SUPPLEMENTARY MATERIAL

Maternal characteristics

Supplementary Table 1: Maternal Socio-demographic Characteristics

Variables	Frequency	%
Maternal age (median, IQR)	27 (23,33)	
Maternal BMI (median, IQR)	22 (20,25)	
Education level		
Illiterate	5	5.6
Primary	23	25.6
Secondary	29	32.2
Tertiary	33	36.7
Residence location		
Rural	72	80.0
Urban	18	20.0
Occupation		
Housewives	43	47.8
Students	11	12.2
Self-employees	25	27.8
Employees	8	8.9
Health insurance coverage		
Yes	32	35.6
No	56	62.2
Marital status		
Single	28	31.1
Married	62	68.9
Cigarette use		
Yes	0	00.0
No	90	100.0
Alcohol use		
Yes	0	100.00
No	90	100.00

Supplementary Table 2: Maternal Clinical Characteristics

Variables	Frequency	%
Type of cardiac lesion		
Rheumatic heart disease	80	88.9
Congenital heart disease	3	3.3
Cardiomyopathies	7	7.8
Ischaemic heart disease	0	0.0
Previous cardiac condition		
Known cardiac patient	42	46.7
Newly diagnosed cardiac pat.	48	53.3
Comorbidities		
Yes	30	33.3
No	60	66.7
Treatment prior to or during pregnancy		
Yes	43	47.8
No	47	52.2
Intervention prior to pregnancy		
Yes	6	7.2
No	77	92.8
Parity		
Primigravid	38	42.2
Multiparous ($\leq$3)	30	33.3
Grand multiparous ($\geq$4)	22	24.4
Mode of admission		
Home	35	38.9
Transfer	955	61.1
Gestational period (in weeks):	1	1.1
First trimester	29	32.2
Second trimester	40	44.4
Third trimester	7	7.8
Intrapartum	13	14.4
Postpartum		
Number of foetus		
Singleton	88	97.8
Twins	2	2.2

Maternal outcomes

Supplementary Table 3: Maternal Cardiac and Obstetric Events by Gestational Period

Cardiac events	0-13	14-28	29-40	Intrapartum	Postpartum
Heart failure	0(00.0)	14(24.6)	4(7.0)	1(1.8)	2(3.5)
Pulmonary oedema	0(00.0)	4(7.0)	0(00.0)	1(1.8)	10(17.5)
Cardiac arrest	0(00.0)	0(00.0)	0(00.0)	4(6.9)	0(00.0)
Systemic pulmonary embolism	0(00.0)	2(3.5)	0(00.0)	0(00.0)	1(1.8)
Arrhythmias (AF, RBBB, PVC)	0(00.0)	8(14.0)	2(3.5)	2(3.5)	3(3.5)
Obstetric events					
Miscarriage	1(1.9)	2(3.7)	-	-	-
Therapeutic MTOP	0(00.0)	8(14.8)	0(00.0)	-	-
Preterm delivery/SGA	-	1(1.9)	17(31.5)	-	-
Pre-eclampsia	-	4(7.4)	7(13.0)	0(00.0)	0(00.0)
Antepartum haemorrhage	-	0(00.0)	2(3.7)	0(00.0)	-
Stillbirths	-	0(00.0)	2(3.7)	-	-
PP depression	0(00.0)	0(00.0)	1(1.9)	-	4(7.4)
ICU admission	0(00.0)	1(1.9)	0(00.0)	0(00.0)	5(9.3)
Non-obstetric maternal deaths	0(00.0)	6(11.1)	0(00.0)	1(1.9)	4(7.4)

AF: atrial fibrillation; RBBB: right bundle branch block; PVC: premature ventricular contraction, SGA: small for gestational age

Factors associated with maternal adverse outcome

Supplementary Table 4. Maternal Socio-demographic Characteristics

Variables	Maternal and neonatal outcomes		χ^2	P-v	OR	P-v	95% IC
	Good outcome	Adverse outcomes					
Maternal age	N=65	N=25					
<20 years®	5(7.7)	5(20.0)			-	-	-
20-34 years	50(76.9)	14(56.0)	4.382	MCp=0.133	0.3	0.069	0.1-1.1
35-44 years	10(15.4)	6(24.0)			0.6	0.532	0.1-2.9
Education level							
Illiterate	4(6.2)	0(0.0)			0.0	0.999	0.0
Primary	14(21.5)	10(40.0)	5.297	MCp=0.126	3.3	0.049*	1.0–11.0
Secondary	19(29.2)	9(36.0)			2.2	0.190	0.6–7.2
Tertiary®	28(43.1)	6(24.0)			-	-	-
Marital status							
Married ®	45(69.2)	17(68.0)	0.013	FEp=1.000	-	-	-
Single	20(30.8)	8(32.0)			1.1	0.910	0.4-2.9
Occupation							
House wives	29(44.6)	16(64.0)			1.7	0.564	0.3-9.2
Students	10(15.4)	2(8.0)	2.633	MCp=0.462	0.6	0.650	0.1-5.4
Self employees	20(30.8)	5(20.0)			0.8	0.764	0.1-4.9
Employees ®	6(9.2)	2(8.0)			-	-	-
Residence location							
Rural	51(78.5)	25(100.0)		FEp=0.009	$8xe^8$	0.998	0.0
Urban®	14(21.5)	0(0.0)	6.377*		-	-	-

χ^2: **Chi square test**   MC: **Monte Carlo**   FE**: Fisher Exact**

p: p value; OR: odds ratio; CI: confidence interval; *: Statistically significant at $p \leq 0.05$; ®/-: no p value value

Supplementary Table 5. Individual Factors

Variables	Maternal and neonatal outcomes		x^2	P	OR	P	95% IC
	Good outcomes	Adverse outcomes					
Access to ANC	**N=65**	**N=25**					
Yes®	60(92.3)	9(36.0)			-	-	-
No access	5(7.7)	16(64.0)	32.001*	<0.001*	0.1	<0.001*	0.01–0.1
-Access to preconception care							
Yes	4(6.2))	0(0.0)		FEp=	0.00	0.999	0.0
No®	61(93.8)	25(100,0)	1.610	0.573		-	-
Health insurance coverage							
Yes®	26(40.0)	5(20.0)			-	-	-
No	39(60.0)	20(80.0)	3.198	0.074	2.7	0.080	0.9-7.9
Parity							
≤3®	24(37.5)	5(20.0)		^{MC}p=	-	-	-
≥4	40(62.5)	18(72.0)	6.003*	0.028*	2.2	0.175	0.7-6.5
Place of delivery							
Health facility®	64(98.5)	21(44.0)			-	-	-
Home	1((1.5)	4(16.0)	31.201*	MCp<0.001*	22.9	0.007*	2.3-224
Facility of care							
Tertiary hosp.	19(29.2)	0(0.0)			0.0	0.998	0.0
County hosp.	1(1.5)	2(8.0)			0.6	0.723	0.0-8.4
Sub-county hosp.	10(15.4)	3(12.0)	36.706*	MCp <0.001*	0.1	0.005*	0.0-0.5
Health center	27(41.5)	4(16.0)			0.0	<0.001*	0.0-0.2
Private hosp.	3(4.6)	0(0.0)			0.0	0.999	0.0
No access®	5(7.7)	16(64.0)			-	-	-

ANC: antenatal care; ≤: less or equal; >: more than

Supplementary Box 1: Modified WHO Risk Category

- **Low risk (WHO category I)**: no detectable increased risk for maternal mortality and no or mild increase risk in morbidity. This includes patients with successful repaired of simple lesion (ASD, VSD, PDA, anomalous of pulmonary venous drainage), uncorrected FT, atrial or ventricular ectopic beats (or isolated), and NYHA class I and II patients.

- **Medium risk (WHO category II)**: small increased in maternal risk mortality or moderate increase in morbidity. This includes women with unrepaired atrial and ventricular septa defect, patent defect arteriosus, mild MS, MR, tricuspid disease, corrected FT or aortic coarctation, unimpaired left ventricular function, mitral valve prolapses, pulmonary stenosis, most of arrhythmias (supraventricular arrhythmias).

- **High- risk (WHO risk category II-III and III)**: significant increased risk of maternal mortality or severe morbidity. This category includes patients with moderate MS, atrial fibrillation, asymptomatic aortic disease, mild to moderate left ventricular impairment, aortic coarctation without valve involvement, Marfan syndrome without aortic dilatation, NYHA class III, aorta dilatation <45 mm in association with bicuspid aortic valve disease, mechanical valve, systemic right ventricular impairment, Fontan circulation, unrepaired cyanotic disease, aortic dilatation 40-45 mm in Marfan syndrome, aortic dilatation 45-50 mm in bicuspid aortic valve disease; and

- **Extremely high-risk (WHO risk category IV)**: extremely high risk of maternal mortality or severe morbidity. This category includes patients with pulmonary hypertension from any cause, Eisenmenger syndrome, aortic coarctation with valvular involvement, Marfan's syndrome with valve involvement, severe MS, severe symptomatic aortic disease, aortic dilatation >50 mm in aortic disease associated with bicuspid aortic valve, severe coarctation of the aorta, and severe left ventricular dysfunction (<30%, NYHA class III-IV).

ASD: atrial septal defect, VSD: ventricular septal defect, PDA: patent ductus arteriosus, FT: Fallot of tetralogy, MS: mitral stenosis, MR: mitral regurgitation, NYHA: New York Heart Association, WHO: World Health Organization

Supplementary Figure 1: Maternal Death by Type of Cardiac Disease

Maternal death by type of cardiac disease

Legend:
- RHD
- CHD
- Cardiomyopathies

18%

9%

73%