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## Employment may Protect Fathers in the Setting of Maternal Teenage Pregnancy from Anxiety and Depression: Findings from the Australian Father's Study

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### Abstract

**Objective:** There is limited research on fathers in the setting of maternal teenage pregnancy. Most studies report data from regions of social disadvantage and low education. We report on the levels of anxiety, depression and quality of life of fathers in the setting of maternal teenage pregnancy in an area where the unemployment rate is low.

**Methods:** Observational study of 50 fathers in the setting of maternal teenage pregnancy and 100 fathers whose partners were not teenagers (control), living within the same metropolitan healthcare region with high employment rates. Fathers were enrolled within the larger Australian Father's Study and were recruited from antenatal clinics and community settings. Researchers administered the Hospital Anxiety and Depression Scale, Satisfaction with Life Scale and demographic questionnaires.

**Results:** Fathers in the setting of maternal teenage pregnancy were significantly younger than control fathers ( $p < 0.05$ ). After adjusting for demographic variables, fathers in the setting of maternal teenage pregnancy did not have levels of anxiety, depression or quality of life that were significantly different to control fathers.

**Conclusion:** Fathers in the setting of maternal teenage pregnancy, when engaged in further education or employment have levels of anxiety, depression and quality of life comparable to control fathers.

**Keywords:** Teenage pregnancy; Teenage fathers; Education; Hospital anxiety and depression scale; Satisfaction with life scale; Depression; Anxiety; Quality of life

### Background

Paternal depression is a significant health problem. A recent meta-analysis estimated it impacted upon one in ten families [1]. As with maternal depression, its consequences can lead to poorer outcomes in offspring [2]. Paternal depression can also cause financial and emotional stressors for the family as well as poor paternal infant engagement [3]. There is societal and political interest in strategies to minimize the toll of paternal depression on families.

Depression in fathers is common in the setting of maternal teenage pregnancy [4-7]. However, most reported studies have been conducted in areas with low Relative Socioeconomic Area for Disadvantage scores [8] where participation rates in employment and education in young men are poor. Low socioeconomic status adversely impacts on the incidence of depression [7].

Employment can be a protective factor against depression, acting as a stabilising focus for vulnerable families [3,9,10]. Conversely, the adverse cycle of unemployment and depression can adversely impact on engagement of fathers with their children and increase paternal

stress and aggravation [3,9-11]. Education may also be a protective factor in preventing depression in individuals from low socioeconomic backgrounds [12,13]. However, the role of employment and education as protective factors for fathers within the setting of maternal teenage pregnancy has not been specifically studied.

Our hypothesis was that employment and education could play a protective role for fathers in the setting of maternal teenage pregnancy by reducing rates of anxiety and depression and improving quality of life. The aim of the study was to document levels of anxiety, depression and quality of life in a geographic region where participation opportunities in education and employment opportunities for young men were high.

### Methods

#### Type of study and ethics approval

The findings in this manuscript were a predefined sub-study of The Australian Father's Study, a longitudinal study of 1000 fathers that explored father's attitudes towards antenatal, birth and postnatal care [14,15]. The Australian Father's Study is collection of sub-studies of men who are the acknowledged father in the setting of pregnancy. The sub-studies address maternal teenage pregnancy, "fly in fly out (FIFO)" workers, aboriginal background, migrant background and preterm

birth. FIFO workers are workers who live in one region of Australia and fly to their worksite wherein they lodge on site for a period of one to four weeks and then fly home and repeat this in a cycle.

They represent a significant part of the Australian workforce especially in industries such as mining, oil and gas where the worksites are in isolated rural locations. The Australian Father's Study also recruited a large cohort of fathers who reflected the general demographic features of the wider population of Australia fathers with a pregnant partner in terms of age, ethnicity, religious belief and parity. These were comparison fathers for the substudies.

The Australian Father's Study has institutional ethics committee approval (Primary ethics committee: Joondalup Health Campus) and Australian and New Zealand national trial registration (ACTRN12613001273774) located at the web address: <https://www.anzctr.org.au/Trial/Registration/TrialReview.aspx?id=365323>.

### Study population

All individuals in the present study on fathers in the setting of maternal teenage pregnancy were recruited from the North Metropolitan Health Service in Western Australia. Individual informed consent was obtained from each male participant after permission to approach the father had been verbally obtained from the pregnant woman.

Fathers in the setting of maternal teenage pregnancy were defined as men who were the acknowledged father of the baby in a setting where the pregnant woman was aged less than 20 years (maternal teenage pregnancy fathers). Of note, these fathers were not all themselves teenagers, as their mean age was 2.1 years older than the pregnant mother.

The comparison group was expectant fathers recruited from the same metropolitan health service region, whose pregnant partner was not a teenager (comparison fathers). This group of fathers had demographic features similar to the wider population of expectant Australian fathers in terms of age, religious belief, years of education, employment and first time fatherhood status [16].

All fathers were recruited from a geographic region with low unemployment, and a high Relative Socioeconomic Index for Disadvantage as the recruiting postcodes fell into the 50-100th centiles [8].

### Questionnaires

Research staff first approached the pregnant mother to obtain verbal consent to approach the father of her unborn baby. This was a requirement of the ethics committee. Research staff then approached the nominated father. Following written consent, fathers completed a demographic questionnaire, the Hospital Anxiety and Depression Scale (HADS) [17,18] and Satisfaction with Life Scale (SWLS) [19,20].

The HADS is a widely used tool to identify emotional distress in non-psychiatric patients [17,18]. It does not identify specific mental disorders but is a more general measurement of mental distress and consists of subscales for anxiety and depression. Fourteen questions (half relate to anxiety and half to depressive symptoms) are interpreted in a range from normal to severe. It excludes symptoms of physical feeling or sensation, therefore avoiding potential confounding by somatic symptoms [17,18].

The SWLS is a five-item questionnaire that measures global evaluation of satisfaction with one's life [19,20]. SWLS does not specify the context of pregnancy and fatherhood. It assesses overall contentment with life as a subjective measure based on personal standards. SWLS has reliable test-retest validity for the purpose of comparison with delivery and postnatal data [19,20].

### Inclusion and exclusion criteria

Fathers were recruited via the pregnant mother who identified the man as the father of her unborn baby. If the mother declined to provide consent, the father was excluded. Fathers where pregnancy was complicated by a known fetal anomaly or with insufficient English literacy skills were also excluded from this sub-study.

### Sample size

We assumed 50% of fathers in the setting of maternal teenage pregnancy compared to 30% of comparison fathers would report anxiety or depressive symptomatology. This assumption was based upon outcomes from a 2005 study from western Melbourne in Victoria, Australia [4].

A sample of 45 teenage group fathers provided 80% power with an error of 0.05 to detect this difference. The study recruited 50 fathers in the setting of maternal teenage pregnancy to ensure a sufficient sample, assuming incomplete data might be obtained from some questionnaires. Twice the number of fathers was enrolled for the comparison group.

### Statistical analysis

Data was entered onto a dataset using Minitab<sup>®</sup> (version 16, University of Melbourne). A descriptive analysis was used for the quantitative data. In order to analyze for differences in responses between fathers in the setting of maternal teenage pregnancy and comparison fathers, the significance (p) of the differences was determined by the Fisher Exact test. A p-value of 0.05 was set for rejection of the null hypothesis. Student T-test was used to compare continuous data.

### Results

Of the teenage mothers approached, 86% gave permission to speak to the acknowledged father of their baby. Of the fathers in the setting of maternal teenage pregnancy subsequently approached by research staff, 80% consented to participate in the trial. This gave an overall consent rate of 69%.

The demographic characteristics of the study participants are summarized in Table 1. Fathers in the setting of maternal teenage pregnancy were significantly younger and more likely born in Australia than the comparison group fathers (92% versus 68%,  $p < 0.0001$ ).

A higher prevalence of fathers in the setting of maternal teenage pregnancy were of Aboriginal or Torres Strait Islander descent (18% versus 3%,  $p < 0.0001$ ). Significantly more fathers in the setting of maternal teenage pregnancy did not cohabit with the mother (28% versus 10%,  $p = 0.008$ ) and no longer had an ongoing relationship with the mother (28% versus 10%,  $p = 0.008$ ).

	Comparison fathers N=100	Maternal teenage pregnancy setting fathers N=50	P-value
<b>Age</b>			
Mean (sd)	31.8 (3.1)	21.2 (1.2)	<0.0001
<b>Country of birth</b>			
Australia	68%	92%	<0.0001
Elsewhere	32%	8%	
<b>Aboriginal or Torres Strait Islander</b>	3%	18%	<0.0001
<b>Relationship status</b>			
Living with partner in ongoing relationship	82%	32%	<0.0001
Not living with partner but in an ongoing relationship	8%	40%	
Not living with partner and not in an ongoing relationship	10%	28%	
<b>Education</b>			
<12 years	7%	14%	<0.0001
12 years	40%	74%	
>12 years	53%	12%	
<b>Employed</b>			
No	5%	12%	0.76
Yes	95%	88%	
<b>Fly In, Fly Out worker</b>			
Yes	20%	14%	0.5
No	80%	86%	
<b>Hours employed</b>			
0-15	9%	35%	<0.0001
15-40	23%	61%	
40+	68%	4%	
<b>Smoker</b>	21%	38%	0.009
<b>First time father</b>			
Yes	52%	96%	<0.0001
No	48%	48%	
<b>Pregnancy planning</b>			
Natural – planned	70%	22%	<0.0001
IVF – planned	11%	0%	
Unplanned	19%	78%	

**Table 1:** Demographics of expectant fathers.

76% of fathers in the setting of maternal teenage pregnancy had received 12 years of education though significantly fewer had achieved more than 12 years (12% versus 53% p<0.0001), an outcome probably attributable to their younger age and therefore more limited years of

opportunity. There were no significant differences in levels of employment or in employment as a fly in, fly out (FIFO) worker.

The prevalence of smoking in fathers in the setting of maternal teenage pregnancy was higher (38% versus 21%,  $p < 0.009$ ) as was the rate of unplanned pregnancy (78% versus 19%,  $p < 0.0001$ ).

Table 2 demonstrates no significant difference in overall HADS and subscale depression and anxiety scores between the two groups. Similarly differences in mean scores for the SWLS were not significant with a mean score of 27.5 for the control group and 27.6 for the teenage group fathers.

	Comparison fathers N=100	Maternal teenage pregnancy setting fathers N=50	P-value
<b>HADS</b>			
Total score $\geq 14$ N (%)	22%	28%	0.42
Anxiety subscale score $\geq 8$ N (%)	19%	16%	0.82
Depression subscale score $\geq 8$ N (%)	10%	14%	0.59
<b>Satisfaction with life scale</b>			
Total score Mean (sd)	27.5 (4.9)	27.6 (4.7)	0.79

**Table 2:** Anxiety, depression and quality of life in expectant fathers.

A secondary analysis was undertaken of the fathers in the setting of maternal teenage pregnancy comparing those who were themselves teenagers compared to the fathers who were 20 years and older. No significant difference was found in overall HADS score (32% versus 26%,  $p = 0.75$ ), depression sub-scale (16% versus 16%,  $p = 1.00$ ), anxiety subscale (16% versus 13%,  $p = 0.93$ ), or quality of life scores (27.7 versus 27.6,  $p = 0.86$ ).

## Discussion

This study found that fathers in the setting of maternal teenage pregnancy who live within a geographic region of higher Relative Socioeconomic Index for Disadvantage and where youth education and employment opportunities are high have levels of anxiety, depression and quality of life similar to comparison fathers. In contrast, a previous study from Western Melbourne, Australia in a setting where the Relative Socioeconomic Index for Disadvantage was low and rates of youth participation in employment and education were poor, reported significantly higher levels of psychosocial pathology [4].

In line with previous reports, we documented lower rates of cohabitation with partners, higher rates of being Australian-born and of being of Aboriginal or Torres Strait Islander descent. There were significantly higher rates of unplanned pregnancy and smoking.

The fathers recruited for our study lived in a region where unemployment levels were below the national average, particularly due to employment opportunities through the mining industry. Rates of FIFO employment were similar between the two groups (18% for fathers in the setting of maternal teenage pregnancy and 16% for comparison fathers) and represented a significant proportion of overall employment. Our results suggest that in a setting where employment opportunities are high, and socioeconomic status is maintained, the effect of stressful life events such as unplanned maternal teenage pregnancy may be ameliorated in the father so that age does not become a defining risk variable. Employment thus acts as a buffer against psychosocial pathology.

This environment also promotes quality of life. The SWLS scores were high in both fathers in the setting of maternal teenage pregnancy and comparison fathers. Although the two groups showed diverse demographics, their quality of life scores were similar in the antenatal period.

Unfortunately, rates of maternal teenage pregnancy are higher in regions where youth education and employment opportunities are more limited. Therefore, rates of psychosocial pathology are likely to remain high in these regions. Co-morbidities of unplanned pregnancy, relationship fragmentation and smoking still need to be addressed, even in areas of higher socioeconomic opportunity.

Overall, the study reinforces that the provision of education and employment opportunities to young men in the setting of maternal teenage pregnancy is a vital social intervention to buffer these young men and the family against psychosocial pathology.

## Study Limitations

This study has a number of limitations. Firstly, fathers could only be approached through the pregnant woman, so those cases where the father was unknown or where a severe relationship breakdown had occurred were not able to be included in the study. Secondly, the study did not explore family income, paternal networks and father's needs and desires for pregnancy. These variables might impact upon outcomes. Finally, the trial is not randomized and it may be that other factors ameliorated the impact on psychosocial pathology and quality of life that were not measured. The study advantages were the high participation rate and compliance in questionnaire completion.

## Conclusion

Fathers in the setting of maternal teenage pregnancy, when living in a region with education and employment opportunities, have levels of anxiety, depression and quality of life comparable to comparison fathers. This study highlights the vital need to provide education and employment opportunities for vulnerable fathers.

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