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Determinants of women's satisfaction during their delivery in the health structures of Pikine in Dakar: A transversal study

Thierno Souleymane Ball Anne, Ibrahima Seck, Massamba Diouf, Adama Faye, Marie BA, Anta Tal Dia

ABSTRACT

Aims: This article presents the results of a study aimed at assessing the satisfaction of women during childbirth in the health structures of the department of Pikine in the region of Dakar Senegal and identifying the determinants of this satisfaction. Methods: This cross-sectional survey carried out in 2015 involved 318 women who gave birth. An adapted version of the Satisfaction Questionnaire for Obstetric Care and Postpartum Immediate Care (SSOPPI) was used. Factors on the quality of the system in the structures, the socio-demographic and psychological characteristics of the mothers were used as exposure variables. Results: The two-thirds of the sample having a satisfaction score greater than 7.92 for satisfaction scores ranging from 1 to 10. Childbirth in a Mbao structure as well as the lack of appropriate premises, human resources or equipment in the structures (quality of the system) are negatively associated with satisfaction with respectively adjusted odd ratio (OR) of 0.39 [0.22–0.67] and 0.46 [0.23–0.90]. Conversely, childbirth in a Pikine (district) health facility is positively associated with satisfaction with adjusted OR of 3.15 [1.76–5.70]. Similarly, childbirth in a health post is associated with satisfaction with adjusted OR of 1.70 [1.00–2.91]. Conclusion: The socio-demographic and psychological characteristics of the mothers were not associated with their satisfaction. Characteristics related to childbirth structure were significantly associated with the satisfaction of mothers.

Keywords: Childbirth, Determinants, Department of Pikine, Satisfaction, Senegal

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INTRODUCTION

The reproductive health problems of African populations, particularly those in the southern Sahara, continue to pose major public health challenges. In Senegal, the situation of women of reproductive age, similarly to other countries of Sub-Saharan Africa, is not any better.

In Senegal, although maternal mortality has declined noticeably over the past decade, it remains high despite the political will. This mortality rate declined from 434 maternal deaths in 2005 to 392 maternal deaths in 2010–2011 per 100,000 live births [1].

According to the same source, a large proportion of childbirth (27%) continues to take place at home. It was also found that almost a quarter (23%) of women who gave birth in health facilities did not receive post-natal consultations.

Several determinants have been identified as limiting women's access to health facilities before, during and after childbirth. Among those mentioned in the research carried out in Senegal, we can note the relatively young age of women, low parity, low level of education, low income, geographical inaccessibility of women to health facilities and unavailability of means of transport. It also emerged that the taboos around pregnancy and childbirth constitute a limiting factor in the demand for care [2, 3].

The quality of care provided by health providers is a parameter that is often taken into account in the analysis of the use of care. However, the models used to assess this quality are most often based on an objective assessment of care. These models analyze the services delivered by comparing them to pre-established standards. It is also important to consider the perception of quality of care, taking into account the level of client satisfaction. Indeed, it is confirmed that satisfaction is a variable strongly associated with health behaviors [4].

In 2013, the Pikine department had a total population of more than 1,100,000 inhabitants [5]. It has three health districts (Pikine, Mbao and Keur Massar) that rely on local partners such as health committees, grassroots community organizations and local authorities, but also on external technical and financial partners [6].

The objective of this study is to measure the satisfaction of women during childbirth in the health structures of the department of Pikine in the region of Dakar (Senegal) and to identify the determinants of this satisfaction.

MATERIALS AND METHODS

The study was based on a cross-sectional analytical estimate.

Inclusion criteria

For health structures

- Be located in one of the three health districts of the Department of Pikine
- Having a functional maternity

For mothers

- Having given birth in a health facility in the department of Pikine
  - To a living child
  - within two days of the day of the interview
  - and who were in a physical condition to withstand an interview of about 30 minutes

Sample size

The sample size was stratified by district according to the sample size formula in a cross-sectional study.

$n = \varepsilon_{\alpha}^{2}. p. q / i^{2}$ (if n= frame size ≥ 10,000)

P = 50%: proportion retained in the absence of a known prevalence; q = 1-p ; ε_{α} = the reduced deviation corresponding to a 95% confidence interval; i = 10% represents accuracy)

The targets of expected deliveries in each of the districts being >10,000, none of the sub-samples have been adjusted.

For each district, we have 106 interviewed mothers (after an increase of 10% attrition) for a total of 318 women.

NB: The attrition rate was applied to the prospective samples at a second follow-up phase of this cohort, which is not taken into account in this article.

Selection and interviewing of women took place within the childbirth structures. In each district, the 106 women who gave birth were recruited during the two weeks set aside for data collection. All women who had to give birth in a health facility during this period were selected until they reached the expected size in the structure.

Data collection instruments

- ❑ The satisfaction questionnaire for obstetric care and postpartum immediate rehabilitation (SSOPPI).
  The revised SSOPPI questionnaire was used in this survey. The original version of the SSOPPI questionnaire has already been validated for metrological properties between September 2004 and January 2005 in health structures in three countries (Canada, France and Senegal) [7].
- ❑ Multidimensional scale of appreciation of the Health Locus of Control of Wallston
  The Wallston scale has been used to evaluate a psychological characteristic of mothers that is the health locus of Control (HLC). It consists of 18 items divided into three sub-scales: Internal health locus of control (IHLC), external or "more powerful

than itself" (PHLC) and fate, luck or chance (CHLC) of six questions each. The modalities are presented on an ordinal scale of 4 points from 1 (strongly disagree) to 4 (strongly agree).

The HLC questions an individual's beliefs about his/her responsibility in determining his or her state of health. It appears from literature that the HLC is a variable with a potential predictive power of satisfaction [8].

- Assessment grid of the quality of the systems in the place of delivery

  This instrument, presented in the form of a checking grid, made it possible to assess the availability and the functionality of certain elements in relation to:
  - Human resources (categories and staff)
  - The premises
  - The materials and equipment

  The standards were derived from the policy document and service standards for reproductive health (PNSR), revised April 2011 [9].

Collection of data

The collection started after receiving the approval of the Cheikh Anta Diop University Ethics Committee for Research (No. 107-2015-CER-UCAD of 03 August 2015). Prior to administering the questionnaires, survey objectives and the importance of the survey were presented. They were also reassured about the confidentiality of the information they were going to deliver. Finally, a consent form was presented to them for signature.

Data collection was provided by three teams of interviewers and supervisors. These interviewers and supervisors were all female to facilitate access to maternity homes and are graduates of the education and administration section of the health services of the National School of Health and Social Development (ENDSS). After a day of training and a pre-test of the instruments, the teams (composed of two interviewers and a supervisor) divided the districts among themselves.

Data entry and analysis plan

Data was double-entered in the Epi Info software (version 3.5.3) and the analysis was done using software R (version R.3.3.2). The analysis was carried out according to the following procedure:

- Descriptive analysis

  Description of the different variables related to the device in the delivery structures. According to their conformity with the standards recommended in the PNP SR, the delivery structures were classified in two sub-groups:

  Delivery structures with optimal system quality
  Delivery structures with non-optimal system quality

Description of socio-demographic characteristics, of the HLC and of childbirth satisfaction

On the descriptive analysis part, the satisfaction variable was considered in its initial format (score at 10 levels). For a more pertinent analysis, it was secondarily recoded in three modalities defined around the values of quantiles (at 1/3) rounded to the nearest integer, therefore resulting in:

- $[1-q_{1/3}]$ = less satisfied
- $[q_{1/3}-q_{2/3}]$ = satisfied
- $[q_{2/3}-10]$ = very satisfied

- Multidimensional descriptive analysis

  The multiple correspondence analysis (MCA) was used to identify the factors that best summarize the data and to analyze the proximities between the different variables. The variable of interest (overall satisfaction) was projected a posteriori on a factorial basis and added (did not participate in the construction of the axes). This strategy allows, in an unbiased way, to analyze the proximities between this variable of interest and the other modalities of the other variables.

- Bivariate analysis

  Cross-analysis between the dependent variable (overall satisfaction during childbirth) and the relevant independent variables. The Chi-Square test was used to test the associations between satisfaction and the qualitative variables, the ANOVA tests and the Kruskall Wallis tests to assess the differences in means according to overall satisfaction.

- Multivariate analysis

  The influence of two or more variables on the dependent variable (overall satisfaction) was assessed using a multivariate analysis of ordered logistic regression.

All variables with $p \leq 0.25$ were retained in the initial multivariate model. Moreover, the variables known throughout the literature as being constantly associated with satisfaction were 'forced' in this initial model. The other models have been designed using the descending step-by-step approach, gradually removing variables that do not provide sufficient information to the model. The final model was chosen using a Parsimony Index like the Akaike Information Criteria (AIC). Finally, the evaluation of the suitability of the final model was done using the Hosmer and Lemeshow test.

RESULTS

Of all women who gave birth at the health facility level, 28.8% were adolescent/youth (3.5% adolescent and 25.3% youth). The average age of mothers is 28.1 years and the maximum age is 44 years. A proportion of 31.9% of mothers have not received any form of education. Only 1.9% of women who gave birth have attained higher education.

Quality of the device in childbirth structures

Only 45% of the delivery sites in the Pikine department present an optimal overall quality (accross all domains) in terms of maternity with less risk with a certain disparity according to the districts; 62.5% in Pikine, 42.9% in Mbao and only 20.0% in Keur Massar (Table 1).

More than half (59.6%) of mothers have no occupational status. A small proportion (3.5%) of them has a regular (paid) source of income.

Almost all of the women who have given birth are women in union, except for 2.5% of single women and 1.6% of divorced women. The majority of mothers (94.6%) are Senegalese nationals. 88.6% of them are urban population.

The average number of children reported by women who gave birth is 2.6. Nearly one-third of the mothers (30.0%) are primiparous (Table 2).

Socio-demographic characteristics of husbands/boyfriends

The cumulative proportion of husbands/boyfriends who received education in French is 53.0% (of which 16.4% for the higher level). Their dominant occupations are those of workers (40.1%) followed by employees (24.9%) and merchants/sellers (18.6%). 3.2% of husbands/boyfriends have no occupation (Table 3).

Socio-demographic characteristics of mothers

Almost all (91.0%) of the mothers have an external dominant HLC (63.7% based on the power of others and 27.3% based on luck). Only 9.0% of the women who gave birth had an internal HLC.

Overall satisfaction of childbirth

The satisfaction of mothers in the health structures of the Pikine department is generally satisfactory. The average overall satisfaction score for the dimension considered is 8.1 (Figure 1).

This satisfaction varies greatly depending on the field considered. Indeed, if the average satisfaction score is 8.9 for the Environment dimension, this score is 8.2 for the 'General aspects' dimension and only 7.6 for the Health personnel dimension (Table 4).

The assessment of the relationship between caregivers mothers is rather negative in in terms of aspects related to communication. The aspects of the care of parturient women who are not appreciated by the mothers are: (i) the explanations that the health care worker must provide to the parturient on the progression of labor and delivery with a score of 6.5 and (ii) the attention that health workers should pay to breastfeeding at birth with an average score of 4.6.

In addition, 2/3 of those who gave birth were identified as 'satisfied' or 'very satisfied' satisfaction with score greater than 7.92. This satisfaction varies depending on the district (Table 5).

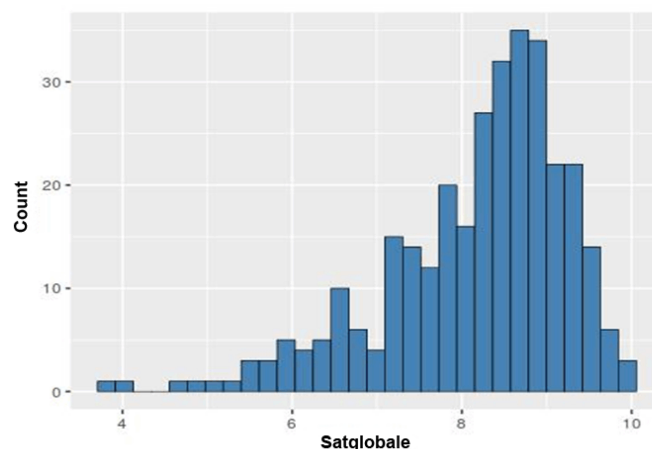

Figure 1: Global satisfaction of mothers.

Table 1: Distribution of structures according to the quality of the existing system in the health structures by district

Characteristics of childbirth structures	Districts			Department Total (N=20)
	Keur Massar (N=5)	Mbao (N=7)	Pikine (N=8)	
Quality of the optimal system	20.0%	42.9%	62.5%	45.0%
Quality of the non-optimal system	80.0%	57.1%	37.5%	55.0%

Table 2: Breakdown of births by socio-demographic characteristics by district

Socio-demographic characteristics of mothers	Districts			Department Total (N=317)
	Keur Massar (N=106)	Mbao (N=105)	Pikine (N=106)	
Âge				
15–19	3.8%	3.8%	2.8%	3.5%
20–24	24.8%	22.9%	28.3%	25.3%
25–29	37.1%	28.6%	26.4%	30.7%
30–34	22.9%	29.5%	30.2%	27.5%
35–39	8.6%	13.3%	10.4%	10.8%
40–44	2.9%	1.9%	1.9%	2.2%
Median Age	27.9 ans	28.6 ans	27.8 ans	28.1 ans
Level of Education				
No Education	35.8%	26.7%	33.0%	31.9%
Other	11.3%	4.8%	8.5%	8.2%
Primary	34.0%	48.6%	41.5%	41.3%
Secondary	17.9%	16.2%	16.0%	16.7%
Higher education	0.9%	3.8%	0.9%	1.9%
Main occupation				
Out of work	66.0%	52.4%	60.4%	59.6%
Other	1.9%	5.7%	1.9%	3.2%
Hairdresser	2.8%	5.7%	5.7%	4.7%
Seamstress	4.7%	10.5%	7.5%	7.6%
Saleswoman	14.2%	21.0%	18.9%	18.0%
Pupil/Student	4.7%	2.9%	2.8%	3.5%
Employee	5.7%	1.9%	2.8%	3.5%
Marital status				
Single	2.8%	1.9%	2.8%	2.5%
Divorced	0.0%	1.9%	2.8%	1.6%
Married (monogamy)	79.2%	71.4%	76.4%	75.7%
Married (polygamy)	18.0%	23.8%	18.0%	19.9%
Lives with a partner	0.0%	1.0%	0.0%	0.3%
Nationality				
Other nationality	2.8%	3.8%	9.4%	5.4%
Senegalese	97.2%	96.2%	90.6%	94.6%
Ethnic origin				
Sérère	16.0%	14.2%	15.1%	15.1%
Diola	6.6%	7.6%	2.8%	5.7%
Mandingue	7.5%	6.7%	8.5%	7.6%
Pular	28.3%	25.7%	32.1%	28.7%
Oulof	37.0%	42.0%	34.9%	37.9%
Autres	4.7%	3.8%	6.6%	5.0%
Location				
Rural	26.4%	1.9%	5.7%	11.4%
Urban	73.6%	98.1%	94.3%	88.6%
Number of children				
Primipare	37.5%	31.7%	21.0%	30.0%
Average number of children	2.5	2.6	2.7	2.6

Table 3: Distribution of husbands/boyfriends of mothers by selected socio-demographic characteristics by district

Some soci-demographic characteristics of husbands/boyfriends of mothers	Districts			Department Total (N=317)
	Keur Massar (N=106)	Mbao (N=105)	Pikine (N=106)	
Education level				
No education	22.6%	9.5%	17.0%	16.4%
Other	16.0%	4.8%	38.7%	19.9%
Primary	32.1%	29.5%	19.8%	25.9%
Secondary	22.6%	38.1%	17.0%	10.7%
Higher education	6.7%	18.1%	7.5%	16.4%
Main occupation				
Other	8.5%	13.3%	11.3%	11.0%
Farmer	4.7%	0.0%	0.0%	1.6%
Pupil/Student	0.9%	0.0%	0.9%	0.6%
Worker	42.5%	35.2%	42.5%	40.1%
Employee	22.6%	30.5%	21.7%	24.9%
Out of work	2.8%	3.8%	2.8%	3.2%
Merchant/Seller	17.9%	17.1%	20.8%	18.6%

Table 4: Average satisfaction scores of the mothers according to different dimensions

Average score according to satisfaction dimension	Districts			Department total (N=311)
	Keur Massar (N=106)	Mbao (N=105)	Pikine (N=100)	
Health personnel	7.5	7.2	8.1	7.6
Environment	9.0	8.3	9.4	8.9
General aspects	8.2	7.7	8.7	8.2

Table 5: Spread of mothers according to their satisfaction level

Characteristics of delivery structures	Districts			Department (N=318)
	Keur Massar (N=106)	Mbao (N=106)	Pikine (N=106)	
Less satisfied	34.9%	53.8%	12.3%	33.6%
Satisfied	34.9%	36.6%	30.9%	34.6%
Very satisfied	30.2%	9.4%	58.4%	31.8%

Results of the ACM

The multidimensional descriptive analysis that discriminates women who are very satisfied on the left and those less satisfied on the right on the first axis of the chart, than childbirth in a health post or in a structure with an optimal device is associated with very satisfied. On the second axis of the graph, the uneducated husband/boyfriend with no education or when childbirth took place in a Pikine district structure is usually associated with very satisfied at the top of the chart (Figure 2).

The final model in ordered logistic regression allowed the following variables to be identified as determinants in the satisfaction of the mothers:

- The absence of optimal quality of the system in the delivery structure is very significantly negatively associated with satisfaction with an adjusted odd ratio (OR) equal to 0.46 [0.23–0.90].
- Childbirth in a Pikine health district health facility is positively associated with satisfaction with an adjusted OR of 3.15 [1.76–5.70]. Conversely, childbirth in a health facility in Mbao was negatively associated with satisfaction with OR adjusted to 0.39 [0.22–0.67].
- Finally, delivery in a health post is associated with satisfaction at delivery with OR adjusted to 1.70 [1.00–2.91].

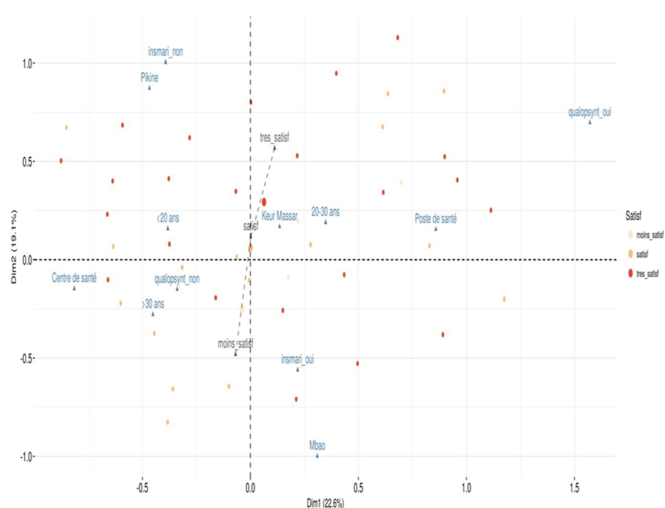

Figure 2: Multiple match analysis (MMA).

DISCUSSION

The distribution of births by age group is exactly the same as the trend of the general fertility rate by age presented in the EDS-MICS 2010–2011 report [1]. This is related to the existence of early maternity for adolescents (who account for 3.5% of births), which is rapidly increasing to reach its maximum at 25–29 years (30.7% of mothers) and is declining gradually. In our sample, women aged 40–44 represent only 2.2% of the total.

Even better, during the data collection period, none of the women who gave birth more than 44 years of age were encountered in the health structures of the department. This is confirmed by the 2010–2011 EDS-MICS report showing a 0.3% fertility rate in 45–49 years. For the vast majority (91.0%) of mothers, the dominant psychological profile is external. Only 9.0% of the mothers have an internal HLC. This predominance of the external orientation of the mothers could be explained by religious and socio-cultural beliefs anchored: “everything that happens to us is the will of ALLAH (Almighty)”, “no one can escape his/her destiny”. Added to this is the fact that very often, the behavior of the mother is strongly influenced by the decisions of the husband, the mother-in-law or even the nursing staff.

It should be pointed out that several studies carried out in the field of psychology attributed greater social value to the internal individuals [10]. It has been shown that favored social groups appear to be more internal to HLC scales compared to disadvantaged groups. Better, more in connection with our study, a study carried out in a professional setting by Beauvois, Bourjade and Pansu and quoted by Samantha PERRIN also showed that individuals using internal explanations obtain better judgments than individuals using them to a lesser extent (i.e., the external ones). This probable association between the type of HLC with internal dominance and the quality of judgment can very objectively lead us to question the relevance of the use of satisfaction grid to the services received by beneficiaries in the context of a group with an externally dominated HLC (as was the case in our study).

With 2/3 of Satisfied or Very Satisfied mothers (with score satisfaction greater than 7.92), the overall level of satisfaction noted in our study was higher than that found in an assessment of patient satisfaction at the Sousse gynecological unit in Tunisia where an overall satisfaction level of 51.0% was found [11].

On the other hand, in another study on Maternal satisfaction and mode of delivery conducted in the Port-Royal maternity hospital in Paris in 2009, it was found that 85.7% of the mothers were Satisfied or Very Satisfied during their childbirth. A level of satisfaction well above that found in our study [12].

However, the fact that customer satisfaction is a subjective assessment that varies over time and depends on the benchmarks and values of the subjects concerned but also on the contexts in which this assessment has been collected, limits the possibilities of comparing the results obtained with those of a non-similar study on satisfaction.

In addition, very high scores of reported satisfaction do not necessarily mean that the service is good, but may mean in some cases, those patients accept dysfunctions for various reasons (linked to their psychological profile or just to their culture).

On the other hand, what remains constant and quite objective is that the satisfaction of the mothers was strongly associated with the quality of the system in the health structures. The main elements that were lacking in terms of objective quality in our study are the following:

- Deficits in midwives, doctors and matrons
- Unavailability of pathological pregnancy rooms, work rooms, chat rooms, Kangaroo units or toilets
- The deficit in delivery tables and delivery boxes in relation to the average number of births delivered in the structures

Implications for practice

In order to improve the satisfaction of women who have given birth and for a safer delivery perspective, the delivery structures of the health districts of Keur Massar, Mbao and Pikine must be upgraded through:

- The development of a plan for strengthening human, facilities, materials and equipment as suggested in the PNP SR document. In this process, priority will be given to the health centers in the different districts because not only are they the reference structures for health posts

and other private structures, concentrate most of the deliveries, but also ironically are the least well-off structures in terms of human resources, premises, material and equipment.

- It is also important to better equip healthcare providers for better interaction between caregiver and mother because, as we have seen above, the Health Personnel dimension is the one around which we find the weakest satisfaction scores for the mothers.

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Author Contributions

Thierno Souleymane Ball Anne – Substantial contributions to conception and design, Analysis and interpretation of data, Drafting the article, Final approval of the version to be published
Ibrahima Seck – Substantial contributions to conception and design, Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published
Massamba Diouf – Substantial contributions to conception and design, Analysis and interpretation of data, Drafting the article, Final approval of the version to be published
Adama Faye – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published
Marie BA – Substantial contributions to conception and design, Drafting the article, Final approval of the version to be published
Anta Tal Dia – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

Guarantor

The corresponding author is the guarantor of submission.

Conflict of Interest

Authors declare no conflict of interest.

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