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A critical review of non-pneumatic anti-shock garment utilization in Nigerian healthcare space: Challenges, strategies and prospects to scale-up uptake

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Abstract

Background: Non-Pneumatic Anti-Shock Garment is an effective and scientifically proven first-aid, fit-for-purpose, adult-height adaptable and low technology device used in the management of obstetric haemorrhage. Despite the introduction of this obstetric tool in Nigeria about two decades ago, its utilization remains limited due to non-availability, non-replacement of worn out garments, poor return and exchange pathway, lack of training and retraining of health workers, and poorly motivated medical staff. Therefore, there is a need to critically review the literature, locally and globally, on the utilization and challenges of Non-Pneumatic Anti-Shock garment, and then proffer strategies to scale up its nationwide availability and uptake in Nigeria as part of preventive measures to reduce maternal morbidity and mortality.

Objective: To critically review the utilization of Non-Pneumatic Anti-Shock garment in Nigeria, focusing on the challenges, strategies and prospects to improve its availability and uptake.

Methods: A search of the literature was conducted in the following electronic databases: PubMed, Scopus and Google Scholar between 2004 and 2024. Keywords and phrases such as Non-Pneumatic Anti-Shock Garment, utilization, obstetric haemorrhage, challenges, maternal morbidity and mortality, and Nigeria were entered as search queries. Articles published in English language in the last 20 years and in line with the study objectives were focused on.

Conclusion: Access to Non-Pneumatic Anti-Shock Garment and its utilization are still considered low in Nigeria. Emergency obstetric care services, aiming at reducing maternal morbidity cannot be robust without adequate availability and utilization of Non-Pneumatic Anti-Shock Garments.

Keywords: Non-Pneumatic Anti-Shock Garment, utilization, obstetric haemorrhage, maternal morbidity and mortality, challenges, strategies, scale up, Nigerian healthcare space

Introduction

Globally, the death of a mother during pregnancy, labour and immediately following delivery is considered an obstetric catastrophe which should be prevented by all means whenever possible. Annually, about 300,000 maternal deaths are reported on a global scale, and of these, 99% occur in developing countries with limited resources [1]. The majority of these maternal deaths are due to causes that are preventable by technologies or means that are practicable in all climes whether low, middle or high income countries [2, 3]. Obstetric haemorrhage, especially postpartum haemorrhage, is a leading cause of the maternal morbidity and mortality, contributing 20-25% of the total number of maternal deaths [2, 4]. Simple and inexpensive measures that are scientifically proven can be deployed to reduce these obstetric mishaps to the barest minimum, and these include active management of the third stage of labour through administration of uterotonic drugs, uterine massage and prompt delivery of the placenta via the controlled cord traction [2, 3, 5]. Nevertheless, there are still some causes of obstetric haemorrhage such as ruptured uterus, genital tract lacerations, antepartum haemorrhage (abruptio placentae and placenta praevia) that are not immediately amenable to the use of uterotonic agents or needing additional surgical procedures as definitive interventions. 6, 7 Non-pneumatic anti-shock garment (NASG) is a first-aid, fit-for-purpose and adult-height-adaptable obstetric device that could be deployed in nearly all forms of obstetric haemorrhage to prevent or reverse hypovolemic shock and allows time for referral to a higher healthcare

facility or gives healthcare providers ample time for evaluation, preparations for definitive interventions and stabilization of the patients even when treatment is on-going [2, 3, 7, 8, 9]. This simple, easy to use, light-weight (1.5kg), low technology and inexpensive device was introduced into Nigerian healthcare space almost 2 decades ago as part of the NASG project to prevent maternal mortality from obstetric haemorrhage in Nigeria.¹⁰ Despite its advantages, a lot of health workers at all levels might not have seen, used this device recently or not at all.^{11, 12} It is therefore, necessary to critically review the utilization of Non-Pneumatic Anti-Shock garment in Nigeria, with focus on the challenges, prospects and then proffer measures to scale up its use and availability.

Methods

This is a narrative review in which a search of the literature was conducted in the following electronic databases: MEDLINE via PubMed, Scopus via Elsevier and Google Scholar, focusing on articles, abstracts and conference papers published between 2004 and 2024. Keywords and phrases such as Non-Pneumatic Anti-Shock Garment, utilization, obstetric haemorrhage, NASG implementation challenges, strategies, maternal morbidity and mortality and Nigerian healthcare space were entered as search queries. Full text articles published in the last 20 years and highlighting the utilization, benefits, barriers and government policy on NASG were focused on. Articles that discussed this device in low-, middle- and high-income countries were also reviewed to compare level of utilization and challenges with happenings in Nigerian healthcare space. Additional search of citations of full text articles was conducted to identify other sources of studies relevant to the objectives of this review. To be included in this review, articles need to align with the study conceptual framework and also focus on NASG utilization, barriers to nationwide availability and uptake, prospects and NASG role in prevention of maternal morbidity and mortality in Nigeria and globally. Journal articles written prior to 2004, not in agreement with the subject matter or written in languages other than English were tactically excluded since they will not align with the objectives of this study. Articles were identified, screened and selected for inclusion based on the study objectives and relevance to Nigerian context and other low- and middle-income countries. The final full text articles included in the review were critically scrutinized to ensure they are in line with the conceptual framework of this study.

Obstetric Haemorrhage (OH) and its menace in Nigeria

One of the preventable causes of maternal deaths in Nigeria is primary postpartum haemorrhage (PPH), which is a major subset of obstetric haemorrhage (OH) that includes abruptio placentae, placenta praevia, bleeding from ruptured ectopic pregnancy and miscarriages [2, 4, 6, 7]. In 2015, estimates of 58,000 maternal deaths were reported in Nigeria and PPH accounts for about one quarter of these deaths [2, 4, 13]. There is increasing trend in the maternal mortality due to PPH in Nigeria and other low-income countries as against downward pattern in the developed countries of the world mainly due to implementation of multiple interventions as recommended by the World Health Organization (WHO) and other sister international agencies.¹³ The reasons for increasing pattern of maternal deaths in Nigeria are not hidden because there are reports that only 43% of parturients in Nigeria delivered under the supervision of skilled birth attendants [14]. This implies that the majority (57%) of Nigerian pregnant women are attended to during delivery by unskilled birth attendants. Sometimes, in low-income countries,

the birth attendants may even lack equipment or skills to prevent, recognize or manage PPH [3]. Efforts are being put in place to reduce maternal deaths due to the menace of PPH and other leading complications of pregnancy in Nigeria [13]. Recently, government has also launched a package of basic and comprehensive emergency obstetric care services, all aiming at reducing maternal mortality and severe morbidity in Nigeria. This package referred to as Maternal Mortality Reduction Innovation Initiative (MAMII) has set goals of increasing health facility utilization and skilled birth attendance by 60% while reducing maternal mortality by 30% within three years [15]. One of the strategies to prevent or reverse shock due to PPH is the use of simple and low technology measures [2, 3, 6, 9]. Multiple interventions should be improved upon beyond the current low levels in Nigeria and other low-income countries in order to join global efforts at combating the leading killer of our pregnant women [11, 13, 16].

NASG utilization in Nigeria

The first utilization of NASG in Nigeria was through a sponsored project conducted in Nigeria and Egypt in 2006 to test the effectiveness of this low technology device in the management of postpartum haemorrhage and the outcome was impressive with maternal mortality of 6.7% versus 1.9% for pre-NASG phase and NASG phase respectively and likewise, severe morbidity was reported to be 5.3% and 1.3% for pre-NASG phase and NASG phase respectively.¹⁰ Similar studies in Zimbabwe, Zambia and other low-income countries have also been conducted and reports further buttressed the effectiveness of this obstetric tool [8, 9, 11, 12, 17].

NASG is an obstetric tool made of a stretchable compression material called neoprene and has 6 segments, numbering 1-6, that are held firmly in place by Velcro fasteners, wrapped sequentially from above the ankles to the calf, the thighs, the pelvis and the abdomen. A foam ball is incorporated into the 5th segment to help in compression of the abdominal aorta, thus reducing blood flow to the uterus via the uterine arteries [8]. This redistribution of blood from the lower extremities and uterus will definitely reduce blood loss from the uterus and ensure enough blood is diverted to the heart, the brain and the lungs, pending the institution of the definitive interventions to address the bleeding headlong [8, 18]. The mechanism of action is mainly by applying a pressure of about 20-40mmHg to the muscles, sequencing them and redistributing pool of blood from the lower extremities and the abdomen to the upper part of the body [19]. Thus, by implication NASG could also be described as a means of using self-blood in resuscitation and it is therefore, likely to be acceptable in all settings, regardless of religion and socio-cultural inclinations. The application of NASG could be done by a person not necessarily medically trained (only few minutes of training on application suffice) within 2 minutes.⁸ The treatment of OH in terms of definitive interventions and stabilization as well as removal of NASG can only be carried out by medically qualified personnel [8, 20]. This implies that application of NASG is a first-aid tool in the hands of anybody trained within few minutes, but disengagement (removal) of NASG, following treatment, a tool only in the hands of medically trained personnel. To apply NASG, the garment is openly and neatly spread on a flat surface with the women placed gently on the garment putting into consideration the woman's height to ensure proper placement of the segments. Segments 1 and 2 (both paired) are applied on the legs and wrapping the calves, segment 3 (paired) on the thighs, segment 4 (unpaired) on the pelvis, segment 5 (unpaired) with foam ball (also known as Belly ball

or Naval ball) on the abdomen and segment 6 (unpaired) to wrap segment 5 firmly [8, 20]. While the NASG is in place, patient can be transported to a higher healthcare facility where comprehensive emergency obstetric care services could be rendered [8, 21, 22]. NASG could be applied for up to 48 hours without any complication resulting from its use, thus allowing enough time for transport, evaluation and treatment [8, 18, 19, 20, 22]. To remove NASG, the attending medical personnel should ensure that the woman is haemodynamically stable, packed cell volume of at least 21% (Haemoglobin concentration of at least 7%), pulse rate of less than 100 beats per minutes, systolic blood pressure of 100mmHg or more and no on-going haemorrhage [8, 20]. The details of criteria for removal (disengagement) require that the attending personnel should be medically trained.

Challenges of NASG Utilization in Nigeria

Postpartum haemorrhage still remains a leading cause of maternal morbidity and mortality responsible for loss of quality human capital and has great economic implications. Some of the identified challenges with the use of NASG in Nigeria is the non-availability in all healthcare facilities and the few ones that have this important low technology device may probably not using them due to worn out [11, 12]. In those primary health centres with NASG, utilization could also be limited by mechanism to return and exchange this device when applied on a patient to be referred for further secondary or tertiary level care, which may take some times depending on availability of blood transfusion services and surgical skills [9, 17, 23]. Since, NASG will not be removed immediately at presentation to the referral centre, how does it get back to the referring primary care facility? This might be a challenge, depending on how close these two centres are to each other. Therefore, NASG return and exchange pathway mechanism is a barrier to utilization that should be addressed [8, 17]. In the developed countries like United States of America and United Kingdom, a single use policy may be appropriate [17]. The knowledge of application and removal of NASG is limited to few medical personnel such as midwives, emergency nurses or physicians and obstetricians (residents and specialists) that have been trained and retrained [11, 17]. The report from Ethiopia stated that only 36.2% of the respondents in a cross-sectional study among healthcare professionals have the needed knowledge of NASG utilization in their hospitals.¹⁶ Ohaeri et al, in South-western Nigeria, also reported low level of utilization among midwives due to poor knowledge and non-availability [11]. There should be widespread knowledge of NASG utilization and all health workers should know how to apply this first-aid and fit-for-purpose obstetric tool. In the face of exodus of health workers to abroad in search of greener pastures (what is fondly called Japa Syndrome in Nigerian context), newly employed medical personnel may not be practically skillful in the removal of NASG following successful treatment, which is a potential barrier to scaling up NASG utilization. Another potential barrier to NASG utilization in Nigeria is alternative healthcare demands which is likely to limit the number of NASG per centres. Report from Ethiopia stated that having 2 and more numbers of NASG increases the level of utilization.¹⁶ Although, a unit of NASG cost \$60-170 to procure, considering other health resources that are needed to make the health system adequately functional and to supply NASG to all healthcare facilities that are rendering emergency obstetric care services, government needs huge amount of fund to implement nationwide NASG uptake [8, 23]. Finally, in the face of “Japa syndrome”, the available medical personnel rendering emergency obstetric services may be poorly motivated

considering the patient loads, personal health, economic hardship and the need to stay healthy and fit to continue to render effective healthcare services [24, 25].

Strategies, Prospects and Recent Opportunities for Scale up NASG Utilization

The identified challenges to NASG utilization should be tackled headlong to improve its uptake and availability. Government at all levels should ensure that all healthcare facilities (primary, secondary and tertiary) have at least two units of NASGs similar to reports from Ethiopia [16]. If one NASG is being engaged or in transit, the second NASG will be a placeholder ready to be used in case of another women presenting with obstetric haemorrhage and in need of this important first-aid device. Nationwide coverage of NASG should be nonnegotiable to ensure availability at all times.

Another barrier to utilization is loss or unkempt NASG after each use. According to safe motherhood program on NASG policy Brief, each device could be used for up to 40 times if properly cleaned, dried, and neatly kept and maintained.⁸ Therefore, there should be an effective NASG return and exchange pathway between the referring low level care centre and the referral comprehensive emergency obstetric care service facilities [8, 17]. A dedicated staff should be assigned to this important aspect of NASG utilization and maintenance. He or She could be named NASG maintenance officer or alternatively NASG champion [8, 17]. and there should be proper training for the purpose. Effective communication should also be part of the NASG return and exchange programme.

A good way to improve NASG utilization is through training and retraining of staff especially with the current trends in emigration of workers in low-income and middle-income countries [11, 16, 17]. There is high turn-over of staff in health sector in most developing countries, making quarterly training a potential strategy to improve the uptake of NASG for the management of obstetric haemorrhage.

Although, government at the federal level is committed to strategies to reduce maternal mortality rate in the country especially with the introduction of a special package of emergency obstetric care nationwide in Federal government owned facilities, efforts should be geared towards improving the supply of more NASG to assist in caring for women with obstetric haemorrhage timely [15]. The implementation of “MAMII” (maternal Mortality Reduction Innovation Initiative) policy of the government will definitely be an opportunity that will improve the utilization and scaling up of NASG. The program will mean free services to the poor obstetric women, thus facilitating prompt referral to higher care facilities and since government is committed to this course to reduce the prevailing menace of maternal mortality, interventions to achieve these goals should be ensured. Hence, there is the likelihood of procurement of more NASG to help in the fight against maternal killers such as postpartum haemorrhage, bleeding from miscarriages and ruptured ectopic pregnancies [2, 4].

Finally, the welfare of medical staff in the healthcare facilities should be improved upon to scale up NASG utilization by highly motivated medical personnel and the good intention of the national government of Nigeria should be harnessed to improve NASG utilization with opportunity “MAMII” programme presents as announced by the Federal Ministry of Health and Social Welfare during the recent Joint Annual Health Review in November, 2024 [15].

Conclusion and Recommendations

Maternal mortality rate in Nigeria is still very high and government is making frantic efforts to improve maternal health, to make pregnancy experience a positive one and overall, to reduce the current trends in maternal morbidity and mortality. Emergency obstetric care services whether at the basic or comprehensive level cannot be robust without adequate availability and utilization of Non-Pneumatic Anti-Shock Garments in Nigeria at all levels of Healthcare space. The authors recommend that training and retraining of health workers should be done quarterly to ensure that the available medical personnel are skillfully up-to-date with the use of NASG, mechanisms to return and exchange NASG used in transporting patients should be put in place and strengthened, use of dedicated ambulances for parturients and other obstetric patients, and finally incentives for staff using the NASG with documented evidence will go a long way to scale up the utilization of NASG in Nigeria, and by extension in other Low- and Middle-income countries with similar challenges.

Limitations of this study

This review only accessed published documents in electronic databases. Grey literature with better insights might not have been captured. Also, some of the findings from this document may not be applicable to all settings and populations. Therefore, randomized controlled trials may be needed to further corroborate the findings as presented in this review.

Authors' contributions

All the authors contributed significantly to the conception, literature search and manuscript drafting.

All the authors read and approved the final manuscript for publication.

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References

- Hogan MC, Kyle JF, Mohsen N, Stephanie YA, Mengru W, Susanna MM, *et al.* Maternal mortality for 181 countries, 1980-2008: a systematic analysis of progress towards Millennium Development Goals 5. *Lancet.* 2010;375(9726):1609-1623.
- World Health Organization. Recommendations for the prevention and treatment of postpartum hemorrhage. Geneva, Switzerland: World Health Organization; 2012.
- International Federation of Gynecology and Obstetrics. Prevention and treatment of postpartum hemorrhage in low-resource settings. *Int J Gynecol Obstet.* 2012;117(1):108-118.
- Akaba GO, Nnodu OE, Ryan N, *et al.* Applying the WHO ICD-MM classification system to maternal deaths in a tertiary hospital in Nigeria: a retrospective analysis from 2014-2018. *PLoS One.* 2021;16(6):e0244984.
- Alfirevic Z, Blum J, Walraven G, Weeks A, Winikoff B. Prevention of postpartum hemorrhage with misoprostol. *Int J Gynecol Obstet.* 2007;99(Suppl 2):S198-S201.
- Mourad-Youssif M, Ojengbede O, Meyer C, Fathalla M, Morhason-Bello I, Galadanci H, *et al.* Can the non-pneumatic anti-shock garment (NASG) reduce adverse maternal outcomes from postpartum hemorrhage? Evidence from Egypt and Nigeria. *Reprod Health.* 2010;7:23-33.
- Manandhar S, El Ayadi AM, Butrick E, Hosang R, Miller S. The role of the non-pneumatic anti-shock garment in reducing blood loss and mortality associated with post-abortion hemorrhage. *Stud Fam Plann.* 2015;46(3):281-296.
- Safe Motherhood Program. A unique first-aid device for obstetric hemorrhage and hypovolemic shock: policy implications for implementing the non-pneumatic anti-shock garment (NASG). *NASG Policy Brief.* 2013;1-8.
- Ojengbede O, Morhason-Bello I, Galadanci H. Assessing the role of the non-pneumatic anti-shock garment in reducing mortality from postpartum hemorrhage in Nigeria. *Gynecol Obstet Investig.* 2011;71(1):66-72. DOI:10.1159/000316053. PMID: 21160197.
- Miller S, Turan JM, Ojengbede A, Ojengbede O, Fathalla M, Morhason-Bello IO, *et al.* The pilot study of the non-pneumatic anti-shock garment (NASG) in women with severe obstetric hemorrhage: combined results from Egypt and Nigeria. *Int J Gynaecol Obstet.* 2006;94(Suppl 2):S154-S156.
- Ohaeri B, Ogbeye GB. Assessment of utilization of non-pneumatic anti-shock garment (NASG) in the control of postpartum hemorrhage among midwives in selected hospitals in Ondo State, Nigeria. *Int J Caring Sci.* 2017;10(1):327-334.
- Jordan K, Butrick E, Yamey G, Miller S. Barriers and facilitators to scaling up the non-pneumatic anti-shock garment for treating obstetric hemorrhage: a qualitative study. *PLoS One.* 2016;11(3):e0150739.
- Okonofua FE, Ekezue B, Ntoimo LFC, Ekwo C, Ohenhen V, Agholor K, *et al.* Effects of multifaceted interventions to prevent and manage primary postpartum hemorrhage in referral hospitals: a quasi-experimental study in Nigeria. *BMJ Global Health.* 2022;7(4):e007779.
- Ibrahim MS, Babandi Z, Joshua I, *et al.* Comparing antenatal and delivery care services in public and private health facilities: evidence from 2018 Nigeria demographic and health survey. *West Afr J Med.* 2021;38:206-212.
- Federal Ministry of Health and Social Welfare. Joint Annual Review (JAR). Abuja, Nigeria; 2024.
- Bekele G, Terefe G, Sinaga M, Belina S. Utilization of non-pneumatic anti-shock garment and associated factors for postpartum hemorrhage management among healthcare professionals in public hospitals of Jimma zone, South-West Ethiopia, 2019. *Reprod Health.* 2020;17:37.
- Downing J, El Ayadi A, Miller S, Butrick E, Mkumba G, Magawali T, *et al.* Cost-effectiveness of the non-pneumatic anti-shock garment (NASG): evidence from a cluster randomized controlled trial in Zambia and Zimbabwe. *BMC Health Serv Res.* 2015;15(1):37.
- Lester F, Stenson A, Meyer C, Morris J, Vargas J, Miller S. Impact of non-pneumatic anti-shock garment on pelvic blood flow in healthy postpartum women. *Am J Obstet Gynecol.* 2011;202(5):409.e1-5.
- Bansal R, Suri V. Non-pneumatic anti-shock garment: a promising tool for management of obstetric hemorrhage with hypovolemic shock. *J Postgrad Med Educ Res.* 2019;53(3):121-125.
- Miller S. Introduction to the non-pneumatic anti-shock garment (NASG) for obstetric hemorrhage. *UCSF Safe Motherhood Program;* 2013.
- Turan J, Ojengbede O, Fathalla M, Mourad-Youssif M, Morhason-Bello IO, *et al.* Positive effects of the non-

- pneumatic anti-shock garment on delays in accessing care for postpartum and post-abortion hemorrhage in Egypt and Nigeria. *J Womens Health (Larchmt)*. 2011;20(1):91-98.
22. Miller S, Bergel EF, El Ayadi AM, Gibbons L, Butrick EA, Magwali T, *et al*. Non-pneumatic anti-shock garment (NASG), a first-aid device to decrease maternal mortality from obstetric hemorrhage: a cluster randomized trial. *PLoS One*. 2013;8(10):e76477.
 23. LifeWrap. Non-Pneumatic Anti-Shock Garment (NASG). Accessed December 19, 2024. Available from: www.lifewrap-nasg.com.
 24. Onah CK, Azuogu BN, Ochie CN, Akpa CO, Okeke KC, Okpunwa AO, *et al*. Physician emigration from Nigeria and the associated factors: the implications for safeguarding the Nigerian health system. *Hum Resour Health*. 2022;20:85.
 25. Grantee AA, Grantee II. An exodus of nurses has caused a “medical brain drain” in Nigeria. Are rich countries to blame? Pulitzer Center. 2023. Available from: www.pulitzercenter.org. Accessed December 16, 2024.

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