

# A Survey of Gestational Diabetes in Broken Hill



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## Background

Gestational diabetes (GDM) is a common health issue in Australia, affecting around 16% of pregnancies. It is a routine to screen all pregnant women with a test known as 75g OGTT. This survey is to determine the prevalence and characteristics of GDM in pregnant women in Broken Hill. In addition to that, the secondary objective is to study the birth outcomes of pregnancies complicated by GDM in Broken Hill.

## Methodology

The clinical details of all singleton live births in the past 24 months until March 2021 were retrieved from the Obstetric database in Electronic Medical Record (EMR), and downloaded as an electronic Excel spreadsheet. IBM SPSS 24 was used to analyse and generate the statistics. After excluding cases with missing data, the final number of patients was 364.

## Outcome

Among the data gathered, 28.3% had some form of diabetes. Maternal obesity had a significant effect. The caesarean section rate was higher in patients with GDM (37.9%) as compared to patients without diabetes (29.9%). Similarly, the rate of instrumental birth was higher in GDM group (8.7%) as compared to group without diabetes (6.5%). Patients without diabetes were found to have higher rate of normal vaginal delivery (63.6%) compared to patients with GDM (53.4%). Patients with GDM were noted to have higher percentage of emergency birth (14.6%) than non-diabetic patients (13.0%). Newborns of patients without diabetes had lower median weight (3350±688.17) as compared with patients with GDM.

As for ultrasound findings, the median foetal BPD was found to be lower (84.5±18.22) in patients without diabetes as compared to patients with GDM. Amongst patients with GDM, those who were on insulin control had the highest foetal BPD (91.0±2.83).

## Discussion

This survey indicates that the incidence of GDM in the Broken Hill district at 28% of pregnant mothers is much higher than the national average. Broken Hill Hospital is a major rural referral hospital that provides inpatient and outpatient services to the community within Far West Local Health Network (FWLHN).

There are many risk factors that would increase the vulnerability of pregnant mothers to get gestational diabetes. One important risk factor is ethnicity. Data from AIHW showed that Aboriginal and Torres Strait Islander mothers have 1.3 times higher incident rate in getting gestational diabetes compared to non-aboriginal mothers [14]. Looking into Broken Hill, there is a significant proportion of the community who are of Aboriginal and Torres Strait Islander, thus it could be suggested that the high prevalence of gestational diabetes in Broken Hill Hospital could be due to high rates of indigenous ethnicity.

In Australia, another important risk factor for gestational diabetes is high BMI [15]. Among pregnant women who had gestational diabetes in 2017, 25% of them were overweight while 20% of them were obese [16]. Similarly, maternal BMI showed a significant role in increasing the prevalence of gestational diabetes in Broken Hill. Another important consideration in a rural setting is socio-economical background. It was found that pregnant mothers from a lower socio-economical background have 1.6 times higher risk of gestational diabetes [14]. Looking at Broken Hill Community, the lower socioeconomic status amongst the rural population could be an important risk factor that might have silently contributed to the prevalence of gestational diabetes. Broken Hill LGA has its unique population with the most aboriginal community, so the distribution of the data could be slightly different to the community in other parts of NSW. Further studies will be beneficial in understanding about modifiable and non-modifiable risk factors associated with gestational diabetes in Broken Hill. One suggestion is that all pregnant mothers should be screened for gestational diabetes in the earlier stage of their pregnancies, so that earlier management could be implemented in their pregnancies for better maternal and foetal outcome.

## Conclusions

As this is the preliminary survey, more studies need to be carried out in the future to strengthen the understanding of gestational diabetes in Broken Hill community. Nevertheless, gestational diabetes is an important health issue in pregnancy that needs to be addressed in order to formulate a more wholesome and comprehensive care for both the mother and the fetus. Given the high incidence, it would be justified to adopt a policy whereby early screening for GDM is carried out on all women, rather than just those with risk factors.

## Results

Illustration 1.5 Frequency of mode of delivery in GDM and non- diabetic

Diabetes status	Frequency	Normal vaginal birth	Instrumental birth	Caesarean section
No diabetes	Count	166	17	78
	% within Diabetes status	63.60%	6.50%	29.90%
	% within Mode of Delivery	75.10%	65.40%	66.70%
GDM/Pre-existing T2DM	Count	55	9	39
	% within Diabetes status	53.40%	8.70%	37.90%
	% within Mode of Delivery	24.90%	34.60%	33.30%

Illustration 1.6 Frequencies of elective/emergency birth in different diabetes status

Diabetes status	Frequency	Elective	Emergency	Total
No diabetes	Count	227	34	261
	% within Diabetes status	87.00%	13.00%	100.00%
GDM/Pre-existing T2DM	Count	88	15	103
	% within Diabetes status	85.40%	14.60%	100.00%

Illustration 1.7 Frequencies of parity in different diabetes status

Diabetes status	Frequency	Primipara	Multipara	Total
No diabetes	Count	108	153	261
	% within Diabetes status	41.40%	58.60%	100.00%
GDM/Pre-existing T2DM	Count	39	64	103
	% within Diabetes status	37.90%	62.10%	100.00%

Illustration 2.1 Percentile of newborn weight (g)

Diabetes status	Median	Standard Deviation
No diabetes	3350.0	688.17
GDM on diet control	3445.0	388.07
GDM on oral hypoglycaemic	3565.0	481.82
GDM on insulin	3248.0	632.15
Pre-existing T2DM	3545.0	7.07

Illustration 2.2 Percentile of foetal USS BPD (mm)

Diabetes status	Median	Standard Deviation
No diabetes	84.5	18.22
GDM on diet control	89.0	4.91
GDM on oral hypoglycaemic	89.0	4.48
GDM on insulin	91.0	2.83
Pre-existing T2DM	89.0	12.73

Illustration 2.3 Percentile of foetal USS HC (mm)

Diabetes status	Median	Standard Deviation
No diabetes	308.0	63.15
GDM on diet control	317.5	18.58
GDM on oral hypoglycaemic	318.0	14.62
GDM on insulin	316.5	13.44
Pre-existing T2DM	317.0	14.14

Illustration 2.4 Percentile of foetal USS AC (mm)

Diabetes status	Median	Standard Deviation
No diabetes	304.0	75.34
GDM on diet control	323.0	23.78
GDM on oral hypoglycaemic	325.0	26.40
GDM on insulin	326.5	20.51
Pre-existing T2DM	311.0	9.90

Illustration 2.5 Percentile of foetal USS FL (mm)

Diabetes status	Median	Standard Deviation
No diabetes	65.5	15.88
GDM on diet control	68.0	4.41
GDM on oral hypoglycaemic	68.0	7.54
GDM on insulin	65.0	4.24
Pre-existing T2DM	63.0	9.90

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