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Factors influencing the place of delivery in the rural region of Labrousse, Haïti

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ABSTRACT

Objectives

The objective of this study is to determine factors that influence the place of delivery in the rural region of Labrousse, Haiti

Design

This study employed a cross-sectional survey design to collect data using an anonymous interview guide comprising structured questions and made up of two parts: 1- Identification of personal and socio-cultural parameters. 2-Identification of the reasons for the place of the last childbirth.

Setting

The study was conducted from September to November 2017 in Notre-Dame of Lourdes of Labrousse community health center and the area catered to by it. Labrousse is a rural community located in the 3rd communal section of Miragoâne about 19 kilometers from the main road, in the department of Nippes.

Participants

The survey included 92 women aged 13–46 years, live in the area who had at least one birth in the last 1–3 years by the time of data collection.

Results

75% of women gave birth to their last child at home. 76% of home births were assisted by a matron or traditional practitioner. age, religion, level of education of mothers and fathers, distance between home and health facility, availability of transportation and prenatal follow-up are significant factors ($P < 0.05$) that influence the choice of delivery place.

Conclusion

Acting on the factors influencing the delivery place in Labrousse would make it possible to bridge this gap between the number of home births and the number of births in healthcare facility.

INTRODUCTION

Background

According to the World Health Organization, 500,000 women die each year because of their pregnancy, 99% in low- and middle-income countries. Home delivery remains one of the main causes of maternal and child mortality in these countries. Reducing maternal mortality is one of the elements of Goal 3 of the Sustainable Development Goals. One of the indicators to assess this process is the proportion of births performed by a trained health worker. Despite the progress made; in 2013, 289,000 women died during or after childbirth (1). In Haiti 6 out of 10 deliveries occur at home without medical assistance. Only 36% take place in a health facility (21% in a public facility, 10% in a private facility and 5% in a mixed facility) (2). These proportions are higher in urban areas than in rural communities. (3). In urban areas, 63% of births took place with the help of a health worker compared to 30% in rural areas. 60% of births in urban areas occurs in a health facility compared to 29% in rural communities. (3). overall, several factors can influence delivery place (4,5,6).

Objectives

The objective of this study is to determine factors that influence the place of delivery in the rural region of Labrousse, Haiti.

METHODS

Study Setting

The study was conducted from September to November 2017 in Notre-Dame of Lourdes of Labrousse community health center and the area catered to by it. Labrousse is a rural community located in the 3rd communal section of Miragoâne about 19 kilometers from the main road, in the department of Nippes. this mountainous region of about 15,000 inhabitants is divided into many small hamlets that are difficult to access and served by dirt roads with deep crevasses that meander through the mountains. Commonly seen economic activities of the zone are agricultural activities and livestock rearing. The zone has one health center and some dispensaries with roads that are difficult to use throughout the year.

Study population

The study population was women aged 13–46 years, live in the area who had at least one birth in the last 1–3 years by the time of data collection. women who gave birth prematurely or

who had been transferred to hospital due to a complication during childbirth were excluded from the study. The survey included 92 women

Study design and data collection

This study is a quantitative cross-sectional study. Data collection included interviews using an anonymous interview guide comprising structured questions and made up of two parts: 1- Identification of personal and socio-cultural parameters. 2- Identification of the reasons for the place of the last childbirth. The questionnaire was developed after a rigorous review of the literature on the determinants of birthplace in similar studies. The variables studied are age, religion, level of education of mothers and fathers, parity, economic activity sector, marital status, distance between home and health facility, availability of transportation and prenatal follow-up.

Data processing and analysis

The data were analyzed using SPSS version 23 statistical software. frequency and proportion analyze were carried out to describe the socio-demographic and pregnancy characteristics of the study subjects. Pearson's correlation tests were used to assess the association between different variables. Those with a statistically significant association with the dependent variable were then evaluated with bivariate and multivariate logistic regressions to determine the magnitude of the correlation between the dependent and independent variables. a confidence interval = 95% is considered with $p < 0.05$ taken as statically significant association.

RESULTS

characteristics of the study population

The mean age of the respondents was 28.3 ± 4.2 with extremums of 17 and 43. 2.17% are Under 18. a high proportion (73.90%) of mothers were in the age range of 19–32 years. 22.82% of respondents were married. 31.52% were primipara, 52.17% were multipara (2 to 3 children) and 16.30% were grand multipara (more than 3 children). Protestantism remains the dominant practice in this region (50%), followed by Catholicism (44.56%). 8.69% of women have never been to school; 50% have primary level; only 1.98% hold a professional study diploma. Retail business and agriculture are the two main economic activities of women in this region. the fathers were mainly farmers and motorcycle taxi drivers (53.26%).

75% of women gave birth to their last child at home. 76% of home births were assisted by a matron or traditional practitioner. (Tab 1)

Tab 1 : Descriptive data of the study population			
VARIABLE	CATEGORY	FREQUENCY (N)	PERCENTAGE (%)
age group	=<18	2	2.17
	19-25	34	36.95
	26-32	34	36.95
	33=<	22	23.91
marital status	Married	21	22.82
	Unmarried	71	77.17
parity	Primipara	29	31.52
	Multipara	48	52.17
	Grand Multipara	15	16.30
religion	Catholicism	41	44.56
	Protestantism	46	50
	Voodoo	1	1.08
	Others	4	4.34
Mother's education level	No education	8	8.69
	Primary level	50	54.34
	Secondary level	33	35.86
	University level	1	1.08
Father's education level	No education	9	9.78
	Primary level	42	45.65
	Secondary level	40	43.47
	University level	1	1.08
Mother's level of economic activity	No activity	1	1.08
	Primary sector	36	39.13
	Secondary sector	9	9.78
	Tertiary sector	46	50
Father's level of economic activity	No activity	0	0
	Primary sector	35	38.04
	Secondary sector	8	8.69
	Tertiary sector	49	53.26
delivery place	Healthcare Facility	23	25
	Home	69	75
presence of matron /traditional practitioner	Yes	69	75
	No	23	25

Reasons for selection of place of delivery

Of the various reasons mentioned, distance is an important element. 71.73% of respondents have no means of transport. 41.30% of women take about an hour, 32.60% walk for two hours and 26.08% walk for more than two hours to reach the nearest healthcare facility. The trip is most often done on foot (93.47%). only 5.43% have access to a motorized vehicle. (Tab 2)

Tab 2: Reasons for selection of place of delivery (N=92)			
VARIABLE	CATEGORY	FREQUENCY (N)	PERCENTAGE (%)
Reasons for selection of place of delivery	Any	3	3.26
	Distance	66	71.73
	Security	15	16.30
	Pregnancy complication	8	8.69
distance from the healthcare facility	Fairly close (= <60 min walk)	38	41.30
	Distant (60-120 min walk)	30	32.60
	very distant (120 = <min walk)	24	26.08
means of transport available	None (on foot)	86	93.47
	horseback	1	1.08
	Motorcycle / car	5	5.43

prenatal follow-up

91.30% of women made at least 2 antenatal visits with a regularity found in 84.78% of them.

73.91% had 3 to 5 antenatal visits. (Tab 3)

Tab 3: Prenatal Follow-up (N=92)			
VARIABLE	CATEGORY	FREQUENCY (N)	PERCENTAGE (%)
at least 2 antenatal visits	Yes	84	69.56
	No	8	30.43
regularity of prenatal visits	Yes	78	84.78
	No	14	15.21
number of antenatal visits	0-2	8	8.69
	3-5	68	73.91
	6-8	13	14.13
	>=9	3	3.26

Age is a statistically significant factor ($p < 0.05$) of home births. women aged 19-25 are more likely to give birth at home (OR=2.6; 95% CI). Childbirth in healthcare facility, however, is not influenced by age ($p > 0.05$). Marital status and parity are not factors that can influence the choice of delivery place.

Catholic women are more likely to give birth at home (OR=1.06; $p=0.008$; 95% CI) while Protestant women are more likely to give birth in hospital (OR=1.12) (Tab 4). Mothers' level of education influences place of birth. those who have not been to school are more likely to give birth at home (OR=2.78; $p=0.001$; 95% CI). However, Mothers' level of education does not influence childbirth in hospital($p>0.05$). The fathers' level of education is decisive in the choice of the delivery place. The more educated they are, the more mothers give birth in a healthcare facility ($p=0.001$) and conversely, the less educated they are, the more mothers give birth at home ($p=0.004$) (Tab 4). The parents' sector of economic activity is a determining

factor of the delivery place. in the third sector, the probability for women to give birth at home was lower compared to other levels of economic activity, it positively influences healthcare facility childbirth (OR=1.32; p=0.004; 95% CI). The distance from the health center and the complications of subsequent pregnancies are statistically significant elements that influence the place of delivery. Women are more likely to give birth at home if they live far from the health center (OR=1.63; 95% CI). the likelihood of giving birth at home increases if women do not have access to transportation (OR=18.8; 95% CI). With a motorized vehicle available, they are more likely to give birth in a healthcare facility (OR=5; 95% CI) (Tab 5). antenatal visits influence the choice of delivery place. Women who have had more than 5 prenatal visits, whether regular or not, most often give birth in healthcare facility (OR=3.32; p=0.009; 95% CI) (Tab 6)

Tab 4: multiple regression table (95% IC)						
VARIABLE	CATEGORY	FREQUENCY (N)	DELIVERY PLACE (%)			
			Home		Healthcare Facility	
			OR	P-Value	OR	P-Value
age group	=<18	2	0.33	0.02	3.09	0.20
	19-25	34	2.61		0.38	
	26-32	34	0.54		1.83	
	33=<	22	0.85		1.16	
marital status	Married	21	0.58	0.75	1.71	0.30
	Unmarried	71				
parity	Primipara	29	0.63	0.08	1.57	0.20
	Multipara	48	1.00		1.00	
	Grand Multipara	15	0.40		2.46	
religion	Catholicism	41	1.06	0.00	0.94	0.008
	Protestantism	46	0.89		1.12	
	Voodoo	1	0.00		0.00	
	Others	4	0.00		0.00	
Mother's education level	No education	8	2.48	0.001	0.40	0.08
	Primary level	50	0.88		1.12	
	Secondary level	33	0.53		1.87	
	University level	1	0.00		-----	
Father's education level	No education	9	3.64	0.01	0.27	0.04
	Primary level	42	0.56		1.75	
	Secondary level	40	1.45		0.68	
	University level	1	0.00		-----	
Mother's level of economic activity	No activity	1	-----	0.001	0.00	0.006
	Primary sector	36	1.00		1.00	
	Secondary sector	9	2.88		0.34	
	Tertiary sector	46	0.70		1.41	
Father's level of economic activity	No activity	0	-----	0.0008	-----	0.004
	Primary sector	35	1.03		0.96	
	Secondary sector	8	2.63		0.37	
	Tertiary sector	49	0.75		1.32	

Tab 5: multiple regression and real statistical values of the variables at the place of delivery (95% IC)							
VARIABLE	CATEGORY	FREQUENCY	DELIVERY PLACE (%)				
			Home		Healthcare Facility		
			OR	P-Value	OR	P-Value	
Reasons for selection of place of delivery	Any	3	-----		0.00		
	Distance	66	-----		0.00		
	Security	15	0.00	0.02	-----	0.61	
	Pregnancy complication	8	0.00		-----		
distance from the healthcare facility	Fairly close (= <60 min walk)	38	0.38		2.56		
	Distant (60-120 min walk)	30	1.63	0.38	0.61	0.15	
	very distant (120 = <min walk)	24	2.08		0.48		
means of transport available	None (on foot)	86	18.8		0.05		
	horseback	1	-----	0.03	0.00	0.14	
	Motorcycle / car	5	0.00		-----		

Tab 6: regression table and significance of variables at the place of delivery (95% IC)							
VARIABLE	CATEGORY	FREQUENCY	DELIVERY PLACE (%)				
			Home		Healthcare Facility		
			OR	P-Value	OR	P-Value	
at least 2 antenatal visits	Yes	84					
	No	8	5.7	0.925	0.17	0.39	
regularity of prenatal visits	Yes	78					
	No	14	2.03	0.76	0.49	0.42	
number of antenatal visits	0-2	8	0.35		2.81		
	3-5	68	2.32		0.43		
	6-8	13	0.30	0.0007	3.32	0.009	
	>=9	3	0.78		1.28		

DISCUSSION

Pearson's correlation analyzes demonstrate that factors such as: age of mother, distance, available means of transportation, religion, educational level of mothers and fathers, their level of economic activity and complications of previous pregnancies are statistically significant factors influencing the choice of the delivery place in Labrousse. women aged 19-25 are more likely to give birth at home (OR=2.6; p=0.02; 95% CI). Other studies on the subject show that, on the contrary, older women are more likely to give birth at home, unlike younger women who give birth in hospital [8]. The marital status of women does not influence the choice of delivery place (p=0.75 at home; p=0.30 at healthcare facility) which corroborates the findings of other studies [7], [8]. The number of pregnancies and / or previous deliveries has no effect on the place of delivery; Primiparous, multiparous and grand multiparas give birth both in hospital and at home. In a study by Fritz Verly Vernet et al. The majority of primiparous gave birth in a hospital environment, while most multiparas and even more grand multiparas gave birth at home [9]. Diallo F, Diallo T, Sylla M et al. found similar results in a study they

conducted in the tropics [16]. the Canadian Public Health Agency has established that non-hospital deliveries are more common among multiparas than first-time mothers [10]. Catholic women are more likely to give birth at home (OR=1.06; $p=0.008$; 95% CI) while Protestant women are more likely to give birth in hospital (OR=1.12). Analyses show that religion is a statistically significant element that can influence the place of delivery. other studies have shown that Christianity is indeed correlated with a high rate of hospital delivery [8] [11] [12]. The women's level of education influences the choice of delivery place. Only 12.5% of women who have never been to school gave birth in hospital compared to 87.5% at home; while 26.2% of those with an educational level gave birth in hospital against 71.4% who gave birth at home. mothers who have never been to school are more likely to give birth at home (OR = 2.78; $p = 0.001$). The fathers' level of education is also decisive on the choice of the delivery place, the more they are educated the more mothers give birth in the hospital ($p=0.001$). Fritz Verly Vernet et al. found that over 78% of women who gave birth in hospital had reached secondary school and those who gave birth at home were mostly illiterate [9]. According to Faye A, Ndiaye P, Tal-Dia A, Bâ I.O. the more the woman's level of education increases, the more the chance of being assisted by qualified personnel during childbirth increases [13]. In Senegal; childbirth in a health institution by women at the primary and secondary level is respectively 1378 more and 3049 more that of women without instructions [13]. this could be explained by that the higher her level of education, the more the woman has the possibility of finding a better job and thus of having a high socioeconomic level and of having the means to give birth at hospital [14]. The level of economic activity of the parents is a determining factor of the delivery place. Thus we were able to find that in the tertiary sector of activity, the probability for these women to give birth at home was lower compared to other sectors of economic activity; it positively influences childbirth in hospital (OR = 1.32, $p= 0.004$). studies have shown that women's economic health quintile plays a role in the birthplace [7,8]. n this study, women are more likely to give birth at home if they are far from the health center, and this risk increases even more if there is no transport available. According to Faye A, Ndiaye P, Tal-Dia A, Bâ I.O, the prevalence of home birth was correlate to factors such as lack of transportation and long distance [13]. Confidence in health care providers can be a factor that can influence the choice of delivery place [9]. In our study, those who gave birth in healthcare facility in almost 100% of cases said they felt safe with health care providers, but this parameter was not evaluated in the correlation analysis.

The results of this study have strengths and limitations. The census sampling technique and the high response rate add to the credibility of the results. However, the results should be interpreted with caution. The study setting could be different contextually with other rural parts of the country where there are more health services available. the cross-sectional nature of the study prevents elucidating the direction of the cause-and-effect relationship of the variables with the choice of delivery place.

CONCLUSION

in Haiti, the level of health service delivery in rural communities is significantly lower than in urban areas. This study shows the various factors that can influence the delivery place in Labrousse, it is necessary to act on these factors to close this gap that exists between the number of home deliveries and the number of healthcare facility deliveries for a reduction in maternal and infant mortality in rural areas. The Public Health Ministry and other relevant NGOs should work with organizations in the hinterland to facilitate expanded and integrated access to health care

Ethical statements

This study was carried out at the Notre Dame de Lourdes health center in Labrousse following the agreement of the managers of this center. The study was conducted under the supervision of the Ethical Medicine and Societal Laboratory (LABMES) of the Faculty of Medicine of the State University of Haiti. Each woman answered the questions individually, after informed consent, and a guarantee of confidentiality.

All authors have approved the final manuscript and agreed for its publication. This study has not received any allowance from any commercial or charitable agency or organization. The authors declare that there is no conflict of interest.

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