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Highlights

Randomised Controlled Study

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Discovering Thoughts, Inventing Future

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GYNECOLOGY AND OBSTETRICS

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## A Randomised Controlled Study of Intramuscular Camylofin Dihydrochloride vs Intravenous Hyoscine Butylbromide in Augmentation of Labour

By Dr. Shridhar S. Dayama, Dr. Sunil S. Patil & Dr. Pradip W. Sambarey

*B.J. Govt. Medical College and Sassoon Hospital, India*

**Abstract-** Aims and objectives-to study and compare the effectiveness of injection Camylofin and injection Hyoscine in accelerating active phase of the 1st stage of labour in uncomplicated pregnancies. Second was to study the effects of the two drugs on 2nd and 3rd stage of labour and to study the adverse drug reactions on the mother and fetus. Method- This was randomized controlled prospective study. 150 Primigravida in the age group 18 to 30 years with gestational age 37 to 40 weeks were included. The cases were divided into 3 groups Group I consisted 50 women which was Control Group. Group II consisted of 50 women who were given injection Camylofin intramuscular. Group III consisted of 50 women who were given injection Hyoscine intravenous. Result-There was significant reduction in duration of active phase of labour and improvement in the rate of cervical dilatation with Camylofin compared to Hyoscine butylbromide. There were no maternal, fetal side effects associated to these drugs.

**Keywords:** *camylofin, hyoscine, active phase of labour.*

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# A Randomised Controlled Study of Intramuscular Camylofin Dihydrochloride vs Intravenous Hyoscine Butylbromide in Augmentation of Labour

Dr. Shridhar S. Dayama <sup>α</sup>, Dr. Sunil S. Patil <sup>σ</sup> & Dr. Pradip W. Sambarey <sup>ρ</sup>

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## I. INTRODUCTION

Labour is one of the important and memorable events in a woman's life. Labour is a multifactorial process, which involves myometrial contraction, cervical ripening and dilatation and the expulsion of the fetus and placenta in an orderly manner. Liggins<sup>1</sup> has stated that any hypothesis for the initiation of labour is incomplete unless it includes the satisfactory explanation for the structural changes in the cervix. During pregnancy, the contractility of the myometrium is usually diminished to accommodate and protect the growing products of conception, whereas the cervix forms a tight sphincter to ensure the integrity of pregnancy. Close to term, myometrial activity increases and the cervix undergoes biochemical changes. This is called cervical maturation and ripening. Cervix plays essentially a passive role as an innocent obstruction and is acted upon by all the forces of labour. Cervical dilatation is the result of all the driving forces of uterine contractions acting against passive tissue resistance. The dilatation of the cervix is one of the effective end results of these forces and in this role it serves to reflect

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the process of labor.<sup>2</sup>Cervical dilatation is one of the important factors which determines the duration of labour and is the resultant of all the driving forces of uterine contraction acting against tissue resistance. Failure of the cervix to dilate in labour can cause prolonged labor. Prolonged labour can lead to increased maternal and neonatal mortality and morbidity. Active management of labour versus physiological expectant management, has shown to decrease the occurrence of prolonged labour. Various drugs have been tried in the past to reduce the tone of the cervical cells. Antispasmodics are drugs that are usually taken to relieve cramps. They work either by direct relaxation of muscle or by interfering with the message sent by the nerves to the muscle to contract. It is thought that these drugs may help with opening the womb (dilatation of the cervix), when given during labour as a preventative or a treatment strategy. This would shorten the time spent in labour. Evidence was sought to support this idea. Majority of these drugs were found to have ill effects on the fetus and the mother as well. The modern obstetricians are now in search of a new drug which has got the role of beneficiary effect on the dilatation of internal os with minimal side effects on the fetus and mother. Administering antispasmodics during labour could also lead to faster and more effective dilatation of the cervix. Interventions to shorten labour, such as antispasmodics, can be used as a preventative or a treatment strategy in order to decrease the incidence of prolonged labour. As the evidence to support this is still largely anecdotal around the world, there is a need to systematically review the available evidence to obtain a valid answer.

## II. AIMS AND OBJECTIVES

1. To study and compare the effectiveness of Injection Camylofin and Injection Hyoscine in accelerating active phase of the 1st stage of labour in uncomplicated pregnancies in terms of duration of active phase of labour, cervix dilatation
2. To study the effects of the two drugs on 2<sup>nd</sup> and 3<sup>rd</sup> stage of labour.

3. To study the adverse drug reactions on the mother and fetus.

### III. MATERIALS AND METHODS

This study was conducted at a General Hospital from September 2011 to September 2013. Total number of cases-150 primigravidae. This was randomized controlled prospective study. Approval from ethical committee of the Institute was taken prior to the study. Women with term gestation, in active labour were chosen by simple randomization for the administration of drugs and written informed consent for the same was taken.

#### a) Inclusion Criteria

Primigravida in the age group 18 to 30 years with gestational age 37 to 40 weeks were included. All patients had singleton foetus with vertex presentation, spontaneous onset of labour in active phase of labour with intact membrane. Active phase of labour will be defined as 4 cm cervical dilatation with uterine contractions 3 contractions in 10 minutes each lasting for 30 sec.

#### b) Exclusion Criteria

Any antenatal pregnancy complications like preeclampsia, eclampsia, cephalopelvic disproportion, premature rupture of membranes, placenta previa, placenta abruption, preterm labour, abnormal

presentation, multiple pregnancy, Medical disorders, induced labour, Known hypersensitivity to drug were excluded.

The cases were divided into 3 groups Group I: Consisted of 50 women who were given none of the cervical dilatation drugs i.e. Control Group. Group II: Consisted of 50 women who were given injection Camylofin (Anafortan) IM during labour at an interval of 1 hour upto a maximum of 4 injections. Group III: Consisted of 50 women who were given injection Hyoscine (Buscopan) IV at an interval of 1 hour upto a maximum of 4 doses. History was taken. General physical, systemic, per abdomen and vaginal examination was done and drugs were given according to the group to which the patient belonged. Labour was monitored clinically and plotted partographically. Any side effects were noted and treated accordingly. After the delivery of the placenta, cervix and vagina were inspected to exclude any trauma to the cervix and vagina. Following parameters were recorded in every patient- Duration of active phase (1st stage) of labour. Rate of cervical dilatation. Duration of 2nd stage. Duration of 3rd stage. Mode of delivery side effects- maternal and fetal. 3rd stage complications. Neonatal condition at birth –baby weight and Apgar. The results observed were analyzed using biostatistical tests like Chi-square test and compared with that of other studies.

### IV. OBSERVATIONS

Table 1 : Age Distribution and Gestational Age

Age in years	Group I (Control)		Group II (Camylofin)		Group III (Hyoscine)	
	No.	%	No.	%	No.	%
18 – 20	2	4	8	16	2	4
21 – 25	24	48	31	62	24	48
26 – 30	24	48	11	22	24	48
Total	50	100	50	100	50	100
Mean ± SD	25.10±2.91		23.08±2.65		25.10±2.91	
Gestational age in wks						
37wks to 37 wks+6days	9	18	6	12	10	20
38wks to 38wks+6days	28	56	26	52	19	38
39wks to 40wks	13	26	18	36	21	42
Total	50	100	50	100	50	100

Majority of the patients in control group (96%) were in the 21-30 yrs age group, those in Camylofin group(62%) in 21-25 yrs age group and those in Hyoscine group in 21-30 yrs age group.(Table I). Mean age in Control group was 25.10 year, in Camylofin group was 23.08, in Hyoscine group was 25.10.

Majority of the women in Control group and Camylofin group were between 38 and 39 weeks of gestation (>50%), those in Hyoscine group were between 39 and 40 weeks of gestation (42%). Period of gestation is statistically similar among the three groups with p=0.108 (Not significant)

**Table 2 :** Comparison of Duration of 1st stage (active phase) of labour, 2nd stage and 3rd stage

	Group I(control) vs. Group II (Camylofin)	Group I (control) vs. Group III (Hyoscine)	Group II(Camylofin) vs. Group III (Hyoscine)
<b>Difference</b>			
Duration of 1st stage (active phase) of labour (min)	67.34	65.34	-11.74
Duration of 2nd stage of labour (min)	0.78	-1.41	-2.18
Duration of 3rd stage of labour (min)	3.71	1.14	-2.57
<b>P value</b>			
Duration of 1st stage (active phase) of labour (min)	<0.001**	<0.001**	0.013*
Duration of 2nd stage of labour (min)	0.707	0.322	0.068+
Duration of 3rd stage of labour (min)	<0.001**	0.443	0.019*

The difference between Control group and Camylofin group, Control group and Hyoscine group and Camylofin group and Hyoscine group was statistically significant with regard to the duration of 1st stage of labour. The difference between Control group and Camylofin group, Control group and Hyoscine group and Camylofin group and Hyoscine group is not

statistically significant with regard to the duration of 2nd stage of labour. There is significant shortening of the 3rd stage of labour in Camylofin group when compared to Control group and Hyoscine group while there was no significant difference between Control and Hyoscine group.

**Table 3 :** Comparison Rate Of Cervical Dilatation

	Rate of Cervical Dilatation ( in cm/hr )	
	Mean	SD
Group I (control)	1.97	0.28
Group II (Camylofin)	3.14	0.51
Group III (Hyoscine)	2.78	0.54
Comparison	Difference	p value
Group I vs. Group II	1.17	<0.001**
Group II vs. Group III	0.81	<0.001**
Group II vs. Group III	0.36	<0.001**

Rate of Cervical Dilatation is significantly more in Group II when compared to Group I (3.14mins vs. 1.97 mins) and significantly more in Group III when

compared to Group I (2.78mins vs. 1.97mins). Rate of cervical dilatation was also significantly more in Group II when compared to Group III.

**Table 4 :** Mode of Delivery and Labour Complications

MODE OF DELIVERY	Group I (control)		Group II (Camylofin)		Group III (Hyoscine)	
	No.	%	No.	%	No.	%
FTND	45	90	47	94	45	90
Instrumental	2	4	1	2	2	4
LSCS	3	6	2	4	3	6
Total	50	100	50	100	50	100
<b>LABOUR COMPLICATIONS</b>						
Atonic PPH	0	0	0	0	0	0
Cervical or vaginal tear	1	2	0	0	1	2
Retained placenta	0	0	1	2	0	0
Sec arrest of dilatation	0	0	1	2	1	2

Mode of delivery was comparable in all three groups. In Control group, 2% cases developed cervical tear. In Camylofin group, 2% cases developed retained placenta (however no PPH) and 2 % cases developed secondary arrest of dilatation of cervix. In Hyoscine

group, 2% cases developed cervical tear and 2 % cases developed secondary arrest of dilatation of cervix.

Table 5 : Maternal Side Effects and Fetal / Neonatal Side Effects

MATERNAL SIDE EFFECTS						
	GroupI(control)		GroupII (Camylofin)		GroupIII (Hyoscine)	
	No.	%	No	%	No	%
dry mouth	0	0	4	8	2	4
Tachycardia	0	0	1	2	1	2
nausea/vomiting	0	0	4	8	1	2
Giddiness	0	0	1	2	4	8
Drowsiness	0	0	1	2	2	4
Flushing	0	0	0	0	1	2
Hypotension	0	0	0	0	1	2
Present	0	0	7	14	8	16
FETAL / NEONATAL SIDE EFFECTS						
tachycardia /bradycardia	1	2	0	0	2	4
Meconium stained liquor	1	2	1	2	0	0
low Apgar	0	0	1	2	1	2
Present	2	4	2	4	3	6

In Camylofin group maternal minor side effects were present in 14% cases while in Hyoscine group in 16% cases. Fetal or neonatal side effects were present

in Control group in 4% cases while in Camylofin group 4% cases developed fetal side effects. In Hyoscine group 6% cases developed fetal side effects.

Table 6 : Perinatal Outcome (Baby Weight and Apgar)

Fetal outcome	Control group	Camylofin group	Hyoscine group	P value
Birth weight (kg)	2.95±0.19	2.86±0.33	3.02±0.36	
Apgar score at 1 min	7.86±0.57	7.82±0.62	7.86±0.57	0.927
Apgar score at 5 min	8.90±0.46	8.84±0.62	8.90±0.46	0.801

Mean birth weight was 2.95 kg in Control group, 2.86 kg in Camylofin group and 3.02 kg in Hyoscine group. Mean Apgar score at 1 min in Control group and Hyoscine group was 7.86 and 7.82 in Camylofin group. Mean Apgar score at 5 min in Control and Hyoscine group was 8.90 and 8.84 in Camylofin group.

with various other studies was carried out. The mean age of patients in group I is 25.10, in group II is 23.08 and in group III is 25.10. Mean age is comparable to other studies –In the study by Himangi<sup>3</sup> et al (2003) mean maternal age was 23 years in Camylofin group and 25 years in control group. And it was 24.13 years in KaurSarbhjit<sup>4</sup> et al study (2013).Maximum number of patients in both group I and group II were between 38-39 weeks. ( 56% and 52% respectively). In group III, 38 % patients were in between 38-39 weeks and 42 % were in between 39-40 weeks. The average period of gestation in all three groups is 39 weeks. In a study by Singh KC et al<sup>5</sup>, the average period of gestation was 38.6 weeks, which is comparable to the present study. Parity has an important influence on the duration of labour. Most of the studies have included only primigravidae. To remove this confounding factor, in the present study also we have included only primigravidae.

## V. DISCUSSION

Friedman, Phillipot, O' Driscoll and others have worked extensively on management of labour and partogram. These studies have given us the concept of active management of labour. Modern Obstetricians are now in search of new drugs, which have got the sole beneficiary effect on the dilatation of the internal os with minimal side effects on fetus and the mother. Drotaverine hydrochloride, camylofin dihydrochloride are muscolotropic agents - phosphodiesterase type IV inhibitors, structurally related to papaverine. They have mild Calcium channel blocking effects, no anticholinergic effects and act directly on smooth muscle cells, inhibiting spasm.(Sommers<sup>2</sup> 2002) Valethamate bromide and hyoscine butyl bromide (Buscopan) are anticholinergic agents which act as antagonists of acetylcholine at muscarinic receptors, inhibiting muscle spasm of smooth muscles innervated by the parasympathetic nerves(Sommers<sup>2</sup> 2002 and Samuels<sup>3</sup> 2009)

In present study mean Duration of active phase labor in group I was 185.38 min , in group II was 118.04 , in group III was 129.74 indicating that Camylofin is more efficacious in reducing duration of active phase of 1<sup>st</sup> stage of labour.

Active management of labour has gone a long way in decreasing maternal morbidity and perinatal mortality. Comparison of the results of the present study

In a study by Himangi<sup>3</sup> (2003), et al mean duration of active phase of labor was shorter in Camylofin group (3 hours, 35 minutes) than placebo group (5 hour, 34 minutes).The difference between Control group and Camylofin group in terms of the duration of active phase of labour is 67.34 min which is statistically significant, that between Control group and

Hyoscine group is 65.34 min which is statistically significant, that between Camylofin group and Hyoscine group is 11.74 min which also is statistically significant. The difference between Control group and Camylofin group, Control group and Hyoscine group and Camylofin group and Hyoscine group is not statistically significant with regard to the duration of 2nd stage of labour. There is significant shortening of the 3rd stage of labour in Camylofin group when compared to Control group and Hyoscine group while there was no significant difference between Control and Hyoscine group. This significant shortening of 3rd stage of labour in Camylofin group could not be attributed to any known factor. (Table 3)

In present study mean cervical dilatation rate is significantly more in Camylofin group (3.14 cm/hour) than Hyoscine group (2.78 cm/hour) with  $p = 0.001$ . In a study by Himangi et al<sup>9</sup> (2003), mean rate of cervical dilatation in Camylofin group was 1.92cm/hour. In Kaur Sarbhjit<sup>4</sup> study (2013), Mean rate of cervical dilatation according to active phase of first stage was  $3.33 \pm 1.03$  cm/hr in Anafortan group which is comparable to present study. In a study by Kamalesh Tiwari et al<sup>7</sup> (2003) with Hyoscine butylbromide the rate of cervical dilatation was 2.78 cm/hour in primigravidae which is comparable to present study. In the present study, 90% of control group, 94% of Camylofin group and 90% of Hyoscine group delivered vaginally. 4% of control group, 2% of Camylofin group and 4% of Hyoscine group had instrumental delivery. Delivery by LSCS was 6%, 4% and 6% respectively. In a study by Himangiet al<sup>4</sup> 92% of patients had normal vaginal delivery, 4% had instrumental delivery and 4% had LSCS in Camylofin group. Incidence of side effects were statistically similar in two groups (14% in Camylofin group and 16% in Hyoscine,  $p > 0.05$ ). In Hyoscine group, 4% developed dryness of mouth, 2% developed transient tachycardia, 2% developed nausea, 8% developed giddiness, 4% developed drowsiness.

Mean birth weight was 2.95kg in control group and 2.86 in Camylofin group and 3.02 in Hyoscine group. 0% in control group, 2% in Camylofin group, 2% in Hyoscine group had low Apgar score. 2% in control group (one case because of meconium stained liquor), 4% in Camylofin group (two cases because of meconium stained liquor and instrumental delivery), 4% in Hyoscine group (two cases because of instrumental delivery). In various other studies too birth weight and Apgar were not affected by the drugs. The present study concluded that both the drugs are free from fetal side effects.

## VI. SUMMARY

The study was conducted in the Department of Obstetrics and Gynaecology of a general Hospital, between September 2011 to September 2013. 150 primigravidae were selected. Majority of the cases were

in the age group of 21-25 yrs. On statistical analysis, appropriate selection of all three groups was confirmed with regards to age, period of gestation. Among primigravidae who received injection camylofin the mean duration of active phase of labour is 118.04 min. The rate of cervical dilatation being 3.14 cm/hr. In Inj. Hyoscine group, the mean duration of active phase of labour is 129.74 min, the rate of cervical dilatation being 2.78 cm/hr, whereas in control group the mean duration of active phase labour is 185.38 cm/min and the rate of cervical dilatation 1.97 cm/hr. Both the drugs have been found to shorten the duration of active phase of labour, but the shortening caused by camylofin was more when compared to Hyoscine. No serious side effects were observed with both the drugs. Transient side effects like tachycardia, dryness of mouth, giddiness were observed in both the groups. There was no difference in mode of delivery, birth weight of the newborn and Apgar scores at 1 min and 5 min. There were no significant fetal side effects in both the groups. Hence both the drugs did not interfere with utero placental circulation.

## VII. CONCLUSION

The following conclusions were drawn from this study:

1. Both camylofin and Hyoscine butylbromide are effective in reducing the duration of active phase of labour and improving rate of cervical dilatation.
2. There is significant reduction in duration of active phase of labour and significant improvement in the rate of cervical dilatation with Camylofin compared to Hyoscine butylbromide. Thus, Camylofin is more efficacious in augmenting the active phase of labour.
3. The number of patients having drug induced minor side effects are comparable with both drugs. These drugs cause no major maternal side effects.
4. There are no fetal/neonatal side effects associated to these drugs.
5. There are no adverse effects of these two drugs on 2<sup>nd</sup> and 3<sup>rd</sup> stage of labour.

Thus, effective shortening of the duration of labour was achieved without any significant detrimental effects to the mother and the newborn. Camylofin is better in achieving the end result. Hence, it can be used in modern obstetrics to relieve spasm and to hasten the rate of cervical dilatation and thereby promote safe delivery. However, it is recommended that the better results obtained with Camylofin should be verified with studies including large number of subjects.

So we can say that in modern obstetrics no women should be allowed to suffer in pain and agony of labor. Labor should be considered as a pleasurable moment in the life of every pregnant women. Drugs which hasten labor should be welcomed by both obstetrician and the laboring mother.

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## Macrosomie Foetale a Propos De 1270cas / Fetal Macrosomia about 1270 Cases

By Ramsiss Hanan, Abida Aida, Elamrani Sabah & Bargach Samir

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### Summary-

- In our work, we retrospectively studied 1270 cases of childbirth fetal macrosomia for a period of one year from 1st January 2014 to 31 December 2014 in the delivery room of the Souissi's maternity CHU Ibn Sina of Rabat.
- About 18470 births in 1270 were macrosomic, (a frequency of 6, 87%). The mean birth weight was 4346.45 + -354,83 grammes.
- The highest rate was observed in parturients :
  - in the age bracket of 26-35 years with (49.13%).
  - multiparts (67,9%)
  - fats (45,4%)
  - having an antecedent of macrosomia (19,3%)
  - having an exceeded term (12,2%)
  - often involved in the genesis of the macrosomia diabetes was found in only 2.75% of cases

*Keywords: macrosomia; weight; delivery; maternal- fetal complications; prevention; screening; risk factors.*

*GJMR-E Classification : NLMC Code: WJ 190*



*Strictly as per the compliance and regulations of:*



# Macrosomie Foetale a Propos De 1270cas / Fetal Macrosomia about 1270 Cases

Ramsiss Hanan <sup>α</sup>, Abida Aida <sup>σ</sup>, Elamrani Sabah <sup>ρ</sup> & Bargach Samir <sup>ω</sup>

## Resume-

- Dans notre travail, nous avons étudié rétrospectivement l'accouchement de 1270 cas de macrosomie foetale durant une période d'une année allant du 1<sup>er</sup> janvier 2014 au 31 décembre 2014 dans la salle d'accouchement de la maternité Souissi du CHU Ibn Sina de Rabat.
- Sur 18470 naissances, 1270 étaient des macro-somes, soit une fréquence de 6,87% .Le poids de naissance moyen était de 4346,45 +/- 354,83 grammes.
- La fréquence la plus élevée a été observée chez :
  - ✓ les parturientes ayant un âge entre 26 à 35 ans (fréquence de 49,13%).
  - ✓ multipares (67,9%).
  - ✓ obèses (45,4%) .
  - ✓ ayant un antécédent de macrosomie (19 ,3%).
  - ✓ présentant un dépassement de terme (12,2%).
  - ✓ par ailleurs le diabète souvent incriminé dans la genèse de la macrosomie a été retrouvé seulement dans 2,75% des cas.
- La souffrance foetale aigue (44,95%) représentait l'anomalie du travail la plus fréquente
- L'accouchement s'est déroulé par voie basse dans 69% des cas, la fréquence de la césarienne était de 31%.
- Les complications maternelles étaient dominées par : L'hémorragie de la délivrance (93 ,5%) le plus souvent sur des lésions périnéales et des inerties utérines.
- Les complications foetales étaient dominées par l'hypoglycémie (39,70%), la dystocie des épaules (20,59%) compliquée de lésions du plexus brachial (5,89%).
- La mortalité néonatale était de 0,7% dans notre série qui reste non élevé par rapport aux données de la littérature.
- Aucun cas de décès maternel n'a été retrouvé dans notre étude.

**Mots-Clés:** macrosomie; poids; accouchement; complications materno-foetales; prévention; dépistage; facteurs de risque.

## Summary-

- In our work, we retrospectively studied 1270 cases of childbirth fetal macrosomia for a period of one year from 1<sup>st</sup> January 2014 to 31 December 2014 in the delivery room of the Souissi's maternity CHU Ibn Sina of Rabat.
- About 18470 births in 1270 were macrosomic, (a frequency of 6, 87%). The mean birth weight was 4346.45 + -354,83 grammes.
- The highest rate was observed in parturients :
  - ✓ in the age bracket of 26-35 years with (49.13%).
  - ✓ multiparts (67,9%)

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- ✓ fats (45,4%)
- ✓ having an antecedent of macrosomia (19,3%)
- ✓ having an exceeded term (12,2%)
- ✓ often involved in the genesis of the macrosomia diabetes was found in only 2.75% of cases
- Acute fetal distress was the most common abnormality of work (44.95 %).
- The delivery was vaginal in 69% cases, and cesarean section in 31%.
- The fetal complications were dominated by low blood sugar (39.70 %), shoulder dystocia (20, 59 %) complicated by brachial plexus palsy at (5.89 %).
- Maternal complications were dominated by haemorrhage (93, 5%) most often on perineal lacerations and uterine inertia.
- Neonatal mortality was 0.7% in our series.
- No cases of maternal deaths were reported in our series.

**Keywords:** macrosomia; weight; delivery; maternal- fetal complications; prevention; screening; risk factors.

## I. INTRODUCTION

- ❖ Il s'agit d'une étude rétrospective, descriptive portant sur 1270 nouveau-nés macrosomes (confirmés après la naissance par un poids supérieur ou égal à 4000 g), colligés à la maternité Souissi du CHU Avicenne, durant une période de 12 mois allant du 1<sup>er</sup> janvier 2014 au 31 décembre 2014 sur un total de 18078 Accouchements et 18472 naissances. Notre travail a fixé comme :

### ➤ Objectif général

- ✓ la description des aspects épidémiologiques et cliniques de la macrosomie foetale dans la maternité Souissi Rabat durant la période de notre étude.

### ➤ Objectifs spécifiques

- ✓ L'évaluation de la fréquence de la macrosomie foetale dans notre étude et sa comparaison avec les données de la littérature.
- ✓ la recherche des différents facteurs de risque de la macrosomie foetale.

l'évaluation du mode d'accouchement et de la morbi-mortalité materno-foetale liée à la macrosomie.

## II. RESULTATS

### a) Epidemiologie

#### i. Fréquence

- ❖ Dans notre série, la fréquence des nouveau-nés macrosomes était chiffrée à 6,87%.

- ❖ Le poids de naissance a varié entre 4000g et 6100g
- ❖ La majorité (62,84%) des nouveau-nés avait un poids de naissance entre 4000g et 4400g.
- ❖ PNN moyen était de : 4346,45+-354,83 grammes. (tableau 1).

*Tableau 1* : Répartition des cas selon le poids de naissance.

Poids de naissance En gramme	Nombre de cas	Pourcentage %
4000-4400	798	62,84
4400-4800	319	25,11
4800-5200	100	7,88
5200-5600	41	3,23
Supérieur à 5600	12	0,94
Totale	1270	100

ii. *Age maternel*

- ❖ L'âge maternel a varié entre 14 et 50 ans.
- ❖ L'âge moyen de nos parturientes était de 30,64+-6,53ans. (tableau 2)

*Tableau 2* : Répartition des parturientes selon l'âge.

Age maternel (ans)	Nombre de parturiente	Pourcentage %
14-25	324	25,51
26-35	624	49,13
36-45	316	24,89
46-50	6	0,47
TOTAL	1270	100

iii. *Antécédents maternels*

a. *Antécédents maternels médicaux*

- ❖ 36 de nos parturientes ont eu des antécédents médicaux dont le plus fréquent est le diabète. (tableau3)

*Tableau 3* : Répartition des parturientes selon les antécédents médicaux.

Pathologie médicale	Nombre da cas	Pourcentage %
Diabète ancien	17	47,22
Asthme	4	11,11
HTA chronique	2	5,55
Polykystose rénale	2	5,55
Goitre	2	5,55
Lupus	1	2,78
Syphilis	1	2,78
RAA	1	2,78
Epilepsie	1	2,78
HVB	1	2,78
HVC	1	2,78
Cardiopathie	1	2,78
Sclérose en plaque	1	2,78
Greffe de cornée	1	2,78
Total	36	100

b. *Antécédents maternels obstétricaux*

- ❖ Chez la majorité des parturientes un antécédent de macrosomie antérieur ou de césarienne a été signalé (tableau 4)

*Tableau 4* : Répartition des patientes selon les antécédents obstétricaux.

Antécédent obstétrical	Nombre de cas	Pourcentage%
Accouchement dystocique	10	2,9
Macrosomie	245	70, 2
Césarienne	94	26,9
Total	349	100

iv. *Parité*

- ❖ La parité était comprise entre 1 et 7.
- ❖ La parité moyenne était de 2,36 +- 1,30.

- ❖ Dans notre série la majorité des parturientes était des paucipares. (tableau 5)

*Tableau 5 : Répartition des mères selon la parité.*

Parité	Nombre de cas	Pourcentage %
Primipare	408	32,1
Pauci pare	622	49
Multipare	240	18,9
Totale	1270	100

- v. *Antécédents familiaux*
  - ❖ La notion de diabète dans la famille a été retrouvée chez 581 parturientes réalisant ainsi un pourcentage de 45,75%
- vi. *Facteurs métaboliques*
  - a. *Diabète*
    - ❖ Seules 35 mères étaient connues diabétiques dont :
      - ✓ 05 cas de diabète type 1.
      - ✓ 12 cas de diabète type2.
      - ✓ 18 cas de diabète gestationnel ont été signalés sur nos dossiers.
  - b. *L'obésité constitutionnelle*
    - ❖ En calculant l'indice de masse corporelle (IMC), l'obésité était retenue chez 576 patientes soit 45,4%.
  - c. *L'obésité acquise*
    - Dans notre série, la notion de prise de poids pendant la grossesse appelée L'obésité gestationnelle (définie selon la formule de Lorentz) ne peut faire l'objet d'une approche rigoureuse du fait du nombre important de femmes sans suivi

prénatal ou avec un suivi de qualité médiocre laissant pour compte la prise régulière du poids au cours des consultations prénatales. De plus, l'appréciation exacte du gain pondéral suppose la connaissance du poids de la gestante juste avant ou au tout début de la gestation. Ceci suppose que les patientes soient suivies régulièrement comme c'est le cas dans les études où ce facteur est pris en compte. Malheureusement, nos parturientes nous sont référées dans la majorité des cas des maternités périphériques souvent en fin de grossesse ou pendant le travail.

#### b) *Etude Clinique*

##### i. *La hauteur utérine*

- ❖ La hauteur utérine était comprise entre 30 et 39cm.
- ❖ Le maximum de fréquence était situé entre 32 et 33 cm.
- ❖ La hauteur utérine moyenne était de 32,89+-1,86cm.
- ❖ La notion de panicule adipeux a été rapportée sur 63 de nos dossiers. (tableau 6)

*Tableau 6 : Répartition des parturientes selon la hauteur utérine.*

Hauteur utérine cm	Nombre des cas	Pourcentage %
30-31	278	21,9
32-33	585	46
34-35	268	21,1
36-37	123	9,7
> 37	16	1,3
Total	1270	100

- ii. *Pathologies gravidiques associées*
  - ❖ Le dépassement de terme est la principale anomalie obstétricale observée dans notre série.
  - ❖ L'HTAG était compliquée dans 06cas d'éclampsie et pré-éclampsie sévère. (tableau 7)

*Tableau 7 : Répartition des pathologies gravidiques associées.*

Pathologie gravidique	Nombre de cas	Pourcentage %
Dépassement de terme	155	56,16
Rupture prématurée des membranes	50	18,12
HTAG+Pré éclampsie	45	16,30
Diabète gestationnel	18	6,52
Hémorragie du 3 <sup>ème</sup> trimestre	8	2,90
Total	276	100

iii. *L'indice de masse corporelle (IMC)*

- ❖ L'IMC moyen était de 29,27 kg/m<sup>2</sup>. (tableau 8)

*Tableau 8* : Répartition des parturientes selon l'IMC.

IMC kg /m <sup>2</sup>	Nombre de cas	Pourcentage%
<18,5	0	0
18,5<IMC<24,9	77	6
25<IMC<29,9	617	48,6
IMC ≥ 30	576	45,4
Total	1270	100

iv. *Nature des présentations*

- ❖ La présentation du sommet était la plus fréquente dans notre étude (96,78% des cas). (tableau 9)

*Tableau 9* : Répartition des différentes présentations.

Présentation	Nombre de cas	Pourcentage%
Sommet	1229	96,78
Siege	35	2,75
Face	4	0,31
Transverse	1	0,08
Font	1	0,08
Total	1270	100

v. *Déroulement du travail*

- ❖ La souffrance fœtale aiguë (SFA) représentait l'anomalie du travail la plus fréquente, compliquée de 8 cas de décès en per partum.
- ❖ Le déroulement du travail était normal chez la majorité de nos parturientes.
- ❖ Les antispasmodiques musculotropes ont été utilisés chez 122 parturientes. (tableau 10)

*Tableau 10* : Répartition des différentes anomalies au cours du travail.

Anomalies du travail	Nombre de cas	Pourcentage%
DEDC	18	16,51
Dystocie de démarrage	33	30,28
Souffrance fœtale	49	44,95
Stagnation de la dilatation	9	8,26
Total	109	100

c) *Modalités d'Accouchement*i. *Voies D'accouchement*

- ❖ Dans notre série la majorité des macrosomes ont été nés par voie basse avec un pourcentage de 69%. (graphique 1)

ii. *Accouchement Par Voie Basse*

- ❖ Dans notre étude l'accouchement par voie basse spontanée était le mode le plus fréquent avec un pourcentage de 46%.

- ❖ Le recours à des instruments (ventouse d'extraction ou forceps) était rapporté dans 23% des cas.
- ❖ Le recours à des manœuvres obstétricales était rapporté dans 15 cas. (tableau 11)

*Tableau 11* : Répartition des modalités d'accouchement par voie basse.

Modalité d'accouchement par voie basse	Nombre de cas	Pourcentage%
Spontanée	400	46
Spontanée + épisiotomie	273	31
Ventouse d'extraction	193	22
Forceps de pageot	11	1
TOTAL	877	100

iii. *Accouchement Par Césarienne*

- ❖ La voie haute a été indiquée chez 31% des parturientes.

- ❖ La principale indication de la voie haute était la disproportion foeto-pelvienne avec un pourcentage de 23,15 (tableau 12)

*Tableau 12* : Répartition des indications d'accouchement par voie haute.

Indication de la VH	Nombre de cas	Pourcentage %
Disproportion foeto-pelvienne	91	23,15
Utérus cicatriciel+Macrosomie	50	12,72
Souffrance foetale aigue	49	12,47
Rupture prématurée des membranes prolongée	32	8,14
Dépassement de terme +Macrosomie	28	7,12
Siège+Macrosomie	28	7,12
Utérus cicatriciel	27	6,87
Bassin chirurgical	15	3,82
Défaut d'engagement à dilatation complète	15	3,82
Stagnation de la dilatation	9	2,29
Virage du liquide amniotique	7	1,78
Procidence du cordon	6	1,53
Primipare âgée	3	0,76
Pré rupture utérine	4	1,02
Chorioamniotite	3	0,76
Inertie utérine	5	1,27
Hématome rétro-placentaire	2	0,51
Placenta prævia	2	0,51
Présentation transverse	1	0,25
Présentation de front	1	0,25
Présentation face	2	0,51
Rupture utérine	2	0,51
Bassin juvénile	1	0,25
Cicatrice corporéale	1	0,25
Antécédent de périnée	1	0,25
Grossesse gémellaire +macrosomie	1	0,25
Indéterminée	7	1,78
Total	393	100

#### iv. Sexe Des Nouveau-Nés

- ❖ Le sexe masculin était dominant avec un pourcentage de 63%(graphique 2)

#### v. Morbidite Et Mortalite Neonatale

##### a. Score d'Apgar à la naissance

La grande partie des nouveau-nés avait un score d'Apgar  $\geq 7$  à la 5<sup>ème</sup> min. (tableau 13)

*Tableau 13* : Répartition des nouveau-nés selon le score d'Apgar.

Score d'Apgar	Nombre de cas	Pourcentage%
>7	1226	96,53
3-7	34	2,68
<3	10	0,79
Total	1270	100

##### b. Morbidité néonatale

- ❖ La fréquence de la morbidité néonatale était de 5,35% elle était dominée par les hypoglycémies et les lésions traumatiques du plexus brachial (tableau 14)

*Tableau 14* : Répartition des morbidités néonatales.

Morbidité néonatale	Nombre de cas	Pourcentage%
Hypoglycémie	27	39,70
Dystocie des épaules	14	20,59
Plexus brachial	4	5,89
Malformations	6	8,82
Fracture	1	1,47
Paralysie faciale	1	1,47
Détresse respiratoire	4	5,89
Infection	5	7,35

Rétention de la tête derrière	1	1,47
BSS	5	7,35
Totale	68	100

c. *Mortalité néo-natale*

- ❖ 10 cas de décès en per partum ont été rapportés ce qui fait un taux de mortalité de 0,79%.

d) *Morbidite et Mortalite Maternelle*i. *Morbidité maternelle : (tableau 15)*

- ❖ La fréquence de la morbidité était estimée à 6,06%
- ❖ L'hémorragie de délivrance était la principale complication maternelle retrouvée

*Tableau 15* : Répartition des morbidités maternelles.

Morbidité maternelle	Nombre de cas	Pourcentage%
Hémorragie de délivrance :	72	93,50
- inerties utérines	30	38,96
- Ruptures utérines	2	2,60
- Pré rupture utérine	4	5,19
- lésions périnéales	13	16,88
- Périnée complet	2	2,60
- Rétentions placentaires	21	27,27
Hématome rétro placentaire	1	1,30
Chorioamniotite	3	3,90
Pré éclampsie du post partum	1	1,30
Totale	77	100

ii. *Mortalité maternelle*

- ❖ Aucun cas de décès maternel en rapport avec l'accouchement d'un macrosome n'a été rapporté sur nos dossiers.

e) *L'analyse Du Poids De Naissance Foetal En Fonction Des Parametres Maternels*i. *L'analyse du poids de naissance foetal en fonction de l'âge maternel (tableau 16)**Tableau 16* : La corrélation entre le poids de naissance foetal et l'âge maternel

		PNN	âge
PNN	Corrélation de Pearson	1	,076**
	Sig. (bilatérale)		,007
	N	1270	1270
âge	Corrélation de Pearson	,076**	1
	Sig. (bilatérale)	,007	
	N	1270	1270

- Notre coefficient de corrélation=0,076 ; il est positif et faiblement significatif.
- Le  $p < 0,05$  donc la corrélation entre le PNN et l'âge maternel existe bel et bien au sein de notre population.

ii. *L'analyse du poids de naissance foetal en fonction de la parité*

- Notre coefficient de corrélation=0,197 ; c'est une valeur positive et significative.
- Le  $p < 0,05$  la corrélation entre le PNN et la parité existe bel et bien au sein de notre population. (tableau 17)

*Tableau 17* : La corrélation entre le poids de naissance foetal et la parité

		PNN	parité
PNN	Corrélation de Pearson	1	,197**
	Sig. (bilatérale)		,000
	N	1270	1270
parité	Corrélation de Pearson	,197**	1
	Sig. (bilatérale)	,000	
	N	1270	1270

iii. *L'analyse du poids de naissance fœtal en fonction de l'indice de masse corporelle maternel*

- Notre coefficient de corrélation=0,066 ; c'est une valeur positive et faiblement significative.
- Le  $p < 0,05$  donc la corrélation entre le PNN et l'IMC maternel existe bel et bien au sein de notre population. (tableau 18)

*Tableau 18* : La corrélation entre le poids de naissance fœtal et l'indice de masse corporelle maternel

		PNN	IMC
PNN	Corrélation de Pearson	1	,066*
	Sig. (bilatérale)		,019
	N	1270	1270
IMC	Corrélation de Pearson	,066*	1
	Sig. (bilatérale)	,019	
	N	1270	1270

iv. *L'analyse du poids de naissance en fonction de la hauteur utérine*

- Notre coefficient de corrélation=0,876 ; c'est une valeur positive et significative.
- Le  $p < 0,05$  donc la corrélation entre le PNN et HU existe bel et bien au sein de notre population. (tableau 19)

*Tableau 19* : La corrélation entre le poids de naissance fœtal et de la hauteur utérine

		PNN	HU
PNN	Corrélation de Pearson	1	,876**
	Sig. (bilatérale)		,000
	N	1270	1270
HU	Corrélation de Pearson	,876**	1
	Sig. (bilatérale)	,000	
	N	1270	1270

### III. DISCUSSION

a) *La Fréquence*

- La fréquence de la macrosomie varie entre 1,56% et 9,2% selon les auteurs, dans notre série sur 18472 naissances 1270 ont été des macrosomes ce qui fait une fréquence de 6,87%.
- ❖ Nos résultats restent proches de ceux retrouvés par la majorité des auteurs (tableau 20a)

*Tableau 20a* : Fréquence de la macrosomie selon les auteurs.

AUTEURS	PAYS	ANNEE	FREQUENCE %
OUARDA [62]	Tunisie	1989	6,8
NOCON[61]	USA	1990	7,58
ABDELKODOUSS[66]	Maroc	1997	7,5
MOUNZIL[63]	Maroc	1999	7,68
MERGER[60]	France	1999	6,46
TOUZET [65]	France	2002	7,2
SIRRAJ [67]	Maroc	2004	7,5
LAGHZAOUJ[68]	Maroc	2004	7,5
EIOUAZZANI[64]	Maroc	2011	7,7
Notre série	Maroc	2014	6,87

- ❖ D'autres auteurs rapportent une fréquence plus élevée (tableau 20 b)

*Tableau 20b* : Fréquence de la macrosomie selon les auteurs.

AUTEURS	PAYS	ANNEE	FREQUENCE %
STEVENSON[70]	USA	1979	8 à10
GOLDITCH[69]	USA	1978	8
SOUMANI[8]	Maroc	1993	11
SUNNET[71]	USA	2002	9,2



- ❖ Certains auteurs notamment africains rapportent une fréquence plus faible (tableau 20c)

Tableau 20c : Fréquence de la macrosomie selon les auteurs.

AUTEURS	PAYS	ANNEE	FREQUENCE %
ABUDU [72]	Nigéria	1989	4,9
BADJI[73]	Sénégal	1999	1,56
SANOGO[ 74]	Mali	2009	5,02

- ❖ Ces variations de fréquence entre les séries pourraient s'expliquer par :
  - ✓ le mode de recrutement : Stevenson ne s'est intéressé qu'à des enfants de mères diabétiques
  - ✓ la taille et l'échantillon : les études de Goldich et Soumani ont porté sur plusieurs maternités. Elles représentent mieux la population de macrosomes
  - ✓ les facteurs de sous nutrition, de suivi insuffisant, de manque d'hygiène au cours de la grossesse, de bas niveau socio-économique (dans les séries africaines).
- b) *Les Facteurs De Risque*
  - L'age Maternel*
    - ❖ L'âge maternel a varié entre 14 ans et 50 ans
    - ❖ 57,63%de nos parturientes avaient un âge supérieur ou égal à 30ans ce qui rejoint les données de la littérature [1],[2] :
      - BADJI [3] :58,1%
      - OUARDA [4] : 46%
      - MOUNZIL [5] :58%
    - ❖ L'Age moyen de nos parturientes était de 30,64+ /- 6,53 ans qui est presque identique à celui retrouvé par
      - EIOUZZANI [6] :30,5ans
      - BADJI [3] :30 ans
  - Parite*
    - ❖ Ceci peut être expliqué par :
      - ✓ la spécificité socioculturelle de chaque pays (âge du mariage le mode de vie, la planification familiale etc.)
      - ✓ Ainsi que l'expression discrète des troubles métaboliques avec l'âge avancé (l'obésité et ou diabète) souvent retrouvés à partir de la péri-ménopause.
    - ❖ La parité moyenne dans notre série était de : 2,36+-1,30
    - ❖ 67,9% de nos parturientes étaient des multipares avec une nette prédominance des paucipares 49%.
      - Nos résultats sont en accord avec les données de la littérature (tableau 21)

Tableau 21 : Répartition de la fréquence de la multiparité selon les auteurs.

Auteurs	Pays	Année	Fréquence de la multiparité %	Nombre total de cas
OUARDA [62]	Tunisie	1989	62 ,2	497
BADJI [73]	Sénégal	1999	76	105
MOUNZIL [63]	Maroc	1999	21	384
TOUZET [65]	France	2002	58 ,6	701
SUNNET [71]	USA	2002	50	4021726
SIRRAJ [67]	Maroc	2004	64,6	1100
SANOGO [74]	Mali	2009	40	185
ELOUZZANI [64]	Maroc	2011	66	255
Notre série	Maroc	2014	67,9	1270

- Antécédent maternel d'accouchements de nouveaux nés macrosomes*
  - ❖ Selon The American College of Obstetricians and Gynaecologists (ACOG), l'antécédent de macrosome est le facteur le plus incriminé dans la survenue de la macrosomie, sa valeur prédictive positive est de 95% et c'est pratiquement la même valeur retrouvée par l'Agence Nationale pour le Développement de l'Évaluation Médicale (ANDEM) [9].
    - 245 de nos femmes ont déjà accouché d'un gros enfant, ce qui rejoint les résultats de la littérature. Ceci nous reconforte dans l'idée qu'une femme ayant accouché d'un macrosome récidive le plus souvent : c'est la dystocie progressive de la multipare. (tableau 22)

Tableau 22 : Répartition d'antécédent de macrosomie selon les auteurs.

Auteurs	Pays	Année	Fréquence de l'ATCD de macrosomie%	Nombre total de cas
OUARDA [62]	Tunisie	1989	18	497
PANEL [82]	France	1991	12,6	198
MOUNZIL [63]	Maroc	1999	15	384
BADJI [73]	Sénégal	1999	50,5	105
LAGHZAOUÏ [68]	Maroc	2004	5,14	2160
SIRRAJ [67]	Maroc	2004	13,4	1100
SANOOGO [74]	Mali	2009	31,4	185
ELOUAZZANI [64]	Maroc	2011	4	255
Notre série	Maroc	2014	19,3	1270

- iv. *Diabète maternel*
- ❖ Une femme enceinte peut avoir soit :
    - un diabète connu : type 1 insulinodépendant ou type 2 insulinorésistant.
    - un diabète gestationnel
  - ❖ Dans notre série la fréquence du diabète quelque soit son type a été estimée à 2,75% dont :
    - ✓ 0,40% un diabète de type 1
    - ✓ 0,94% un diabète de type 2
    - ✓ 1,41% de diabète gestationnel
    - ❖ ceci peut être expliqué par le fait que la majorité des femmes n'ont pas bénéficié d'un dépistage systématique ainsi que le non suivi des grossesses. (tableau 23)

Tableau 23 : Répartition de la fréquence du diabète selon les auteurs.

Auteurs	Pays	Année	Fréquence de diabète %	Nombre total de cas
PANEL [82]	France	1991	2,5	198
GBABUIDI [83]	Sénégal	1994	5,5	100
LAGHZAOUÏ [68]	Maroc	2004	5,23	2160
MOUNZIL [63]	Maroc	1999	4,4	384
CARLOTTI [84]	France	2000	4,5	-
HUGH [85]	USA	2001	4,1	-
SIRRAJ [67]	Maroc	2004	3	1100
BADJI [73]	Sénégal	1999	3,5	105
SANOOGO [74]	Mali	2009	1,1	185
WARLIN [79]	France	1975	10	-
BISH [77]	France	1955	1,07	-
ELOUAZZANI [64]	Maroc	2011	0,78	255
Notre série	Maroc	2014	2,75	1270

- ❖ selon plusieurs auteurs, le diabète qu'il soit gestationnel ou préexistant à la grossesse constitue un facteur de risque connu de la macrosomie fœtale : sa fréquence varie entre 45% chez une population de femmes diabétiques, et 8% chez une population témoin de femmes non diabétiques [10], [11].
  - ❖ En cas de diabète maternel, la macrosomie est classiquement attribuée à l'hyperinsulinisme fœtal réactionnel à l'hyperglycémie maternelle, en raison de l'effet anabolisant de l'insuline.
- c) *Clinique*
- i. *La hauteur utérine*
- ❖ La mesure de la hauteur utérine est systématique, elle est considérée comme élément clinique essentiel dans le dépistage des macrosomes ; mais parfois, difficile à mesurer chez les obèses (panicule graisseux), et donc sa valeur peut varier parfois selon l'examineur.
- ii. *L'obésité maternelle*
- ❖ L'indice de masse corporelle (IMC) est une mesure du poids par rapport à la taille couramment utilisée pour estimer le surpoids et l'obésité chez les populations et les individus adultes. Il correspond au poids divisé par le carré de la taille, exprimé en kg/m<sup>2</sup> (Poids\*100/Taille<sup>2</sup>). L'Organisation mondiale de la Santé (OMS) définit l'obésité comme un IMC égal ou supérieur à 30. [12]
  - ❖ 45,4% de nos parturientes étaient des obèses
  - ❖ Vu le manque de données on n'a pas pu étudier l'obésité acquise définie par la formule de Lorenz
- iii. *Les pathologies gravidiques associées*
- ❖ L'hypertension artérielle se définit par une pression artérielle systolique  $\geq$  140 mm Hg et /ou une pression diastolique  $\geq$  90 mm Hg à 2 reprises (tension artérielle prise au repos en décubitus latéral gauche ou en position assise). Ainsi on distingue (selon ESH 2007 – Consensus 2009)
    - Tous types confondus sa fréquence dans notre série était de 3,45%.

- Cette fréquence reste proche de celle retrouvée par :
  - ✓ OUARDA [4] 2,8%.
- Certains auteurs ont rapporté une fréquence plus élevée :
  - ✓ MATTHEW [2] :7,6%
  - ✓ SIRRAJ [13] :9,09%
  - ✓ SANOGO [7] : 9,2%
- iv. *Le terme de la grossesse*
  - ❖ Selon les modes de calculs, les facteurs génétiques et certaines caractéristiques maternelles, influencent la durée de la gestation qui varie entre 280 et 290 jours à partir du premier jour de la date des dernières règles (pour des cycles réguliers de 28 jours)
  - ❖ Le dépassement de terme est retrouvé chez 12,20 % de nos parturientes. Certains auteurs rapportent des fréquences moins élevées :
    - ✓ BADJI [3] : 9,5%
    - ✓ SANOGO [7] : 2,5%
    - ✓ PANEL [14] : 2,5%
    - ✓ SIRRAJ [13] :0,54%
    - ✓ ELGHZAOUI [8] : 1,76%
  - Cette différence entre les auteurs peut être expliquée par
    - ✓ Le manque d'une datation précise de la grossesse par une échographie précoce, ou une date précise des dernières règles.
    - ✓ La fréquence et la régularité des consultations prénatales.
    - ❖ Certains auteurs pensent que le dépassement de terme expose trois fois plus le fœtus au risque de macrosomie par rapport aux fœtus naissant avant 42 semaines d'aménorrhée [15], [16].
    - ❖ OUARDA et collaborateurs [17] suggèrent l'existence d'une influence réciproque de la macrosomie sur la maturité. Ainsi la prolongation de la grossesse favorise l'hypotrophie et d'autre part s'accompagnerait d'un gain pondéral, l'hypertrophie fœtale qui favoriserait la prolongation du terme par le biais de la disproportion foeto-pelvienne perturbant ainsi le déclenchement spontané du travail en modifiant les composantes mécaniques [18].
- v. *Le mode de présentation du fœtus*
  - ❖ La présentation céphalique était majoritaire avec une fréquence de 96,78%. La plupart des travaux confirment cette constatation (tableau 24)

Tableau 24 : Fréquence de la présentation céphalique selon les auteurs.

Auteurs	Année	Pays	Fréquence de la présentation céphalique %
BADJI [73]	1999	Sénégal	87,60
SANOGO [74]	2009	Mali	96,2
SIRRAJ [67]	2004	Maroc	91,9
LAGHZAOUI [68]	2004	Maroc	87,55
ELOUAZZANI [64]	2011	Maroc	97,5
Notre série	2014	Maroc	96,78

- ceci en vertu de la loi d'accommodation.
- d) *Modalités D'accouchement*
  - i. *Accouchement Par Voie Basse*
    - ❖ Comme en témoigne la majorité des séries marocaines l'accouchement d'un macrosome est d'abord spontané, le recours à la ventouse est plus fréquent que l'utilisation du forceps, contrairement aux pays Européens et Américains, où l'utilisation du forceps est plus fréquente. (tableau 25)

Tableau 25 : Fréquence des modalités d'accouchement par voie basse selon les auteurs.

Auteurs	Pays	Année	Spontanée	Ventouse	Forceps	Manceuvres
OUARDA [62]	TUNISIE	1989	70,1	6,4	6,2	-
PANEL [82]	France	1991	58	-	23,8	9,66
BADJI [73]	SENEGAL	1999	57,2	-	0,9	-
ABDELKODOSS [66]	MAROC	1997	46,84	26,85	1,66	9,98
JULIA [95]	USA	2000	56,4	7	10,1	-
SIRRAJ [67]	MAROC	2004	72,22	13,85	8,02	6,17
LAGHZAOUI [68]	MAROC	2004	65	32	3	6,5
SANOGO [74]	MALI	2009	73	-	7	-
ELOUAZZANI [64]	MAROC	2011	72	-	0,4	-
Notre série	MAROC	2014	46	22	1	1,18

ii. *Accouchement Par Césarienne*

- ❖ On a réalisé 393 césariennes (31% de l'ensemble des accouchements réalisés), dont 117 (presque le tiers) étaient des voies hautes prophylactiques.
- ❖ Ce taux varie selon les études (tableau 26)

Tableau 26 : Fréquence de la voie haute selon les auteurs

Auteurs	année	Taux de césarienne en %
SPELLACY [57]	1979	34
TURNER [62]	1990	10
PANEL [82]	1991	9,09
GBAGUIDI[18]	1994	7
WENDY VAN [70]	1998	26
STOTLAND [96]	1999	34,3
BADJI [73]	1999	41,9
BOULANGER [97]	2001	16,3
LAGHZAOUI [68]	2004	9,3
SIRRAJ [67]	2004	39,45
SANOGO [74]	2009	20
ELOUAZZANI [64]	2011	28
Notre série	2014	31

- ❖ Les indications de la césarienne étaient variées et dominées par la disproportion foeto-pelvienne, macrosomie sur utérus cicatriciel et la souffrance fœtale aigue...
- iii. *La Macrosomie Fœtale Et Les Modalités D'accouchement*
- ❖ La voie basse reste le mode d'accouchement le plus fréquent. Selon le CNGOF et l'HAS, l'équipe obstétricale complète (sage-femme, obstétricien, anesthésiste et pédiatre) doit être présente à l'accouchement.
  - La surveillance du travail devra être rigoureuse, pour dépister les complications dynamiques (hypo ou hypercinésie, hypertonie) et mécaniques (défaut d'engagement de la présentation, stagnation de la dilatation, et tout ce qui évoque une disproportion foeto-pelvienne). Il faut savoir que la macrosomie expose à un allongement anormal de la fin de la dilatation et de la 2<sup>ème</sup> phase du travail.
- e) *E-Les Caractéristiques Des Nouveau-Nés*
- Tous les fœtus étaient uniques ; sauf un cas d'une grossesse bichoriale bi amniotique ce qui prouve que les grossesses multiples ne donnent habituellement pas de fœtus macrosomes.
- i.  *poids de naissance du nouveau né*
- 66%** des bébés avaient un poids de naissance entre 4000g et 4500g ce qui rejoint les résultats rapportés par la plupart des travaux :
- ✓ GBAGUIDI [19] : 89%
  - ✓ BADJI CA [3]: 91,5%
  - ✓ SANOGO [7] : 89,8%
  - ✓ LAGHZAOUI [8]:75%
  - ✓ -SIRRAJ[ 13] 73,4% entre 4000 et 4400 g
- ❖ Le poids moyen des nouveau-nés dans notre série était de 4346,45+- 354,83 grammes, avec des variations allant de 4000 à 6100 grammes.
  - ❖ Cette moyenne reste proche de celle rapportée par :
    - ✓ ELOUAZZANI [6] 4269±271,9 grammes ;
    - ✓ SANOGO [7] 4184,86 grammes
- ii. *Le sexe*
- ❖ La prédominance masculine a été rapportée par la plupart des auteurs et a été confirmée par notre étude.
    - ✓ BADJI [3]52%
    - ✓ GBAGUIDI [19] 60%
    - ✓ MERGER [20] 66,68%
    - ✓ SIRRAJ [13] 60,7%
    - ✓ SANOGO [7] 67%
    - ✓ ELOUAZZANI [6] 66,67%
    - ✓ Notre série 63%
- f) *La Morbidité Et La Mortalité Neonatale*
- ❖ La vitalité du fœtus est mesurée par le score mis au point par Virginie Apgar.
  - ❖ Dans notre série, le score d'Apgar à la première minute était > à 7 chez la majorité des nouveau-nés.
- Ce taux reste proche à celui retrouvé par la majorité des auteurs :
- ✓ BADJI [3] 65,7%
  - ✓ SANOGO [7] 90,3%
  - ✓ SIRRAJ [13]96%

i. *La Mortalite Neonatale*

- ✓ le taux de mortalité dans notre série était de 0,7%. (tableau 27)

Tableau 27 : Répartition de la mortalité néonatale selon les auteurs.

Auteurs	Pays	Année	Fréquence de la mortalité %
WARLIN [79]	France	1975	6
BISH [77]	France	1955	0,6
OUARDA [62]	Tunisie	1989	1,2
BADJI [73]	Sénégal	1999	3,8
MATTHEW [76]	USA	1997	1,51
ORALENGIN [99]	USA	2001	0,8
SIRRAJ [67]	Maroc	2004	2,18
LAGHZAOU [68]	Maroc	2004	2,82
SANOGO [74]	Mali	2009	1,62
ELOUZZANI [64]	Maroc	2011	0
Notre série	Maroc	2014	0,79

- Notre taux de mortalité reste non élevé par rapport à celui retrouvé dans d'autres séries. 10 cas de décès périnataux ont été rapportés, soit une fréquence de 0,79% dont ;
  - 8 décès à la suite d'une souffrance fœtale aigue.
  - 2 décès secondaires à des ruptures utérines.
- ✓ Des problèmes d'ordre mécanique liés à l'accouchement
- ✓ ou métabolique en rapport avec l'étiopathogénie de la macrosomie.
- Notre taux de morbidité était de 5,35%.(tableau 28).

ii. *La Morbidite Neonatale*

- ❖ Selon les auteurs, la macrosomie est un facteur qui augmente la morbidité néonatale soit par :

Tableau 28 : Répartition de la morbidité néonatale selon les auteurs.

Auteurs	Pays	Année	Fréquence de la morbidité%
OUARDA [62]	Tunisie	1989	3,6
PANEL [82]	France	1991	5,15
BADJI [73]	Sénégal	1999	8,6
SUNEET [71]	USA	2000	5
LAGHZAOU [68]	Maroc	2004	6,53
SIRRAJ[67]	Maroc	2004	6,09
ELOUZZANI [64]	Maroc	2011	38,04
Notre série	Maroc	2014	5,35

- Ainsi la morbidité néonatale liée à l'accouchement d'un macrosome est non négligeable. Elle est dominée par les hypoglycémies et les lésions du plexus brachial. Ces dernières sont redoutables et assez fréquentes dans notre série. Elles traduisent l'existence d'une disproportion foetopelvienne. ceci rejoint les résultats retrouvés par d'autres auteurs.
- cette morbidité semble être liée à un défaut de prise en charge précoce des grossesses à risque surtout en cas de disproportion foeto-pelvienne. Il s'y ajoute le retard des évacuations à partir des centres périphériques et la qualité de la consultation pré natale.
- Ainsi on distingue entre
  - Des Complications D'ordre Mécanique*
    - ✚ *La Dystocie Des Epaules*
      - ❖ Dans notre série, on a noté 14 cas de dystocie des épaules (20,59% des morbidités fœtales), dont 4 cas compliqués de lésions du plexus brachial. Les poids de naissance de ces nouveaux nés ont varié entre 4000grammes et 5400grammes avec une moyenne de 4576,47grammes.
    - ✚ *Le Fractures*
      - ❖ Dans notre série, on a identifié un seul cas de fracture de la diaphyse humérale chez un nouveau-né avec un poids de naissance de 5400 grammes suite à un accouchement par voie basse, aidé d'une ventouse d'extraction et compliqué par une dystocie des épaules.
  - Complications D'ordre Métabolique*
    - ✚ *L'hypoglycémie Néonatale*
      - ✓ L'hypoglycémie était la principale anomalie métabolique dans notre série (39,70% des morbidités), ceci rejoint les données de la littérature.
    - ✚ *L'hypocalcémie :*
      - ❖ L'hypocalcémie est définie par une calcémie inférieure à 70 mg/l (1,75 mmol/l).

- ❖ Aucun cas d'hypocalcémie documentée n'a été rapporté sur nos dossiers.
- ✚ *L'hyperbilirubinémie :*
- ❖ Les nouveau-nés de mères diabétiques ont fréquemment une hyperbilirubinémie en raison de leur intolérance à l'alimentation orale des premiers jours, et donc un accroissement du cycle entérohépatique de la bilirubine.
- ✚ *La Polyglobulie :*
- ❖ Souvent retrouvée chez les nouveau-nés de mères diabétiques : l'hyperinsulinisme est à l'origine d'une hématopoïèse excessive. Elle peut être asymptomatique mais doit être traitée si l'hématocrite est supérieur à 70%.
- ✚ *Les Malformations :*
- ❖ Le taux des malformations augmente en cas de diabète maternel mal équilibré, elles ne relèvent pas d'un mécanisme génétique, mais d'une modification de l'environnement de l'embryon par l'intermédiaire de l'hyperglycémie, au cours des 6 à 7<sup>ème</sup> semaines de l'organogenèse.
- ❖ Dans notre série on a noté 6 cas de malformations répartis comme ceci :
  - ✓ 1cas de syndrome Daouly Waker
  - ✓ 1cas de dysmorphie faciale avec des oreilles bas insérées, épaissement de la nuque
  - ✓ 1cas d'ambiguïté sexuelle
  - ✓ 1cas de bec de lièvre
  - ✓ 1cas de pied bot
  - ✓ 1cas de spina bifida
- ❖ aucun d'eux n'est associé à un diabète maternel.
- ✚ *Autres :*
- ❖ Autres complications chez les nouveau-nés macrosomes surtout ceux issus de mère diabétique, peuvent être observées : la thrombopénie et l'acidose
- v. *L'asphyxie Néonatale*
- ❖ Plusieurs études rapportent un risque d'asphyxie néonatale significatif en cas de macrosomie fœtale avec des scores d'Apgar à 1 min <6 par rapport aux nouveau-nés non macrosomes [21, 22].
- ❖ Dans notre série on a noté 8 cas d'asphyxie dont 1 est associé à une dystocie des épaules.
- vi. *Syndrome De Détresse Respiratoire*
- ❖ Il concerne actuellement surtout les enfants nés par césarienne : ils présentent un retard de résorption entraînant une détresse respiratoire transitoire.
- ❖ Chez les nouveau-nés de mère diabétique, ce syndrome est causé par un retard de résorption aggravé par le rôle inhibiteur de l'hyperinsulinisme fœtal sur la maturation du surfactant.
- ❖ Dans notre série on a trouvé 4 cas de détresse respiratoire.

vii. *Autres*

La bosse séro-sanguine (7,35% des morbidités dans notre série) Ces complications n'ont pas de séquelles à long terme.

+L'hémorragie cérébro-méningée .Aucun cas n'a été enregistré dans notre série.

viii. *Conséquences A Long Terme*

- ✓ Les enfants de mère diabétique ont un risque accru d'obésité et d'intolérance au glucose. Ce risque est plus marqué chez les enfants dont la mère avait un diabète de type 1 qu'en cas de diabète gestationnel, notamment si ce dernier était bien équilibré [23].
- ✓ Dans la population générale, un poids de naissance élevé est associé à un risque accru d'obésité, avec un risque relatif de 1,5 pour les poids de naissance compris entre 3850 et 4500g, ce risque s'élevant à 2,08 pour les poids de naissance supérieurs à 4500g. Un risque ultérieur de diabète ou d'hypertension artérielle n'a pas été rapporté en cas de macrosomie isolée [23].

g) *La Morbi- Mortalite Maternelle*i. *La Mortalite Maternelle*

Aucun décès maternel en rapport avec l'accouchement d'un macrosome n'a été signalé dans notre étude, ce qui rejoint les résultats trouvés dans la littérature [6] [13][24] [7] [2]

ii. *La Morbidite Maternelle*

- Notre taux de morbidité maternelle était de 6,06%,
  - *L'hémorragie de la délivrance*
- ❖ Dans notre série la fréquence de l'hémorragie de délivrance était de 5,67%, elle était à la tête des morbidités maternelles (93,50%des complications), elle était secondaire : aux inerties utérines dans 38,96% des cas ; aux rétentions placentaires dans 27,27% des cas ;aux lésions de la filière génitale dans 16,88% des cas
- ❖ la macrosomie est un facteur de risque connu de l'hémorragie de la délivrance. Ainsi sa fréquence est de 4,2 à 18,6% en cas de macrosomie contre 2 à 9% chez la population standard. [25]ceci est expliqué par le fait que la macrosmie est souvent associée à une fréquence élevée des atonies utérines (dues aux surdistensions utérines) et des placentas prævius (en effet, plus le fœtus est gros plus le placenta risque de s'étaler sur le segment inférieur [26]. Il existe d'autres facteurs de risque comme les antécédents d'hémorragie de la délivrance, l'induction du travail, les présentations dystociques... [27]
- ❖ L'hémorragie est souvent due aux lésions périnéales (16,88% dans notre série) en cas d'accouchement par voie basse, surtout après recours aux manœuvres en cas de dystocie des épaules ou d'extraction instrumentale. Ces lésions

peuvent intéresser toute la filière génitale (vulve, vagin, périnée, col et segment inférieur, tissu cellulaire périvaginal, et organes voisins). [28]

- ❖ Les déchirures périnéales du 3<sup>ème</sup> ou 4<sup>ème</sup> degré : périnée complet, périnée complet compliqué (16,88% dans notre étude) sont plus fréquentes en cas de macrosomie foetale (approximativement 3 à 5 fois plus élevées selon l'étude de Mathew et al. [29]), selon Lipscomb et al. [30], 52% des dystocies des épaules s'accompagnent de lésions périnéales de 3<sup>ème</sup> ou 4<sup>ème</sup> degré. Mais plusieurs auteurs ont montré que la réalisation des manœuvres sans épisiotomie (lorsque cela est possible) lors d'une dystocie des épaules évitait les traumatismes sévères du périnée sans augmenter le risque d'élongation du plexus brachial. [31 ,32]
- *Les infections du post partum*
- ❖ Les complications infectieuses représentent 3,9% des morbidités maternelles dans notre série, elles sont favorisées par l'existence d'un diabète, d'une rupture prématurée des membranes, un travail prolongé, un traumatisme génital, une hémorragie de la délivrance ou des manœuvres endo-utérines. [33] Il peut s'agir d'une endométrite, d'une désunion de cicatrice, d'une infection de paroi pour les césariennes ou d'une infection urinaire.
- ❖ Stotland et al. ont montré que le risque d'infection du post-partum chez la mère augmente avec le poids de naissance : [34]
- Pour un poids de naissance de 4000 à 4499g le risque d'infection est de 1,9%, il passe à 2,5% si le poids est entre 4500 à 4999g et à 2,5% pour un poids qui dépasse 5000g.
- *Les complications thromboemboliques*
- ❖ Cette augmentation est liée à la fréquence plus élevée des hémorragies de la délivrance et des infections du post partum, associées à la grossesse et au post partum et la chirurgie du petit bassin qui constituent des facteurs de risque connus de la maladie thromboembolique.
- ❖ On n'a pas noté d'accident thromboembolique dans notre série ceci est due à l'efficacité des moyens de prévention aussi bien mécaniques que pharmacologiques (levée précoce, anticoagulation ...)
- *Les complications à distance*
- ❖ On constate que l'incidence des incontinences urinaires est plus importante chez les femmes ayant accouché de macrosomes.
- ❖ Mac Arthur observe un taux d'incontinence anale de 28‰ chez les primipares ayant accouché d'un enfant de plus de 4000g contre 12,5‰ pour celles ayant accouché d'un enfant de moins de 4000g. [25]
- ❖ Les prolapsus (rectocèle, cystocèle) semblent aussi plus élevés et plus précoces en cas d'accouchement d'un macrosome. [25]
- ❖ On n'a pas de données sur l'incidence des complications à long terme. (tableau 29)

Tableau 29 : Répartition de la morbidité maternelle selon les auteurs.

Auteurs	Pays	Année	Fréquence de la morbidité %
OUARDA [62]	Tunisie	1989	4,60
MATTHEW [76]	USA	1997	2,01
BADJI [73]	Sénégal	1999	31,4
STOTLAND [96]	USA	1999	1,95
SANOGO [74]	Mali	2009	4,9
SIRRAJ [67]	Maroc	2004	4,09
LAGHZAOU [68]	Maroc	2004	5,42
Notre série	Maroc	2014	6,06

- h) *Correlation Entre Les Parametres Maternels Et Le Poids Foetal*
- i. *L'analyse du poids de naissance en fonction de l'âge maternel*
- La corrélation entre l'âge maternel et le PNN existe bel et bien dans notre population ( $p < 0,05$ ), il s'agit d'une corrélation positive et peu significative ( $R=0,076$ )
  - On conclue que l'âge maternel est un facteur peu déterminant dans la genèse de la macrosomie.
  - Presque les mêmes résultats ont été obtenus par d'autres auteurs [13] [6] [7]
- ii. *L'analyse du poids de naissance en fonction de la parité*
- ❖ Plusieurs auteurs considèrent que la multiparité est un facteur déterminant dans la genèse de la macrosomie [35] ;[36] ;[ 24] ; [14];[13] ; [6] ce qui est illustré dans notre étude par un coefficient de corrélation positif et significatif ( $R=0,197, p<0,05$ )
  - ❖ la grande multiparité expose à une augmentation du risque de macrosomie ce qui la rend parmi les facteurs de risques acquis classiques .La plupart des travaux convergent vers la confirmation de cette nette prédominance des multipares (BISH [37], MANDALOU[38], WARLIN J F[39] en conformité avec le fait qu'une femme met au monde des enfants de plus en plus gros : C'est la dystocie

progressive de la multipare. Ceci s'explique par le fait que le poids foetal augmente en moyenne de 300 mg d'une parité à l'autre et que le quatrième enfant pèse généralement 4000 g à la naissance. [40]

iii. *L'analyse du poids de naissance foetal en fonction de l'indice de masse corporelle maternel*

➤ La corrélation entre l'indice de masse corporelle maternel et le PNN foetal existe bel et bien dans notre population ( $p < 0,05$ ), il s'agit d'une corrélation positive et peu significative ( $R=0,066$ )

iv. *L'analyse poids de naissance en fonction de la hauteur utérine:*

❖ La mesure de la hauteur utérine est la technique la plus ancienne et la plus simple pour estimer la croissance foetale. Elle est utilisée depuis le début des surveillances obstétricales mais a été décrite plus précisément dans les années 1970 par Leroy pour la France [41] et Westin pour la Suède. [42]

❖ La corrélation entre la hauteur utérine et le PNN existe bel et bien dans notre série ( $p < 0,05$ ), il s'agit d'une corrélation positive et fortement significative ( $R=0,876$ ), ce qui rejoint les résultats trouvés dans d'autres séries [13] [43] [5] [14] [44] [45]

#### IV. CONCLUSION

❖ L'accouchement d'un macrosome fait partie des accouchements à risque, il pose d'énormes problèmes pour l'obstétricien sur le plan diagnostique, préventif et thérapeutique.

❖ Dans notre étude, nous avons pu dégager un certain nombre d'éléments épidémiologiques permettant de déterminer le profil de la population à risque :

➤ Il s'agit de :

✓ Femmes âgées entre 26 et 35 ans.

✓ Multipares

✓ Parturientes avec une hauteur utérine supérieure ou égale à 33cm.

✓ Femmes ayant un antécédent de macrosomie.

✓ Femmes avec des grossesses avec un terme dépassé.

✓ Femmes avec un antécédent familial de diabète.

✓ La fréquence des femmes diabétiques reste faible dans notre série du fait des modalités de dépistage et de la qualité du suivi des parturientes.

❖ Dans notre étude les conséquences de la macrosomie foetale en terme de santé étaient dominées :

➤ Sur le plan foetal, par la dystocie des épaules avec dans de rares cas une élongation du plexus brachial. Le foetus était également exposé à l'asphyxie lors de l'expulsion, et à l'hypoglycémie néonatale.

➤ Sur le plan maternel, par les hémorragies de la délivrance surtout sur des lésions de la filière génitale lors des accouchements par voie basse.

• En raison de l'importante mortalité et morbidité néonatale et maternelle, le dépistage est primordial via :

- un interrogatoire minutieux à la recherche des différents facteurs de risque

- une mesure systématique de la hauteur utérine

- une estimation échographique du poids foetal notamment au 3<sup>ème</sup> trimestre et à l'approche du terme

• la prévention de la macrosomie vise surtout les facteurs de risque modifiables notamment le diabète, l'obésité et les facteurs sociaux ceci par une hygiène de vie bien conduite.

• Une fois installée la prévention de ses différentes complications parfois dramatiques se base sur

✓ La surveillance étroite et la direction du travail d'une manière réfléchie.

Une bonne maîtrise des manœuvres obstétricales pour prévenir et faire face à la dystocie des épaules.

#### Déclaration d'intérêts

Les auteurs déclarent ne pas avoir de conflits d'intérêts en relation avec cet article.

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## Knowledge of Cervical Cancer and its Associated Factors among Reproductive Age Women at Robe and Goba Towns, Bale Zone, Southeast Ethiopia

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**Abstract- Back ground:** Cervical cancer remains the most common cancer in women in Eastern Africa. The estimated Incidence of Cervical Cancer was about 42.7 and Mortality rate of 27.6 per 100,000. In Ethiopia, Current estimates indicate that every year 7095 women are diagnosed with cervical cancer and 4732 die from the disease. Due to lack of awareness about the disease, inadequacy or lacking of screening programs in less developed countries-Ethiopia, the incidence of the disease is increasing alarmingly. This study Assessed the Knowledge about cervical cancer and its associated factors among reproductive age women at Robe and Goba towns, Bale zone, south east Ethiopia, 2015.

**Methodology:** A community based cross-sectional survey was conduct from February to May 2015 in Robe & Goba towns, southeast Ethiopia. Three Hundred sixty three households having at least one women aged 15 -49 were included in the study. Systematic sampling method was used to select the households. A structured questionnaire was used to collect the data. Ten trained Urban Health Extension workers were collected the data. Binary and Multiple Logistic regression methods were use to identify independent predictors of the knowledge of women on the cervical cancer.

**GJMR-E Classification :** NLMC Code: WP 475, QZ 20.5



KNOWLEDGE OF CERVICAL CANCER AND ITS ASSOCIATED FACTORS AMONG REPRODUCTIVE AGE WOMEN AT ROBE AND GOGA TOWNS BALE ZONE SOUTHEAST ETHIOPIA

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# Knowledge of Cervical Cancer and its Associated Factors among Reproductive Age Women at Robe and Goba Towns, Bale Zone, Southeast Ethiopia

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**Results:** The response rate for this study was 100%. This study identified that 280(77.1%) of respondents had heard of cervical cancer, However, About 54% of women had inadequate knowledge about the disease. About 273(75.2%), 207 (57%) and 265 (73%) of the respondents were didn't know the main presenting sign and symptoms, prevention methods and treatment options of cervical cancer respectively. About 265(73%) of women did not know HPV that is the most common causes of cervical cancer. Women who ever visited HI were 8times more likely knowledgeable than who did not. Women who knew HPV are 9 times more likely knowledgeable than who did not and women who knew anyone with the case are 3.4 times more likely knowledgeable than those who did not know anyone with the disease.

**Conclusion and recommendations:** This study found that knowledge about cervical cancer was inadequate though majority of the women had heard about the disease. Hence, Providing Health Education about the disease on its risk factors, sign and symptoms and prevention methods for the women has a crucial role in increasing their Knowledge and

reducing the morbidity and mortality of women due to this preventable and curable disease.

## I. INTRODUCTION

Cervical cancer is the second most common cancer in women worldwide. Globally, cervical cancer accounted for an estimated 528,000 new cancer cases worldwide and for 266,000 deaths in 2012 accounting for 7.5% of all female cancer deaths. Almost nine out of ten (87%) cervical cancer deaths occur in the less developed regions (1). Of these new cases of cervical cancer, 80% occur in developing countries, where it accounts for almost 12% of all female cancers (2).

The burden of cervical cancer is potentially large in Sub-Saharan Africa (3).Cervical cancer remains the most common cancer in women in Eastern Africa. The estimated Incidence of Cervical Cancer was about 42.7 per 100, 000 with highest cumulative Risk for Incidence of cervical cancer (4.56) and Mortality rate of 27.6 per 100,000 with the highest cumulative risk of cervical cancer mortality(4).

In Ethiopia, Current estimates indicate that every year 7095 women are diagnosed with cervical cancer and 4732 die from the disease. The projected number of new cervical cancer cases will almost double by 2025 (5).

The age standardized incidence rate of cervical cancer in Ethiopia was 26.4 per 100,000 and ASMR was about 18.4 per 100,000. Facility based studies have shown that cervical cancer was the leading types of cancer in Ethiopia (6).

Human papillomavirus (HPV) is a necessary cause of cervical (7). There are several risk factors for cervical cancer. Cervical cancer is commonly linked to sexual behaviours and risk factors, such as unprotected sex, having multiple sexual partners, high parity, having experienced a weakened immune system, Family history of cervical cancer, diets low in fruits and vegetables and poverty, Early age at first sex and early age at first pregnancy and long term use of oral contraceptive (8).

Though; cervical cancer is fully preventable and curable at low cost and at low risk, when screening to

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facilitate the timely detection of early precursor lesions in asymptomatic women is available together with appropriate diagnosis, treatment and follow-up (3).

However, due to lack of awareness about the disease, inadequacy or lacking of screening programs in less developed countries-Ethiopia, the incidence of the disease is increasing alarmingly.

So, this study assessed the level of knowledge about cervical cancer among women at Goba and Robe towns of Bale Zone, Oromia region, Southeast Ethiopia.

## II. METHODOLOGY

### a) Study area and period

Bale Zone is located in Oromia National Regional State, Ethiopia. According to the National Population and Housing Census projection carried out in 2012, the population of the town was 57031. Out of this 28,968 (50.8%) were males and 28,063 (49.2%) were females. The Zone has three administrative towns. There are three hospitals in these three towns, one for each town. The study was conducted from February to March 2015.

*Study design:* Community based cross-sectional survey was employed.

*Population:* All Households having reproductive age group women of Goba and Robe towns. Study populations were randomly selected women of age 15 - 49 from the source population. Women who had cervical Cancer at a time of study were excluded.

### b) Sample size determination

Sample size was determined based on one proportion formula considering 31% of knowledgeable level about the disease at Gonder town (10), 95% confidence level, and 5% marginal error.

$$n = \frac{Z^2 p(1 - p)}{d^2}$$

The final sample size was 330. By including 10%, non-response rates the final sample size became 363.

*Sampling procedures:* Robe town has three kebeles and Goba town has two main kebeles. Two kebeles was taken randomly from Robe town and one kebele from Goba Town. Total number of Households found in each kebele was determined and sampling frame prepared. Then sample size was allocated proportionally to each kebele assuming that at least one eligible subject present in each Household. Finally, systematic sampling method was used to get the Household with eligible subjects. Whenever more than one eligible respondent in selected household, only one respondent was selected using lottery method.

In case no eligible candidate in a selected household or the selected household was close, the interviewer were revisited on next day and collected data.

*Study Variables:* Independent variable includes: Age, women educational status, husband educational status, occupation, Parity, History of Tobacco Smoking, Ever visiting Health institutions, History of Cervical cancer in the family, Sources of the information on cervical cancer and History of Sexually transmitted diseases. Dependent Variable was Knowledge level about cervical cancer.

*Operational definition:* A series of questions regarding risk factors of cervical cancer, main sign & symptoms, treatment options and prevention measures was asked to assess the respondents' knowledge about cervical cancer. The reliability coefficient of these questions tested and has Cronbach's Alpha of 0.8. Then Mean score was used to classify the study subjects as having Adequate knowledge if they score above mean score and otherwise not.

### c) Data collection tool and data collection procedures

Data collection tool was developed by reviewing different literatures. A Structured, pre-tested and interviewer administered questionnaire in Afaan Oromo language was used to collect data. This tool includes socio demographic part, questions regarding cervical cancer including its risk factors, main presenting sign and symptoms and its treatment options of cervical cancer. Ten diploma level health extension workers were collected the data.

*Data analysis:* Data were coded, entered and cleaned using SPSS version 19.0 for windows. The frequency distribution was made. Binary logistic regression was made to identify significantly associated independent variables to the dependent variable and those significantly associated on binary logistic regression was included in multivariable logistic regression. Stepwise method was used to identify independent predictors' knowledge level of women on cervical cancer. Statistical significance was declared at probability value of fewer than 0.05.

*Data quality Assurance:* Pretest performed on the tool on reproductive women at one of kebele in Goba town to check some ambiguous questions and unclear question and necessary amendment was made. Reliability test was done. Intensive training was given to data collectors regarding the purpose of the study and interview technique and subject selection for interview. The collected data were reviewed and checked for completeness on day of each data collection by assigned supervisors.

*Ethical consideration:* Madda Walabu University Research and ethical committee was reviewed the Proposal to ensure that how ethical issues was handled. The town health office was asked for permission to conduct the study. Then kebele leader was given a permission letter before the actual study commenced. Informed consent was obtained from each study

subjects after clarifying the about the purpose of the study & other relevant information of the study. Privacy and confidentiality were strictly maintained.

### III. RESULTS

#### a) *Socio Demographic Characteristics of Respondents*

The response rate for this study was 100%. The Age range of respondents were from 18-49, with mean of 28yearr (SD=7.5). One hundred thirty eight (38%) of respondents were at age category of 25-34. A housewife was the most common occupation reported by respondents. Regarding the highest educational attainment, 113 (31.2%) of respondents were at secondary school (7-10). Two hundred sixty Eight (73.8%) of them were Ever married (Table 1).

#### b) *Family history of cervical cancer and Sexually Transmitted Infection*

This study revealed that only three respondents reported family history of cervical cancer. Five respondents reported history of Sexually Transmitted Infection.

#### c) *Awareness of Cervical Cancer, its risk factors, sign and symptoms, prevention and treatment option of cervical cancer*

This study showed that 280(77.1%) of respondents had heard of cervical cancer and 83(22.9%) had not heard of it. The main sources of information for those who heard of cervical cancer were mass media 177(60.4%), friends/colleagues 64(21.8%) and Health Professionals 36(12.3%)(Table 3). Seventy one (19.6%) had knew anyone with cervical cancer. One hundred twenty seven (35.2%) knew that all women are at risks of developing cervical cancer. Majority, 311(86.6%) did not knew possible detection of cervical cancer before its manifestation and 234(65.7%) did not knew the early detection cancer for easily cure of the cervical cancer. One Hundred ninety three (53.3%) knew that cervical cancer could result in infertility. Two hundred thirty five (65.1%) were reported that they were not knew the main risk factors of cervical cancer. About 273(75.2%), 207 (57%) and 265 (73%) of the respondents were didn't know the main presenting sign and symptoms, prevention methods and treatment options of cervical cancer respectively (Table 2)

Of who knew the sign and symptoms of cervical cancer, about 27% of them knew offensive vaginal discharge, about 23% knew bleeding after coitus and 22.53% of them knew pain as the sign and symptoms of cervical cancer (Fig. 1).

Among respondents who knew the prevention methods of cervical cancer, about 57% of them reported regular medical checkup followed by being faithful, delaying sexual debut, consistent condom uses and Vaccine for HPV (Fig.2).

#### d) *Knowledge of Cervical Cancer*

One hundred ninety five (53.7%) of the respondent had Inadequate knowledge and 168(46.3%) were had adequate knowledge about cervical cancer.

#### e) *Predictors of Knowledge of Cervical Cancer among women of Reproductive age group*

To identify factors associated with knowledge cervical cancer among the respondents, first binary logistic regression was made. Then, those variables became significant on binary logistic were entered for Multivariable Logistic regression with Step wise method. Finally, Heard of HPV, Ever Visit of Health Institution and knowing any one with cervical cancer were found significant predictors of knowledge level of cervical cancer among the respondents.

Those women who had visited Health Institution were more likely knowledgeable compared to their counter parts (AOR=3.6, 95%CI: 1.69-7.85). Women who knew anyone with cervical cancer were more likely knowledgeable compared to those who didn't know anyone with cervical cancer (AOR=3.4, 95%CI: 1.52-7.44). Who heard about HPV were more likely knowledgeable about cervical cancer than women who didn't heard of HPV (AOR=9.1, 95%CI: 4.15-20.12) (Table 3).

### IV. DISCUSSION

The risk of developing cervical cancer is high in the third world due to atypical socio-economic characteristics including poverty, illiteracy, high parity and less availability and utilization of screening facilities (9).

This study was assessed the knowledge of cervical cancers, its associated risk factors among Women age from 15 to 49 at Southeast Ethiopia because knowing cervical cancer, its causative/risk factors, symptoms and preventive measures of a cervical cancer can make all the differences, without this prevention is far more difficult. In this study 77.1% of respondents had heard of cervical cancer which is consistent with study conducted in North West Ethiopia, Gondar town (78.7%) (10) Lower than finding from Ghana (93, 0%) (11) and Kenya (87%)(12). However, higher than the findings from Nigeria (40.8%) (13). This gap might be due to the difference in study time, study setting and nature of the population involved in the studies conducted.

Mass Media (Television, Radio) (60.4%) was the main sources of information followed by Friends/Colleagues (21.8%), Health professionals (12.3%) and Health Extension Workers (5.5%). Even though there was figurative difference, this finding is consistent with finding of study conducted in Gondar town (10), the finding of the study in Nigeria (13) which revealed that; Television/Radio, Health professionals

and Friends as the main sources of information for cervical cancer.

The common risk factor is sexually transmitted infection caused by Human Papilloma Virus (HPV) and it is estimated that 50 to 80 percent of sexually active women are infected at least once in their life time with the virus (14). However, this study found that 265(73.6%) respondents not knew or heard of HPV as causative agents of cervical cancer.

Prevention and early detection are keys to the reduction of incidence and progression of many chronic diseases including cancer (14). This study revealed that about 43% of the respondents knew that cervical cancer can be prevented. This finding is lower than the finding from Gondar town and South Africa (10, 15).

This study found that about 67% of the respondents believe that cervical cancer can be cured if detected Early, which is higher than finding from Gondar town (10). About thirty four percent of the respondents believe that cervical cancer cannot be cured. This difference can be explained by the difference in the background of the study participants and differences in study setting. It also indicated the misconception and lacks of awareness about the disease in this community which may hinder prevention efforts.

Though majority of the respondents had heard of cervical cancer, Above half of the respondent were found to have Inadequate knowledge about cervical cancer. This is consistent with finding of studies from Nigeria (11), North Ethiopia, (10) and Ghana (13) which revealed that comprehensive knowledge about cervical cancer is low.

This study found that women who had ever visit health Institution were 3.6 times more likely knowledgeable about cervical cancer than their counterparts. This finding is in line with the finding from Gondar town, which revealed that women who ever visited Health Institutions were 8 times more likely knowledgeable about cervical cancer.

This might be due to that women who visited health institutions have a greater chance of getting more information from health professionals in the form of health education/information at the health Institutions.

In addition, Women who knew someone affected with cervical cancer were about 3.4 times more likely to have above median knowledge than who did not. This indicates that knowing person/women with the case helps the other people/women to know more about the diseases by reading or getting the information/education from those women who are affected by the disease.

## V. CONCLUSION

This study found that knowledge about cervical cancer was inadequate though majority of the women had heard about the disease. Knowing anyone with the

cervical cancer, heard of HPV and ever visiting HI were found significant predictors of Knowledge of cervical cancer.

Hence, Providing Health Education about the disease on its risk factors, sign and symptoms and prevention methods for the women has a crucial role in increasing their Knowledge. This in turn reduces the morbidity and mortality of women due to this preventable and curable disease.

Launching public awareness program to further their knowledge by educating women about risk factors and benefit of screening using Pap smear test. The role of mass media campaign (use of FM radio which is currently very available) should be considered in creating public awareness to further the knowledge by educating about risk factors, sign and symptoms, prevention methods of the cancer and benefit of pap smear test.

### Competing interests

We declare that there are no any types of competing interest.

### Authors' contributions

**TB** conceived and designed the study, analysed the data, interpreted the results and prepared the final version of the Manuscript. **AA**, **DB** and **MT** have contributed to the acquisition of data and drafting and critically revising manuscript. All authors read and approved the final manuscript.

## VI. ACKNOWLEDGEMENT

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### List of Abbreviations

AOR Adjusted Odds Ratio  
HEWs Health Extension Workers  
HI Health Institutions  
HP Health Professionals  
HPV Human papillomavirus  
STI Sexually Transmitted Infections

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### LISTS OF TABLES AND FIGURES

**Table 1:** Socio Demographic Characteristics of Respondents, Bale Zone, Goba and Robe Towns, Southeast Ethiopia, 2015

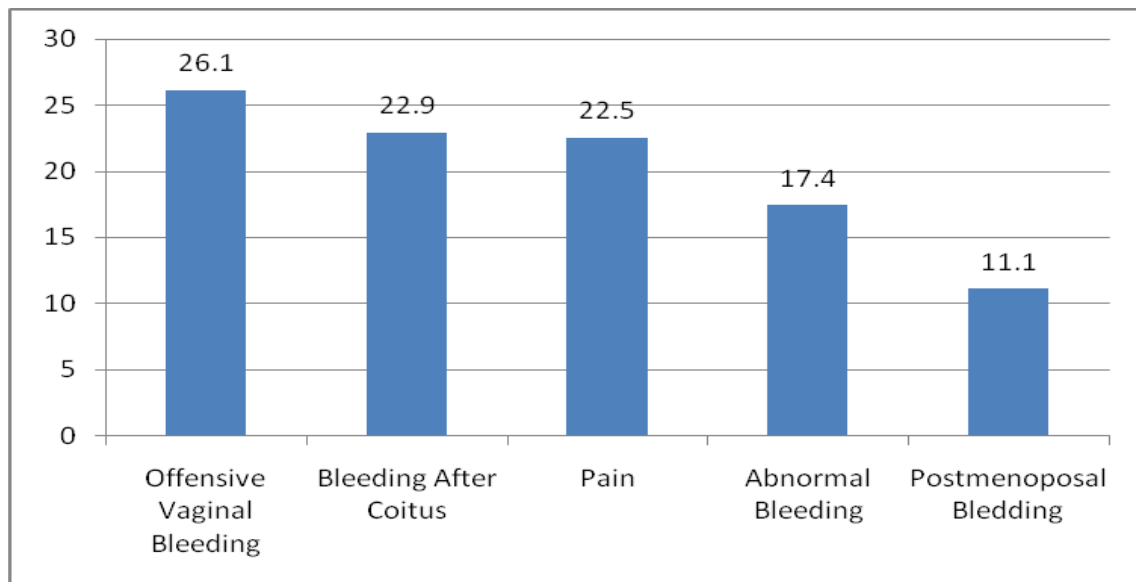
Socio demographic variables		Frequency	Percent
Age of Women	15-24	128	35.3
	25-34	138	38.0
	35 and above	97	26.7
Occupation of women	Housewives	96	27.4
	Daily labor	47	13.4
	Students	79	22.6
	Teacher	34	9.7
	Merchant	61	17.4
	Health professionals	20	5.7
	Others**	13	3.7
	Do not read and write	44	12.2
Education status of Women	Read and write	27	7.5
	Primary(1-6)	48	13.3
	Secondary(7-.10)	113	31.2
	Grade 11-12	50	13.8
	Certificate	8	2.2
	Diploma	55	15.2
	Degree above	18	5.0
Marital status	Single	95	26.2
	Ever Married	268	73.8

\*\* Indicates House maids, Farmers and Hair Dressers

**Table 2:** Percentage Distribution of Awareness of Cervical Cancer, its risk factors, sign and symptoms, prevention and treatment option of cervical cancer among women of age 15-49 at Goba & Robe towns, 2015.

Variables		Frequency	Percent
Heard about Cervical Cancer	yes	280	77.1
	No	83	22.9
Sources of Information about cervical cancer	HP	36	12.3
	HEWs	16	5.5
	Mass Media	177	60.4
	Friends	64	21.8
Know anyone with Cervical Cancer	yes	71	19.6
	No	291	80.4
Heard about HPV	yes	95	26.4
	No	265	73.6
All women are at risk of Cervical cancer	Yes	127	35.2
	No	234	64.8
Possible to detect cervical before S/S	Yes	48	13.4
	No	311	86.6
Easily cured if early detected	Yes	234	65.7
	No	122	34.3
Cervical cancer results in infertility	Yes	193	53.3
	No	169	46.7
Do you know the risk factors of Cervical cancer	yes	126	34.9
	No	235	65.1
Do you know the main presenting sign and Symptoms of cervical cancer	yes	90	24.2
	No	273	75.2
Heard prevention methods of cervical cancer	yes	156	43.0
	No	207	57.0
Have you heard treatment option of cervical cancer	yes	98	27.0
	No	265	73.0

*HEWs= Health Extension Workers, HP= Health Professionals*



**Figure 1:** Percentage Distribution of Sign and Symptoms of cervical cancer reported by Respondents, at Goba and Robe Towns, 2015

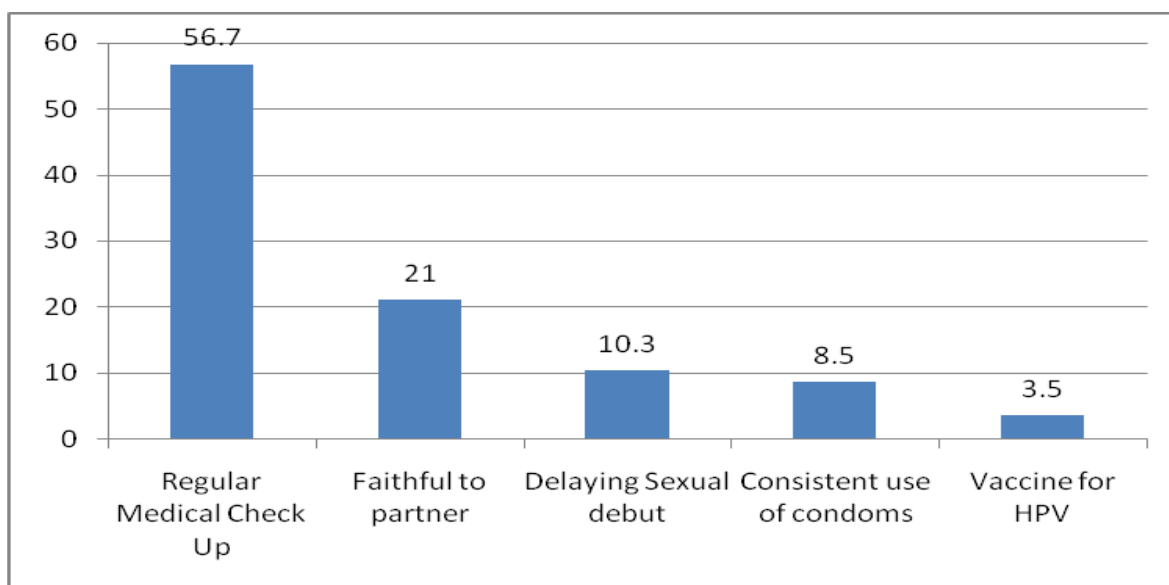


Figure 2 : Percentage Distribution of prevention methods of cervical cancer reported by Respondents, at Goba and Robe Towns, 2015

Table 3 : Independent predictors of cervical cancer knowledge among respondents, Bale Zone, Goba and Robe towns, 2015

Independent predictors		P-Value	AOR	95.0% CI
Heard about HPV	Yes	0.000	9.1	4.15- 20.12
	No		Reference	
Ever Visit Health Institution	Yes	0.001	3.6	1.69-7.85
	No		Reference	
Knew anyone with cervical cancer	Yes	0.003	3.4	1.52-7.44
	No		Reference	

AOR= Adjusted Odds Ratio, CI=Confidence Interval, P=Probability Value



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## Parietal Endometriosis about Seven Cases and Review of the Literature

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**Résumé-** L'endométriose pariétale se caractérise par sa prévalence chez des femmes de la quatrième décade de la vie, sur un terrain favorable d'antécédents de chirurgie abdominale, notamment la pratique de césarienne ou de chirurgie gynécologique.

Le diagnostic est aisé devant une symptomatologie typique caractérisée par la présence chez une femme en âge de procréation, d'un syndrome pariétal abdominal tumoral douloureux, dont l'intensité fluctue au rythme des cycles menstruels.

Cependant, la reconnaissance de la maladie peut s'avérer relativement ardue en absence de signes évocateurs, mettant en balance de nombreuses autres éventualités morbides bénignes ou malignes.

**Mots Clés:** *endométriose pariétale; césarienne; preuve anatomo pathologique; traitement chirurgical; maroc.*

**GJMR-E Classification :** *NLMC Code: WP 390*



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# Parietal Endometriosis about Seven Cases and Review of the Literature

## Endométriose Pariétale : A Propos De Sept Cas Et Revue De La Littérature

Mounia Ziyadi <sup>α</sup>, Abdellah Babahabib <sup>σ</sup>, Mehdi Hassani <sup>ρ</sup>, Jaouad Kouach <sup>ω</sup>, Driss Rhali Moussaoui <sup>¥</sup>  
& Mhamed Dehayni <sup>§</sup>

**Résumé-** L'endométriase pariétale se caractérise par sa prévalence chez des femmes de la quatrième décennie de la vie, sur un terrain favorable d'antécédents de chirurgie abdominale, notamment la pratique de césarienne ou de chirurgie gynécologique.

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Cependant, la reconnaissance de la maladie peut s'avérer relativement ardue en absence de signes évocateurs, mettant en balance de nombreuses autres éventualités morbides bénignes ou malignes.

Dans ces conditions, le recours à des investigations complémentaires telles que l'échographie, la TDM et l'IRM ou encore l'aspiration biopsique permet d'étayer le diagnostic mais assez souvent, seule l'étape anatomopathologique permet de façon ultime de reconnaître l'endométriase.

Le traitement de choix de l'endométriase pariétale est l'exérèse chirurgicale de la masse. L'association d'un traitement médical à base de Danazol ou bien d'agonistes de la LH - RH se justifie surtout en cas d'atteinte pelvienne concomitante ou en présence d'une masse tumorale de grande taille.

Dans ce travail, on rapporte 7 cas d'endométriase pariétale colligées au service de gynéco obstétrique de l'hôpital militaire de Rabat sur une période de Trois ans de 2010 à 2013.

**Mots Clés:** endométriase pariétale; césarienne; preuve anatomo pathologique; traitement chirurgical; maroc.

**Abstract-** The parietal Endometriosis is characterized by its prevalence among women in the fourth decade of life, on a favorable ground of antecedents of abdominal surgery, including the practice of cesarean section or gynecological surgery.

The diagnosis is easy in front of a typical symptomatology characterized by the presence at a woman in age of procreation, of a painful tumoral abdominal parietal syndrome, whose intensity fluctuates at the rhythm of menstrual cycles. However, the recognition of the disease can prove difficult in the absence of evocative signs, putting out of balance many other benign or malignant morbid possibilities.

Under these conditions, the recourse to complementary investigations such as ultrasound, CT and MRI, or biopsy aspiration can support the diagnosis but rather enough, only the anatomopathological stage allows in an

ultimate way to recognize the endometriosis. The treatment of choice of parietal endometriosis is surgical excision of the mass.

According to the extent of resection, an adjuvant procedure to repair the aponevrotic defects and cutaneous with reinforcement by plate may be required.

The association medical treatment containing Danazol or agonists of LH - RH is justified especially in the event of infringement concomitant pelvic or in presence of a large size tumor mass.

We report seven cases of endometriosis parietal collated in the service of gynecology - obstetrics HMIMV between 2010 and 2013.

### I. INTRODUCTION

L'endométriase se définit par la présence de tissu endométrial en dehors de l'endomètre, susceptible de répondre aux sollicitations hormonales ovariennes. Les localisations les plus communes sont pelviennes : ovaires, péritoine, ligaments utérins, lame recto vaginale. D'autres localisations extra pelviennes plus rares ont été décrites, en particulier au niveau de la vessie, de l'intestin, de l'appendice, de l'ombilic, des sacs herniaires, du poumon, des reins et de la paroi abdominale[1]. cette dernière l'objet de notre travail est une entité rare constitue 1 à 2% de l'endométriase extra génitale, elle survient le plus souvent sur cicatrice abdomino pelvienne, les cicatrices de chirurgie utérine, les cicatrices de césarienne, le trajet d'une aiguille d'amniocentèse [2-3], d'un orifice de trocart de coelioscopie, mais parfois en dehors de tout contexte [4]

L'incidence de l'endométriase pariétale après césarienne varie selon les études entre 0,03 et 0,4% [1.5.6]

Nous rapportons sept cas d'endométriomes pariétaux pris en charge au service de gynécologie obstétrique de l'hôpital militaire de Rabat sur une période de trois ans de 2010 à 2013.

### II. PATIENTES ET MÉTHODES

Notre études rétrospective porte sur sept cas d'endométriase pariétale colligées au service de gynécologie obstétrique de l'hôpital militaire de Rabat

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sur une période de trois ans de janvier 2010 à décembre 2013.

Pour chaque patiente nous avons révélé son âge, l'existence d'un antécédent de chirurgie pelvienne ,ou d'antécédent de césarienne ,la localisation ,la taille de la lésion ,le type de la symptomatologie ,la réalisation des examens complémentaires ,le type de traitement effectué et enfin l'évolution avec la présence ou non d'une récurrence ,nous effectuerons également une revue de la littérature.

### III. RÉSULTATS

De janvier 2010 à décembre 2013 sept patientes ont été prise en charge dans notre service L'âge moyen de notre patiente était de 36,5 soit entre 27 et 46 ans, l'antécédent de césarienne a été retrouvé chez six patientes, une seule n'avait aucun passé chirurgical.

Les signes d'endométriose profonde a été retrouvée chez une seule patiente type algies pelviennes chroniques, dysménorrhées secondaires et dyspareunies profondes.

Les six patientes qui avaient un antécédent de césarienne ont consulté en moyenne quatre ans et demi pour bilan de masse pariétale avec des douleurs cycliques, une seule malade a consulté pour nodule ombilical douloureux et bleuté qui augmente de taille en concomitance avec les règles.

Des examens complémentaires ont été demandés chez nos patientes :

- Quatre patientes ont bénéficié d'une échographie pariétale couplée au doppler chez une malade

ayant montré un nodule hétérogène solido kystique figure 1

- Une seule patiente a bénéficié d'un scanner abdominopelvien révélant une masse tissulaire pariétale prenant le produit de contraste après injection figure 2
- l'IRM dont le but était de préciser les rapports de la masse ainsi que la recherche de localisations associées a été pratiquée chez trois malade ayant montré un nodule hétérogène en T1 et T2 figure 3

Le diagnostic d'endométriose pariétale a été suspecté chez toutes nos malades avant le traitement, dans tous les cas le traitement chirurgical à type d'exérèse chirurgicale a été effectué. Le nodule était intra musculaire chez quatre malades, pré aponévrotique chez deux et une patiente avait une localisation sous aponévrotique.

Pour toutes les malades une suture simple de l'aponévrose a été effectuée, sans recours au traitement prothétique.

Des lésions d'endométriose profonde ont été retrouvées chez une patiente avec des nodules bleuâtres au niveau du cul de sac de douglas.

Le traitement médical a été préconisé chez une patiente pendant six mois à base d'agonistes LHRH dans le cadre d'une récurrence pour soulagement de la symptomatologie

L'évolution était en général favorable en dehors d'une récurrence qui a été reprise

Tableau I : Résumé des données cliniques et du traitement

	CAS 1	CAS 2	CAS 3	CAS 4	CAS 5	CAS 6	CAS 7
Age	31 ans	34 ans	46 ans	44 ans	30 ans	27 ans	32 ans
ATCDS chirurgicaux	Oui	Oui	Non	oui	Oui	Oui	Oui
Intervalle post opératoire	6 ans	5ans	-	4 ans	4 ans	5 ans	3 ans
Clinique	Masse en regard de la cicatrice Indolore	Nodule sous cutané +dl continue	Nodule ombilical +dl cyclique	Masse pariétale +dl cyclique	Nodule douloureux	Nodules douloureux	Masse pariétale douloureuse
Siège	FID en regard de la cicatrice pfannentiel	FID en regard de la cicatrice pfannentiel	Péri ombilical	FIG en regard de la cicatrice pfannentiel	FID en regard de la cicatrice pfannentiel	FID en regard de la cicatrice pfannentiel	FIG en regard de la cicatrice pfannentiel
Caractère Cataménial	NON	NON	OUI	OUI	OUI	Oui	OUI
Dimensions	25mm	20mm	15mm	40mm	25mm	15 mm	35mm
Traitement	Exérèse	Exérèse	Exérèse	Exérèse +ttt médical	Exérèse	Exérèse	Exérèse
Evolution	Bonne	Bonne	Bonne	Récidive	Bonne	Bonne	Bonne

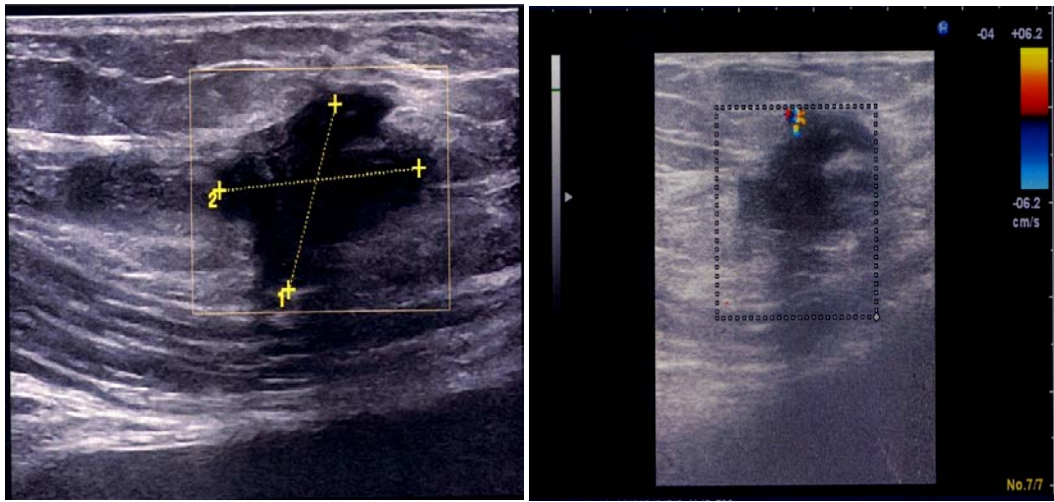


Figure 1 : échographie +doppler de la paroi abdominale montrant le nodule endométriosique

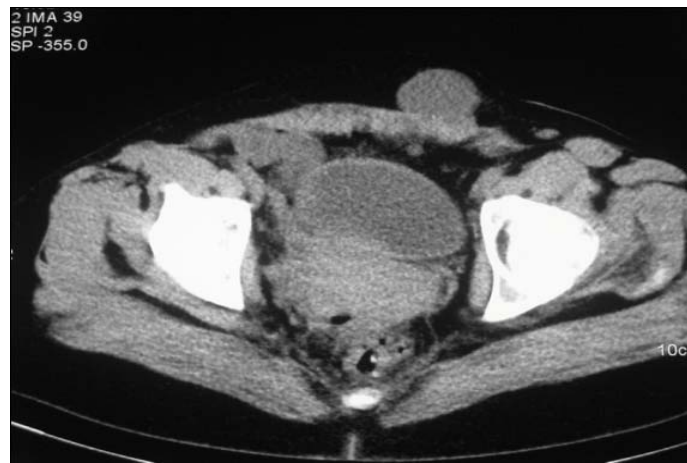


Figure 2 : formation pariétale de densité tissulaire ne prenant pas le produit de contraste et envahissant le muscle grand droit sous-jacent

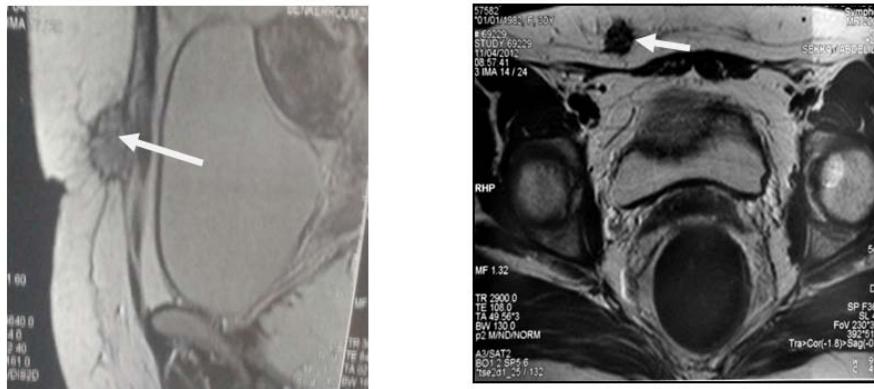


Figure 3 : a) coupe coronale, b) coupe transversale : images IRM montrant l'implant endométriosique infiltrant l'aponévrose des muscles grand droit

#### IV. COMMENTAIRE

L'endométriose est une pathologie non néoplasique quasi exclusive de la femme en période d'activité génitale qui se définit par la présence du tissu endométrial en dehors de la cavité utérine,

l'endométriome est une forme de l'endométriose sous forme d'une masse solide ou kystique, les endométriomes pariétaux sont rares, observés surtout sur cicatrice chirurgicale dans notre étude 6 patientes avaient un antécédent de césarienne avec cicatrice pfannentiel





Le délai d'apparition des lésions est variable de six mois à 37 ans [7] dans notre étude le délai moyen est de 4,5 ans entre 3 ans et 6 ans.

En général l'endométriose de la paroi abdominale affecte les femmes en période d'activité génitale entre 20 ans et 40 ans [8,9]

L'âge moyen de notre patiente était de 36,5, il n'existe pas d'endométriose avant la puberté et la fréquence en général de la maladie après la ménopause est de 2% et 4% ; el ABSI et al on rapporté un cas d'endométriose chez une femme ménopausée [10]

a) *Ethiopathogénie*

L'endométriose pelvienne est une maladie complexe vraisemblablement multifactorielle plusieurs théories ont été proposées : théorie métastatique, métaplasique et d'induction.

Pour les endométriomes pariétaux le mécanisme le plus probable est la greffe locale des cellules endométriales qui vont se développer au niveau des zones non épithélialisées [10].

Leur développement est également favorisé par l'inflammation secondaire induite par des facteurs immunologiques , Patterson and al pensent que ces lésions seraient expliquées par des modifications anatomiques ,l'utérus serait attiré par les adhérences contre la paroi abdominale ,ainsi que les trompes qui se

retrouvaient plaquées contre le péritoine pariétal ,au cours des menstruations le sang refluant dans les trompes suivrait les replis et les adhérences pour imprégner la cicatrice opératoire [11].

Les deux autres théories métaplasique (différenciation des cellules mésenchymateuses) et métastatique (voie lymphatique et veineuse) peuvent expliquer les cas de nodule endométriosique au niveau de l'ombilic et sur les gaines des muscles grands droit chez la femme n'ayant pas subi aucune intervention chirurgicale.

b) *Anatomie pathologique*

• Aspect macroscopique

L'endométriome pariétal se présente comme des nodules ou des lésions micro kystiques ,rouge ,bleues ,brunes ou noires figure 4, dont la taille varie entre 2 et 3 cm et peut aller jusqu'à 12 cm [12] dans notre étude la taille a varié entre 1,5 et 4cm

• Aspect microscopique

L'examen microscopique met en évidence un épithélium glandulaire cylindrique associé au chorion cytogène avec une inflammation lymphocytaire,cet aspect peut se modifier au cours du cycle menstruel du fait de l'imprégnation hormonale avec apparition de l'œdème ,de la congestion et de l'hémorragie.

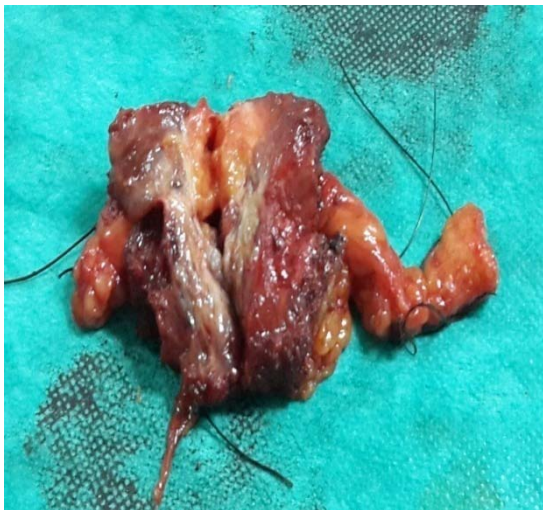


Figure 4 : aspect macroscopique d'un nodule endométriosique de couleur jaune au sein du tissu musculaire



Figure 5 : Coupe histologique montrant les glandes endométriales dilatées

c) *Clinique*

Classiquement c'est une patiente en période d'activité génitale qui consulte pour bilan de masse pariétale qui apparaissent en regard d'une cicatrice de chirurgie abdomino pelvienne et qui augmente de taille et devient douloureuse au moment des menstruations, parfois lorsque la localisation du nodule est superficiel, on remarque un changement de teinte de la lésion qui

devient bleuâtre avec fistulisation à la peau sous forme d'un écoulement sanglant.

En revanche quand le nodule est à distance ou en absence de la cicatrice, chez une femme très jeune ou très âgée, ou en dehors de tout contexte chirurgicale le diagnostic peut se confondre avec d'autre pathologie :les abcès ,les hématomes ,les neurinomes et rarement les tumeurs malignes (sarcomes, métastases de carcinomes) [11,13,14],en général le

diagnostic sera redressé à l'étape anatomie pathologique dans 37% [11].

d) *Paraclinique*

- L'échographie

L'échographie est une bonne méthode de recherche pour les masses tumorales compte tenu de sa pratique et son faible coût elle n'est pas un examen spécifique de l'endométriose pas d'image pathognomonique elle permet un diagnostic de présomption en accord avec la clinique, elle permet de préciser l'origine pariétale, la taille, les contours et l'extension de l'endométriose et enfin d'éliminer les diagnostics différentiels

- La TDM

L'aspect au scanner n'est pas caractéristique, classiquement c'est une masse tissulaire prenant le contraste après injection du fait du caractère vasculaire de la lésion, par ailleurs il peut être utile pour préciser les rapports du nodule en profondeur

- L'IRM [15]

En raison de la résolution très spécifique de l'imagerie par résonance magnétique (IRM), cette technique permet d'identifier les lésions plus petites et distinguer les signes d'hémorragie organisée dans les endométrioses, ce qui laisse supposer ce diagnostic. En outre, l'IRM a de meilleures performances que la tomodensitométrie (TDM) par rapport à la description de la graisse sous-cutanée, les tissus musculaires et aponévrotiques.

En séquence T1, la lésion sera en hyper-signal si un saignement intra lésionnel est présent. Ces examens complémentaires peuvent également permettre d'éliminer un diagnostic différentiel comme par exemple une hernie inguinale.

- Biopsie aspiration à l'aiguille fine

Elle peut faire le diagnostic avant d'envisager un traitement chirurgical, mais reste un geste indésirable du fait du risque d'ensemencement le long du trajet de la ponction.

e) *Traitement*

Des tentatives de traitement médical par castration médicamenteuse ont été effectuées en se basant sur des progestatifs puissants le danazol et les agonistes GnRH, mais le traitement de référence reste l'exérèse chirurgicale de la lésion, Dans notre étude toutes les patientes ont bénéficié d'un traitement chirurgical qui a été efficace dans 100 % des cas en dehors d'une seule récurrence. Plusieurs études, [1,11] signalent un taux important de récurrence. Les risques de récurrence rapportés sont cependant variables d'une étude à l'autre, de 0 à 15 % [11,16]. Il nous paraît donc important d'effectuer une exérèse large d'emblée quitte à utiliser une prothèse pariétale pour refermer le défaut

aponévrotique, Dans notre étude nous n'avons pas eu besoin d'utiliser de prothèse.

Des moyens théoriques de prévention de l'affection peuvent être proposés : protection de la paroi par des champs opératoires, Le lavage et le débridement du tissu décidual avec une irrigation vigoureuse avec une solution saline, avant toute fermeture de la plaie abdominale.

Il faut éviter l'inoculation de tissu décidual au niveau des berges de la plaie utérine et de suturer à travers la décidual au moment de la fermeture utérine [16]

## V. CONCLUSION

L'endométriose pariétale est rare et ses mécanismes de survenue sont bien cernés.

L'établissement du diagnostic de cette affection pariétale est sujet à une ambivalence spécifique:

- Aisé devant une symptomatologie cyclique évoluant au rythme des menstruations, d'une masse douloureuse, quasi pathognomonique ;
- Beaucoup plus délicat et ardu en absence de ce caractère, entraînant une mise en évidence du diagnostic à l'étape histologique seulement.

L'échographie Doppler couleur est l'examen morphologique de choix pour confirmer le diagnostic et éliminer d'autres pathologies pariétales en montrant une masse hypoéchogène hyper vascularisée. En cas de doute diagnostique avant la chirurgie, l'IRM a une place certaine pour détecter le signal particulier de l'hémorragie dans l'endométriose et confirmer le diagnostic.

En outre, alors que le traitement de l'endométriose, « maladie générale », fait souvent appel à une thérapie médicamenteuse reposant de nos jours sur le Danazol et sur les agonistes de la LH-RH, le traitement curatif de celle pariétale est représenté essentiellement par l'exérèse chirurgicale de la masse ; les récurrences dans ces conditions et en absence d'une autre association sont rares.

Des moyens théoriques de prévention de l'affection pariétale existent : attention particulière vis-à-vis de la protection de la paroi par des champs opératoires, irrigation appropriée à la fin des interventions chirurgicales.

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## Video-Urodynamic Characteristics in Women with Urgency due to Detrusor Sphincter Dyssynergia and Idiopathic External Urethral Sphincter Hyperactivity

By Conrad Leitsmann & Sameh Hijazi  
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**Abstract- Purpose:** We investigated the role of video-urodynamic (VUD) to identify detrusor sphincter dysynergia (DSD) and idiopathic external urethral sphincter hyperactivity (SH) in women suffering urgency.

**Material and Methods:** Between July 2013 and May 2015, 82 women who underwent VUD studies due to urgency were analyzed. Women were evaluated carefully by complete history, physical investigation, urosonography, voiding diary, and video-urodynamic investigation.

**Results:** Using VUD, we found DSD or SH in 40 of 83(48%) women. Median age of women was  $54 \pm 18$  (range: 22-84). DSD and SH were found in 31 of 40 (78%) and 9 of 40 (22%) women respectively. 19 of 40 (48%) women had urge incontinence with median pad usage of  $4 \pm 2$  (range: 1-10) daily. 20 of 40 (50%) women suffered from recurrent urinary infections.

**Keywords:** *detrusor sphincter dyssynergia, sphincter hyperactivitiy, urgency, video-urodynamic.*

**GJMR-E Classification :** NLMC Code: WJ 140



*Strictly as per the compliance and regulations of:*



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**Conclusion:** Detrusor sphincter dyssynergia and idiopathic external urethral sphincter hyperactivity can lead to urgency as a primary complaint. Video-urodynamic plays a critical role in diagnosing the cause of urgency.

**Keywords:** detrusor sphincter dyssynergia, sphincter hyperactivity, urgency, video-urodynamic.

## I. INTRODUCTION

Detrusor external sphincter dyssynergia (DSD) is defined as detrusor contraction concurrent with an involuntary contraction of the urethral sphincter and/or periurethral striated muscle due to neurologic abnormality [1]. In the absence of neurological abnormality, impaired coordination of bladder contraction and sphincter relaxation is more appropriately referred to as dysfunctional voiding or idiopathic external urethral sphincter hyperactivity (SH) [2, 3]. Unfortunately, there is no gold standard for the

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diagnosis of DSD or SH. The combination of pelvic floor electromyography (EMG) and videocystourethrography (VCUG) during video-urodynamic study (VUD) are the most acceptable and widely agreed upon methods for the diagnosis of DSD [4, 5]

Urgency is the key symptom of overactive bladder (OAB). Urgency is defined as a sudden compelling desire to void which is difficult to defer [1]. The simultaneous contractions of the external urethral sphincter and the detrusor lead to high voiding pressure, large post-void residual urine, and urgency.

Our study evaluated the urodynamic findings of females who suffer from urgency due to detrusor sphincter dyssynergia or idiopathic external urethral sphincter hyperactivity. Women with DSD or idiopathic SH report of OAB symptoms such as urgency as the primary complaint. The diagnosis of DSD or idiopathic SH using VUD can be very critical for the choice of the treatment for urgency in females.

## II. MATERIALS AND METHODS

### a) Patients

Between July 2013 and May 2015, 82 women suffering urgency underwent VUD investigation at the Department of Urology of University Medical Center Goettingen. We analyzed the data of women and the urodynamic findings retrospectively. All methods, definitions, and units are according to the standards recommended by the International Continence Society [1].

### b) Ethics statement

The study was approved by the local Ethics Committee of the University Medical Center Goettingen (permit 5/4/15).

### c) Measurements

VUD studies were performed according to Good Urodynamic Practices recommended by the International Continence Society [1]. The diagnosis of DSD or SH was made using the standards recommended by the European Association of Urology (EAU) Guidelines [1]. We defined DSD as an increase in pelvic floor EMG activity during detrusor contraction in

the absence of Valsalva's or Crede's maneuver and/or dilated posterior urethra obstructed by the external sphincter in VCUR [4, 5]. Minimal acceptable criterion for agreement between the EMG and VCUG was set at 70%. During VUD investigation, pelvic floor EMG and VCUG were performed simultaneously. All VUD investigations were performed in a sitting position. Filling cystometry was initiated with a body temperature Ringer's lactate solution at a speed of 20 mL/min. The intravesical and urethral pressure were measured simultaneously using a dual lumen 8 French transurethral urodynamic catheter placed in the bladder and the external urethral sphincter[5]. Two patch EMG electrodes were placed around the anus and a third ground patch electrode was placed over the adductor tendon on the medial aspect of the patient's left knee [1]. During the urodynamic study, the pressure was continuously monitored and the correct position of the catheter was ensured. The same urodynamic system (Medical Measurement Systems GmbH, Enschede, Netherlands) was applied for all studies.

We included women with urgency symptoms [1]. We excluded patients with signs of automatic dysreflexia, known anatomic abnormalities of the urinary tract such as urethra stricture and vesico-ureteral reflux, women who received immunosuppressive treatment, pregnant women and those with nonbacterial urinary tract infection, from the study.

Evaluated data was prospectively collated and included: women demographics (age) and lower urinary tract symptoms (LUTS) such as voiding frequency, nocturia episodes, and irrepresible urgency. All women were evaluated via complete history, voiding diary, physical investigation, sonography and VUD study.

All VUD studies were assessed by an experienced urogynecologist using a standardized

practice in accordance to the recommendations of the International Continence Society (ICS) [abrams]. We performed VUD to measure cystometric variables and to detect voiding disorders. Following variables were measured during the VUD: cystometric bladder capacity (CBC), maximum flow rate ( $Q_{max}$ ), post-void residual (PVR) volume, detrusor pressure at  $Q_{max}$  ( $P_{det}$ ), and external urethral sphincter electromyography. Definitions of urodynamic disorders were also made using the recommendations of ICS [1].

d) *Statistical analyses*

Data was analyzed using the Statistical Package for the Social Sciences (SPSS, Inc., Chicago, IL) program. We used a T-test for continuous data and Chi square test for dichotomous data. The significance level was set at a P value of less than 0.05.

III. RESULTS

Using VUD, we found DSD or idiopathic pelvic floor hyperactivity in 40 of 82 (48%) women. The median age of women was  $54 \pm 18$  (range: 22-84). DSD and idiopathic SH were found in 31 of 40 (78%) and 9 of 40 (22%) women respectively. 19 of 40 (48%) women had urge incontinence with median pad usage of  $4 \pm 2$  (range: 1-10) daily. 20 of 40 (50%) women suffered from recurrent urinary infections. 15 of 40 (38%) women had neurogenic voiding dysfunctions due to multiple sclerosis. Detrusor underactivity and overactivity were found in 12 of 40 (30%) and 12 of 40 (30%) respectively. 16 of 40 (60%) women had a normal detrusor activity urodynamically. 4 of 40 (10%) women performed intermittent self catheterization due to urinary retention. Table 1 describes the urodynamic findings of women.

Table 1 : Lower urinary tract symptoms (LUTS) and cystometric findings

Study group (n =40)	
<b>Lower urinary tract symptoms (LUTS)</b>	
Voiding frequency (median $\pm$ SD, range)	$8 \pm 5$ (3-24)
Nocturia > 2 n(%)	28 (70%)
Nocturia (median $\pm$ SD, range)	$2 \pm 2$ (1-4)
<b>Cystometric findings</b>	
$Q_{max}$ (ml/sec) (median $\pm$ SD, range)	$12 \pm 6$ (2-26)
$Q_{max}(P_{det})$ (cmH <sub>2</sub> O) (median $\pm$ SD, range)	$37 \pm 22$ (10-124)
CBC (ml) (median $\pm$ SD, range)	$340 \pm 165$ (70-690)
<b>CBC</b> cystometric bladder capacity; <b><math>Q_{max}</math></b> maximum flow rate; <b><math>Q_{max}(P_{det})</math></b> detrusor pressure at $Q_{max}$	

IV. DISCUSSION

DSD is as detrusor contraction concurrent with an involuntary contraction of the urethral sphincter and/or periurethral striated muscle due to neurologic abnormality [1]. Idiopathic SH is the presence of external urinary sphincter contraction occurring during micturition without neurogenic abnormality [6]. Causes of idiopathic

SH may be abdominal straining or attempted inhibition of detrusor contraction [7]. The EMG activity is elevated during detrusor contraction in patients with DSD or SH [4, 6]. In our study, the diagnosis of DSD with EMG was standardized using patch electrodes and the same electrode placement. We found that women with DSD or SH suffer from overactive bladder symptoms on the basis of urgency with or without urinary incontinence.

VUD plays an important role in the diagnosis of women with urgency in terms of the presence of DSD or voiding dysfunction. Urgency is believed to be indicative of the subsequent finding of OAB syndrome or detrusor overactivity [8]. In the literature, discordance between OAB and DO has also been reported [9]. Digesu et al. found that only half of patients with OAB had DO on VUD, and only 27% of patients with urodynamic diagnosed DO had urgency [9]. In our study, only 30% (12 of 40) of women with DSD and urgency additionally had detrusor overactivity on VUD. Nevertheless, urgency was found to be suggestive of a high probability among patients with DSD. Although, DSD affects the choice and response to treatment of urgency patients. Antimuscarinic therapy in patients with urgency due to DSD or idiopathic SH may lead to dysfunctional voiding with residual urine retention and secondary increasing of urgency.

In most cases, DSD and SH can lead to bladder outlet obstruction (BOO). In women, there are no standardized urodynamic criteria for the diagnosis of BOO. Chassagne et al. reported that using a combined cut-off value of  $Q_{max} < 15$  ml/s and  $P_{det}Q_{max} > 20$  cm H<sub>2</sub>O for diagnosis of BOO in females had a sensitivity of 74% and a specificity of 91% [10]. Using these criteria, the prevalence of BOO in women with DSD or SH was 58% (23 of 40) in our study. Because of the lack of standard definitions of BOO, this prevalence varies between 3% and 29% [11]. Cho et al. reported a BOO prevalence of 43% (70 of 163) in women with OAB symptoms. Females with BOO complain about obstructive and storage symptoms of the lower urinary tract [8]. Kayigil et al. reported that BOO was more frequent in individuals with idiopathic DO than in the control group using a different cut-off value for BOO [12]. They described that some women with BOO reported storage symptoms as the initial complaint.

In our study, 30% (12 of 40) of women with urgency and DSD or SH had detrusor underactivity (DUA). DUA is a contraction of reduced strength and/or duration, which results in prolonged bladder emptying and/or a failure to achieve complete bladder emptying within a normal time span [1]. DUA is, in the most cases, idiopathic and can also be encouraged by neurogenic diseases, pelvis surgery, and drug therapy. The incidence of idiopathic DUA in adult women is about 30% [13]. DUA leads to voiding dysfunction with low  $Q_{max}$  and a high urine residual volume. However, some females with DUA complain primarily of storage symptoms and urgency. In this particular case, the diagnosis of DUA can only be made with VUD. DUA may have caused frequent urination and urgency observed in this study. In the present study, the prevalence of DUA, depending on the diagnostic criteria, is relatively high.

## V. CONCLUSIONS

Detrusor sphincter dyssynergia and idiopathic external urethral sphincter hyperactivity can lead to urgency as the primary complaint. Video-urodynamic plays a critical role in diagnosing the cause of urgency such as detrusor sphincter dyssynergia or idiopathic external urethral sphincter hyperactivity.

*Conflict of Interest:* The authors declare that they have no conflict of interest.

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## Prevalence of Dysmenorrhea and its Correlates among the Rural Women of Andhra Pradesh, India

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**Abstract- Background:** Dysmenorrhea is a common problem in women of reproductive age.

**Aim:** The present study is aimed at assessing the prevalence of dysmenorrhea and its correlates in free living adult rural women of Chittoor District, Andhra Pradesh, India.

**Subjects and Methods:** In this study 752 married rural women in the age range of 20 to 40 years are screened by employing multistage random sampling technique. Data on life styles, socioeconomic conditions, self reported health status and menstrual characteristics has been procured through pre-validated questionnaires. Results: Menstrual problems are noticed to an extent of 31.9% respectively (Primary dysmenorrhea: 29.9% and Menorrhagia: 2.1%). In the present sample 12% of the women are suffering from oligomenorrhea and 9% with hypermenorrhea. Multivariate (binary) logistic regression analysis have revealed that subjects with poor self rated health have 4.689 times the risk of developing dysmenorrhea.

**Keywords:** dysmenorrhea, menstrual cycle, socioeconomic status, life styles, rural women.

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# Prevalence of Dysmenorrhea and its Correlates among the Rural Women of Andhra Pradesh, India

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**Results:** Menstrual problems are noticed to an extent of 31.9% respectively (Primary dysmenorrhea: 29.9% and Menorrhagia: 2.1%). In the present sample 12% of the women are suffering from oligomenorrhea and 9% with hypermenorrhea. Multivariate (binary) logistic regression analysis have revealed that subjects with poor self rated health have 4.689 times the risk of developing dysmenorrhea. Women with bleeding duration more than 7 days have 3.283 times, irregular menstrual cycle had 3.472 times and early menarche (<11 yrs) had 1.31 times higher chances of having dysmenorrhea.

**Conclusion:** Dysmenorrhea is found to be highly prevalent among rural women. Advocation of preventive strategies in the form of promoting healthy life styles can be effective to correct the menace.

**Keywords:** dysmenorrhea, menstrual cycle, socioeconomic status, life styles, rural women.

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## I. INTRODUCTION

Assessing menstrual characteristics is an indicator for women's reproductive biology (Harlow and Ephross 1995). Menstrual disorders include menstrual cycle irregularities (of duration or length), hyper- or hypomenorrhoea, poly or oligomenorrhoea, dysmenorrhoea, amenorrhoea, menorrhagia and premenstrual syndrome (Ray et al. 2010; Santos et al. 2011). Menstrual disorders have economic consequences in terms of health care costs involving expensive hormonal drugs and laboratory tests (Rodrigues et al. 2011; Karout et al. 2012; Lentz et al. 2012).

Dysmenorrhea is considered to be the most common symptom of all menstrual complaints and poses a greater burden of disease than any other gynecological complaint (Patel et al. 2006; Sood et al. 2012). Dysmenorrhea or painful menstruation is defined as a severe, painful, cramping sensation in the lower abdomen that is often accompanied by other symptoms, such as sweating, headache, nausea, vomiting, diarrhea, and tremulousness, all occurring just before or during the menses (Lentz et al. 2012). The reported prevalence of dysmenorrhea of any severity varies between 16% and 91% in women of reproductive age. The lowest prevalence of 16% is reported in a random sample of Japanese women aged 17–51 years (Ohde et al. 2008). The highest prevalence of 91% is reported in a random sample of Iranian women aged 16–56 years (Tavallaee et al. 2011). George and Bhaduri (2002) found dysmenorrhea to be a common problem in India with prevalence of 87.7%. However, the true prevalence of dysmenorrhea among the Indian adult women is not yet established.

Prevalence studies have shown several factors that are associated with dysmenorrhea like age (Messing et al. 1993), smoking (Mishra et al. 2000), higher body mass index (Harlow and Park 1996), earlier age at menarche (Harlow and Park 1996), nulliparity (Sundell et al. 1990), longer and heavier menstrual flow (Harlow and Park 1996), family history of dysmenorrhea (Parveen et al. 2009) and usage of oral contraceptives (Juang et al. 2006) besides depression and stress

(Gordley et al. 2000). Other common factors, such as education (Chen et al. 2000), employment (Ng et al. 1992), alcohol consumption (Harlow and Park 1996), marital status (Messing et al. 1993), and physical activity (Harlow and Park 1996), show largely negative or inconclusive results. Thus it is important to understand whether, and to what extent the modifiable risk factors explain the variation in the prevalence of dysmenorrhea. Towards this end umpteen studies are available on adolescent sample in Indian populations (Deo and Ghattargi 2007; Agarwal and Agarwal 2008; Karthiga et al. 2011; Kural et al. 2015). Studies pertaining to the prevalence of dysmenorrhea and its risk factors among the Indian adult women are very limited (Khatri and Gupta 1978; Bang et al. 1989; Bhatia et al. 1997). India being multilingual and multiethnic there is a need to have data from each and every population segments to weigh the risk. In the light of this background, the present study has been undertaken to assess the prevalence of dysmenorrhea and its association with life style and socioeconomic conditions of free living rural adult women.

## II. MATERIALS AND METHODS

The present research work intends to study the menstrual characteristics and their association with other confounding factors among the rural women aged 20 to 40 years. The design of the study has been cross sectional in nature. A multistage random sampling technique is applied to draw the sample. There are three revenue divisions in Chittoor District. All the revenue divisions are taken into consideration. Each revenue division consists of 22 mandals of which two mandals are randomly selected from each division. In each mandal, 4 villages are randomly selected. In the selected villages 1155 houses have been enlisted. Door to door survey is carried out to recruit the sample. After administering the inclusion and exclusion criteria, 854 women are found fit and finally, 752 women have given consent to participate in the study. The participation rate is 86 percent. Pilot study has been conducted for befriending and for explaining the women participants about the purpose of the study. Data collection is done between Dec 2011 and Jan 2013. The exclusion criteria are women with lactation, women who have undergone surgical menopause and having gross abnormality. The study is approved by the Departmental Ethics Committee of Sri Venkateswara University, Tirupati. Electoral roles have been checked to ascertain the age of the participant to establish the correct age. Each person is interviewed privately at her residence and encouraged to disclose any other health related problems she may have faced in her life.

Standard social survey methods like structured interview schedule, and in-depth interviews have been used to collect the data. A schedule consisting of multidimensional questions on individual's demo-

graphics, like age, age at menarche, age at marriage, life styles, fertility, education, occupation and income are procured. Information about women's perception on their own health problems, menstrual hygiene, menstrual problems, regularity of the cycle, use of hormonal contraceptives, bowel habit and prevalence of reproductive tract infections and sexual transmitted diseases (RTI/STDs) have been collected. The prevalence of self reported non-communicable diseases is recorded. Regarding the birth control measures, 83 percent of the women have undergone tubectomy. In the remaining sample, no participant is found practicing temporary birth control measures. Hence, we have dropped the variable for further statistical analysis to see its effect on menstrual problems.

Educational level of the participants and their family income are recorded through their public distribution cards. Physical activity is assessed based on subjects occupational and leisure time activities (Singh et al. 1997). Participants are requested to recall their first experience of menstrual bleeding to ascertain the age at menarche. Information about age at marriage, first and last pregnancies, and number of pregnancies has been gathered. Menstrual cycle length is defined as the gap between first day of one bleeding episode to previous day of next bleeding episode. Duration of menstrual flow is defined as the number of days from first bleeding initiation to last bleeding. Further, different problems related to menstruation are enquired. Since the sample is from rural background, there would be ample possibility that women might have used materials other than sanitary napkin, which may have exerted adverse effect on menstrual health. To test this, women have been enquired regarding the usage of sanitary material during menstruation. Precautionary measures are taken to check the recall bias on self reported information provided by the subject.

Statistical analysis is carried out via SPSS 16.0 and alpha level is set at  $p < 0.05$ . Qualitative variables are provided with percentages. Chi square test has been applied to see the strength of association with independent variables. Age adjusted multivariate (binary) logistic regression model with forward conditional entry is employed in predicting the menstrual problems. The independent variables, entered are education, income, physical activity, self reported health, age at menarche (continuous variable), duration of menstrual flow, regularity of the cycle, material used during menstruation, history of RTI/STDs and bowel habits. In each step the variables are entered at 0.05 and removed at 0.10. This model consists of four steps with variables like self rated health, regularity of cycle, duration of menstrual flow, and age at menarche.

### III. RESULTS

In the present study, mean age of the women was  $30.74 \pm 4.85$  yrs. Data on socioeconomic status, life styles and self reported health status is shown in table I. Illiteracy is noticed to an extent of 16 percent. 11 percent of the women's income is below <24,000 INR and 52 percent of the women's income is in the range of

25,000-44,000 INR. Women with sedentary and heavy physical activity are 24 percent and 27 percent respectively. In the present study 60 percent of the women have opined that their self reported health status is good, while 38 percent have perceived that their self reported health as fair. Around 2 percent of the women have expressed poor health status.

*Table I* : Socioeconomic, life style and self reported health status of the sample.

Variable	Females (N=752)	
	n	%
<b>Education</b>		
Illiterate	118	15.7
Primary Education	290	38.6
Secondary Education	198	26.3
Higher Education	146	19.4
<b>Family Income in INR</b>		
Low income (<24000)	81	10.8
Middle income (25000-44000)	391	52.0
High income (>45000)	280	37.2
<b>Physical activity</b>		
Sedentary	179	23.8
Mild	250	33.2
Moderate	122	16.2
Heavy	201	26.7
<b>Self reported health</b>		
Good	454	60.4
Fair	285	37.9
Poor	13	1.7

Table II depicts the data on demographic and menstrual characteristics. 66 percent of the women got married at below 20 years of age. Age at first conception is 31 percent among the women <20 yrs of age. In the study population, one fourth of the women have attained menarche <11 of age. Oligomenorrhea and hypermenorrhea are noticed to an extent of 12 percent and 9 percent respectively. During menstruation, 32 percent of the women have suffered from different menstrual problems. Primary dysmenorrhea (stomach ache and back ache, head ache, vomiting) is the predominant ailment suffered by 30 % of subjects. Menorrhagia is noticed to an extent of 2.1 percent. 43 percent of the women are said to be using domestic cloth as material during the menstruation, whereas 57 percent of the women have become acclimatized to use commercial pad. Data on RTI/STDs and bowel habits are shown in table III. RTI/STDs have been diagnosed in 19 percent of the women. Irregular bowel habits are noticed to an extent of 15 percent.

Table II : Data on demographic and menstrual characteristics of the study sample.

Variable	Females (N=752)	
	n	%
<b>Age at Marriage</b>		
< 20 yrs	496	66.0
20-23 yrs	215	28.6
24-27 yrs	28	3.7
>27 yrs	13	1.7
<b>Age at first conception</b>		
<20 yrs	232	30.9
20-23yrs	466	62.0
24-26 yrs	18	2.4
>26 yrs	28	3.7
<b>Age at menarche</b>		
< 11 yrs	183	24.3
12-13 yrs	438	58.2
14-15 yrs	131	17.4
<b>Menstrual cycle</b>		
Normal (28-35 days)	662	88.0
Irregular [Oligomenorrhea (36-50 days)]	90	12.0
<b>Duration of menstrual flow</b>		
3 days	21	2.8
4 days	190	25.3
5 days	475	63.2
>7 days (Hypermenorrhea)	66	8.8
<b>Menstrual problems</b>		
Yes	240	31.9
No	512	68.1
<b>Type of problem</b>		
Primary Dysmenorrhea (Stomach ache and Back ache & Head ache and Vomiting)	224	29.9
Menorrhagia (heavy bleeding)	16	2.1
<b>Material used during menstruation</b>		
Cloth	323	43.0
Pad	429	57.0

Table III : Data on RTI/STDs and bowel habits of the study sample.

Variable	Females (N=752)	
	n	%
<b>History of RTI / STD infections</b>		
Yes	142	18.9
No	610	81.1
<b>Bowel habits</b>		
Regular	643	85.5
Irregular	109	14.5

Percentage frequencies and strength of association between menstrual problems and other confounding factors are shown in tables IV-VI. Subject's physical activity and educational level failed to show significant association with the presence of menstrual problems. The frequency of menstrual problems have found decreased when subject's income increases ( $P < 0.001$ ). Subjects self perception of poor self reported health status elevates the menstrual problems. It is also found that menstrual problems associated significantly with other problems such as hypermenorrhea ( $\chi^2 = 14.84$ ;  $P < 0.00$ ), oligomenorrhea ( $\chi^2 = 31.47$ ;  $P < 0.00$ ), RTI/STDs ( $\chi^2 = 4.55$ ;  $P < 0.03$ ), domestic cloth as material used during menstruation ( $\chi^2 = 6.32$ ;  $P < 0.01$ ) and irregular bowel habits ( $\chi^2 = 9.97$ ;  $P < 0.02$ ).

**Table IV :** Percentage frequencies of menstrual problems by socioeconomic, physical activity and self reported health status.

Variable	Menstrual problems					$\chi^2$ - value	P-value
	N	Yes		No			
		n	%	n	%		
<b>Education</b>							
Illiterate	118	48	40.7	70	59.3	5.78	0.122
Primary	290	93	32.1	197	67.9		
Secondary	198	58	29.3	140	70.7		
Higher	146	41	28.1	105	71.9		
<b>Income in INR</b>							
Low income (<24000)	81	36	44.4	45	55.6	15.76	0.001
Middle income (25000-44000)	391	135	34.5	256	65.5		
High income (>45000)	261	67	25.7	194	74.3		
<b>Physical activity</b>							
Sedentary	179	69	38.5	110	61.5	6.33	0.096
Mild	250	81	32.4	169	67.6		
Moderate	122	36	29.5	86	70.5		
Heavy	201	54	26.9	147	73.1		
<b>Self reported health</b>							
Good	454	115	25.3	339	74.7	23.745	0.000
Fair	285	118	41.4	167	58.6		
Poor	13	7	53.8	6	41.4		

\* p<0.05

**Table V :** Percentage frequencies of menstrual problems by confounding factors.

Variable	Menstrual problems					$\chi^2$ - value	P-value
	N	Yes		No			
		n	%	n	%		
<b>Duration of menstrual flow</b>							
Normal (< 6days)	686	205	29.9	481	70.1	14.84	0.000
Hypermenorrhea (>7days)	66	35	53.0	31	47.0		
<b>Menstrual cycle</b>							
Regular	662	188	28.4	474	71.6	31.47	0.000
Irregular	90	52	57.8	38	42.2		
<b>Material used during menstruation</b>							
Cloth	323	119	36.8	204	63.2	6.32	0.012
Pad	429	121	28.2	308	71.8		

\* p<0.05

**Table VI :** Percentage frequencies of menstrual problems by history of RTI/STD and bowel habits of the study sample.

Variable	Menstrual problems					$\chi^2$ - value	P-value
	N	Yes		No			
		n	%	n	%		
<b>History of RTI/STD Infections</b>							
Yes	142	56	39.4	86	60.6	4.55	0.033
No	610	184	30.2	426	69.8		
<b>Bowel habits</b>							
Regular	643	191	29.7	452	70.3	9.97	0.022
Irregular	109	49	45.0	60	55.0		

\* p<0.05.

Results of the binary logistic regression are presented in table VII. The results show that the chances of having menstrual problems are 2.986 times higher among the women with fair self rated health. The risk of menstrual problems is 4.689 when subjects self perception of health status as poor. The odds of menstrual problems are 3.472 among the women with

oligomenorrhea (95%CI: 2.154-5.599). Women with hypermenorrhea are thrice at risk towards menstrual problems (95% CI: 1.881-5.728). Women attaining the menarche at 14-15 years show odds of 0.763. In other words attaining early menarche (<11 years) are 1.31 times (1/0.763) higher chances of developing dysmenorrhea.

Table VII : Multivariate (binary) logistic regression model to predict the menstrual problems.

Variables	$\beta$	S.E.	Sig	OR*	95% CI for OR	
					Lower	Upper
<b>Self rated health</b>						
Good				Ref.		
Fair	0.992	0.175	0.000	2.696	1.914	3.797
Poor	1.545	0.592	0.009	4.689	1.471	14.949
<b>Regularity of cycle</b>	1.245	0.244	.000	3.472	2.154	5.599
<b>Duration of Menstrual flow</b>	1.189	0.284	0.000	3.283	1.881	5.728
<b>Age at menarche</b>	-.271	0.079	0.001	0.763	0.653	0.891
Constant	1.868	0.972	0.055	6.478		

Variable(s) entered on step 1: Self reported health

Variable(s) entered on step 2: Regularity of cycle

Variable(s) entered on step 3: Duration of Menstrual flow

Variable(s) entered on step 4: Age at menarche

\* adjusted for age

OR= Odds ratio

The logistic regression model is  $Y = 1.868 + 0.992$  (fair self reported health)  $+ 1.545$  (poor self reported health)  $+ 1.245$  (Regularity of cycle)  $+ 1.189$  (Duration of Menstrual flow)  $- 0.271$  (Age at menarche). Where Y=Menstrual problems.

#### IV. DISCUSSION

Menstrual disorders represent an important area of unmet need for reproductive health services for women in developing countries. Dysmenorrhea is one of the most common complaints and gynecological problems among worldwide women (George and Bhaduri 2002; Harel 2006; Agarwal and Agarwal 2010). WHO systematic review assessed the geographical distribution of chronic pelvic pain and indicated that the rate of dysmenorrhea was 16 to 81 percent (Latthe et al. 2006). Harlow and Campbell (2004) reviewed the studies in developing countries and indicated that the prevalence of dysmenorrhea is in between 15 to 68 percent among the adult women. On the other hand, studies from the developed countries have reported a range of 60 to 73 percent (Unsal et al. 2010). Studies among the Indian adolescents reveal a high of 67.2 (Sharma et al. 2008) and 84.2 percent respectively (Kural et al. 2015). The results of the present study are in agreement with the above studies that dysmenorrhea is common complaints among the adults which may have negative impact on health related quality of life. The variation in the prevalence rates across the population

groups may be due to ethnic, socio-cultural and life style factors (Al-Kindi and Al-Bulushi 2011).

Prospective studies have observed a significant decrease in the prevalence of dysmenorrhea with increasing age (Aykut et al. 2007). Patel et al (2006) in their study observed a higher prevalence of dysmenorrhea in early adult part of life and decreases with advancement of age. An examination of the results of this study also demonstrates an elevation of primary dysmenorrhea in <29 yrs age group and then the prevalence decreased with advancement of age, however the difference is statistically insignificant. Hence data was not reported and age was adjusted in the regression model to nullify its effects.

Reproductive health of women permeates with social, cultural and lifestyle significance (Marvan et al. 2003). A number of population based studies, investigated variations in menstrual function vis-à-vis menstrual problems and their correlates (Waller et al. 1998). Self-rating of health is the most frequently used tool to assess the health perceptions in epidemiological studies. Feeling fair/poor self rated health of the women in the present study are experiencing greater risk towards dysmenorrhea. Taperi and Rimpela (1989) study concluded that the experience of menstrual pain

seems to be related to self rated health as a whole and to life styles rather than to specific disorders and health practices. Our results reiterate the importance of self rated health in assessing the risk towards a condition.

Socioeconomic and behavioral risk factors for dysmenorrhea have long been of interest because of possibility of effective intervention. Associations between dysmenorrhea and being overweight, physical activity, and alcohol consumption have been inconsistent (Klein and Litt 1981). In the present study, though the factors like income, physical activity, sanitary napkin, history of RTI/STD infections and bowel habits have independently shown significant association with dysmenorrhea, yet these effects have been nullified in the presence of other confounding factors. Ciccone et al (2010) study has clearly demonstrated that educating the subject on health and management will have greater impact in reducing the burden of risk. The outcome of the work warrants a strong partnership between the care manager and the subject and collaboration between the physician and the care manager in the health management.

Research reports have shown a significant association between early menarche and dysmenorrhea; the underlying reason could be the fact that subjects who attain menarche early have longer exposure to uterine prostaglandins leading to higher prevalence of dysmenorrhea (Shrotriya et al. 2012). A higher proportion of the women in the sample (37% vs 20%) attained menarche <11 of age exhibited 1.31 times risk towards dysmenorrhea when compared to 14-15 years. Our data is in best agreement with other studies where age at menarche is an important factor (Patel et al. 2006).

Oligomenorrhea seems to be one of the potential risk factors for dysmenorrhea in the present study. Different studies have suggested that dysmenorrhea is more prevalent in women with longer cycles (El-Gilany et al. 2005). Two studies proposed that the presence of heavy menses or irregular menses have associated with increased risk for dysmenorrhea, with odds of 1.9 each respectively (Patel et al. 2006; Unsal et al. 2010). The sample under the study exhibited an odds of 3.472 towards dysmenorrhea. No conclusion can be drawn to address this effect because of the limited number of studies. Further menstrual bleeding duration of >7 days is another important risk factor for dysmenorrhea. Subjects who have bleeding duration for more than 7 days have more chance of getting dysmenorrhea with odds of 3.283. This finding is compatible with the result showing that the risk of dysmenorrhea is higher in women with long menstrual flows (Unsal et al. 2010).

The potential limitations of our study are 1) Even though the questionnaire is standardized, certain practical problems like birth control measures and stressful events limit us in gaining the reliable data 2)

Lack of data on diet and nutritional anthropometry which are expected to have significant effect on menstrual characteristics. Further, classification of the subjects based on the economic levels in rural settings of India is a laborious exercise, because the window between low and high income groups is narrow. Since the nature of data is self reporting, it may have resulted in under reporting of the conditions in few cases.

The findings of our study could be generalized and applied to all the rural women of India with similar socioeconomic and cultural background. In conclusion, it is inferred that a significant portion of the women in the present study are suffering from dysmenorrhea. The confounding factors for the promotion of the irregularities are self reported health, irregular menstrual cycle, duration of menstrual flow and age at menarche. Hence advocacy of preventive strategies in the form of improving healthy life styles can be effective in correcting the menace.

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### Author Contributions

Conceived and designed the study: KKR, TB, PG, KSNR. Data Collection: PG, TB, CP, RBS. Analyzed the data: PG, KKR. Wrote the paper: KKR, KSNR, PG

### Conflict of Interest

None of the authors has a personal or financial conflict that has an interest in the subject of this Manuscript.

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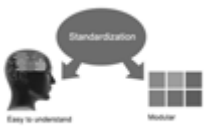
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Metric SI units are supposed to generally be used excluding where they conflict with current practice or are confusing. For illustration, 1.4 l rather than  $1.4 \times 10^{-3} \text{ m}^3$ , or 4 mm somewhat than  $4 \times 10^{-3} \text{ m}$ . Chemical formula and solutions must identify the form used, e.g. anhydrous or hydrated, and the concentration must be in clearly defined units. Common species names should be followed by underlines at the first mention. For following use the generic name should be constricted to a single letter, if it is clear.

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All manuscripts submitted to Global Journals Inc. (US), ought to include:

Title: The title page must carry an instructive title that reflects the content, a running title (less than 45 characters together with spaces), names of the authors and co-authors, and the place(s) wherever the work was carried out. The full postal address in addition with the e-mail address of related author must be given. Up to eleven keywords or very brief phrases have to be given to help data retrieval, mining and indexing.

*Abstract, used in Original Papers and Reviews:*

### Optimizing Abstract for Search Engines

Many researchers searching for information online will use search engines such as Google, Yahoo or similar. By optimizing your paper for search engines, you will amplify the chance of someone finding it. This in turn will make it more likely to be viewed and/or cited in a further work. Global Journals Inc. (US) have compiled these guidelines to facilitate you to maximize the web-friendliness of the most public part of your paper.

### Key Words

A major linchpin in research work for the writing research paper is the keyword search, which one will employ to find both library and Internet resources.

One must be persistent and creative in using keywords. An effective keyword search requires a strategy and planning a list of possible keywords and phrases to try.

Search engines for most searches, use Boolean searching, which is somewhat different from Internet searches. The Boolean search uses "operators," words (and, or, not, and near) that enable you to expand or narrow your affords. Tips for research paper while preparing research paper are very helpful guideline of research paper.

Choice of key words is first tool of tips to write research paper. Research paper writing is an art. A few tips for deciding as strategically as possible about keyword search:



- One should start brainstorming lists of possible keywords before even begin searching. Think about the most important concepts related to research work. Ask, "What words would a source have to include to be truly valuable in research paper?" Then consider synonyms for the important words.
- It may take the discovery of only one relevant paper to let steer in the right keyword direction because in most databases, the keywords under which a research paper is abstracted are listed with the paper.
- One should avoid outdated words.

Keywords are the key that opens a door to research work sources. Keyword searching is an art in which researcher's skills are bound to improve with experience and time.

Numerical Methods: Numerical methods used should be clear and, where appropriate, supported by references.

*Acknowledgements: Please make these as concise as possible.*

#### References

References follow the Harvard scheme of referencing. References in the text should cite the authors' names followed by the time of their publication, unless there are three or more authors when simply the first author's name is quoted followed by et al. unpublished work has to only be cited where necessary, and only in the text. Copies of references in press in other journals have to be supplied with submitted typescripts. It is necessary that all citations and references be carefully checked before submission, as mistakes or omissions will cause delays.

References to information on the World Wide Web can be given, but only if the information is available without charge to readers on an official site. Wikipedia and Similar websites are not allowed where anyone can change the information. Authors will be asked to make available electronic copies of the cited information for inclusion on the Global Journals Inc. (US) homepage at the judgment of the Editorial Board.

The Editorial Board and Global Journals Inc. (US) recommend that, citation of online-published papers and other material should be done via a DOI (digital object identifier). If an author cites anything, which does not have a DOI, they run the risk of the cited material not being noticeable.

The Editorial Board and Global Journals Inc. (US) recommend the use of a tool such as Reference Manager for reference management and formatting.

#### Tables, Figures and Figure Legends

*Tables: Tables should be few in number, cautiously designed, uncrowned, and include only essential data. Each must have an Arabic number, e.g. Table 4, a self-explanatory caption and be on a separate sheet. Vertical lines should not be used.*

*Figures: Figures are supposed to be submitted as separate files. Always take in a citation in the text for each figure using Arabic numbers, e.g. Fig. 4. Artwork must be submitted online in electronic form by e-mailing them.*

#### Preparation of Electronic Figures for Publication

Even though low quality images are sufficient for review purposes, print publication requires high quality images to prevent the final product being blurred or fuzzy. Submit (or e-mail) EPS (line art) or TIFF (halftone/photographs) files only. MS PowerPoint and Word Graphics are unsuitable for printed pictures. Do not use pixel-oriented software. Scans (TIFF only) should have a resolution of at least 350 dpi (halftone) or 700 to 1100 dpi (line drawings) in relation to the imitation size. Please give the data for figures in black and white or submit a Color Work Agreement Form. EPS files must be saved with fonts embedded (and with a TIFF preview, if possible).

For scanned images, the scanning resolution (at final image size) ought to be as follows to ensure good reproduction: line art: >650 dpi; halftones (including gel photographs) : >350 dpi; figures containing both halftone and line images: >650 dpi.





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#### TECHNIQUES FOR WRITING A GOOD QUALITY RESEARCH PAPER:

**1. Choosing the topic:** In most cases, the topic is searched by the interest of author but it can be also suggested by the guides. You can have several topics and then you can judge that in which topic or subject you are finding yourself most comfortable. This can be done by asking several questions to yourself, like Will I be able to carry our search in this area? Will I find all necessary recourses to accomplish the search? Will I be able to find all information in this field area? If the answer of these types of questions will be "Yes" then you can choose that topic. In most of the cases, you may have to conduct the surveys and have to visit several places because this field is related to Computer Science and Information Technology. Also, you may have to do a lot of work to find all rise and falls regarding the various data of that subject. Sometimes, detailed information plays a vital role, instead of short information.

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**22. Never start in last minute:** Always start at right time and give enough time to research work. Leaving everything to the last minute will degrade your paper and spoil your work.

**23. Multitasking in research is not good:** Doing several things at the same time proves bad habit in case of research activity. Research is an area, where everything has a particular time slot. Divide your research work in parts and do particular part in particular time slot.

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**26. Go for seminars:** Attend seminars if the topic is relevant to your research area. Utilize all your resources.



**27. Refresh your mind after intervals:** Try to give rest to your mind by listening to soft music or by sleeping in intervals. This will also improve your memory.

**28. Make colleagues:** Always try to make colleagues. No matter how sharper or intelligent you are, if you make colleagues you can have several ideas, which will be helpful for your research.

**29. Think technically:** Always think technically. If anything happens, then search its reasons, its benefits, and demerits.

**30. Think and then print:** When you will go to print your paper, notice that tables are not be split, headings are not detached from their descriptions, and page sequence is maintained.

**31. Adding unnecessary information:** Do not add unnecessary information, like, I have used MS Excel to draw graph. Do not add irrelevant and inappropriate material. These all will create superfluous. Foreign terminology and phrases are not apropos. One should NEVER take a broad view. Analogy in script is like feathers on a snake. Not at all use a large word when a very small one would be sufficient. Use words properly, regardless of how others use them. Remove quotations. Puns are for kids, not grunt readers. Amplification is a billion times of inferior quality than sarcasm.

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**33. Report concluded results:** Use concluded results. From raw data, filter the results and then conclude your studies based on measurements and observations taken. Significant figures and appropriate number of decimal places should be used. Parenthetical remarks are prohibitive. Proofread carefully at final stage. In the end give outline to your arguments. Spot out perspectives of further study of this subject. Justify your conclusion by at the bottom of them with sufficient justifications and examples.

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### Key points to remember:

- Submit all work in its final form.
- Write your paper in the form, which is presented in the guidelines using the template.
- Please note the criterion for grading the final paper by peer-reviewers.

### Final Points:

A purpose of organizing a research paper is to let people to interpret your effort selectively. The journal requires the following sections, submitted in the order listed, each section to start on a new page.

The introduction will be compiled from reference matter and will reflect the design processes or outline of basis that direct you to make study. As you will carry out the process of study, the method and process section will be constructed as like that. The result segment will show related statistics in nearly sequential order and will direct the reviewers next to the similar intellectual paths throughout the data that you took to carry out your study. The discussion section will provide understanding of the data and projections as to the implication of the results. The use of good quality references all through the paper will give the effort trustworthiness by representing an alertness of prior workings.



Writing a research paper is not an easy job no matter how trouble-free the actual research or concept. Practice, excellent preparation, and controlled record keeping are the only means to make straightforward the progression.

#### **General style:**

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To make a paper clear

- Adhere to recommended page limits

Mistakes to evade

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- Separating a table/chart or figure - impound each figure/table to a single page
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In every sections of your document

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- Align the primary line of each section
- Present your points in sound order
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- Use past tense to describe specific results
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The summary should be two hundred words or less. It should briefly and clearly explain the key findings reported in the manuscript-- must have precise statistics. It should not have abnormal acronyms or abbreviations. It should be logical in itself. Shun citing references at this point.

An abstract is a brief distinct paragraph summary of finished work or work in development. In a minute or less a reviewer can be taught the foundation behind the study, common approach to the problem, relevant results, and significant conclusions or new questions.

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- Fundamental goal
- To the point depiction of the research
- Consequences, including definite statistics - if the consequences are quantitative in nature, account quantitative data; results of any numerical analysis should be reported
- Significant conclusions or questions that track from the research(es)

## Approach:

- Single section, and succinct
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- Center on shortening results - bound background information to a verdict or two, if completely necessary
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The **Introduction** should "introduce" the manuscript. The reviewer should be presented with sufficient background information to be capable to comprehend and calculate the purpose of your study without having to submit to other works. The basis for the study should be offered. Give most important references but shun difficult to make a comprehensive appraisal of the topic. In the introduction, describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will have no attention in your result. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here. Following approach can create a valuable beginning:

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- Very for a short time explain the tentative propose and how it skilled the declared objectives.

## Approach:

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- If use of a definite type of tools.
- Materials may be reported in a part section or else they may be recognized along with your measures.

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- If well known procedures were used, account the procedure by name, possibly with reference, and that's all.

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- It is embarrassed or not possible to use vigorous voice when documenting methods with no using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result when script up the methods most authors use third person passive voice.
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- Resources and methods are not a set of information.
- Skip all descriptive information and surroundings - save it for the argument.
- Leave out information that is immaterial to a third party.

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The principle of a results segment is to present and demonstrate your conclusion. Create this part a entirely objective details of the outcome, and save all understanding for the discussion.

The page length of this segment is set by the sum and types of data to be reported. Carry on to be to the point, by means of statistics and tables, if suitable, to present consequences most efficiently. You must obviously differentiate material that would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matter should not be submitted at all except requested by the instructor.



## Content

- Sum up your conclusion in text and demonstrate them, if suitable, with figures and tables.
- In manuscript, explain each of your consequences, point the reader to remarks that are most appropriate.
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- Do not present the similar data more than once.
- Manuscript should complement any figures or tables, not duplicate the identical information.
- Never confuse figures with tables - there is a difference.

### Approach

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- In spite of position, each table must be titled, numbered one after the other and complete with heading
- All figure and table must be adequately complete that it could situate on its own, divide from text

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- Give details all of your remarks as much as possible, focus on mechanisms.
- Make a decision if the tentative design sufficiently addressed the theory, and whether or not it was correctly restricted.
- Try to present substitute explanations if sensible alternatives be present.
- One research will not counter an overall question, so maintain the large picture in mind, where do you go next? The best studies unlock new avenues of study. What questions remain?
- Recommendations for detailed papers will offer supplementary suggestions.

### Approach:

- When you refer to information, differentiate data generated by your own studies from available information
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Topics	Grades		
	A-B	C-D	E-F
<i>Abstract</i>	Clear and concise with appropriate content, Correct format. 200 words or below	Unclear summary and no specific data, Incorrect form  Above 200 words	No specific data with ambiguous information  Above 250 words
<i>Introduction</i>	Containing all background details with clear goal and appropriate details, flow specification, no grammar and spelling mistake, well organized sentence and paragraph, reference cited	Unclear and confusing data, appropriate format, grammar and spelling errors with unorganized matter	Out of place depth and content, hazy format
<i>Methods and Procedures</i>	Clear and to the point with well arranged paragraph, precision and accuracy of facts and figures, well organized subheads	Difficult to comprehend with embarrassed text, too much explanation but completed	Incorrect and unorganized structure with hazy meaning
<i>Result</i>	Well organized, Clear and specific, Correct units with precision, correct data, well structuring of paragraph, no grammar and spelling mistake	Complete and embarrassed text, difficult to comprehend	Irregular format with wrong facts and figures
<i>Discussion</i>	Well organized, meaningful specification, sound conclusion, logical and concise explanation, highly structured paragraph reference cited	Wordy, unclear conclusion, spurious	Conclusion is not cited, unorganized, difficult to comprehend
<i>References</i>	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring



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