

# Unemployment and Reproductive Outcome: An Australian Study

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## Abstract

The Mater-University of Queensland Study involves the follow-up of 8556 pregnant women who were enrolled at their first clinic visit. This analysis compares four groups of women categorized according to their own and their partners' employment status. Group 1 comprised women unemployed, partners not unemployed. Group 2 comprised women not unemployed with unemployed partners. Group 3 comprised women and partners who were both unemployed. In group 4 neither partner was unemployed. Initial analysis showed that there was a significant association between birthweight and birthweight for gestational age, and unemployment as reported by mothers. After adjustment for lifestyle variables (principally smoking) there were no remaining statistically significant associations.

The association between unemployment (in men) and lifestyle, mental and physical health has been reviewed by Kerr (1983) and Schwefel (1986), but there have been few reports regarding unemployment amongst women and more specifically the effect of unemployment on pregnant women and possible consequences for reproductive outcome. Such research is needed, in part, because of the recent increase in female unemployment. Between 1970 and 1986 there was a 15% increase in numbers of males employed and a 55% increase in numbers of females employed in Australia (Fisher 1987). The female unemployment rate in Australia has been higher than the male unemployment rate in 15 of the last 17 years, and according to Fisher (1987) in 1986 unemployed females comprised 42% of the total unemployed and 39% of the employed workforce.

The purpose of this study was to determine whether (i) unemployment of the pregnant woman affected pregnancy outcomes, (ii) unemployment of the pregnant woman's partner affected pregnancy outcomes, (iii) unemployment of both partners affected pregnancy outcomes, (iv) whether related factors, e.g. age, parity, smoking, etc. were intervening or con-founding variables in any apparent association of the above events.

## Subjects and methods

This paper reports data from the Mater-University of Queensland Study of Pregnancy (MUSP). It follows up a cohort of pregnant women enrolled and interviewed at their first clinic visit and for whom data on pregnancy outcomes were available from the hospital records.

Details of sampling, questionnaire design, response rates, etc. have been reported by Keeping *et al.* (1989). For this analysis demographic and lifestyle data were taken from the questionnaire administered at the first clinic visit and details of the birth were abstracted from the medical record completed by hospital staff. Staff completing this record were effectively 'blind' to the unemployment status of the respondent.

Employment status was determined on the basis of two precoded questions answered by the respondent. Unemployment status was determined by a respondent's subjective judgement that she or her partner or both were so categorized. While there is some debate about whether persons not in receipt of unemployment benefits are, in a strict sense, unemployed, it is clear that many persons seeking work are, for a variety of reasons, unable to obtain government benefits. It has been estimated that these 'hidden'

unemployed are disproportionately women whose partners are employed and who, while wishing to work, have not been able to receive unemployment benefits.

## Results

Of the 8556 women initially enrolled in the study 252 failed to provide employment details either for themselves or their partner and a further 136 women were excluded because they were pensioners (117), students (4) or other women (15) without a partner. Those women describing themselves as unemployed and without a partner (150) were categorized as unemployed, while those women employed but without a partner (77) were categorized as 'neither unemployed'. In any event, separate computer runs including and excluding the latter two groups did not influence the findings.

**Table 1.** Unemployment status\*

	<i>n</i>	%
Mother unemployed	713	8.7
Partner unemployed	666	8.2
Both unemployed	224	2.7
Neither unemployed	6565	80.4
Total	8168	100.0

\* Excluded were 158 for whom data on their unemployment status and that of their partners were missing.

Table 1 provides details of the major sub-groups in the comparisons which follow. Women who were themselves unemployed were distinguished from those who described their partners as unemployed and from those who were unemployed at the same time as their partners. While only 2-7% of the sample reported that both partners were unemployed, it seemed appropriate to treat separately this group of women who might be expected to manifest the most severe pathology, if such exists.

Unemployment levels are not randomly distributed throughout the community but concentrated amongst some groups (Table 2). In our sample of 8168 women, some 65% of the 89 women who were aged  $\leq 18$  years were in one of the three unemployed groups, as were 24% of those women in the 19-25 age group ( $n = 4678$ ). Similarly, the unemployed groups had lower parity, were less often married, were more often from the lowest occupational status group, had higher smoking levels and less regularly ate breakfast. In a number of respects the unemployed groups, particularly that group of women who reported themselves unemployed, had biological characteristics and health behaviours which suggested they were likely to have a less favourable outcome of their pregnancies.

**Table 2.** Association between unemployment status and socio-demographic and health behaviour variables

	Cramer's <i>V</i>
Mother's age	0.14***
Panty	0.15***
Marital status	0.30***
Partner's occupational status	0.10***
Smoking at first visit	0.09***
Eat breakfast regularly	0.07***

\*\*\*  $P < 0.001$ .

Tables 3 to 5 present the mean and categorized comparisons of the pregnancy outcomes (gestation at delivery, birthweight, birthweight for gestation, and perinatal death) of the four groups, both unadjusted and adjusted for the potentially adverse biological and behavioural variables noted previously. It is clear that the unemployed groups do not experience higher levels or rates of preterm delivery (Table 3).

By contrast, the mean unadjusted birthweight of the unemployed groups is some 50-100 g lighter than that of the group with neither partner unemployed (Table 4). Adjustment using analysis of variance shows that this difference is largely attributable to the higher levels of smoking in the unemployed groups. While the pattern of rate of low birthweight follows broadly the comparisons of the means, these latter differences are not statistically significant.

The unemployed groups have babies with lower weight-for-gestation, and higher rates of babies under the 5th birthweight centile (Table 5). Adjustment for the mother's smoking levels is the single major factor contributing to a reduction of these differences, although adjustment for parity and eating breakfast regularly also contributes to the reduction of these differences, until they become of marginal statistical significance (reduced from  $P < 0.0001$  to  $P = 0.11$ ). The major remaining difference, after adjustment, appears to be between those women who report their partners are unemployed and the group where neither is unemployed.

In total there were 80 perinatal deaths in the sample, of which 16 occurred in the unemployed groups (rate 11.4 per 1000 births) compared with 64 deaths in the 'neither unemployed' group (rate 10.6 per 1000 births). These differences are modest and are attributable to chance. A sample of considerably greater size than the one obtained for this study would be required to confirm or deny the existence of the significance of difference observed above (Table 6).

## Discussion

Work (next to sleep) is the second most important focus of day-to-day activity, although it is believed that the financial aspects are of relatively minor importance in influencing work satisfaction, compared with the feelings of accomplishment and self-respect (Converse 1980) and the development of a social network (Borrero & Rivera 1980). Conversely, lack of work has been associated with emotional and mental health problems as reported by Hill (1978), Zawadski & Lazarsfeld (1935), Linn *et al.* (1985) and Banks & Jackson (1982). Any association between lack of work and physical health is less clear.

**Table 3.** Unemployment status by pre term delivery

	Rate of preterm births ( $\leq 36$ weeks)				
	Mean gestation (weeks)		Rate/100 births	Odds ratio	
	Unadjusted	Adjusted*		Unadjusted	Adjusted*
Mother unemployed	39.3	39.2	6.70	1.44	1.17
Partner unemployed	39.4	39.3	3.87	0.81	0.58
Both unemployed	39.3	39.1	5.73	1.22	0.76
Neither unemployed	39.3	39.2	4.75	1.00	1.00
	NS	NS		$P = 0.10$	$P = 0.12$

\* Adjusted for mother's age, parity, marital status, father's occupational status and mother's smoking and eating breakfast regularly.

Criticisms of the methods used in previous studies of the association between unemployment and health have been expressed by Ackerman & Vaeth (1978), Moser *et al.* (1984), Waldron *et al.* (1982) and McMichael (1976). For these reasons this review has been limited to papers with a longitudinal design and with reliably measured health

outcomes. Brenner (1977) and College (1982) used aggregate data to infer that a 1% increase in unemployment leads to a 2% increase in mortality, although Spruit (1982) raised doubts about these findings. Support for the association between unemployment and mortality has been provided by Moser *et al.* (1984) in the extensive OPCS longitudinal study covering 1% of the British population and specifically looking at various causes of death and allowing for social class differences. However, the association between unemployment and morbidity was less clear as the DHSS Cohort Study in Britain showed only an increased utilization of health services by the unemployed group (Ramsden & Smee 1981). Almost parallel findings were reported by the American Veterans' Administration Study, where despite greater use of medical services by the unemployed group, and a subjective decrease in their health, there was no significant increase in diagnosed illness. Cook *et al.* (1982) reported higher rates of lung and heart disease when unemployed were compared with employed men, although adjustment for some socio-demographic and lifestyle variables reduced or eliminated the differences.

**Table 4.** Unemployment status by birthweight

	Rate of low birthweight ( $\leq 2499$ g)				
	Mean birthweight (g)		Rate/100 births	Odds ratio	
	Unadjusted	Adjusted*		Unadjusted	Adjusted*
Mother unemployed	3277	3327	6.54	1.31	1.27
Partner unemployed	3324	3296	5.63	1.11	1.03
Bath unemployed	3287	3313	5.73	1.13	0.84
Neither unemployed	3380	3331	5.08	1.00	1.00
	$P < 0.0001$	NS		NS	NS

\* Adjusted for mother's age, parity, marital status, father's occupational status and mother's smoking and eating breakfast regularly.

Few studies of unemployment and pregnancy outcome have been reported. In Australia, Lumley *et al.* (1985) noted that women with unemployed partners were more likely to have low birthweight babies. This has also been reported by Stein *et al.* (1987) in Oxford – a difference which was attributed to income.

**Table 5.** Unemployment status by birthweight centile adjusted for gestational age

	Rate of low birthweight (=5th centile)				
	Mean birthweight centile		Rate/100 births	Odds ratio	
	Unadjusted	Adjusted*		Unadjusted	Adjusted*
Mother unemployed	44.5	47.6	6.39	1.48	1.16
Partner unemployed	47.0	45.8	6.69	1.56	1.50
Both unemployed	45.0	47.9	5.73	1.32	0.86
Neither unemployed	50.6	49.0	4.40	1.00	1.00
	$P < 0.0001$	$P = 0.11$		$P = 0.02$	NS

\* Adjusted for mother's age, parity, marital status, father's occupational status and mother's smoking and eating breakfast regularly.

In the longitudinal study we are presenting, a large sample of women were questioned early in pregnancy about their own and their partner's employment status. Four commonly accepted indicators of the outcome of pregnancy were obtained from the subsequent hospital record. Employment data were obtained early in pregnancy and it may be that some women (or their partners), initially categorized as employed or unemployed, subsequently

changed their status. It appears unlikely, however, that the above process produced misleading results. Thus it is notable that the group possibly least subject to these changes of status (the 'father unemployed' group) manifests differences of magnitude similar to the other two unemployed groups.

The results suggest that for two of the four outcomes (birthweight and weight for gestational age) one or more of the unemployed groups had more adverse pregnancy outcomes. Adjustment for various biological and lifestyle factors indicated that the above differences were attributable to the higher rate of cigarette consumption and lower parity evident in the unemployed groups.

**Table 6.** Unemployment status by perinatal death

	Rate/1000 births	(n) †	Perinatal mortality	
			Unadjusted	Adjusted*
Mother unemployed	15.6	(10)	1.47	1.41
Partner unemployed	8.8	(5)	0.83	0.67
Bath unemployed	5.2	(1)	0.49	0.49
Neither unemployed	10.6	(64)	1.00	1.00
			NS	NS

\* Adjusted for mother's age, parity, marital status, father's occupational status and mother's smoking and eating breakfast regularly.

† Number of deaths.

A number of subsidiary findings also warrant comment. Women who are themselves unemployed (as well as women whose partner is unemployed) appear to be at greater risk of having a low-birthweight and small-for-gestational-age baby. The unemployment status of both partners is pertinent to understanding the outcome of a pregnancy.

This study suggests that the observed differences in pregnancy outcome are attributable to known risk factors which are more common in the unemployed groups. While it is not possible to assert confidently a particular cause-effect sequence from this study alone, it is possible to combine the findings of this study with others of the unemployed to describe the most likely causal sequence (see Zawadzki & Lazarsfeld 1935; Kasl *et al.* 1975; Hill 1978; Borrero 1980; Banks & Jackson 1982; Burke 1984; Linn *et al.* 1985; Kessler *et al.* 1987). While the process will vary somewhat for particular individuals and groups, it appears the unemployed react initially to their changed status by enthusiastically seeking work. As such efforts meet with repeated rejection, their economic circumstances decline, and their emotional state deteriorates. Many of the unemployed become apathetic and depressed, some react by choosing to use sub-stances which may temporarily elevate their mood (e.g. cigarettes). If this projection above is correct, then unemployment can be seen to induce a variety of changes in lifestyle, some of which may have a negative influence on the out-come of pregnancy.

That these differences are attributable to known risk factors (e.g. cigarette smoking, parity) does not diminish the value of perceiving the unemployed group to be at elevated risk. There may be a need to mount pre-emptive surveillance and appropriate health education programmes, as well as dealing creatively with the social rejection implied by unemployment status.

We conclude that there is an association between unemployment and low birthweight. These differences appeared largely attributable to the observation that women in the unemployed groups had higher rates of cigarette consumption. Because unemployment appears to have an adverse influence on a mother's lifestyle there is a need to consider the benefits of prevention programmes for these women.

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