ADIPS Pregnancy and Diabetes Audit 2020

Final POOLED DATA Benchmarking Report

March 2021

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ACKNOWLEDGEMENTS

We thank Sites for participating in this Pilot and for responding to requests for validation of their data. We also wish to acknowledge and thank for their assistance, Ms Jincy Immanuel for coordinating and assisting with data collection and reporting, Dr Tania Polhill for data validation and proof reading, and Dr Tang Wong for assistance with the intricacies of SPSS.

INTRODUCTION

Supported by the Australasian Diabetes in Pregnancy Society (ADIPS) BOARD, a multidisciplinary ADIPS WORKING PARTY was established in 2019 to develop a 'Minimum Dataset' (including a Data Dictionary), suitable for collecting and auditing Diabetes and Pregnancy and GDM Process and Outcomes across Australasia. The Working Party developed such a Dataset and in early 2020 expressions of interest were sought from ADIPS Members to submit their data in a de-identified format in a doubly de-identified system whereby all correspondence with participating Sites was carried out through a Trusted Third Party (WSU Campbelltown), who corresponded directly with the Central Data Analysis Site (the Diabetes Centre at Bankstown-Lidcombe Hospital). All communication between the Central Data Analysis Site and participating Sites was through the Trusted Third Party.

The Dataset contains fifty-five data items including Maternal Demographic, Descriptive, Clinical, Pathology and Management Data Items as well as Pregnancy and Neonatal Outcome Variables designed to assess aspects of care including Pre-pregnancy Type 1 and Type 2 Diabetes care (T1DM & T2DM), Diagnosis of Gestational Diabetes (GDM), Management, Therapy, the Birth and Early Neonatal Findings.

The Primary Aim of this ADIPS PILOT was to carry out an Audit and Benchmarking exercise of singleton live births of pregnant women with pre-existing T1DM or T2DM and those with GDM, to enable participating Sites to compare their outcomes with 'peer' Sites. A secondary aim/objective was to obtain information for a separate overall Pooled Data Report. Ultimately it is envisaged that systems will be established and funded allowing this exercise to be undertaken on a regular basis.

METHODS

Participating Sites submitted their data in a pre-specified Excel spreadsheet format to the Trusted Third Party Site, where all Site Data were de-identified and coded with a Unique Identifier. The Trusted Site holds the only copy of this code. These data were collated and the Central Data Analysis Site was provided with a single Excel Spreadsheet comprised of eleven Worksheets, each containing all data for each Site.

The Central Data Analysis Site thence amalgamated all eleven Worksheets into a single dataset file and firstly undertook data validation, identifying several anomalies that needed to be addressed, prompting our completion of the following data validation steps:

- Conversion of HbA1c for 2 Sites from IFCC to NGSP %.
- Gestation at birth recoded from one Site: data format changed (e.g. 38+4 changed to 38.4).
- Height conversion from centimetres to metres for 2 Sites.
- Pre-pregnancy weight validated (some clearly incorrect data deleted).
- Gestation at delivery – birthweight was queried with Sites appeared too low.
- We undertook age calculations for 2 Sites from DOB provided.
- We removed letters and words from numerical fields (e.g. 'N/A').

The next step was data verification. Numerous anomalies were found in many data fields, with unlikely / impossible identified data subsequently queried with Sites by sending data queries to the Trusted Third Party Site who forwarded them to the respective Sites. The de-identified responses were collated and returned to the Central Data Analysis Site. These queries included [*but were not restricted to*] the following:

> Age, Height, Weight, Gravida, oGTT and HbA1c values, Gestation at Delivery, Birthweight and Live Birth data items. Missing data were not sought, but solely clarification of questionable data items that had been provided.

All verified data item corrections received were applied to the Dataset.

All questioned data items that Sites could NOT validate were deleted.

Records verified as Stillbirths were deleted. A decision was thence made to delete all records containing births recorded as less than 28 weeks gestation. We accepted validated heights as low as 140 cm and as high as 185 cm and a validated weight maximum of 185 kg.

Just as East and South East Asian were not separated due to combined coding in some sites, Māori and the different Pacific communities were also not separated in several sites (and combined under "Pacific populations"). The Ethnic background data were grouped as per those needed to calculate birthweight centile (see below) and no adjustment for underlying ethnic differences have been made in any other analyses.

Once the above had been completed, the Dataset was closed for analyses. Next, data manipulations were made to create specific fields to assist analyses. Examples include: Diabetes Type [coded as one field] was converted to a T1DM identifier, a T2DM identifier and a GDM identifier field; and from Method of Delivery, Planned and Emergency Caesarean identifier fields were created. Additionally, HbA1c target fields were created namely HbA1c >6.5% Trimester 1 = Yes/No and HbA1c >6.0% Trimester 2 and Trimester 3 = Yes/No respectively, in line with recent ADIPS Guideline Targets (ADIPS 2020) [1].

Infant birthweights were categorised as LGA (>90th percentile) and SGA (<10th percentile) using Gardosi et al (2009) [2] [V6.6_au] customised percentile charts. This adjusts for: maternal height; self-reported maternal pre-pregnancy weight; parity; ethnicity; infant birthweight, gestational age at delivery and gender. Early delivery was calculated as <37 weeks and <34 weeks. Neonatal hypoglycaemia was defined as capillary glucose <2.6 mmol/L. Neonatal jaundice required phototherapy.

Additionally, Sites were re-coded at the Central Analysis Site as an added security measure and every effort has been made to preclude identification of any Site from the analyses presented. Hence Ethnic Background data have not been provided per Site.

Analyses were divided into separate PROCESS (Missing Data Analyses) and HARD OUTCOMES in three separate sections: T1DM, T2DM and GDM. NOTE - The GDM data come from site(s) using ADIPS 2014 Criteria, ADIPS 1998 Criteria and ADIPS New Zealand Criteria [3-5], and no attempt has been made to analyse GDM outcomes separately based on different criteria. Outcome and other measures are reported based upon non-missing data except for congenital malformations where all missing data is assumed to imply no congenital malformations.

STATISTICAL ANALYSES were undertaken using IBM SPSS Version 24.0 ©. Categorical variables were described using numbers and percentages and continuous variables were described using mean ± standard deviation or median and range. Statistical testing was not undertaken.

ETHICS: Sites were responsible for obtaining local Ethics or management clearance to provide their data for the ADIPS Audit. The overall Audit was approved by the Western Sydney University Human Research Ethics Committee (HREC Approval Number: H13648).

This Final Site Data Benchmarking Report has been provided to Sites and a separate email sent indicating their individual Code to enable them to analyse their data in comparison with others.

A Note on Interpretation

In undertaking analyses, cross tabulation in SPSS utilises valid variable percentages to derive results. Valid percentages exclude Missing data so that, for example, in a variable completed for nine individuals where an item has three Yes values, three No values and three Missing values, the percent Yes is 33.3%, but the "valid" percent of completed fields is 50% and it is the valid percent that is reported. In this example, half of the completed values are Yes and half are No. This, therefore, makes no assumption about what the Missing values would have been.

In a situation however where the item has only been completed with Yes values and there are a large number of Missing values, the percentage of Yes values will be reported as 100% - again that is the percent of completed values.

An example where this has become an issue is SCN/NICU admission in GDM, where for one site, there were 88 Yes values but over 2000 Missing values. Consequently, the result for that site is 100% Yes, whereas the total percent of all possible values is just 3.7%. Reporting 100% is clearly wrong and reporting 3.7% introduces a potential error, by assuming that all 2000+ Missing values were No. This has been highlighted in the text on page 54.

Further examples include Site Z Page 12 Insulin Pump, Page 14 Chronic/Essential Hypertension and Page 14 Gestational Hypertension, (all 100%) but where (respectively) this is 3/295, 13/295 and 14/295 YES and the rest are Missing values.

No attempt has been made to correct this potential error in the calculations apart from the Congenital Malformation fields, where the "total" percentage has been reported and the total sample size (including missing data) is taken as the denominator in the process of computing a field entitled 'Any Congenital Malformation'. Data reported in this field and in the Minor and Major Congenital Malformation fields in T1DM, T2DM and GDM have excluded incomplete data fields completely.

It has not been feasible or timely to undertake a complete re-analysis of all data fields in order to make this correction where necessary.

In instances where individuals find a result for an Outcome questionable, it is recommended that they check the missing data tabulation for that field, for that Site, in the Process analyses presented on previous pages. In the example above, SCN/NICU admission in GDM, (100% for one Site), the missing value was 96.3%

RESULTS: Overview

There were Eleven Participating Sites from Australia and New Zealand who provided data on a total of 10144 individual singleton pregnancies (435 T1DM, 1013 T2DM and 8696 GDM). Of the Eleven Sites, Seven provided Pregnancy and T1DM data, Nine Pregnancy and T2DM and Eight Sites GDM data.

Ethnic Background data were provided for 93% of women and the breakdown of all Sites' combined data was 33.1% European, 20.8% South Asian, 13.8% East/South East Asian, 12.5% Pacific populations, 8.1% Middle Eastern, 7.0% 'Other', 2.6% Aboriginal and Torres Strait Islander and 2.0% African – with considerable inter-Site variation which is as to be expected.

The Following Sections are, respectively, data on PROCESS thence 'hard' OUTCOME findings pertaining to T1DM (Pages 5-22), then T2DM (Pages 23-42) and finally GDM (Pages 43-56) thence Discussion (Pages 57-58) and References (Page 59).

ADDENDUM Jan 2021 – Note on Interpretation of Appendix [1] (Pages 60-74)

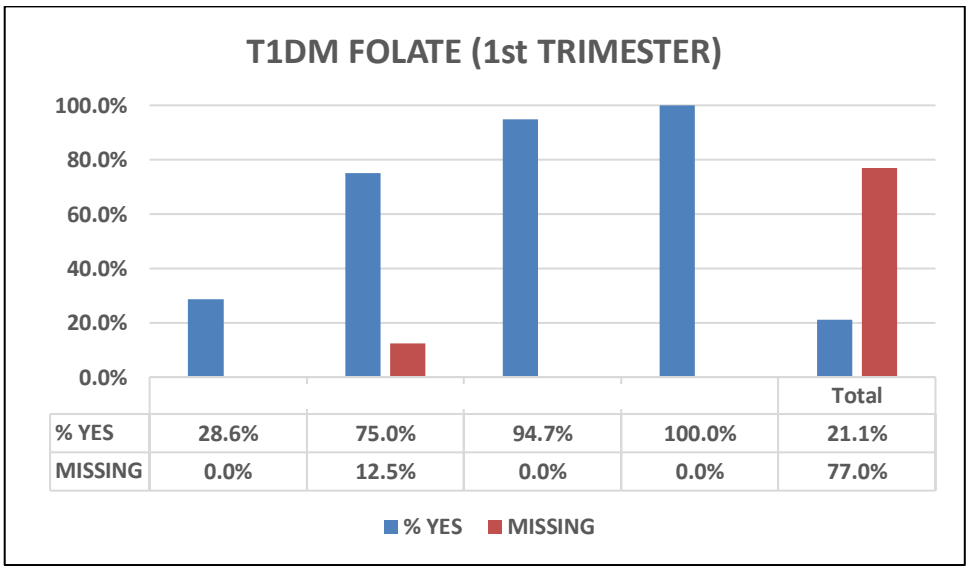
We have NOT undertaken any additional analysis of the Dataset, this is just an additional way of presenting the data - The appendix merely contains some additional graphs on some selected Key Outcomes in three Sections, T1DM then T2DM then finally GDM.

The Graphs have been constructed to contain Site data for each Outcome with Percent YES [% YES] and Percent Missing [% MISSING] FOR EACH SITE in the Columns.

Please note that:
[1] All Sites with 100% MISSING Data **have been excluded from the Graph;**
[2] The Last Column contains the **MEAN % YES for the Outcome for ALL SITES with data**;
[3] Sites where % Yes + % Missing add up to *exactly 100%* indicates that **there were NOT ANY 'NO' DATA for that Site in that Field** (NOT in this Example – *but in others in the Appendix*); and
[4] The TOTAL % MISSING is the Total % Missing for **ALL SITES** - SO THAT the % YES for that outcome is for **100% MINUS the Total % Missing for that Outcome.** (See Example Below).

As an Example - *The interpretation of the following Graph from the Appendix is*:

T1DM FOLATE (1st TRIMESTER) was reported by 4/7 Sites only;
The Range between Sites was 28.6%-100% with a Mean of 21.1% across those 4 Sites;
The Overall % Missing for this item was 77.0% of possible patient data, thus 21.1% is the Mean for T1DM FOLATE USE (1st TRIMESTER), being available in just 23% of the T1DM patients in the Audit.



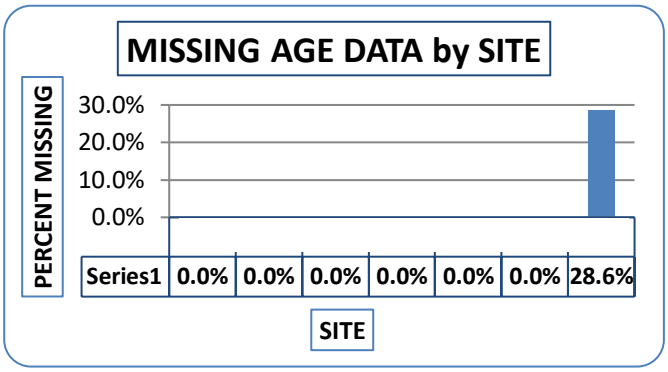
					Total
% YES	28.6%	75.0%	94.7%	100.0%	21.1%
MISSING	0.0%	12.5%	0.0%	0.0%	77.0%

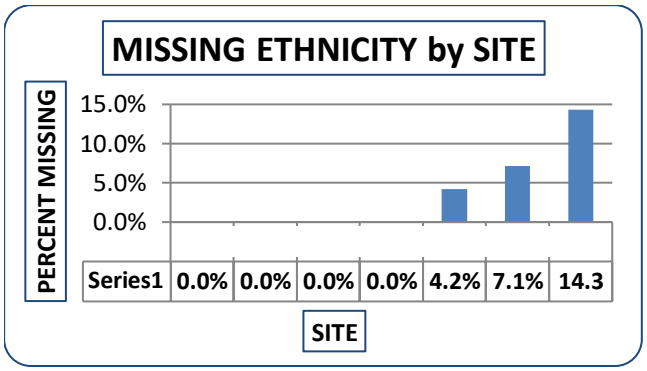
This section reviews the benchmarked PROCESS Outcomes in the Audit for T1DM

Type 1 Diabetes

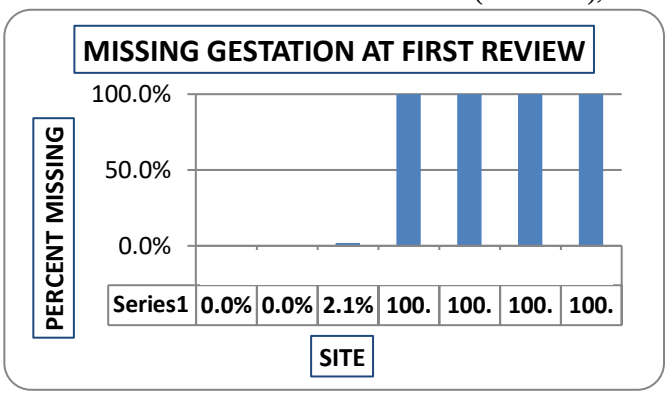
Seven Sites provided Data on 435 women with Type 1 Diabetes and Pregnancy

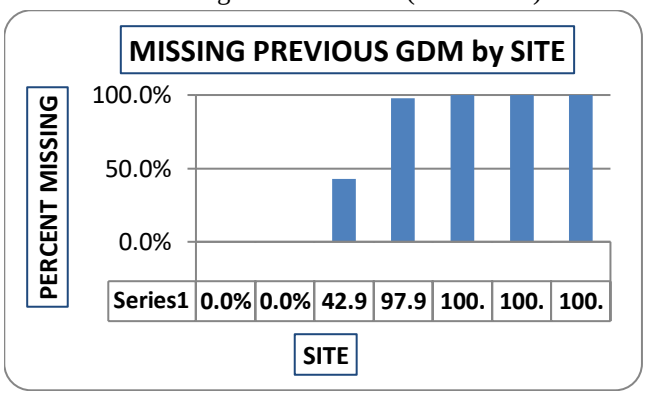
Only one Site had missing Age data (28.6%), while three had missing Ethnic Group data (4.2-14.3%).



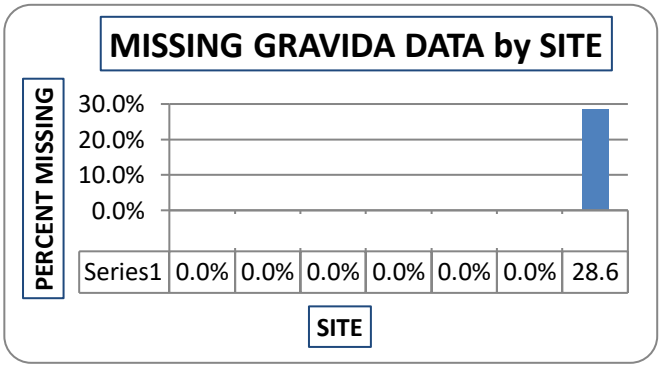


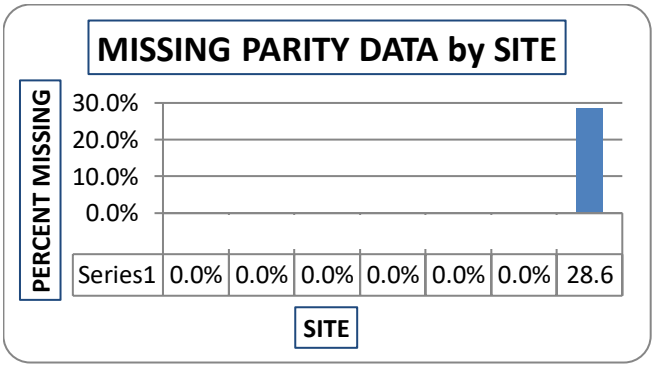
Five Sites had no Gestation at First Review (2.1-100%), while five Sites had missing Previous GDM (42.9-100%).



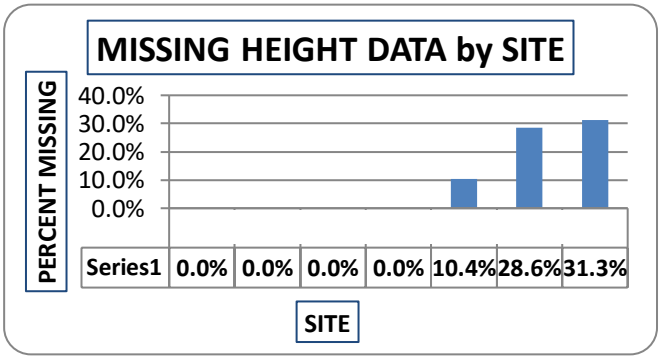


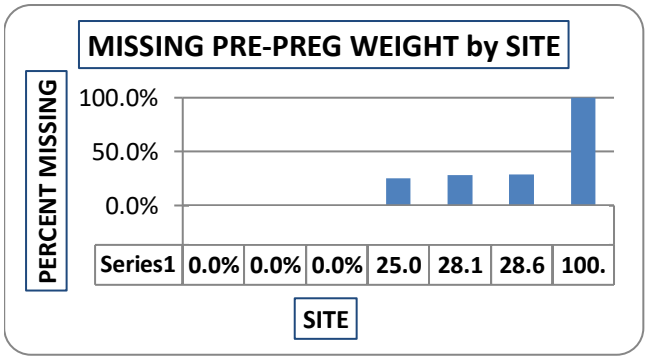
Only one Site had missing Gravida and Parity data (both 28.6%).





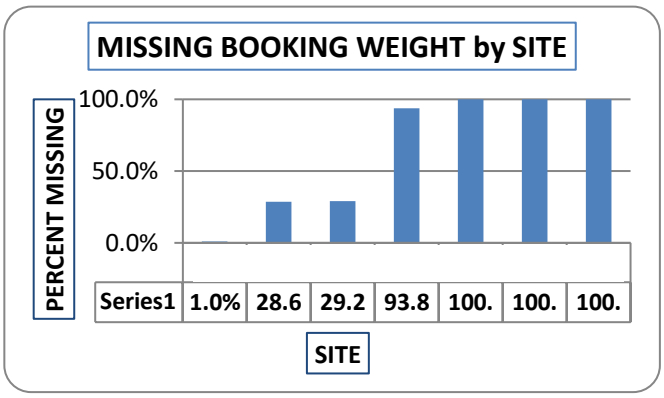
Three Sites had missing Height data (10.4-31.3%) & four Sites had missing Pre-pregnancy Weight data (25.0-100%).

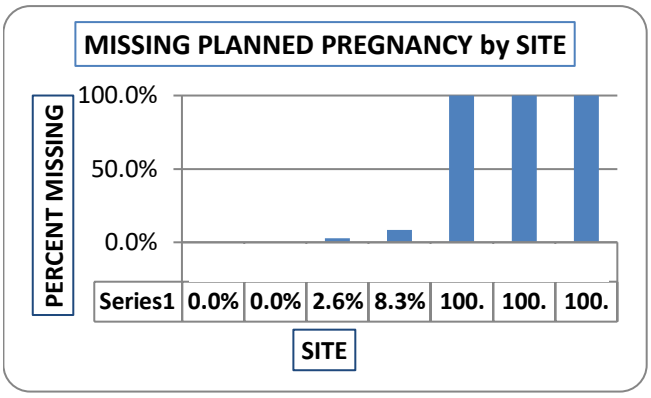




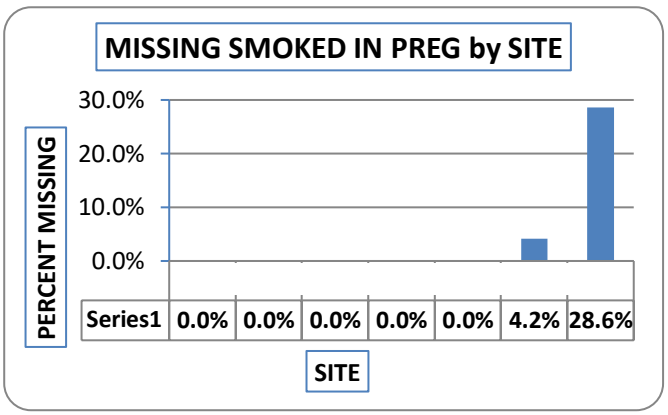
Type 1 Diabetes

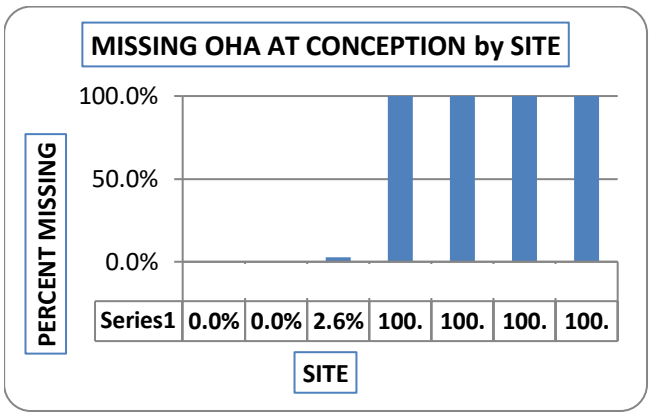
All Sites had missing Booking Weight (1.0-100%) and five Sites had missing Planned Pregnancy data (2.6-100%).



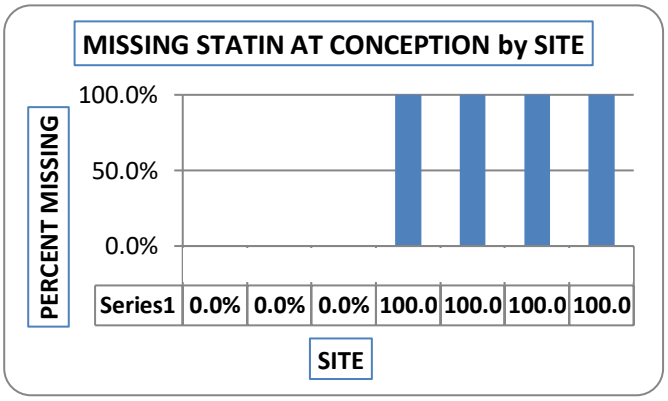


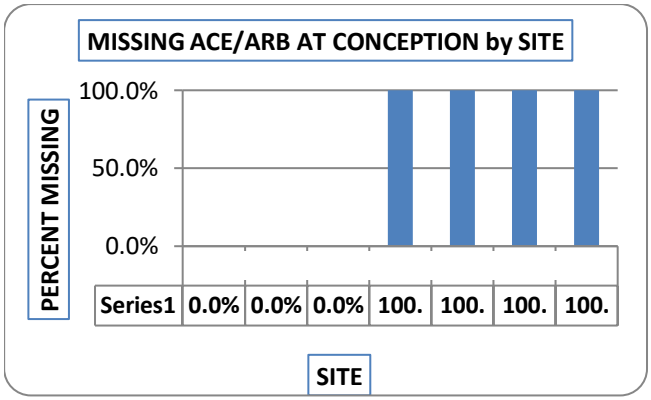
Two Sites had missing Smoked in Pregnancy (4.2-28.6%) & five Sites had missing OHA at Conception (2.6-100%).



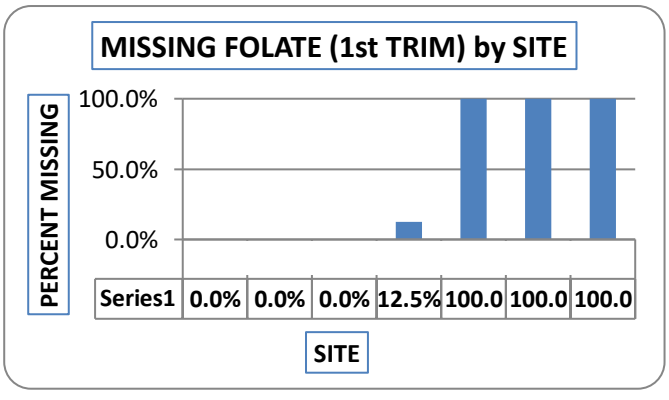


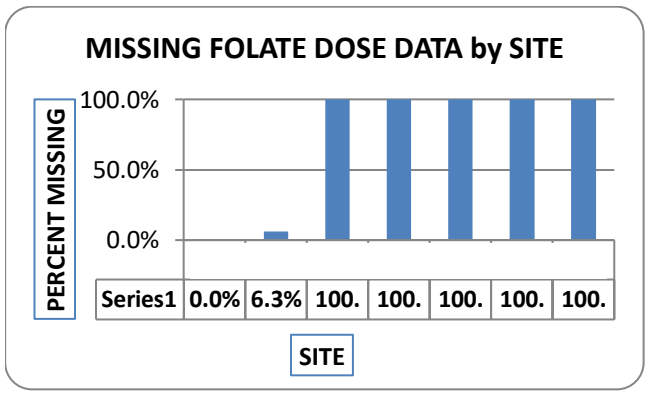
Four Sites had missing Statin at Conception & the same four Sites had missing ACE/ARB at Conception (all 100%).





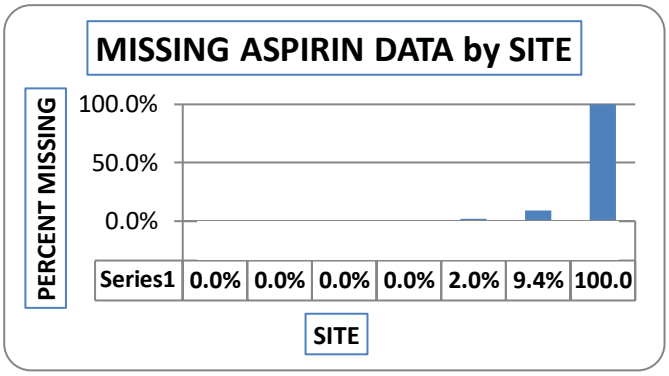
Four Sites had missing Folate 1st Trimester data (12.5-100%) and six Sites had missing Folate Dose data (6.3-100%).

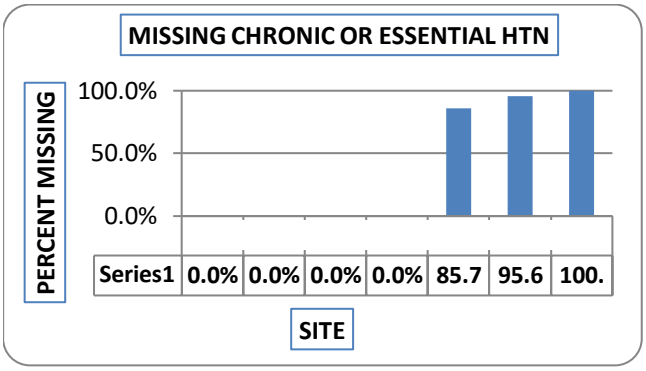




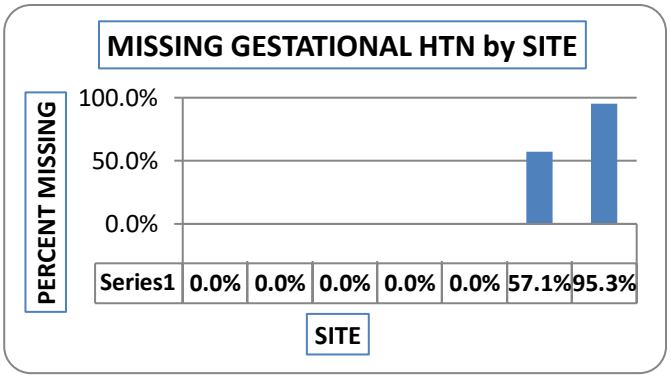
Type 1 Diabetes

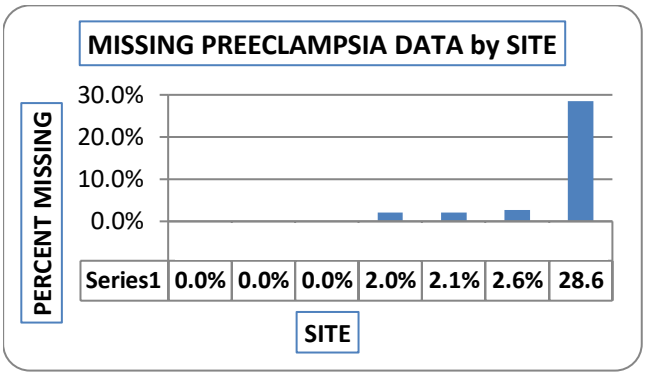
Three Sites had missing Aspirin data (2.0-100%) & three Sites had missing Chronic/Essential Htn data (87.5-100%)



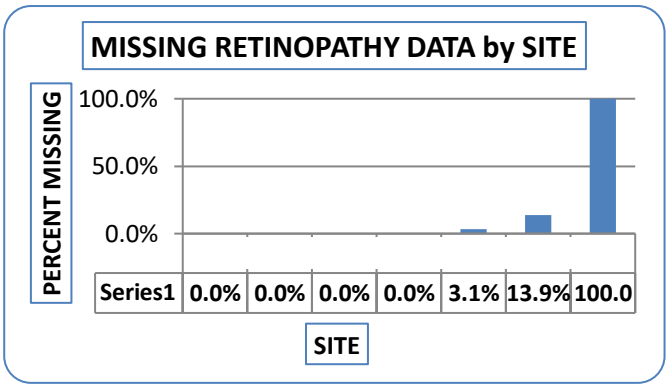


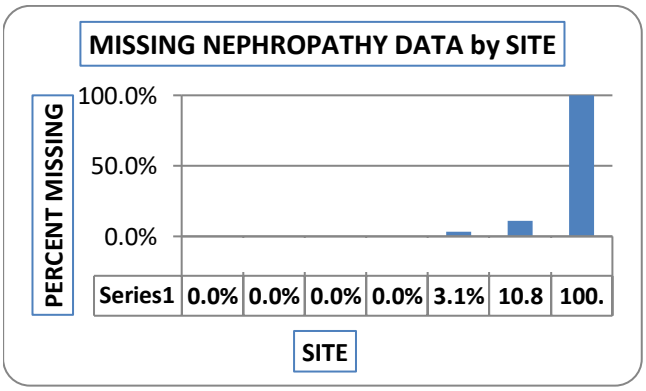
Two Sites had missing Gestational Htn data (57.1-95.3%) and four Sites had missing Preeclampsia data (2.0-28.6%).



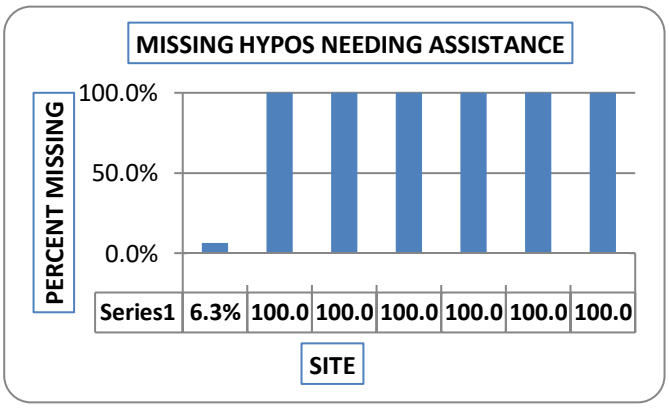


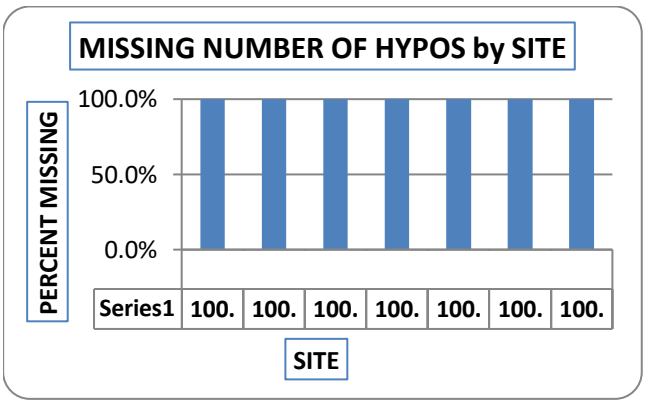
Three Sites had missing Retinopathy (3.1-100%) and the same three Sites had missing Nephropathy data (3.1-100%).





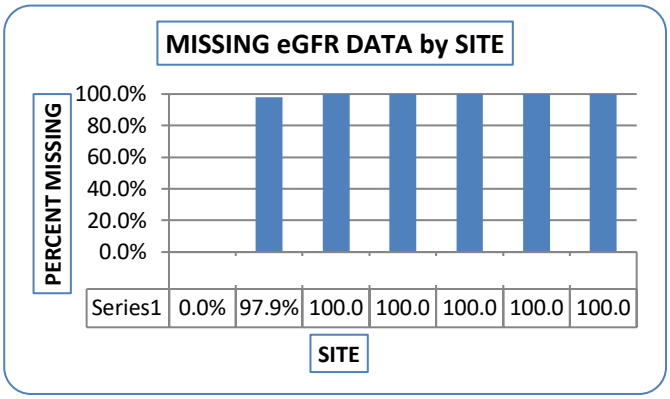
All Sites had missing Significant Hypos data (6.3-100%) & NONE had any Hypo Number data (All 100% missing).

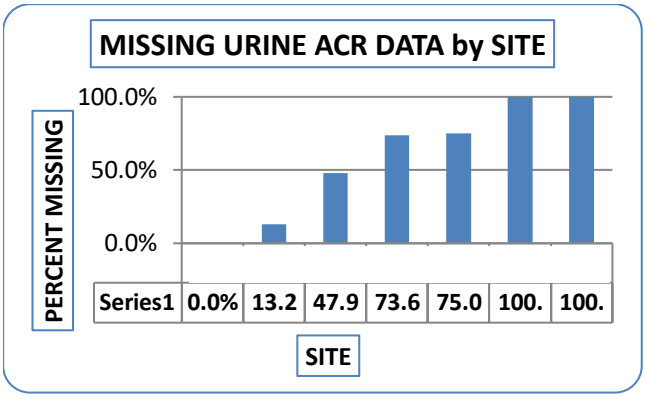




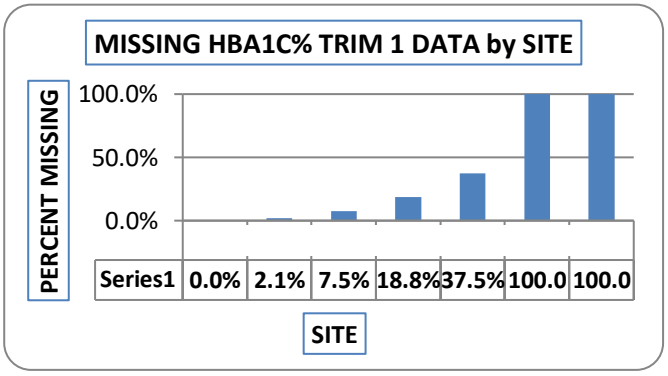
Type 1 Diabetes

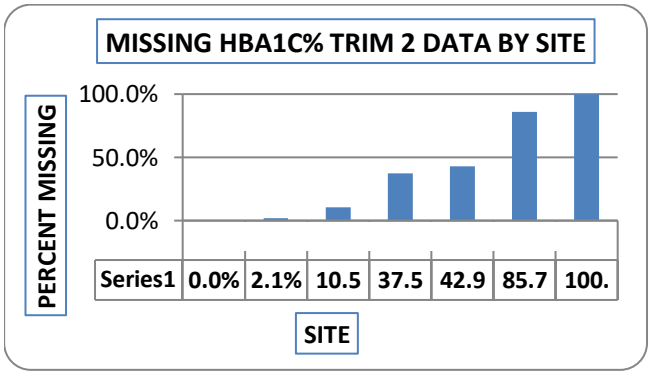
Six Sites had missing eGFR data (97.9-100%) and the same six Sites had missing Urine ACR data (13.2-100%).



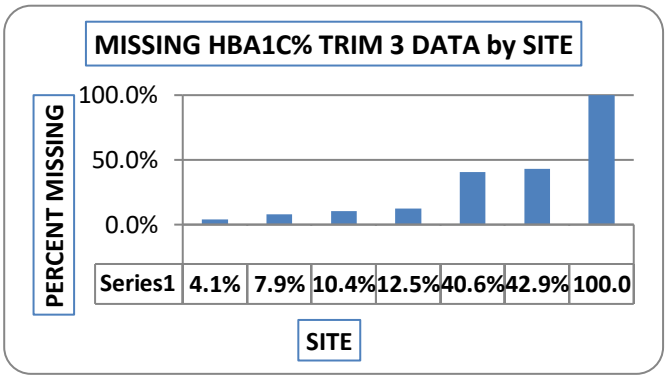


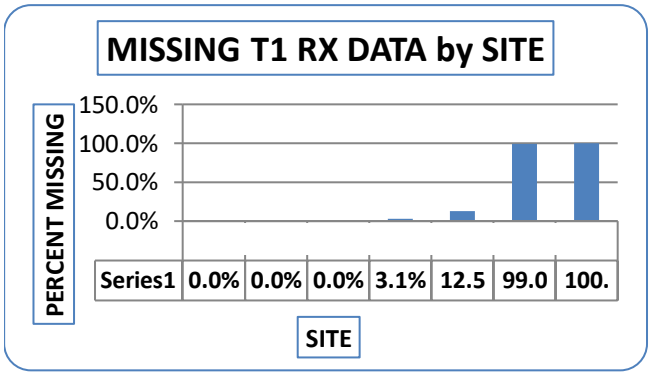
Six Sites had missing 1st Trimester HbA1c (2.1-100%) & six Sites had missing 2nd Trimester HbA1c (2.1-100%).



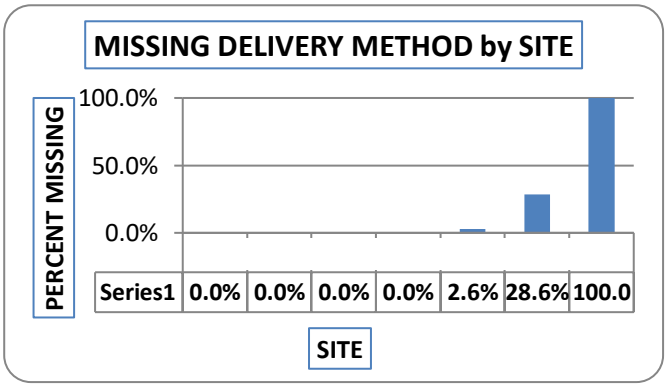


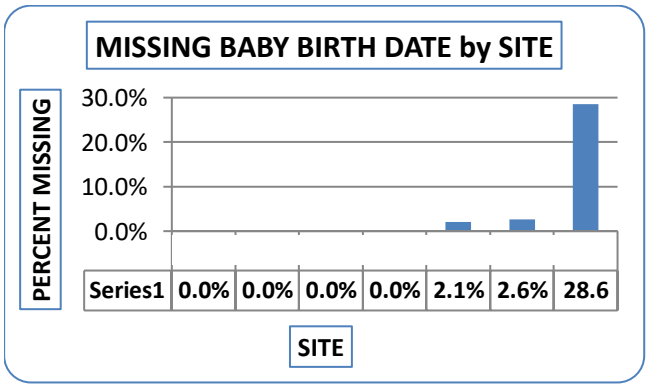
All Sites had missing 3rd Trimester HbA1c (4.1-100%) & four Sites had missing T1DM Treatment data (3.1-100%).





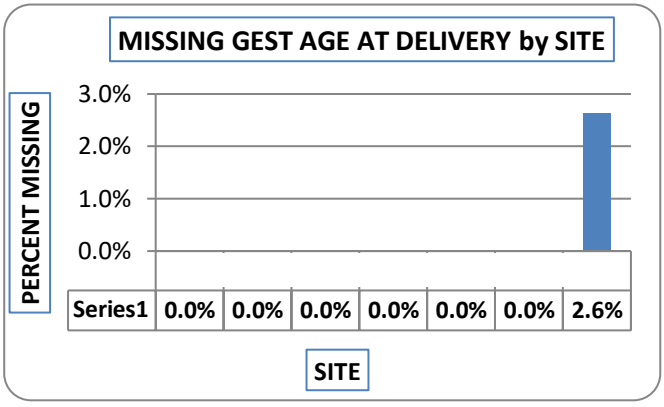
Three Sites had missing Delivery Method (2.6-100%) and three Sites had missing Baby Date of Birth (2.1-28.6%).

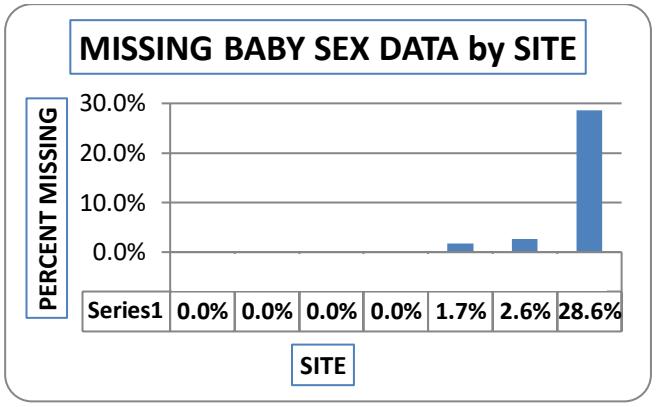




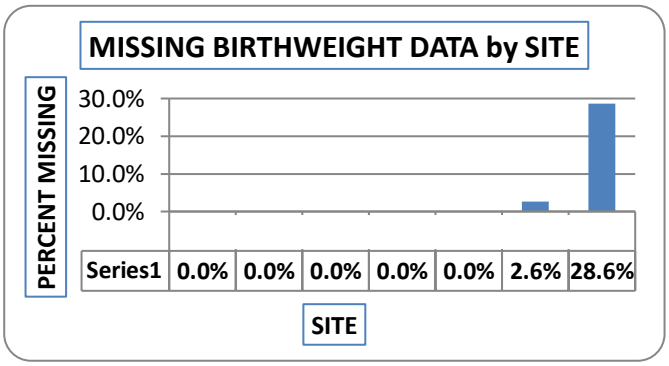
Type 1 Diabetes

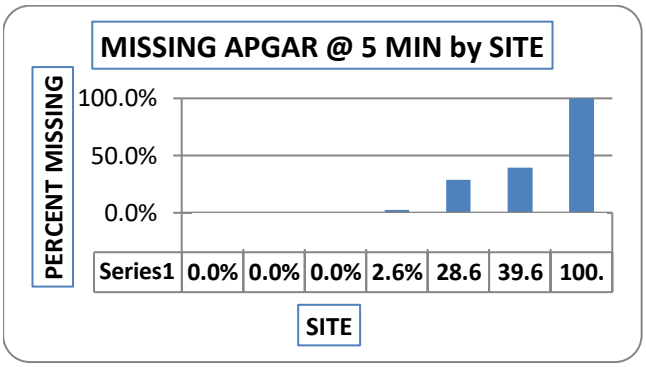
Only one Site had missing Gest Age at Delivery (2.6%) and three Sites had missing Baby Sex data (1.7-28.6%).



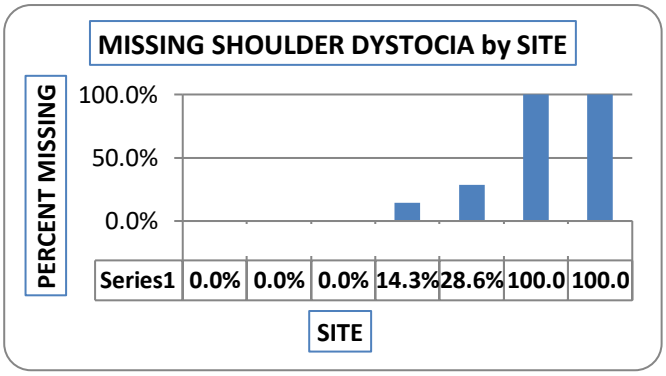


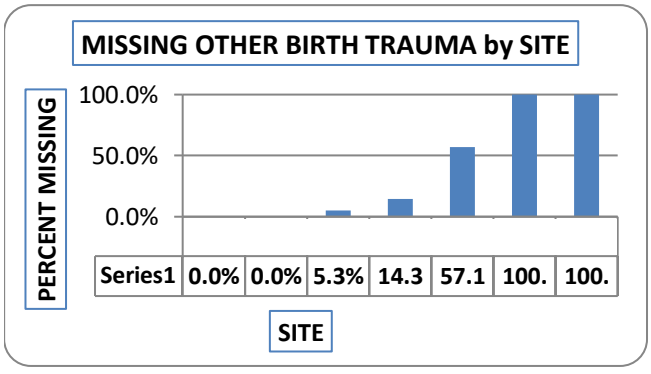
Two Sites had missing Birthweight data (2.6-28.6%) and four Sites had missing Apgar at 5 Minutes data (2.6-100%).



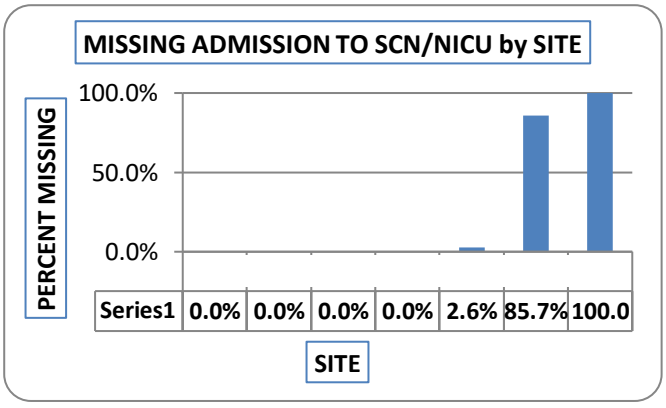


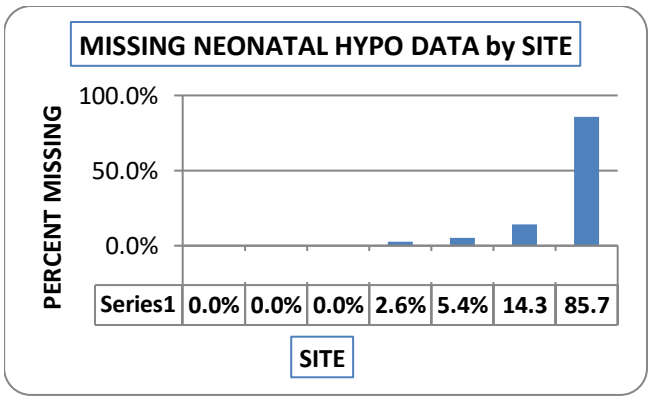
Four Sites had missing Shoulder Dystocia (14.3-100%) and five Sites had missing Other Birth Trauma (5.3-100%).





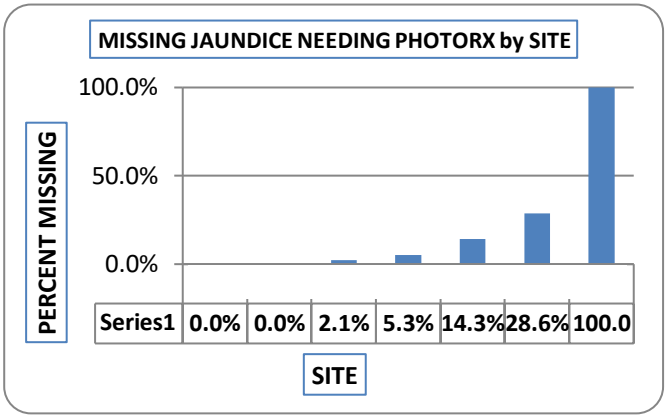
Three Sites had missing SCN/NICU Admission (2.6-100%) and four Sites had missing Neonatal Hypo (2.6-85.7%).

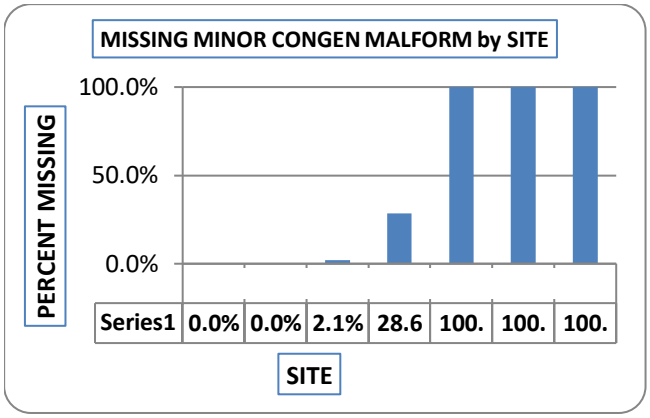




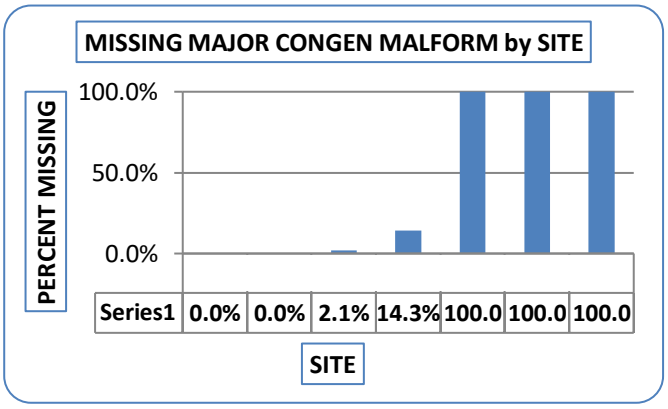
Type 1 Diabetes

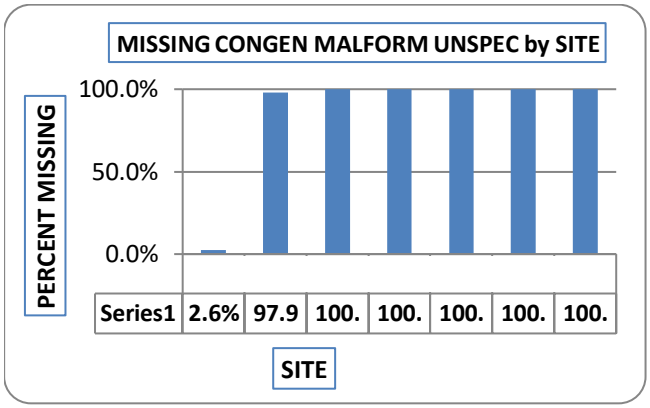
Five Sites had missing Jaundice-PhotoRx & five Sites had missing Minor Congenital Malformation (both 2.1-100%).



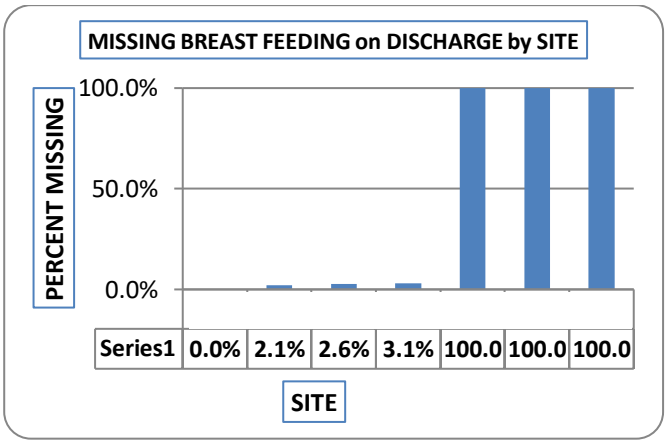


Five Sites had missing Major Congenital Malformation (2.1-100%). All Sites had missing Unspecified data (2.6-100%).





Six Sites had missing Breast Feeding on Discharge data (2.1-100%).

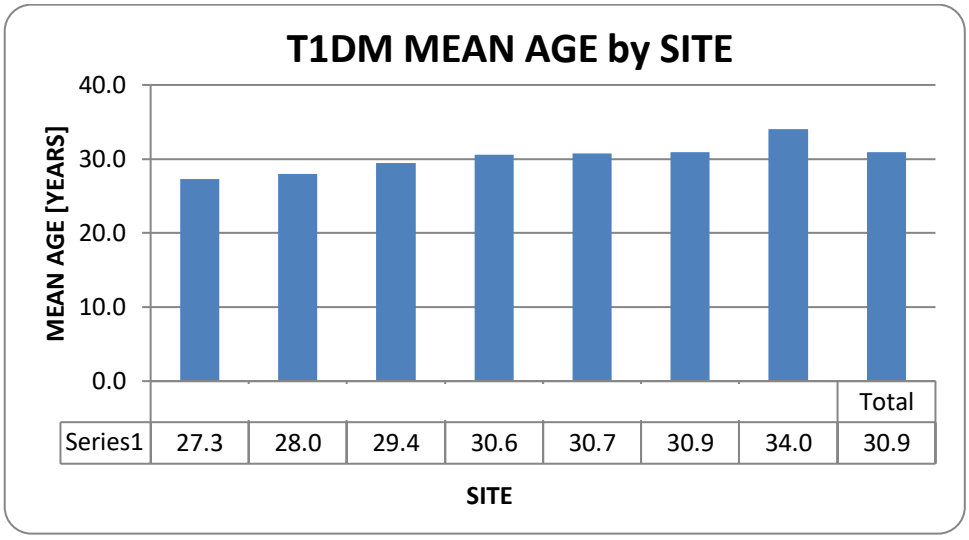


The next section reviews the benchmarked Outcome Findings in the Audit for T1DM

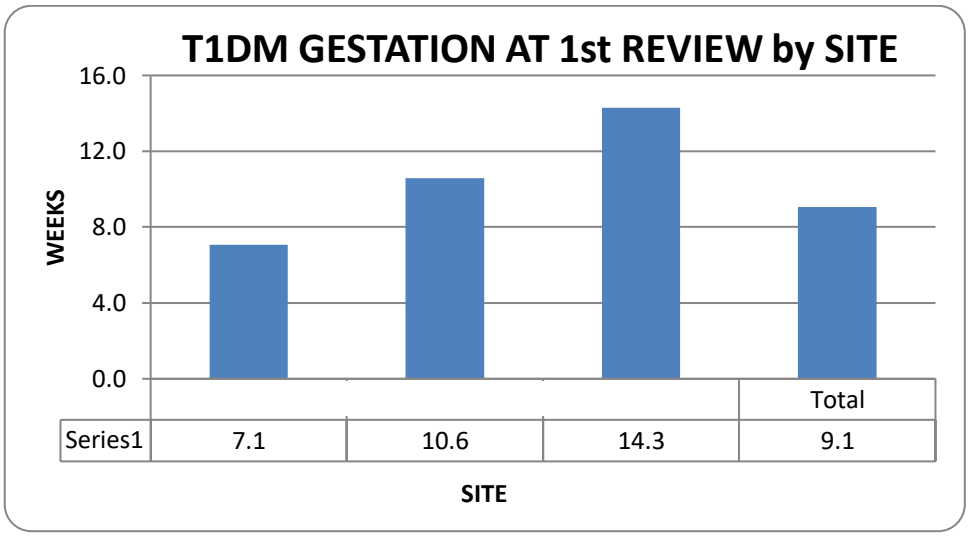
This section reviews the benchmarked Outcome Findings in the Audit for T1DM

Type 1 Diabetes

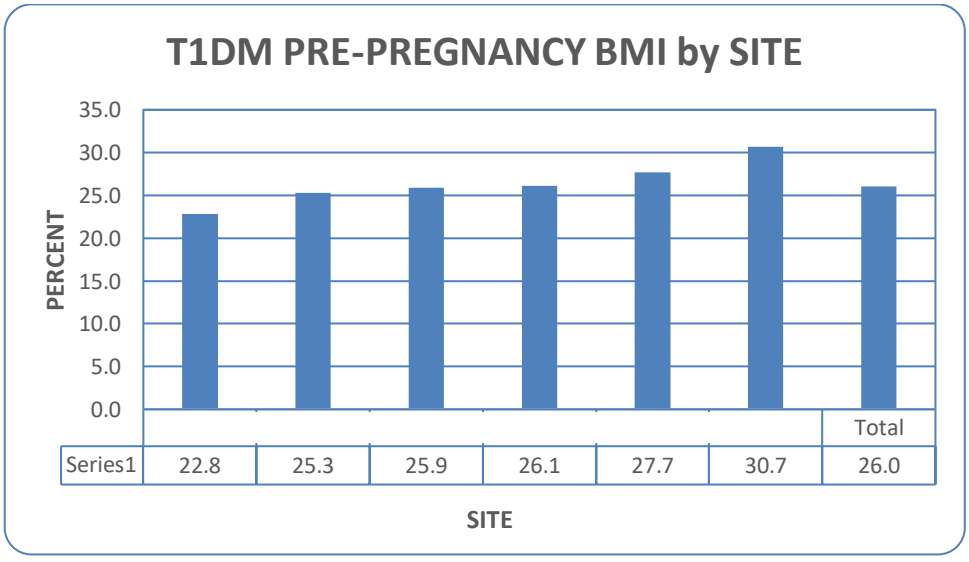
The overall mean (± SD) Age of 433/435 T1DM pregnant women was 30.9 years ± 5.3 years (overall range 17.0-45.0). The inter-site mean age variation was 27.3 ± 3.5 to 34.0 ± 3.4 years across the eight Sites.



The mean (± SD) weeks gestation was available from three Sites only and was 9.1 ± 5.3 (overall range 3.0-27.0). The inter-site mean weeks gestation variation was 7.1 ± 3.4 to 14.3 ± 3.9 weeks across the three Sites that provided data.

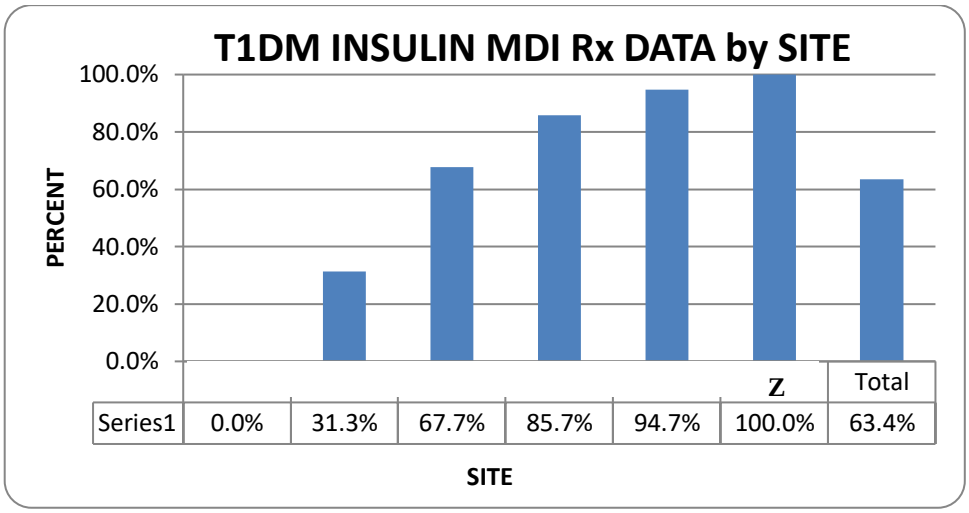


Pre-Pregnancy BMI in T1DM could be calculated for 94.3% of 6/7 Sites & was overall 26.0 (inter-Site range 22.8-30.7).

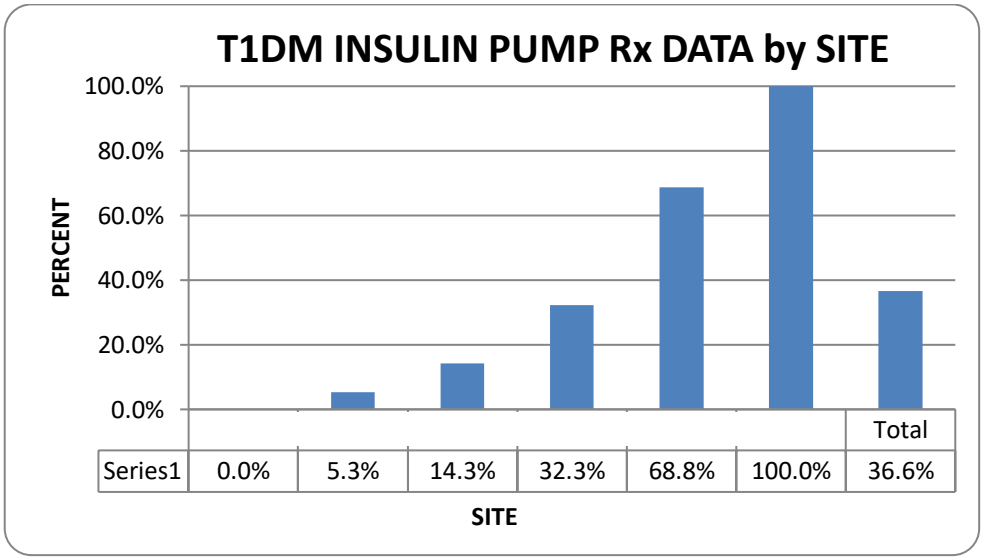


Type 1 Diabetes

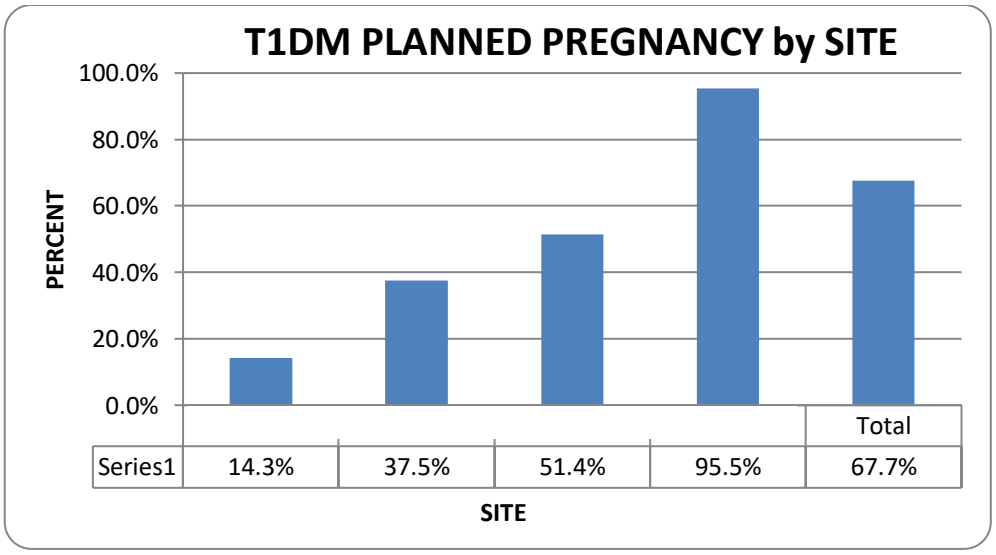
Type 1 Insulin MDI Therapy in Pregnancy varied between 6/7 Sites that provided data with an overall mean of 63.4%. The inter-site mean Insulin MDI percent variation was 0 – 100 %. [0% n=0/3]



Type 1 Insulin Pump Therapy in Pregnancy varied between 6/7 Sites that provided data with an overall mean of 36.6% The inter-site mean Insulin MDI percent variation was 0 – 100 %. [100% n=3/3]

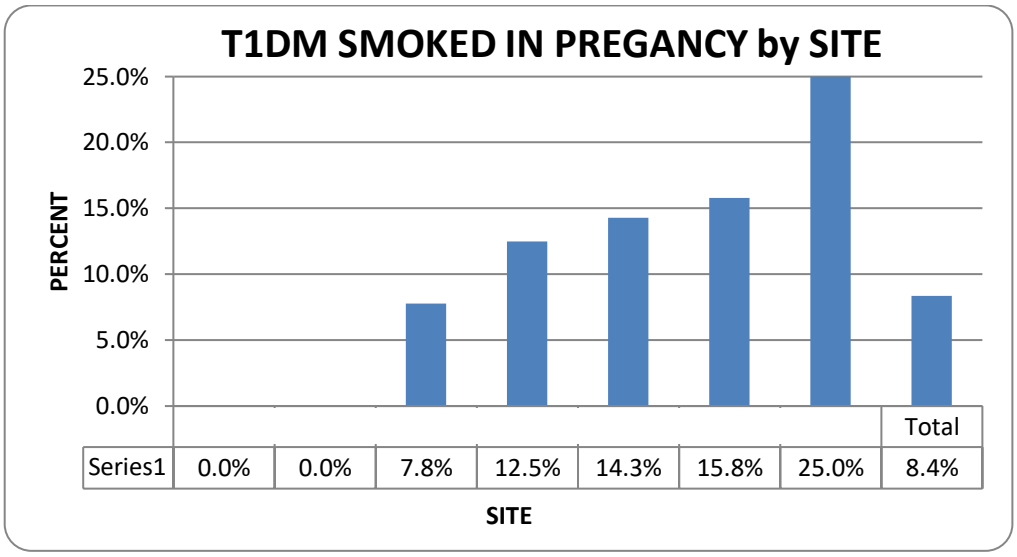


Pregnancy Planning was reported by 4/7 Sites with an overall rate of 67.7% & an inter-site percent variation of 14.3-95.5%.



Type 1 Diabetes

T1DM and Smoking in Pregnancy data were reported by all Sites (mean 8.4% inter-Site range 0-25.0% [n=2/8]).

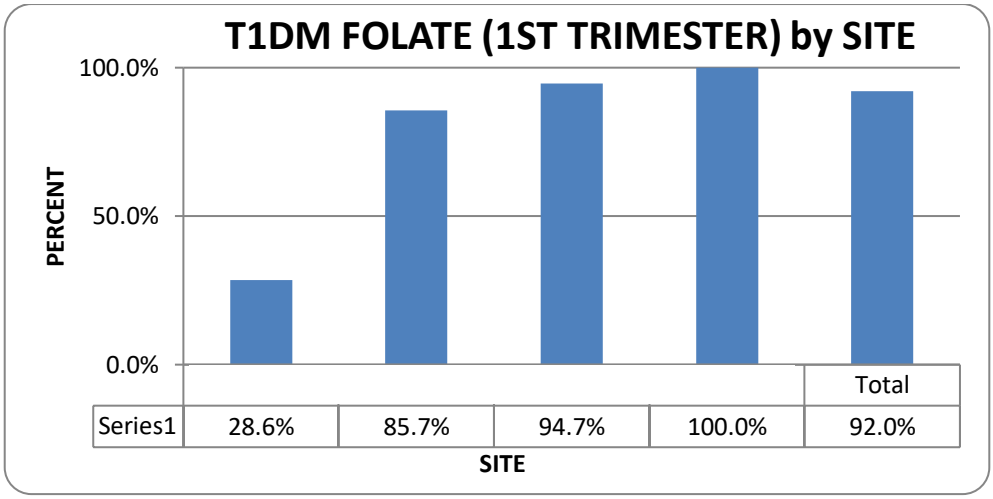


OHA use at Conception in T1DM Pregnancy, reported by 3/7 Sites was low (as expected) just 1 case

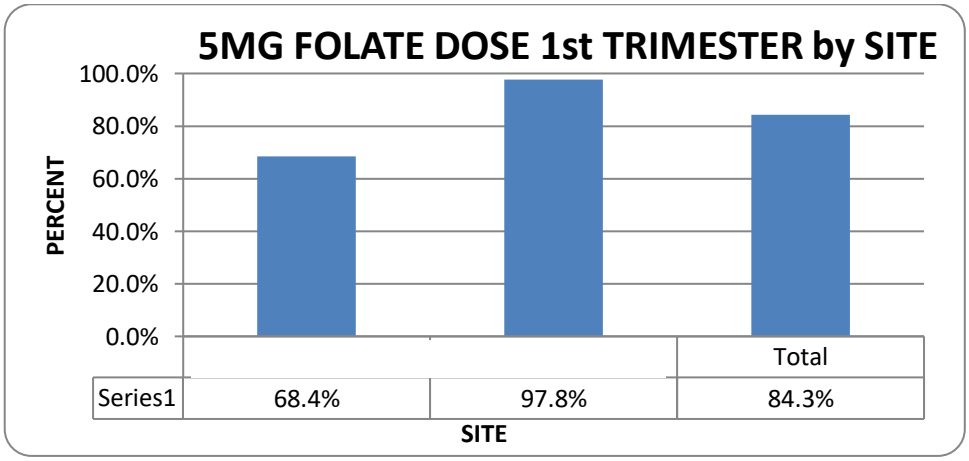
Statin use at Conception in T1DM Pregnancy, reported by 3/7 Sites showed **ZERO** cases.

ACE/ARB use at Conception in T1DM Pregnancy, reported by 3/7 Sites showed just 1 case.

Folate use First Trimester in T1DM, reported by 4/7 Sites was overall 92.0% (inter-Site range 28.6-100%) [n=2/7][n=48/48].

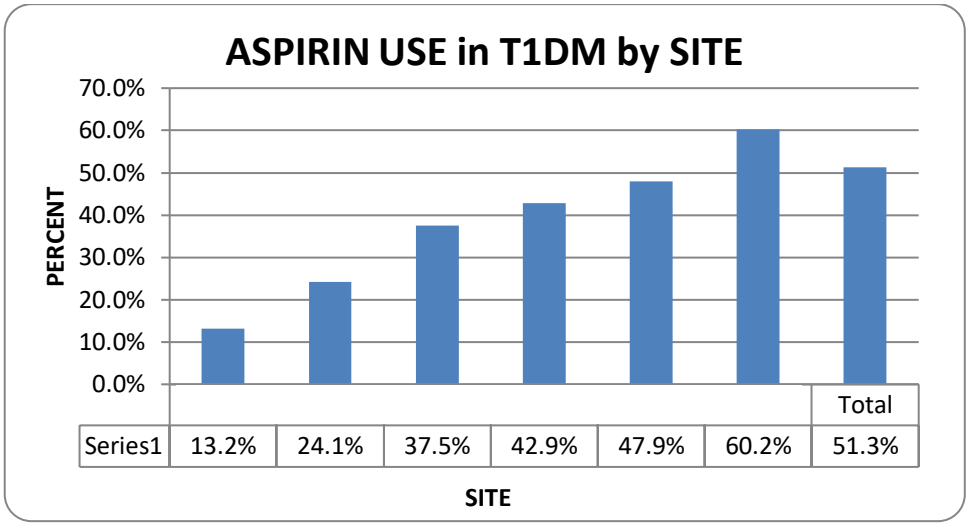


5 mg Folate Dose First Trimester in T1DM reported by 2/7 Sites was overall 84.3% (inter-Site range 68.4-97.8%). An additional 10 women at one Site and 1 woman at another Site, received 0.5 mg in the 1st Trimester.

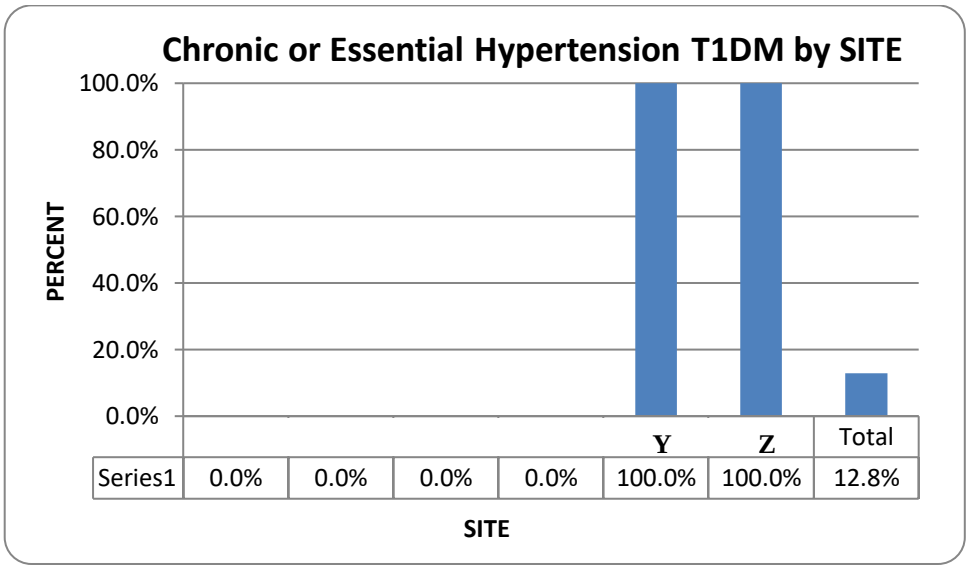


Type 1 Diabetes

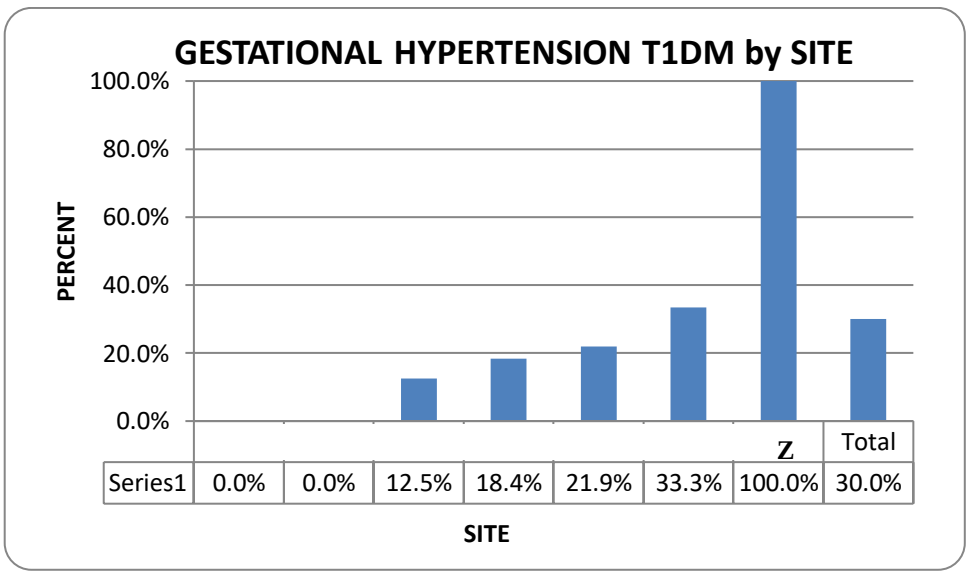
Aspirin Use in T1DM Pregnancy, reported by 6/7 Sites was overall 51.3% (inter-Site range 13.2-60.2%).



Chronic or Essential Hypertension in T1DM, reported by 6/7 Sites was overall 12.8% (inter-Site range 0-100%). [This was n=1 at one Site and n=13 at another Site].

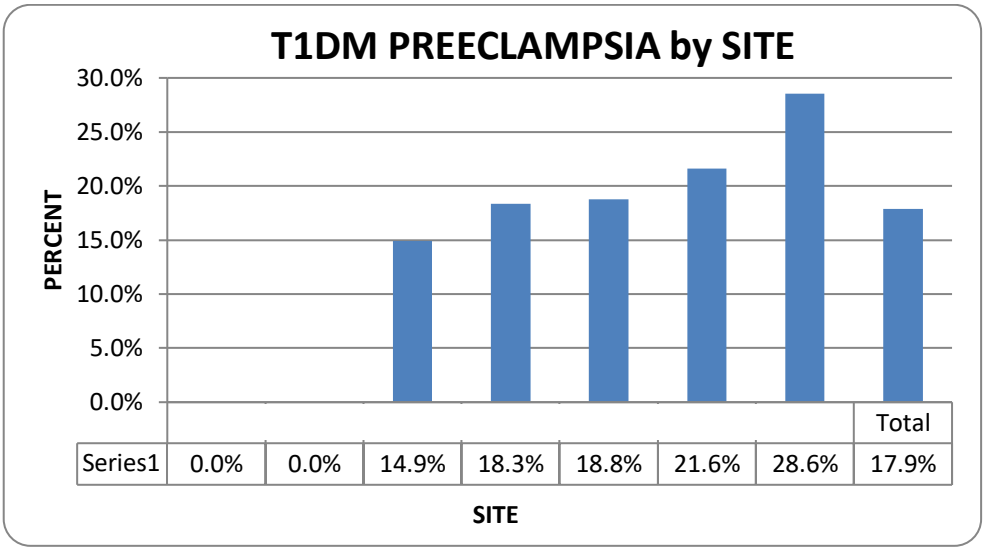


Gestational Hypertension in T1DM, reported by all Sites was overall 30.0% (inter-Site range 0-100%[n=14]).

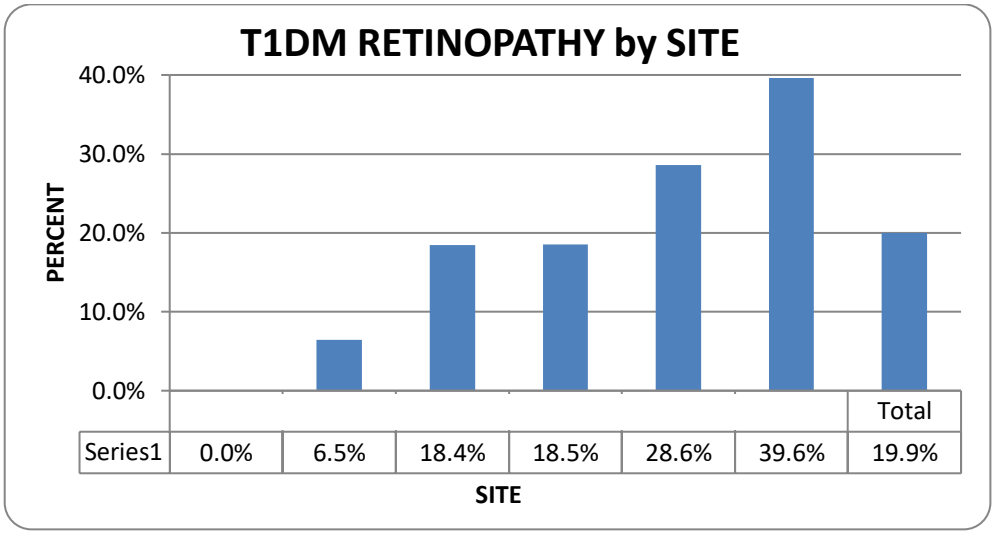


Type 1 Diabetes

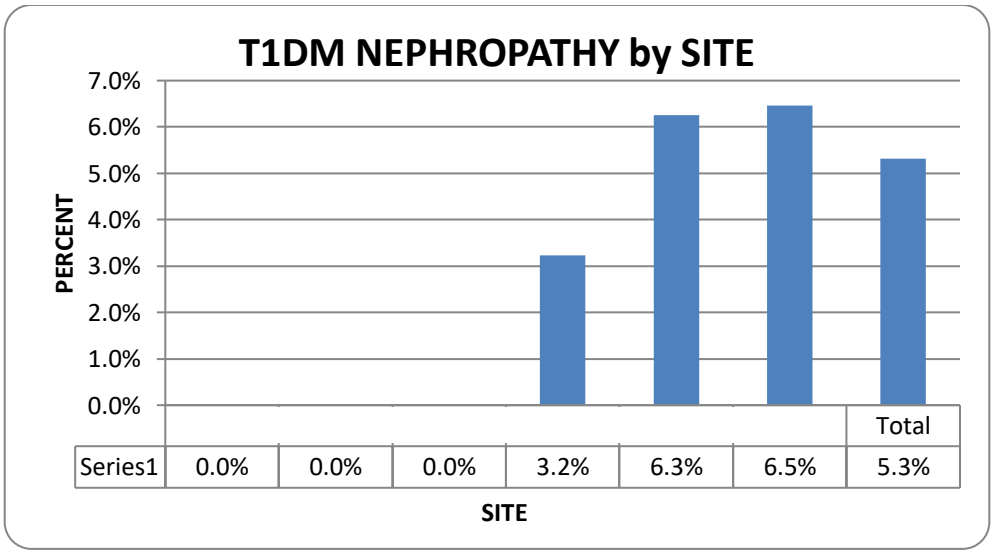
Preeclampsia in T1DM Pregnancy, reported by all Sites was overall 17.9% (inter-Site range 0-28.6%).



Retinopathy in T1DM reported by six Sites was overall 19.9% (inter-Site range 0-39.6%).



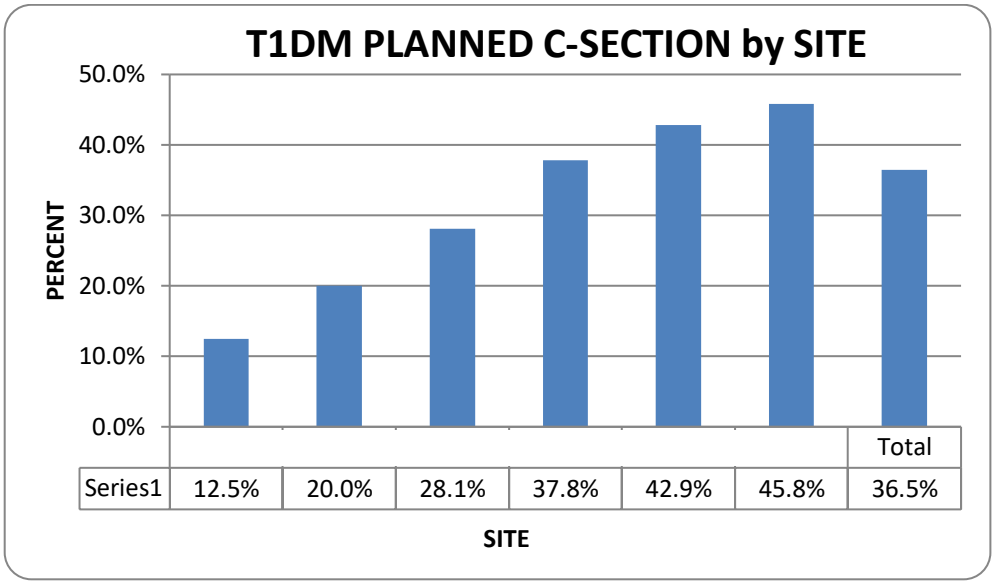
Nephropathy in T1DM reported by six Sites was overall 5.3% (inter-Site range 0-6.5%).



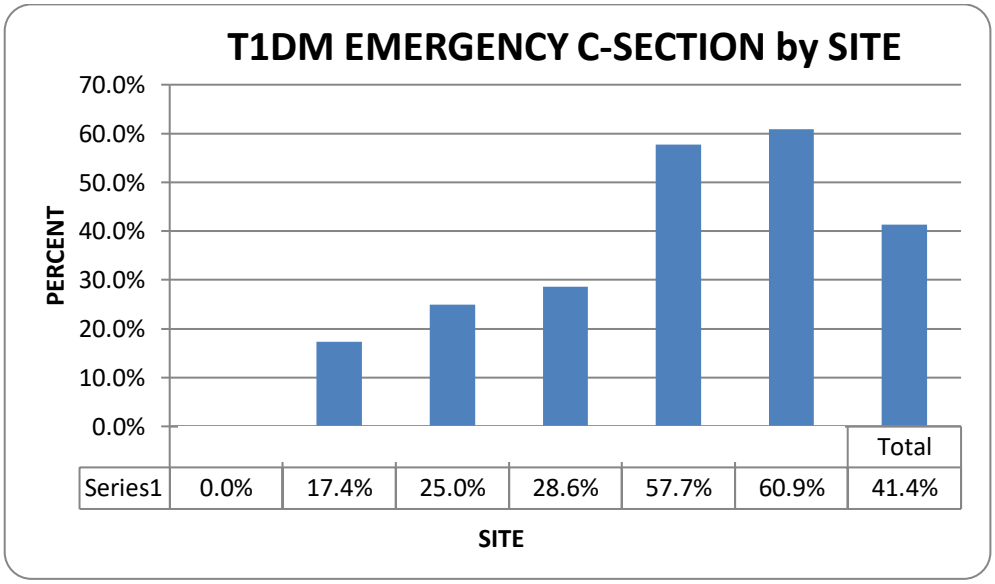
MATERNAL HYPOGLYCAEMIC EPISODESS NEEDING ASSISTANCE … *NO SITE PROVIDED ANY DATA*

Type 1 Diabetes

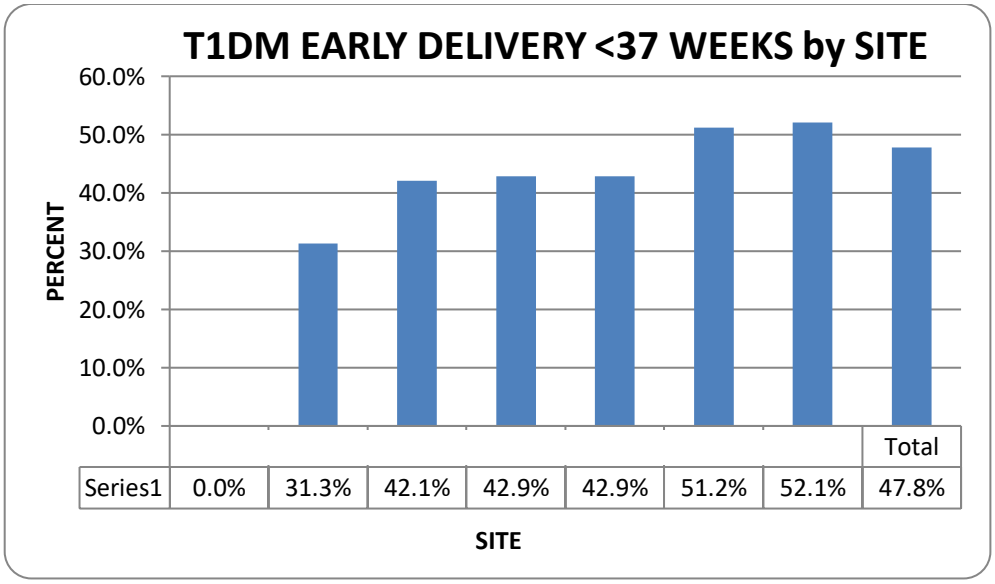
Planned Caesarean Section in T1DM reported by six Sites was overall 36.5% (inter-Site range 12.5-45.8%).



Emergency Caesarean Section in T1DM reported by six Sites was overall 41.4% (inter-Site range 0-60.9%).

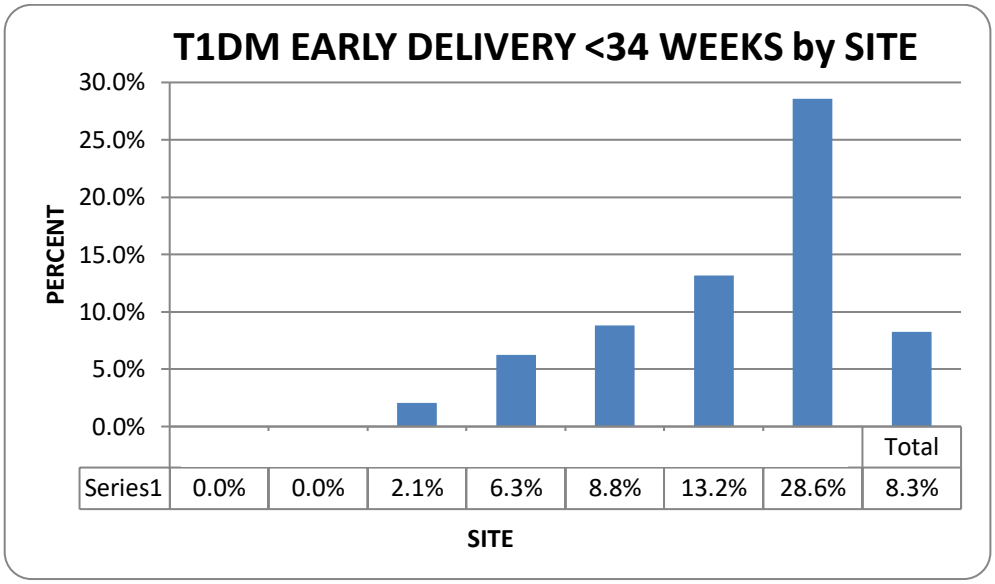


Early Delivery <37 Weeks in T1DM reported by all Sites was overall 47.8% (inter-Site range 0-52.1%). [0% n=0/8]

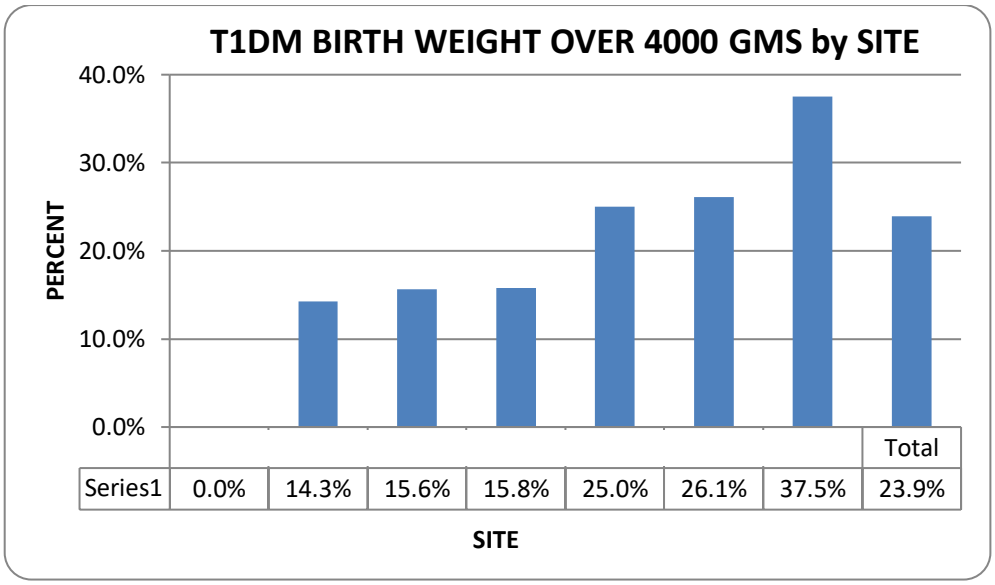


Type 1 Diabetes

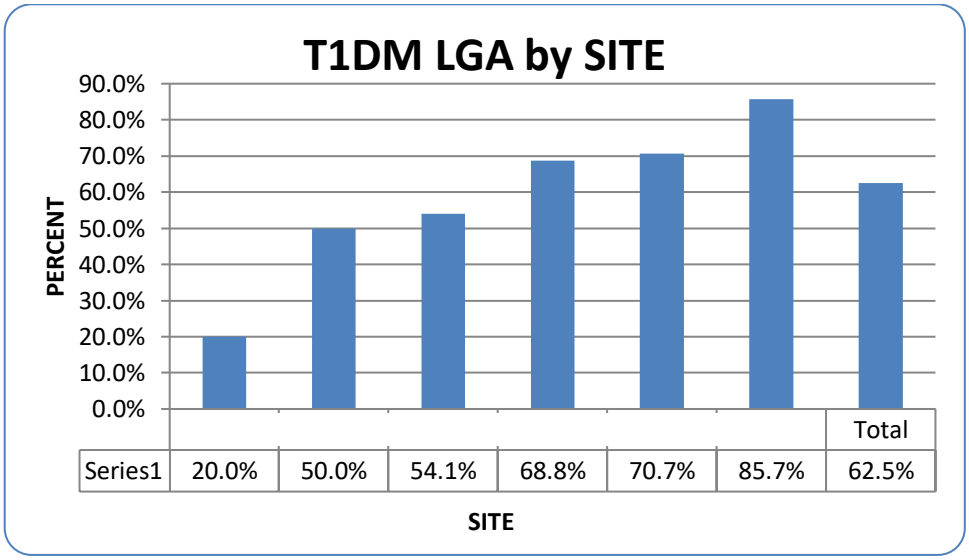
Early Delivery <34 Weeks in T1DM reported by seven Sites was overall 8.3% (inter-Site range 0-28.6%) [n=2/5].



Birth Weight >4000 Grams in T1DM reported by all Sites was overall 23.9% (inter-Site range 0-37.5%) [n=0/7].

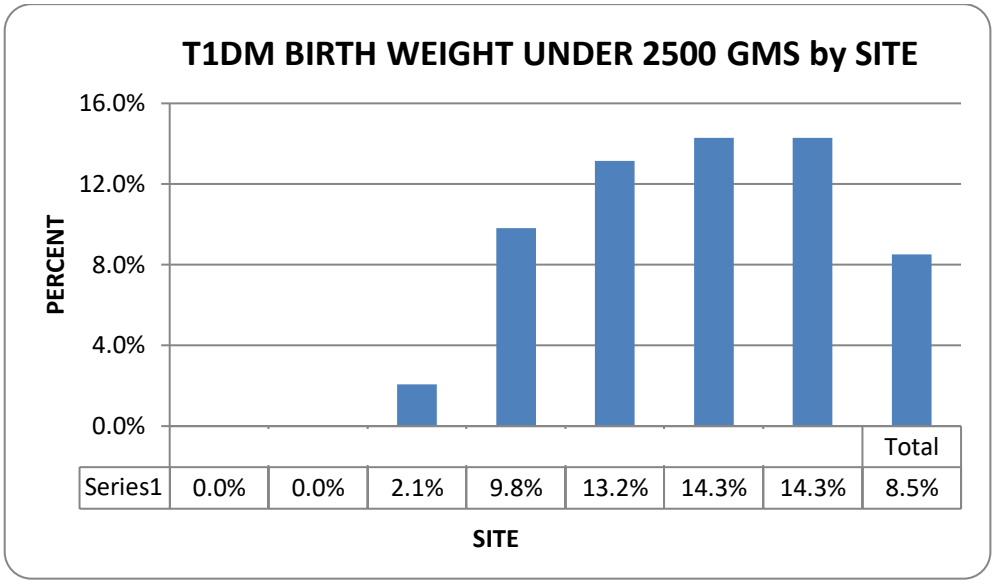


LGA in T1DM was only available for 25.7% of records and calculated from 6/7 Sites was overall 62.5%. The inter-Site range was 20.0-85.7% with small numbers at several sites – 20.0% [n=1/5], 85.7% [n=6/7].

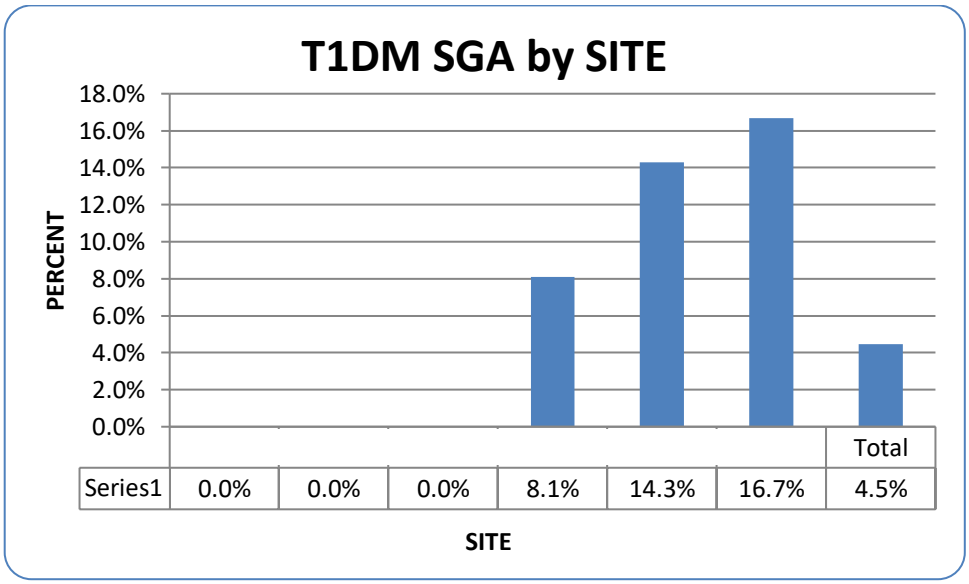


Type 1 Diabetes

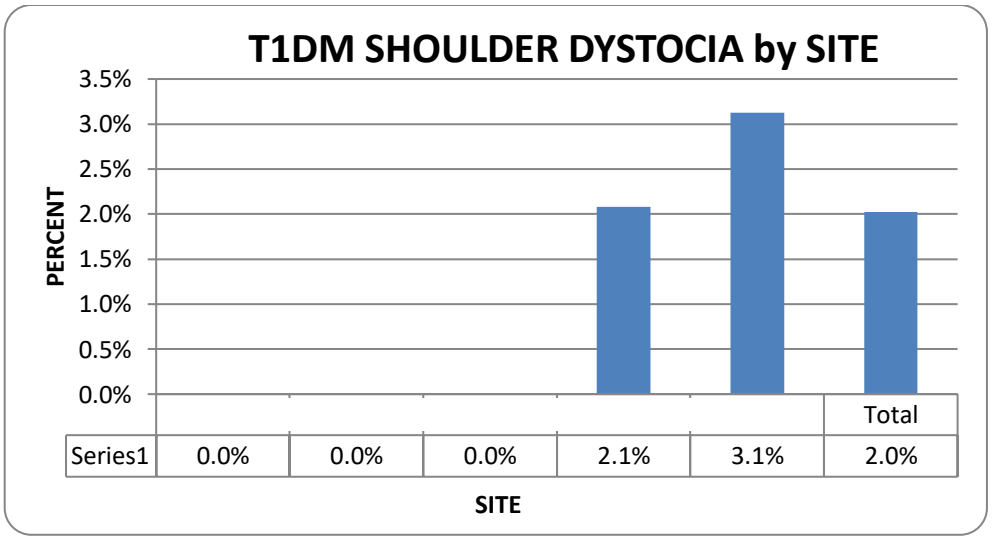
Birth Weight <2500 Grams reported by all Sites was overall 8.5% (inter-Site range 0-14.3%) [n=1/6].



SGA in T1DM was only available for 25.7% of records and calculated from 6/7 Sites was overall 4.5%. The inter-Site range was 0-16.7% with small numbers at several sites – 0.0% [n=0/5-0/41], 16.7% [n=1/6].

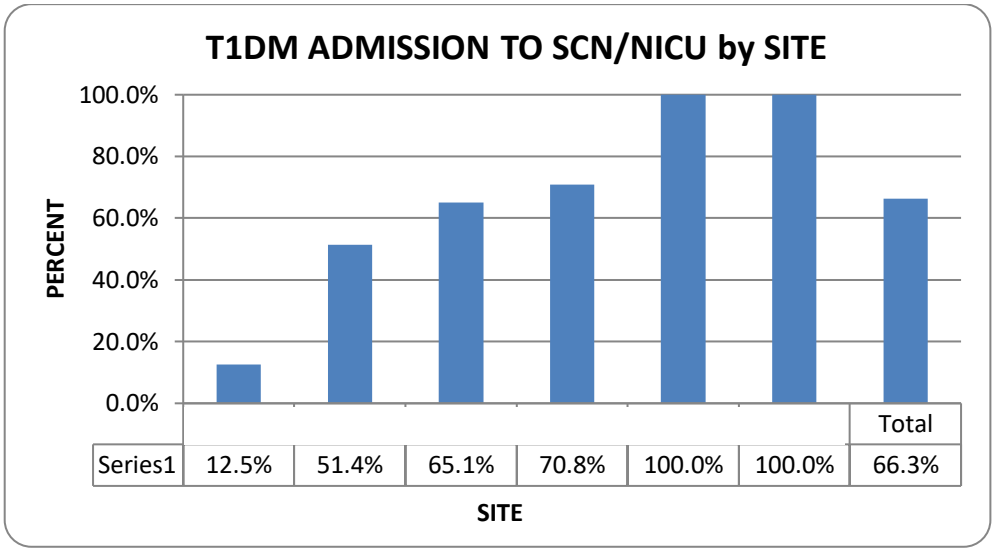


Shoulder Dystocia in T1DM reported by five Sites was overall 2.0% (inter-Site range 0-3.1%).

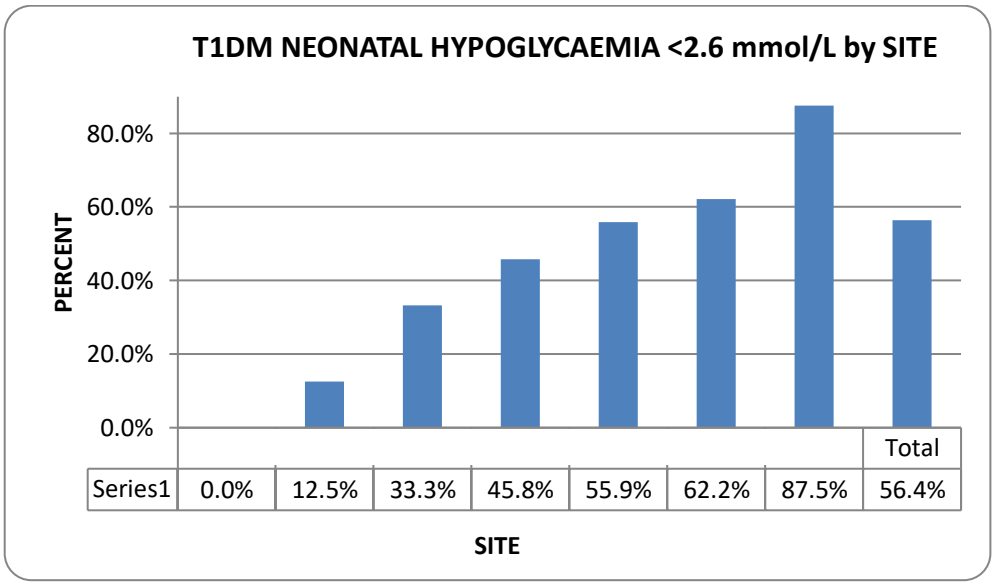


Type 1 Diabetes

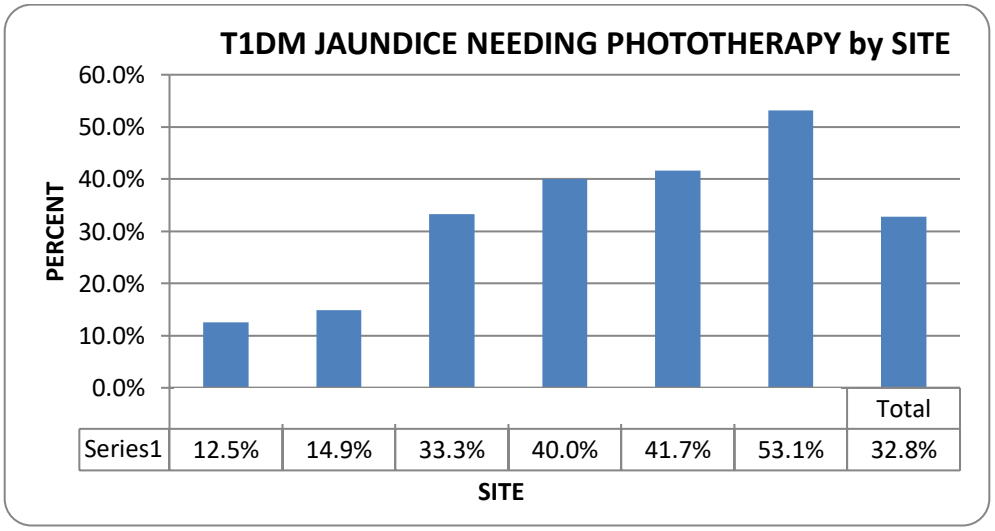
SCN/NICU Admission in T1DM reported by six Sites was overall 66.3% (inter-Site range 12.5-100%).



Neonatal Hypo <2.6 mmol/L in T1DM reported by all Sites was overall 56.4% (inter-Site range 0-87.5%) [n=0/1].

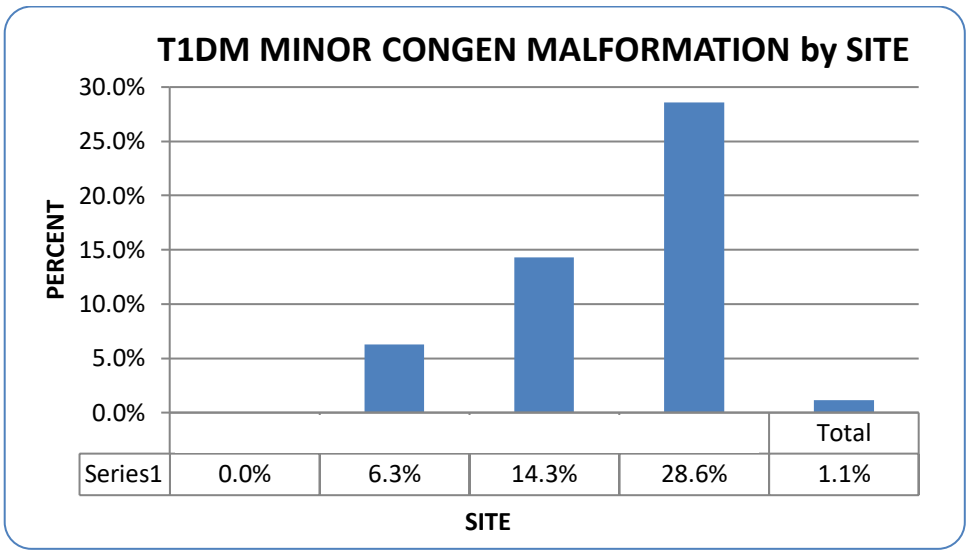


Neonatal Jaundice needing Phototherapy reported by six Sites was overall 32.8% (inter-Site range 12.5-53.1%).

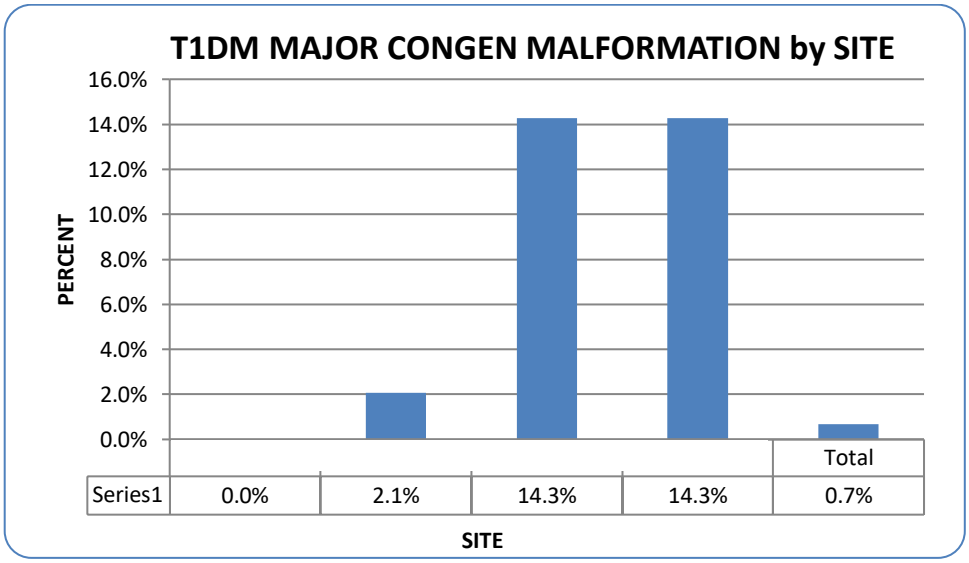


Type 1 Diabetes

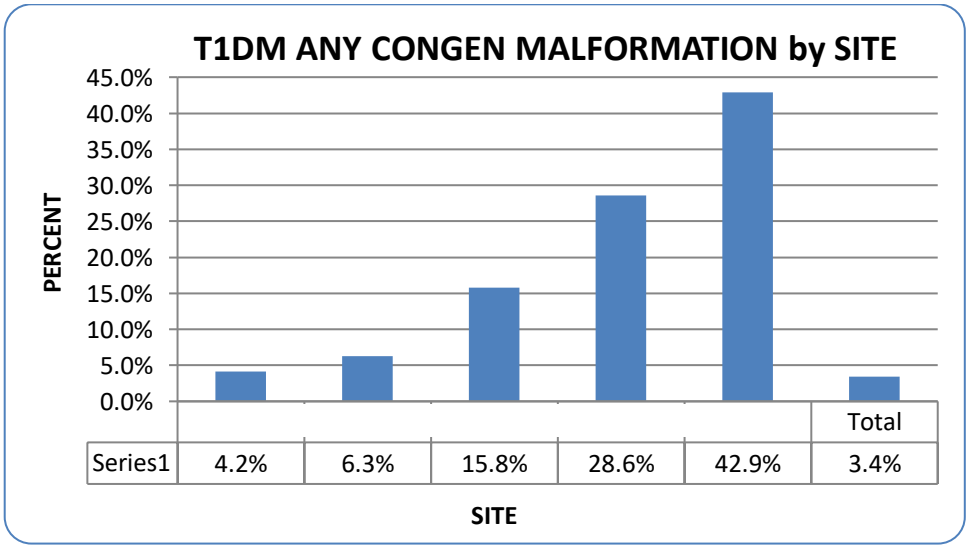
Minor Congenital Malformations in T2DM reported by four Sites was overall 1.1% (inter-Site range 0-28.6%) 0% [n=0/48] 28.6% [n=2/7].



Major Congenital Malformations in T1DM reported by four Sites was overall 0.7% (inter-Site range 0-14.3%) [n=0/32]. Additionally, One Site Reported Congenital Malformations UNSPECIFIED – hence the Composite Analysis below.

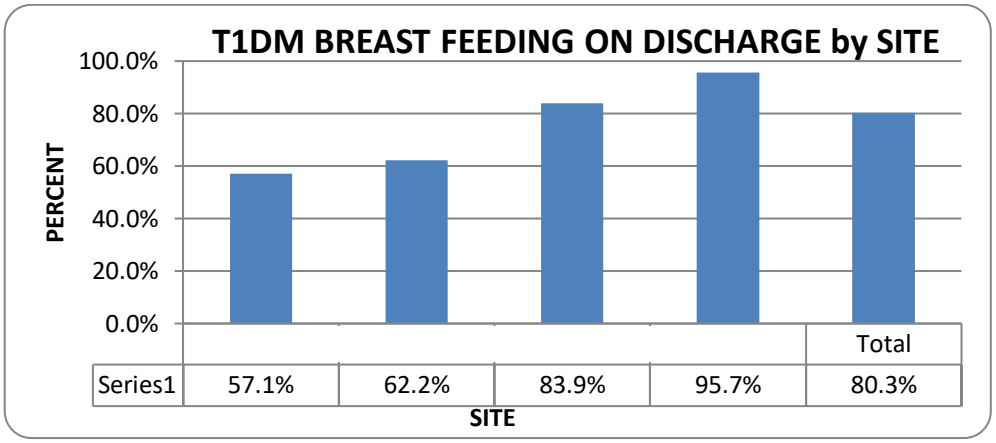


ANY Congenital Malformatios in T1DM reported by five Sites was overall 3.4% (inter-Site range 4.2-42.9%)[n=3/7].

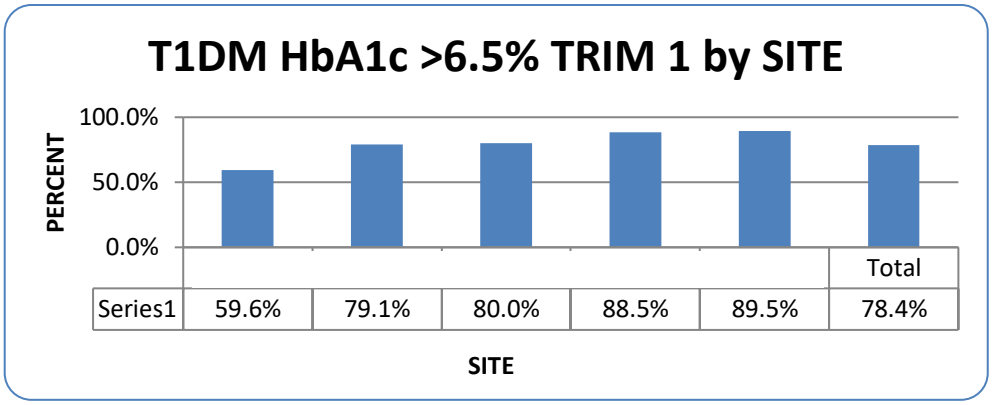


Type 1 Diabetes

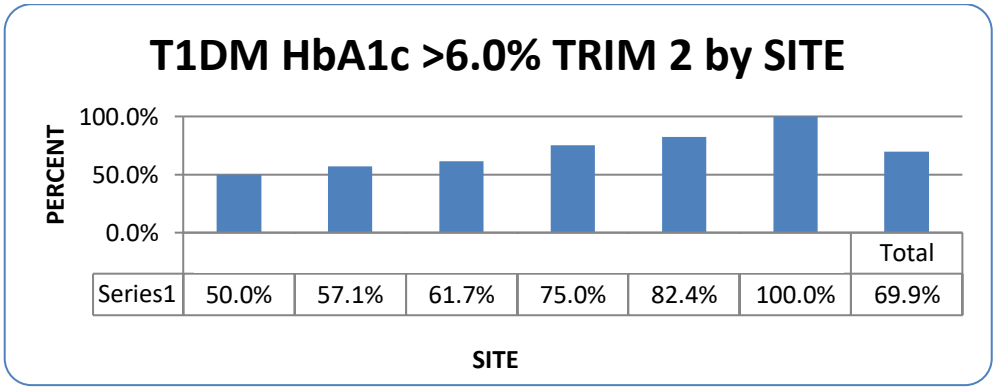
Breast Feeding on Discharge in T1DM reported by four Sites was overall 80.3% (inter-Site range 57.1-95.7%).



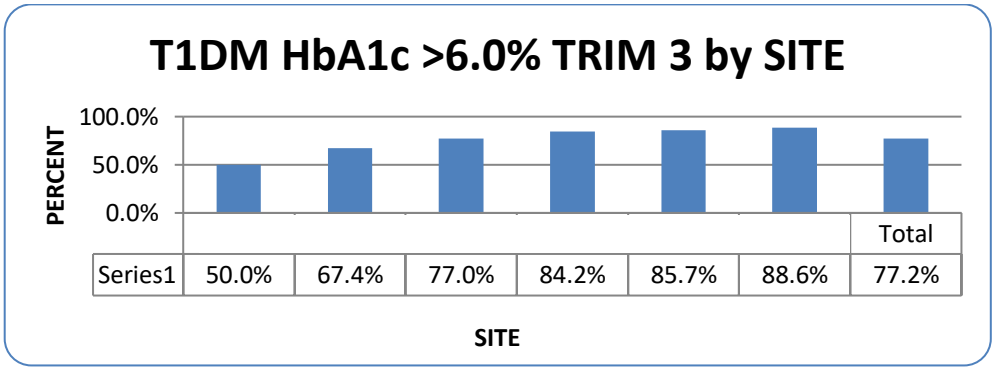
HbA1c % ABOVE TARGET in T1DM 1st Trimester reported by five Sites was overall 78.4%.
The inter-Site range 59.6-89.5%.



HbA1c % ABOVE TARGET in T1DM 2nd Trimester reported by six Sites was overall 69.9%.
The inter-Site range 50.0-100%.

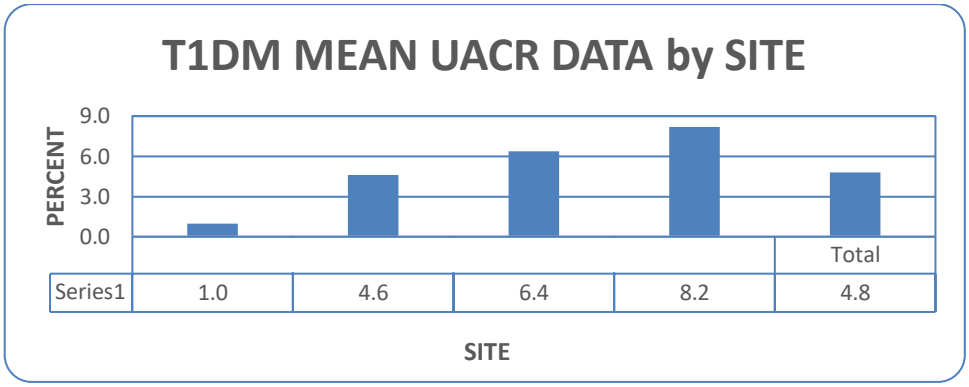


HbA1c % ABOVE TARGET in T1DM 3rd Trimester reported by six Sites was overall 77.2%.
The inter-Site range 50.0-88.6%.



Type 1 Diabetes

Mean Urine ACR Values T1DM reported by four Sites was overall 4.8 (inter-Site Range 1.0-8.2).

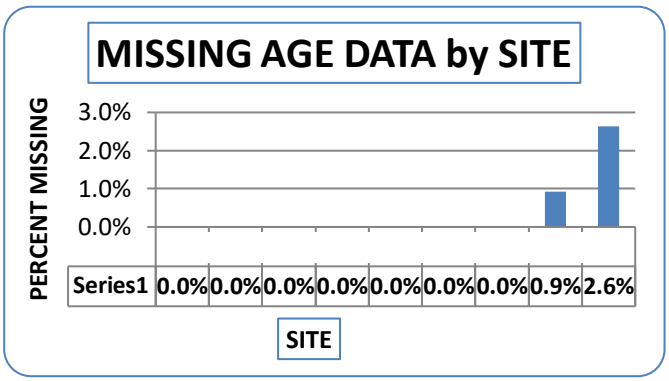


This section reviews the benchmarked PROCESS Outcomes in the Audit for T2DM

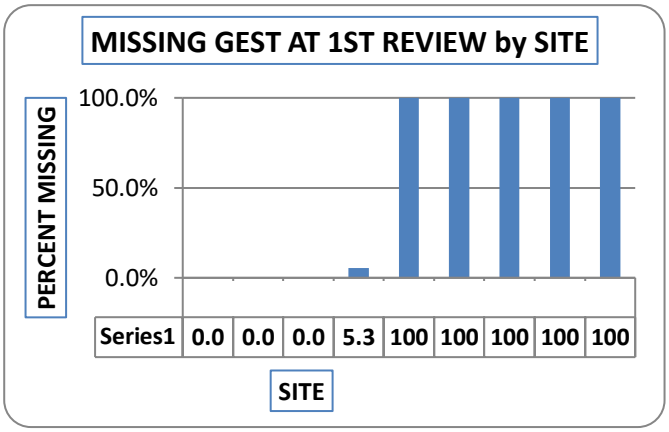
Type 2 Diabetes

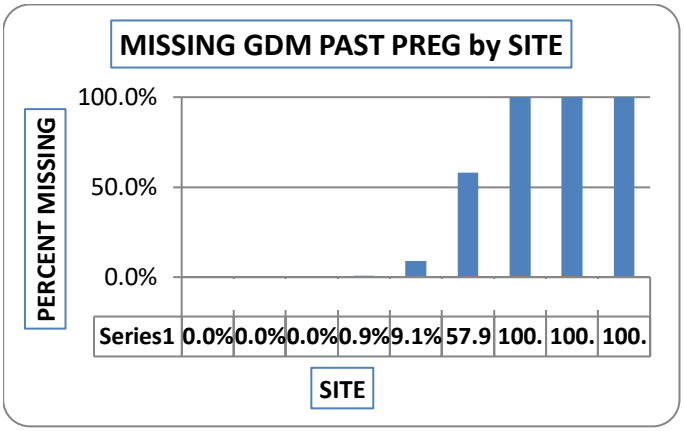
Nine Sites provided Data on 1013 women with Type 2 Diabetes and Pregnancy

Only two Sites had missing Age data (0.9-2.6%), while four had missing Ethnic Group data (4.5-65.8%).

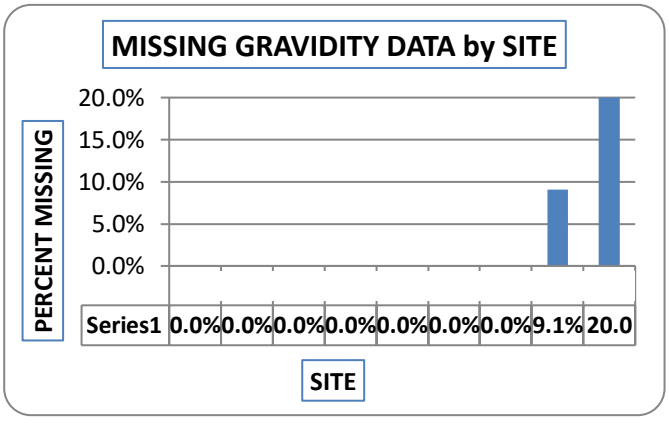


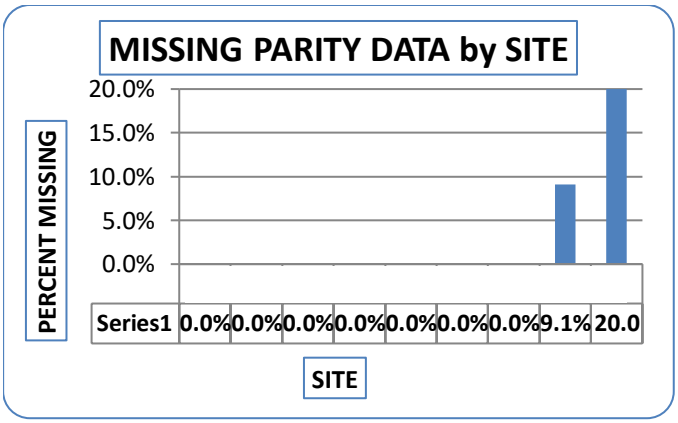
Six Sites had missing Gestation at 1st Review (5.3-100%) and six Sites had missing Previous GDM (0.9-100%).



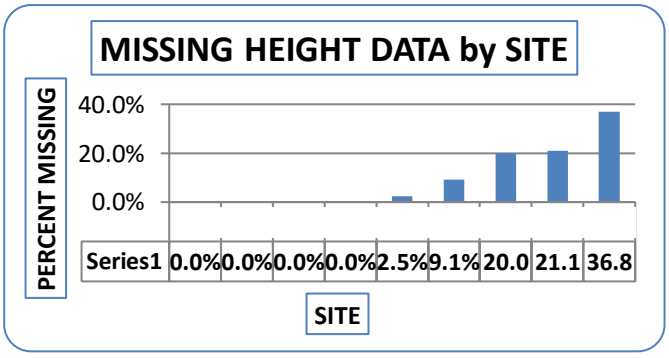


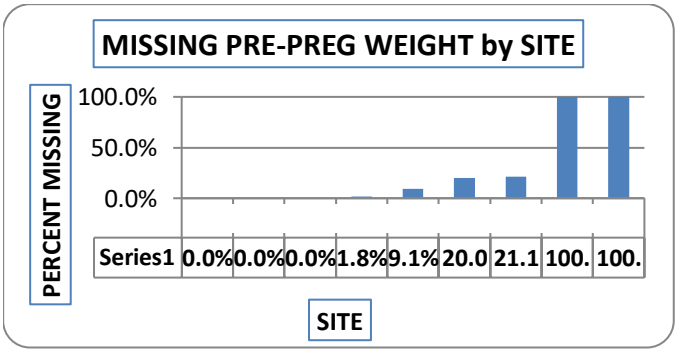
Only two Sites had missing Gravida and Parity data (both 9.1-20.0%).





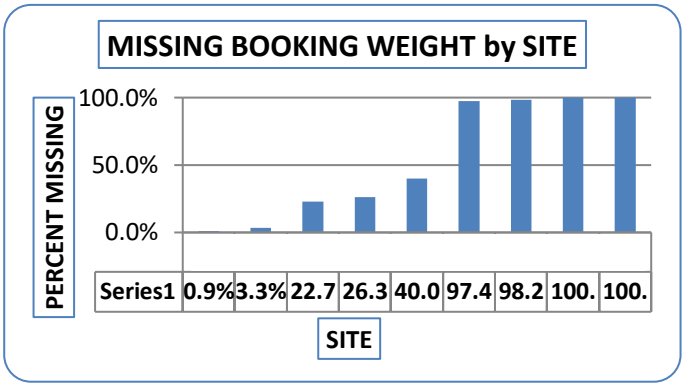
Five Sites had missing Height data (2.5-36.8%) & six Sites had missing Pre-pregnancy Weight data (1.8-100%).

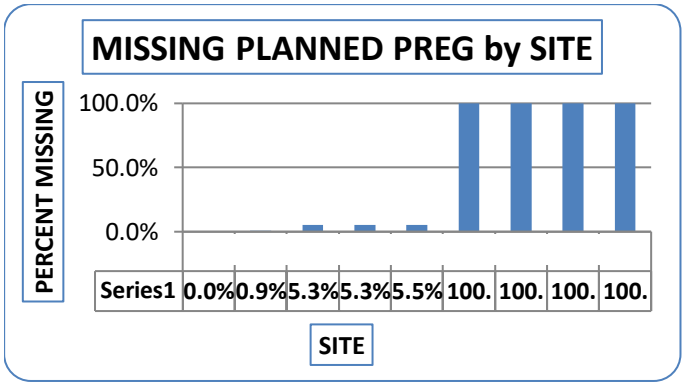




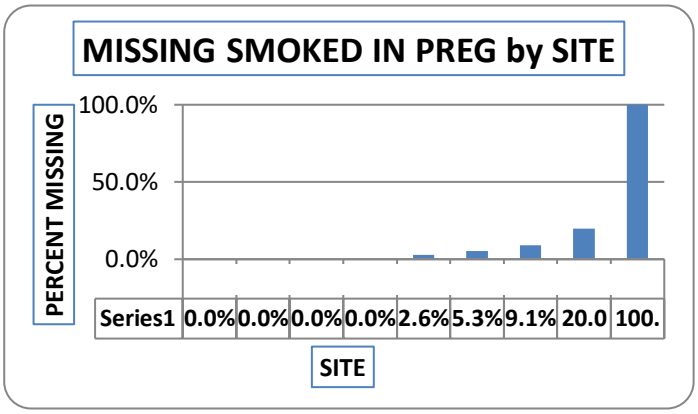
Type 2 Diabetes

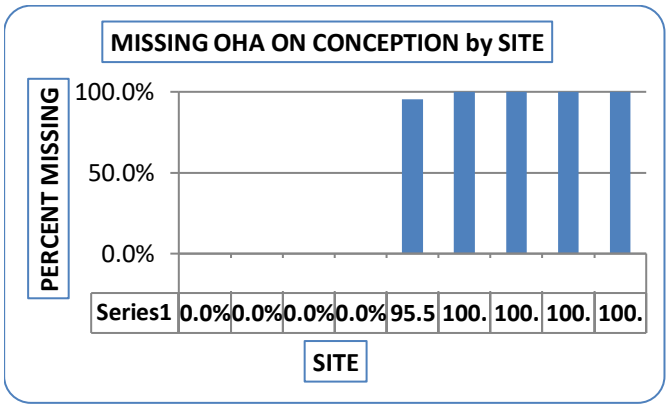
All Sites had missing Booking Weight (0.9-100%) and eight Sites had missing Planned Pregnancy data (0.9-100%).



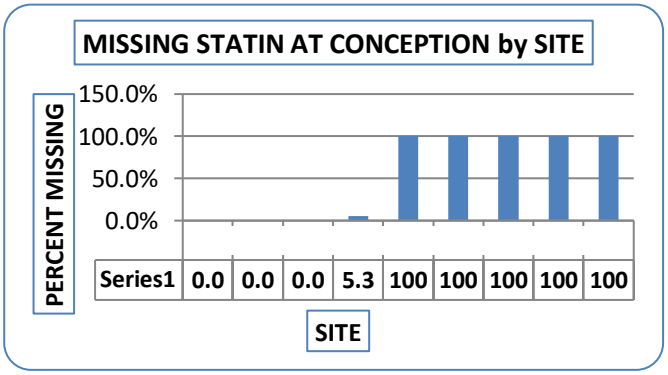


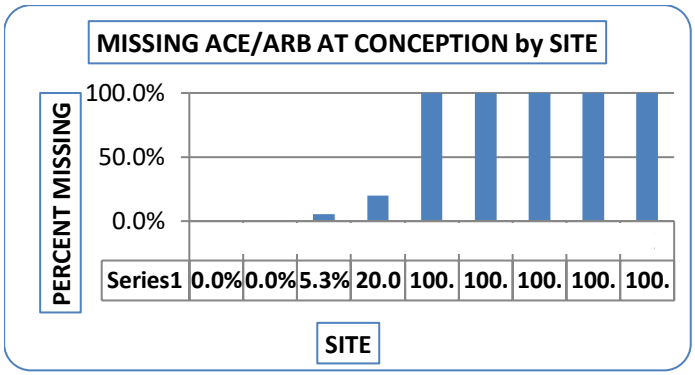
Five Sites had missing Smoked in Pregnancy (2.6-100%) & five Sites had missing OHA at Conception (95.5-100%).



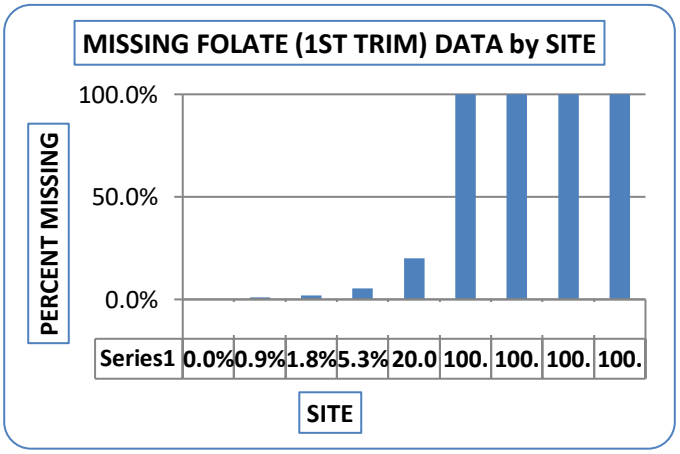


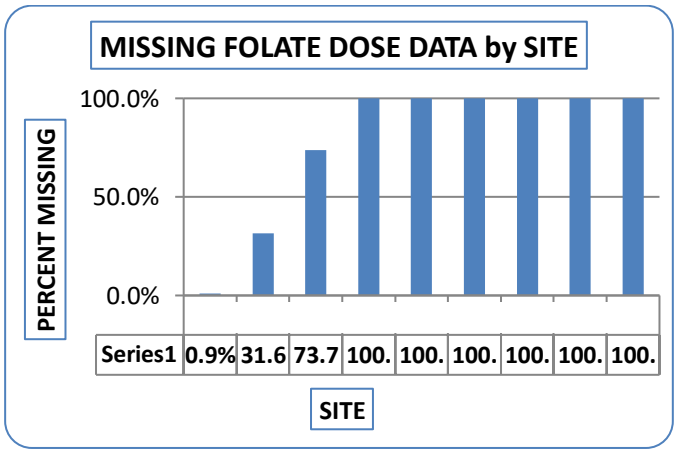
Six Sites had missing Statin at Conception (5.3-100%) & 7 Sites had missing ACE/ARB at Conception (5.3-100%).





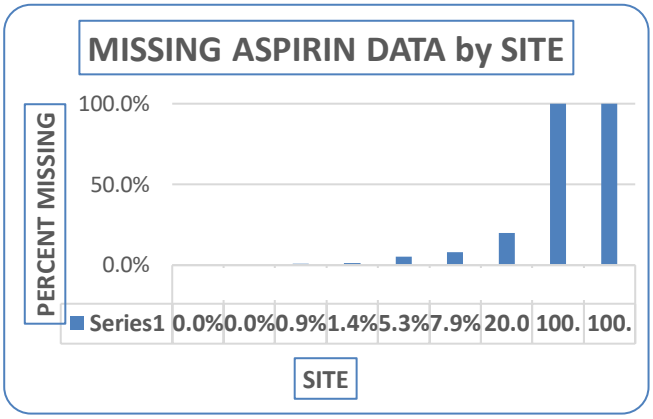
Eight Sites had missing Folate 1st Trimester data (0.9-100%) and all Sites had missing Folate Dose data (0.9-100%).

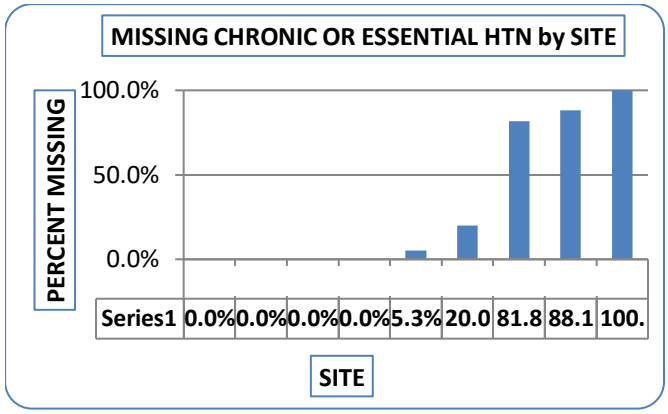




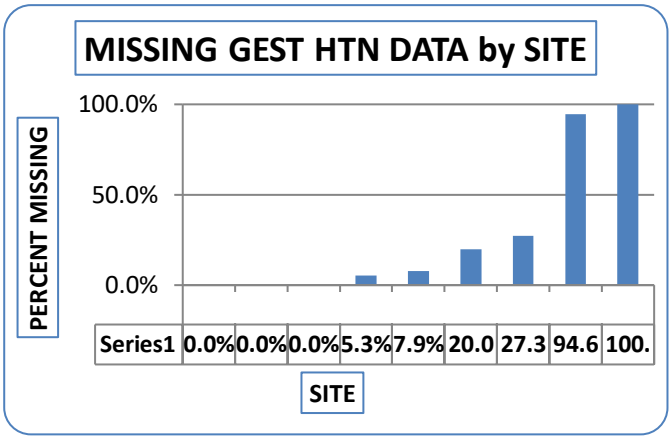
Type 2 Diabetes

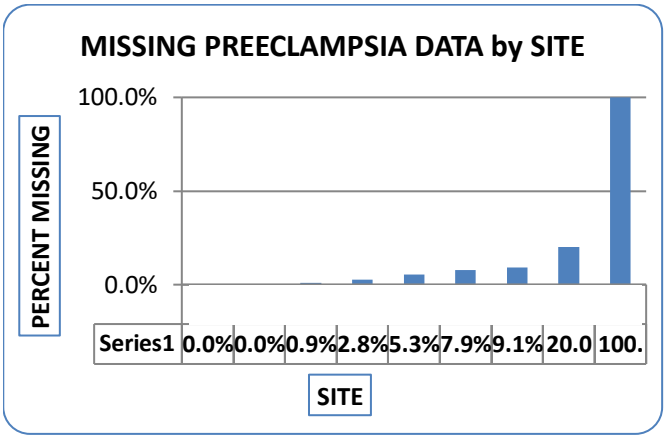
Seven Sites had missing Aspirin data (0.9-100%) & five Sites had missing Chronic/Essential Htn data (5.3-100%)



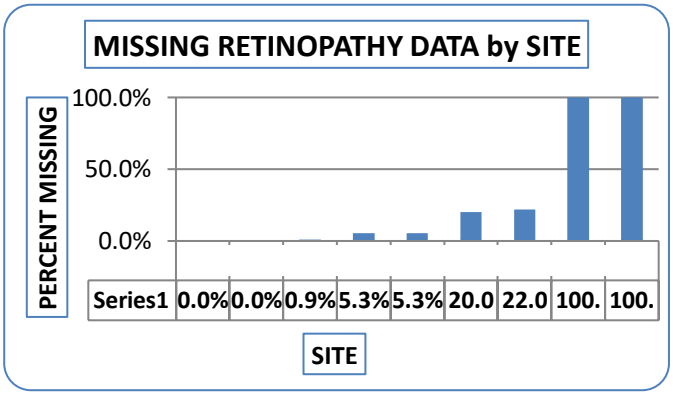


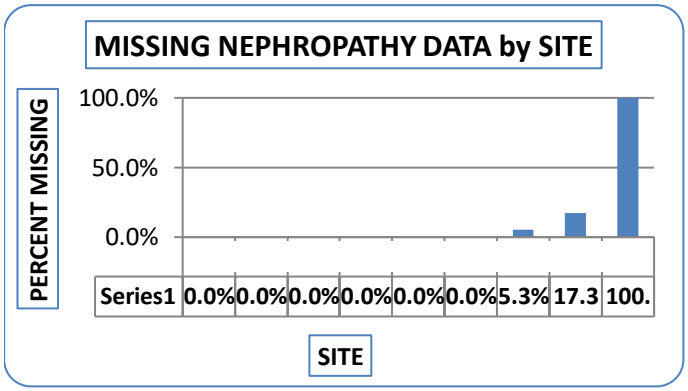
Six Sites had missing Gestational Htn data (5.3-100%) and seven Sites had missing Preeclampsia data (0.9-100%).



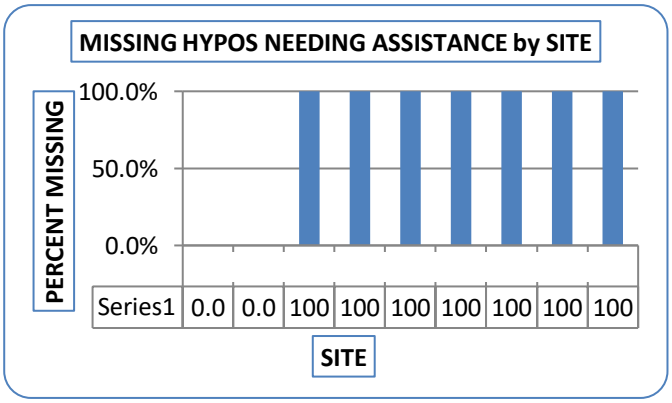


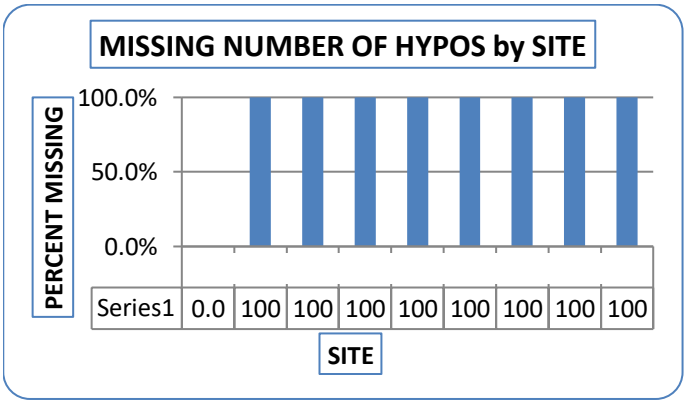
Seven Sites had missing Retinopathy (0.9-100%) and three Sites had missing Nephropathy data (5.3-100%).





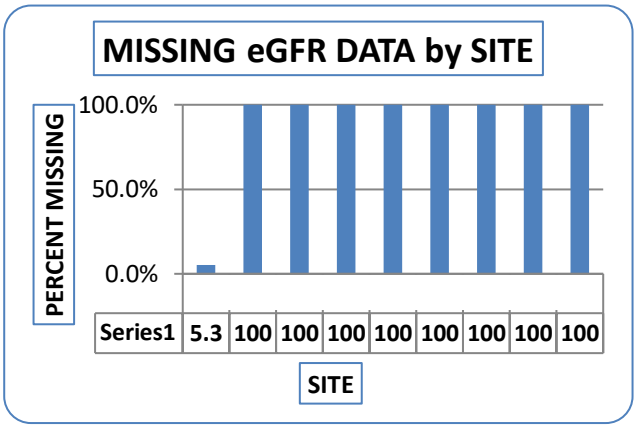
Seven Sites had missing Significant Hypos data (100%) & eight Sites had NO Hypo Number data (100% missing).

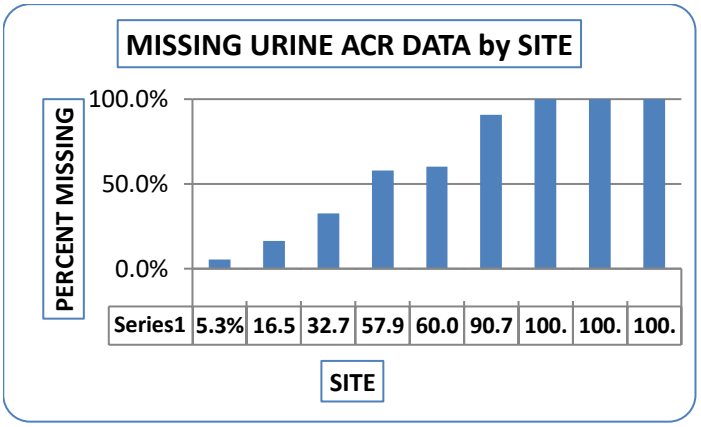




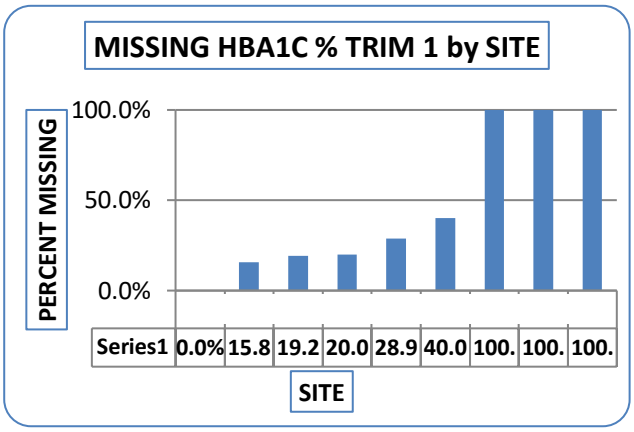
Type 2 Diabetes

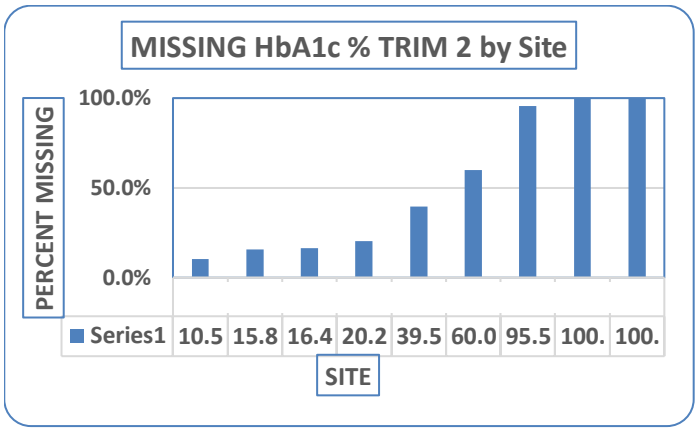
All Sites had missing eGFR data (5.3-100%) [EIGHT 100%] and all Sites had missing Urine ACR data (5.3-100%).



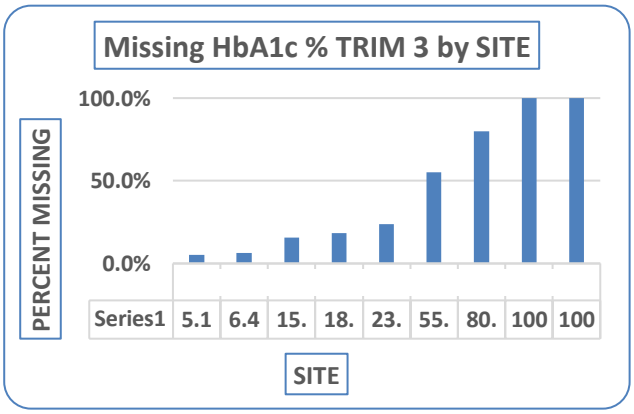


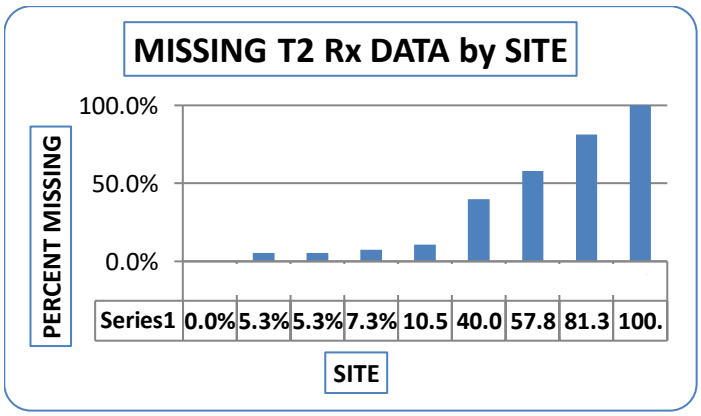
Eight Sites had missing 1st Trimester HbA1c (15.8-100%). All Sites had missing 2nd Trimester HbA1c (10.5-100%).



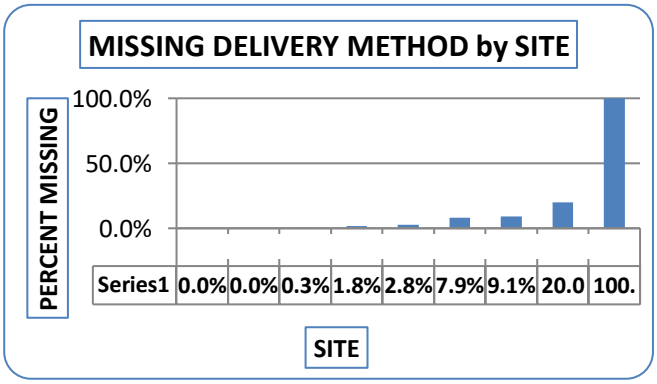


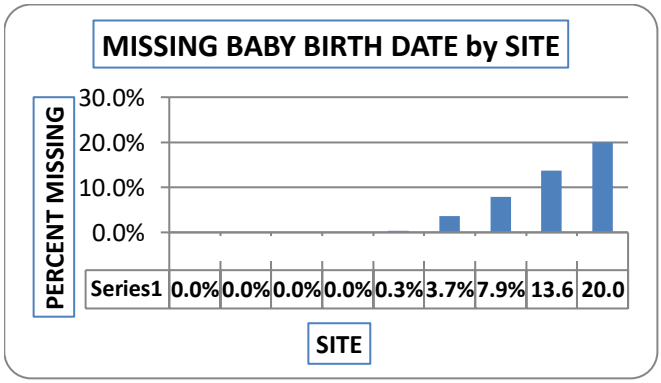
All Sites had missing 3rd Trimester HbA1c (5.1-100%) & eight Sites had missing T2DM Treatment data (5.3-100%).





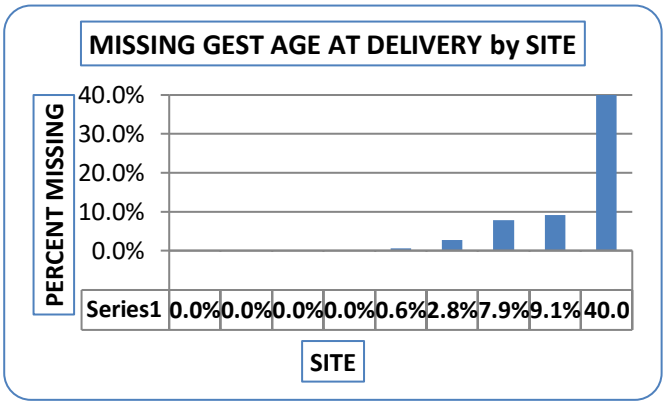
Seven Sites had missing Delivery Method (0.3-100%) and five Sites had missing Baby Date of Birth (0.3-20.0%).

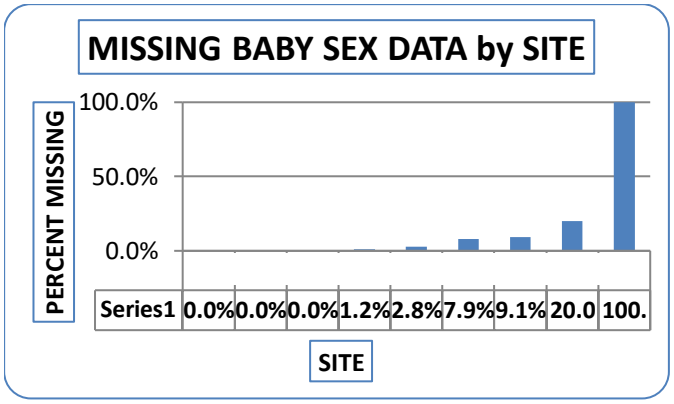




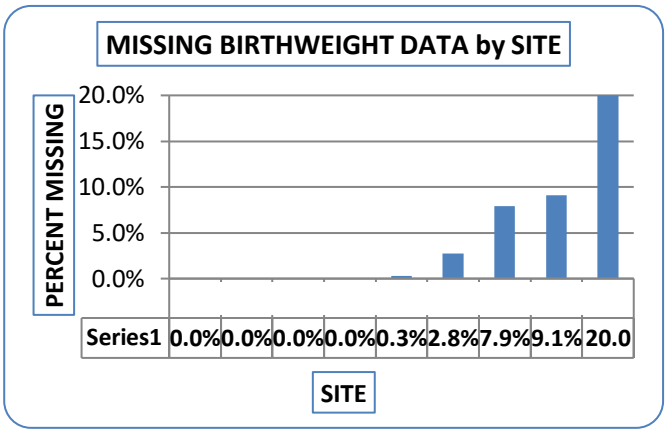
Type 2 Diabetes

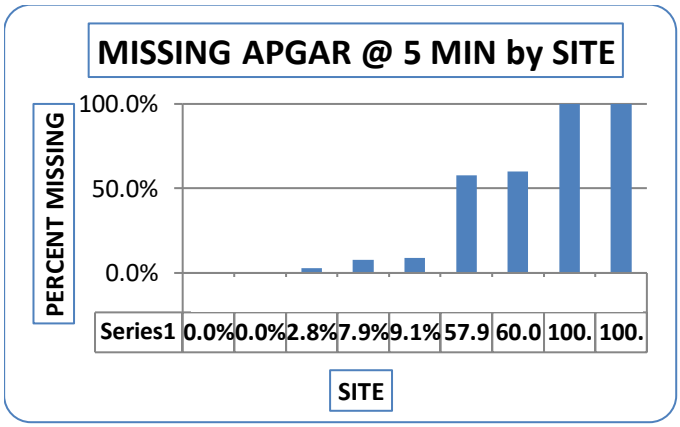
Five Sites had missing Gest Age at Delivery (0.6-40.0%) and six Sites had missing Baby Sex data (1.2-100%).



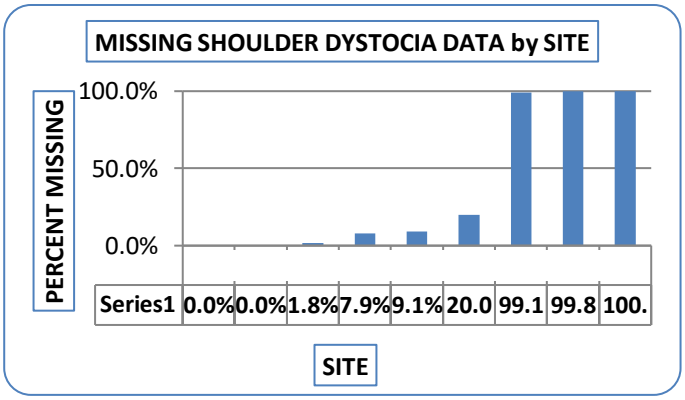


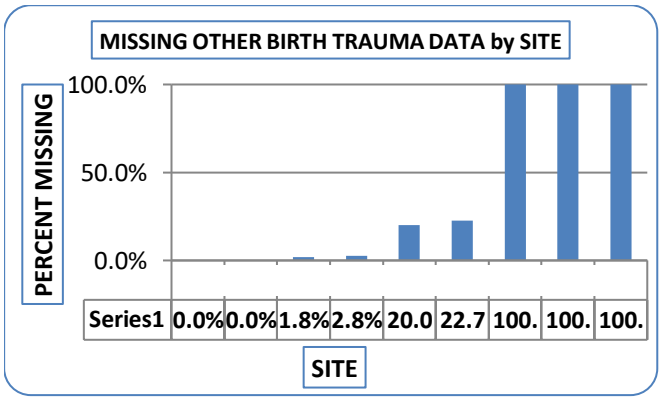
Five Sites had missing Birthweight data (0.3-20.0%) & seven Sites had missing Apgar at 5 Minutes data (2.8-100%).



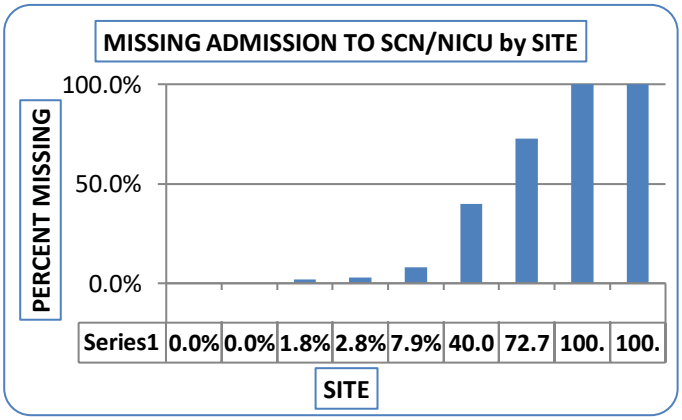


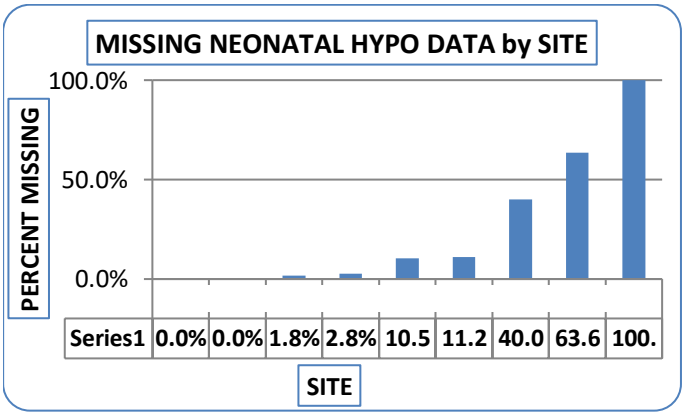
Seven Sites had missing Shoulder Dystocia (1.8-100%) and seven Sites had missing Other Birth Trauma (1.8-100%).





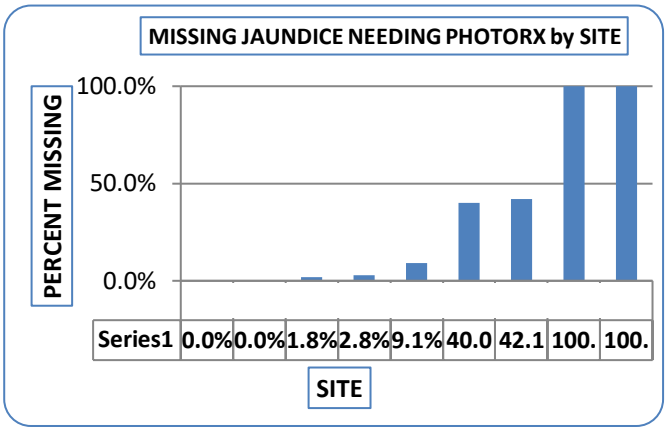
Seven Sites had missing SCN/NICU Admission (1.8-100%) & seven Sites had missing Neonatal Hypo (1.8-100%).

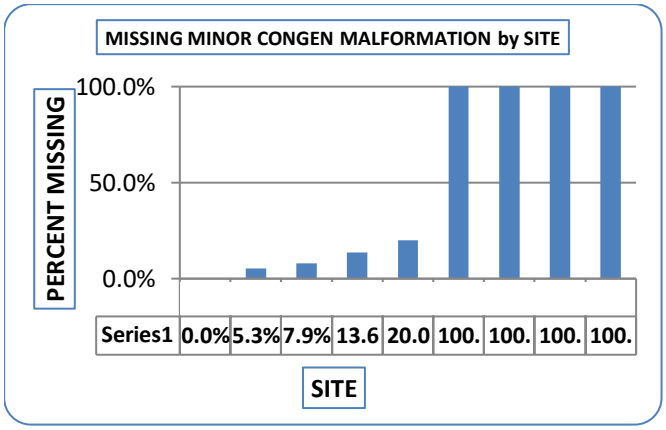




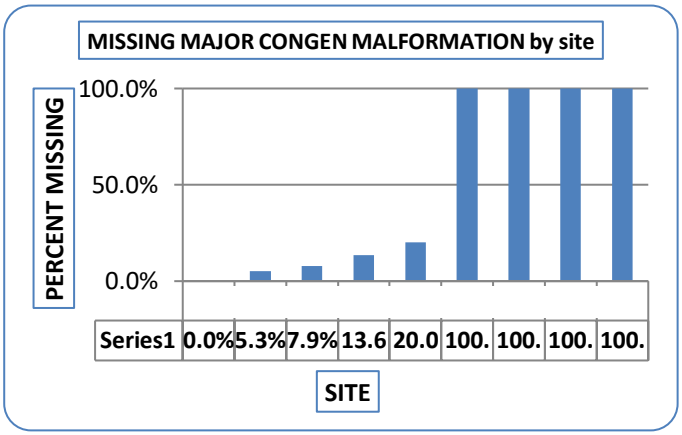
Type 2 Diabetes

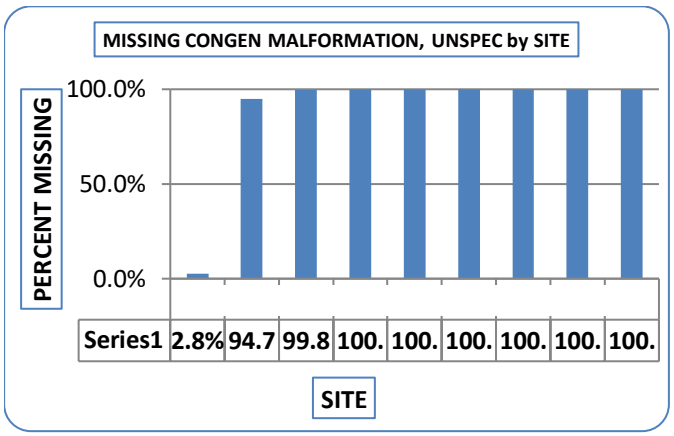
Seven Sites had missing Jaundice-PhotoRx (1.8-100%). 8 Sites had missing Minor Congen Malformation (5.3-100%).



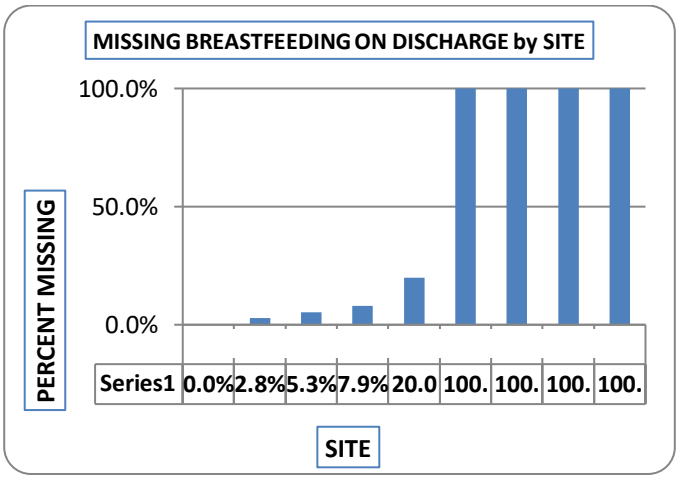


8 Sites had missing Major Congen. Malformation (5.3-100%). All Sites had missing Unspecified data (2.8-100%).





Eight Sites had missing Breast Feeding on Discharge data (2.8-100%).

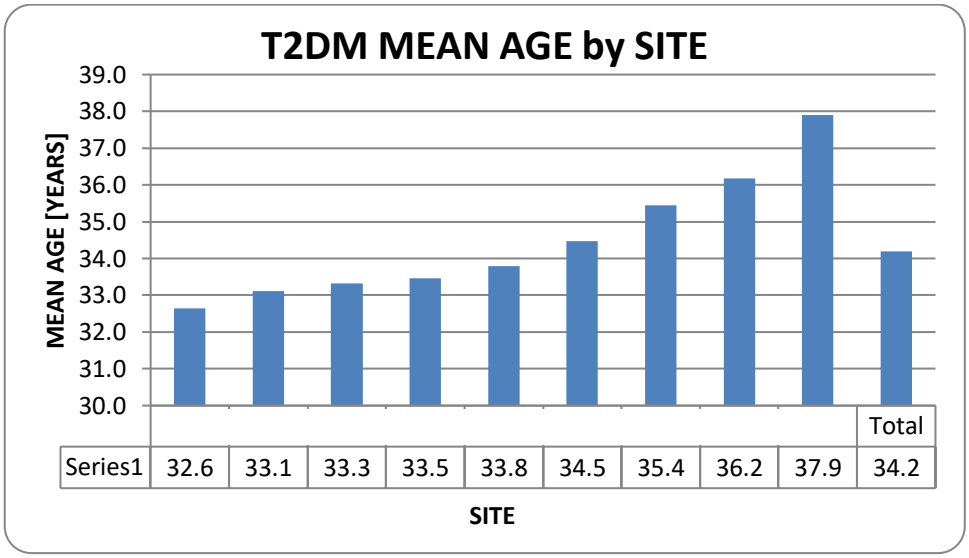


The next section reviews the benchmarked Outcome Findings in the Audit for T2DM

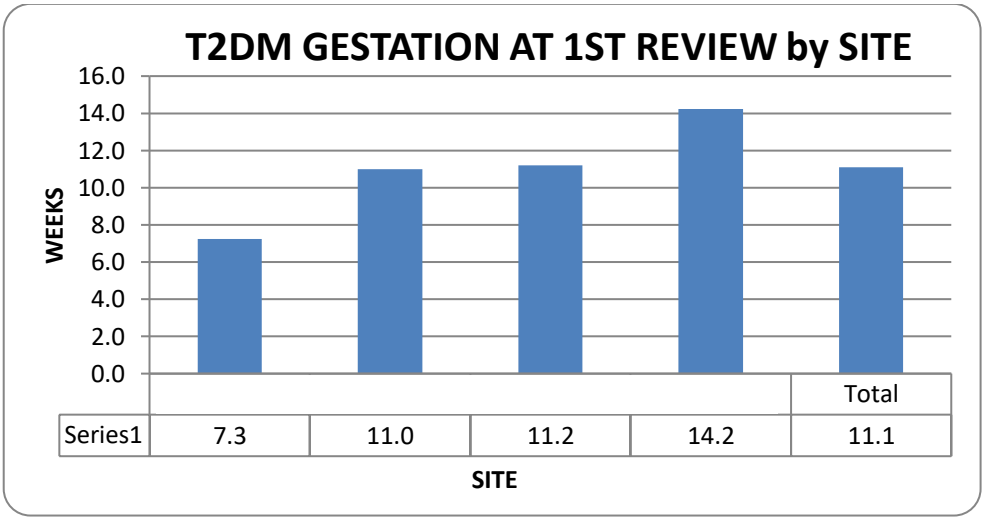
This section reviews the benchmarked Outcome Findings in the Audit for T2DM

Type 2 Diabetes

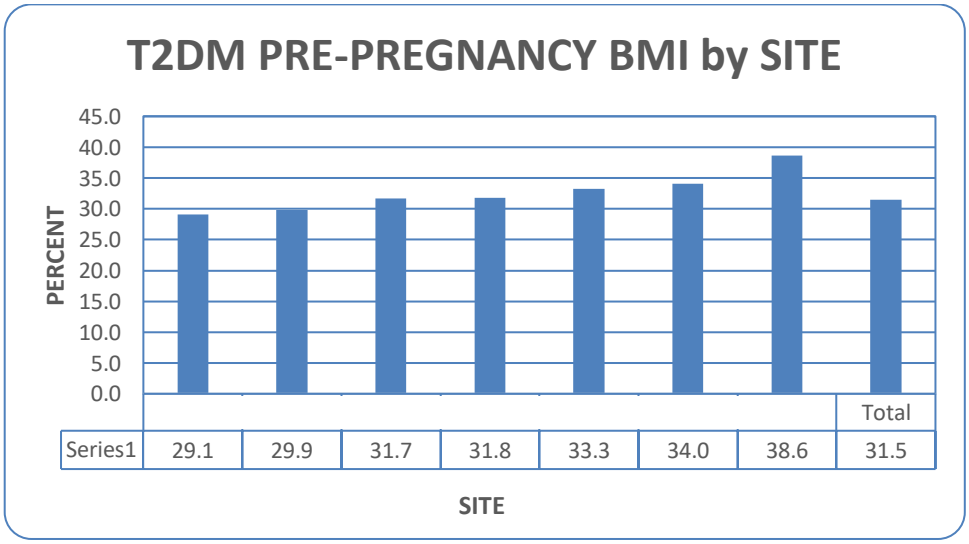
The overall mean (± SD) Age of 1011/1013 T2DM pregnant women was 34.2 years ± 5.6 years (overall range 18.0-49.0). The inter-site mean age variation was 32.6 ± 5.4 to 37.9 ± 3.3 years across the nine Sites.



The mean (± SD) weeks gestation was available from four Sites only and was 11.1 ± 6.1 (overall range 3.5-33.0). The inter-site mean weeks gestation variation was 7.3 ± 2.9 to 14.2 ± 7.3 weeks across the four Sites that provided data.

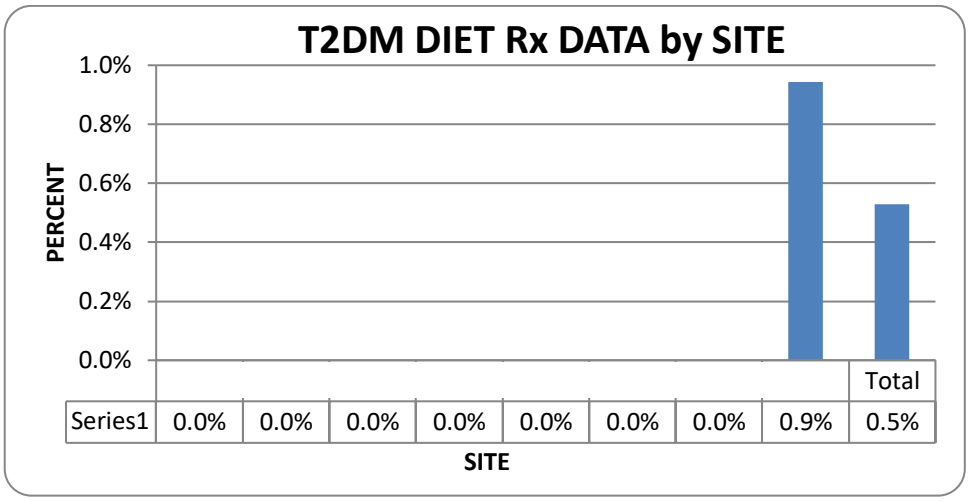


Pre-Pregnancy BMI in T2DM could be calculated for 91.4% of 7/9 Sites & was overall 31.5 (inter-Site range 29.1-38.6).

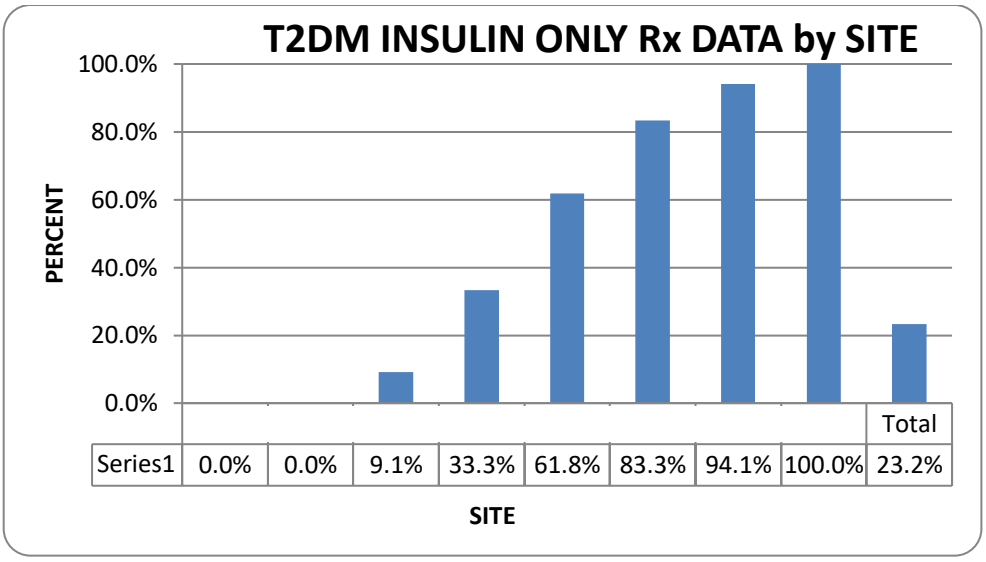


Type 2 Diabetes

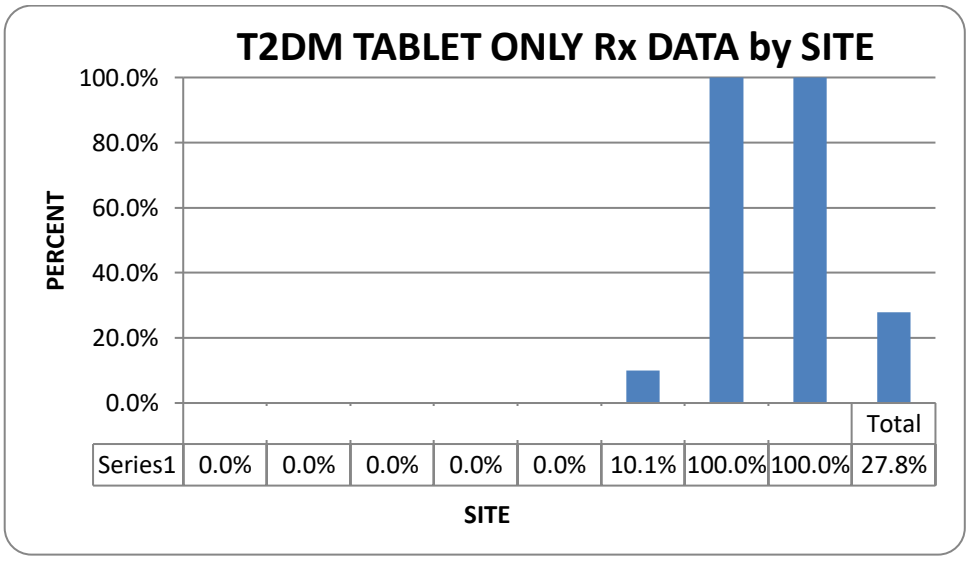
Type 2 Diet Therapy in Pregnancy was reported in 3/318 women at one of the eight Sites that provided data.
[*Whilst this is possible it may have been a coding error that was not verified with the Site*]



Type 2 Insulin Therapy in Pregnancy from eight Sites that provided data was overall 23.2% (inter-Site range 0-100%).

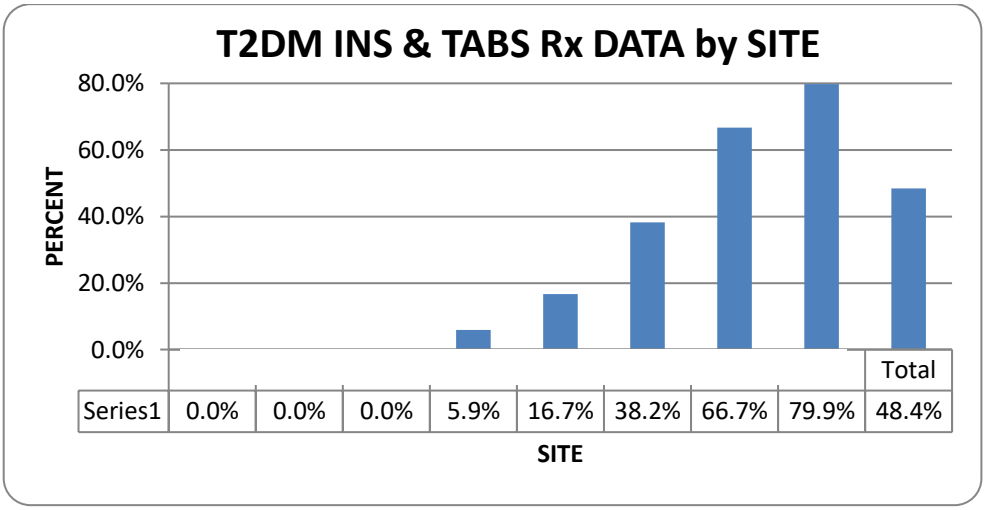


Type 2 Tablet Therapy in Pregnancy from eight Sites that provided data was overall 27.8% (inter-Site range 0-100%).

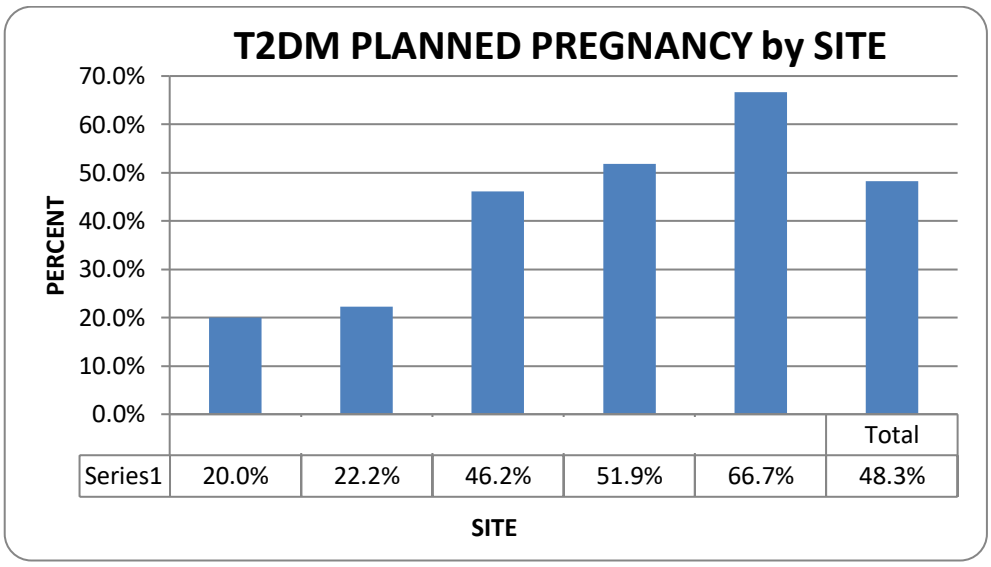


Type 2 Diabetes

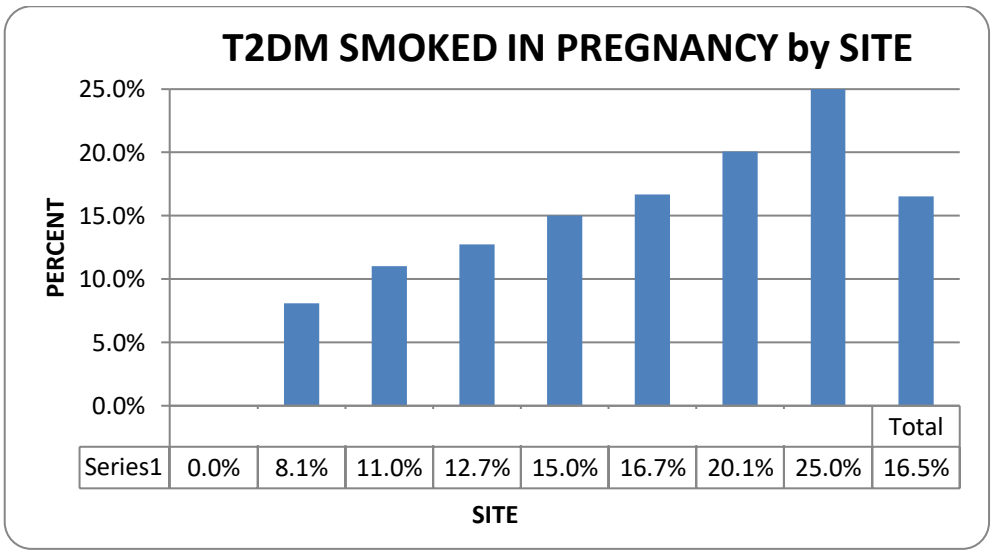
Type 2 Insulin & Tablet Rx in Pregnancy from eight Sites was overall 48.4% (inter-Site range 0-79.9%).



Pregnancy Planning was reported by 5/9 Sites with an overall rate of 48.3% & an inter-Site percent variation of 20.0-66.7%.

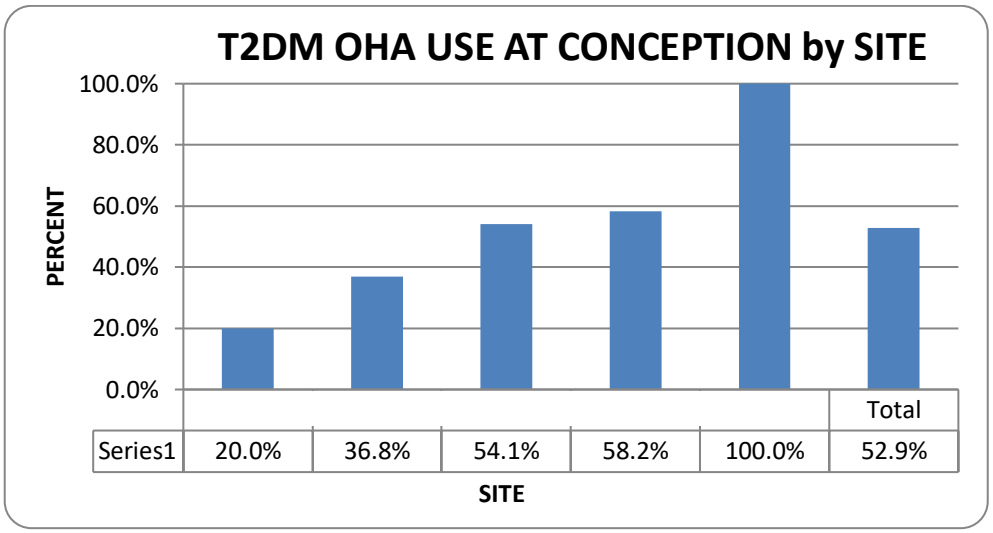


T2DM and Smoking in Pregnancy data were reported by 8/9 Sites (mean 16.5% inter-Site range 0-25.0% [n=1/4]).

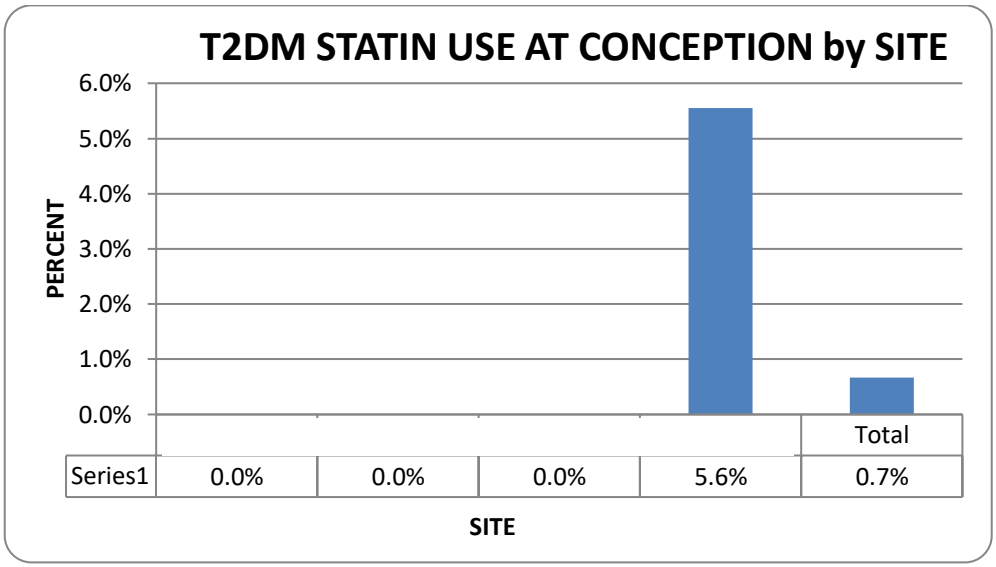


Type 2 Diabetes

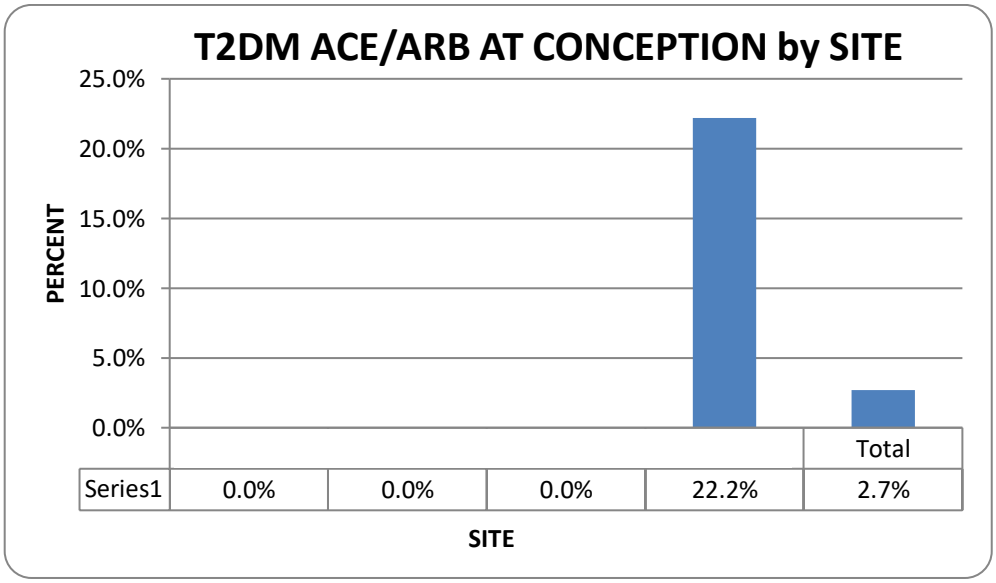
OHA use at Conception in T2DM Pregnancy, reported by 5/9 Sites was overall 52.9% - inter-Site range 20.0-100%.
NOTE – This may include Metformin as this was NOT distinguished in the field definition.



Statin use at Conception in T2DM Pregnancy, reported by 4/9 Sites with one Site reporting 5.6% [n=1/18].

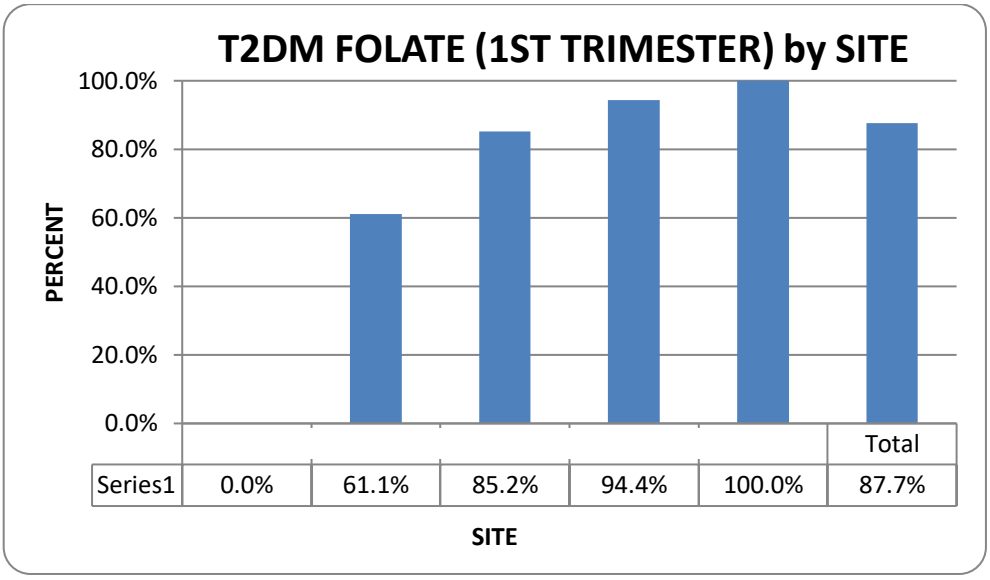


ACE/ARB use at Conception in T2DM Pregnancy, reported by 4/9 Sites with one Site reporting 22.2% [n=4/18].

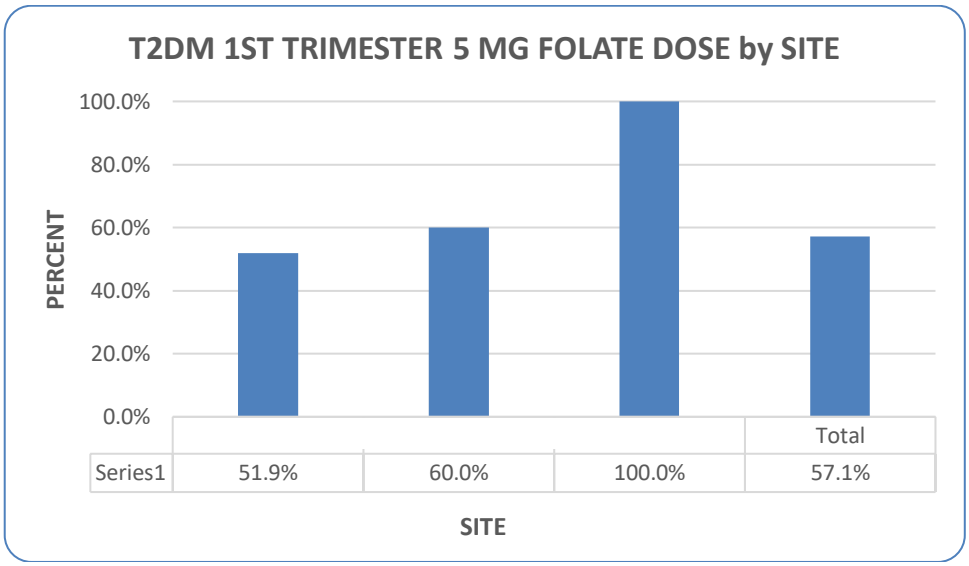


Type 2 Diabetes

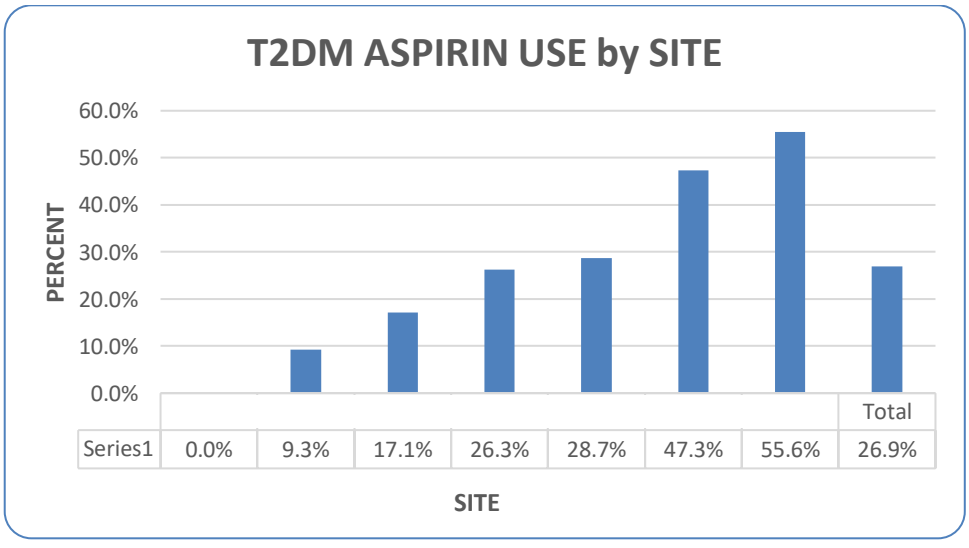
Folate use First Trimester in T2DM, reported by 5/9 Sites was overall 87.7% (inter-Site range 0-100%) [n=0/4].



5 mg Folate Dose First Trimester in T2DM reported by three Sites was overall 57.1% (inter-Site range 51.9-100%) [n=19/19].
The remaining percentages of women reportedly received 0.5 mg in the 1st Trimester.

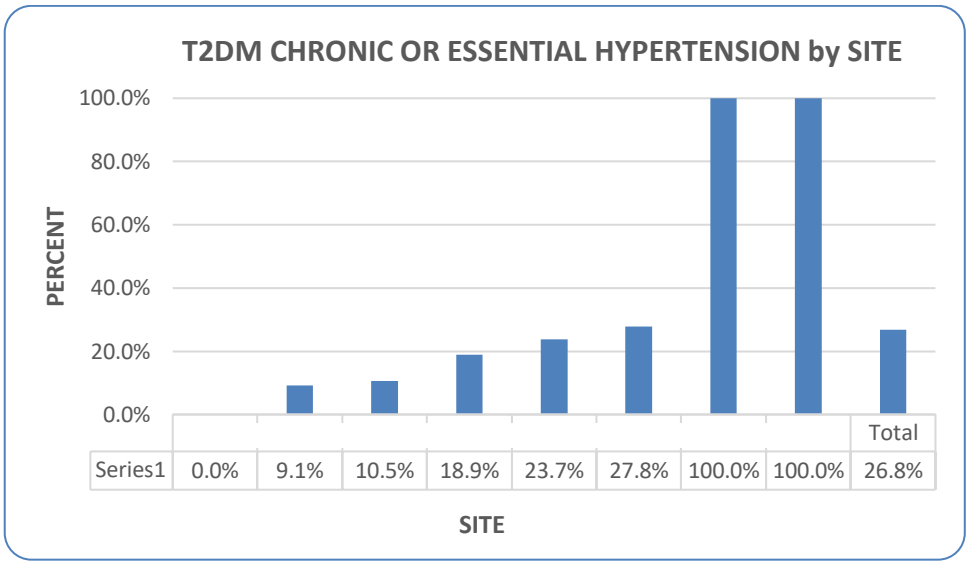


Aspirin Use in T2DM Pregnancy, reported by 7/9 Sites was overall 26.9% (inter-Site range 0-55.6%) [n=0/4].

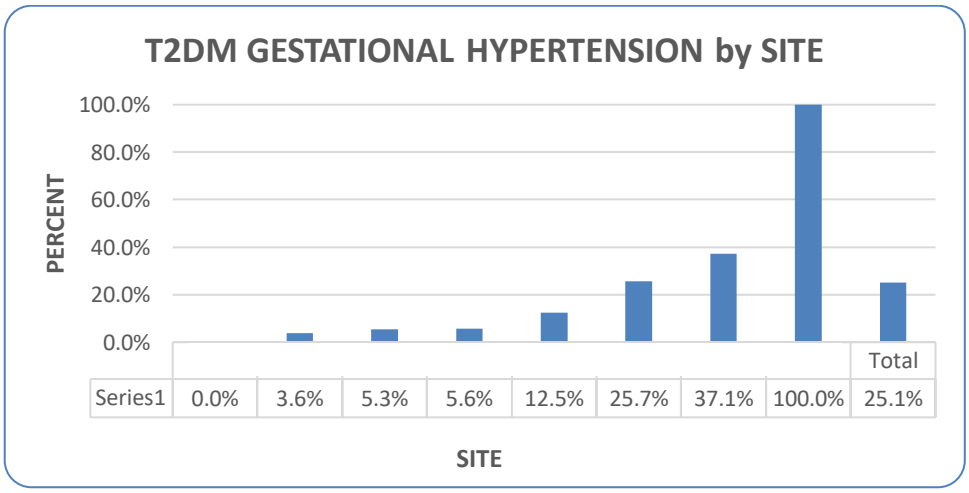


Type 2 Diabetes

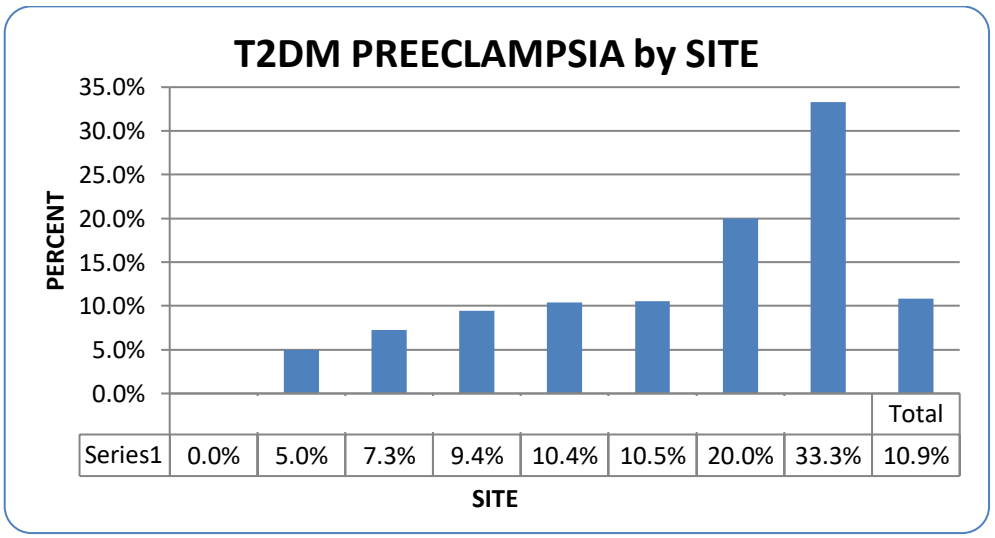
Chronic or Essential Hypertension in T2DM, reported by 8/9 Sites was overall 26.8% (inter-Site range 0-100%). [This was 0% n=0/4 and 100% (n=4/4 and n=51/51)]



Gestational Hypertension in T2DM, reported by 8/9 Sites was overall 25.1% (inter-Site range 0-100%[n=14]). [This was 0% n=0/4 and 100% n=23/23]

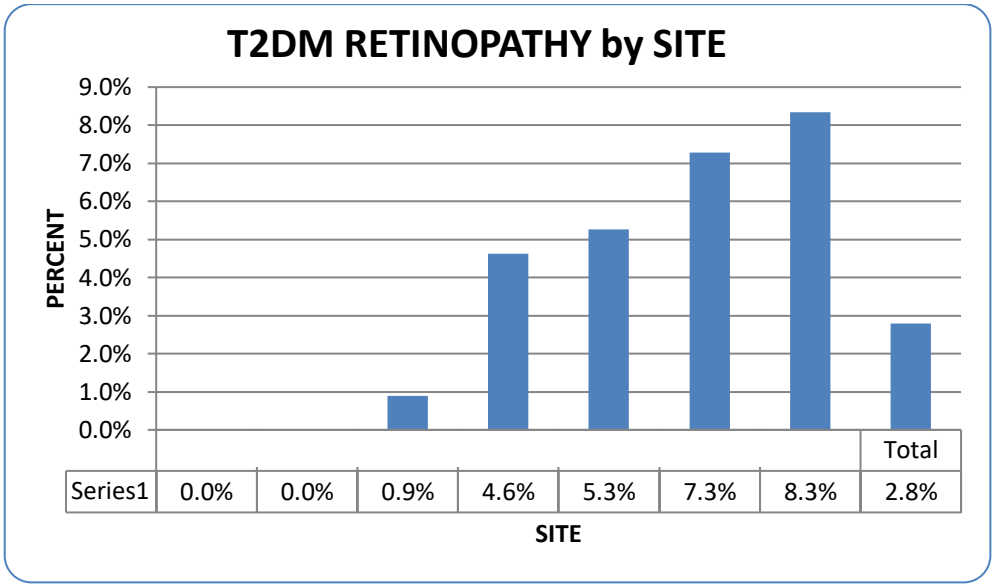


Preeclampsia in T2DM Pregnancy, reported by 8/9 Sites was overall 10.9% (inter-Site range 0-33.3%).

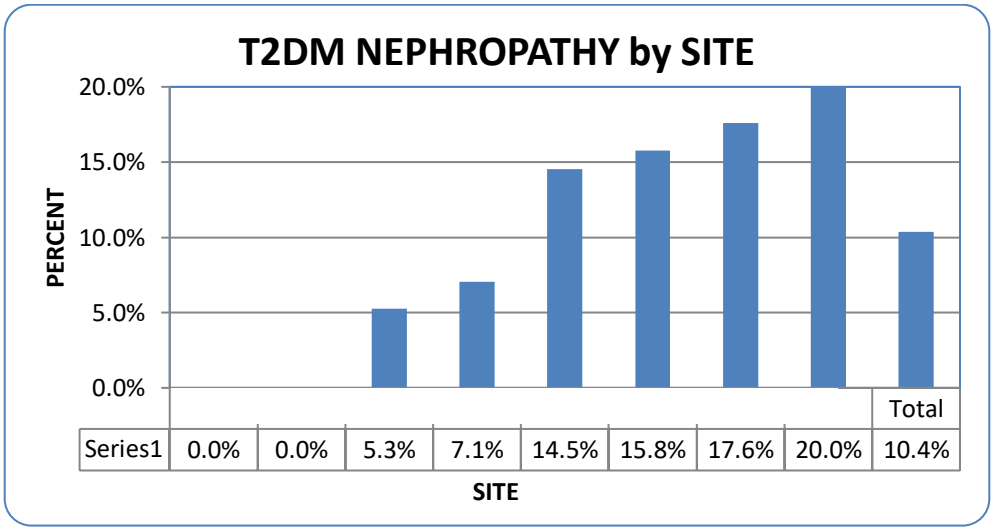


Type 2 Diabetes

Retinopathy in T2DM reported by seven Sites was overall 2.8% (inter-Site range 0-8.3%).

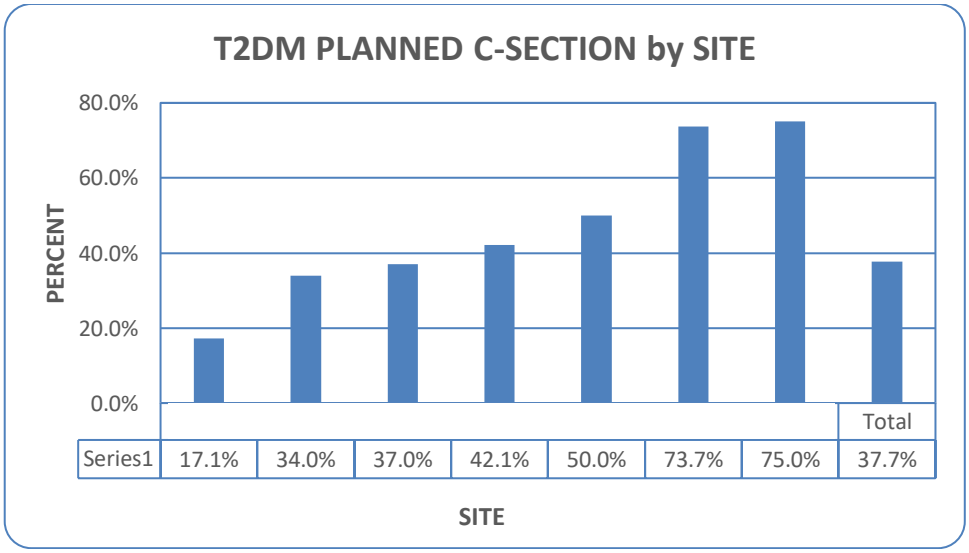


Nephropathy in T2DM reported by 8/9 Sites was overall 10.4% (inter-Site range 0-20.0%).



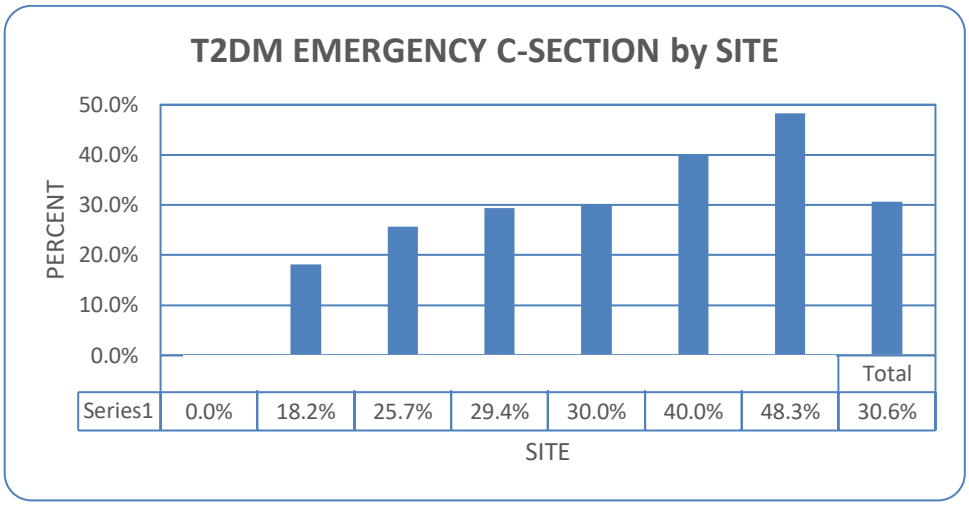
MATERNAL HYPOGLYCAEMIC EPISODESS NEEDING ASSISTANCE - *ONE Site reported 1/23 episode 5.3%*

Planned Caesarean Section in T2DM reported by 7/9 Sites was overall 37.7%% (inter-Site range 17.1-75.0%).
NOTE Another Site had 53.8% **Caesarean Sections UNSPECIFIED**

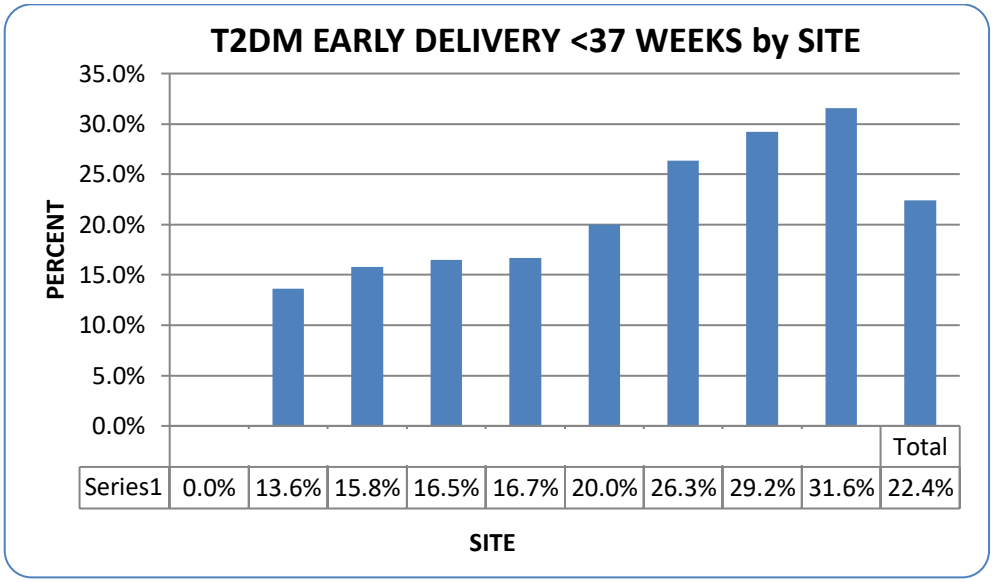


Type 2 Diabetes

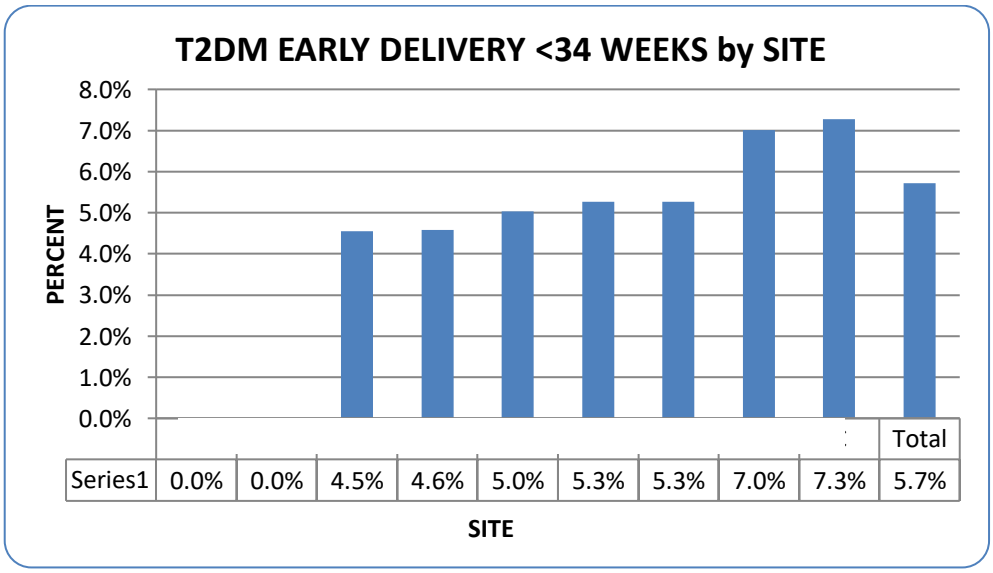
Emergency Caesarean Section in T2DM reported by seven Sites was overall 30.6% (inter-Site range 0-48.3%).
NOTE [1] n=0/1 at one Site NOTE [2] Another Site had 53.8% **Caesarean Sections UNSPECIFIED**



Early Delivery <37 Weeks in T2DM reported by all Sites was overall 22.4% (inter-Site range 0-31.6%). [0% n=0/5]

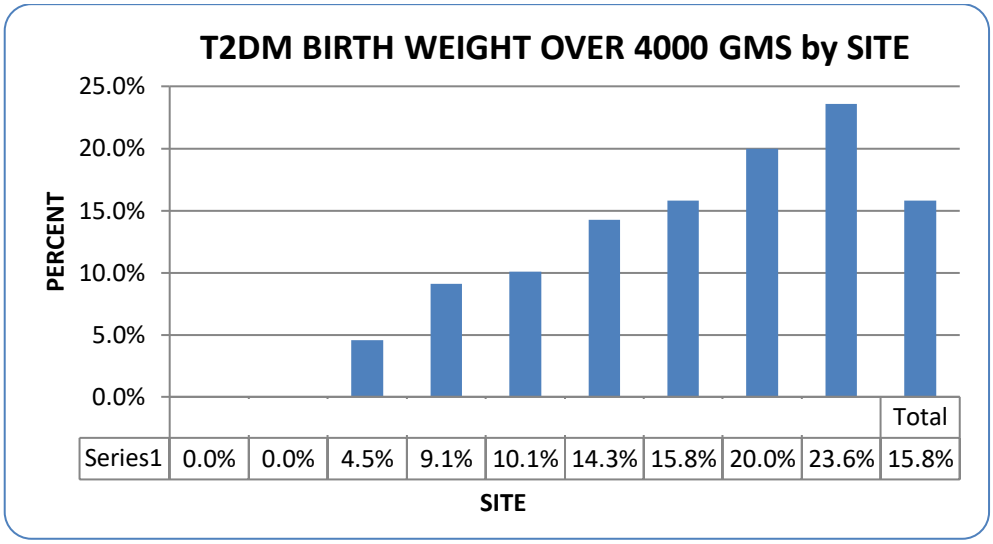


Early Delivery <34 Weeks in T2DM reported by nine Sites was overall 5.7% (inter-Site range 0-7.3%).
NOTE 0% is n=0/5 and 0/38.

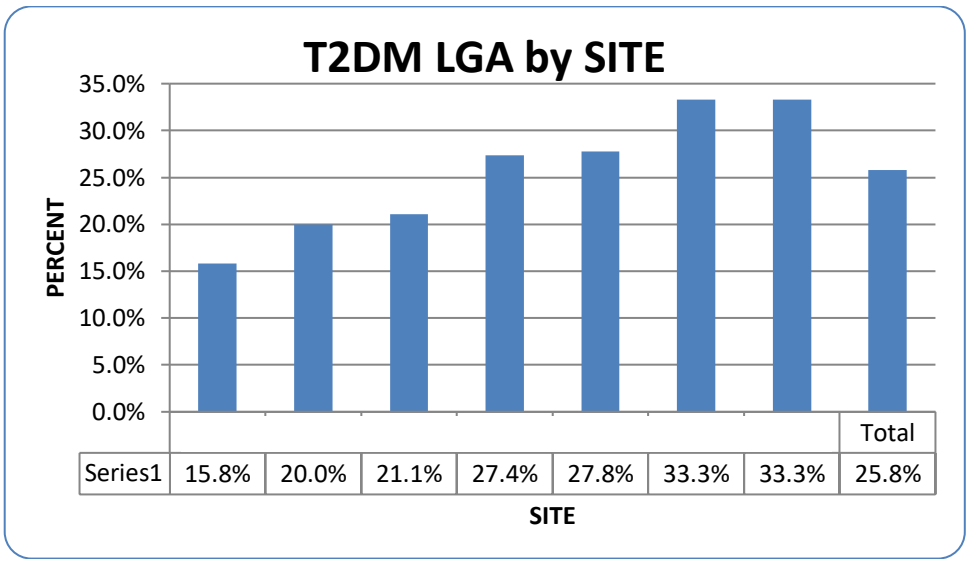


Type 2 Diabetes

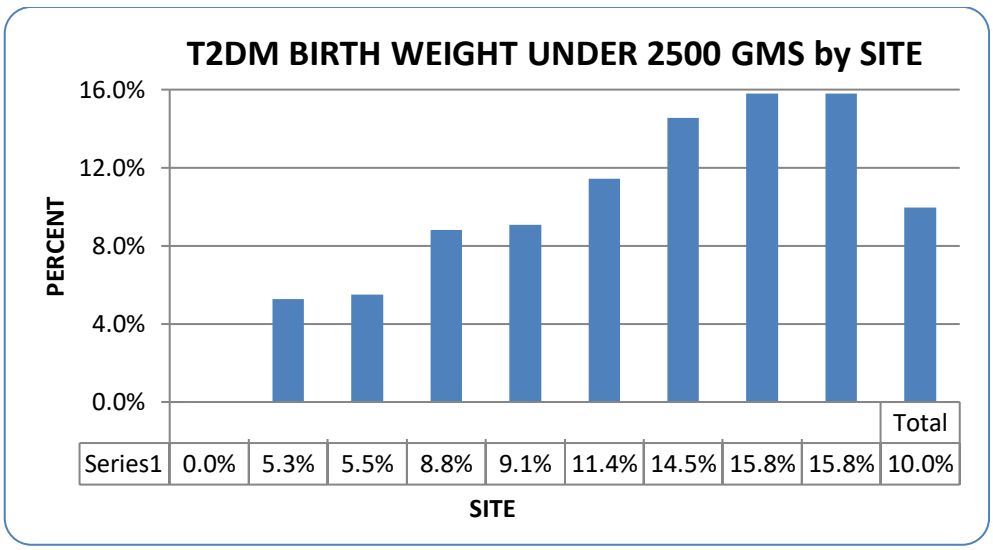
Birth Weight >4000 Grams in T2DM reported by all Sites was overall 15.8% (inter-Site range 0-23.6%) [n=0/19].



LGA in T2DM was only available for 22.2% of records and calculated from 7/9 Sites was overall 25.8%.
The inter-Site range was 15.8-33.3% with small numbers at several sites – 15.8% [n=3/16], 33.3% [n=1/3 & 3/9].

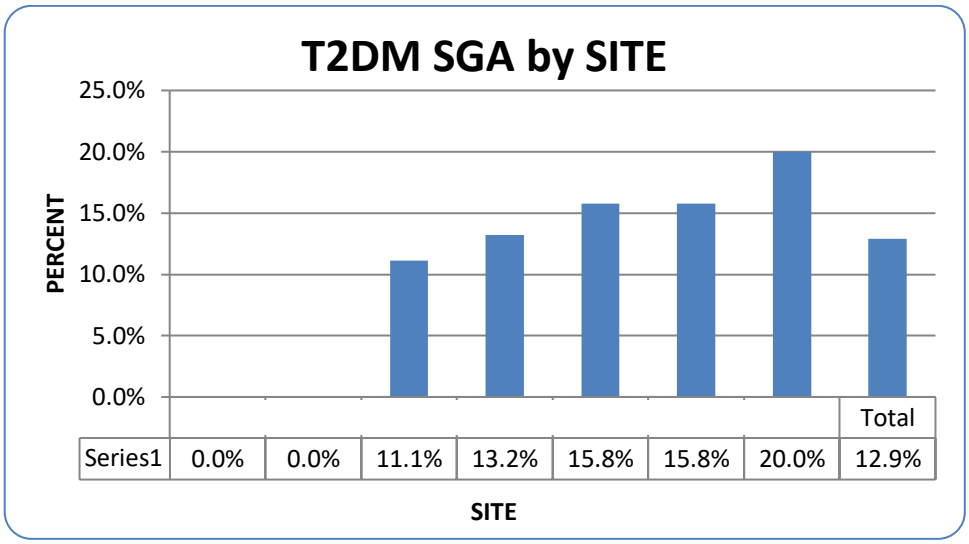


Birth Weight <2500 Grams in T2DM reported by all Sites was overall 10.0% (inter-Site range 0-15.8%) [n=0/5].

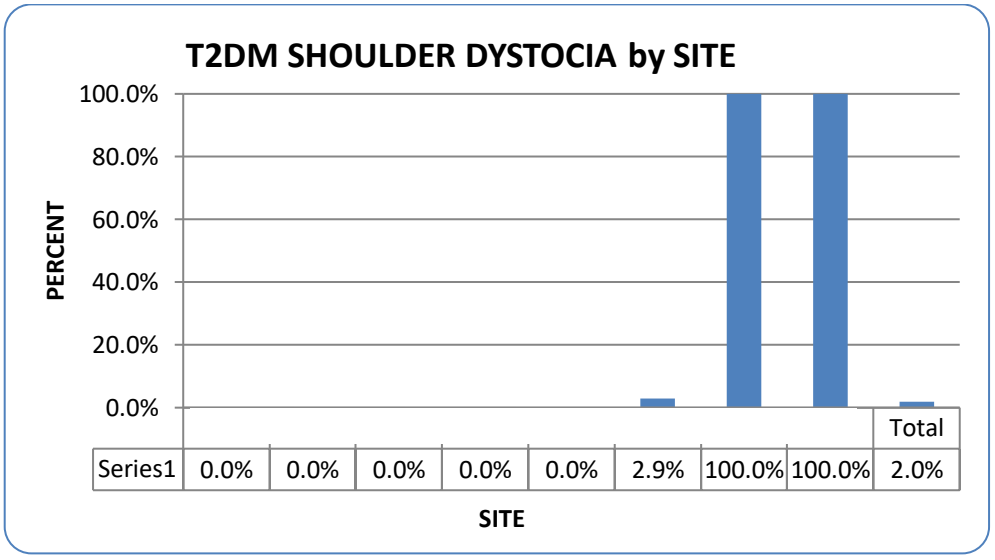


Type 2 Diabetes

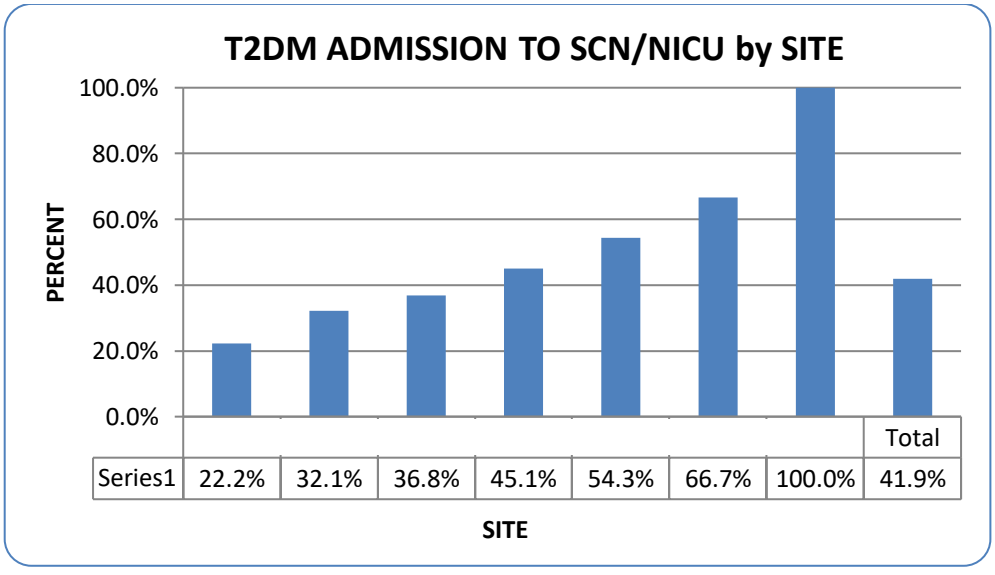
SGA in T2DM was only available for 22.2% of records and calculated from 7/9 Sites was overall 12.9%. The inter-Site range was 0-20.0% with small numbers at several sites – 0% [n=0/3 & 0/9].



Shoulder Dystocia in T2DM reported by 8/9 Sites was overall 2.0% (inter-Site range 0-100%)[n=1/1].

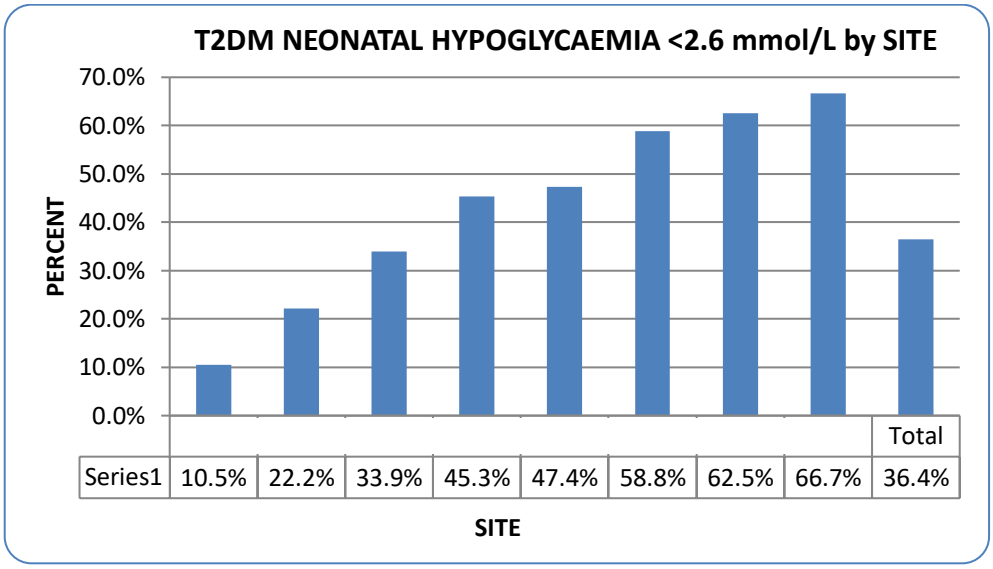


SCN/NICU Admission in T2DM reported by 7/9 Sites was overall 41.9% (inter-Site range 22.2-100%).

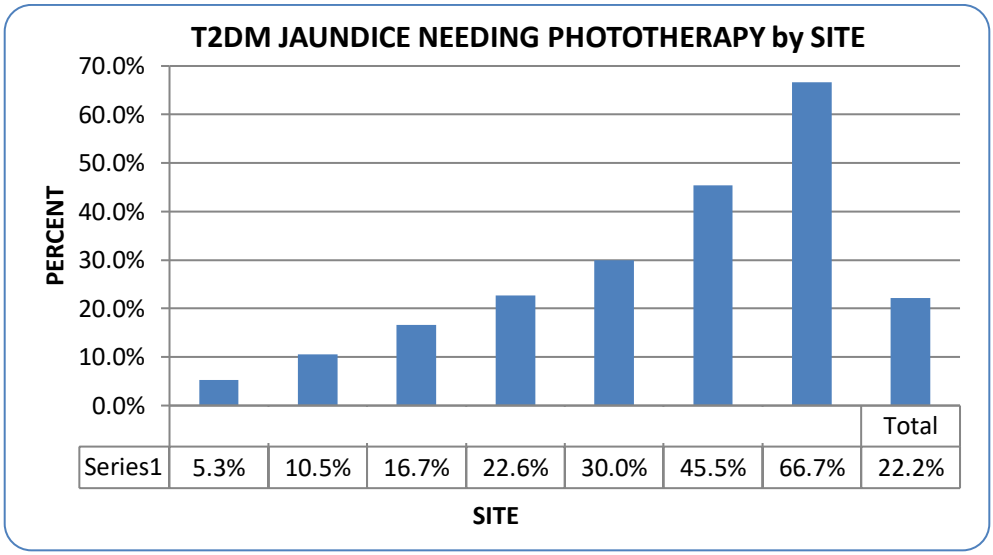


Type 2 Diabetes

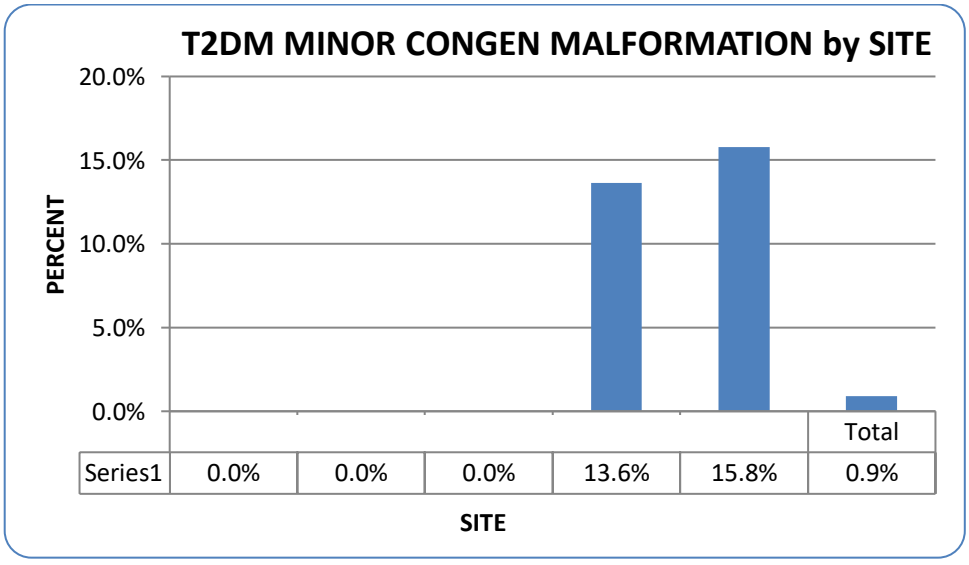
Neonatal Hypo <2.6 mmol/L in T2DM reported by 8/9 Sites was overall 36.4% (inter-Site range 10.5-66.7%). NOTE Some Sites have Small Numbers and 66.7% [n=2/3] and 62.5% [n=5/8].



Neonatal Jaundice needing Phototherapy reported by 7/9 Sites was overall 22.2% (inter-Site range 5.3-66.7%). NOTE Some Sites have Small Numbers and 66.7% [n=2/3].

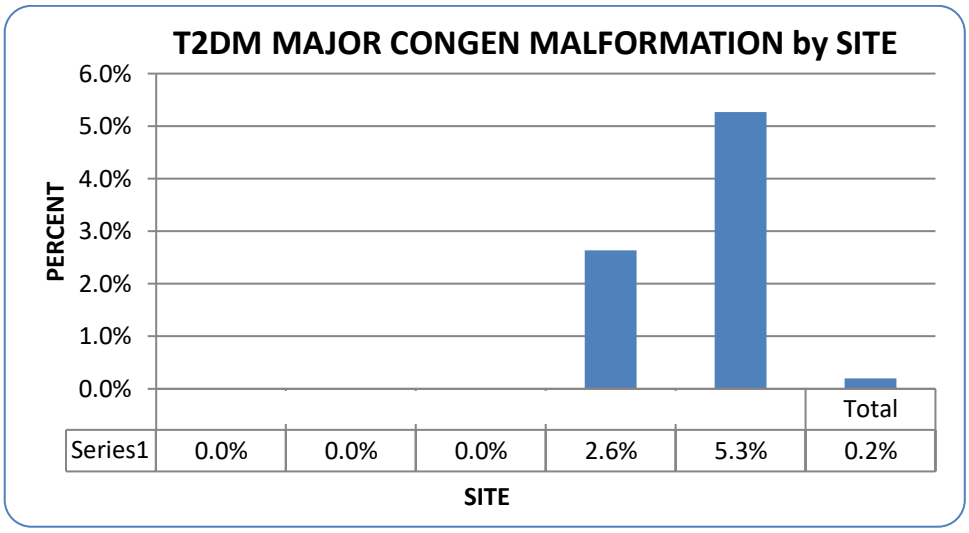


Minor Congenital Malformations in T2DM reported by 5/9 Sites was overall 0.9% (inter-Site range 0-15.8%) [n=6/38].

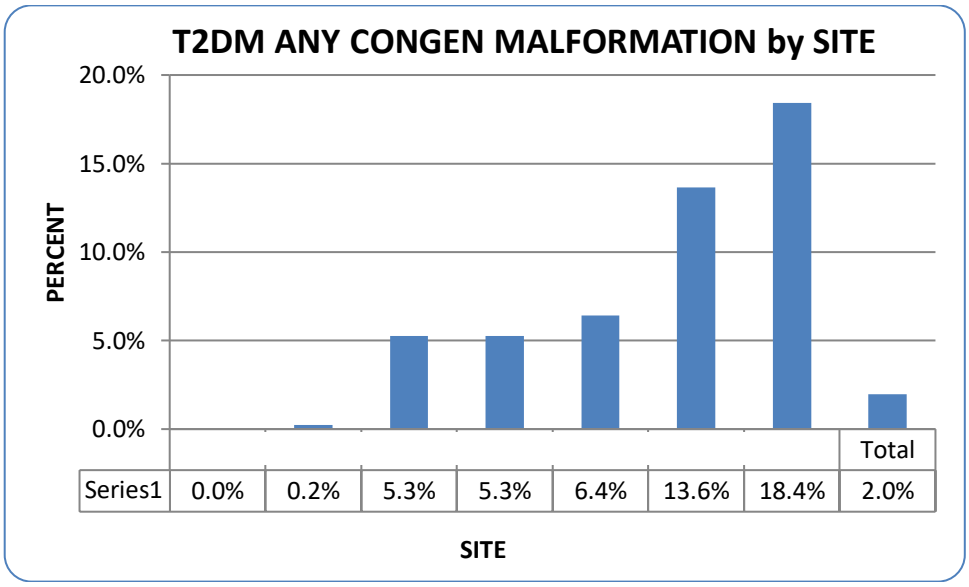


Type 2 Diabetes

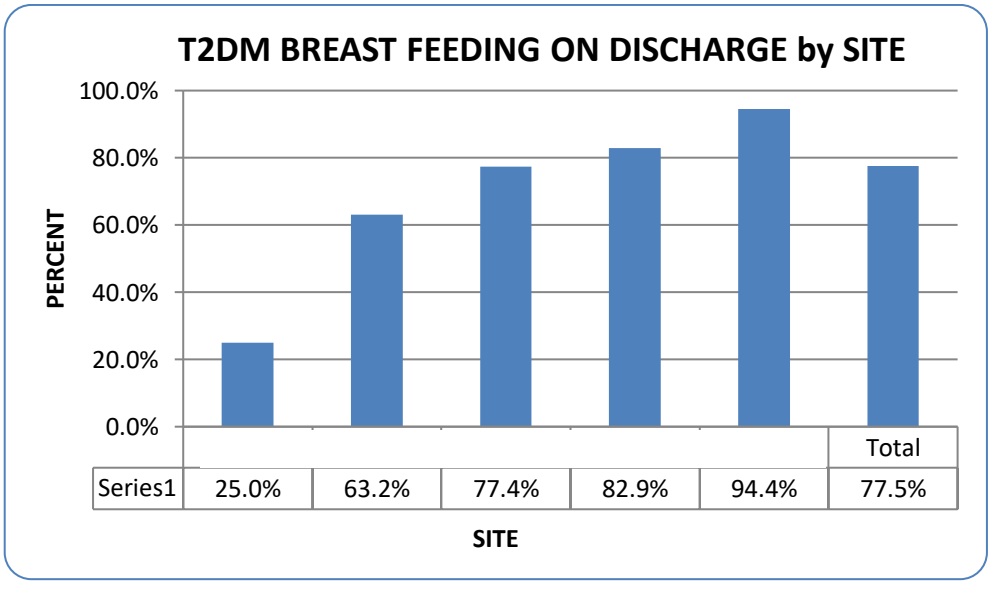
Major Congenital Malformations in T2DM reported by 5/9 Sites was overall 0.2% (inter-Site range 0-5.3%) [n=1/19]. Additionally, One Site Reported Congenital Malformations UNSPECIFIED – hence the Composite Analysis below.



ANY Congenital Malformations in T2DM reported by 7/9 Sites was overall 2.0% (inter-Site range 0-18.4%) [n=0/5].

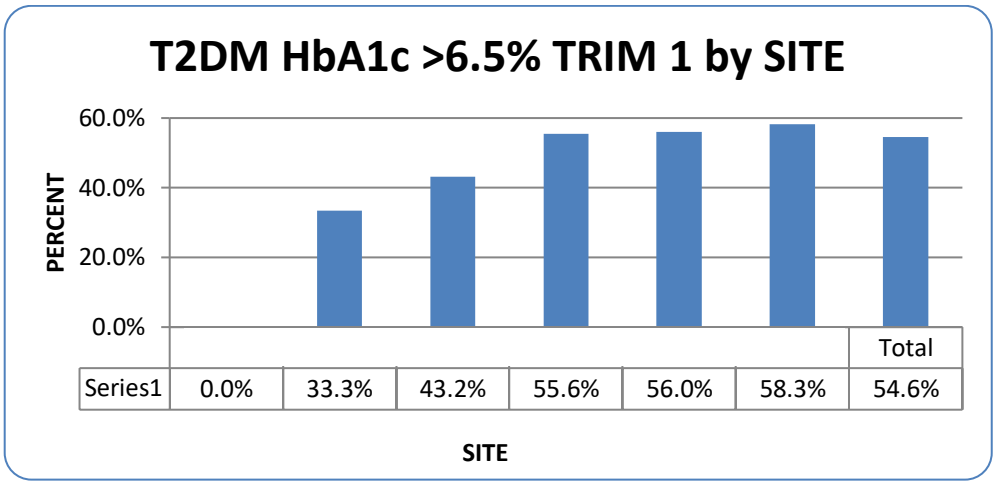


Breast Feeding on Discharge in T2DM reported by four Sites was overall 77.5% (inter-Site range 25.0-94.4%).

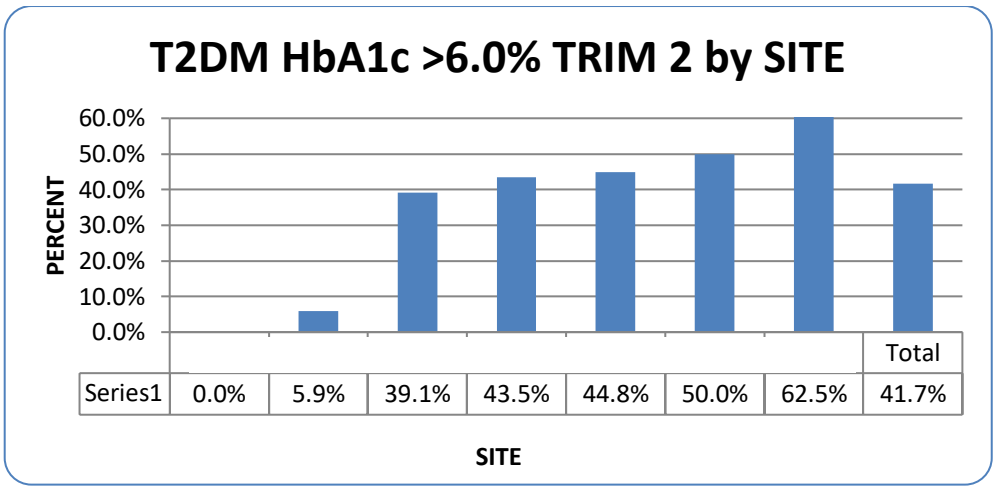


Type 2 Diabetes

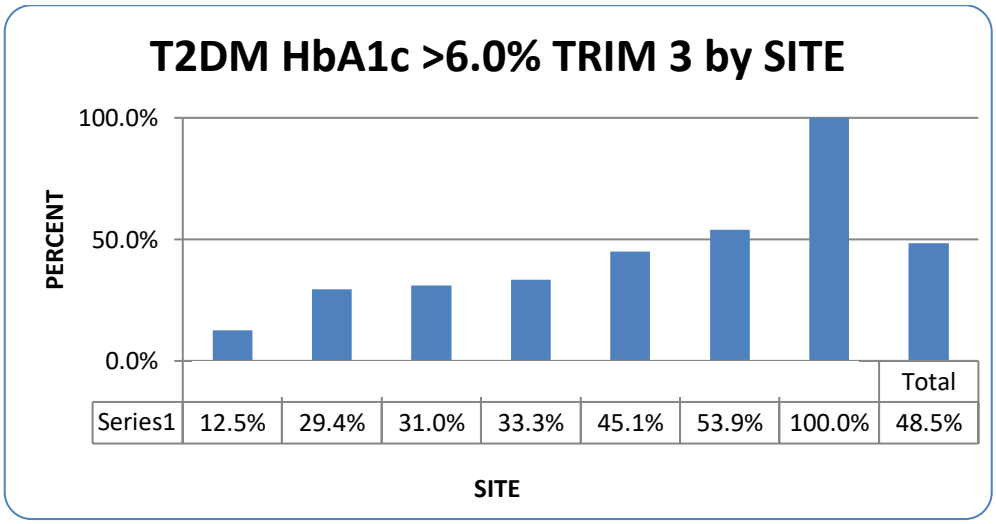
HbA1c % ABOVE TARGET in T2DM 1st Trimester reported by five Sites was overall 54.6%.
The inter-Site range 0-58.3%. [0% n=0/16]



HbA1c % ABOVE TARGET in T2DM 2nd Trimester reported by seven Sites was overall 41.7%.
The inter-Site range 0-62.5%. [0% n=1 5.9% n=2 – The Mean value was not altered by removing these Sites].

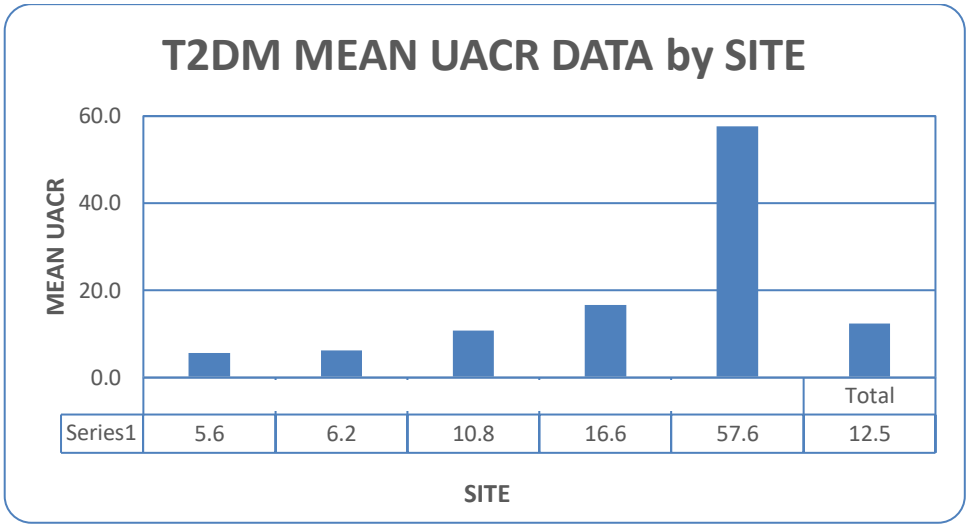


HbA1c % ABOVE TARGET in T2DM 3rd Trimester reported by seven Sites was overall 48.5%.
The inter-Site range 12.5-100%.



Type 2 Diabetes

Mean Urine ACR Values T2DM reported by five Sites was overall 12.5 (inter-Site Range 5.6-57.6).

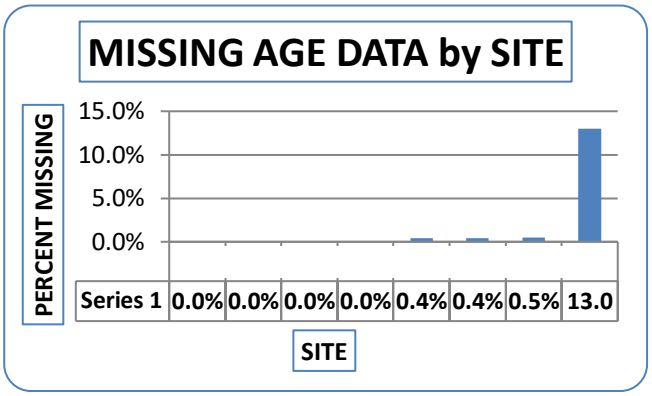


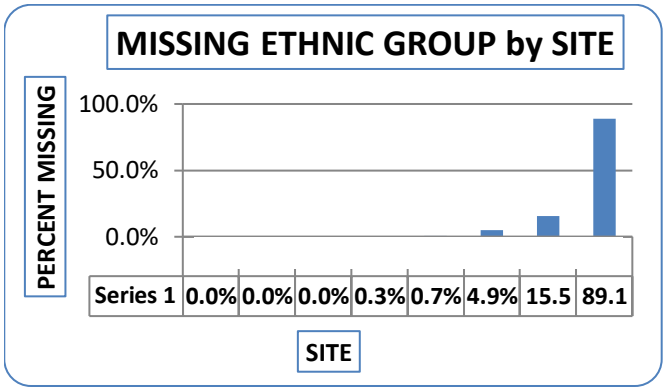
This section reviews the benchmarked PROCESS Outcomes in the Audit for GDM

Gestational Diabetes

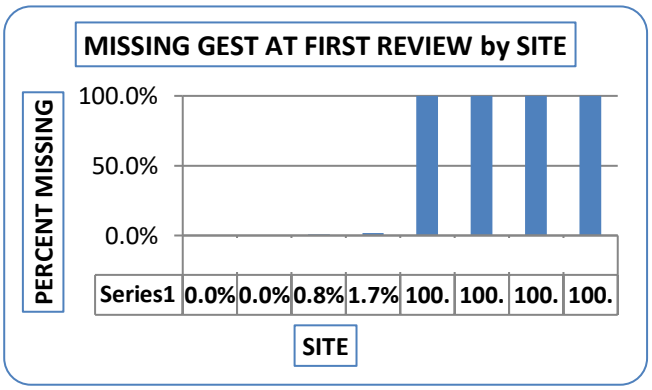
Eight of the Eleven Sites provided Data on 8696 women with Gestational Diabetes

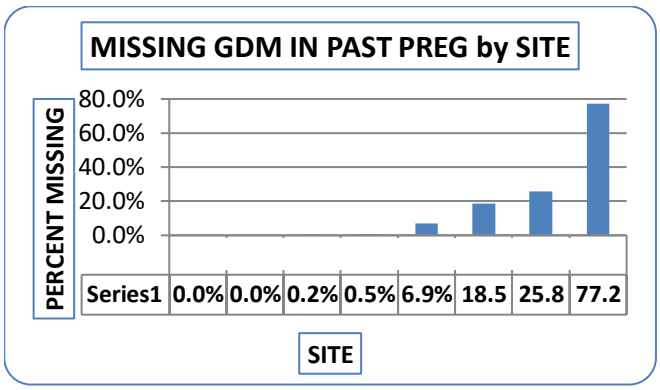
Four Sites had missing Age data (0.4-13.0%), while five had missing Ethnic Group data (0.3-89.1%).



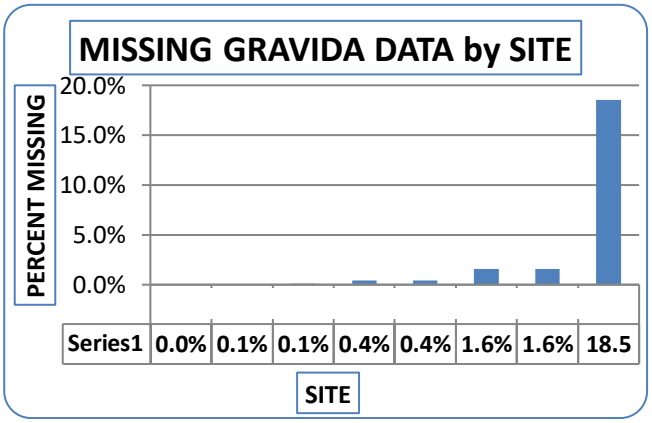


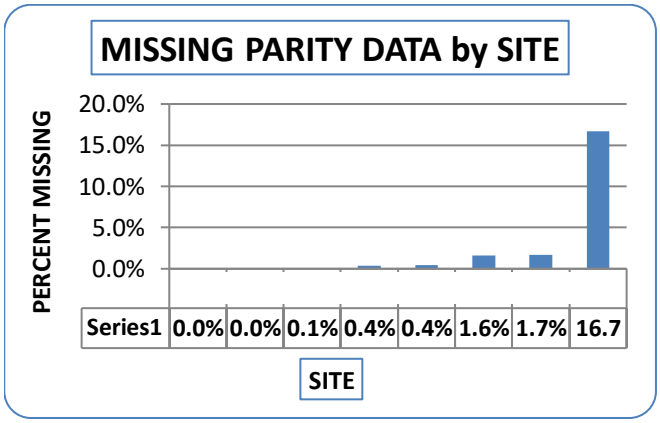
Six Sites had missing Gestation at 1st Review data (0.8-100%) and six Sites had missing Previous GDM (0.2-77.2%).



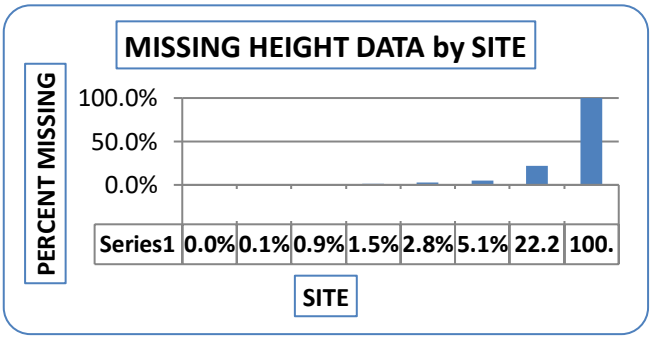


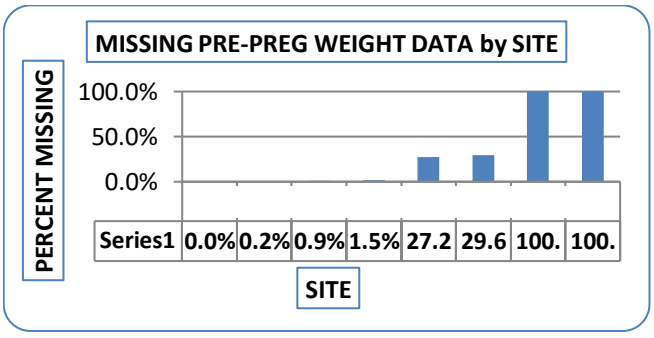
Seven Sites had missing Gravida data (0.1-18.5%) and six Sites had missing Parity data (0.1-16.7%).





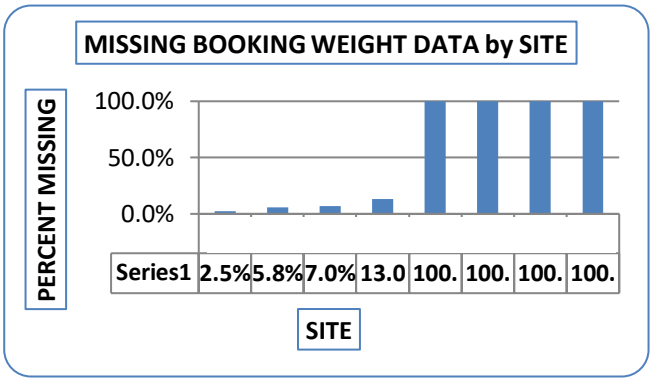
Seven Sites had missing Height data (0.1-100%) & seven Sites had missing Pre-pregnancy Weight data (0.2-100%).

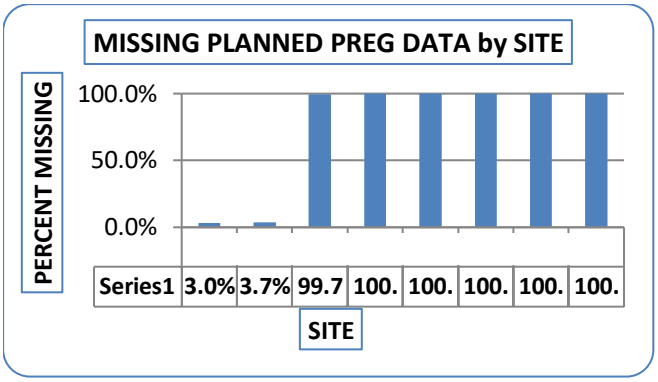




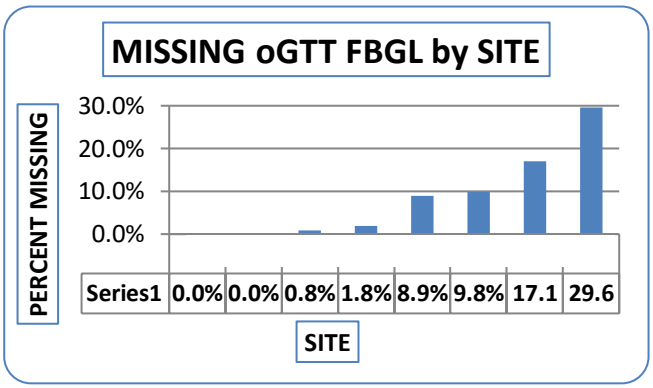
Gestational Diabetes

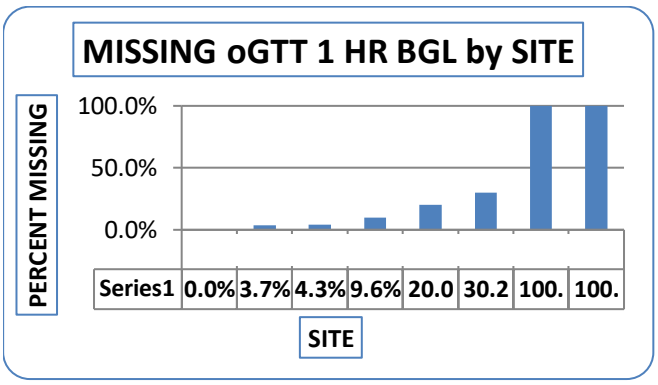
All Sites had missing Booking Weight (2.5-100%) and all Sites had missing Planned Pregnancy (3.0-100%).



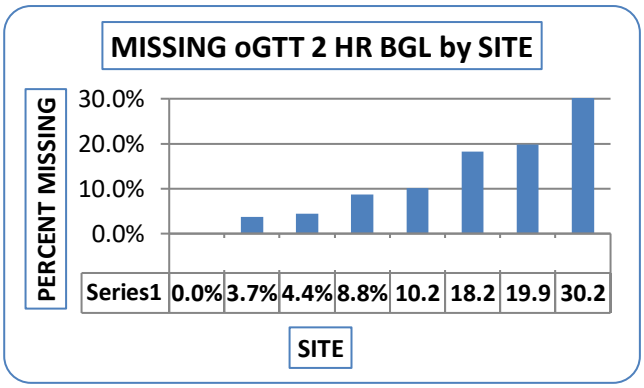


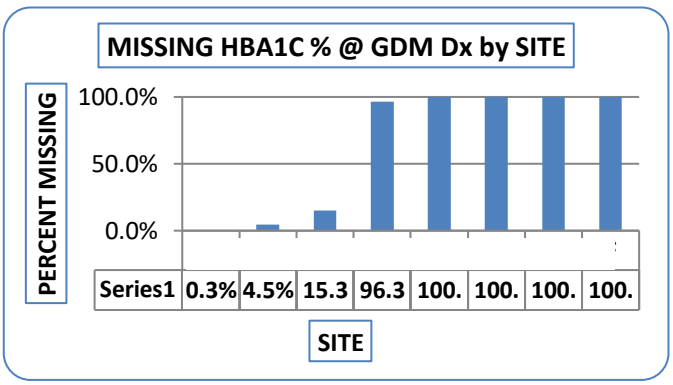
Six Sites had missing oGTT FBGL data (0.8-29.6%) & seven Sites had missing oGTT 1 Hour BGL data (3.7-100%).



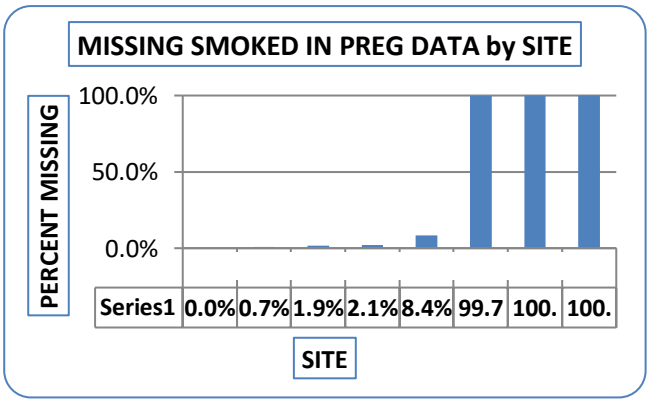


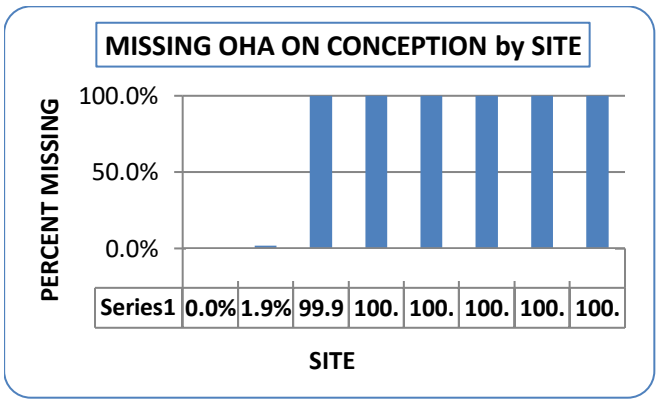
Six Sites had missing oGTT 2 Hour BGL (3.7-30.2%) & all Sites had missing HbA1c % at Diagnosis (0.3-100%).





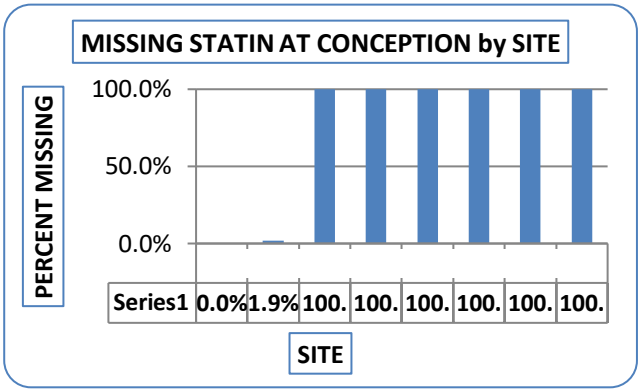
Seven Sites had missing Smoked in Pregnancy (0.7-100%) & 7 Sites had missing OHA at Conception (1.9-100%).

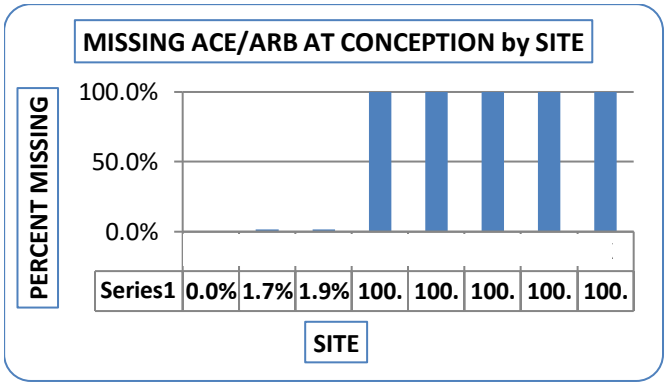




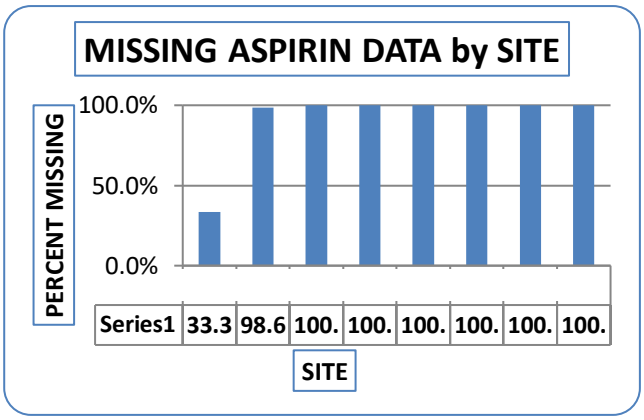
Gestational Diabetes

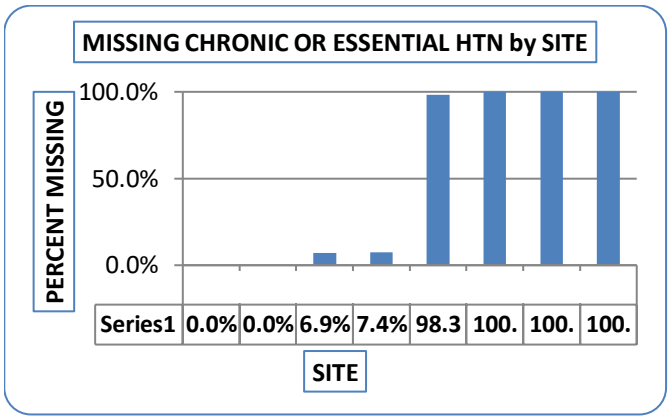
7 Sites had missing Statin at Conception (1.9-100%) 7 Sites had missing ACE/ARB at Conception (1.7-100%).



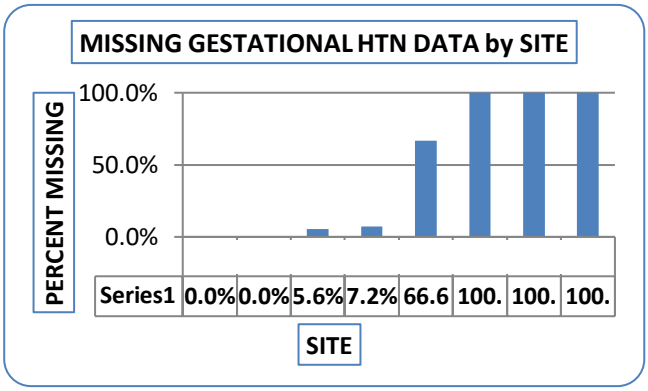


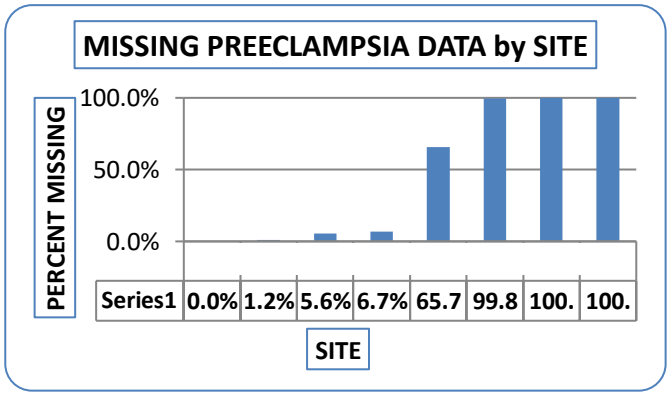
All Sites had missing Aspirin data (33.3-100%) & six Sites had missing Chronic/Essential Htn data (6.9-100%)



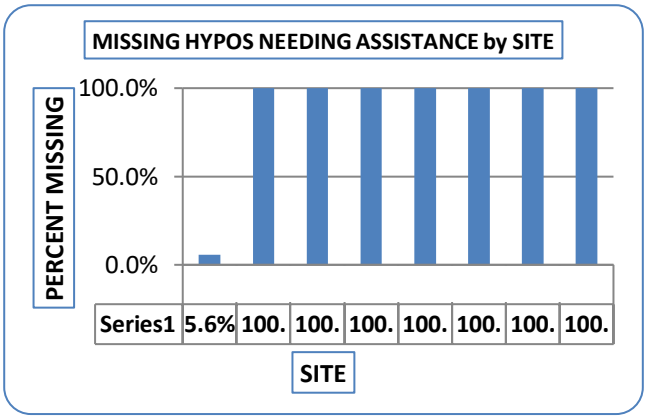


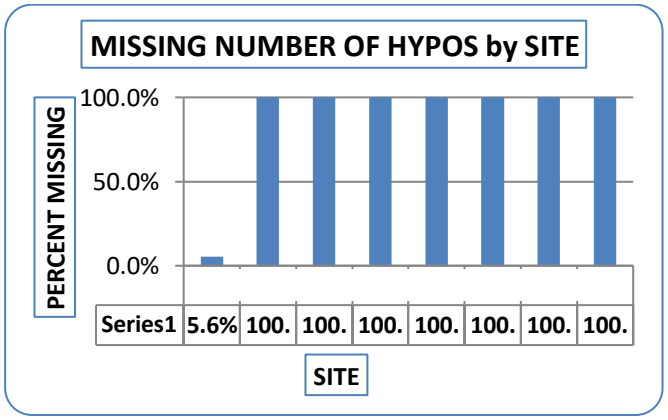
Six Sites had missing Gestational Htn data(5.6-100%) & seven Sites had missing Preeclampsia data (1.2-100%).





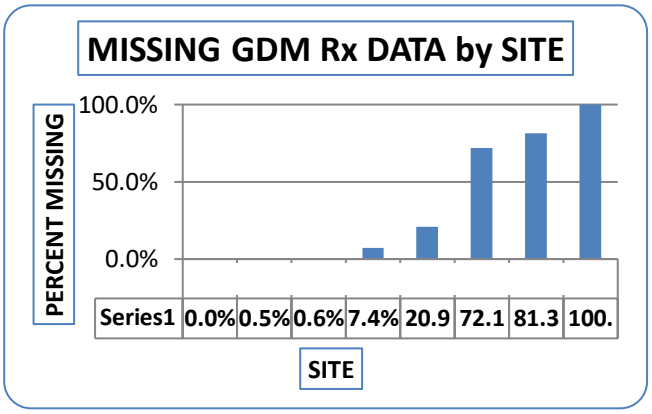
All Sites had missing Significant Hypos data (5.6-100%) & all Sites had missing Hypo Number data (5.6-100%).

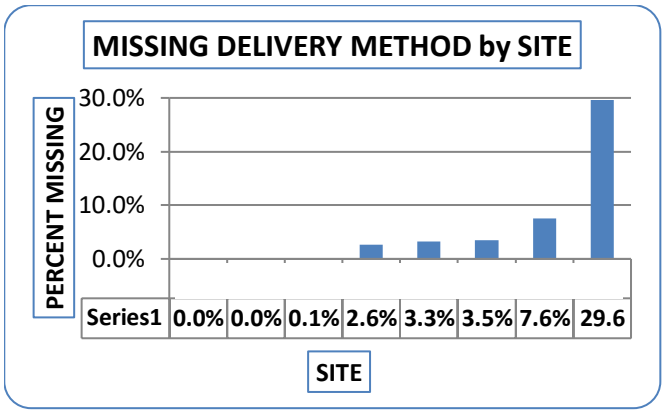




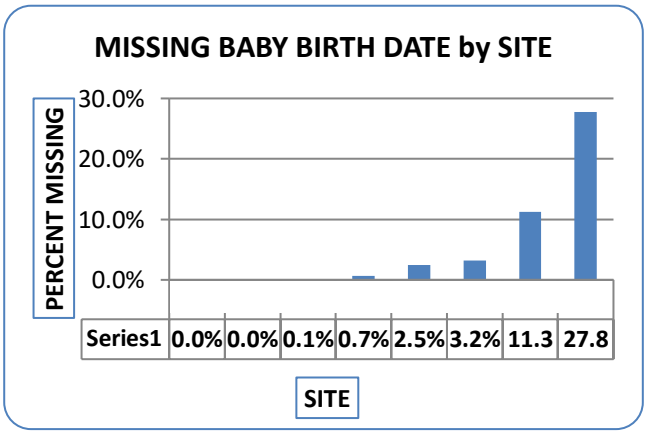
Gestational Diabetes

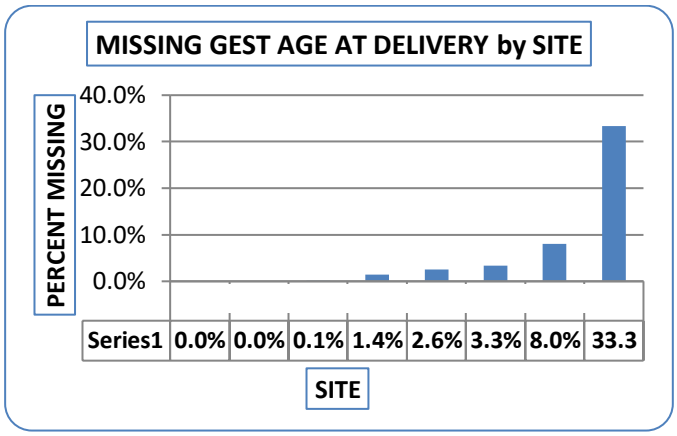
Seven Sites had missing GDM Treatment (0.5-100%) and six Sites had missing Delivery Method (0.1-29.6%).



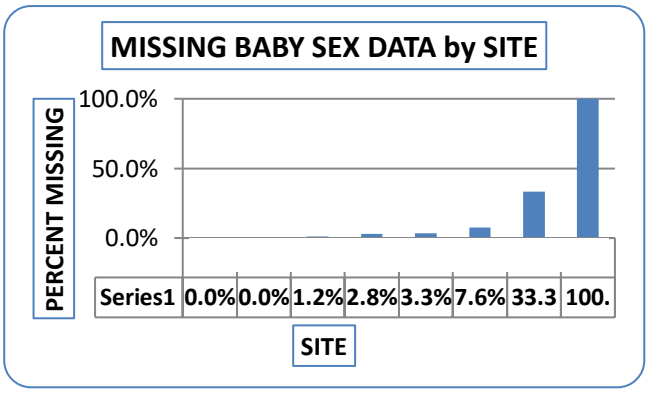


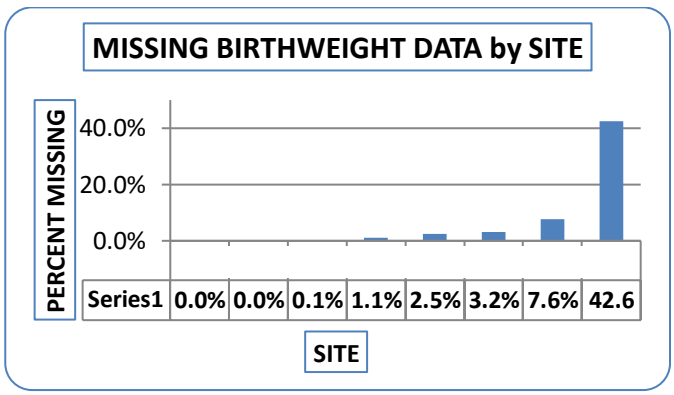
Six Sites had missing Baby Date of Birth (0.1-27.8%) & six Sites had missing Gest Age at Delivery (0.1-33.3%).



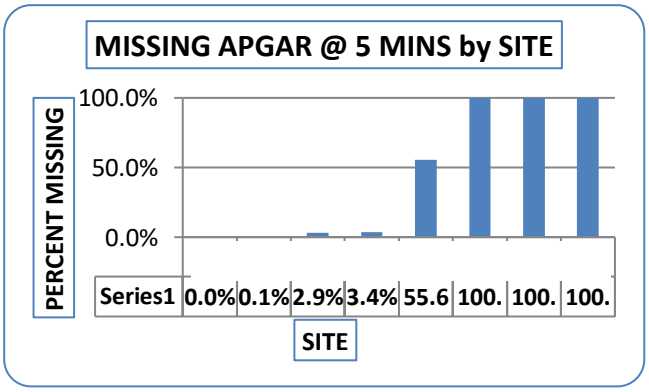


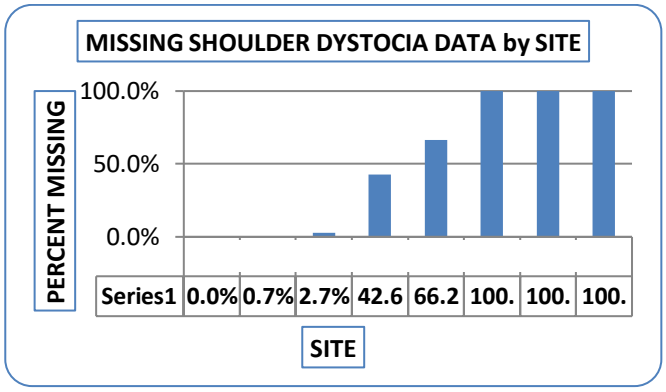
Six Sites had missing Baby Sex data (1.2-100%) and six Sites had missing Birthweight data (0.1-42.6%).





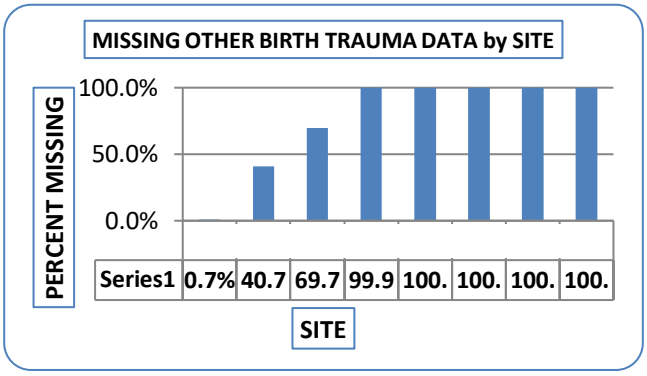
7 Sites had missing Apgar at 5 Minutes data (0.1-100%) & 7 Sites had missing Shoulder Dystocia (0.7-100%).

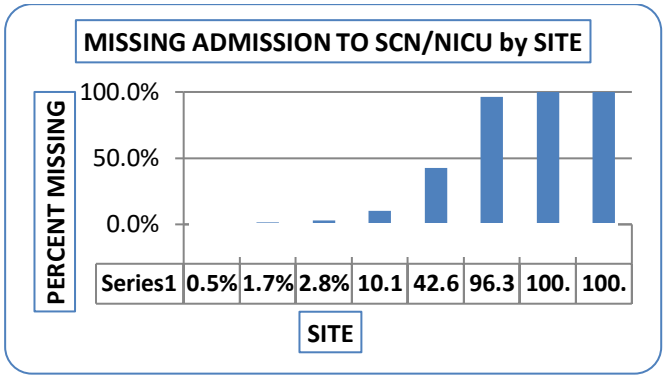




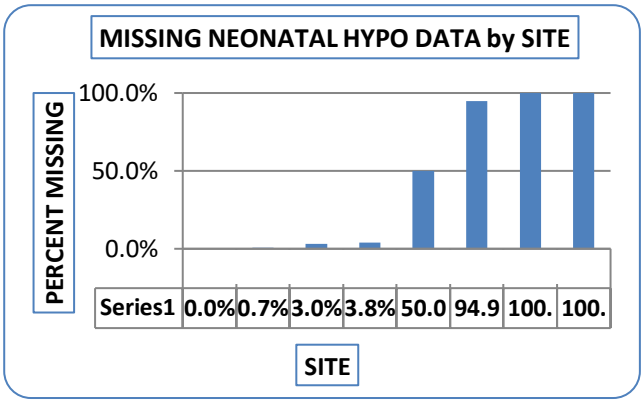
Gestational Diabetes

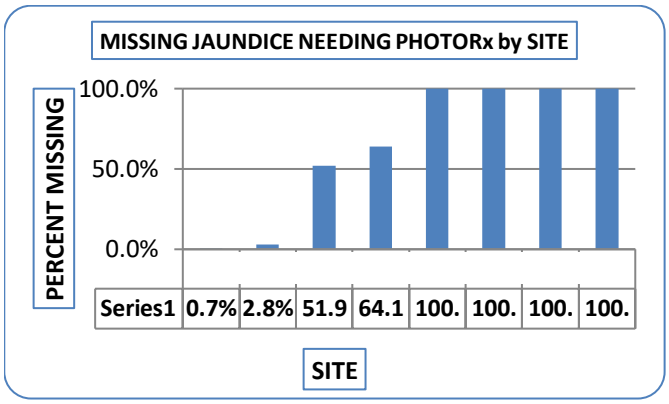
All Sites had missing Other Birth Trauma (0.7-100%) and all Sites had missing SCN/NICU Admission (0.5-100%).



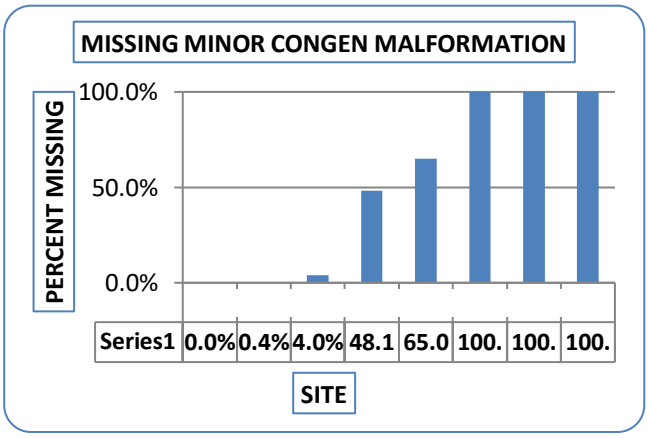


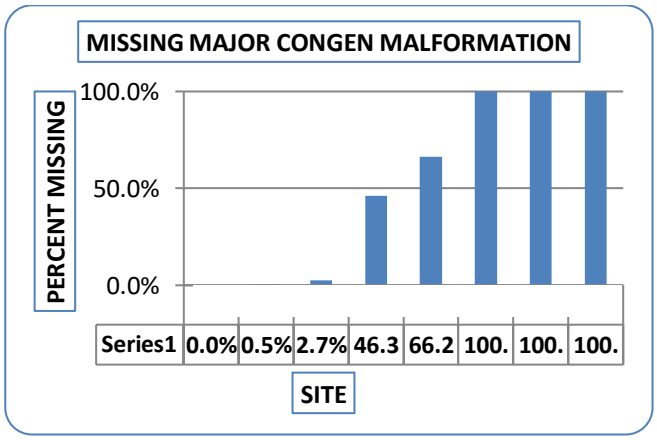
Seven Sites had missing Neonatal Hypo (0.7-100%) & all Sites had missing Jaundice-Photo Rx data (0.7-100%).



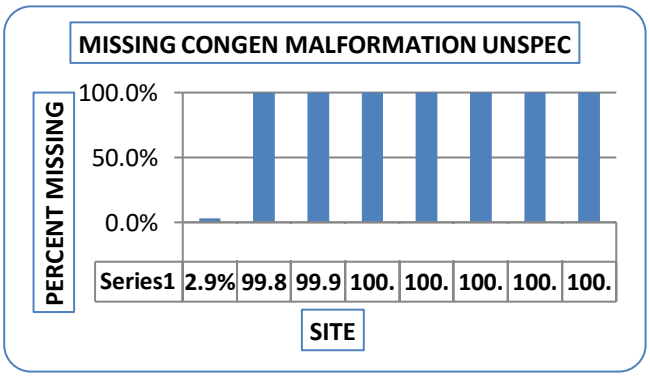


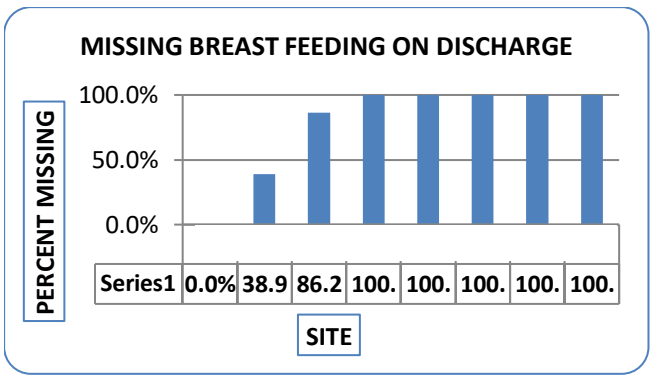
7 Sites had missing Minor Congen Malformation (0.4-100%) 7 Sites had missing Major Congen Malformation (0.5-100%)





Eight Sites had missing Unspecified data (2.9-100%). 7 Sites had missing Breast Feeding on Discharge data (38.9-100%).



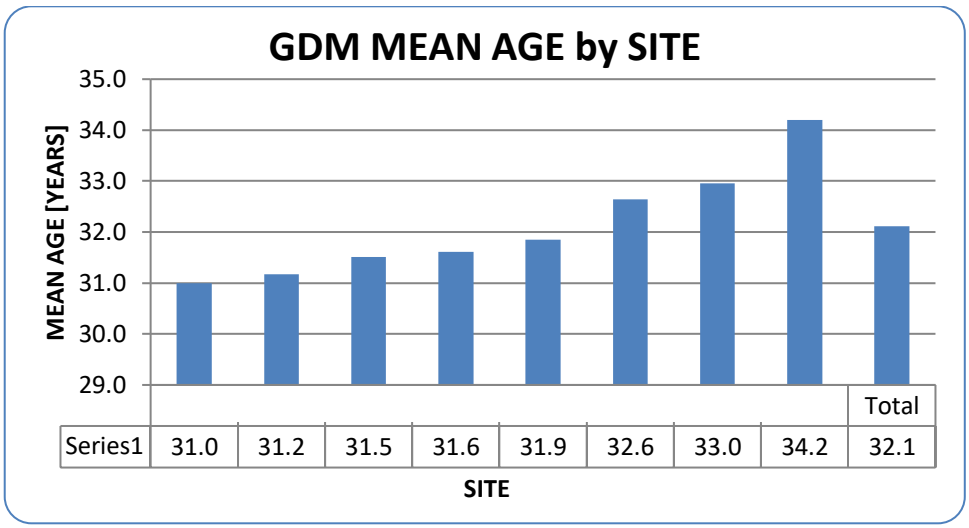


The next section reviews the benchmarked Outcome Findings in the Audit for GDM

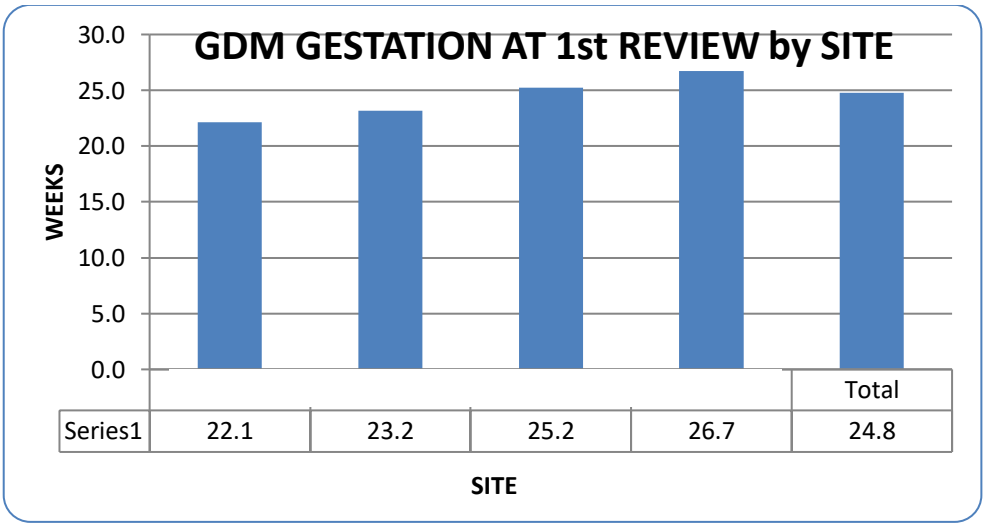
This section reviews the benchmarked Outcome Findings in the Audit for T2DM

Gestational Diabetes

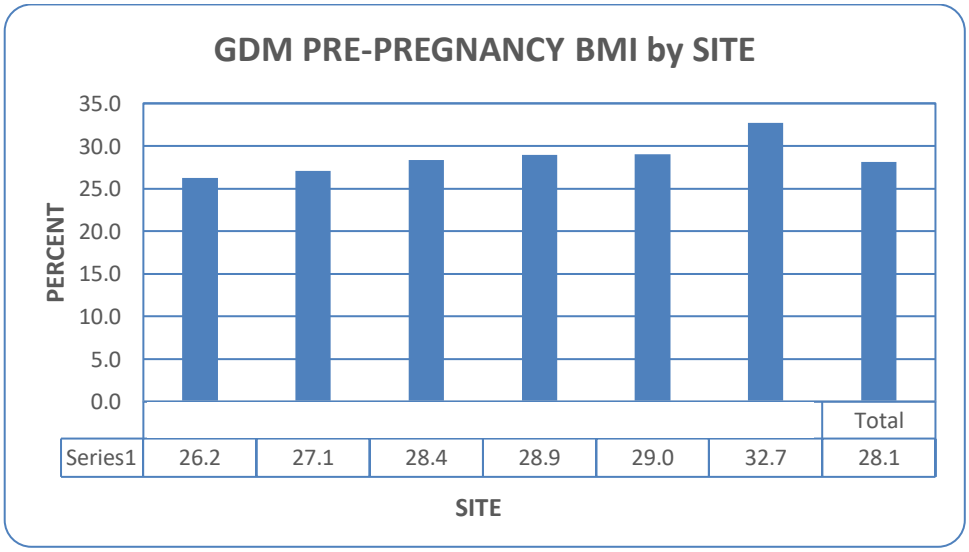
The overall mean (± SD) Age of 8670/8696 GDM pregnant women was 32.1 years ± 5.5 years (overall range 15.0-51.0). The inter-site mean age variation was 31.0 ± 5.2 to 34.2 ± 5.7 years across the eight Sites.



The mean (± SD) weeks gestation was available from four Sites only and was 24.8 ± 7.2 (overall range 4.0-39.0). The inter-site mean weeks gestation variation was 22.1 ± 9.3 to 26.7 ± 5.8 weeks across the four Sites that provided data.

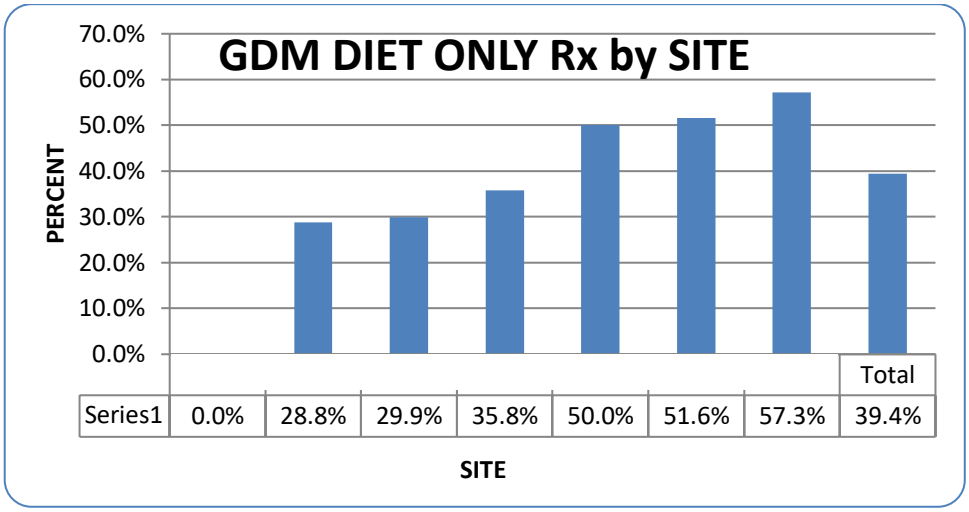


Pre-Pregnancy BMI in GDM could be calculated for 93.6% of 6/8 Sites & was overall 28.1 (inter-Site range 26.2-32.7).

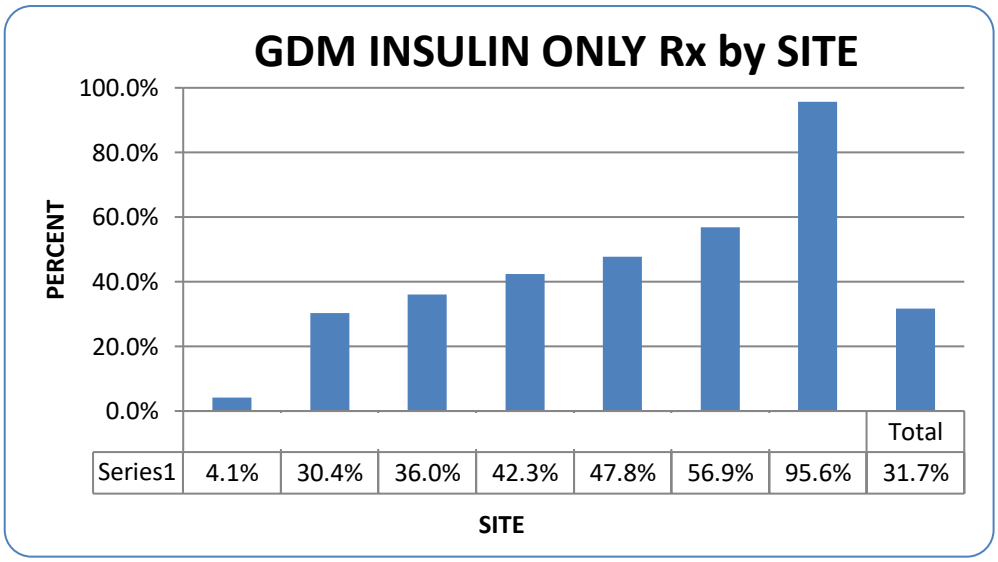


Gestational Diabetes

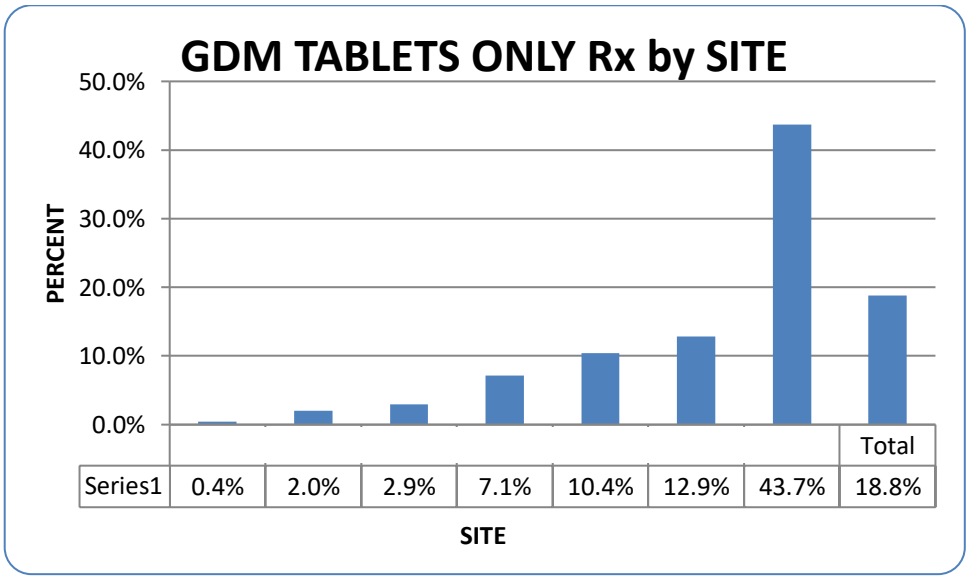
GDM Diet Therapy was reported in 7/8 eight Sites with overall mean 39.4% Inter-Site range 0-57.3%.



GDM Insulin Therapy from 7/8 Sites that provided data was overall 31.7% (inter-Site range 4.1-95.6%).

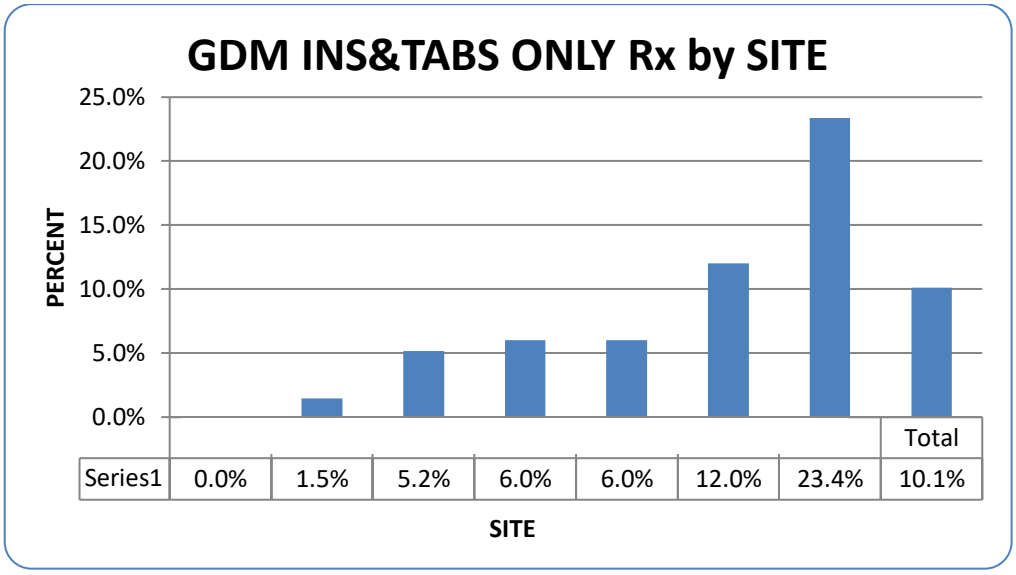


GDM Tablet Therapy from seven Sites that provided data was overall 18.8% (inter-Site range 0.4-43.7%).
NOTE Tablet Type was NOT Specified in the Field Definition. It is presumed the majority would be Metformin.

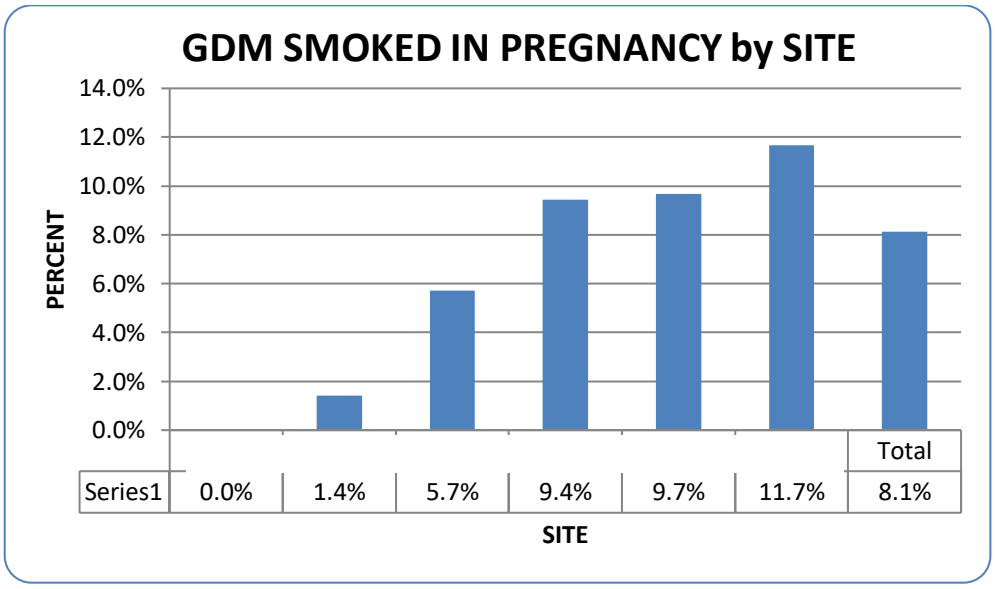


Gestational Diabetes

GDM Insulin & Tablet Rx from seven Sites was overall 10.1% (inter-Site range 0-23.4%).



GDM and Smoking in Pregnancy data were reported by six Sites (mean 8.1% inter-Site range 0-11.7% [n=2/8]).



OHA use at Conception in GDM Pregnancy, reported by 2/8 Sites was 4 women (? Metformin ? Coding Error).

Statin use at Conception in GDM Pregnancy, showed **ZERO** cases.

ACE/ARB use at Conception in GDM Pregnancy, showed **ZERO** cases

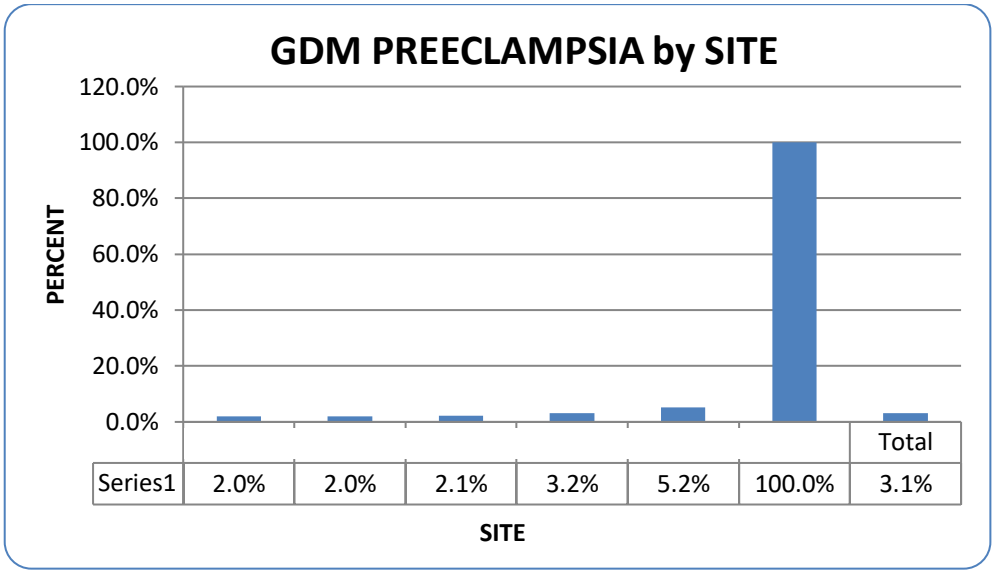
Folate use First Trimester in GDM, reported by one Site was 6 women (Presumably a Coding Error).

Aspirin Use in GDM, reported by two Sites was 34 women at one Site and 1 at the other.

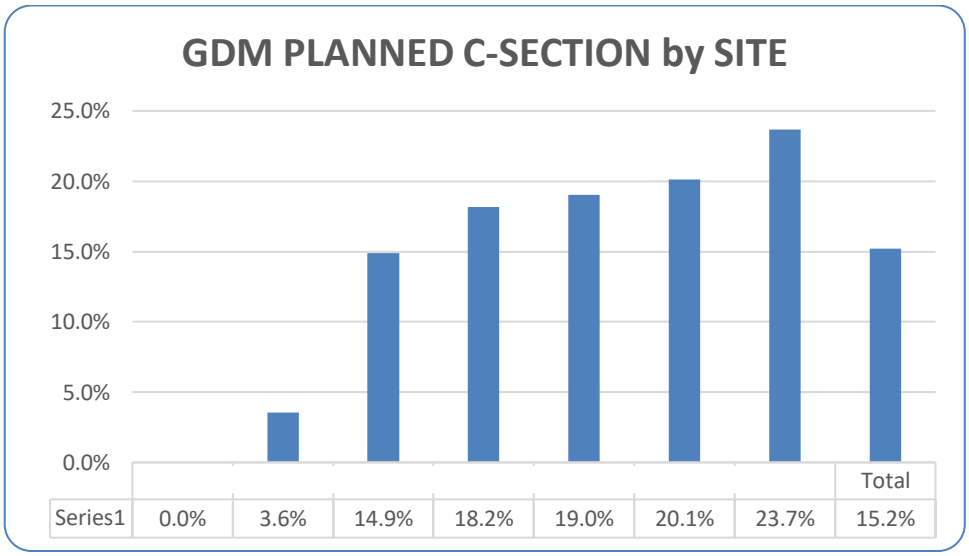
MATERNAL HYPOGLYCAEMIC EPISODES NEEDING ASSISTANCE … *NO SITE PROVIDED ANY DATA*

Gestational Diabetes

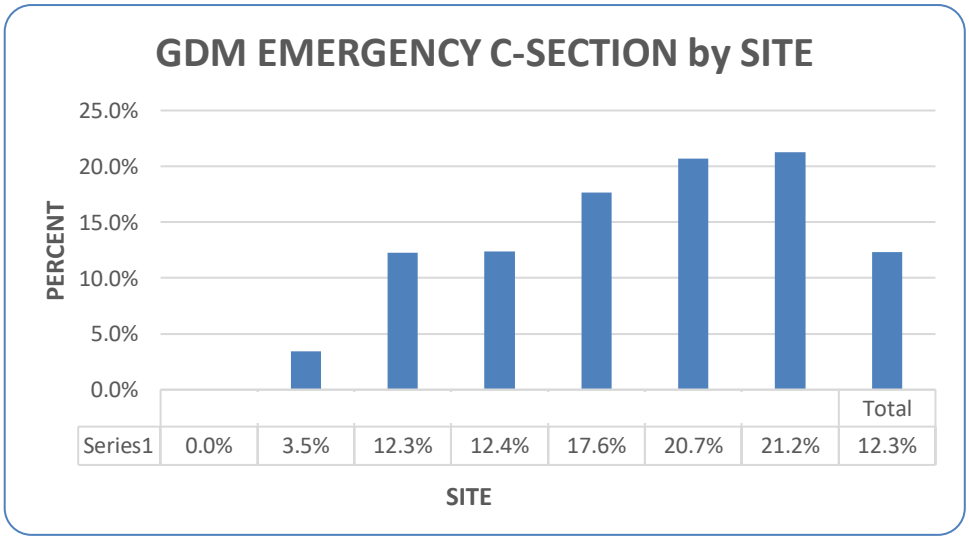
Preeclampsia in GDM, reported by all Sites was overall 3.1% (inter-Site range 2.0-100%) [n=1/1].



Planned Caesarean Section in GDM reported by all Sites was overall 15.2% (inter-Site range 0-23.7%). [n=0/850]
NOTE One Site had 34.6% **Caesarean Sections UNSPECIFIED**

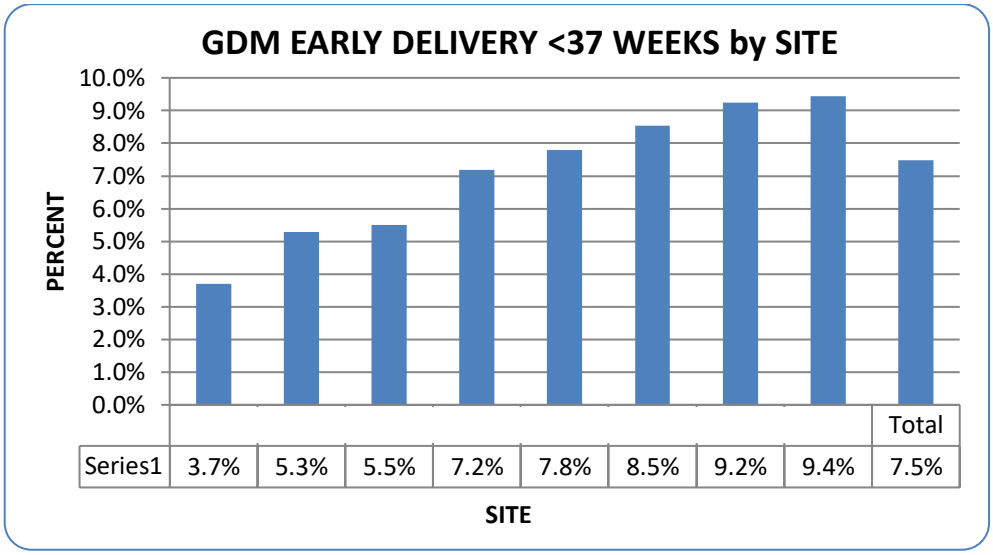


Emergency Caesarean Section in GDM reported by six Sites was overall 12.3% (inter-Site range 0-21.2%).[n=0/850]
NOTE One Site had 34.6% **Caesarean Sections UNSPECIFIED**

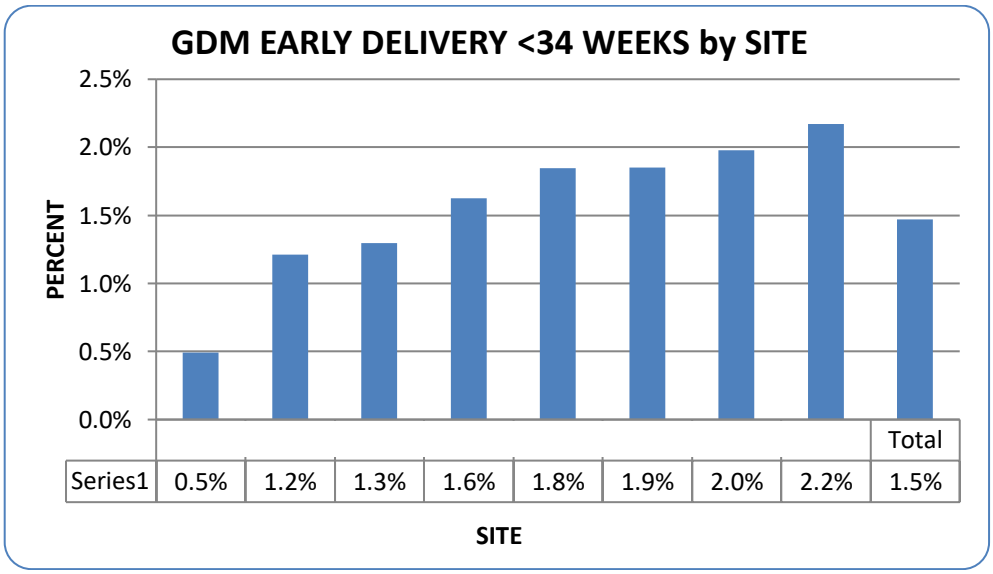


Gestational Diabetes

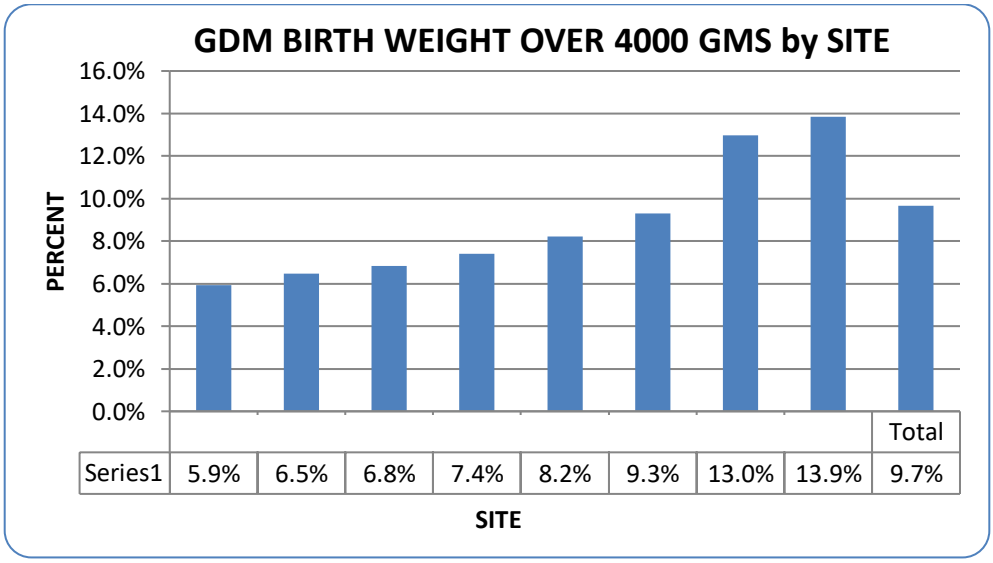
Early Delivery <37 Weeks in GDM reported by all Sites was overall 7.5% (inter-Site range 3.7-9.4%).



Early Delivery <34 Weeks in GDM reported by all Sites was overall 1.5% (inter-Site range 0.5-2.2%).

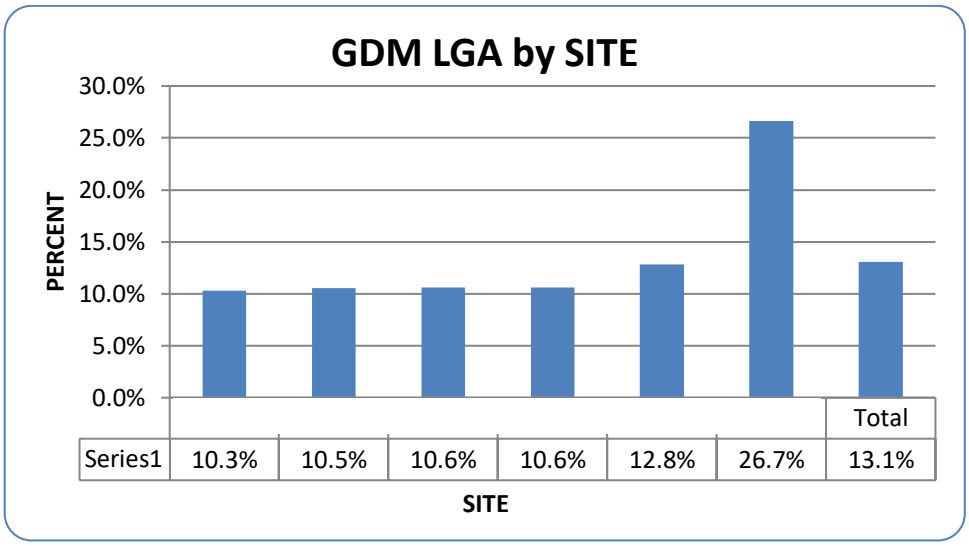


Birth Weight >4000 Grams in GDM reported by all Sites was overall 9.7% (inter-Site range 5.9-13.9%) [n=0/7].

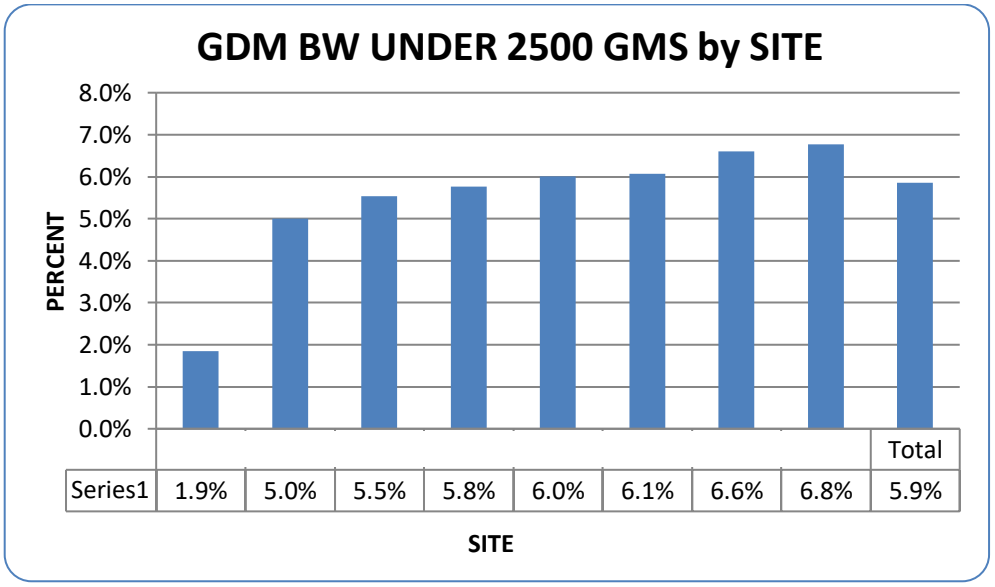


Gestational Diabetes

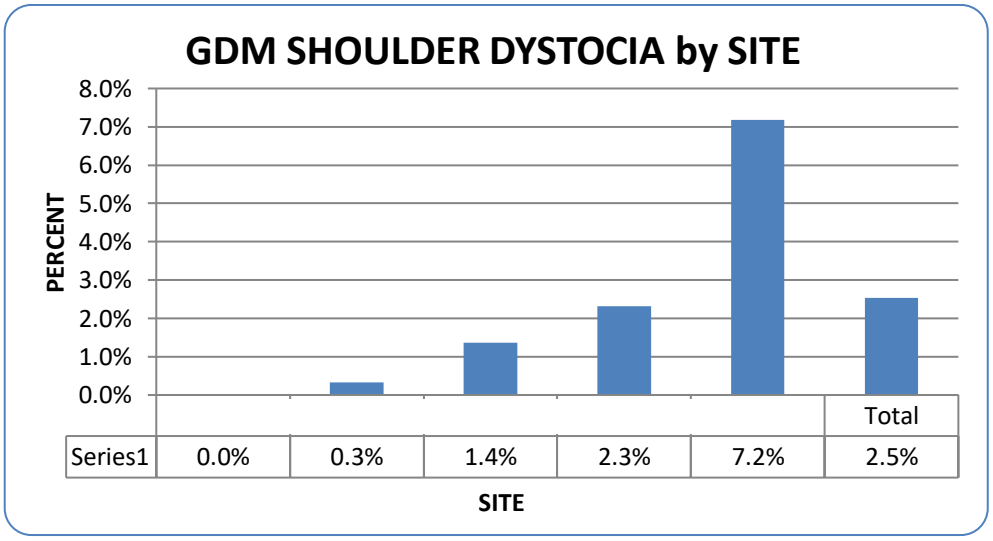
LGA in GDM was available for 66.2% of records and calculated from 6/8 Sites was overall 13.1%. The inter-Site range was 10.3-26.7% [n=214/803].



Birth Weight <2500 Grams in GDM reported by all Sites was overall 5.9% (inter-Site range 1.9-6.8%) [n=1/6].

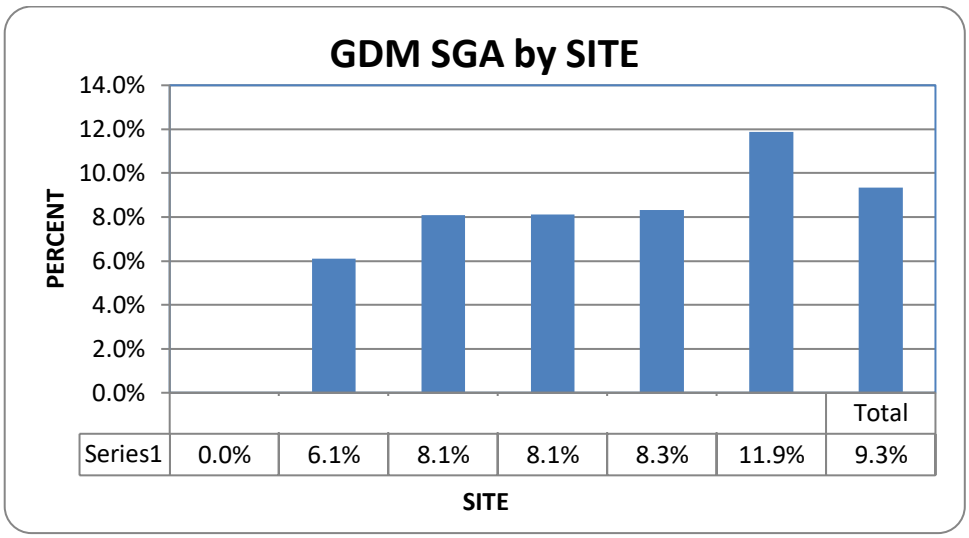


Shoulder Dystocia in GDM reported by five Sites was overall 2.5% (inter-Site range 0-7.2%).

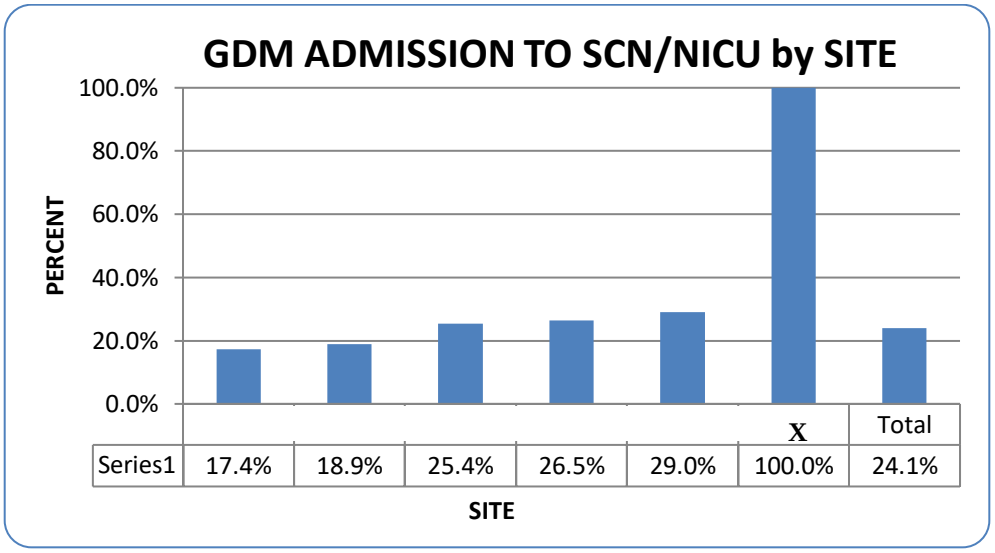


Gestational Diabetes

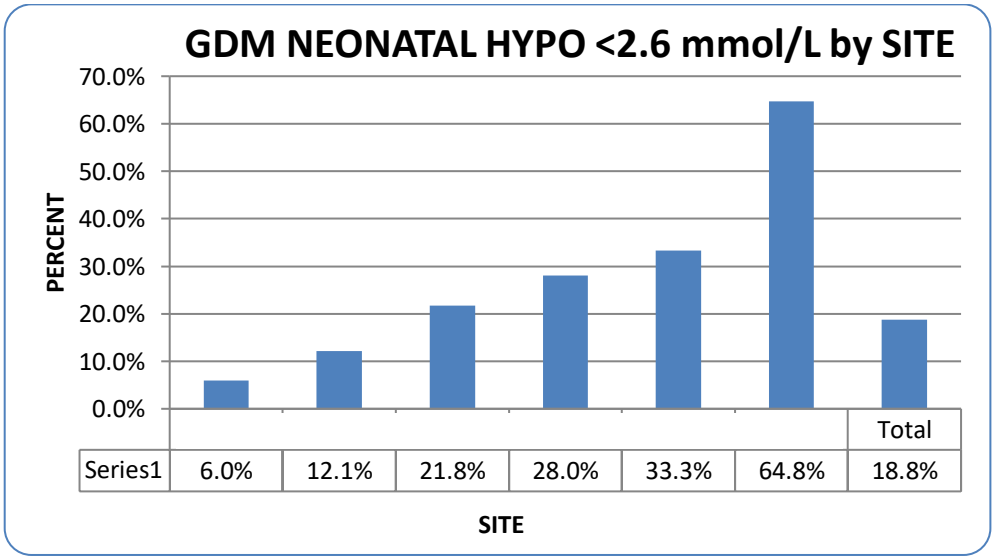
SGA in GDM was available for 66.2% of records and calculated from 6/8 Sites was overall 9.3%.
The inter-Site range was 0-11.9% [n=0/19].



SCN/NICU Admission in GDM reported by six Sites was overall 24.1% (inter-Site range 17.4-100%)[n=88/88].
This is the Field noted in Methods (Page 3) where there is a problem interpreting Site X Data

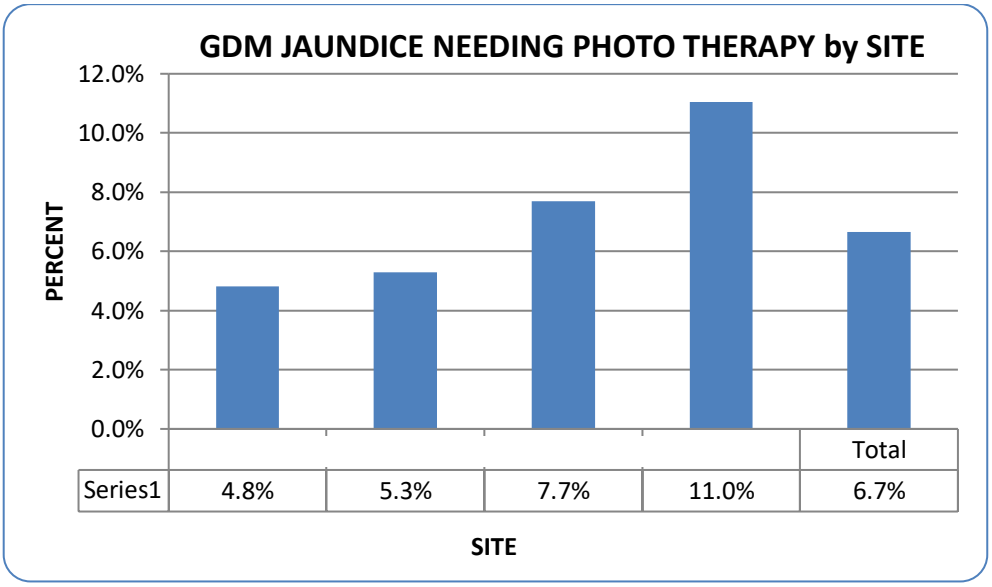


Neonatal Hypo <2.6 mmol/L in GDM reported by 6/8 Sites was overall 18.8% (inter-Site range 6.0-64.8%).

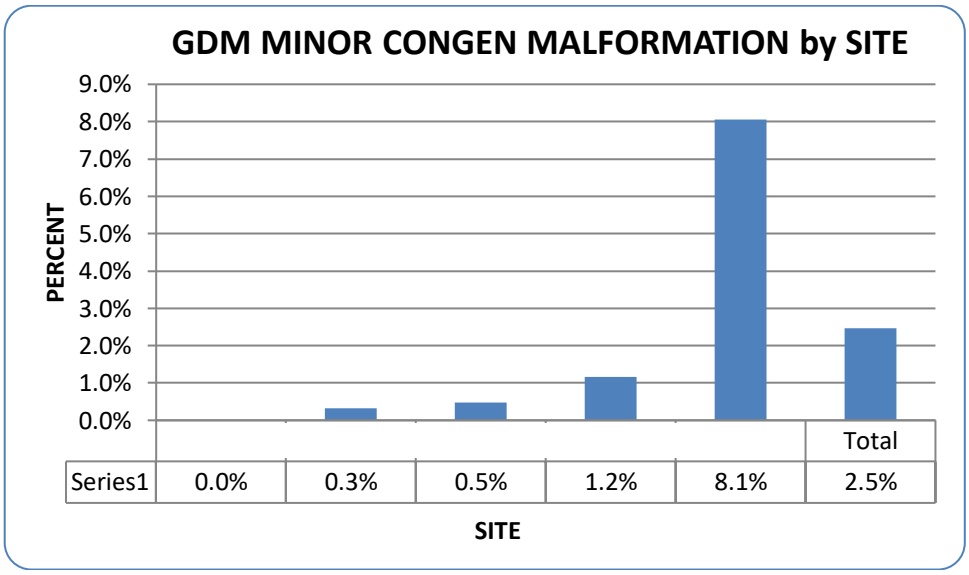


Gestational Diabetes

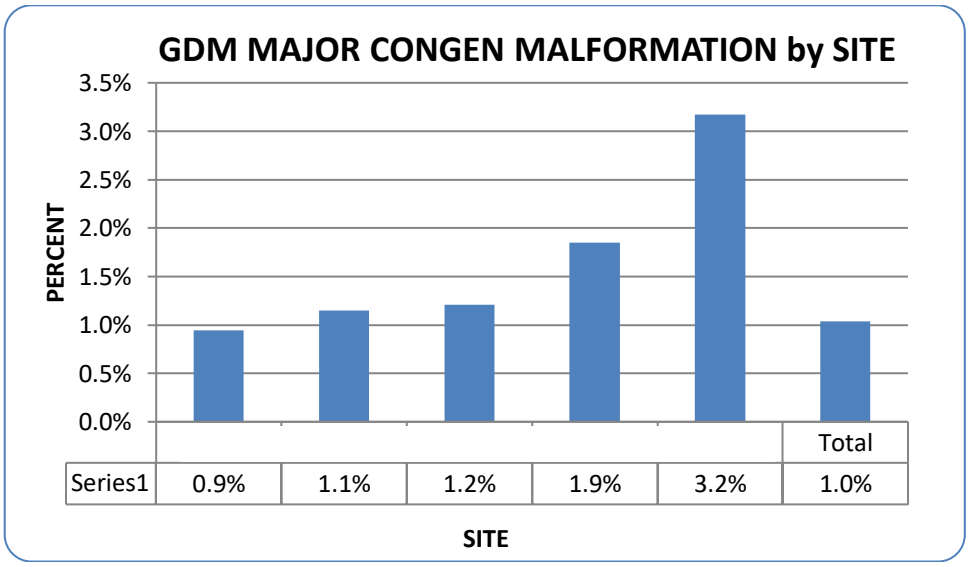
Neonatal Jaundice needing Phototherapy reported by 4/8 Sites was overall 6.7% (inter-Site range 4.8-11.0%).



Minor Congenital Malformations in GDM reported by five Sites was overall 2.5% (inter-Site range 0-8.1%)[n-0/54].

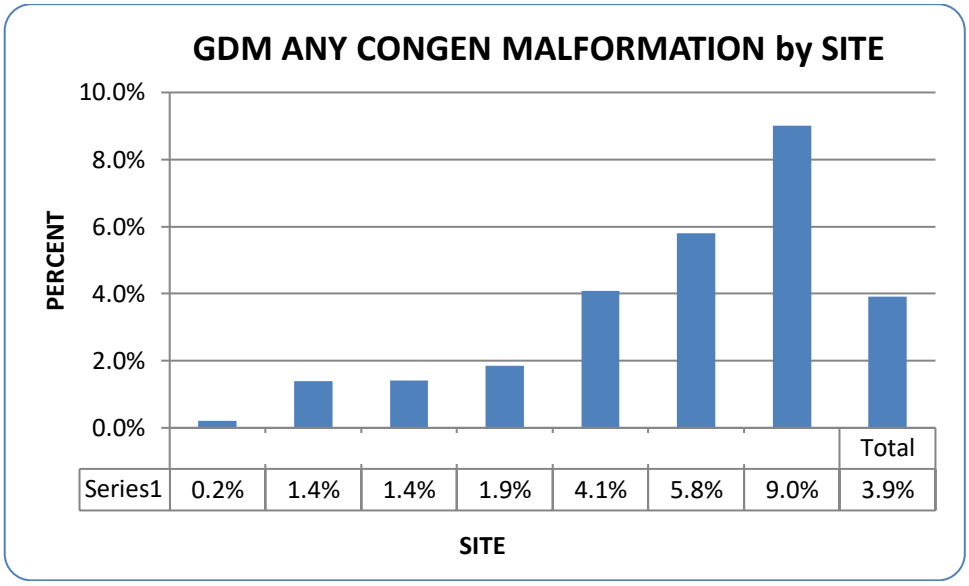


Major Congenital Malformations in GDM reported by five Sites was overall 1.0% (inter-Site range 0.9-3.2%).

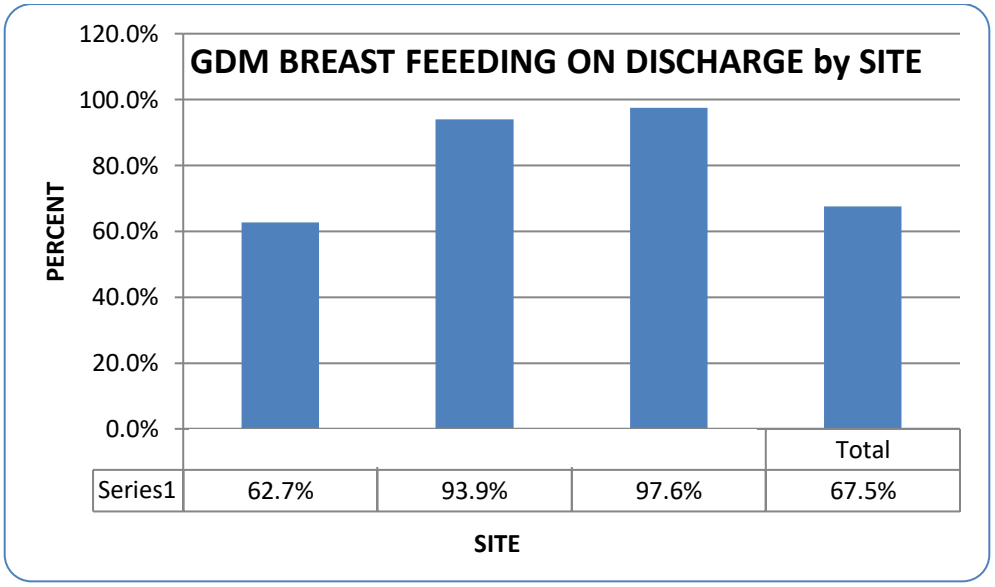


Gestational Diabetes

Any Congenital Malformations in GDM reported by seven Sites was overall 3.9% (inter-Site range 0.2-9.0%)



Breast Feeding on Discharge in GDM reported by three Sites was overall 67.5% (inter-Site range 62.7-97.6%).



DISCUSSION: General

This ADIPS Pilot was a voluntary Audit and Benchmarking exercise to which Eleven Sites from Australia and New Zealand provided de-identified data on over 10,000 singleton pregnancies in women with pre-existing diabetes and those diagnosed with gestational diabetes. Data have been managed in a doubly de-identified manner through a Trusted Third Party, who has coordinated all correspondence between the participating Sites and the Central Data Analysis Site. Every effort was made to validate and verify data by querying Sites about questionable values in several key data items, however missing data were not sought.

The analyses presented in this report are benchmarked to enable Sites to compare their Process and Outcome findings with the other participating Sites. A separate Overall Pooled Data Report will be prepared and submitted for publication. This report has not compared T1DM with T2DM and GDM as these would need adjustment for site characteristics and could be affected by missing data.

In reviewing the data in this report, several general observations could be made:

- There is a significant amount of missing data in many data item fields;
- There is considerable variation between Sites in many data items in both missing data and outcomes;
- At a cursory glance, it may appear that management may be less than ideal in several aspects of care.

Caution is needed in interpreting the above observations, however.

The data provided came, in the most part (if not entirely) from Sites with existing databases, not from specific data retrievals that may be undertaken in a research project designed to target specific research questions. Consequently, missing data *may* reflect the fact that a particular field or fields is/are not recorded in the database, and not necessarily that they are not part of patient care. An example may be (for instance) Folate Use in the first trimester in T1DM and T2DM. Sites might practice this 100% of the time, but may record that fact in their database infrequently or not at all, hence data would be missing totally or in part for that data item for such a Site. The purpose of an audit such as this, (using the Folate example) is to highlight that if such a field is being used to assess the outcome of care, then Sites could (indeed should) collect and record it in their database. Equally it is recognised that Sites may indeed NOT collect such data as it is indeed NOT their routine practice. An important point regarding data completeness is that appropriate interpretation of Outcomes is dependent on complete (or near complete) Process – in other words, interpreting (for example) the percent of babies with (say) neonatal hypoglycaemia, is far more appropriate if this is a proportion of a full dataset ie all (or most) babies delivered, rather than just in the 10-20% where it has been recorded. It is up to Sites to assess this when they review their data in this Report.

Outcome and other measures were reported based upon non-missing data except for congenital malformations where all missing data was assumed to imply no congenital malformations. This exclusion particularly arose from one site where only the presence of congenital malformations was recorded. Excluding missing data assumes that the proportion with the measure was the same in those with missing and non-missing data which may not be the case. This might overestimate the proportion with some measures where missing and negative may have been seen as synonymous. An example arose for SCN/NICU admission in pregnancies complicated by GDM where only "Yes" was added, suggesting that 100% of babies went to SCN/NICU. If none of the babies with missing fields went to SCN/NICU then, the estimate became 3.7% much lower than the 15-30% (rounded) at other sites. Future audit rounds need to ensure that missingness is minimised.

The considerable variation between Sites in some Outcomes will be determined in part by the Casemix of individual women that they serve, and no attempt has been made to assess this as we did not want to potentially de-identify or un-mask Sites by presenting data on Ethnic Background or (for instance) diagnostic BGL data. If indeed variations are real, again it is incumbent on Sites to look at 'poor' Outcomes and determine if they can be improved.

Equally relevant regarding outcomes of care is that individual Outcomes will be influenced by numerous factors including patient adherence to recommended therapy, service provision and the completeness of the data submitted for analysis. Additionally, it is difficult (if not impossible) to gauge some outcomes overall (for instance Breast Feeding on Discharge in GDM) when data are only available for three of eight Sites. Provision of larger, more complete datasets, and involvement of more Sites in future Audits would address this issue.

A more thorough interpretation and discussion of the overall results reported here will be made in the Overall Pooled Data Report.

What can be concluded here, is that this Pilot has been successful in showing that important de-identified data on Pregnancy and Diabetes, and GDM can be collected, collated, validated, verified, analysed and reported. Processes are in train to make this a sustainable and ongoing exercise.

We trust that Sites find this Report useful and we would welcome feedback.

REFERENCES

[1] Rudland, V.L., Price, S.A., Hughes, R., Barrett, H.L., Lagstrom, J., Porter, C., Britten, F.L., Glastras, S., Fulcher, I., Wein, P., Simmons, D., McIntyre, H.D. and Callaway, L. (2020), ADIPS 2020 guideline for pre-existing diabetes and pregnancy. Aust N Z J Obstet Gynaecol. https://doi.org/10.1111/ajo.13265

[2] Gardosi J, Francis A. Customised Weight Centile Calculator – GROW-Centile v5.15/6.4, 2009. Gestation Network. Available at www.gestation.net (v5.15: individual; v6.4: bulk centiles).

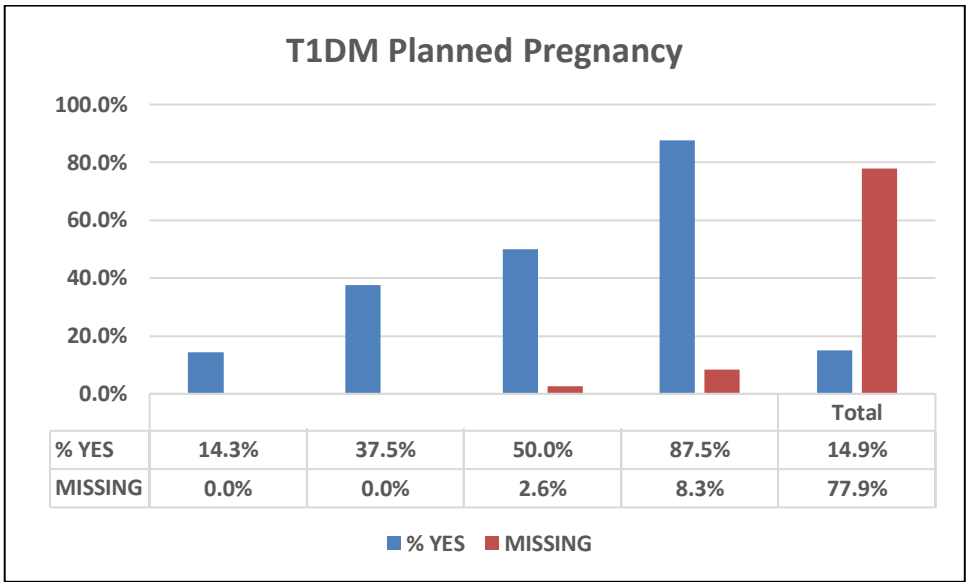
[3] ADIPS Consensus Guidelines for the Testing and Diagnosis of Gestational Diabetes Mellitus in Australia Nankervis A, McIntyre HD, Moses R, Ross GP, Callaway L, Porter C, Jeffries W, Boorman C, De Vries B, McElduff A for the Australasian Diabetes in Pregnancy Society. Available from http://www.adips.org/downloads/ADIPSConsensusGuidelinesGDM-03.05.13VersionACCEPTEDFINAL.pdf

[4] Hoffman L, Nolan C, Wilson JD, Oats JJ, Simmons D; The Australasian Diabetes in Pregnancy Society. Gestational diabetes mellitus – management guidelines. Med J Aust 1998;169:93–97.

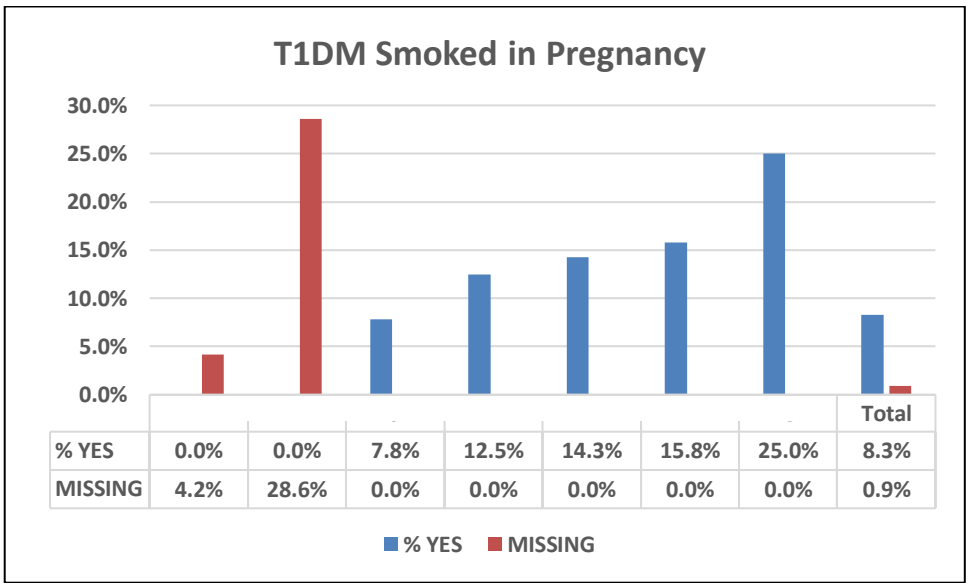
[5] Ministry of Health. 2014. Screening, Diagnosis and Management of Gestational Diabetes in New Zealand: A clinical practice guideline. Wellington: Ministry of Health. [Cited 2019 October 5]. Available from https://www.health.govt.nz/system/files/documents/publications/screening-diagnosis-management-of-gestational-diabetes-in-nz-clinical-practive-guideline-dec14-v2.pdf

APPENDIX [1]

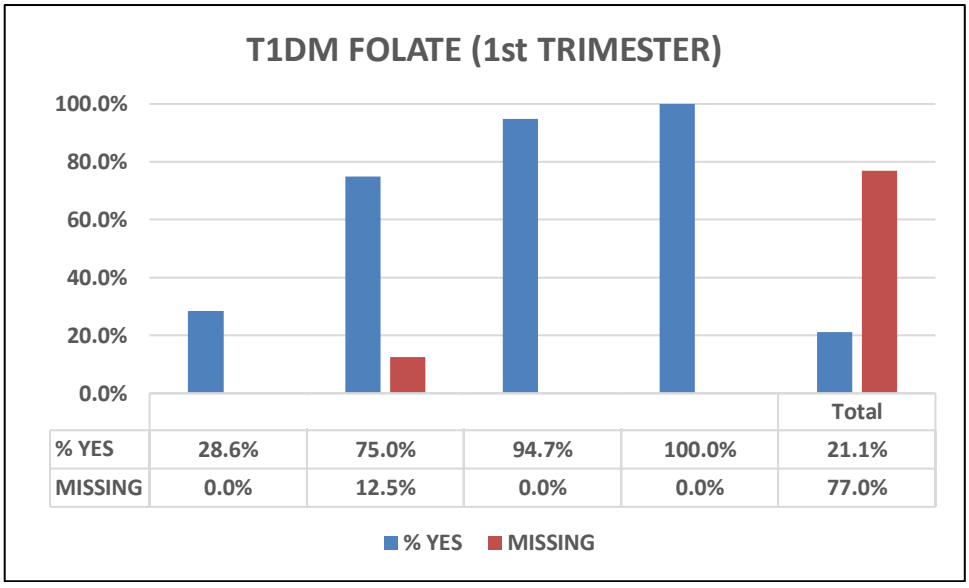
T1DM PERCENT YES AND PERCENT MISSING



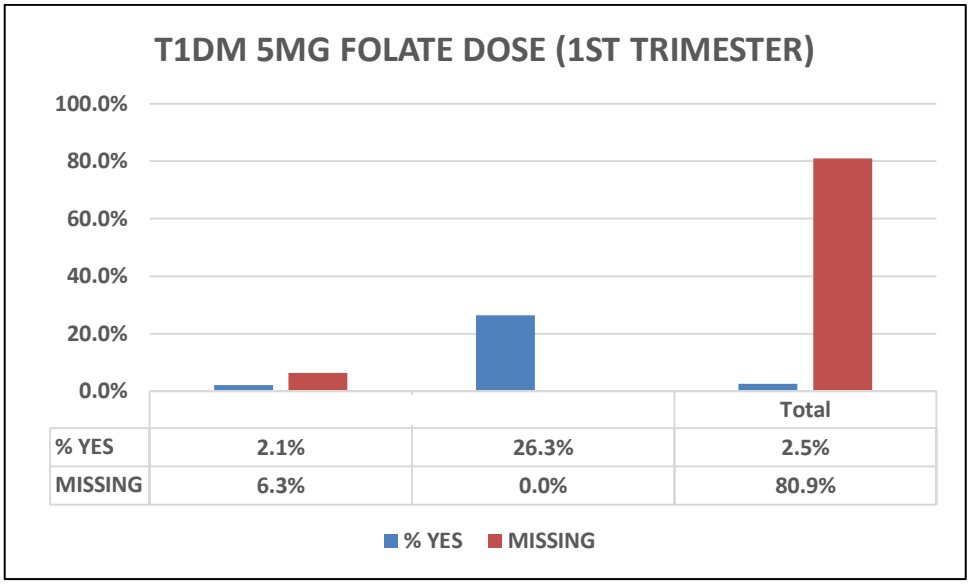
					Total
% YES	14.3%	37.5%	50.0%	87.5%	14.9%
MISSING	0.0%	0.0%	2.6%	8.3%	77.9%



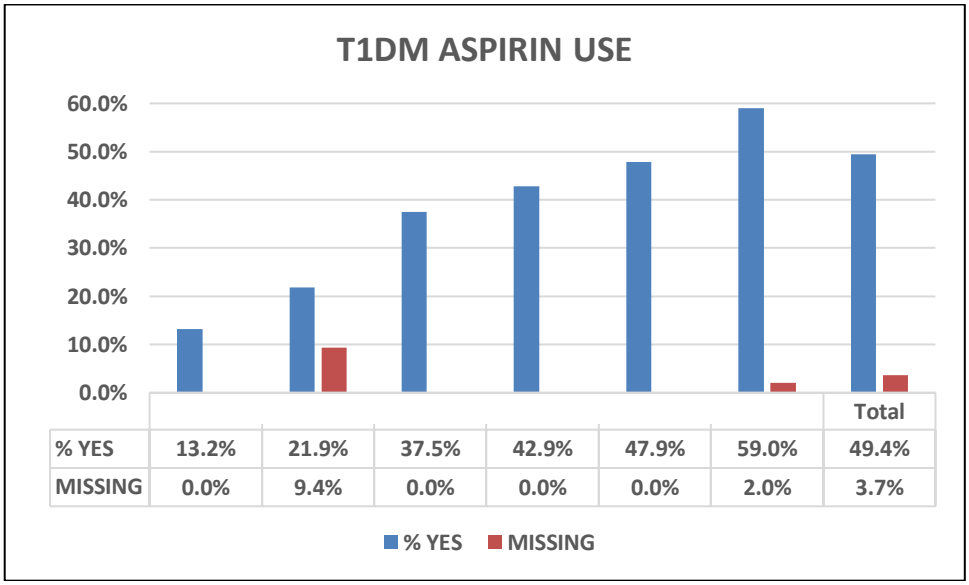
								Total
% YES	0.0%	0.0%	7.8%	12.5%	14.3%	15.8%	25.0%	8.3%
MISSING	4.2%	28.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%



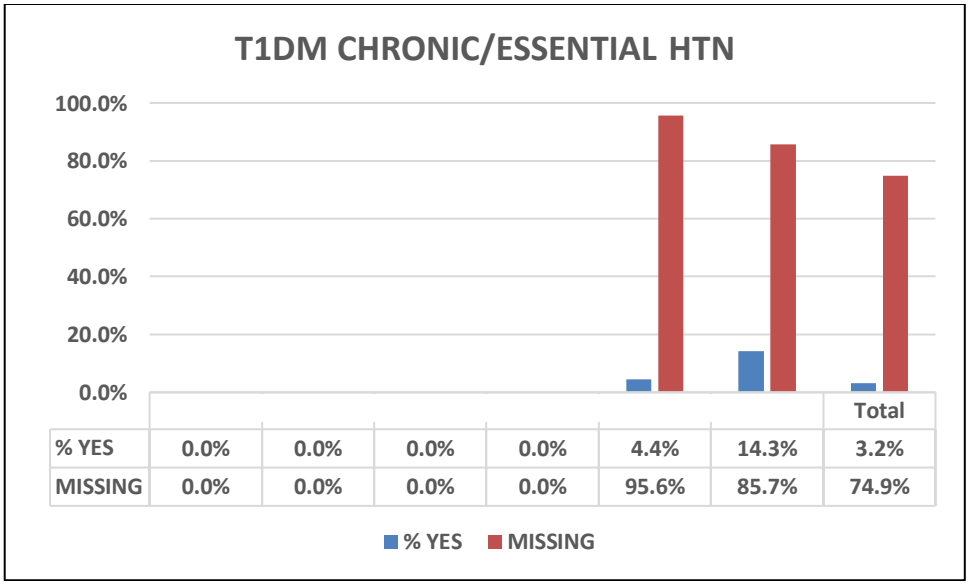
					Total
% YES	28.6%	75.0%	94.7%	100.0%	21.1%
MISSING	0.0%	12.5%	0.0%	0.0%	77.0%



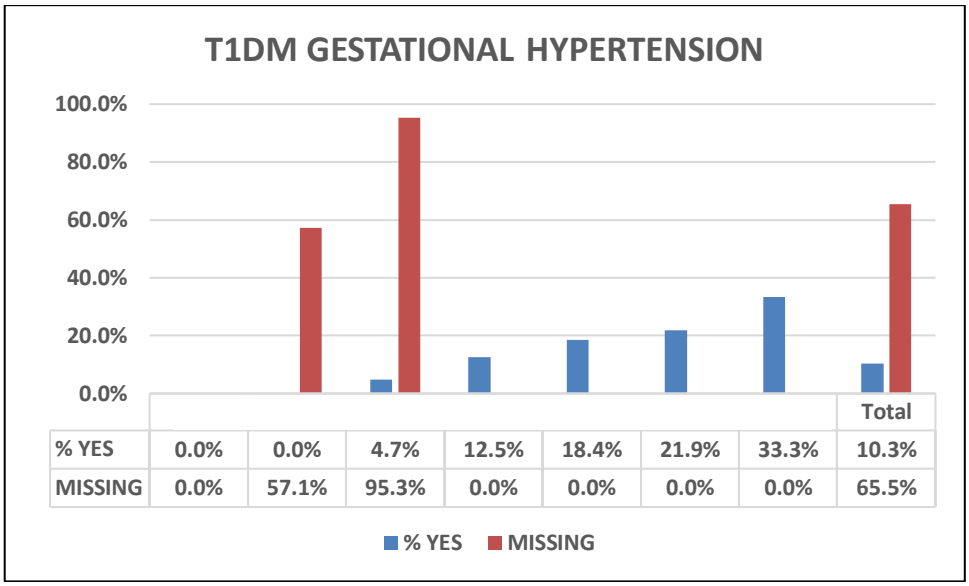
			Total
% YES	2.1%	26.3%	2.5%
MISSING	6.3%	0.0%	80.9%



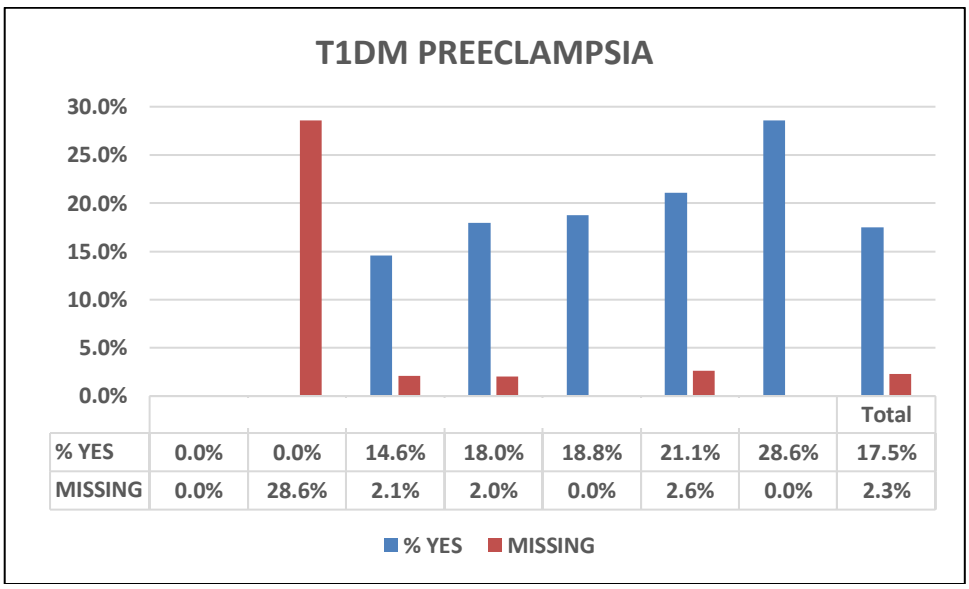
							Total
% YES	13.2%	21.9%	37.5%	42.9%	47.9%	59.0%	49.4%
MISSING	0.0%	9.4%	0.0%	0.0%	0.0%	2.0%	3.7%



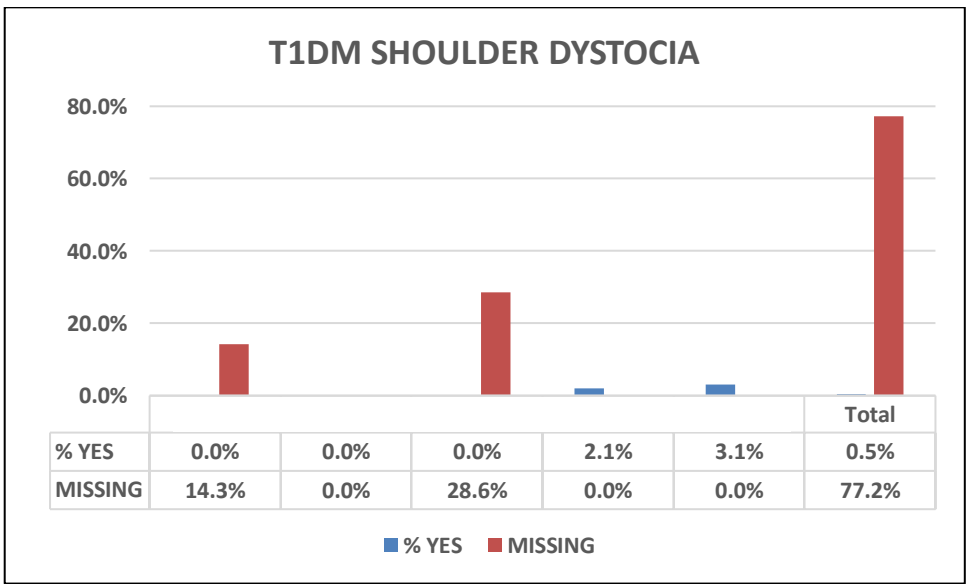
							Total
% YES	0.0%	0.0%	0.0%	0.0%	4.4%	14.3%	3.2%
MISSING	0.0%	0.0%	0.0%	0.0%	95.6%	85.7%	74.9%



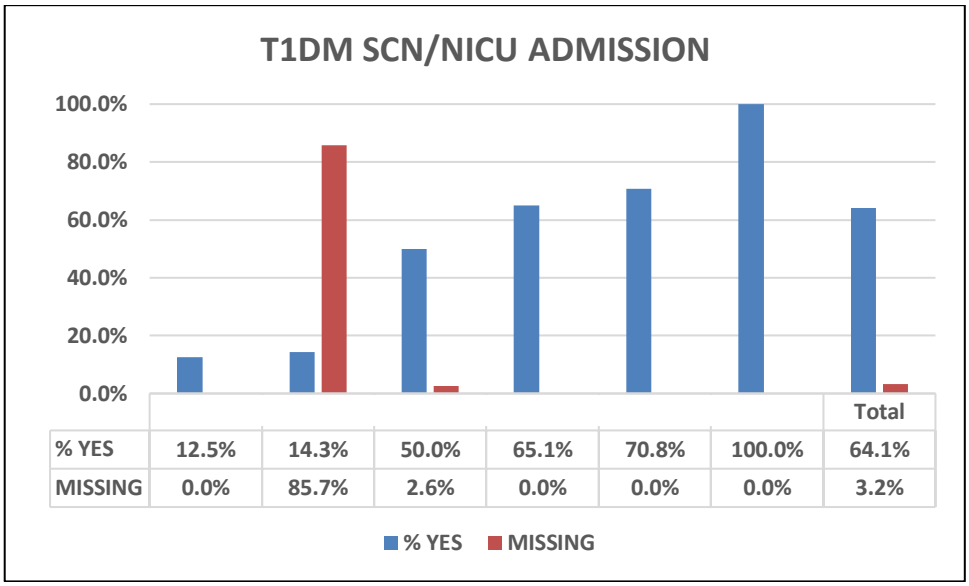
								Total
% YES	0.0%	0.0%	4.7%	12.5%	18.4%	21.9%	33.3%	10.3%
MISSING	0.0%	57.1%	95.3%	0.0%	0.0%	0.0%	0.0%	65.5%



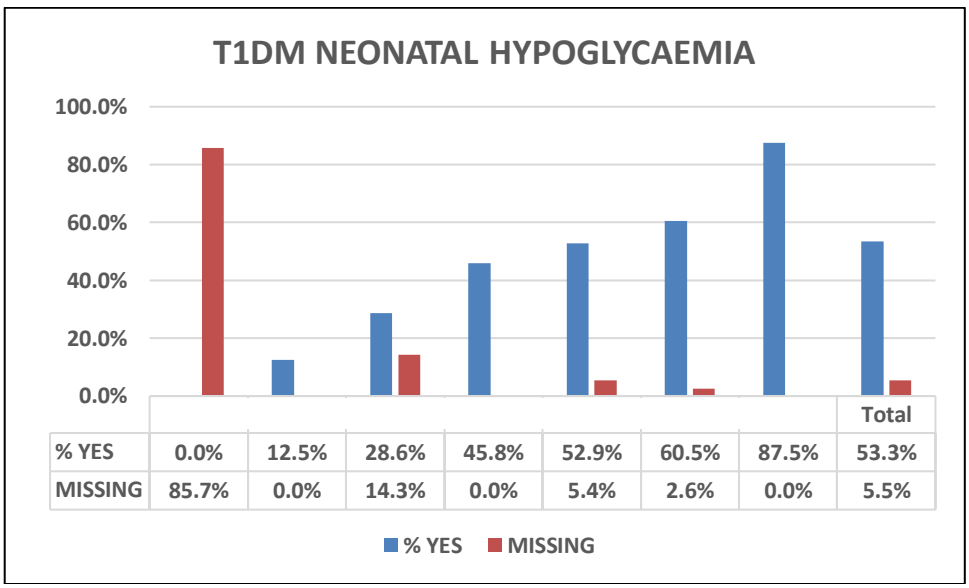
								Total
% YES	0.0%	0.0%	14.6%	18.0%	18.8%	21.1%	28.6%	17.5%
MISSING	0.0%	28.6%	2.1%	2.0%	0.0%	2.6%	0.0%	2.3%



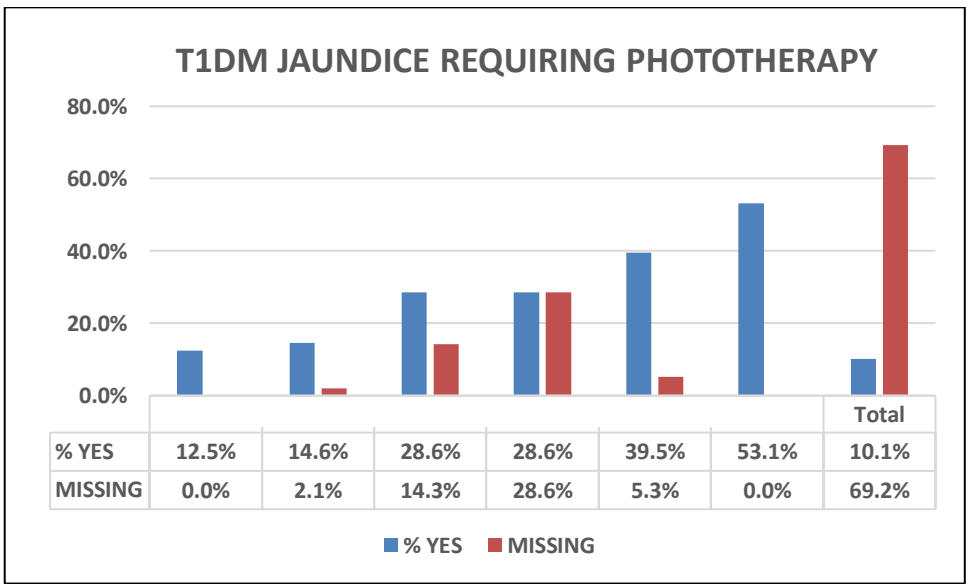
						Total
% YES	0.0%	0.0%	0.0%	2.1%	3.1%	0.5%
MISSING	14.3%	0.0%	28.6%	0.0%	0.0%	77.2%



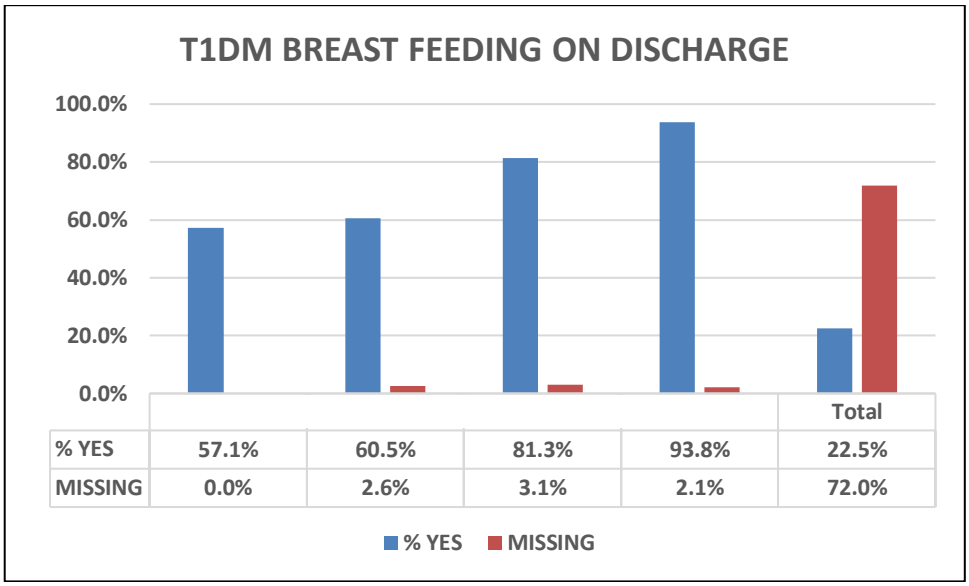
							Total
% YES	12.5%	14.3%	50.0%	65.1%	70.8%	100.0%	64.1%
MISSING	0.0%	85.7%	2.6%	0.0%	0.0%	0.0%	3.2%



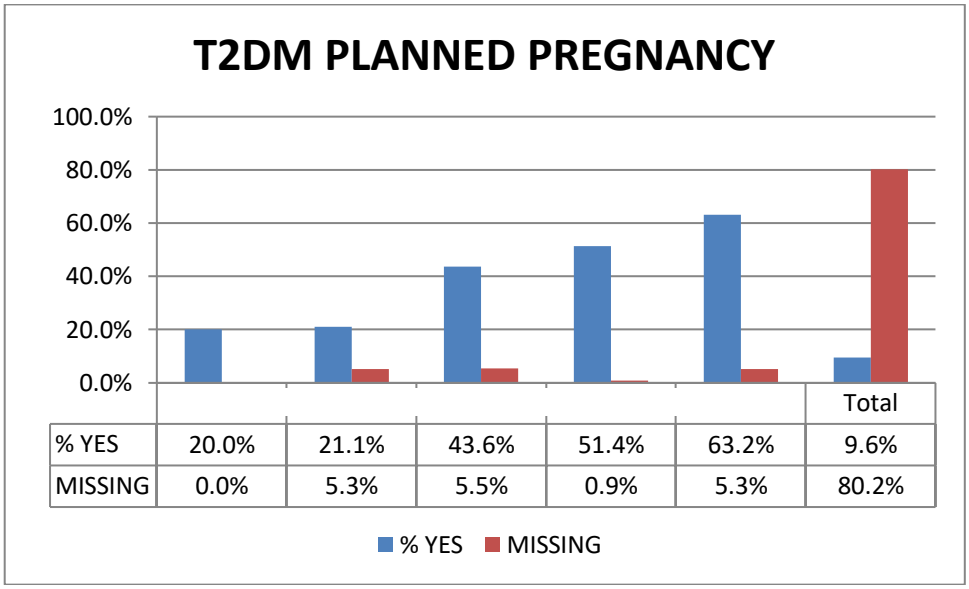
								Total
% YES	0.0%	12.5%	28.6%	45.8%	52.9%	60.5%	87.5%	53.3%
MISSING	85.7%	0.0%	14.3%	0.0%	5.4%	2.6%	0.0%	5.5%



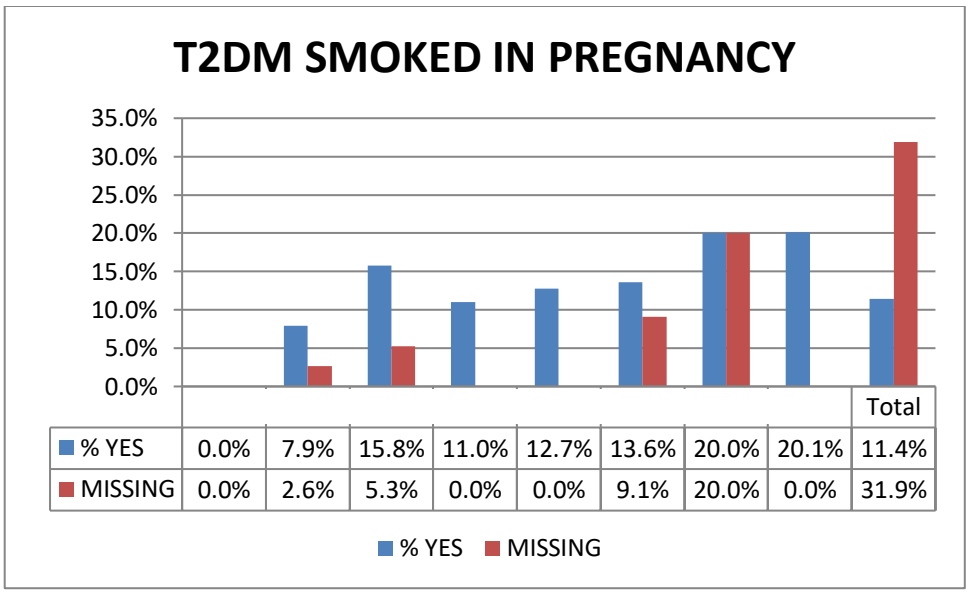
							Total
% YES	12.5%	14.6%	28.6%	28.6%	39.5%	53.1%	10.1%
MISSING	0.0%	2.1%	14.3%	28.6%	5.3%	0.0%	69.2%


T1DM BREAST FEEDING ON DISCHARGE
100.0%
80.0%
60.0%
40.0%
20.0%
0.0%
Total
% YES 57.1% 60.5% 81.3% 93.8% 22.5%
MISSING 0.0% 2.6% 3.1% 2.1% 72.0%
% YES
MISSING

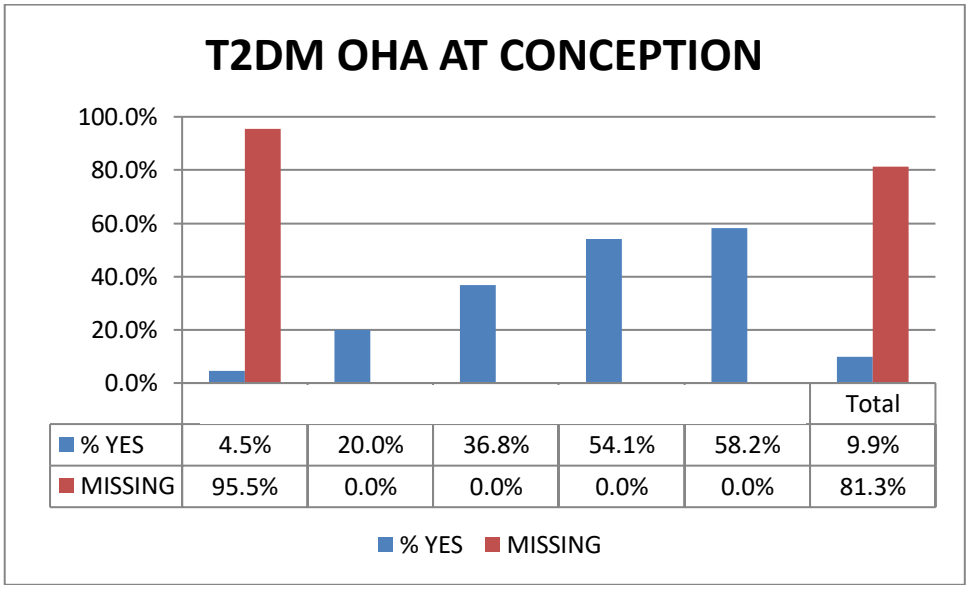
T2DM PERCENT YES AND PERCENT MISSING



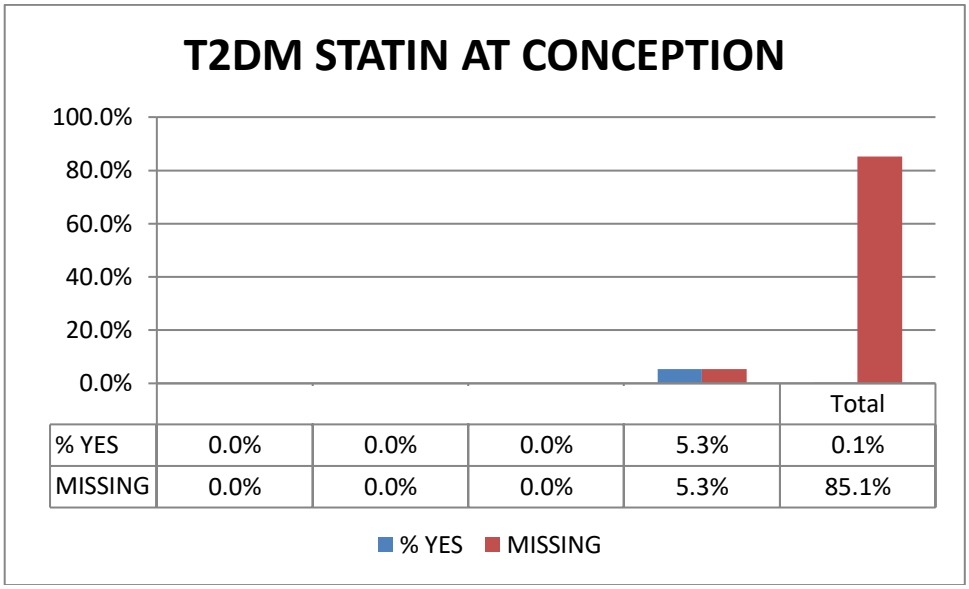
						Total
% YES	20.0%	21.1%	43.6%	51.4%	63.2%	9.6%
MISSING	0.0%	5.3%	5.5%	0.9%	5.3%	80.2%



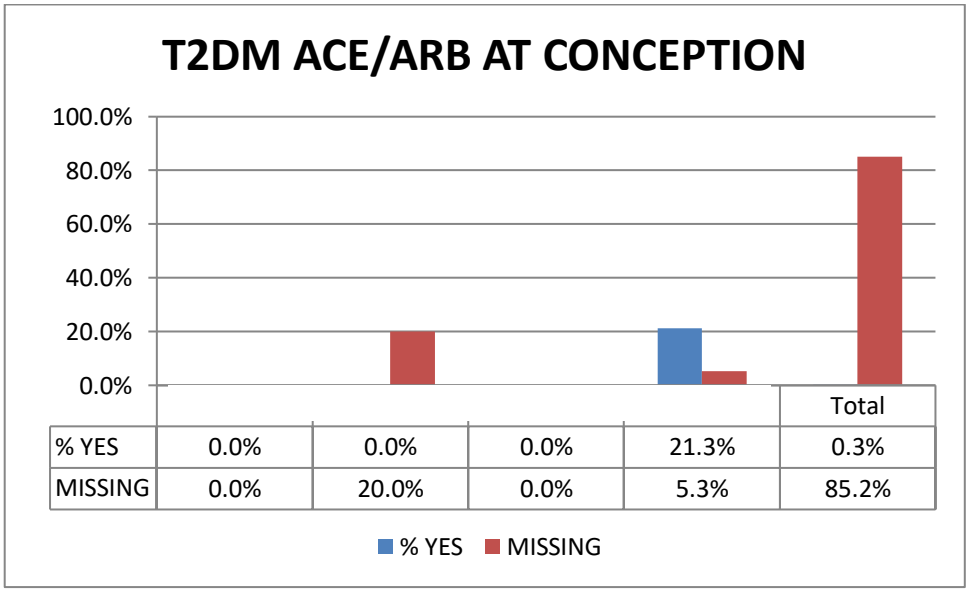
									Total
% YES	0.0%	7.9%	15.8%	11.0%	12.7%	13.6%	20.0%	20.1%	11.4%
MISSING	0.0%	2.6%	5.3%	0.0%	0.0%	9.1%	20.0%	0.0%	31.9%



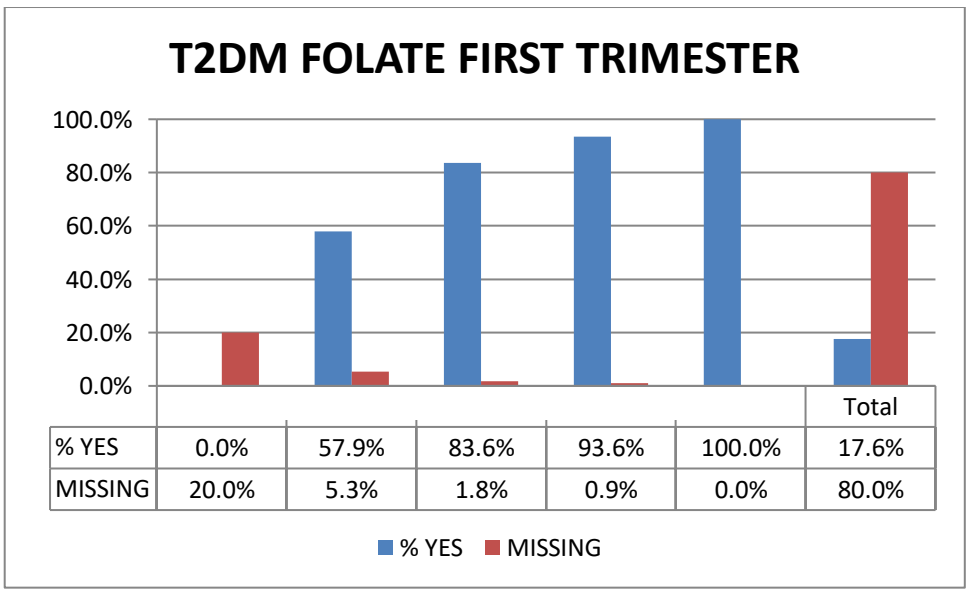
						Total
% YES	4.5%	20.0%	36.8%	54.1%	58.2%	9.9%
MISSING	95.5%	0.0%	0.0%	0.0%	0.0%	81.3%



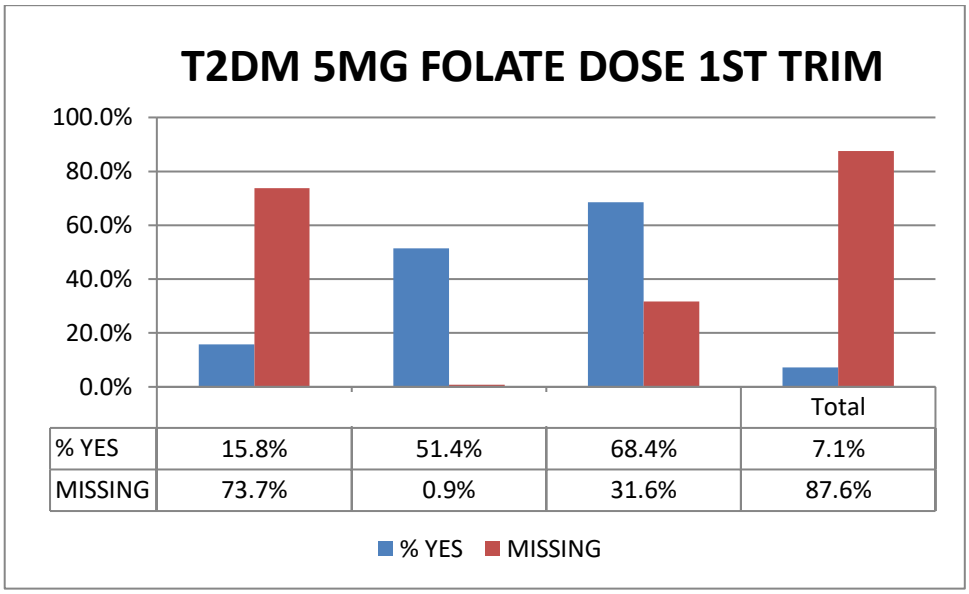
					Total
% YES	0.0%	0.0%	0.0%	5.3%	0.1%
MISSING	0.0%	0.0%	0.0%	5.3%	85.1%

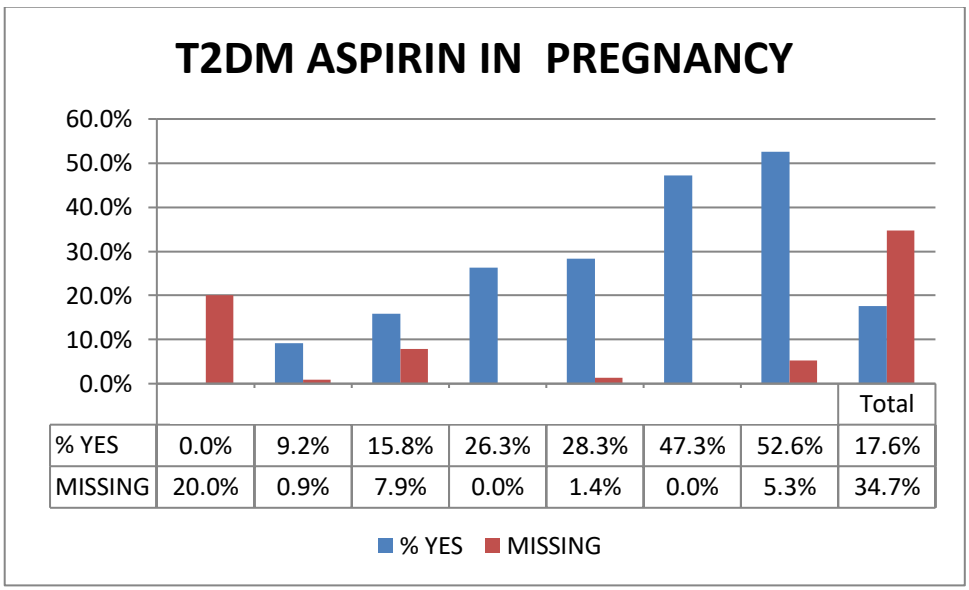


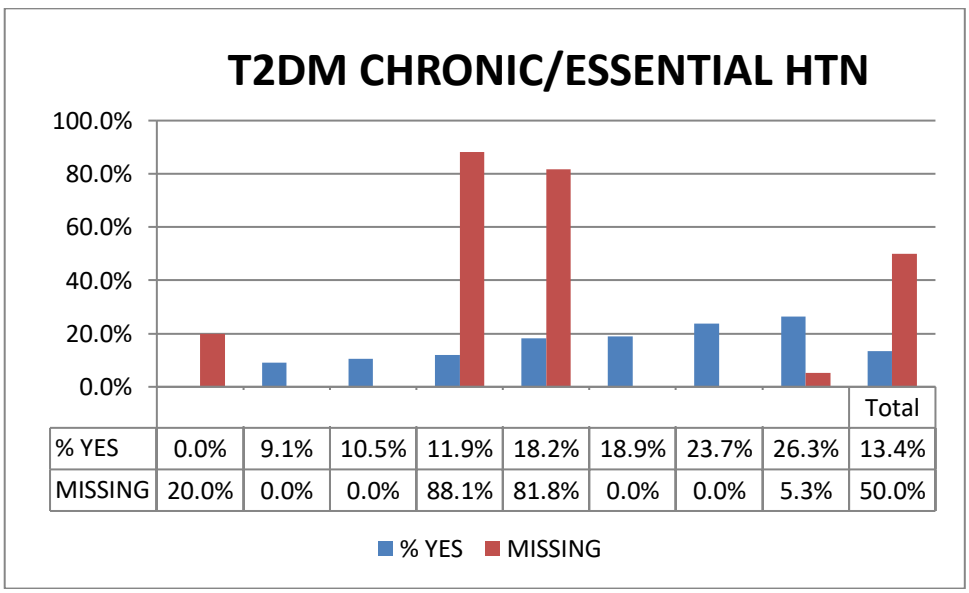
					Total
% YES	0.0%	0.0%	0.0%	21.3%	0.3%
MISSING	0.0%	20.0%	0.0%	5.3%	85.2%

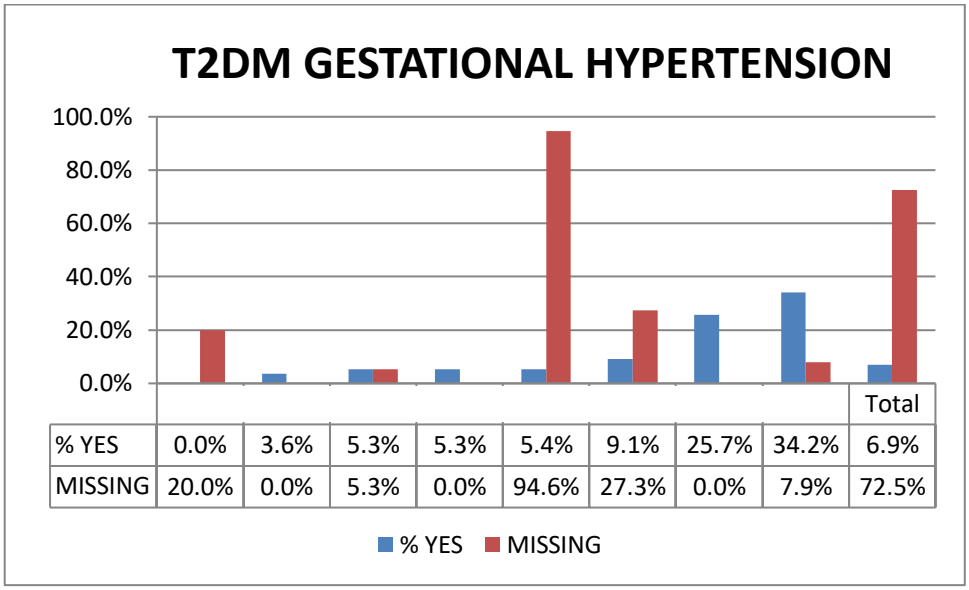


						Total
% YES	0.0%	57.9%	83.6%	93.6%	100.0%	17.6%
MISSING	20.0%	5.3%	1.8%	0.9%	0.0%	80.0%

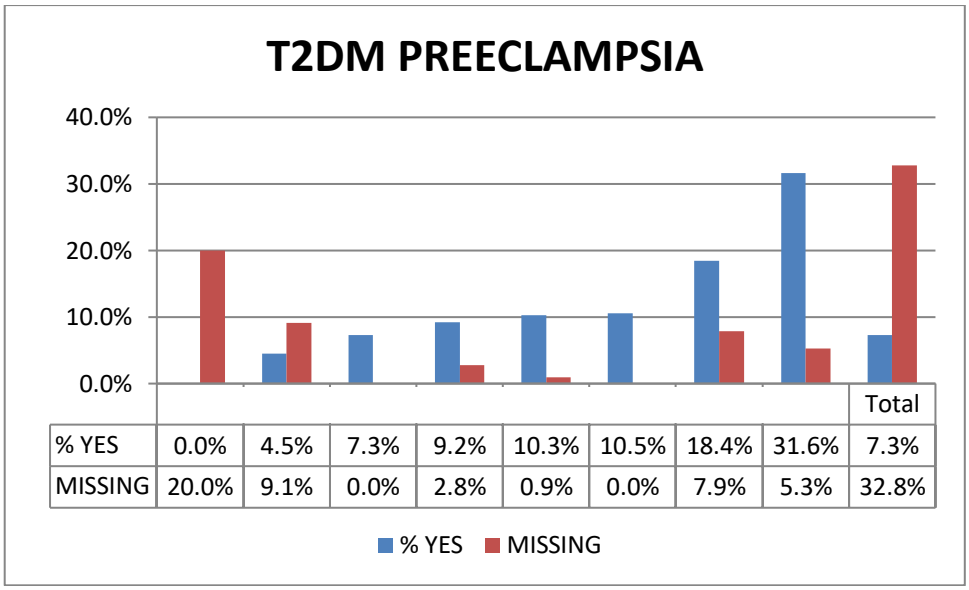

T2DM 5MG FOLATE DOSE 1ST TRIM
100.0%
80.0%
60.0%
40.0%
20.0%
0.0%
Total
% YES 15.8% 51.4% 68.4% 7.1%
MISSING 73.7% 0.9% 31.6% 87.6%
% YES
MISSING


T2DM ASPIRIN IN PREGNANCY
60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
Total
% YES 0.0% 9.2% 15.8% 26.3% 28.3% 47.3% 52.6% 17.6%
MISSING 20.0% 0.9% 7.9% 0.0% 1.4% 0.0% 5.3% 34.7%
% YES
MISSING

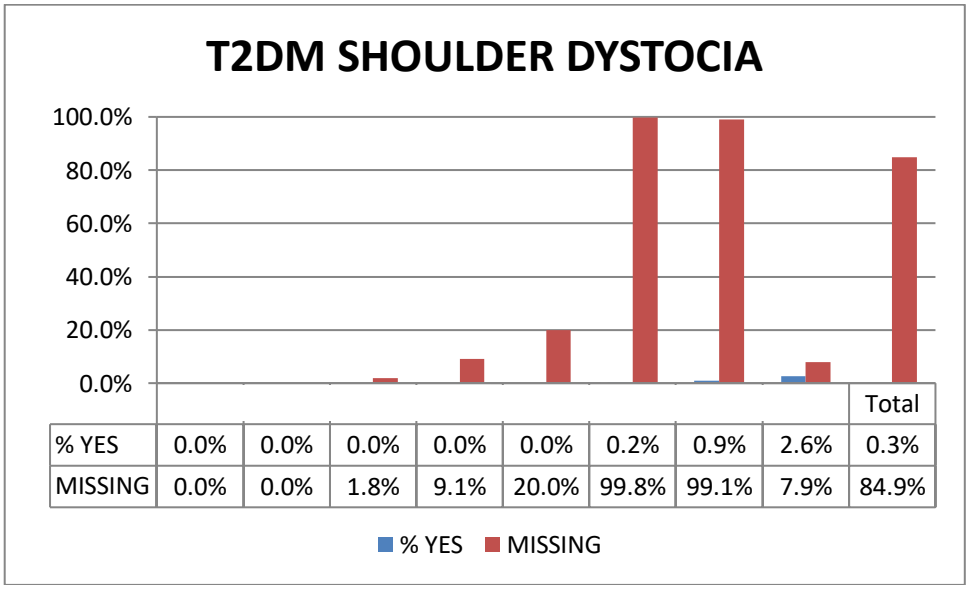

T2DM CHRONIC/ESSENTIAL HTN
100.0%
80.0%
60.0%
40.0%
20.0%
0.0%
Total
% YES 0.0% 9.1% 10.5% 11.9% 18.2% 18.9% 23.7% 26.3% 13.4%
MISSING 20.0% 0.0% 0.0% 88.1% 81.8% 0.0% 0.0% 5.3% 50.0%
% YES
MISSING



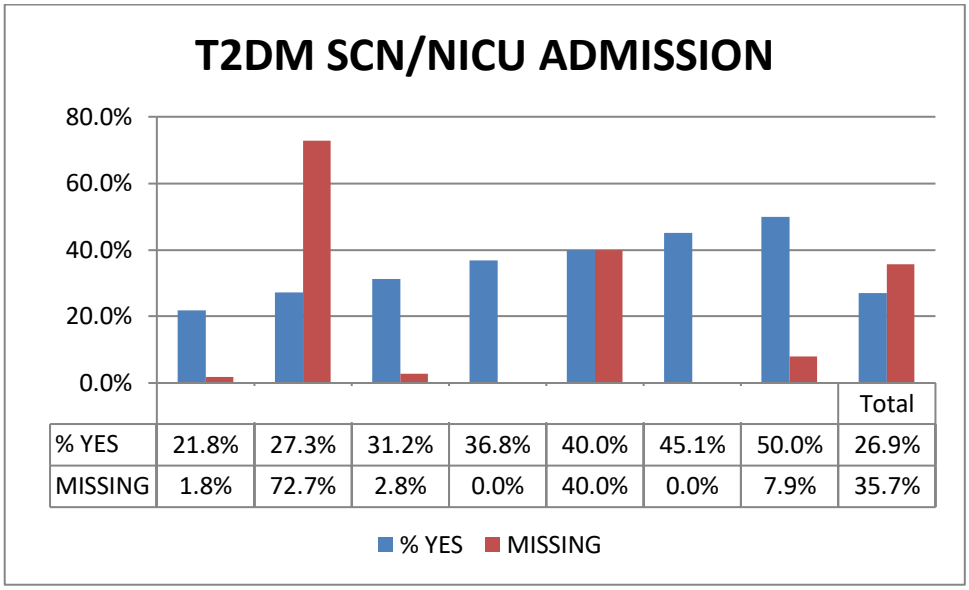
									Total
% YES	0.0%	3.6%	5.3%	5.3%	5.4%	9.1%	25.7%	34.2%	6.9%
MISSING	20.0%	0.0%	5.3%	0.0%	94.6%	27.3%	0.0%	7.9%	72.5%



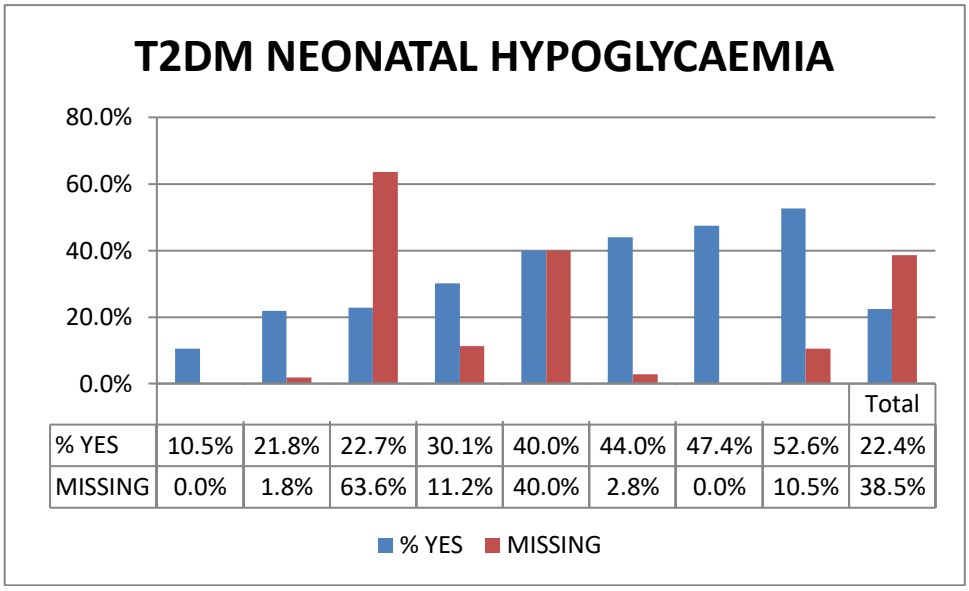
									Total
% YES	0.0%	4.5%	7.3%	9.2%	10.3%	10.5%	18.4%	31.6%	7.3%
MISSING	20.0%	9.1%	0.0%	2.8%	0.9%	0.0%	7.9%	5.3%	32.8%



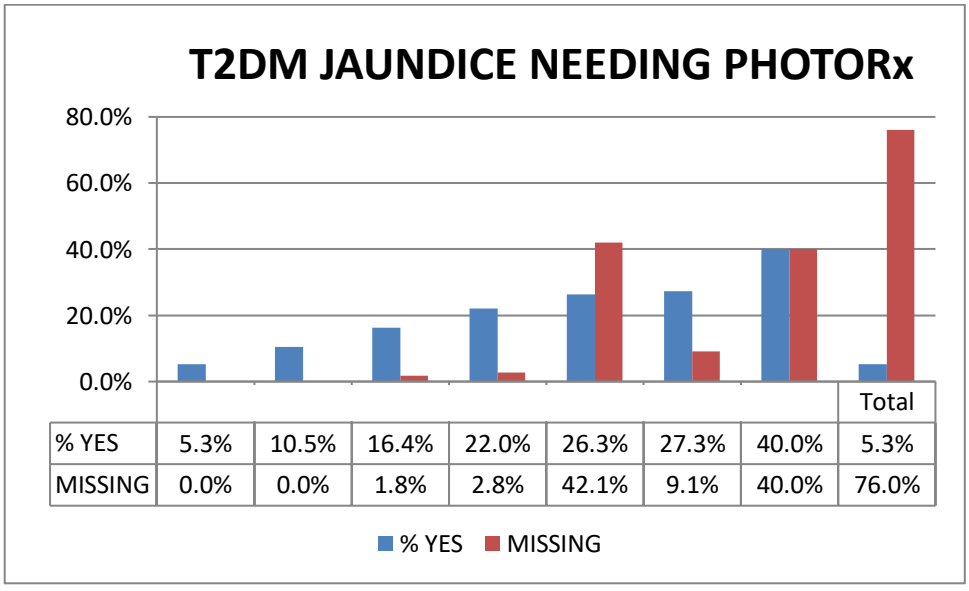
									Total
% YES	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.9%	2.6%	0.3%
MISSING	0.0%	0.0%	1.8%	9.1%	20.0%	99.8%	99.1%	7.9%	84.9%



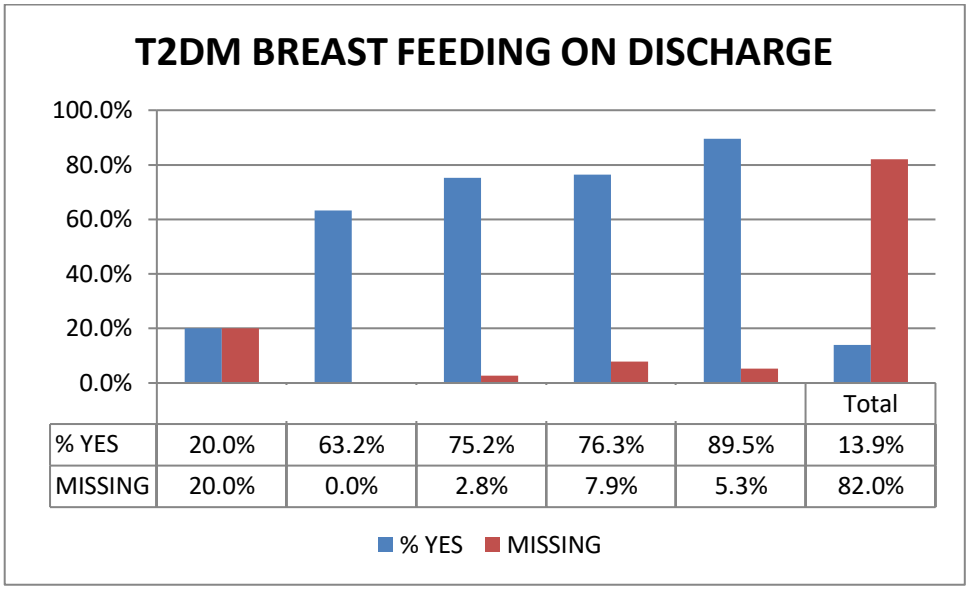
								Total
% YES	21.8%	27.3%	31.2%	36.8%	40.0%	45.1%	50.0%	26.9%
MISSING	1.8%	72.7%	2.8%	0.0%	40.0%	0.0%	7.9%	35.7%



								Total
% YES	10.5%	21.8%	22.7%	30.1%	40.0%	44.0%	47.4%	52.6%	22.4%
MISSING	0.0%	1.8%	63.6%	11.2%	40.0%	2.8%	0.0%	10.5%	38.5%

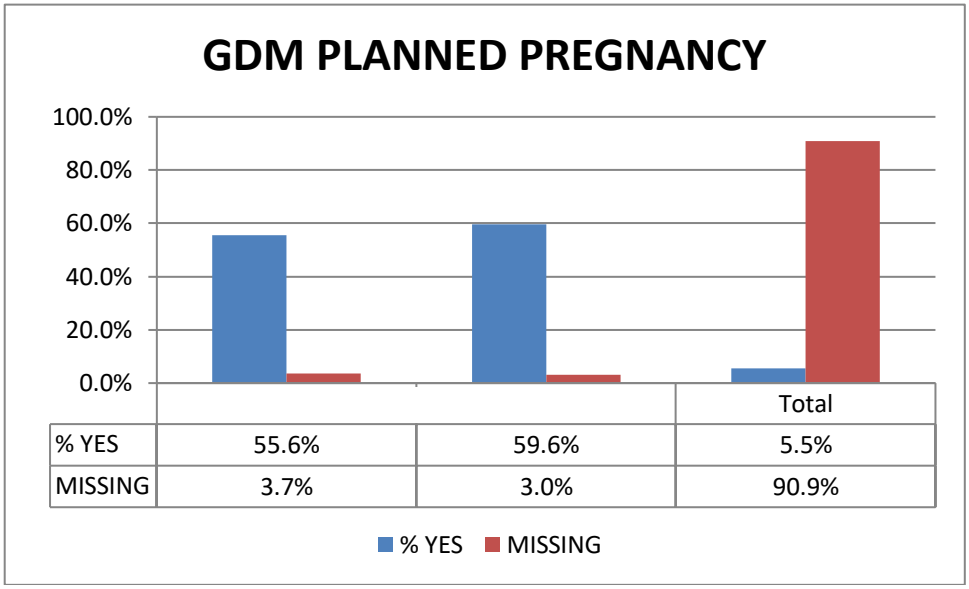


								Total
% YES	5.3%	10.5%	16.4%	22.0%	26.3%	27.3%	40.0%	5.3%
MISSING	0.0%	0.0%	1.8%	2.8%	42.1%	9.1%	40.0%	76.0%

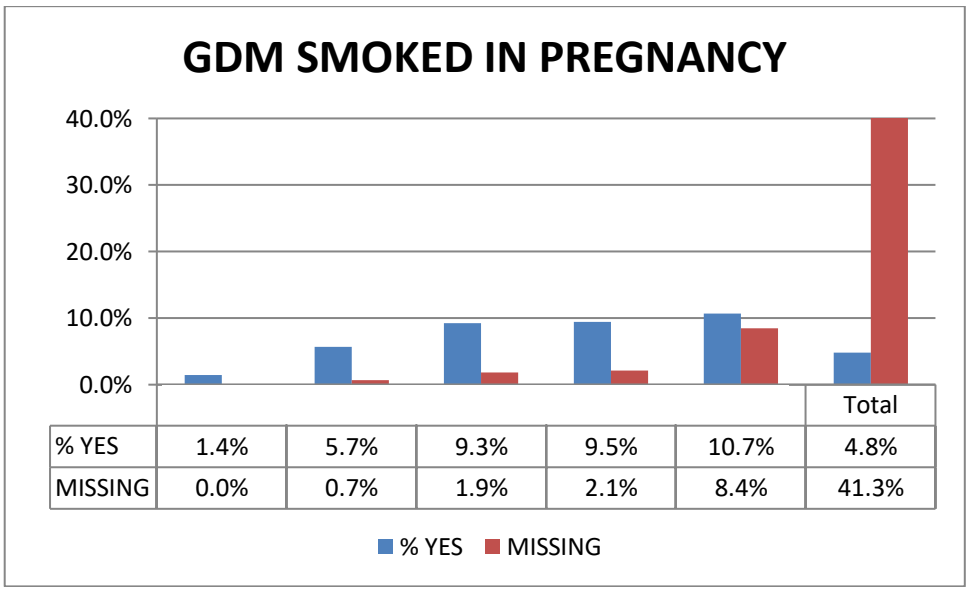


						Total
% YES	20.0%	63.2%	75.2%	76.3%	89.5%	13.9%
MISSING	20.0%	0.0%	2.8%	7.9%	5.3%	82.0%

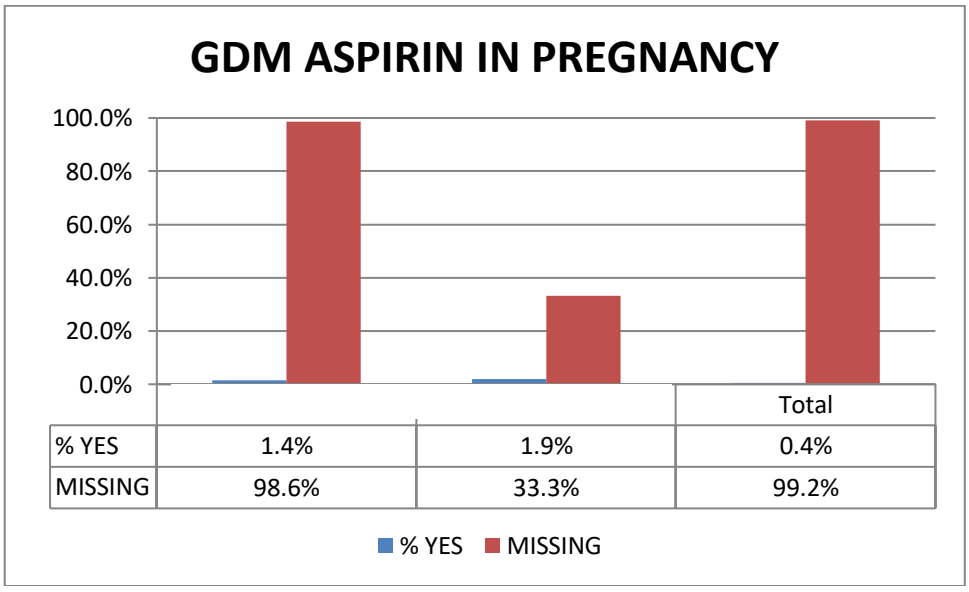
GDM PERCENT YES AND PERCENT MISSING



			Total
% YES	55.6%	59.6%	5.5%
MISSING	3.7%	3.0%	90.9%

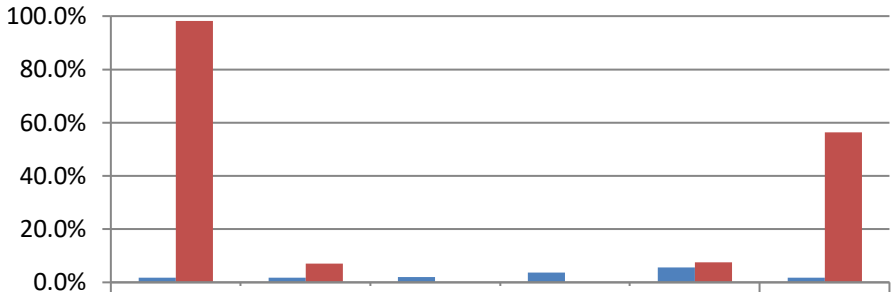


						Total
% YES	1.4%	5.7%	9.3%	9.5%	10.7%	4.8%
MISSING	0.0%	0.7%	1.9%	2.1%	8.4%	41.3%



			Total
% YES	1.4%	1.9%	0.4%
MISSING	98.6%	33.3%	99.2%

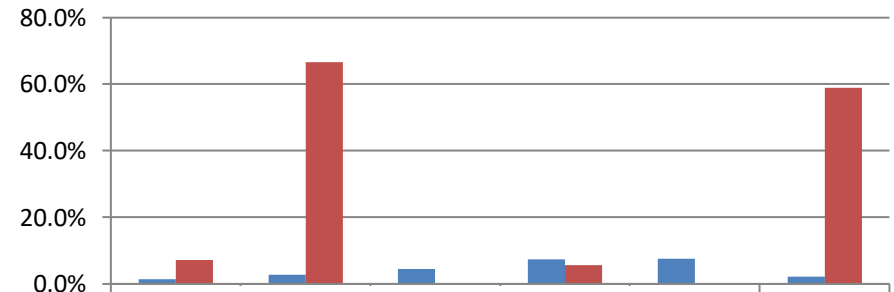
GDM CHRONIC/ESSENTIAL HTN



						Total
% YES	1.7%	1.8%	2.0%	3.7%	5.6%	1.7%
MISSING	98.3%	6.9%	0.0%	0.0%	7.4%	56.4%

% YES MISSING

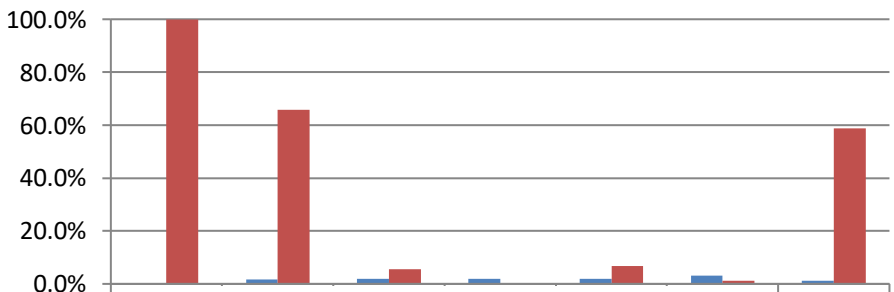
GDM GESTATIONAL HYPERTENSION



						Total
% YES	1.3%	2.8%	4.5%	7.4%	7.7%	2.1%
MISSING	7.2%	66.6%	0.0%	5.6%	0.0%	58.9%

% YES MISSING

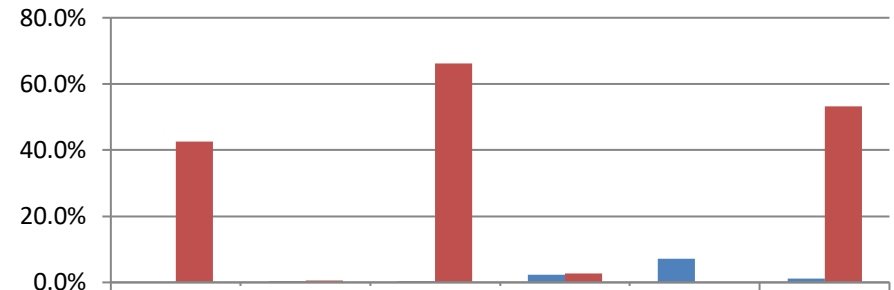
GDM PREECLAMPSIA



							Total
% YES	0.2%	1.8%	1.9%	2.0%	2.0%	3.2%	1.3%
MISSING	99.8%	65.7%	5.6%	0.0%	6.7%	1.2%	58.7%

% YES MISSING

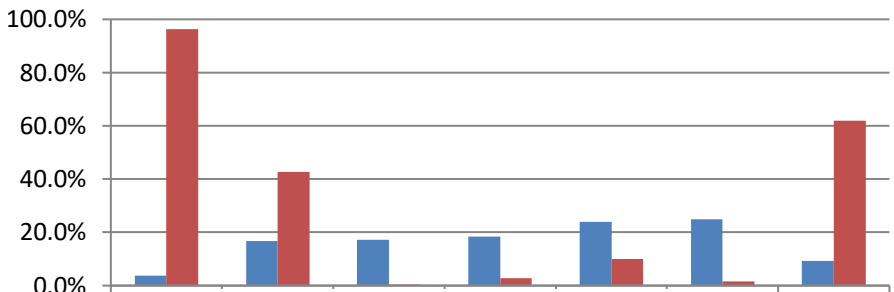
GDM SHOULDER DYSTOCIA



						Total
% YES	0.0%	0.3%	0.5%	2.3%	7.2%	1.2%
MISSING	42.6%	0.7%	66.2%	2.7%	0.0%	53.2%

% YES MISSING

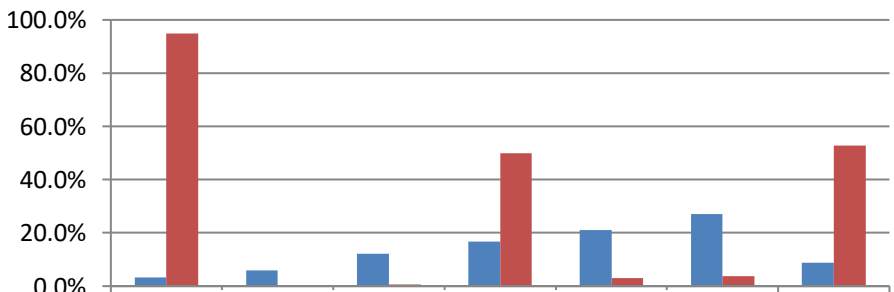
GDM SCN/NICU ADMISSION



							Total
% YES	3.7%	16.7%	17.3%	18.3%	23.8%	25.0%	9.2%
MISSING	96.3%	42.6%	0.5%	2.8%	10.1%	1.7%	61.8%

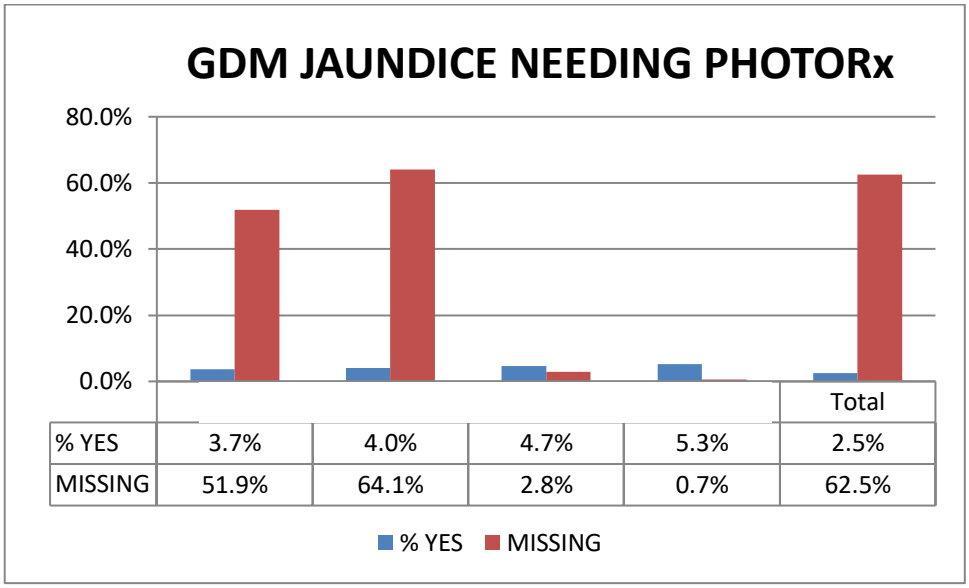
% YES MISSING

GDM NEONATAL HYPOGLYCAEMIA

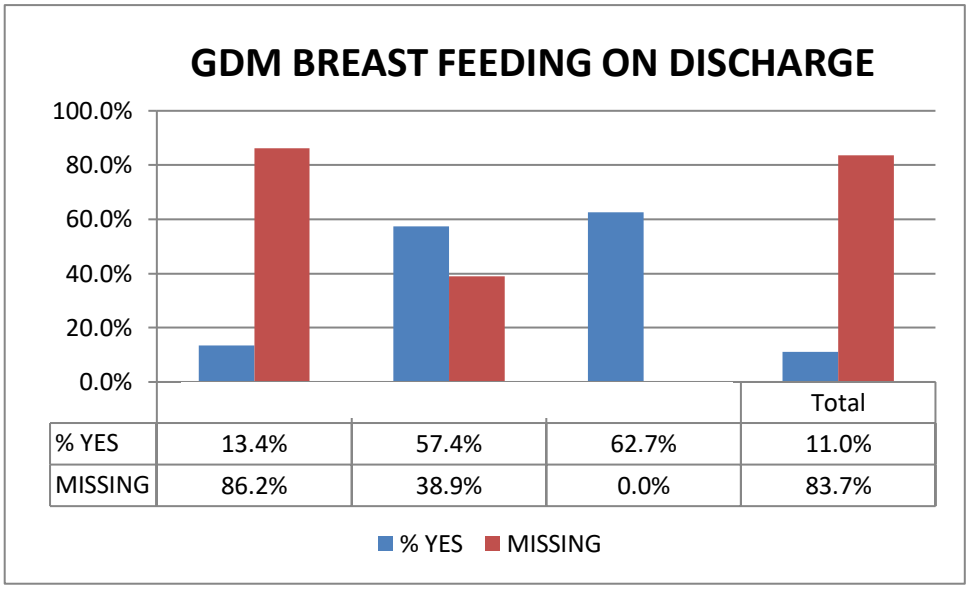


							Total
% YES	3.3%	6.0%	12.1%	16.7%	21.1%	27.0%	8.8%
MISSING	94.9%	0.0%	0.7%	50.0%	3.0%	3.8%	52.9%

% YES MISSING



					Total
% YES	3.7%	4.0%	4.7%	5.3%	2.5%
MISSING	51.9%	64.1%	2.8%	0.7%	62.5%



				Total
% YES	13.4%	57.4%	62.7%	11.0%
MISSING	86.2%	38.9%	0.0%	83.7%