

<b>Institution: University of Birmingham</b>
<b>Unit of Assessment:UoA1</b>
<b>Title of case study:</b> Promoting non-physician support for maternal health in the developing world
<p><b>1. Summary of the impact</b> (indicative maximum 100 words)</p> <p>Maternal health and mortality remains a major concern in the developing world. Research led by Prof Arri Coomarasamy and colleagues at the University of Birmingham has demonstrated the effectiveness of non-typical support for maternal health in low- and middle-income countries worldwide, focused on the benefits of bringing in traditional birth attendants and non-physician clinicians to support the slow process of developing more capacity amongst skilled birth attendants in these regions. Prior to this work, these individuals were considered unsafe and inappropriate to support births, even though they were conducting millions of deliveries in the developing world. Prof Coomarasamy’s team’s research clearly demonstrated that this is not the case. This has had a major impact on international thinking about the valuable role of non-physician support for maternal health and mortality, reflected in the latest World Health Organisation task-shifting recommendations. In these and other related issues, policy and public awareness has been further supported by Prof Coomarasamy’s crucial role in Ammalife, an international maternal health charity focused on the developing world.</p>
<p><b>2. Underpinning research</b> (indicative maximum 500 words)</p> <p><b>Traditional birth attendants:</b> Women in developing countries face significant barriers when accessing healthcare; financial, geographical, and cultural. This is why 99% of all maternal deaths worldwide occur in the developing world, and 98% of stillbirths and newborn deaths. 60 million births per year take place outside healthcare facilities, more than half without assistance from a skilled birth attendant, i.e. accredited health professionals such as midwives or doctors, trained to manage normal pregnancy and childbirth. Instead most women are supported by local women known as ‘traditional birth attendants’ (TBAs), who rather than regulated training or governance acquired their skills through experience of delivering babies or apprenticeship with other TBAs.</p> <p>Training programmes for TBAs began over 60 years ago and in 1994 more than 85% of developing countries operated some form of TBA training to improve maternal and perinatal outcomes. By 1998, TBA training was a central component of the Safe Motherhood Initiative launched by WHO, United Nations Children’s Fund (UNICEF), United Nations Population Fund, World Bank, and other organizations. However there was a lack of evidence from randomised, controlled trials to inform policy-level decision making of effectiveness of such training. In 1998, a team at the University of Birmingham led by Prof KK Cheng collaborated with colleagues in Pakistan to conduct a cluster randomised controlled trial in training TBAs, providing clean delivery kits and linking TBAs with health services. The results, published in New England Journal of Medicine, showed a statistically significant 30% reduction in perinatal (i.e. immediately before,during or after birth) mortality and a similar size reduction in maternal mortality, indicating that substantial improvements in outcomes could be achieved with this intervention [1].</p> <p>Understanding the potential impact of the Pakistan findings, Arri Coomarasamy (Professor of Gynaecology and Reproductive Medicine, at the University of Birmingham since 2008) and colleagues (Dr Heather Winter (deceased), Prof Christine MacArthur, at UoB since 1988; Prof KK Cheng, at UoB since 1993) have worked to promote further evaluation of effects of TBAs, not instead of, but alongside increasing coverage of skilled birth attendants. In 2009 a Cochrane review from another team described the potential of training for TBAs as ‘promising’ (Sibley et al, Cochrane Database Syst Rev 2009;3:CD005460), but at that time the study by researchers in Birmingham was the first and only randomised controlled trial to consider the subject. Therefore evidence to inform and guide any decision-making, policy formulation and investment in training was still lacking. In view of this uncertainty, in 2011 Prof Coomarasamy conducted a systematic review and meta-analysis to investigate the effectiveness of strategies incorporating training and support of TBAs on perinatal and maternal outcomes [2].This review identified six cluster randomised controlled trials and seven non-randomised controlled studies, and meta-analysis (a statistical overview of different primary studies considering the same research question) showed significant reductions in perinatal/ neonatal death and a reduction in maternal death where TBAs provided assistance.</p> <p><b>Non-physician clinicians:</b> Lack of doctors, particularly specialist trained doctors, greatly affects</p>

## Impact case study (REF3b)

the availability of care in developing countries, and more specifically the availability of emergency obstetric surgery such as caesarean section. Non-physician clinicians (NPCs) are not doctors; they follow a separate training program, but carry out many tasks performed by doctors such as diagnosis, treatment, surgery and prescribing. Their qualification is not internationally recognised, but they are often significantly (by around five times) less costly than doctors to train and employ. NPCs were initially introduced to fill the coverage gaps within healthcare services in developing countries, but they have now become an integral part of health systems, providing a substantial amount of medical care. NPCs roles within obstetrics vary, yet in less than half of countries in sub-Saharan Africa are they permitted to perform caesarean section.

Caesarean section is the most common major operation performed to save the life of a mother or baby in sub-Saharan Africa. The availability of good quality routine and emergency obstetric care has been proven to improve maternal and perinatal outcomes. Aware of the shortage of doctors, Prof Coomarasamy's team recognised the potential beneficial impact of NPCs within obstetric care. However, there was uncertainty around about their role, effectiveness, and their safety, a key need given the central role that NPCs could play in increasing the availability of obstetric surgery.

Prof Coomarasamy's team's subsequent systematic review and meta-analysis of six comparative studies in developing countries [3] compared the outcomes of caesarean section performed by NPCs and doctors. The results of the study showed that there are no significant differences between the rates of maternal and perinatal mortality incurred by NPCs and doctors following caesarean section, but that there are more wound complications following NPC surgery.

### 3. References to the research (indicative maximum of six references)

1. Jokhio AH, Winter HR, Cheng KK. An intervention involving traditional birth attendants and perinatal and maternal mortality in Pakistan. *New England Journal of Medicine*. 2005; 352(20): 2091-2099. doi: 10.1056/NEJMs042830
2. Wilson A, Gallos I, Planar N, Lissauer D, Khan K, Zamora J, MacArthur C, Coomarasamy A. Effectiveness of strategies incorporating training and support of traditional birth attendants on perinatal and maternal mortality: A meta-analysis. *BMJ* 2011; 343:d7102. doi: <http://dx.doi.org/10.1136/bmj.d7102>
3. Wilson A, Lissauer D, Thangaratinam S, Khan K, MacArthur C, Coomarasamy A. A comparison of clinical officers with medical doctors on outcomes of caesarean section in the developing world: meta-analysis of controlled studies. *BMJ* 2011; 342:d2600. doi: <http://dx.doi.org/10.1136/bmj.d2600>

### 4. Details of the impact (indicative maximum 750 words)

The United Nations have set out eight Millennium Development Goals (MDGs), international development objectives that were officially established following the Millennium Summit of the United Nations in 2000. All 189 United Nations member states and at least 23 international organisations have agreed to achieve these goals by the year 2015. The fourth and fifth of these goals are '**Reducing child mortality rates**' and '**Improving maternal health**'.

#### Scale of the issue

- Over **700** women die every day from pregnancy-related complications.
- **99%** of maternal deaths occur in developing countries.
- Over **1,000,000** children are left motherless each year as a result of this.
- Babies who survive the death of their mother seldom reach their first birthday.

Human resource shortages in the health services have been widely acknowledged as a key threat to the attainment of the health-related MDGs, and there is a very clear need to optimise the capacity and capability of the existing workforce in developing nations. The work driven by Prof Arri Coomarasamy and colleagues in the University of Birmingham has made a significant impact on the thinking of policymakers at an international level, reflected both in international guidelines and recommendations, and in local policy and strategy in maternal health units in the developing world. With respect to **traditional birth attendants**, it is estimated that more than 50% of all births in developing countries are attended by TBAs, with the rate as high as 80-90% in rural parts of some countries. This form of support has proven very popular with women giving birth in these settings, but without suitable training and support they are not knowledgeable or skilled enough in what is required to undertake safe deliveries, nor do they have appropriate materials/equipment. Despite

previous investment in training programmes for TBAs to upskill the group, prior to the research undertaken by Prof Coomarasamy and colleagues, the main international health organisations were heavily promoting skilled birth attendants for all women and correspondingly discontinuing interventions to improve skills and practices of TBAs. However, this discontinuation was not based on high-quality evidence of either benefit or lack of benefit of these traditional workers. While skilled birth attendants are obviously ideal, they are likely to remain in short supply in rural parts of the developing world in the foreseeable future for economic reasons. They therefore do not represent a practical or at least imminent solution.

Carers for babies and mothers clearly need to be appropriately trained, equipped and linked to health services to reduce mortality in both groups, and to this end Prof Coomarasamy's team have worked to promote further evaluation of effects of TBAs, not instead of, but alongside increasing coverage of skilled birth attendants. Their work has clearly demonstrated reductions in neonatal, perinatal and maternal deaths where TBAs were appropriately trained and involved, and an editorial review in the British Medical Journal in December 2011 stated that this research 'provides compelling evidence that trained and supported traditional birth attendants save babies lives' [1].

Similarly, for **non-physician clinicians** Prof Coomarasamy's team were able to demonstrate that maternal and perinatal mortality was not significantly different following caesarean section, the most common operation to save mothers and their children in sub-Saharan Africa.

The evidence around both groups delivered by Prof Coomarasamy's research has been of major importance to international views on the utility of both traditional birth attendants (TBAs) and non-physician clinicians (NPCs) in caring for mothers and children during pregnancy and birth. To ensure that this work truly makes an impact, researchers at the University of Birmingham have been progressing correspondence, meeting and delivering presentations to individuals from relevant national and international bodies. These include:

- Margaret Chan (Director-General), World Health Organisation (WHO) – 1<sup>st</sup> March 2012
- Andrew Mitchell MP (then UK Secretary of State for International Development) and Nina Gora (Gender and Governance Manager), Oxfam - 11<sup>th</sup> May 2012
- Sir Sabaratnam Arulkumaran (then President) International Federation of Gynaecology and Obstetrics (FIGO) – 9<sup>th</sup> October 2012
- Rushanara Ali MP, Shadow Minister for International Development – 24<sup>th</sup> November 2012

Organisations such as WHO know where to target training so that NPCs will be better able to perform obstetric surgery safely and effectively, and Prof Coomarasamy, together with other colleagues who contributed to this research, chiefly Profs Christine MacArthur and KK Cheng, provide informal advisory services to WHO as it designs and formulates its own wider global research programme. The team has also facilitated discussions at international conferences such as the annual FIGO congress (October 2012) to promote the further evaluation of the benefits of better training TBAs and NPCs in the developing world. Additional engagements include guidance of the integration of TBAs into practice, given directly to clinicians in Nigeria.

Following these discussions, a personal letter was sent from WHO to the team in 2012 [2] noting that *"your letter pointing to the recent evidence on the effects of trained traditional birth attendants came at a time when several WHO departments were involved in developing WHO recommendations on optimizing the delivery of key, effective interventions to improve maternal and newborn health through task-shifting"*. This correspondence further confirmed that, in line with the recommendations of their research, the guideline panel was in favour of recommending lay health-workers to deliver health promotion and counselling advice for various interventions, administration of oral misoprostol for the prevention of postpartum haemorrhage, labour companionship and oral supplements (calcium in areas of low calcium intake, iron-folate, intermittent presumptive malaria treatment and vitamin A in areas with deficiency) with targeted monitoring and evaluation activities.

Subsequent WHO publications explicitly recommended the use of NPCs for numerous tasks in hospital settings and TBAs "in settings where serious service gaps exist" [3]. Prof Coomarasamy was the first author explicitly thanked for his assistance and collaboration in updating the relevant

material and providing additional information. This is strong evidence that the team's research has changed international thinking on the importance of these other skilled groups in maternal and infant care, and therefore made a substantial impact in the effort towards the reduction of maternal and perinatal mortality worldwide. For example, the Deputy Director of the Ifakara Health Institute in Tanzania wrote to the team [4] to confirm that: *"The extensive and compelling research from your team at the University of Birmingham into the value of task shifting and the innovative utilisation of alternative health cadres to maximise the opportunities to improve maternal health in less economically developed countries has been crucial to the understanding of this issue within the Ifakara Health Institute in Tanzania, and our subsequent work adapting to the recommendations that it has contributed to in international policy in this area."*

The Head of the Department of Obstetrics and Gynaecology at University of Malawi College of Medicine also wrote to highlight: *"The importance of clear and robust evidence of the beneficial roles of traditional birth attendants and non-physician clinicians in our local context cannot be overstated. Whilst we all recognise that universal access to skilled birth attendants and improved coverage of obstetricians would be the ideal, the reality is that there is a continual struggle to deliver care with the limited providers available. The findings of your studies are most helpful to inform not only our strategic priorities for future investment but also our daily operational tasks."* [5]

To support international advocacy around issues relating to maternal and child health, Professor Coomarasamy was instrumental in the establishment of the charity Ammalife, and remains a trustee and the charity's primary contact. The charity run projects, undertakes internationally-valued research, provide specialist advice, education and training & work with others to advance women's health rights. Ammalife has supported much of the work detailed in this case study through funding and support for dissemination, such as work with team member Amie Wilson, who was nominated as one of Oxfam's Most Inspiring Women in the Midlands in March 2011 [6] for her contributions to international charity work (including promoting uptake of the team's research in developing countries). Ammalife have campaigned to support the research outlined here through their links with many of the large international bodies mentioned above, and to raise public and policy-makers awareness of these issues and the validity of the solutions proposed.

Through Ammalife, the University of Birmingham research team has collaborated with Made in Europe to produce an evidence-based resource pack of the top 20 interventions to reduce maternal death, including the roles of TBAs and NPCs [7]. The pack has been distributed to numerous charities across the UK (Muslim Charity, Islamic relief, Muslim Hands, Al Muntada Trust, Muslim Charities Forum). This work has raised maternal health issue awareness and engagement amongst many prominent Muslim scholars (58 have confirmed that they are actively supporting the approaches outlined); supported 776 workshops; and they raised the proportion of Muslim NGOs increasing programme activity on maternal health in their budgets and strategies by 30% [8]. The work was celebrated by Baroness Jenny Tonge (Chair of the UK All Party Parliamentary Group on Population, Development and Reproductive Health) in a House of Commons reception [9].

**5. Sources to corroborate the impact** (indicative maximum of 10 references)

1. Hodnett E. Traditional birth attendants are an effective resource. BMJ 2012; 344. doi: <http://dx.doi.org/10.1136/bmj.e365>
2. Personal correspondence from WHO
3. WHO recommendations: optimizing health worker roles to improve access to key maternal and newborn health interventions through task shifting. WHO: 2012.
4. Letter of support from Deputy Director, Ifakara Health Institute
5. Letter of support from Head of the Department of Obstetrics and Gynaecology, University of Malawi College of Medicine
6. Oxfam's Most Inspiring Women in the Midlands: <http://suttoncoldfieldlocal.co.uk/oxfams-birth-rights-exhibition-at-good-hope-hospital/>
7. At Our Mothers' Feet campaign NGO resource pack, MADE in Europe in partnership with Ammalife and support from the UK Department for International Development
8. MADE Partnership annual report 2013
9. House of Commons At Our Mothers' Feet reception invitation