The Non-Pneumatic Anti-Shock Garment (NASG) for Obstetric Haemorrhage, Cluster Randomised Trial – Harare, Zimbabwe.

BACKGROUND

Obstetric haemorrhage (OH) is the leading cause of maternal mortality. A simple easy to use device, the NASG, was suggested to decrease OH mortality. Made of a stretchy compression material, Neoprene, it comprises nine articulated segments wrapped sequentially around legs, pelvis and abdomen and closes with Velcro. NASGs work by applying circumferential counter pressure; decreasing blood flow to the compressed area and enhancing blood flow to the heart, lungs and brain. When blood is increased to the core organs, shock symptoms are reversed.

Pilot studies of pre-intervention phase and NASG intervention phase were conducted in tertiary facilities in Nigeria and Egypt to reduce maternal mortality. The results indicated a strong effect, but the World Health Organisation (WHO) recommended a randomized control trial to test NASG efficacy with the most rigorous evidence. The research team from University of California, San Francisco (UCSF) led by Professor Suellen Miller, Director of Safe Motherhood Programme approached the University of Zimbabwe-UCSF Collaborating Research Programme in Reproductive Health to conduct a trial in Zimbabwe. I, Violet Mambo, Nurse-Midwife, was the project coordinator for the multi-site study (14 sites) in Harare; sites include two Central Hospitals and 12 City Health Clinics with maternity facilities. The study was conducted between 2007-2012.

The study was conducted in two phases: The first phase was observational where data on standard management of obstetric haemorrhage was collected from all fourteen sites. The second phase of intervention commenced October 2008 where the NASG was introduced at two tertiary hospitals to equip staff to care for women arriving in NASG later from primary care clinics who were randomised into control and intervention arms. The question was whether earlier application of NASG resulted in better maternal and fetal outcome.

HOW NURSES CONTRIBUTED TO CLINICAL RESEARCH

Nurses and nurse midwives were critical to this research project. Firstly, by virtue of working in a clinical area where research is being conducted nurses demonstrated interests in the importance of the effects of NASG to low resource settings as it was practical and realistic to delivery of care. The nurses’ understanding of the study and relevance to the clinical area contributed to the research, which was having a direct impact on reversing shock on women who were unconscious and moribund due to hypovolemia.
Secondly, nurses’ collected research data and enrolled women on identification of the inclusion criteria to the study. The inclusion criteria included signs of hypovolemic shock such as pulse above 100 beats per minute, systolic blood pressure below 100 and estimated blood loss at clinics >500mls and at hospitals >1000mls. The training was ongoing to ensure new staff kept abreast with the rest of team working in clinical areas.

Thirdly, nurses and midwives were the ones to actually apply the NASG to the women, either at the midwife-led clinics or at the referral hospitals. Nurses learned to rapidly apply NASG. The application was done sequentially from legs, pelvis and abdomen with each panel tight enough to produce a snap sound, to ensure enough counter circumferential pressure to the effect of reducing blood flow to compressed blood vessels and increasing the blood flow to the vital core organs.

Nurses continued with all aspects of shock/hemorrhage protocols, which included closer monitoring and recording of vital signs than usual. This monitoring and recording was a major contribution to the clinical research, which relied on this data to determine how much more rapidly the women who received the NASG at the clinic recovered from shock than did the women who received the NASG only later, at the RH. All the information about the woman was recorded by nurses and midwives on a study data collection form. The midwives engaged in advocacy for women requiring definitive treatment by informing doctors of the condition to plan an intervention or prescribe blood.

After a woman was stable for two hours with normal blood pressure, pulse and minimum bleeding, all of which were recorded by the nurses and midwives, they would begin the process of a systematic NASG removal, which took one hour. The midwife begins from segment one at the ankles and waits for fifteen minutes to allow the normal blood flow to stabilise and checks vital signs for stability before removing the next segment. This process was repeated till all the segments were removed and vital signs remain stable. Then midwives continued to monitor the woman’s vital signs and hemoglobin and other laboratory signs until she was successfully discharged from the hospital. Study midwives oversaw the data forms to be sure they were accurate and complete before being entered into the database. I oversaw the database as well, and also conducted a study of hemorrhage cases at the hospital to be sure that no cases were missed.

**SUPPORT NEEDED TO ENABLE GREATER INVOLVEMENT FOR NURSES IN CLINICAL RESEARCH**

Firstly, urgent need for professional bodies, Zimbabwe Nursing Council and Medical Research Council to formulate a nurses’ research body to equip staff working in clinical areas. The role of the body would empower, monitor and evaluate research from training to professional level. The nurses would be supported in understanding research process, protocol which enhances
the quality of data resulting in credible research. While conducting the NASG study, ongoing trainings were conducted every three months to ensure that new staff had the necessary knowledge and skills to participate with confidence, not only clinically, but also on collecting and recording quality data.

There is shortage of midwives and nurses and researchers need to engage the government the need to boost human resources in clinical areas to guarantee quality research which would drive change of policy at government level. The staff in clinical areas express fear, lack of confidence and purely struggling to fulfill their normal nursing duties and care of patients. The added burden of data collection and other research duties could compromise their primary obligation to come to work. Hence well staffed units with support from the government and researchers could bring fundamental breakthrough to the nations.

As 21st century health care requires evidence based practice, midwives and nurses, as the frontline players in the health system, should participate in research to build a practical body of knowledge for care delivery. To leave a legacy of research more effort should be made to involve nurses in clinical research. The final support needed is to allow midwives/nurses to be involved at policy formulation level.

**CONCLUSION**

Nursing research offers benefits for patients, public, health providers, researchers, government and nurses. This article highlighted contributions by nurses and discussed ways nurses could contribute to clinical research that would improve the health system.