A RETROSPECTIVE STUDY OF DIABETES IN PREGNANCY AT VILA CENTRAL HOSPITAL, VANUATU FROM 2014 TO 2018

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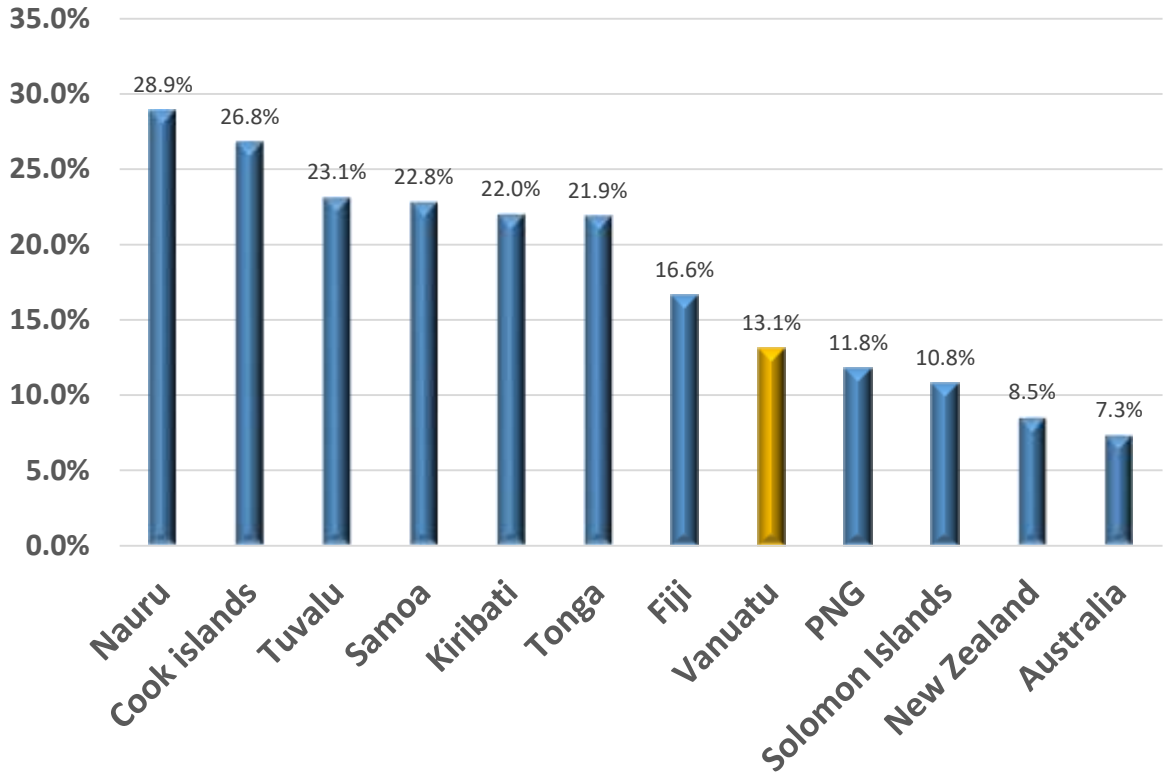
INTRODUCTION AND BACKGROUND

Globally

- Prevalence Diabetes Mellitus in adults has been increasing
- Estimated 422 million adults living with Diabetes.
- 7th leading cause of death in 2016
- In Vanuatu 13% prevalence

Pacific Islands profile for Diabetes prevalence in adult population



1. *Hoffman L et al. Gestational Diabetes Mellitus – Management guidelines: The Australasian Diabetes in Pregnancy society Med J.*
2. *WHO fact sheets*

DEFINITION

Diabetes in Pregnancy (DIP) – Any Diabetes detected in a pregnancy

- Gestational Diabetes Mellitus (GDM)
- Pre – existing Diabetes

DIABETES IN PREGNANCY (DIP)

- WHO : 10 – 25% of pregnancies are complicated by Diabetes.

  (WHO fact sheet- 2016)

- Gestational Diabetes (GDM): 2 – 9 %

  (Caroline A et al New Eng J, June 2005)

- In Fiji: 3.5% - 4.1 % Prevalence of DIP.

  (Fuka et al, 2015; Sema et al, 2015)

- Vanuatu : **NO** Studies to date on Diabetes in Pregnancy.

VILA CENTRAL HOSPITAL (VCH)

- Vanuatu Population – 300,000
- Port Vila – 45,000 population
- Vila Central Hospital – main referral hospital for the whole country
- Still birth rate(SBR): 13/1000 births
- Neonatal death rate (NNR): 11/1000 births
- Maternal death rate (MMR): 86/100,000 live births

VILA CENTRAL HOSPITAL OBSTETRIC UNIT

- Approximately 3000 deliveries per year
- 3 Obstetricians, 1 Registrar and 3 rotating interns
- Antenatal clinics – run by midwives
- No standard Screening Protocol in place for Diabetes in pregnancy

LITERATURE REVIEW

- Diabetes in Pregnancy (DIP) can only be diagnosed if screened for

- Controversies associated with Universal screening and Selective screening

Caroline A, Crowther et al; ACHOIS trial NEJM, June 2005

- Diagnostic criteria by International Association of Diabetes in Pregnancy Study Group (IADPSG) was reviewed, supported and endorsed by other National and International O&G societies (WHO/ACOG/RANZCOG/ADA)

IADPSG consenses panel on the diagnosis and classification of Hyperglycemia in pregnancy; Diabetic Care Vol 10, March 2010

DIAGNOSTIC CRITERIA FOR DIP

	Test Method	International Association of Diabetes in Pregnancy Study Groups (IADPSG)	Fiji National Guideline
GESTATIONAL DIABETES (GDM)	**GTT**		
	Fasting Blood Sugar	≥ 5.1 mmol/L	≥ 5.1 mmol/L
	1 hour	≥ 10 mmol/L	≥ 10 mmol/L
	2 hours	≥ 8.5 mmol/L	≥ 8.5 mmol/L
PRE – EXISTING DIABETES	**GTT**		
	Fasting Blood Glucose	≥ 7 mmol/L	≥ 7 mmol/L
	Random Blood Glucose	≥ 11 mmol/L	≥ 11 mmol/L
	GCT	Not recommended	≥ 11 mmol/L
	HbA1c	≥ 7	≥ 6.5

IMPACT OF DIABETES IN PREGNANCY

Maternal Impacts

- Hypertensive disorders
- Operative delivery and Birth trauma
- GDM – 30 – 50% GDM in their subsequent pregnancy, 50% will develop Type 2 DM in 10-20 years time

Simeoni U et al; International journal of OBGYN; FIGO initiative on GDM, 2015 : 3

Neonatal Impacts

- Still Birth
- Neonatal death
- Foetal macrosomia
- Shoulder Dystocia
- Congenital Anomalies

(Hapo study comperative research group (HAPO); 2008, vol 358, No 19)

PROBLEM STATEMENT

- There is no data available on Diabetes in Pregnancy (DIP) in Vanuatu and we do not know its prevalence nor the impact on maternal and fetal outcomes.

AIM

- To conduct a retrospective audit to assess the prevalence of Diabetes in Pregnancy, mode of diagnosis and its maternal and neonatal outcomes in women who delivered at Vila Central Hospital, between January 1st 2014 to December 31st 2018.

OBJECTIVES

- To determine
  - The Prevalence of Diabetes in Pregnancy
  - The Mode of Diagnosis
  - The Maternal and Foetal Outcomes in women with Diabetes in Pregnancy who delivered at Vila Central Hospital during this study period.

METHODS

- STUDY DESIGN : A Retrospective descriptive study
- STUDY SAMPLE : All women diagnosed with Diabetes in Pregnancy during this study period
- Data management
  - Data Extraction , Excel entry, Data Cleaning, Data Dictionary, Data Analysis

RESULTS AND DISCUSSIONS

Total # of Deliveries in 5 years

90.7% of Folders retrieved

SCREENING AND DIAGNOSIS

- Screening was based on **RISK FACTORS**
- All cases were diagnosed only by using **FASTING BLOOD GLUCOSE** testing
- 70% of cases were diagnosed in 3rd trimester of pregnancy

TREND OF DIP AT VILA CENTRAL HOSPITAL (VCH)

YEAR	TOTAL DELIVERIES	DIP CASES (%)
2014	3093	9 (0.3)
2015	2839	4 (0.14)
2016	3162	15 (0.5)
2017	3245	10 (0.3)
2018	3315	17 (0.5)

PREVALENCE

- Prevalence of Diabetes in Pregnancy over the 5 year period – 0.35%
- Percentage of women who required screening but not screened – 4.36%

3.5 – 4.1% prevalence in Fiji (*Fuka et al and Sema et al , 2019)*

5.5% prevalence in Palau

AGE OF STUDY GROUP

- Mean Age of the study is 31.4 years (Range 21 – 43 years

In Lautoka Hospital Mean age 30 years – (*Sema V. et al. PJRH 2019;1(8):440-446.)*

Ireland Mean age 31 years – *(E.P.O'Sullivan et aL Diabetologia;15 April, 2011, 54:1670)*

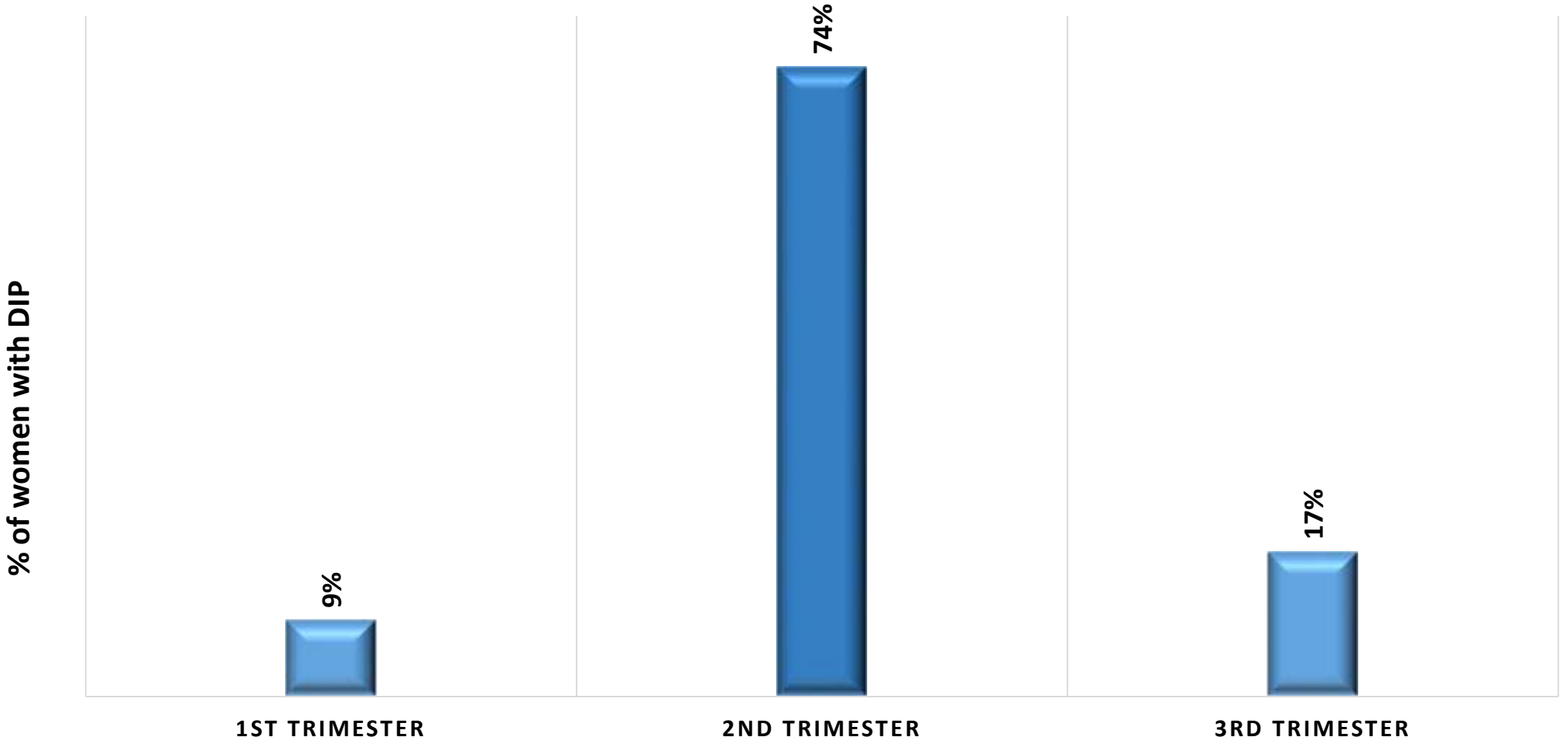
SOCIO – DEMOGRAPHICS OF WOMEN WITH DIP

	20 - 30	**39 % (21)**
AGE CATEGORY	31 - 40	57 % (31)
	> 40 YEARS	4 % (2)
	Primary	13 % (7)
EDUCATION LEVEL	Secondary	48.1 % (26)
	Tertiary	24.1 % (13)
	Single	1.85 % (1)
MARITAL STATUS	Married	57.41 % (31)
	Defacto	38.9 % (21)

GDM becomes significantly increased from 25 years onwards

-Lao T, Ho L, Chan B et al.Diabetes Care 2006, April 29(4); 948-949

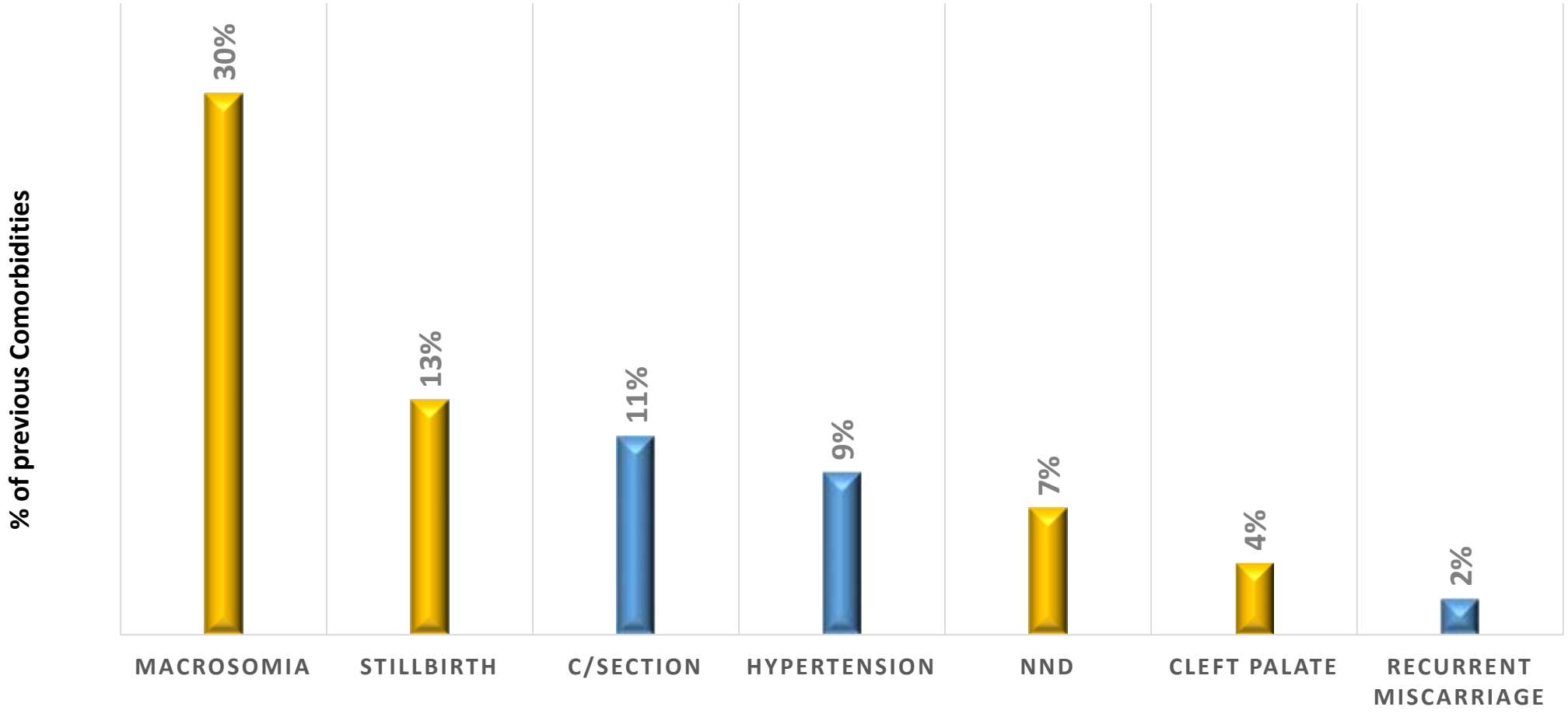
Booking Gestation of women with DIP



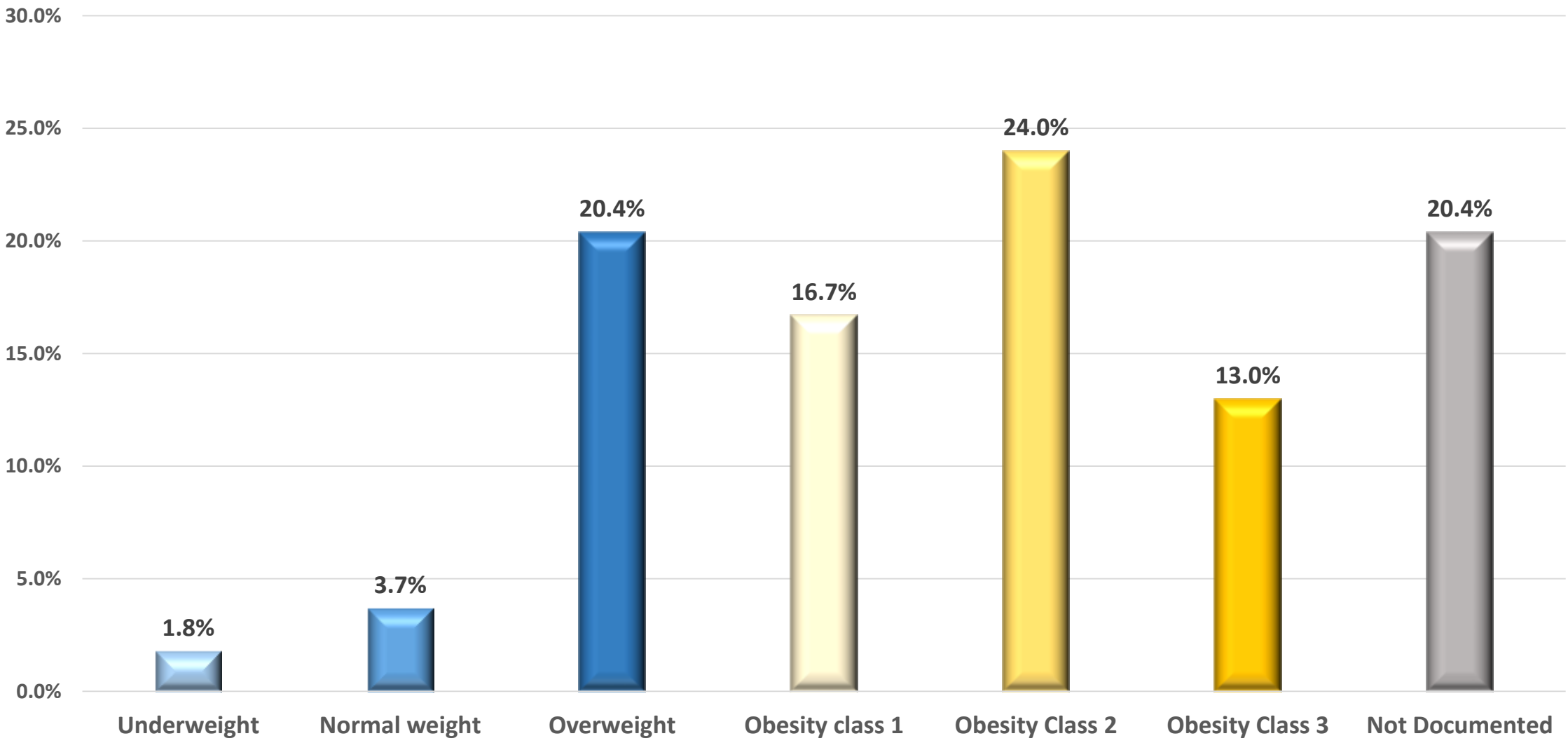
FREQUENCY OF ANTENATAL RISK FACTORS IN WOMEN WITH DIP

- 20% - History of previous Gestational Diabetes (GDM)
- 39% - Positive Family History of Diabetes Mellitus
- 15% - known case of Diabetes Mellitus Type 2

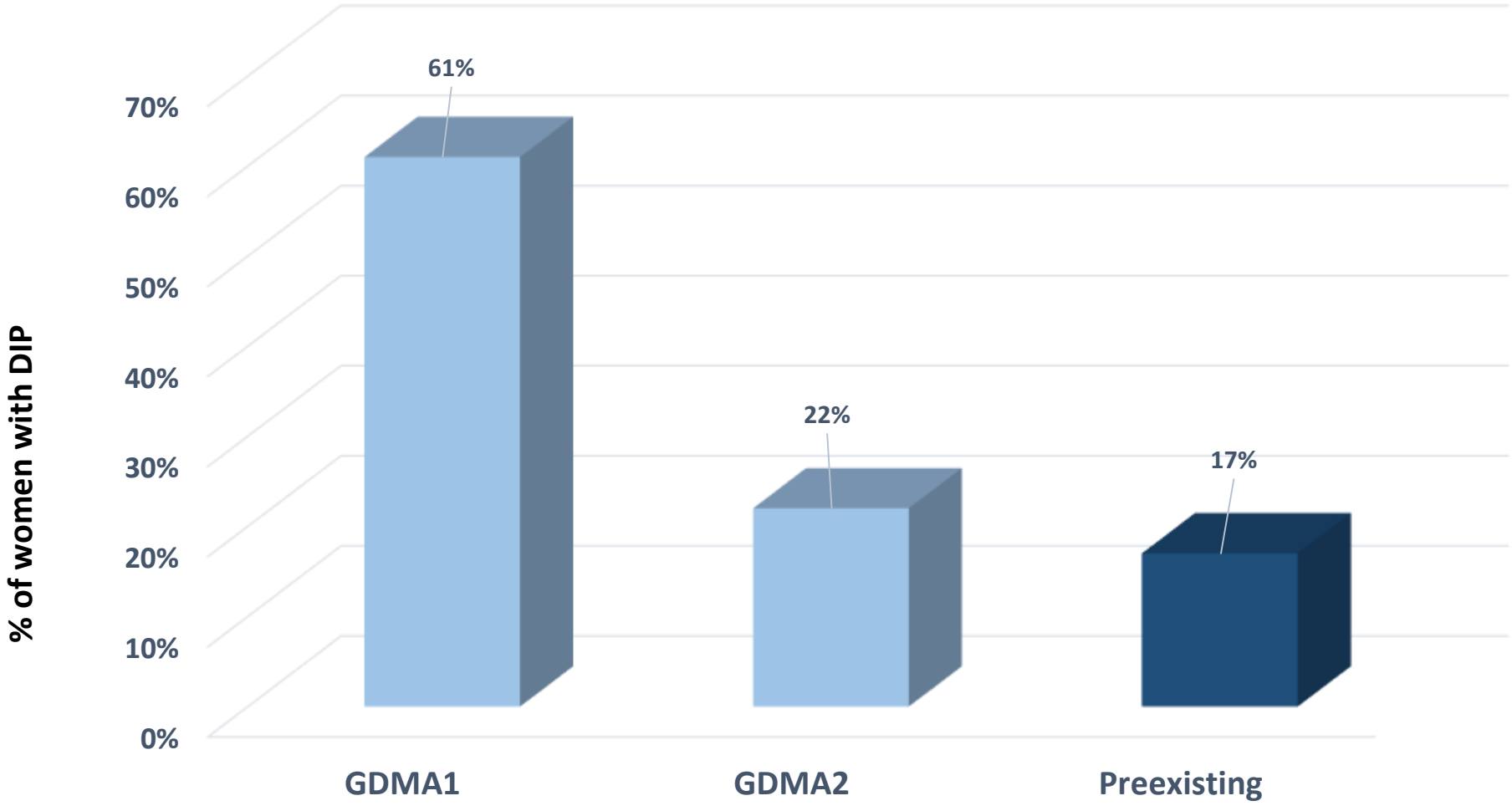
PAST OBSTETRIC HISTORY



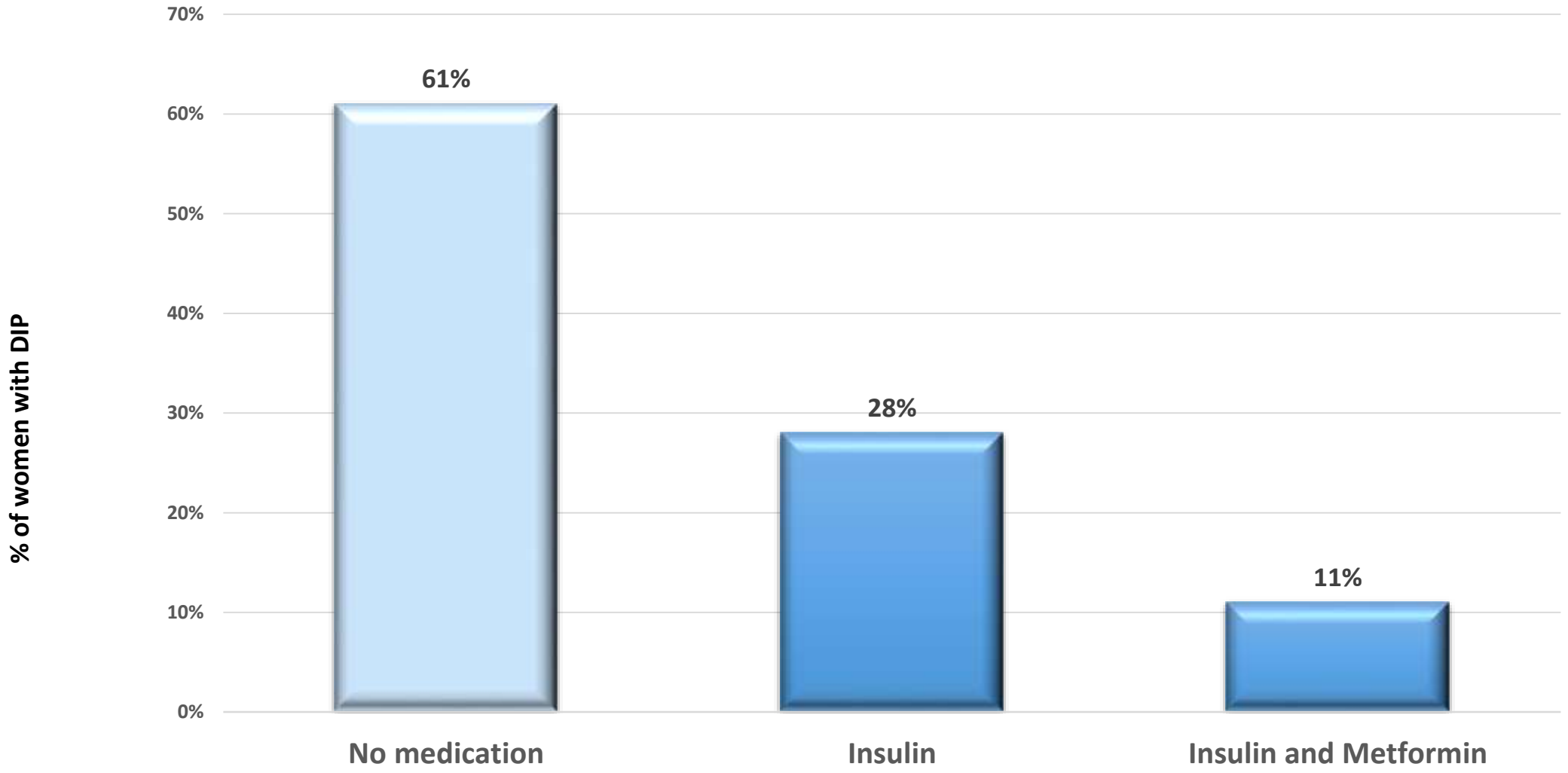
Frequency BMI Categories in women with DIP



Type of Diabetes in Pregnancy (DIP)



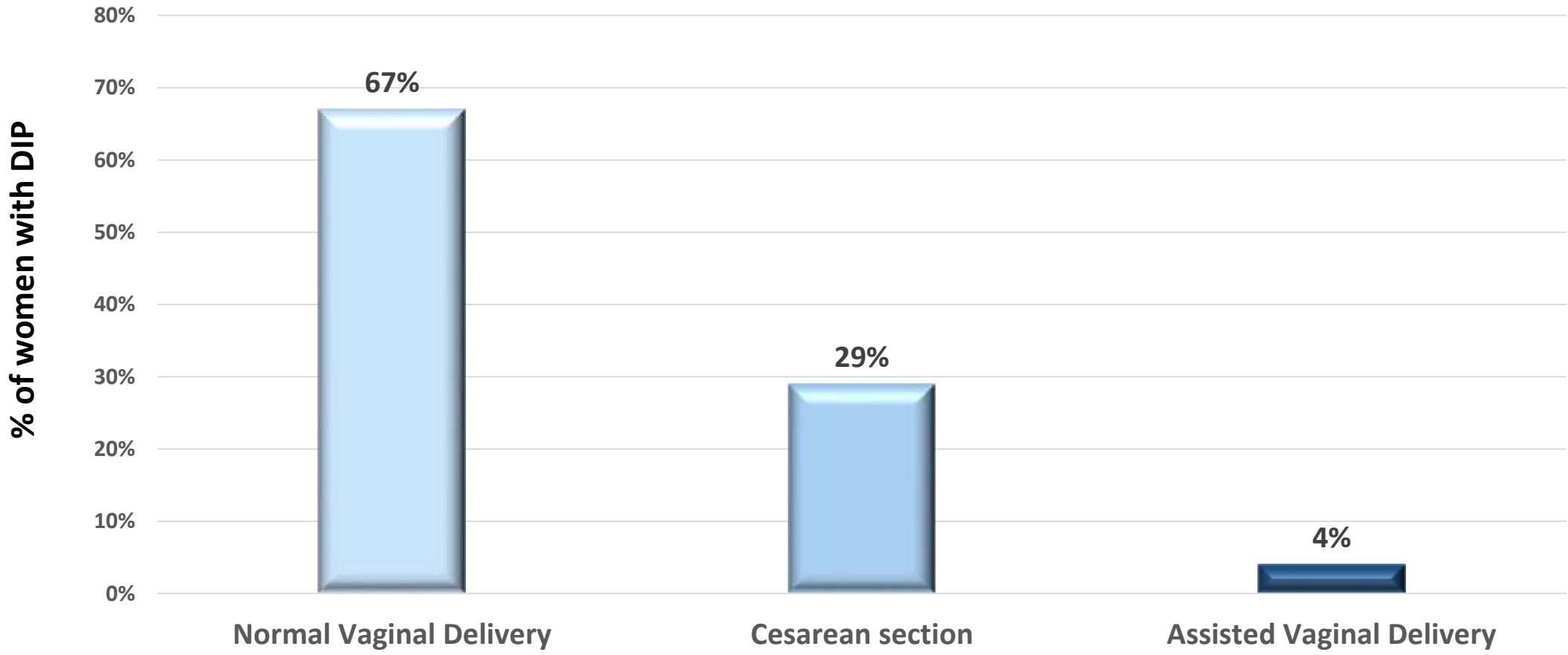
Diabetic Medications used during Pregnancy



FREQUENCY OF HYPERTENSION IN WOMEN WITH DIP

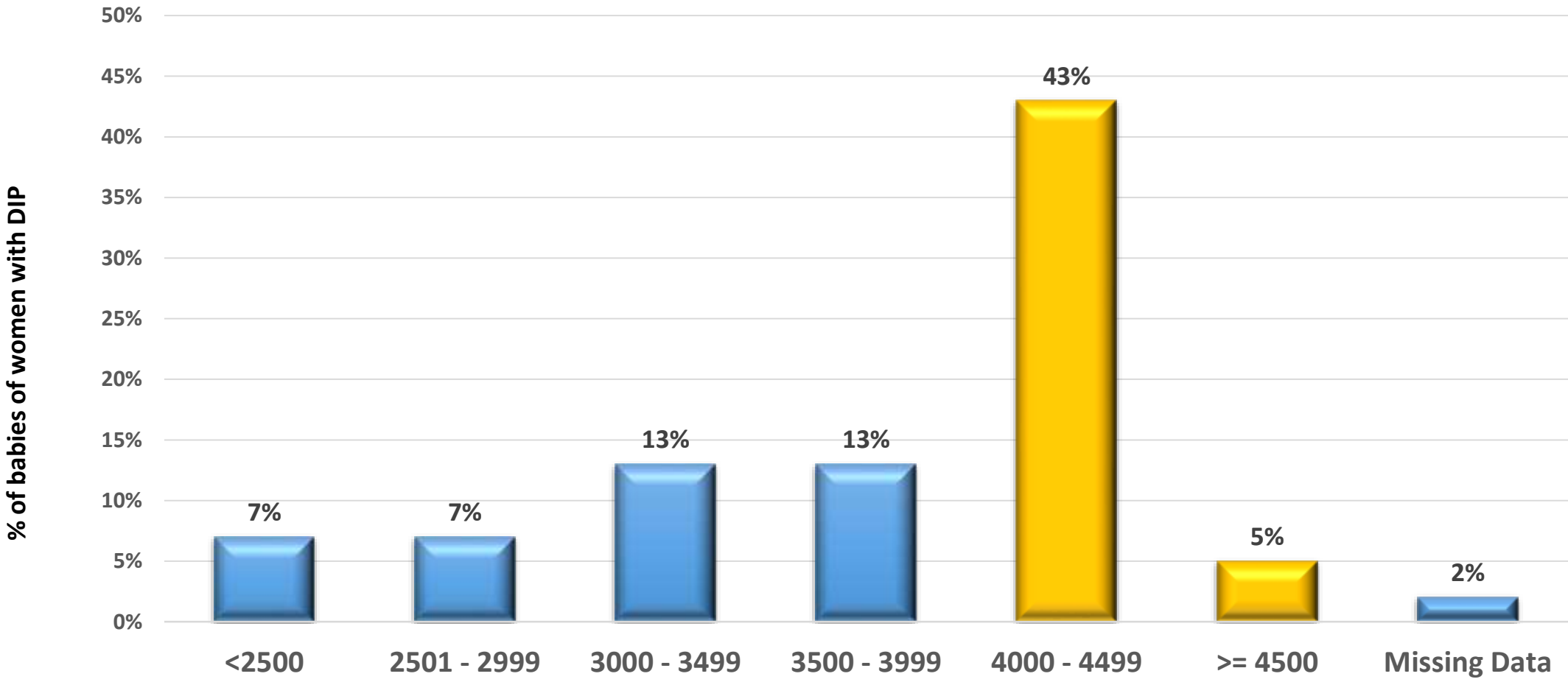
- 35% had Hypertension in pregnancy

Mode of Delivery for Women with DIP



CS rate in DIP – 31 % *(Sema et al; PJRH, Vol 8, 2019)*

Birthweight of Babies of women with DIP



RISK OF MATERNAL ADVERSE OUTCOMES FOR WOMEN WITH DIP

Maternal Adverse Outcome	Relative Risk	95% Confidence Interval	P – Value
Cesarean section	4	3.4 – 6.5	< 0.0001
Assisted Vaginal Delivery (AVD)	3.6	0.9 – 14	0.0655
Postpartum haemorrhage (PPH)	2.6	1.1 – 6	0.02

CS OR 2- *E.P.O'Sullivan et al. Diabetologia 2011*

CS OR – 2.42 -Sema V et al; PJRH Vol 8 2019

FETAL AND NEONATAL OUTCOMES

Foetal & Neonatal Adverse Outcome	Relative Risk (RR)	95% Confidence Interval (CI)	P – Value
Still Birth (SB)	7.4	3.1 – 17.2	< 0.0001
Foetal macrosomia	136	103 – 180	< 0.0001
Shoulder Dystocia (SD)	20	6.4 – 62	< 0.0001

Still Birth OR 2.28 - *Sema et al; PJRH, Vol 8, 2019.*
Macrosomia; OR 1.2 -*E.P.O'Sullivan et al ,Diabetologia 2011*
Shoulder dystocia OR 3.7- *J. G. Ray et al in 2001* -

OTHER NEONATAL OUTCOMES

OUTCOMES	PERCENTAGE / NUMBERS
Congenital anomalies	2 % (1)
Neonatal Hypoglycaemia	7% (4)
Respiratory Distress Syndrome (RDS)	2% (1)
Nursery Admissions	22% (12)

CONCLUSION

- Inadequate Screening and Diagnosis of Diabetes in Pregnancy at VCH
- Prevalence of DIP in this Obstetric population is 0.35% (Underestimate)
- Diagnosis with only Fasting Blood Glucose is Suboptimal
- There is Significant Maternal morbidity associated with DIP
- Significant increase in Neonatal adverse outcomes of women with DIP at Vila Central Hospital

LIMITATIONS

- Retrospective Audit
- Small sample size

RECOMMENDATIONS

- Improve screening for Diabetes in Pregnancy at Vila Central Hospital as this study now showed there is significant impact on Maternal and Neonatal outcomes
- Conduct in-hospital upskilling workshops on DIP for Registered Nurses, Midwifes and Medical staff
- Develop and use a local guideline for Vila central hospital.

DRAFT guideline for screening and diagnosis of DIP at Vila Central Hospital

Bislama version

Microsoft Word Document

English version

Microsoft Word Document

SKRINING GAEDLAEN BLONG SIK SUKA LONG OL MAMA WE OLI GAT BEL LONG VILA CENTRAL HOSPITAL (VCH), VANUATU

Sik Suka hemi wan long olgeta Non communikabol disis we I save affectem laef blong wan man long taim we hemi stap iet insaed long bel blong mama blong hem kasem taim we hemi ded. Hemi risponsabiliti blong yumi olgeta helt profesonal blong luk save mo addressem long taim blong antenatal visit blong olgeta.

Sik suka I save hapen tu long taim we mama hemi gat bel. I kat 2 common taep blong hem, Gestational Diabetes- suka I hae long taem we mama I kat bel mo hemi oraet afta hemi bonem bebe) wetem Pre-exisiting Diabetes - suka I bin hae mo confomesen I bin hapen bifo mama I kat bel. I kat taep 1 mo taep 2 sik blong suka.

Litreja I shoem se, sapos I kat gudfala skrining gaedlaen, ol stret test blong faenem sik suga mo gudfala manejmen blong sik suka long taim we mama hemi gat bel, I save resal long gudfala aotkam blong bebe mo mama tu.

Long Vanuatu, lokol data blong yumi long wan resej we I jes hapen long Vila centrol Hospital I shoem tru se sik blong suka we oli faenem taim mama I gat bel I save affektem laef blong wan anbon bebe insaed long bel blong mama blong hem kasem taem bebe I bon o bebe I ded insaed long bel blo mama, mo I save affektem laef blong wan mama tu. From rison ia nao, local gaedlaen ia I blong helpem yumi ol heltwoka blong luksave olgeta risk fakta we yumi save faenem long wan mama taim hemi kam blong mekem fes visit blong hem long anti netal klinic mo mekem test blong sik suka long olgeta we oli mitim ol kraeteria wetem propa manejmen blong sik suka we hemi stret mo I fitim hospital mo kaontri blong yumi.

SKRINING INSAED LONG ANTINATAL KLINIK

Hemi inpoten blong lukaotem olgeta risk fakta ia long ol mama taim oli kam long fes visit:

RISK FACTA BLONG SIK SUKA LONG TAIM MAMA I GAT BEL

Moderet risk fakta grup

- Obesity (BMI > 30), olgeta we oli genem mo weit lo adulthood o inbitwin long taim we oli gat bel.
- Oli bin gat bigfala bebe last taim we oli gat bel wetem weit blong bebe we hemi bitim 4 kilo (>4 kg)
- Olgeta we oli bin gat miscarej bitim 3 taim finis
- Olgeta we oli gat suka I bigwan long pispis taim oli bin go tru long wan test long fes visit.
- Olgeta we oli bin faenem high blad pressure long las pregnancy blong ol

ACKNOWLEDGEMENTS

- Almighty God
- Primary Supervisor: Associate Prof Dr Naidu
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- Med Sup and Colleagues at VCH
- HOD and Colleagues at CWMH O&G Department
- NZAID
- My Family

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TAKE HOME MESSAGE

- Women with DIP have 50% risk of developing Type 2 Diabetes in the future
- Pregnancy provides and opportunity to screen for Diabetes Mellitus
- Early booking – Early Diagnosis – Adequate management of DIP – Reduce Maternal Foetal Complications
- Further studies needed to examine the existing strategies to improve screening uptake and evaluate cost effectiveness of preventative interventions.