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Research Article

Traditional Birth Attendants in the Sengerema District Northwest of Tanzania: Whom they Serve and why their Delivery Practices Matter

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Abstract

Introduction: Reduction of maternal deaths due to preventable and manageable causes remains a public health challenge in Sub-Saharan Africa. In Northwest Tanzania, the emergency obstetric care services that are available are relatively poor and home delivery is commonly practiced. The aim of this study was to investigate the characteristics of women who delivered at home and delivery practices of Traditional Birth Attendants (TBAs) in the Sengerema District Northwest of Tanzania.

Methods: This descriptive cross sectional study recruited postpartum women who delivered at home, and TBAs from Sengerema District. Fifty TBAs identified by the community health workers and 160 postpartum women participated in face-to-face interviews in their homes.

Results: The majority of participants delivered their first born at home and displayed limited knowledge on pregnancy danger signs. Home delivery was considered feasible and acceptable by participants due to the accessibility, affordability and availability of TBAs services in their communities. None of the TBAs had formal midwifery training and their use of protective gear was low (32%) with majority of TBAs assisting delivery with bare hands. The use of herbal medicines and massaging were frequently reported by the TBAs to manage severe bleeding, prolonged or obstructed labour, and retained placenta.

Conclusion: Poor knowledge of the danger signs that are indicative of potential birth complications among women and accessibility to and affordability of health care services could be associated with home delivery practice. TBAs had no formal training in midwifery and their practices could place women and their infants at risk for complications during and following delivery.

Keywords: Maternal health; Pregnancy complications; Practices; Traditional birth attendants

Abbreviations

ANC: Antenatal Care; BEmONC: Basic Emergency Obstetric and Newborn Care; DMO: District Medical Office; IQR: Inter Quartile Range; TBAs: Traditional Birth Assistants

Introduction

In 2013, approximately 286,000 women died during childbirth worldwide; 62% of these deaths were women from Sub-Saharan Africa [1]. Tanzania, a country in Sub-Saharan Africa, is making slow progress in reducing of maternal mortality [1,2]. Currently, the maternal mortality rate is 410 per 100,000 live births [2]. Most maternal deaths occur during delivery or within a few hours after delivery. They are frequently due to preventable or manageable causes such as hemorrhage (27%), hypertensive disorder (14%), sepsis (11%), unsafe abortion (8%) and other complications (10%) [3,4].

Accessibility to and availability of quality obstetric services remain a public health challenge in many areas of Tanzania but particularly in rural settings where most of health facilities are dispensaries [5-7]. Many dispensaries are difficult for women to access for delivery because of the poor roads in rural areas and the lack of affordable and reliable local transport. Further, dispensaries typically employ a limited number of health professionals (trained staff) and frequently experience shortages in basic supplies, essential drugs, and equipments [5,7,8]. As a result, many dispensaries may not be able to offer even Basic Emergency Obstetric and Newborn Care (BEmONC).

Provision of free reproductive and child health care services remains a key strategy for improving maternal and child health in Tanzania [9]. In poor rural communities, few women attend the four recommended prenatal visits. As a result, the majority of these women are not provided with potentially lifesaving services such as health education, immunization, prenatal supplements and treatments for infections [2,10].

In Tanzania, more than half of pregnant women deliver at home with the assistance of Traditional Birth Attendants (TBAs) [2]. Research studies have reported limited knowledge of obstetric

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Table 1a: Socio-demographic characteristics of women and TBAs in Sengerema district.

Characteristics & Category		Women (n = 160)		TBAs (n = 50)	
		Number of TBAs	**Percent**	**Number of TBAs**	**Percent**
Age group (clients)	Less 18 years	3	1.88%		
	18 -34 years	149	93.13%		
	35 years & above	8	5.00%		
Age group (TBAs)	Below 50 years			9	18%
	50 years and above			41	82%
Marital status	Currently married	142	88.75%	17	34%
	Currently NOT married	18	11.25%	33	66%
Education level	None	20	12.50%	16	32%
	Primary	132	82.50%	34	68%
	Secondary	8	5.00%	0	0%
	Tertiary	0	0%	0	0%
Occupation	Peasant	130	81.25%	35	70%
	Traditional healer	18	11.25%	12	24%
	Business/Other	8	5.00%	3	6%
	Primary teachers	4	2.50%	0	0%

danger signs among TBAs [11,12]. Due to the number of women who deliver with the assistance of a TBA, the unpredictability of labor and delivery complications, and poor existing referral systems, TBAs' practices are of public health interest. Therefore, the aims of this study were twofold. Firstly, to determine the characteristics of postpartum women who delivered at home. Secondly, to investigate TBAs' birth practices related to obstetric complications. This study will provide detailed information on the present conditions of home delivery in Tanzania and could suggest opportunities for improving maternal and child health at the community level.

Methods

Study settings

Sengerema district is one of seven districts in Mwanza region. It is composed of 35 wards, 15 of which were purposively selected for inclusion in this study because of their accessibility (that is, the research team was able to access these wards via local roads). The main ethnic groups that inhabited Sengerema district are the Sukuma and Zinza. In the district, there is one hospital, nine health centers, 62 dispensaries, and one maternity waiting home. Based on expected deliveries, the Sengerema hospital records indicated that 36.6% of pregnant women delivered at health facilities with the assistance of skilled personnel in 2014. The current maternal mortality rate in Sengerema is 282 per 100,000 live births [13]. According to the TBA district coordinator, 135 TBAs are officially registered at the district medical office.

Study design & population

A descriptive cross sectional study was conducted that included TBAs and women who gave birth under their care within 6 months prior to data collection in August, 2014.

Sample size and sampling procedure

It was very difficult to trace all of the TBAs from the TBAs' registry; therefore, all identified and accessible TBAs in Sengerema District between August, 2014 and October, 2014 were invited to participate. A total of 53 TBAs were approached and 50 (~94%) agreed to participate in the study (no sampling procedure was implemented after identifying these TBAs). Thus, approximately 37% of the registered TBAs in Sengerema District consented to participate in this study.

With the assistance of these TBAs and community health workers, postpartum mothers with infants less than 6 months of age who delivered at home were identified. A total of 164 mothers who resided in Sengerema district at the time of data collection were traced and 160 (~98%) of them consented to participate.

Prior to the interviews, informed consent was obtained from the TBAs and the postpartum women. This study received approval from the Catholic University of Health and Allied Sciences, BUGANDO Mwanza. Permission to do the study was also sought and granted by the District Medical Officer - Sengerema District, the TBA coordinator, and local leaders in Sengerema District with support from Pathfinder International.

Data collection procedures

Face-to-face interviews were conducted with the TBAs and the women who gave birth under their care using a pre-tested structured questionnaire. Postpartum women were asked questions regarding pregnancy danger signs, antenatal care services, facility delivery, and their reasons for home delivery. The TBAs were asked about management of common labor and birth-related complications, including severe bleeding, prolonged or obstructed labour, and retained placenta. World Health Organisation provides definitions for these complications but adjustments that took into account the local context was considered. For example, postpartum hemorrhage is considered when a woman loses more than 500ml of blood in the first 24 hours after delivery [14]. As it is not practical for TBAs

Table 1b: Knowledge on danger signs related to pregnancy among women.

Variable	*Those who said yes*	*n*	*%*
Danger signs during pregnancy	Low blood level (Anemia)	106	66.25
	Bleeding during pregnancy	103	64.38
	Severe abdominal pain	98	61.25
	Vaginal discharge	92	57.50
	Threatening abortion/cramping	91	56.88
	Don't know any danger sign	10	6.25
	Know at least one danger sign	150	93.75
	Know all 5 danger signs (above)	34	12.88
Source of information	Friends/Relatives	149	93.13
	TBAs	87	54.38
	TV/Radio	81	50.63
	Health facility	24	15.00
Antenatal care at least once	Yes	157	98.13
	No	3	1.88
Place of delivery during first birth	It was their 1st birth (TBA)	24	15
	TBA/HOME	64	40
	Health facility	72	45
Reason for delivering at TBAs/Home	Easy accessible	157	98.13
	Relatively cheap	153	95.63
	Instant Labor	117	73.13
	Cultural beliefs	0	100
Women's concern	Safety during birth complications	155	96.88
	Poor hygienic conditions	157	98.13

to determine that a woman has lost more than 500 ml of blood, postpartum hemorrhage was, described as a woman wetting several pieces of clothing "locally referred as Kanga" after delivering, which is viewed as abnormal by TBA [15]. A delay in placental delivery of more than 30 minutes was used to as the definition for retained placenta [16]. Prolonged and obstructed labor was identified as labor that does not proceed to stage II (Fully cervix dilation that ends with baby delivery) after more than 18 hours.

Data analysis

All questionnaires were checked for completeness in the field. Open ended questions were manually coded before data entry and were entered into a computer using EPI data version 3.1. Data cleaning was done prior to data analysis. The cleaned data set was exported to STATA version 11 for data analysis. Simple statistics were computed including means, standard deviations, and percentages. These data provided information on the general characteristics of the TBAs and postpartum women, and maternal health during pregnancy. Due to small sample sizes in some of the cells, simple associations between the socio-demographic characteristics of TBAs and management of individual complications were examined using Fisher's exact test at 0.05 level of significant.

Results

General characteristics for postpartum women who delivered at home

The mean age of the women who participated in this study was 26 years (SD = 4.98 years). Of 160 women who participated, 93.13% were between 18 years and 34 years of age, and the majority were currently married (88.75%). The majority (82.50%) of these women had attained a primary education level and reported being small scale farmers (81.25%). While eleven percent of postpartum women reported that they were traditional healers (Table 1a). More than a half of participants reported that their first birth was a home delivery (55%). Almost all of the women (98%) attended an antenatal care clinic at least once. The median parity was 4 (IQR=3), with majority of women having 4 to 6 children.

Table 2a: TBAs experience and practices during delivery.

Variable		*TBA (N = 50)*	
Experience and acquired skills		n	%
TBA skills	Inherited/Learned from other TBA	35	70
	Spiritual power	11	22
	Certificate in Nursing	4	8
Reproductive Health seminars	Yes	15	30
	No	35	70
Years of Experience	Less than 5years	2	4
	Between 5-10years	3	6
	Between 10-20years	17	34
	Above 20 years	28	56
Hygienic behavior during delivery			
Hand washing practice	Yes	48	96
	No	2	4
Protective gear	Nothing	23	46
	Gloves	16	32
	Plastic bags	11	22
Cord care (Cutting cord)	New razor blade	44	88
	Used pair of scissors	6	12

Knowledge on pregnancy danger signs among postpartum women

Almost (~94%) all postpartum women reported being aware of at least one danger sign during pregnancy namely: anemia, threatening abortion, severe or unusual lower abdominal pain, abnormal vaginal discharge, and vaginal bleeding (Table 1b). Approximately 13% of women reported being aware of all 5 danger signs, and about 7% of the women knew nothing about danger signs during pregnancy although they reported attending antenatal care at least once. Few women noted that the health facility was the source of information on danger signs; typically, they reported that friends and relatives were the common source for information on pregnancy danger signs.

Reported influential factors behind home delivery practice

The women reported that the reasons they delivered at home were because the TBAs' services were: 1) accessible and available and 2) affordable, that is, there was no direct cost incurred for care and transportation since the TBAs were within the community and usually they were close relatives (either a mother-in-law or aunt). Another reason was that they experiences onset of labor pain and had no birth preparedness plan for transport to the local dispensary or health center. Cultural beliefs were not identified as influential factors for delivering at home. Concerns identified by the women related to home delivery were unhygienic conditions and the TBA's skill level (Table 1b).

Table 2b: Management of pregnancy complications by TBAs in Sengerema District.

Management of birth related complications		*n*	*%*
Severe bleeding after delivery	Referral	23	46
	Herbal use	19	38
	Abdominal massaging	5	10
	Mixture of water and sugar	3	6
Retained placenta	Herbal use	16	32
	Massage	13	26
	Referral	7	14
	Manual removal by hand	6	12
	*Provoke vomiting	5	10
	Others	3	6
Prolonged labor	Referral	20	40
	Herbal use	16	32
	Hot tea	5	10
	Massage	4	8
	Others	5	10

(Inserting finger in client's mouth)

Socio-demographic characteristics the TBAs

All of the TBAs who participated in this study were women and the majority (82%) were 50 years of age or older. None of TBAs had a secondary school education and 32% had no formal education. Although 70% of the TBAs considered themselves to be small scale farmers; some TBAs (24%) described themselves as traditional healers.

Training and experience in maternal reproductive health

As per (Table 2a), the majority (92%) of TBAs had no professional training in reproductive health issues. However, 30% reported attending reproductive health seminars over the period that they have been working with pregnant women. Only 8% of TBAs reported having some basic nursing training. Most TBAs (92%) reported that they acquired their knowledge of and skills in delivery from other experienced TBAs (such as mothers-in-law and aunts) through mentorship. Twenty-two percent of the TBAs thought that their ability to deliver babies was attained from spiritual divine power. Most of TBAs (90%) reported having more than 10 years of work experience as birth attendants, and only a few TBAs (4%) had less than 5 years of experience in assisting pregnant women deliver their babies.

Hygienic behavior during delivery

Hygiene is crucial during deliveries for prevention of infections in mothers, newborn babies, and birth attendants. When deliveries are carried out in relatively unhygienic environments, such as on contaminated delivery beds, bed sheets, or mats, and when unsterile sharp objects or bare hands are used, infection transmission is likely to occur. Ninety-six percent of TBAs reported washing their hands with soap and water before assisting with the delivery. However, only

32% reported using rubber gloves when assisting with delivery, 22% reported using plastic bags (locally referred as "mifuko ya plastiki") to deliver babies, and 46% reported delivering babies with their bare hands. Cord cutting using a new razor blade was a common practice; however, a considerable minority of TBAs (12%) reported using a used pair of scissors (Table 2a).

Management of birth complications by TBAs

TBAs reported various methods of managing postpartum hemorrhage including the use of herbal medicines and abdomen massaging, with majority of them referring their clients to nearby health facility (Table 2b). For retained placenta, only 14% of TBAs reported referring women to a health facility (note, this is done when simple interventions such as herbal medicines and massaging do not yield the desirable outcome). The majority (58%) of TBAs either gave these women herbal medicines or massaged the abdomen to stimulate the removal of the retained placenta. Manual removal of the retained placenta with bare hands was also practiced by 12% of TBAs. Furthermore, to remove a retained placenta, a few TBAs reported tying the cord around a stone and instructing the woman to stand. When TBAs were faced with labour that lasted for more than 12 hours (that is, prolonged labour or obstructed labour), only 40% reported referring their clients to health facilities. Other TBAs managed the situation by giving herbal medicines and massaging the woman's back in order to induce labour. The practices reported for managing birth-related complications did not differ by years of experience among all TBAs. However, TBAs who were also traditional healers tended to using herbal medicines more than TBAs who were small scale farmers (Table 2c). Traditional healers were more likely to report giving their clients herbal medicines for retained placenta, prolonged and obstructed labor, and severe vaginal bleeding compared to TBAs who described themselves as subsistence farmers. For example, for severe vaginal bleeding, 83% of traditional healers gave their clients herbal medicines compared to 26% of TBAs who are small-scale farmers, this difference was statistically significant (exact test p-value <0.05). The most common practice reported by TBAs for women with severe vaginal bleeding or obstructed or prolonged labour was referral to the nearby health facility. However, none of traditional healers reported referring their clients for these conditions/complications.

Discussion

Women who delivered under the care of unskilled TBAs were young, had low levels of education, high parity, and relatively low knowledge of danger signs associated with pregnancy complications. Previous studies have observed similar characteristics in postpartum women who delivered at home [17,18]. Early marriage is typical in rural settings in Tanzania and may hamper the opportunity for young women to attain education beyond the primary level. Consequently, this may have implication on their understanding and perceptions of the maternal health risks associated with pregnancy and delivery. Most participants were aware of at least one obstetric danger sign. The most common danger signs reported were anemia, vaginal bleeding, and severe abdominal pain. Few women knew all of the danger signs and a considerable number of women who reported attending ANC did not know any obstetric danger signs. This is consistent with the finding that the health facility was mentioned by only 15% of participants as a source of information on danger signs during pregnancy.

This study and others have reported that pregnant women have limited information of the danger signs during pregnancy [19,20] and that fact that this information is not acquired during ANC visits is a significant concern. Knowledge regarding pregnancy, delivery and postpartum danger signs should be acquired during antenatal visits; however, this may be hampered by the fact that many pregnant women in Tanzania do not participate in all 4 recommended ANC visits [8,21]. However, attending antenatal clinics may not always translate into opportunities for health education. This could be due to lack of ANC staff and the limited time that staff has with each woman who attends the ANC clinic. In many rural ANC, local health care personnel are overloaded with work and do not have time to convey this information [8,21]. Further, the low levels of education may contribute to failure on understanding the information presented [8,21].

Primigravida is considered as a risk factor for obstetric complications including prolonged or obstructed labor that may result to fistula [22]. In this study, more than half of the women reported delivering their first born at home. Most of the women in rural settings consider home delivery with the assistance of a TBA as the ideal situation [6,10]. Research has also suggested that limited knowledge on reproductive health, cost related factors (poverty), and poor quality of maternal care contribute to women's decisions to deliver at home [6,23]. These factors as well as poor infrastructure and poor quality of obstetric care could interfere with the present efforts of the ministry of health and other stakeholders to increase the number of health facility deliveries [8,17,24]. Almost all of the participants reported Attending Antenatal Care (ANC) at least once during the pregnancy. This did not appear to have an influence on home delivery. The fact that most women attended the ANC at least once could be for either pregnancy confirmation or to obtain a clinic card, which allowed them to gain access to health-related benefits such as receiving insecticide treated net [2,10].

In this study, accessibility, affordability, and instant labor pain were commonly reported reasons for home delivery. Similar study findings have been reported elsewhere [10,24]. In Tanzania, maternal and child health services are freely provided in public health facilities but if cost free reproductive health care is inaccessible, inadequate, and/or unfriendly, women may persist practicing home delivery [5,6].

Traditional birth attendants still serve the majority of women in the rural settings in Tanzania [2,7]. Most of these TBAs are elderly women and many are traditional healers. They have little or no professional training and typically developed their skills by working with other experienced TBAs. Thus, junior TBAs learn delivery skills and other maternal and child health practices including management of complications or morbidities by working with experienced TBAs. They are unskilled health personnel who may not be knowledge able on causes of maternal complications that could occur during labor, delivery or immediately postpartum. Poor knowledge of these complications among TBAs has been also been reported in other studies, and could influence on how they manage birth complications [11,12].

Hygiene behavior during delivery is crucial for maternal and newborn health. It involves hand washing before assisting with delivery, use of a clean mat and or sheets on which the mother delivers

the baby. It also involves use of protective gear such as sterilized gloves, and use of new and or sterilized equipment for cord cutting. Our findings revealed that the majority of TBAs reported washing their hands with soap and water prior to delivery. This practice is very important for the prevention of transmission of infections during delivery that could lead to maternal or neonatal sepsis. Different practices of hand washing have been reported elsewhere with some TBAs using soap and water and others smearing oil on their hands prior to assisting with delivery [11,25,26]. Unfortunately, most of the TBAs did not use sterilized gloves during delivery. Bare hands and plastic bags locally know as "mifuko ya plastiki" were frequently used during delivery. Such practices may increase the likelihood of infection transmission [27]. In other part of Tanzania, TBAs have reported reusing the same pair of gloves several times due to shortage of supplies; leaves and oil were used to clean the gloves [26]. The reuse of gloves by TBAs could also increase the possibility of HIV and Hepatitis B transmission. Knowledge on mode of transmission for these diseases has been reported to be poor among some TBAs in India and Nepal [11,26] and to the best of our knowledge; no research has been conducted on the, knowledge levels of TBAs in Tanzania regarding HIV and Hepatitis B transmission.

Sepsis is among the leading causes of maternal and newborn deaths and is associated with unsterile conditions during delivery [3,28]. Proper cutting of the umbilical cord care is crucial for reducing neonatal sepsis and tetanus [29]. In this study, some of TBAs reported using a used pair of scissor to cut the cord. This is a risky practice especially when the used scissors are not sterilized, which is quite likely the case in rural Tanzania settings. Considering the generally poor hygienic conditions in rural areas of Tanzania due to lack of safe, clean water, such practice, can result in transmission of infections [26].

Management of labor and birth related complications are crucial for the survival of mother and her newborn baby. Prolonged and obstructed labor, retained placenta and severe vaginal bleeding after delivery can be life threatening complications if timely and appropriate interventions are not provided [1,3,30]. Inappropriate management on these complications can also lead to maternal morbidity such as fistula [22]. In this study, TBAs reported using herbs and massage, and manually removing the retained placenta either by pulling or hand insertion. These harmful practices including cord pulling and hand insertion for placenta removal have been reported elsewhere [11,15,30-32]. These procedures may be harmful due to the risk of severe bleeding, especially when the cause of the complication is not clear [30]. A placenta may be retained because it is trapped or incarcerated. Other causes include dysfunctional labor, full bladder, adhesion of the placenta, or mismanagement of the third stage of labor [33]. When the placenta is forced to come out either by pulling or hand insertion, removal could result in severe postpartum hemorrhage, uterine inversion increase the risk of uterine infection and endometriosis [33]. Additionally, unhygienic practices of the TBAs could lead to maternal and neonatal sepsis [27].

Primary postpartum hemorrhage is a leading cause of maternal deaths [3]. It is reported to be more common in home deliveries than facility deliveries [18]. TBAs' determination of whether or not a woman is experiencing severe vaginal bleeding is based on their visual judgment of the number of piece of cloth, "Kanga", women wet within the first 24 hours after delivery. This definition has also been reported elsewhere in the literature [15,31]. However, visual estimation of the amount of blood lost during delivery may lead to underestimation [14]. In this study, TBAs reported managing this complication by using herbs, abdominal massage and a mixture of water and sugar. Others studies have reported similar interventions to manage vaginal bleeding including herbal use, hot water, drinking cow blood and divine intervention [15,26,30-32]. The effectiveness of these approaches is questionable and their use could lead to a delay in women receiving appropriate care and referral to a health facility.

Prolonged labor may be caused by the baby being too big to move through the birth canal, mal-presentation, and obstruction in the pelvis or poor uterine contractions. This complication requires comprehensive obstetrics care to ensure a safe delivery for the mother and child. Comprehensive obstetrical care, however, is typically not available with home delivery especially in African rural settings [32,34]. Birth complications may lead to infant and/or maternal death or maternal disability such as obstetric fistula due to untimely management of prolonged and obstructed labor [22,34,35]. TBAs reported using herbs to accelerate the labor; they had no knowledge of the possible causes of prolonged labor. Other studies have reported that TBAs have associated prolonged labor with infidelity behavior during pregnancy. Such beliefs could be associated with delays in making appropriate decision to refer their clients to health facilities for appropriate intervention [10,30,32]. Poor knowledge of birth-related complications among TBAs could explain some of the misconceptions surrounding prolonged labor and their decisions on its management [12,25,26,36].

In Tanzania, although TBAs commonly deliver babies in rural communities, they receive limited supervision and training from the health facilities. Providing them with basic midwifery training could result in a reduction of maternal mortality through early recognition of complications and timely referral. Other developing countries with similar issues have introduced training initiatives to improve the practices of TBAs [12,26,37]. However, the benefits of such training initiatives are uncertain [38,39]. Further research is needed to investigate whether the introduction of basic midwifery training for TBAs results in improved outcomes for mothers and their infants.

Limitations of the Study

The data on the practices and management of birth related complications and hygiene were based on self reports. Therefore, the study findings should be interpreted with caution. The observation of actual practice during labour and delivery was not possible due to privacy and confidentiality issues. The women who participated in this study were identified by TBAs and they could have particular characteristics that may be different from other women who deliver at home. Therefore, these findings may not be applicable to all women who deliver at home because of selection bias and survival bias.

Conclusions & Recommendations

Reproductive health education should be emphasized among women in rural settings in order to improve health seeking behavior, family planning and birth preparedness. The limited professional training of TBAs could influence on how they manage maternal

complications in the rural settings. Unhygienic delivery practices may increase the transmission of infections (maternal and newborn sepsis, HIV to mention a few), which calls for provision of health education among TBAs. Support, training, and supervision are crucial to TBAs since they provide an important service in rural settings where obstetric care and services are limited. They should also be trained for early recognition of maternal complications and be encouraged to refer women to health facility. The use of herbal remedy for most maternal conditions is the standard practice of TBAs. These herbal remedies need to be investigated for their effectiveness.

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