ORIGINAL RESEARCH ARTICLE

Assessment of Maternal Satisfaction with Facility-based Childbirth Care in the Rural Region of Tambacouda, Senegal

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Abstract

In Senegal, only 60% of mothers in rural areas deliver in health facilities. Mothers' satisfaction with their facility-based childbirth experience is one of the factors in their choosing to deliver in such facilities in subsequent pregnancies. The objective of this study was to assess whether compliance with childbirth care based on the mothers' perception of facility-based childbirth care contributes to the degree of maternal satisfaction. We conducted a secondary analysis of cross-sectional survey data collected from 259 mothers who had normal deliveries at facilities in rural areas of Senegal in 2011. The association between overall maternal satisfaction with childbirth care and 23 standard care survey items was assessed. The results showed that the degree of compliance with standard care and eight of 23 survey items were associated with maternal satisfaction. We conclude that to improve maternal satisfaction, facilities need to guarantee compliance with standard care. *(Afr J Reprod Health 2014; 18[4]:95-104).*

Keywords: facility-based childbirth care, maternal satisfaction, compliance standard care, Senegal, rural

Résumé

Au Sénégal, seulement 60% des mères dans les zones rurales accouchent dans des établissements de santé. La satisfaction des mères avec leur expérience de l'accouchement en établissement de santé est l'un des facteurs dans leur choix d'accoucher dans des établissements pendant les grossesses ultérieures. L'objectif de cette étude était de vérifier si le respect des règles concernant les soins de l'accouchement basé sur la perception des mères contribue au degré de la satisfaction maternelle. Nous avons effectué une analyse secondaire des données de l'enquête transversales recueillies auprès de 259 mères qui ont eu des accouchements normaux dans les établissements dans les zones rurales du Sénégal en 2011. L'association entre la satisfaction maternelle globale des soins de l'accouchement et 23 éléments de l'enquête de soins standards a été évaluée. Les résultats ont montré que le niveau de conformité aux soins standards et huit questions parmi les 23 questions de l'enquête ont été associées à la satisfaction maternelle. Nous concluons que, pour améliorer la satisfaction maternelle, les établissements doivent garantir le respect de soins standard par toutes les mères. *(Afr J Reprod Health 2014; 18[4]:95-104).*

Mots-clés: accouchement soins à base d'installation, satisfaction maternelle, respect soins standard, Sénégal, rural

Introduction

Sub-Saharan Africa has the highest maternal mortality ratio (MMR) and the lowest coverage of births attended by skilled health personnel in the world. Reduction of the MMR is one of the targets of the Millennium Development Goal (MDG) 5 to improve maternal health[1]. To reduce the MMR, facility-based childbirth at a primary-level institution is the ideal strategy[2]. In most developing countries, large gaps exist in coverage of deliveries at facilities. In Senegal, only 60% of mothers in rural areas deliver at facilities as compared with 93% of mothers in urban areas[3]. Distance and cost of care are the major barriers preventing rural mothers from accessing facility-based childbirth care. Moreover, most rural facilities lack sufficient professional health personnel, as well as a supportive infrastructure to provide childbirth care[4].

Mothers' dissatisfaction with their childbirth experience at facilities is an additional barrier to their choosing to deliver at facilities for subsequent pregnancies[5,6]. Previous studies in developing countries including Senegal have reported cruel treatment, such as shouting or scolding by caregivers, poor adherence to technical standards of care, and use of inappropriate technologies at health facilities[7-11].

Client satisfaction (hereafter, "maternal satisfaction") is an important measure to evaluate health care[12]. Although the concept of maternal satisfaction is a multidimensional construct, robust studies have shown that the processes of care (interpersonal, informative, and technical aspects) can influence maternal satisfaction[13]. Recent studies in sub-Saharan Africa have shown that maternal satisfaction with facility-based childbirth care was associated with various processes of care, accessibility to the health facility, and the mothers' characteristics[14-16]. A review study of maternal satisfaction with the childbirth experience found that demographic characteristics have little or no relationship with maternal satisfaction[17].

The processes of care are generally defined as standard care in protocols or guidelines drawn up by health authorities[18], and health personnel's practice with regard to compliance with standard care is often used to assess the level of health care at the facility. As health care delivery is highly labor-intensive, the quality of care is directly mediated by the health personnel[19]. In particular, the ability of health personnel to comply with standard care is essential.

In previous studies conducted in developing countries, health personnel practice with respect to giving childbirth care was measured by professionals[8,9] based on standard care criteria or subjectively by mothers[15,16,20]. Some lines of evidence show that clients have the ability to appropriately judge not only the interpersonal skills, but also the technical competence of health personnel[13]. In Senegal, a survey to assess the practice of childbirth care at the facility and mothers' satisfaction about childbirth care was administered during a joint project of the Senegalese Ministry of Health and the Japan International Cooperation Agency conducted from January2009 to December 2011with the goal of improving the quality of childbirth care at a primary-level institution. In this survey, the practice of childbirth care was measured on the basis of a set of standard care items by mothers who delivered there.

We hypothesized that high compliance with standard care, as measured by mothers' perception, would increase the degree of maternal satisfaction[21]. The aims of this study were two-fold: (1) to identify the association between maternal satisfaction and degree of compliance with standard care and (2) to determine which aspects of standard care contribute to this satisfaction.

Methods

Background

This project was implemented in Tambacouda, one of the poorest and remotest regions of Senegal, where the proportion of facility-based childbirths is 45%[3]. This region is one of the typical rural regions of Senegal in which there are underlying childcare issues.

First, the number of midwives staffed at each facility did not meet the quotas set by the national regulations. This insufficient number is due both to the inconvenience of daily life and of the work environment and to the difficulty of cultural and social adaptation caused by the many different local languages, which prevent midwives from wishing to stay in rural areas for any length of time. Second, for mothers, lack of financial accessibility and distance to the facility causes them to choose to deliver at home. And third, inappropriate care and treatment are often observed at the facilities.

The project focused on how to improve the ability and practice of caregivers based on evidence-based and women-centered care, while simultaneously providing some activities to reinforce the work environment so that caregivers could sufficiently demonstrate their ability to give childbirth care. One health center and one health post were selected as interventional primary-level facilities. Only normal deliveries were performed at these facilities because of inability to provide emergency obstetric care. At the health center, the

maternity ward was staffed by professionals and by nonprofessionals. Four teams, each comprising 2 professionals and 2 nonprofessional health personnel, worked 2 delivery shifts during 24 hours. The health post was staffed by 2 male nurses and 3 nonprofessionals' female health personnel. Such teams composed of both professional and nonprofessional health personnel are often observed in rural areas of developing countries because of the massive shortage of professional health personnel at primary-level facilities[4]. Hereafter, we will refer to both the professional and the nonprofessional health personnel as "caregivers" because the delivery was conducted by a mixed team, and, therefore, our study could not distinguish between whether mothers had received care from professional or from nonprofessional personnel.

Data

This study was conducted using a secondary analysis of cross-sectional survey data collected as part of the project during August and September 2011. Based on the delivery register at the facilities, mothers in good health who normally delivered healthy infants at the interventional facilities completed the surveys. Of the 259 respondents who provided consent to participate in the study, 227 were from the health center and 32 from the health post. These numbers represent the typical numbers of monthly deliveries in each facility. In 2011, about 2819 deliveries at the health center and 250 deliveries at the health post were conducted. The survey was a structured questionnaire composed of 74 questions, 22 of which were open.

Table 1 shows the respondents' overall satisfaction, which was selected as the dependent variable. Satisfaction was measured using a 5-point Likert-type scale with the following question: "Are you satisfied with the care you received during this delivery?" As independent variables, 6 sociodemographic characteristics and 4 accessibility measurement items (Table 2) and 23 standard care items (Table 3) were selected.

Table 1: Maternal overall satisfaction with childbirth care at the facilities

Overall satisfaction	**All (n = 259) Number (%)**	**Health Center (n= 227) Number (%)**	**Health Post (n = 32) Number (%)**	***P****
Very satisfied	117(45.2)	100(44.1)	17(53.1)	0.72
Satisfied	112(43.2)	99(43.6)	13(40.6)	
Fairly satisfied	18(6.9)	17(7.5)	1(3.1)	
Dissatisfied	5(1.9)	5(2.2)	0(0.0)	
Very dissatisfied	7(2.7)	6(2.6)	1(3.1)	

*Chi-square test for independence between health center and health post

The respondents' sociodemographic characteristics consisted of age, education, ethnicity, and marital status, and their pregnancy information included parity and number of pregnancy visits. Accessibility was measured by the level of the facility, means of transportation to the health facility, total delivery cost, and respondents' evaluation of the cost. The 23 standard care items concerned compliance with standard care from the respondent's perspective. For each standard care item, the respondent was asked to assess it solely based on her perception.

We categorized the standard care items into 3 types: interpersonal, informative, and technical. The interpersonal aspects of care comprised 5 items: "respect for mother's privacy," "no feeling of loneliness," "receiving empathetic support," "companions present during delivery according to mother's wish," and "congratulatory wishes from caregiver." The informative aspects comprised 7 items: "giving as much information as mother desired," "proposing freedom of position for childbirth," and information about "the benefits of eating," "the state of the fetus after monitoring," "how to breast-feed," "the postnatal consultation," and "what to do in the case of health problems." The technical aspects comprised 11 items: "nonpharmacological methods of pain relief," "not

Table 2: Mothers' sociodemographic characteristics and accessibility to the facilities and results of bivariate analysis of association between maternal satisfaction and each independent variable (n = 259)

Mothers' characteristics	**Number(%)**		***P***
Age*			0.41
Mean (SD)		25.0 (6.4)	
Min. - Max.		12-45	
Education*			0.74
None or informal	121 (46.8)		
Primary	98 (37.8)		
Secondary or more	40 (15.4)		
Ethnicity†			0.93
Poular	112 (43.2)		
Wolof	32 (12.4)		
Manding	39 (15.1)		
Diola	7 (2.7)		
Serere	6 (2.3)		
Other	63 (24.3)		
Marital status†			0.62
Single or others	18 (7.0)		
Married/Monogamous	174 (67.2)		
Married/Polygamous	64 (24.7)		
NA	3 (1.2)		
Parity*			0.56
Mean (SD)		3.2 (2.2)	
Min. - Max.		1-12	
Pregnancy visit*			0.53
Mean (SD)		3.3 (1.3)	
Min. - Max.		0-10	
NA	3 (1.2)		
Accessibility to the facilities			
Means of transport†			0.94
Taxi	185 (71.4)		
By foot	36 (13.9)		
Other	38 (14.7)		
Total delivery cost (CFA franc)*			0.68
Mean (SD)		9205.5 (5763.2)	
Min. - Max.		0-30000	
Evaluation of the cost*			0.64
Cheap	30 (11.6)		
Affordable	140 (54.1)		
Expensive	68 (26.3)		
Very expensive	19 (7.3)		
NA	2 (0.8)		
Level of facility*			0.46
Health center	227 (87.6)		
Health post	32 (12.4)		

*Kendall τ rank correlation, †Chi-square test of association

encouraging the mother to push before she feels the urge to bear down," "vaginal examination not performed by more than 3 caregivers," "supine position not used routinely during labor," "supine position not used routinely during delivery," "permission given to drink fluids," "permission given to eat," "regular fetal monitoring," "comfortable delivery position," "early skin-to-skin contact with the newborn," and "initiation of breast-feeding within 1 hour of delivery."

Additionally, to measure the degree of overall compliance with standard care, 4 variables ("overall care," "interpersonal care," "informative care," and "technical care") were created (Table 3). These variables represent the proportion of standard care items.

Statistical analysis

First, we conducted a descriptive analysis of all the variables. Next, we created a Kendall τ rank correlation matrix to check the relationship or multicollinearity among independent variables. Next, we conducted a bivariate analysis to determine the relationship between the independent and dependent variables. The chi-square test of association was used to compare the nominal and ordinal variables, and a Kendall τ rank correlation analysis, to compare the interval and ordinal variables. All of the care items and level-of-facility variables and other items for which the probability values were less than 0.25 were accounted for in the multivariate analysis[22,23]. Assuming that the dependent variable is an interval variable, we used multiple linear regression analysis to construct a model to identify the factors that might be associated with maternal satisfaction.

Models 1, 2, and 3 were constructed according to the characteristics of the care variables. Model 1 used an "overall care" variable, whereas model 2 used "interpersonal care," "informative care," and "technical care" variables. Model 3 used the 23 standard care items. The forced entry method was selected for these 3 models. On the basis of model 3, model 4 was constructed using the best subset regression. All of the models were checked for multicollinearity using the variance inflation factor (VIF). Akaike's information criterion (AIC) was

used to evaluate the goodness of fit. Probability values less than 0.1 were retained. R version 2.15.2 software was used to analyze the data. This study was approved by the ethics committee of the University of Tsukuba in September 2012 (# 675).

Results

Descriptive statistics and bivariate analysis results

Table 1 shows the maternal overall satisfaction with childbirth care. The majority of respondents reported being satisfied with the care they received. The distribution of the degree of satisfaction did not differ among the facilities (P = 0.72). Table 2 shows the mothers' characteristics and accessibility to the facilities. Their mean age was 25 years. Of the more than 6 ethnicities, the most common was Poular (43%). Most of the mothers were married (92%). More than half (53%) had received a formal education. For 64 mothers (25%), this was their first delivery. One hundred twenty mothers (46%) underwent more than 4 perinatal examinations, as recommended by the Senegalese Ministry of Health. Most of the mothers (71%) came to the facilities by taxi, and 14% came on foot. The mean total cost of the deliveries was 9205 CFA francs (roughly $20).

Table 3 shows the standard care that the mothers received. The mean of the overall care was 56%, with a wide range from 22% to 87%. In each category, the mean of the technical care was 54% (range, 18%-91%), the mean of the informative care, 50% (range, 0%-100%), and the mean of the interpersonal care, 71% (range, 0%-100%). The majority of the mothers showed favorable appreciation towards the interpersonal aspects of care.

Concerning the informative aspects of care, most of the mothers (93%) responded that they obtained as much information as they wished. However, few of them received enough information about the others 5 items: freedom of position for childbirth (21%), benefits of eating (22%), state of the fetus after monitoring (42%), how to breast-feed (48%), and what to do in the case of health problems (43%).

Among the 11 technical aspects of care items, 3 were not complied with by over half of mothers. Those aspects of technical care were offering fluids to drink (8%), permitting eating (12%), and providing nonpharmacological methods of pain relief (32%).Most (89%) replied that the delivery position was comfortable.

Table 3 also shows the association between the degree of maternal satisfaction and each independent variable. Maternal satisfaction was not significantly correlated with the overall characteristics of the mothers or with the accessibility variables. And all 4 of the degrees of overall compliance with standard care and 13 standard care items significantly correlated with maternal satisfaction. These 13 standard care items were all 5 of the interpersonal aspects of care, 4 of the 7 informative aspects of care, and 4 of the 11 technical aspects of care.

Multiple linear regression modeling results

The estimation results are listed in Table 4. The overall care in model 1 and the interpersonal, informative, and technical care in model 2 were associated with maternal overall satisfaction. In model 3, 7 items including "respect for mothers' privacy," "no feelings of loneliness," "empathetic support," "congratulatory wishes from the caregiver," "information on what to do in the case of health problems," "nonpharmacological methods of pain relief," and "comfortable delivery position" were positively associated with maternal satisfaction. The conclusion drawn from model 4 was that the degree of satisfaction significantly increases with all 7 items in model 3 and with "early skin-to-skin contact with the newborn." All of the VIFs were under 4.0. Comparing the AICs, model 4 had the smallest value and was regarded as the best-fitting of the 4 models.

Table 3 Proportion of compliance with standard care and results of bivariate analysis of association between maternal satisfaction and each standard care variable

Received standard care (n=259)	Mean (%)	Min. (%)	Max. (%)	SD	Number (%)	*P*§
Degree of compliance						
Overall care	56.3	21.7	87.0	13.0		< 0.01***
Interpersonal care	70.5	0.0	100.0	21.7		< 0.01***
Informative care	50.2	0.0	100.0	20.3		< 0.01***
Technical care	53.6	18.2	90.9	15.6		0.011**
Interpersonal aspects of care						
Respect for mother's privacy					218 (84.2)	< 0.01***
No feeling of loneliness†					218 (84.5)	< 0.01***
Receiving empathetic support†					231 (89.5)	< 0.01***
Companions present during delivery according to mother's wish*†					61 (23.6)	0.049**
Congratulatory wishes from caregiver‡					185 (72.0)	< 0.01***
Informative aspects of care						
Giving as much information as mother desired					241 (93.1)	0.30
Proposing freedom of position for childbirth					54 (20.8)	0.011**
Information about the benefits of eating					57 (22.0)	0.15
Information about the state of the fetus after monitoring					93 (35.9)	0.02**
Information about how to breast-feed					124 (47.9)	0.04**
Information about the postnatal consultation					230 (88.8)	0.22
Information about what to do in the case of health problems†					112 (43.4)	< 0.01***
Technical aspects of care						
Nonpharmacological methods of pain relief					82 (31.7)	0.012**
Not encouraging the mother to push before she feels the urge to bear down					165 (63.7)	0.83
Vaginal examination not performed by more than 3 caregivers‡					219 (85.2)	0.15
Supine position not used routinely during labor					137 (52.9)	0.71
Permission given to drink fluids					21 (8.1)	0.93
Permission given to eat					32 (12.4)	0.15
Regular fetal monitoring					221 (85.3)	0.67
Supine position not used routinely during delivery†					151 (58.5)	0.43
Comfortable delivery position‡					229 (89.1)	< 0.01***
Early skin-to-skin contact with the newborn					147 (56.8)	< 0.01***
Initiation of breast-feeding within 1 hour of delivery†					182 (70.5)	< 0.01***

* $P < 0.1$, ** $P < 0.05$, *** $P < 0.01$, †n = 258, ‡n = 257, §Kendall τ rank correlation

Table 4 Association between maternal satisfaction and compliance with standard care

	Model 1 (n = 259)		**Model 2 (n = 259)**		**Model 3 (n = 248)**		**Model 4 (n = 248)**	
	β	***P***	***B***	***P***	***β***	***P***	***β***	***P***
Intercept	1.67	< 0.01***	1.43	< 0.01***	0.91	0.01***	1.15	< 0.01***
Level of facility (Health Center=0, Health Post=1)	-0.10	0.51	0.01	0.95	0.12	0.50		
Degree of compliance								
Overall care	0.03	< 0.01***						
Interpersonal care			0.02	< 0.01***				
Informative care			0.004	0.098*				
Technical care			0.008	0.01**				
Interpersonal aspects of care								
Respect for mother's privacy					0.39	< 0.01***	0.42	< 0.01***
No feeling of loneliness					0.49	< 0.01***	0.48	< 0.01***
Receiving empathetic support					0.38	0.04**	0.43	0.012**
Companions present during delivery according to mother's wish					-0.03	0.83		
Congratulation from caregiver					0.28	0.03**	0.26	0.03**
Informative aspects of care								
Giving as much information as mother desired					0.20	0.34		
Proposing freedom of position for childbirth					0.16	0.30		
Information about the benefits of eating					-0.18	0.33		
Information about the state of the fetus after monitoring					0.17	0.14	0.15	0.15
Information about how to breast-feed					-0.03	0.76		
Information about the postnatal consultation					0.12	0.49		
Information about what to do in the case of health problems					0.20	0.09*	0.19	0.07*
Technical aspects of care								
Nonpharmacological methods of pain relief					0.22	0.05*	0.25	0.02**
Not encouraging the mother to push before she feels the urge to bear down					-0.11	0.36		
Vaginal examination not performed by more than 3 caregivers					0.12	0.46		
Supine position not used routinely during labor					-0.002	0.98		
Permission given to drink fluids					-0.01	0.98		
Permission given to eat					0.12	0.56		
Regular fetal monitoring					-0.13	0.40		
Supine position not used routinely during delivery					-0.13	0.29		
Comfortable delivery position					0.55	< 0.01***	0.47	< 0.01***
Early skin-to-skin contact with the newborn					0.20	0.10	0.25	0.015**
Initiation of breast-feeding within 1 hour of delivery					0.13	0.35		
AIC		633.77		619.22		603.49		581.46

*$P < 0.1$, **$P < 0.05$, ***$P < 0.01$

Discussion

Promoting facility-based childbirth is a priority issue in most developing countries, even though the progress made in rural areas has been slow[4]. To break through this situation, mothers' perception of the childbirth experience must be more carefully considered in evaluations of health care, as maternal satisfaction is one of the most important factors for future utilization of health care facilities[13]. The present study is unique among the few studies of maternal satisfaction with facility-based childbirth in sub-Saharan Africa because the compliance with standard care was quantitatively measured based on the mothers' perception.

We assessed whether maternal satisfaction was associated with the perceived degree of compliance with standard care and found that it was. High levels of overall compliance with standard care contributed to increasing levels of satisfaction. In other words, the mothers who perceived themselves as not receiving standard care had decreased levels of satisfaction. This association was also found in all 3 categories of standard care.

It has been suggested that improved caregiver practices with respect to compliance with standard care might increase use of health care facilities[24]. Our study showed that improved perceived compliance with standard care might increase maternal satisfaction, which in turn contributes to future use of health care facilities.

However, we also observed a wide disparity in mother's perceptions of their compliance with care. First, the mothers' perceived degree of compliance with standard care varied from as low as 22% to as high as 87% within the facilities. Next, a low proportion of practice of certain care items that generally take time to provide, such as giving information, was observed.

In the context of childbirth care at facilities in rural in Senegal, the reason for the wide disparity in mothers' perceptions of the degree of compliance with care and low practice of certain care behaviors would be not solely due to the ability of caregivers[24]. We speculate that the wide disparity would be also due to inappropriate working conditions such as shortage of personnel and materials or many deliveries relative to the caregivers' capacity. To confirm this tendency, simultaneous assessment of the caregivers' ability by medical professionals and of the working environment conditions may be preferable.

Our findings also suggest that 8 standard care items contributed to maternal satisfaction. Maternal satisfaction was increased when mothers received nonpharmacological methods of pain relief, were comfortable with the delivery position, and had early skin-to-skin contact with the newborn. And when mothers perceived that their privacy was respected, they did not feel lonely, they received empathetic support, and they were congratulated by their caregiver, their satisfaction was increased. Additionally, the information on what to do in the case of health problems contributed to their satisfaction.

A review study about maternal satisfaction with the childbirth experience found that "the interpersonal relationship," which includes the interpersonal and informative aspects of care, had a major influence on satisfaction[17]. In the present study, 5 of the 8 items associated with maternal satisfaction were considered as "the interpersonal relationship" of care. In the context of maternal health, women-centered care is recently being recognized as one of the priority challenges to improving quality in healthcare[25]. Such a sense of women-centeredness will promote the interpersonal relationship between the mother and the caregivers.

The caregiver's technical support, such as nonpharmacological methods including massage and a comfortable delivery position, likely relieves mothers' pain and increases their comfort during childbirth. They were categorized as "comfort measures" in studies in developed countries, which were identified as one of the aspects contributing to maternal satisfaction[17]. The association between early skin-to-skin contact with the newborn and maternal satisfaction is consistent with the finding of a previous study conducted in Sri Lanka[20].

Most of the mothers in this study were satisfied with the care they received. This result is often observed when we obtain information about overall satisfaction[13,17]. We also considered that dissatisfaction might not have been expressed[26]. Previous studies in sub-Saharan Africa showed

that studies of only mothers with normal deliveries tended to show higher satisfaction rates than did studies that also included mothers with abnormal deliveries[8,14,16].

A limitation of the secondary data collected in this study is that only mothers who had no problem with distance and financial accessibility were selected for the dataset.

In conclusion, our findings showed that maternal satisfaction was mediated by the mothers' perception of compliance with care, which showed wide disparities in practice within the facilities. We suggest that facilities need to more carefully guarantee compliance with standard care by all mothers. Given the difficulties confronting rural facilities in Senegal, the practice of caregivers might not always be consistent with their ability[24]. Information about the practice of care based on the mothers' perception would enable caregivers to reconsider which care behaviors should be improved and why some care behaviors could not be provided for mothers. Such assessment would contribute to improvement in the practice of care. And positive maternal experiences will contribute to the future utilization of such facilities.

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Contribution of Authors

Ms Oikawa, as a doctoral candidate, conceived and designed the study under the guidance of Professor Kondo. During the project, the primary date was collected and the descriptive statistics was analyzed under the cooperation between Dr Sonko, Dr Faye, Dr Diadhiou, and Ms Oikawa. The manuscript was prepared mainly by Ms Oikawa under the guidance of Professor Kondo and Professor Ndiaye.

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