

Does ethnicity and timing of induction in postdate pregnancy affect maternal and fetal outcome? : A cross sectional study from the National Obstetrics <u>Registry Malaysia</u>

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Gestational Week 40+3

47 1.1 4335 98.9

1.000





OBJECTIVES

In Malaysia, a postdate pregnancy is any pregnancy that extends beyond 40 weeks gestation. Various colleges recommend inducing postdates pregnancies by 14 days; and this is supported by several studies showing that induction of labour at or from 41 weeks reduces perinatal morbidity without increasing caesarean section (CS) rates or other adverse outcomes. In Malaysia there is some anecdotal evidence suggesting that Indians may benefit from earlier induction. The Malaysian CPG on induction, however, does not recommend any variation in the timing based on ethnicity. Some hospitals practice induction at 40 weeks +3 days for the Indians, 40 weeks +6 days for the Malays and Chinese. Others induce everyone at 41 weeks. Unfortunately, the question has not been formally examined. The NOR data provides an opportunity to correct this

METHODS

This is a retrospective cohort study using data from the National Obstetrics Registry (NOR). NOR is a clinical data base that compiles obstetric data from 14 tertiary hospitals in Peninsular and East Malaysia. Specific variables were analysed against the 3 major ethnic groups in Malaysia namely Malay, Chinese and Indians to see if timing of induction by ethnicity has any significant association with outcomes. The study period was from 1st January 2011 to 31st Dec 2012. The analysis was performed using STATA statistical software. Descriptive statistics were obtained initially followed by simple logistic regression; p-values<0.05 were treated as significant.

Sample frame/exclusion criteria – gestational age >40+3,Malay Indian and Chinese ethnic mothers only. Outcome variables that were explored were Apgar <7 at 1 and 5 minutes, Fetal distress and admission to NICU, Fresh and macerated stillbirths The general analytic strategy used multinomial logistic regression. Ethnicity, gestational age, and the interaction of ethnicity by gestational age were treated as the principle explanatory variables. Other factors were treated as covariates.

Table shows ethnicity and gestational age interaction effect with outcomes

		Apgar 5 min Score										Apgar 1 min Score							
		<7		>	7 OR		(95% CI)	P valueª				<7	<7		>7		(95% CI)	P valueª	
		n	%	n	%							n	%	n	%				
Race	Malay	2334	1.3	171904	98.7	1.000		0.811	R	Race	Malay	9840	5.6	165015	94.4	1.000		0.088	
	Chinese	262	1.7	15452	98.3	1.360	(0.53 3.51)				Chinese	1023	6.5	14777	93.5	1.549	(1.02 2.36)		
	Indian	201	1.6	12178	98.4	1.110	(0.39 3.19)				Indian	876	7.1	11537	92.9	1.292	(0.81 2.06)		

0.300

Gestational Week 40+3

5.6

245

4155 94.4

1.000

0.013

oversight.

RESULTS

Around 20% of all pregnancies are postdated. There was no evidence that there was an ethnicity, gestational age interaction effect for any outcome. However, later gestational age was significantly associated with increasing odds of NICU admission and fetal distress. Postdate Chinese neonates had significantly lower odds of NICU admission than Malay.

Gestational week	40+3	47	1.1	4335	98.9	1.000		0.300	Gestational week	40+3	245	5.0	4155	94.4	1.000		0.013
	40+4	44	1.2	3623	98.8	1.338	(0.85 2.12)			40+4	212	5.8	3463	94.2	1.152	(0.93 1.43)	
	40+5	28	0.9	3205	99.1	1.015	(0.61 1.69)			40+5	146	4.5	3100	95.5	0.965		
	40+6	34	0.9	3551	99.1	1.040	(0.64 1.69)			40+6	195	5.4	3412	94.6	1.007		
	40+7	46	1.2	3865	98.8	1.256	(0.80 1.98)			40+7	213	5.4	3711	94.6	1.069		
	40+8	40	1.4	2909	98.6	1.610	(1.01 2.56)			40+8	156	5.3	2801	94.7	1.060		
	40+9	25	1	2362	99.0	1.086	(0.63 1.87)			40+9	168	7.0	2227	93.0	1.443	(1.15 1.81)	
	40+10	28	1.5	1834	98.5	1.729	(1.03 2.90)			40+10	117	6.3	1748	93.7	1.367	(1.06 1.76)	
	>=40+11	63	1.1	5500	98.9	1.321	(0.87 2.02)			>=40+11	332	6.0	5244	94.0	1.100	(0.90 1.34)	
Race * Gestational Week							0.995	Race * Gestational W	Veek							0.166	
Note : ª Simple Logi	stics Regress	sion;		OR = odds	s ratio;	95% CI = 9	5% confidence i	interval.	Note : ª Simple Logist	tics Regress	sion;		OR = odd:	s ratio;	95% CI =	95% confidence in	terval.
# Adjusted with HPT	, DM, Heart	Disease,	, Body We	eight, Con	genital An	omaly			# Adjusted with HPT,	DM, Heart	Disease, B	ody Weig	ht, Conge	nital Anor	naly		
				N	FS			Duoluoa				NICU es No Of					Dyalu
			es	N		OR	(95% CI)	P value ^a			Ye		IN		OR	(95% CI)	P valu
		n	%	n	%						n	%	n	%			
Race	Malay	354	0.2	179718	99.8	1.000		>0.999	Race	Malay	15778	8.9	160742	91.1	1.000		0.026
	Chinese	33	0.2	16091	99.8					Chinese	1108	7.0	14624	93.0	0.483	(0.28 0.84)	
	Indian	50	0.4	12645	99.6					Indian	1141	9.1	11369	90.9	0.784	(0.49 1.24)	
Contational Mark	1012	2	0.0	1171	100.0	1.000		0.515	Costational Made	1012	01F	7 2	1000	02.0	1 000		~0.00
Gestational Week	40+3	2	0.0	4471	100.0	1.000		0.515	Gestational Week	40+3	315	7.2	4068	92.8	1.000		< 0.00
	40+4	3	0.1	3740	99.9	1.676	(0.28 10.16)			40+4	234	6.4	3450	93.6	0.867	(0.71 1.05)	
	40+5	1	0.0	3301	100.0	0.755	(0.07 8.37)			40+5	185	5.7	3040	94.3	0.839	(0.68 1.03)	
	40+6	2	0.1	3688	99.9	1.198	(0.17 8.66)			40+6	234	6.5	3389	93.5	0.905	(0.75 1.10)	
	40+7	6	0.2	3989	99.8	3.607	(0.72 18.00)			40+7	236	6.0	3680	94.0	0.857	(0.71 1.04)	
	40+8	2	0.1	3001	99.9	1.636	(0.23 11.69)			40+8	192	6.5	2754	93.5	0.920	(0.75 1.12)	
	40+9	3	0.1	2441	99.9	3.124	(0.52 18.84)			40+9	153	6.4	2239	93.6	0.863	(0.70 1.07)	
	40+10	3	0.2	1905	99.8	3.141	(0.51 19.27)			40+10	93	5.0	1782	95.0	0.674	(0.52 0.87)	
	>=40+11	11	0.2	5751	99.8	3.485	(0.76 15.96)			>=40+11	285	5.1	5343	94.9	0.616	(0.51 0.74)	
Race * Gestational Week							>0.999	Race * Gestational V	Veek							0.430	
Note : ª Simple Logi	stics Regress	sion:		OR = odds	s ratio:	95% CI = 9	5% confidence i	interval.	Note : ª Simple Logist	tics Regress	sion:		OR = odd	s ratio:	95% CI =	95% confidence in	terval.
# Adjusted with HPT			, Body We						# Adjusted with HPT,			ody Weig					
					MS	зв				Fetal Distress							
		Ye	00	• •				P value ^a			Yes		No		OR	(95% CI)	P valu
		1.	5	N	0	OR	(95% CI)	P value=			TC3		INU		UN		
		n	es %	n N	0 %	OR	(95% CI)	P value=			n	%	n	%	UN		
Race	Malay			n 179182		OR 1.000	(95% CI)	>0.999	Race	Malay		% 10.4		% 89.6	1.000		0.457
Race	Malay Chinese	n	%	n	%		(95% CI)		Race	Malay Chinese	n		n			(0.55 1.34)	0.457
Race		n 890	% 0.5	n 179182	% 99.5		(95% CI)		Race		n 18700	10.4	n 161372	89.6	1.000		0.457
Race	Chinese	n 890 60	% 0.5 0.4	n 179182 16064	% 99.5 99.6		(95% CI)		Race	Chinese	n 18700 1808	10.4 11.2	n 161372 14316	89.6 88.8	1.000 0.855	(0.55 1.34)	0.457
Race Gestational Week	Chinese	n 890 60	% 0.5 0.4	n 179182 16064	% 99.5 99.6		(95% CI)		Race Gestational Week	Chinese	n 18700 1808	10.4 11.2	n 161372 14316	89.6 88.8	1.000 0.855	(0.55 1.34)	0.457
	Chinese Indian	n 890 60 86	% 0.5 0.4 0.7	n 179182 16064 12609 4468	% 99.5 99.6 99.3 99.9	1.000		>0.999		Chinese Indian	n 18700 1808 2051 625	10.4 11.2 16.2	n 161372 14316 10644 3848	89.6 88.8 83.8 86	1.000 0.855 0.796 1.000	(0.55 1.34) (0.53 1.19)	
	Chinese Indian 40+3 40+4	n 890 60 86 5	% 0.5 0.4 0.7 0.1 0.1	n 179182 16064 12609 4468 3739	% 99.5 99.6 99.3 99.9 99.9	1.000 1.000 0.636	(0.15 2.70)	>0.999		Chinese Indian 40+3 40+4	n 18700 1808 2051 625 530	10.4 11.2 16.2 14 14.2	n 161372 14316 10644 3848 3213	89.6 88.8 83.8 83.8 85.8	1.000 0.855 0.796 1.000 1.039	(0.55 1.34) (0.53 1.19) (0.85 1.26)	
	Chinese Indian 40+3 40+4 40+5	n 890 60 86 5	% 0.5 0.4 0.7 0.1 0.1 0.0	n 179182 16064 12609 4468 3739 3301	% 99.5 99.6 99.3 99.9 99.9 100.0	1.000 1.000 0.636 0.308	(0.15 2.70) (0.04 2.65)	>0.999		Chinese Indian 40+3 40+4 40+5	n 18700 1808 2051 625 530 463	10.4 11.2 16.2 14 14.2 14	n 161372 14316 10644 3848 3213 2839	89.6 88.8 83.8 86 85.8 86	1.000 0.855 0.796 1.000 1.039 1.006	(0.55 1.34) (0.53 1.19) (0.85 1.26) (0.82 1.23)	
	Chinese Indian 40+3 40+4 40+5 40+6	n 890 60 86 5	% 0.5 0.4 0.7 0.1 0.1 0.0 0.0	n 179182 16064 12609 4468 3739 3301 3689	% 99.5 99.6 99.3 99.9 99.9 100.0 100.0	1.000 1.000 0.636 0.308 0.270	(0.15 2.70) (0.04 2.65) (0.03 2.33)	>0.999		Chinese Indian 40+3 40+4 40+5 40+6	n 18700 1808 2051 625 530 463 567	10.4 11.2 16.2 14 14.2 14 14 15.4	n 161372 14316 10644 3848 3213 2839 3123	89.6 88.8 83.8 86 85.8 86 84.6	1.000 0.855 0.796 1.000 1.039 1.006 1.006	(0.55 1.34) (0.53 1.19) (0.85 1.26) (0.82 1.23) (0.83 1.22)	
	Chinese Indian 40+3 40+4 40+5 40+6 40+7	n 890 60 86 5 4 1 1 1 2	% 0.5 0.4 0.7 0.1 0.1 0.0 0.0 0.0 0.1	n 179182 16064 12609 4468 3739 3301 3689 3993	% 99.5 99.6 99.3 99.9 99.9 100.0 100.0 99.9	1.000 1.000 0.636 0.308 0.270 0.247	(0.15 2.70) (0.04 2.65) (0.03 2.33) (0.03 2.13)	>0.999		Chinese Indian 40+3 40+4 40+5 40+6 40+7	n 18700 1808 2051 625 530 463 567 582	10.4 11.2 16.2 14 14.2 14 15.4 14.6	n 161372 14316 10644 3848 3213 2839 3123 3413	89.6 88.8 83.8 86 85.8 86 84.6 85.4	1.000 0.855 0.796 1.000 1.039 1.006 1.006 1.020	(0.55 1.34) (0.53 1.19) (0.85 1.26) (0.82 1.23) (0.83 1.22) (0.84 1.23)	
	Chinese Indian 40+3 40+4 40+5 40+5 40+6 40+7 40+8	n 890 60 86 5	% 0.5 0.4 0.7 0.1 0.1 0.0 0.0 0.0 0.1 0.1	n 179182 16064 12609 4468 3739 3301 3689 3993 2999	% 99.5 99.6 99.3 99.9 99.9 100.0 100.0 99.9 99.9	1.000 1.000 0.636 0.308 0.270 0.247 0.997	(0.15 2.70) (0.04 2.65) (0.03 2.33) (0.03 2.13) (0.24 4.22)	>0.999		Chinese Indian 40+3 40+4 40+5 40+5 40+6 40+7 40+8	n 18700 1808 2051 625 530 463 567 582 497	10.4 11.2 16.2 14 14.2 14 15.4 14.6 16.6	n 161372 14316 10644 3848 3213 3213 2839 3123 3413 2506	89.6 88.8 83.8 86 85.8 86 84.6 85.4 83.4	1.000 0.855 0.796 1.000 1.039 1.006 1.006 1.020 1.165	(0.55 1.34) (0.53 1.19) (0.85 1.26) (0.82 1.23) (0.83 1.22) (0.84 1.23) (0.95 1.42)	
	Chinese Indian 40+3 40+4 40+5 40+5 40+6 40+7 40+8 40+8 40+9	n 890 60 86 5 4 1 1 1 2	% 0.5 0.4 0.7 0.1 0.1 0.0 0.0 0.0 0.1 0.1 0.1 0.1 0.1	n 179182 16064 12609 4468 3739 3301 3689 3993 2999 2443	% 99.5 99.6 99.3 99.9 99.9 100.0 100.0 99.9 99.9 99.9	1.000 1.000 0.636 0.308 0.270 0.247 0.997 0.395	(0.15 2.70) (0.04 2.65) (0.03 2.33) (0.03 2.13) (0.24 4.22) (0.05 3.42)	>0.999		Chinese Indian 40+3 40+4 40+5 40+5 40+6 40+7 40+8 40+8 40+9	n 18700 1808 2051 625 530 463 567 582 497 397	10.4 11.2 16.2 14 14.2 14 15.4 14.6 16.6 16.2	n 161372 14316 10644 3848 3213 3213 2839 3123 3123 3413 2506 2047	89.6 88.8 83.8 86 85.8 86 84.6 85.4 83.4 83.8	1.000 0.855 0.796 1.000 1.039 1.006 1.006 1.020 1.165 0.974	(0.55 1.34) (0.53 1.19) (0.85 1.26) (0.82 1.23) (0.83 1.22) (0.84 1.23) (0.95 1.42) (0.79 1.20)	
	Chinese Indian 40+3 40+4 40+5 40+5 40+6 40+7 40+8	n 890 60 86 5 4 1 1 1 2	% 0.5 0.4 0.7 0.1 0.1 0.0 0.0 0.0 0.1 0.1	n 179182 16064 12609 4468 3739 3301 3689 3993 2999	% 99.5 99.6 99.3 99.9 99.9 100.0 100.0 99.9 99.9	1.000 1.000 0.636 0.308 0.270 0.247 0.997	(0.15 2.70) (0.04 2.65) (0.03 2.33) (0.03 2.13) (0.24 4.22)	>0.999		Chinese Indian 40+3 40+4 40+5 40+5 40+6 40+7 40+8	n 18700 1808 2051 625 530 463 567 582 497	10.4 11.2 16.2 14 14.2 14 15.4 14.6 16.6	n 161372 14316 10644 3848 3213 3213 2839 3123 3413 2506	89.6 88.8 83.8 86 85.8 86 84.6 85.4 83.4	1.000 0.855 0.796 1.000 1.039 1.006 1.006 1.020 1.165	(0.55 1.34) (0.53 1.19) (0.85 1.26) (0.82 1.23) (0.83 1.22) (0.84 1.23) (0.95 1.42)	
	Chinese Indian 40+3 40+4 40+5 40+6 40+7 40+8 40+9 40+10 >=40+11	n 890 60 86 5 4 1 1 2 4 1 2 4 1 2 4 1 3	% 0.5 0.4 0.7 0.1 0.1 0.0 0.0 0.1 0.1 0.1 0.1 0.1 0.1	n 179182 16064 12609 4468 3739 3301 3689 3993 2999 2443 1905	% 99.5 99.6 99.3 99.9 99.9 100.0 99.9 99.9 99.9 99.9 100.0 99.9	1.000 1.000 0.636 0.308 0.270 0.247 0.997 0.395 1.362	(0.15 2.70) (0.04 2.65) (0.03 2.33) (0.03 2.13) (0.24 4.22) (0.05 3.42) (0.32 5.84)	>0.999		Chinese Indian 40+3 40+4 40+5 40+5 40+6 40+7 40+8 40+9 40+9 40+10 >=40+11	n 18700 1808 2051 625 530 463 567 582 497 397 283	10.4 11.2 16.2 14 14.2 14 15.4 14.6 16.6 16.2 14.8	n 161372 14316 10644 3848 3213 3213 2839 3123 3413 2506 2047 1625	89.6 88.8 83.8 86 85.8 86 84.6 85.4 83.4 83.4 83.8 85.2	1.000 0.855 0.796 1.000 1.039 1.006 1.006 1.020 1.165 0.974 1.013	(0.55 1.34) (0.53 1.19) (0.85 1.26) (0.82 1.23) (0.83 1.22) (0.84 1.23) (0.95 1.42) (0.79 1.20) (0.80 1.28)	
Gestational Week	Chinese Indian 40+3 40+4 40+5 40+6 40+7 40+8 40+9 40+10 >=40+11	n 890 60 86 5 4 1 1 2 4 1 2 4 1 2 4 1 3	% 0.5 0.4 0.7 0.1 0.1 0.0 0.0 0.1 0.1 0.1 0.1 0.1 0.1	n 179182 16064 12609 4468 3739 3301 3689 3993 2999 2443 1905	% 99.5 99.6 99.3 99.9 99.9 100.0 99.9 99.9 99.9 99.9 100.0 99.9	1.000 1.000 0.636 0.308 0.270 0.247 0.997 0.395 1.362	(0.15 2.70) (0.04 2.65) (0.03 2.33) (0.03 2.13) (0.24 4.22) (0.05 3.42) (0.32 5.84)	>0.999	Gestational Week	Chinese Indian 40+3 40+4 40+5 40+5 40+6 40+7 40+8 40+9 40+9 40+10 >=40+11	n 18700 1808 2051 625 530 463 567 582 497 397 283	10.4 11.2 16.2 14 14.2 14 15.4 14.6 16.6 16.2 14.8	n 161372 14316 10644 3848 3213 3213 2839 3123 3413 2506 2047 1625	89.6 88.8 83.8 86 85.8 86 84.6 85.4 83.4 83.4 83.8 85.2	1.000 0.855 0.796 1.000 1.039 1.006 1.006 1.020 1.165 0.974 1.013	(0.55 1.34) (0.53 1.19) (0.85 1.26) (0.82 1.23) (0.83 1.22) (0.84 1.23) (0.95 1.42) (0.79 1.20) (0.80 1.28)	

This study did not show race to gestation interaction effect for any of the outputs. We may not be seeing a drop in quality of outcomes as it may be that each baby is being induced at just the right time.

CONCLUSION

REFERENCE

- Induction of labour for improving outcomes for women, WHO
- Induction of labour for improving birth outcomes for women at or beyond term, Cochrane review, 2007 Gulmeaoglu AM, Middleton P