

Human Journals

Research Article

July 2020 Vol.:16, Issue:1

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The Study of the Existing Associations between Overweight and Childbirth Conditions of the Women Who Have Given Birth at the Souissi Maternity Hospital in Rabat



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Submission: 21 June 2020

Accepted: 28 June 2020

Published: 30 July 2020



HUMAN JOURNALS

www.ijsrm.humanjournals.com

Keywords: Associations, overweight, delivery conditions, childbirth

ABSTRACT

Objective of the study: The objective of this research was to study the existing associations between overweight and delivery conditions of the surveyed women who have given birth. **Materials and Methods:** This is a descriptive prospective study conducted over a period of 9 months from March to November 2018, at the Souissi maternity hospital in Rabat. Including those who had an uncomplicated pregnancy, the number of births recruited was 1002 cases. With a response rate of 93.31% and using a mixed questionnaire, the number of births surveyed was 935 cases, subdivided into two groups. The group of births with normal body weight of 637 cases and the group of births with overweight of 298 cases. **Results:** This work showed the existence of associations between overweight and pregnancy term ($P=0.033$), the course of delivery ($P=0.031$), complications recorded during labour ($P=0.004$), mode of delivery ($P=0.005$), and the practice of episiotomy ($P<0.001$). **Conclusion:** The results of this study show the existence of associations between overweight and the delivery conditions of the respondents. Thus, it is important to integrate the calculation and the analysis of the Body Mass Index in the care of all pregnant women, in order to improve their delivery conditions and have a positive effect on maternal morbidity and mortality in Morocco.

INTRODUCTION

By setting the reducing maternal mortality goal at the global level, international health instances have taken important actions. Nevertheless, the results revealed a large gap between developed and developing countries. Even though worldwide maternal mortality has been reduced by two thirds between 1990 and 2015 [1], almost 99% of maternal deaths occur in developing countries [2]. Indeed, 830 women die every day worldwide, the majority of them in low-income countries owing to pregnancy and childbirth complications [3].

As a developing country, Morocco has a high maternal mortality ratio. Indeed, by subscribing to the Millennium Development Goals, the Moroccan Ministry of Health has set the goal of reducing maternal mortality to 50 deaths per 100,000 live births by 2015 [4]. However, according to the results of the national survey on population and family health in 2017, the maternal mortality rate is currently 72.6 deaths per 100,000 live births [5].

The confidential survey on maternal deaths in Morocco showed that 80% of these deaths were considered preventable and that the factors most frequently identified among deaths in hospital are essentially: under-evaluation of severity in 43%; delay or misdiagnosis in 35%; and delay in care at the level of health services in 30% [6]. To address these factors, this survey emphasized the importance to do considerable efforts by health professionals to improve the quality of care for pregnant women in all health facilities [6].

To assist health care providers in providing the most appropriate care for the clinical circumstances encountered. The French high health authority has highlighted recommendations for good practice concerning the care of overweight and obese pregnant women. The ultimate goal is to reduce the risk of complications during labor and delivery [7], and as a corollary, to have a positive impact on maternal mortality. Especially that, the literature has explained the negative effect of excess weight among pregnant women on perinatal and intrapartum care and on maternal morbidity and mortality [8].

Given the social and economic consequences of maternal mortality [9], and in view of these findings, the objective of this study was to study the existing associations between overweight and the delivery conditions of the women surveyed.

MATERIAL AND METHOD

This is a descriptive prospective study carried out over a period of 9 months from March to November 2018, at the Souissi maternity hospital in Rabat.

2.1 Inclusion criteria

Women who had an uncomplicated pregnancy, who have given birth at the Souissi maternity hospital in Rabat, and who expressed their agreement to participate in this study, regardless of their age and origin, were included in this study.

2.2 Exclusion Criteria

Excluded from this study were women with high-risk pregnancies and those who refused to participate in the survey.

2.3 Data collection

The study was conducted through a mixed questionnaire on:

- Medical information: parity; term of pregnancy; mode of delivery; delivery process; weight; height.
- Socio-demographic data of the women who have given birth, such as age, origin, level of education of the woman who has just given birth;
- Economic data of the women who have given birth: Overall household income; and health coverage.

The study was completed by analyzing and extracting additional information from the medical record.

2.4 Ethical consideration

The Ethics Committee of the Faculty of Medicine and Pharmacy of Rabat and the administration of the Souissi Maternity Hospital of Rabat have given their approval for the realization of this study. Informed consent was obtained from each woman at the time of entry into the study. Participation in the study was free of charge, respecting confidentiality and anonymity.

2.5 Some definitions

2.5.1 Body Mass Index

The Body Mass Index is studied in this research with reference to the classification of the World Health Organization, namely; less than 18.5kg = underweight; [18.5Kg to 25Kg] = normal corpulence; [25Kg to 30Kg] = overweight; [30Kg to 35Kg] = obesity class I; [35Kg to 40Kg] = obesity class II; and more than 40Kg = obesity class III [10].

2.5.2 The delivery process

Through the study of the medical file of each parturient, the progress of their delivery is analysed by studying whether it is aneutocic or dystocic delivery.

2.5.3 The study level of the women who have given birth

In order to analyze the study level of a woman who has given birth, this work has subdivided the levels of study into eight categories; Illiterate; M'Cid or Koranic school; Primary; Secondary; High school; Superior 1st cycle; Superior 2nd cycle; Superior 3rd cycle.

2.5.4 The household

According to the Moroccan High Commission for Planning definition, a household is a group of individuals living in the same dwelling and having common expenses. This study used this definition when conducting the survey.

2.5.5 The household income

Adopting the monoculture approach validated by the High Commission for Planning, household income is analyzed in this study according to six categories. The category from 0 to 499DH, the category from 500DH to 1999DH, the category from 2000DH to 2999DH, the category from 3000DH to 4999DH, the category from 5000DH to 9999DH and the category from 10000DH to 19999DH. To calculate the household income, we took into consideration all the incomes of the active members of this household.

2.5.6 The medical coverage

Medical coverage is classified into four types. The National Social Security Fund (CNSS), the National Fund of Social Welfare Organizations (CNOPS), the Medical Assistance Scheme for the Economically Deprived (RAMED) and a private insurance company.

2.6 Statistical analysis

The recorded data were subjected to computerized analysis using SPSS V 20 software. Quantitative variables were expressed as means and standard deviations, and qualitative variables as percentages. The comparisons used were the Student t-test for quantitative variables and the Pearson Chi2 test for qualitative variables. P-values less than 0.05 were considered as statistically significant.

RESULTS

3.1 Study Flow Chart

Between March and November 2018, 13041 births were performed at the Souissi Maternity Hospital in Rabat. Among these births; 1002 cases were recruited, i.e. 7.68%. Among these women, 38 cases refused to participate in this study, i.e. 3.79%, and 29 recruited were lost to follow-up, i.e. 2.89%. The total number of women surveyed was 935 cases. Divided into two groups. The group of women with normal corpulence (n=637 cases), and the group of women with overweight (n=298 cases). (**Figure 1**)

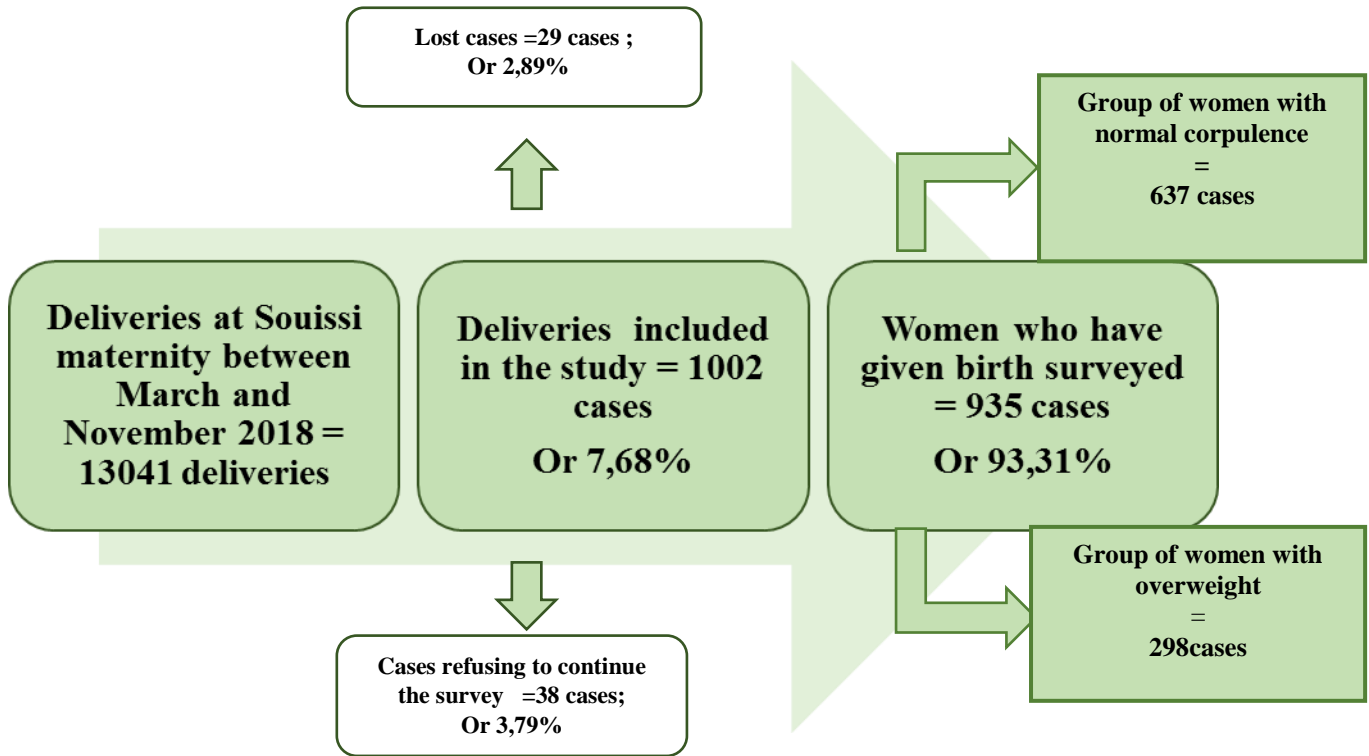


Figure No. 1: Summary of the flow of case participating in the study

3.2 Medical information of women included in this study

The women who have given birth included in this study were primiparous in 49.95% and secondaries in 43.53%. Their sizes were between [1m60, 1m70 [in 51.02%, and between [1m50, 1m60 [in 37.75% of cases. The average weight of the women surveyed was 74.72 ± 6.05 , with 60.11% of the cases weighing between [80 kg, 90 kg]. They had a full-term delivery in 55.08% and over-term delivery in 39.79%. Their delivery process was uncomplicated in 88.98% of cases. For those who had a dystocic delivery, they had bone dystocia in 65.05%, delivery hemorrhages in 18.45%, and prolonged labor in 16.50%. The mode of delivery of the surveyed women was vaginal delivery in 90.80%. Episiotomy was realized in 45.13% of the deliveries. The average number of days they were hospitalized was 1.87 ± 0.36 , with 85.24% being hospitalized for two days for post-partum care. (**Table 1**)

Table No. 1: Medical Information of women Included in this Study

Variables	Surveyed cases N= 935	
	Effective	Percentage (%)
Parity		
Primipare	467	49,95
2nd P	407	43,53
3rd P	43	4,60
≥4 P	18	1,93
Size		
< 1m50	02	0,21
[1m50, 1m60 [353	37,75
[1m60, 1m70 [477	51, 02
[1m70, 1m80]	103	11,02
Weight (mean±SD)	74,72± 6,05	
< 60kg.	04	0,42
[60kg, 80kg [327	34,97
[80 kg, 90 kg]	562	60,11
>90 kg	42	4,49
Term of Pregnancy		
Premature delivery	48	5,13
Term delivery	515	55,08
Term overrun	372	39,79
Childbirth process		
Uncomplicated	832	88,98
With complication	103	11,02
Recorded Complications		
Bone dystocia	67	65,05
Hemorrhage of deliverance	19	18,45
Long labor	17	16,50
Delivery mode		
vaginal delivery	849	90,80
Cesarean	86	9,20
Episiotomy practice		
Yes	422	45,13
No	513	54,87
Number of days in hospital (mean± SD)	1,87± 0,36	
1 day	130	13,9
2 days	797	85,24
3 days	08	0,86

3.3 Socio-demographic and economic characteristics of women surveyed

In this study, 46.10% of the respondents were between [30, 40 years old], and 42.14% were between [20, 30 years old]. They were from urban areas in 58.07%, and rural areas in 34.87%. Their study level was a college in 32.41%, primary school in 28.56%, and high school in 24.39%. The average global household income was 4015.56± 2047.99, with 40.96% reporting an income between [5000DH, 9999DH], and 11.12% reporting an income between [3000DH, 4999DH]. 80% of women who have given birth had medical coverage, including CNSS in 49.23% and RAMED in 43.45%. (Table 2)

Table No. 2: Socio-demographic and economic characteristics of women surveyed

Variables	Surveyed cases N= 935	
	Effective	Percentage (%)
Age range (mean± SD)	24,92± 4,75	
< 20 years old	100	10,70
[20, 30 years old]	394	42,14
[30, 40 years old]	431	46,10
>40 years old	10	1,07
Provenance		
Urban	543	58,07
Rural	326	34,87
Suburban	66	7,06
Study level of the woman who have given birth		
Illiterate	22	2,35
M'Cid or Koranic school	00	00
Primary	267	28,56
College	303	32,41
High school	228	24,39
Superior 1st and 2nd cycles	103	11,02
Superior 3rd cycles	12	1,28
Global household income of the women who have given birth (mean±SD)	4015,56± 2047,99	
[0Dh, 499DH]	43	4,60
[500DH, 1999DH]	203	21,71
[2000DH, 2999DH]	154	16,47
[3000DH, 4999DH]	104	11,12
[5000DH, 9999DH]	383	40,96
[10000DH,19999DH]	00	
The existence of medical		

coverage

Yes	748	80,00
No	187	20,00

Type of medical coverage

RAMED	325	43,45
CNSS	386	49,23
CNOPS	34	4,54
Private insurance company	03	0,40

Body Mass Index of women surveyed

The percentage of women who had a Body Mass Index between [18.5 kg to 25 kg] was 68.13%, with a mean \pm SD of 22.808 ± 1.315 , whereas, 31.87% of women who have given birth had a BMI between [25Kg to 30Kg], with a mean \pm SD of 26.388 ± 1.032 . (**Table 3**)

Table No. 3: Body Mass Index of women Surveyed

Cases surveyed N= 935			
BMI	Effective	Percentage (%)	Mean \pm SD
[18,5Kg à 25Kg]	637	68,13	22,808 \pm 1,315
]25Kg à 30Kg]	298	31,87	26, 388 \pm 1,032

3.4 Association between the overweight recorded among surveyed women and their delivery conditions

Overweight is associated with the term of pregnancy ($P=0.033$), the delivery process ($P=0.031$), the labor complications ($P=0.004$), the delivery mode ($P=0.005$), and the practice of episiotomy ($P<0.001$). (**Table 4**)

Table No. 4: Association between overweight recorded among surveyed women and their delivery conditions

Variables	Cases surveyed N= 935		p
	Normal corpulence n= 637	Overweight n= 298	
Term of Pregnancy			
Premature delivery	29 (4,55%)	19 (6,38%)	0,033
Term delivery	447(70,17%)	68 (22,82%)	
Term overrun	161(25,27%)	211 (70,80%)	
Childbirth Process			
Uncomplicated	610(95,76%)	222(74,50%)	0,031
With complication	27(4,24%)	76(25,50%)	
Recorded Complications			
Bone dystocia	17(62,96%)	50(65,79%)	0,004
Hemorrhage of deliverance	00	19(25%)	
Long work	10(37,04%)	07(9,21%)	
Delivery mode			
vaginal delivery	632(99,22%)	217(72,82%)	0,005
Cesarean	05(0,78%)	81(27,18%)	
Episiotomy practice			
Yes	232(36,42%)	190(63,76%)	<0,001
No	405(63,58%)	108(36,24%)	

DISCUSSION

Referring to the BMI classification adopted by the WHO [10], the analysis of this study results showed that 68.13% of the births surveyed had a normal corpulence, and 31.87% had an overweight. Based on this classification, this study illustrated the existence of associations between overweight and the delivery conditions of the women included in this research.

Overweight is associated with the pregnancy term (P-value =0.033). Indeed, according to the results of this study, the over term birth was recorded among 70.80% of women with overweight, and only among 25.27% of women with normal corpulence. Corroborating the results of several studies. Notably, the Pernot study [11], and the Hamon et al study [12]. These studies found that overweight women had longer pregnancies than those of normal weight.

Overweight is also associated with the childbirth process. The P-value of this association was 0.031. Women have had a dystocic delivery accounted for 4.24% of the normal corpulence

group. The women had a dystocial delivery in 25.50% of the overweight group. Confirming the advances of the Ushakiran study that showed an association between the rate of delivery hemorrhage and the increase in BMI above normal body weight [13]. This is also contradicted by Grossetti et al, who stated that there is no difference in obstetric complications between women of different BMI classes [14].

Overweight is in association with the obstetrics complications recorded in this study, with a P-value of 0.004. Confirming the results of several studies. In particular, the study by Hamon et al [15], the Mochhoury study [16], and the Ushakiran study [13]. The first two studies attested that the risk of bone dystocia is higher among overweight or obese women. In these two studies, the associations between overweight or obesity and bone dystocia were found with statistically significant P-values.

Overweight is associated with the delivery mode with a P-value of 0.005. The cesarean was recorded among 0.78% of normal corpulence women and 27.18% of overweight women. Confirming Abenhaim's study [17], and the Yu et al study [18]. According to these two studies, the rate of vaginal delivery decreases with increasing BMI.

The episiotomy is also associated with overweight, with a P-value less than 0.001. The episiotomy is realized among 36.42% of women with normal corpulence, and among 63.76% of women with overweight. Confirming the results of several researchers, including the Bruyere study [19] and the Iaconelli study [20]. Those studies had shown that an increase in BMI tends to increase the episiotomy practice.

CONCLUSION

This study illustrated existence of associations between the recording of overweight among women included in this study and their delivery conditions. That showed the need to calculate the BMI for each pregnant woman and to analyze their weight gain during pregnancy in the different health care facilities. The ultimate goal is to improve delivery conditions and have a positive impact on maternal prognosis.

ACKNOWLEDGEMENTS

We would like to thank all the women who participated in this study. And we would like to thank all the staff of the Souissi maternity hospital in Rabat for their collaboration. We also thank all the authors who read, criticized, and approved this article.

CONFLICTS OF INTEREST

None.

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