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Reducing maternal mortality from ruptured uterus – the Sokoto initiative

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Summary
Uterine rupture is the most common cause of maternal mortality in our institution. Case fatality for the year 2001 was 47%. Health care including emergency obstetric care (EmOC) is not free, hence, delays in receiving care could occur in patients with limited resources. The objectives of the study were to promote access to emergency obstetric care through a loan scheme for indigent patients with ruptured uterus and determine the success or otherwise of the scheme. The scheme was initiated in January 2002, with the sum of thirty eight Thousand Naira (about 300 US dollars) by consultant obstetricians in the department. Funds were released to the patient only after assessment of her financial capability to enable her get emergency surgical packs. All that was required was a promise to pay back the loan before discharge. Following resuscitation, surgery was performed by one of the consultants. Eighteen cases of ruptured uterus have been managed. Treatment was initiated within 30 minutes of admission. Admission–laparotomy interval averaged 3.5 hours (±1.2). There were two maternal deaths, giving a case fatality of 11 % (2/18). The case fatality from a previous study from the same centre was 38% (16/42). There was a significant difference in case fatality between the two studies (P<0.05; confidence limits are-0.328 and -0.211). Of the seventeen patients that benefited from the scheme, 16 repaid the loan before discharge (94% loan recovery). Only one patient defaulted with five thousand Naira (40 US dollars). A loan scheme for indigent patients with ruptured uterus that enabled them receive emergency obstetric care reduced case fatality. Loan recovery was good. In our quest to reduce maternal mortality in low-income countries without health insurance policies, there might be a need to extend similar initiative to other obstetric emergencies.

Keywords: *Maternal mortality, ruptured uterus, loan scheme, access to EmOC*

Résumé
La rupture utérine est l'une des causes commune de la mortalité maternelle dans nos hopitaux. Ces cas de fatalité s'elevait a 47% a 2000. Les soins de santé inclus : les soins urgente d'obtétriques(PUO) payable retardant la prise des soins pourraient etre aide les patients sans fonds. L'objectif de cette étude était de promouvoir l'acces aux soins d'urgence obstétrique a l'aide d'un systéme de prêt des fons aux patients demunis ayant eu une rupture de l'uterus et aussi de dterminer le succes d un tel structure. Le plan etait initie en 2002 avec une somme de 88,000 Naira ($300 US dollard) par un consultant obstétricien dans cette unité. Les fonds étaient débourses aux patients aprés diagnostie et l'inabilité des supporter le cout financier des soins.Ceci aidait a l'approvisionnement du matérial d 'urgence pour la chirugie sous la promesse de payer la dette aprés la guérrisson. Dix-huit cas de rupture étaient enregistré et le traitement était offert entre 30 minutes d'admission. La moyenne de temps de la laparotomie était de 3.5±1.2 heures. Il y a eu 2 cas de décés 11% (2/8) comparé a 38% (16/38) dans l'année précedente. Il y vait une difference significative entre cas de fatalité entre les 2 études (P<0.05), confidence limite :0.329-0.211). Sur les 17 patients qui béneficaient du plan d'aide , 16 payaient leur dette avant leur décharge , (94% de recouvrement des prets) et seule un patient ne put payer 1000 Naira ($40 US dollard). Un tel plan de prêt pour les patients pauvres ayant des rupture d'uterus réduisait ces cas de fatalité et le recouvrement des fonds était une bonne politique ett pourrait être étendu a d 'autres unités dans les services d'urgences.

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Introduction

The estimated maternal mortality for Nigeria, a developing country in sub-Saharan Africa, exceeds 1,000 per 100,000 live births, with evidence of a rising trend over the last two decades [1]. This worrying state has spurred several research and recommendations on interventions to reverse the trend [2.3] The best approach perhaps, is the suggestion that each locality should research into the problem through audit, rank the adverse factors, set priorities according to appropriateness and impact levels and then apply strong political will to implement reforms [4].

Ruptured uterus is one of the two principal causes of maternal mortality in Sokoto, Northern Nigeria. The other major cause is eclampsia [5]. Delays in receiving emergency obstetric care(EmOC) is the main reason for the high case fatality in ruptured uterus [6].

Sokoto is an urban city located in the North Western part of Nigeria. The indigenous people of Sokoto are Hausa - Fulani, one of the major ethnic groups in Nigeria. They are predominantly farmers, petty traders, nomads

and clerics. As strict Muslims, their culture, attitude and politics are considerably affected by the Islamic religion [7]. The state government professes free medical care but in reality, perhaps it is only the consultation that is free. For instance, most of the consumable items for resuscitation and surgery are usually not available in the health facilities. Considerable time is then lost by the time the patient is finally referred to the teaching hospital. The situation is compounded by the fact that there is no functional national health insurance scheme in Nigeria neither is there any coordination between the various levels of health care delivery systems in the country.

The Usmanu Danfodiyo University Teaching Hospital (UDUTH), Sokoto, is a federally funded tertiary health institution. It is the only functional tertiary health center within a radius of about 150 kilometers. Even though services are not free, they are highly subsidized to encourage patronage by the community. For instance, the total cost of a laparotomy for ruptured uterus is about Fifteen Thousand Naira (120 US dollars). Yet there are many patients that cannot afford this amount! The hospital policy for exempting paupers from payments is cumbersome, frustrating and easily abused. Most emergency cases at the time of admission barely have funds for the hospital registration. After the admission, it is not uncommon for relations of such patients to go back home, sell their wares or livestock before attending to the emergency.

It has been suggested that any effort aimed at bringing down the high maternal mortality in developing countries and especially in resource - poor settings should take into cognizance the poor socioeconomic conditions of the population and of women in particular [8]. The objectives of this study therefore, were to reduce maternal mortality by promoting access to emergency obstetric care through a loan scheme for indigent patients with ruptured uterus and assess the success or other wise of the scheme. This is a preliminary report.

Methods

The Ruptured Uterus Loan Scheme (**RULS**) was initiated in January 2002 as an intervention study. The initial fund of thirty eight thousand Naira (300 U S dollars) was from voluntary contributions by the consultant obstetricians in the department. All the patients that had ruptured uterus within the study period were included. Each patient with ruptured uterus was assessed on admission by the consultant on duty.

The amount of funds released to a given patient was dependent upon the degree of her financial disability. The target was to purchase the emergency pack for resuscitation and laparotomy. The only requirement was a promise to pay back the amount that was loaned before discharge. No interest was charged! Surgery was then performed by the consultant. Main outcome measures were case fatality and loan recovery. The study was compared to a similar previous study from the same centre. Inferences from proportions were employed for test of statistical significance.

Results

There were 1,360 deliveries within the first eleven months of the study of which 18 patients had ruptured uterus. All the patients but one were emergency referrals from peripheral health institutions. Seventeen patients benefited from the scheme. Only one patient had the wherewithal to get relevant investigations done and purchase the emergency pack without any form of financial assistance. The amount loaned to the remaining seventeen patients ranged from five thousand Naira (40 US dollars) to fifteen thousand Naira (120 US dollars). Treatment was commenced within 30 minutes of admission. Admission - laparotomy interval averaged 3.5 hours (±1.2). There were two maternal deaths. The case fatality was therefore 11% (2/18). One patient was brought to the unit in a moribund state and died within 30 minutes while being resuscitated in preparation for surgery. The second mortality was immediately after surgery and was classified as an anaesthetic death. The loan was recovered from 16 of the 17 patients (94% recovery), while one patient defaulted with five thousand Naira(40 US dollars). We have a balance of thirty three thousand Naira(260 US dollars) in the scheme.

Table 1: Comparison between present work and a previous study from the same unit.

Authors	Ekele BA *et al*	Present study
Period of study	1995-1997	2002 (Jan-Nov)
Total delivery	3,106	1,360
No. of uterine rupture	42	18
Incidence	1:74	1:75
Age range (yrs)	16-40	17-42
Modal Parity	7	7
Literacy status	98% (41) Not literate	94% (17) Not literate
Booking status	93% (39) Not booked	94% (17)Not booked
Hysterectomy	50% (21)	53% (9)
Repair + bilateral tubal ligation	24% (10)	47% (8)
Died awaiting surgery	26% (11)	6% (1)
Case fatality	38% (16)	11% (2)
Perinata mortality (Stillbirth)	98%	100% (18)

Figures in parenthesis are the number of cases
The only significant difference between the two studies was in thecase fatality that was 38% for the previous study and 11% for the present work. The standard normal deviation is -9, ($P<0.05$); the confidence limits are -0.0328 and -0.211.

In **Table 1**, some bio-social and clinical data of the 18 patients in this study were compared with values from a previous study from the same unit.

Discussion

The incidence of ruptured uterus from this study was 1 in 75 deliveries, which is similar to the values obtained in previous works from the same institution [6,9]. Similarly, there was no change in the modal parity at which the condition occurred. Lack of formal education amongst the patients was a common finding in all the studies from the institution. The appropriate intervention to change some of these bio-social characteristics, is formal education as prescribed by Harrison [10], which needs a sincere political will to execute. It is simply beyond the clinician!

There was however a significant reduction in case fatality from 38% in the previous work [6] to 11% in the present study ($P<0.05$). The obvious explanation for this improvement in maternal outcome is the immediate access to emergency obstetric care courtesy of the loan scheme. Other workers using different models have also demonstrated that access to obstetric care is an important factor in maternal mortality [11,12,13,14,15]. For instance, the scheme that was reported by Chiwuzie and co-workers, was funded by the community and a two percent interest was charged on the loan [8]. Also worthy of note is the attitude of the patients' relations after taking a loan from the scheme. After this initial assistance, they become more responsive to their patients and this manifests in the speed with which post-operative requests are faithfully executed.

Complete uterine rupture in which the fetus is already extruded into the peritoneal cavity is what weencounter in most cases. Hence, the surgery is usually to salvage the mother since the fetus is already dead at the time of admission. This is reflected in the 98% (41/42) and 100% (18/18) perinatal mortalities in the previous and present studies respectively.

The very high loan recovery rate (94%, 16/17) might be because the people are deeply religious. There was no need for a legal draftsman or a policeman to witness the transactions. Once the promise was made in the name of *Allah* (God), it would be redeemed. It could be argued that the only patient that defaulted might still come back after many months or years to redeem the pledge. The other possible explanation for the successful loan recovery is the fact that the whole hospital community was aware that the funds for the scheme came as private contributions and not from government or public funds. Therefore, there was genuine effort by all persons involved to ensure repayment as soon as it was possible. We suspect if it was a government scheme, the loan recovery might not be as successful. A 93% loan recovery was also reported from a community loan scheme in Nigeria [8].

The ultimate long-term approach to ruptured uterus is to prevent the accident from occurring by addressing the socioeconomic and cultural factors associated with the condition - a task that is beyond the clinician. We are however in agreement with the suggestion that as a short and immediate measure, those that are eventually brought to our maternity units with ruptured uterus should be attended to promptly, using all the resources at our disposal to save life [16]. By so doing we would have also partly addressed the issue of under utilization of maternal health services which has been identified as central to high maternal mortality [17,18]. In conclusion, our case fatality from ruptured uterus has reduced since the inception of the scheme. With proper management, loan recovery has been good and there is now the temptation to extend the initiative to other obstetric emergencies. We recommend that in countries without health insurance policies, and where emergency obstetric care is not free, health workers that cater for patients with limited resources could initiate similar schemes, at least for obstetric emergencies. This way, we would have taken one practical step towards reducing the very high maternal mortality that has become the trademark of some developing countries.

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