

South Africa - Differences in Plasma Glucose as Measured by Glucose Oxidase and Hexokinase Laboratory

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Overview

Identification

ID NUMBER

DifferencesinPlasmaGlucoseasMeasuredbyGlucoseOxidaseandHexokinaseLaboratory

Overview

ABSTRACT

We evaluated the extent of measurement discordance between glucose oxidase and hexokinase laboratory methods and the effect of this on estimated gestational diabetes mellitus (GDM) prevalence in a routine clinical setting. 592 consecutive urban African women were screened for GDM. Paired venous specimens were submitted to two independent calibrated laboratories that used either method to measure plasma glucose concentrations. World Health Organisation diagnostic criteria were applied. GDM prevalence determined by the glucose oxidase and hexokinase methods was 6.9% and 5.1% respectively. Only 34% of GDM positive diagnoses were common to both laboratory methods. Bland Altman plots identified a bias of 0.2 mmol/l between laboratory methods. Plasma glucose concentrations measured by the glucose oxidase method were more platykurtic in distribution. Low diagnostic agreement between laboratory methods was further indicated by a Cohen's kappa of 0.48 ($p < 0.001$). Reports of GDM prevalence using either the glucose oxidase or hexokinase laboratory methods may not be truly interchangeable or directly comparable.

Producers and Sponsors

PRIMARY INVESTIGATOR(S)

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Sampling

No content available

Questionnaires

No content available

Data Collection

Data Collection Dates

Start	End	Cycle
2016-04-01	2017-05-31	N/A

Data Processing

No content available

Data Appraisal

No content available

File Description

Variable List

GDMdata

Content

Cases 592

Variable(s) 34

Structure Type:
Keys: ()

Version

Producer

Missing Data

Variables

ID	Name	Label	Type	Format	Question
V1	part_no	part_no	discrete	character	
V2	gox_t0	gox_t0	contin	numeric	
V3	gox_t60	gox_t60	contin	numeric	
V4	gox_t120	gox_t120	contin	numeric	
V5	HK_t0	HK_t0	contin	numeric	
V6	HK_t60	HK_t60	contin	numeric	
V7	HK_t120	HK_t120	contin	numeric	
V8	abn_gox_t0	abn_gox_t0	discrete	numeric	
V9	abn_gox_t60	abn_gox_t60	discrete	numeric	
V10	abn_gox_t120	abn_gox_t120	discrete	numeric	
V11	abn_HK_t0	abn_HK_t0	discrete	numeric	
V12	abn_HK_t60	abn_HK_t60	discrete	numeric	
V13	abn_HK_t120	abn_HK_t120	discrete	numeric	
V14	age	age	contin	numeric	
V15	smoker	smoker	discrete	character	
V16	chronHT	chronHT	discrete	character	
V17	PrevGDM	PrevGDM	discrete	character	
V18	Gest_visit1	Gest_visit1	contin	numeric	
V19	Glycosuria	Glycosuria	discrete	character	
V20	Weight	Weight	contin	numeric	
V21	Height	Height	contin	numeric	
V22	MUAC	MUAC	contin	numeric	
V23	S_BP	S_BP	contin	numeric	
V24	D_BP	D_BP	contin	numeric	
V25	Gravida	Gravida	discrete	character	
V26	PrevLGA	PrevLGA	discrete	character	
V27	nPrevMis	nPrevMis	discrete	numeric	

ID	Name	Label	Type	Format	Question
V28	nPrevStillb	nPrevStillb	discrete	character	
V29	nPrevCongenAbN	nPrevCongenAbN	discrete	numeric	
V30	nPrevStillb_number	nPrevStillb_number	discrete	numeric	
V31	gdm_gox	gdm_gox	discrete	numeric	
V32	gdm_HK	gdm_HK	discrete	numeric	
V33	FHxDM	FHxDM	discrete	character	
V34	bmi	bmi	contin	numeric	

part_no (part_no)

File: GDMdata

Overview

Type: Discrete	Valid cases: 592
Format: character	Invalid: 0
Width: 10	

gox_t0 (gox_t0)

File: GDMdata

Overview

Type: Continuous	Valid cases: 592
Format: numeric	Invalid: 0
Decimals: 2	Minimum: 2.5
Range: 2.49-8.34	Maximum: 8.3
	Mean: 4
	Standard deviation: 0.8

gox_t60 (gox_t60)

File: GDMdata

Overview

Type: Continuous	Valid cases: 592
Format: numeric	Invalid: 0
Decimals: 2	Minimum: 2.2
Range: 2.19-14.16	Maximum: 14.2
	Mean: 5.4
	Standard deviation: 1.5

gox_t120 (gox_t120)

File: GDMdata

Overview

Type: Continuous	Valid cases: 592
Format: numeric	Invalid: 0
Decimals: 2	Minimum: 2.2
Range: 2.16-16.29	Maximum: 16.3
	Mean: 5.1
	Standard deviation: 1.4

HK_t0 (HK_t0)

File: GDMdata

Overview

Type: Continuous	Valid cases: 592
Format: numeric	Invalid: 0
Decimals: 2	Minimum: 3
Range: 3-8.8	Maximum: 8.8
	Mean: 4.1
	Standard deviation: 0.5

HK_t60 (HK_t60)

File: GDMdata

Overview

Type: Continuous	Valid cases: 592
Format: numeric	Invalid: 0
Decimals: 2	Minimum: 2.3
Range: 2.3-13.5	Maximum: 13.5
	Mean: 5.6
	Standard deviation: 1.4

HK_t120 (HK_t120)

File: GDMdata

Overview

Type: Continuous	Valid cases: 592
Format: numeric	Invalid: 0
Decimals: 2	Minimum: 2.7
Range: 2.7-14.7	Maximum: 14.7
	Mean: 5.3
	Standard deviation: 1.2

abn_gox_t0 (abn_gox_t0)

File: GDMdata

Overview

Type: Discrete	Valid cases: 592
Format: numeric	Invalid: 0
Decimals: 0	
Range: 0-1	

abn_gox_t60 (abn_gox_t60)

File: GDMdata

Overview

Type: Discrete	Valid cases: 592
Format: numeric	Invalid: 0
Decimals: 0	
Range: 0-1	

abn_gox_t120 (abn_gox_t120)

File: GDMdata

Overview

Type: Discrete	Valid cases: 592
Format: numeric	Invalid: 0
Decimals: 0	
Range: 0-1	

abn_HK_t0 (abn_HK_t0)

File: GDMdata

abn_HK_t0 (abn_HK_t0)

File: GDMdata

Overview

Type: Discrete	Valid cases: 592
Format: numeric	Invalid: 0
Decimals: 0	
Range: 0-1	

abn_HK_t60 (abn_HK_t60)

File: GDMdata

Overview

Type: Discrete	Valid cases: 592
Format: numeric	Invalid: 0
Decimals: 0	
Range: 0-1	

abn_HK_t120 (abn_HK_t120)

File: GDMdata

Overview

Type: Discrete	Valid cases: 592
Format: numeric	Invalid: 0
Decimals: 0	
Range: 0-1	

age (age)

File: GDMdata

Overview

Type: Continuous	Valid cases: 592
Format: numeric	Invalid: 0
Decimals: 0	Minimum: 18
Range: 18-47	Maximum: 47
	Mean: 27.8
	Standard deviation: 5.9

smoker (smoker)

File: GDMdata

Overview

Type: Discrete	Valid cases: 592
Format: character	Invalid: 0
Width: 3	

chronHT (chronHT)

File: GDMdata

Overview

chronHT (chronHT)

File: GDMdata

Type: Discrete
Format: character
Width: 3

Valid cases: 591
Invalid: 0

PrevGDM (PrevGDM)

File: GDMdata

Overview

Type: Discrete
Format: character
Width: 3

Valid cases: 592
Invalid: 0

Gest_visit1 (Gest_visit1)

File: GDMdata

Overview

Type: Continuous
Format: numeric
Decimals: 0
Range: 3-35

Valid cases: 592
Invalid: 0
Minimum: 3
Maximum: 35
Mean: 19.1
Standard deviation: 5.6

Glycosuria (Glycosuria)

File: GDMdata

Overview

Type: Discrete
Format: character
Width: 3

Valid cases: 592
Invalid: 0

Weight (Weight)

File: GDMdata

Overview

Type: Continuous
Format: numeric
Decimals: 2
Range: 40.8-128

Valid cases: 592
Invalid: 0
Minimum: 40.8
Maximum: 128
Mean: 70.6
Standard deviation: 15.8

Height (Height)

File: GDMdata

Overview

Height (Height)

File: GDMdata

Type: Continuous
 Format: numeric
 Decimals: 2
 Range: 116-187

Valid cases: 592
 Invalid: 0
 Minimum: 116
 Maximum: 187
 Mean: 161.9
 Standard deviation: 7.2

MUAC (MUAC)

File: GDMdata

Overview

Type: Continuous
 Format: numeric
 Decimals: 2
 Range: 19.5-52.5

Valid cases: 592
 Invalid: 0
 Minimum: 19.5
 Maximum: 52.5
 Mean: 29.9
 Standard deviation: 4.4

S_BP (S_BP)

File: GDMdata

Overview

Type: Continuous
 Format: numeric
 Decimals: 0
 Range: 26-182

Valid cases: 591
 Invalid: 1
 Minimum: 26
 Maximum: 182
 Mean: 122.2
 Standard deviation: 14.9

D_BP (D_BP)

File: GDMdata

Overview

Type: Continuous
 Format: numeric
 Decimals: 0
 Range: 17-108

Valid cases: 591
 Invalid: 1
 Minimum: 17
 Maximum: 108
 Mean: 72.6
 Standard deviation: 10.9

Gravida (Gravida)

File: GDMdata

Overview

Type: Discrete
 Format: character
 Width: 2

Valid cases: 592
 Invalid: 0

PrevLGA (PrevLGA)

File: GDMdata

Overview

Type: Discrete	Valid cases: 591
Format: character	Invalid: 0
Width: 3	

nPrevMis (nPrevMis)

File: GDMdata

Overview

Type: Discrete	Valid cases: 592
Format: numeric	Invalid: 0
Decimals: 0	
Range: 0-2	

nPrevStillb (nPrevStillb)

File: GDMdata

Overview

Type: Discrete	Valid cases: 592
Format: character	Invalid: 0
Width: 7	

nPrevCongenAbN (nPrevCongenAbN)

File: GDMdata

Overview

Type: Discrete	Valid cases: 591
Format: numeric	Invalid: 1
Decimals: 0	
Range: 0-0	

nPrevStillb_number (nPrevStillb_number)

File: GDMdata

Overview

Type: Discrete	Valid cases: 591
Format: numeric	Invalid: 1
Decimals: 0	
Range: 0-3	

gdm_gox (gdm_gox)

File: GDMdata

Overview

gdm_gox (gdm_gox)

File: GDMdata

Type: Discrete
Format: numeric
Decimals: 0
Range: 0-1

Valid cases: 592
Invalid: 0

gdm_HK (gdm_HK)

File: GDMdata

Overview

Type: Discrete
Format: numeric
Decimals: 0
Range: 0-1

Valid cases: 592
Invalid: 0

FHxDM (FHxDM)

File: GDMdata

Overview

Type: Discrete
Format: character
Width: 10

Valid cases: 588
Invalid: 0

bmi (bmi)

File: GDMdata

Overview

Type: Continuous
Format: numeric
Decimals: 2
Range: 15.93-86.43

Valid cases: 592
Invalid: 0
Minimum: 15.9
Maximum: 86.4
Mean: 27
Standard deviation: 6.3

