A clinical audit of combined first trimester screening and non-invasive prenatal testing offered to pregnant women in a regional Australian hospital

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BACKGROUND

It is well documented the disparity in access and opportunity to prenatal screening amongst pregnant women across Australia[1-4]. This retrospective study analysed records of women receiving antenatal care at a regional Australian hospital to determine what proportion were offered first trimester prenatal screening. The study hypothesized that younger, multiparous women and women living rurally are less likely to be offered prenatal screening.

OBJECTIVES

To asses the current practice in regards to screening for fetal chromosomal abnormalities in regional Australia.

METHODS

Independent variables of age, parity and geographical classification of 1114 women for a period of six months (1st July-31st December 2016) were collected. Women 'offered' combined first trimester screening (CFTS) or non-invasive prenatal screening (NIPT) were those who had evidence or documentation stating it was discussed. Women 'not offered' CFTS or NIPT were those who had no evidence or documentation to state the test was discussed. Variables were compared using chi-squared and Mann-Whitney U tests. Significant variables were included in a logistic regression model to examine predictors of prenatal screening.

RESULTS

Of 1114 women, 609 (54%) were 'not offered' prenatal screening. All three variables (age, parity, geographical classification) were statistically and clinically significant. The logistic regression model was statistically significant, $\chi^2(7, N=1114)=209.65$, $p<0.001$, and found between 17.2% and 22.9% of the variance in offer of prenatal screening.

Table 1: Demographic characteristics of sample N (%)

Characteristic	Fetal screening not offered	Fetal screening offered*	Total	*P*-value
Age in years†				<0.001
<18	16 (2.6)	5 (1.0)	21 (1.9)	
18–24	216 (35.5)	68 (13.4)	284 (25.5)	
25–30	200 (32.9)	170 (33.6)	370 (33.2)	
31–35	130 (21.4)	155 (30.6)	285 (25.6)	
36–40	40 (6.6)	90 (17.8)	130 (11.7)	
41+	6 (1.0)	18 (3.6)	24 (2.2)	
Location†				<0.001
Rural	247 (40.6)	134 (26.5)	381 (34.2	
Urban	362 (59.4)	372 (73.5)	734 (65.8)	
Parity‡				<0.001
P0	67 (11.0)	61 (12.1)	128 (11.5)	
P1	203 (33.3)	210 (41.5)	413 (37.0)	
P2	155 (25.5)	138 (27.3)	293 (26.3)	
P3	74 (12.2)	71 (14.0)	145 (13.0)	
P4	50 (9.9)	20 (4.0)	70 (6.3)	
P5+	60 (9.9)	6 (1.2)	66 (5.9)	

† Chi square test
‡ Mann-Whitney U test
*Approximately 10 women were offered NIPT, in some cases as second-tier screening, the remainder were offered CFTS

The strongest predictor of women offered prenatal screening was older age: Those aged between 36–40 had an odds ratio (OR) = 17.19 and those aged 41+ years (OR = 27.46). This indicates that women in the 36–40 years age group and women in the 41+ years age group were 17 and 27 times (respectively) more likely to be offered prenatal screening than women aged <18 years. Women residing in urban locations were nearly twice as likely (OR = 1.82) to be offered prenatal screening than women residing in rural locations. Multiparous women were less likely to be offered screening. For each additional child, women were 0.61 times less likely to be offered prenatal screening (OR = 0.61).

Table 2: Factors associated with fetal anomaly screening – logistic regression

Variables	β	Wald	aOR	95% CI for OR		*P*-value
				Lower	Upper	
Age <18 (Ref)						
Age 18–24	0.26	0.23	1.29	0.45	3.71	0.631
Age 25–30	1.49	7.86	4.44	1.57	12.59	0.005
Age 31–35	1.91	12.69	6.77	2.36	19.39	<0.001
Age 36–40	2.84	25.11	17.19	5.65	52.33	<0.001
Age 41+	3.31	20.57	27.46	6.56	114.93	<0.001
Rural location (Ref)						
Urban location	0.60	72.58	1.82	1.38	2.41	<0.001
Parity	-0.49	4.95	0.61	0.55	0.69	<0.001

CONCLUSION

In regional Australia, younger women, multiparous women and women living rurally are less likely to be offered prenatal screening. Potential barriers and solutions for these findings need to be identified in order for all pregnant women to access prenatal screening equally as per the RANZCOG guidelines.

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