters and put it on the wall, so that you just look at it and you just remember. [Obstetrician 1]

I remember they used get a nurse or an external speaker to come and teach them on a particular topic at the CPD (continuing professional development) session. After their training they decided they could use this particular session to cascade the training. [Obstetrician 2]
He goes out orienting people on the use of vacuum extraction ... he goes around in the health centres so the clinicians get skills from him. [DO 6]

**Later implementation**

Here we report from the interviews with 39 trainees in the third set of interviews. These provide evidence of how they used the various skills and knowledge from their training in clinical practice. Here we report data from the section of the interview where we prompted for data on each of the key aspects of the training.

**Practical skills**

*Caesarean Section (29/39 discuss this)*

The training was different from what has been happening at our institution... we discussed as a group at our institution, then when one of our tutors came. They facilitated changing to the transverse type incision at our institution. It has been adopted that in every patient, it has to be done with that (transverse) incision. [T12:3]

*Neonatal Resuscitation (27/39 discuss this)*

We used to have a lot of neonatal deaths because of poor skill of resuscitation before ETATMBA, because easily giving up. The literature we read in school used to say resuscitate a baby for about 20 minutes. If it’s longer than that you can drop it because what might come out might not be a useful baby. But in this module we learnt that we can resuscitate our neonates as long as we have positive heartbeat. We’ve actually seen that the babies that we then used to say no, you can dispose, wait for it to die, have survived, actually very healthy babies. So, that’s just an example that I have actually enjoyed. [T30:3]

*Postpartum Haemorrhage (23/39 discuss this)*

I applied the B-lynch suture, with my colleague another ETATMBA trainee....we applied it and the patient actually, stopped bleeding. We managed to give fluids and transfuse, and she improved. The patient actually went home, was discharged from the facility. Before the training I never used it. I had heard of the B-lynch suture but was so afraid to use it. I was given a chance to actually use it on a stimulation in the practical part of the class. It was made so simple ... it gave me courage, and I did it and it actually saved a life. So that gave me courage. [T45:3]

You have to call for assistance and you need to take a sample for the laboratory for grouping and cross-match. We are encouraging people to use big hole cannulas, preferably where is possible you need to insert two on both arms to make sure that the circulation is not depleted. There is also encouragement of monitoring of vital signs, it is very crucial in people with PPH, even the use of antibiotics since most of time there are various procedures during the management of PPH, so you can also give prophylactic antibiotic to prevent this woman from sepsis after PPH [T24 3]

*Partograms (14/39 discuss this)*

At this point in time, we are really following the partogram and we are really taking action on each and every deviation from the normal. If cervical dilation is not there... action is being taken. Not only ETATMBA students but even the nurses. Whenever they see something is deviating from the normal, they consult...this patient came in with this problem and the partograph is moving to the other side, so please assist. So we are working together now. [T32:3]

*Vacuum Extraction (13/39 discuss this)*

We have been taught the skill of vacuum extraction. And at one time, I think last year we were given, what we call a Kiwi vacuum extraction...and that one we are able to use. So, patients who could have gone for caesarean section with prolonged labour, we are able to assist them with vacuum extraction. [T1:3]
Breech (12/39 discuss this)

We managed to cascade the training on breech deliveries. Before we were taught, when there was a breech, they used to call somebody ...whoever was more senior clinician in the institution to go and deliver the breech. Now after the training, at least most of the nurses at the hospital are able to do this. [T35:3]

Breech delivery, to me it was one of the most difficult scenarios encounter. When there was a breech delivery, most of the time I was just saying let’s just do C-section, running away from how I could deliver it. But after going through this course we have learnt how to tackle that particular breech because they are several types, each type has got its own way of delivery. So, now we are able to deliver, the breech deliveries. [T28:2]

Leadership

Leadership was, without doubt, the part of the training that trainees talked about most and with the most enthusiasm. Many trainees became quite excited during the interview when talking about how they had used these skills to bring about change in the clinical care delivered. For many it was a revelation that by taking a different approach so much could be achieved. Here we provide examples that provide additional insight into how the trainees were using their new learning. Trainees had developed a collaborative approach to working with their colleagues, particularly the nurses, which was not there before.

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We share, I just don’t go there and say, do you know how to resuscitate? (I say ) come and let me teach you, we go together sister, let’s start, bring that, bring that, we say this one we put here, maybe the mask, this is how we position the baby, am starting to bank watch for this, then she goes oh ok, what about this? We work as a team. [T41:3]

They had learnt to be strategic in seeking, finding or using resources.

We complain that we don’t have blood in the laboratory, but there are some procedures that are done where the patient has been asked to mobilise blood yet we don’t need to use this blood in the end. Some patients were being given blood that did not require blood. After this training, if a patient donates blood for a procedure, if we see that this patient do not require this blood, we keep it and channel it to a patient that may be in dire need of blood. [T23:3]

There was also evidence in the interviews with the obstetricians of the impact of the leadership training.

I wanted the relationship between them and other clinicians to improve so they would work as a team not as individuals...it was good to see change whilst we were there. The midwives would come to say “we never used to do these things with clinical officers before, but you know they don’t now wait to be called they come and check with us what is going on and we would tell them and we would discuss management”. [Obstetrician]

(I saw them) taking on some leadership roles because they were respected. They were actually doing their audits and some had results with them so they presented to the district health management team... (about) things that they wanted to change. [Obstetrician 2]