The association between social support and levels of psychological distress in pregnant women in Australia

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Abstract – **Objective**: The purpose of this study was to explore associations between forms of social support and levels of psychological distress during pregnancy. **Methods**: A cross-sectional analysis of 2,743 pregnant women from south-east Queensland, Australia, was conducted utilising data collected between 2007-2011 as part of the Environments for Healthy Living (EFHL) project, Griffith University. Psychological distress was measured using the Kessler 6; social support was measured using the following four factors: living with a partner, living with parents or in-laws, self-perceived social network, and area satisfaction. Data were analysed using an ordered logistic regression model controlling for a range of socio-demographic factors. **Results**: There was an inverse association between self-perceived strength of social networks and levels of psychological distress (OR = 0.77; 95%CI: 0.70, 0.85) and between area satisfaction and levels of psychological distress (OR = 0.77; 95%CI: 0.69, 0.87). There was a direct association between living with parents or in-laws and levels of psychological distress (OR = 1.50; 95%CI: 1.16, 1.96). There was no statistically significant association between living with a partner and the level of psychological distress of the pregnant woman after accounting for household income. **Conclusion**: Living with parents or in-laws is a strong marker for psychological distress. Strategies aiming to build social support networks for women during pregnancy have the potential to provide a significant benefit. Policies promoting stable family relationships and networks through community development could also be effective in promoting the welfare of pregnant women.

Keywords – psychological distress, social support, pregnant women, public health.

1. Introduction

A correlation between social support and mental health has long been recognised, with a general consensus that social support is an important mechanism in reducing psychological distress in individuals [1-8]. Social support can be offered by different groups or persons: partner, family, relatives, friends or neighbours. Moreover, social interaction may improve ones' health through: 1) transmission of health information; 2) mutual assistance mechanisms; 3) promotion of healthy behaviours; and 4) buffering effect against adversity [9, 10]. Thus implying that the alternative, little social involvement and poor social support, are negatively associated with mental wellbeing.

For pregnant women, social support has been found to have a positive effect on psychological wellbeing [11, 12]. Poor (or lack of) relationship between a pregnant woman and her partner has been suggested to create financial and caregiving strain resulting in psychological distress and anxiety in pregnant women [1, 7, 11, 13]. Other forms of social support have been found to benefit the wellbeing of pregnant women by providing childcare minding and advice [14, 15].

We consider social support at four levels, the first being support provided by a life partner. Living with a life partner has been considered beneficial for pregnant women [12] as a partner contributes to family stability, financial and economic viability, and emotional needs. Studies have shown non-cohabitation is significantly associated with an increased risk of depressive symptoms [7]. The second level of social support is with regards to immediate family members, and more specifically parents or in-laws of the pregnant woman. Young or low-income earning pregnant women are more likely to be living with other family members due to financial stress, whereas other women may choose to live within a larger family unit due to culture or due to a strong familial bond. It is unclear whether living with parents or in-laws is beneficial during pregnancy. The self-perceived social network of a pregnant woman is the third level considered. Satisfaction with social support, such as feeling like you can find someone if you need help, has been found to be important for psychological wellbeing [4, 16, 17]. Finally, area satisfaction is the fourth level of social support. An individual's level of satisfaction within their community might limit depression due to a positive sense of belonging and provision of community support [18, 19]. Alternatively, an unsafe area or feeling of isolation within a community may decrease an individual's psychological wellbeing.

This study aims to demonstrate the importance of social support for pregnant women and reveal differences between four forms of social support with regard to their association with psychological distress.

2. Subjects and Methods

2.1. The sample

This study uses a sample of pregnant women in Australia. The data for this study are from Environments for Healthy Living (EFHL): Griffith Study of Population Health. The EFHL study is a repeated sample, birth cohort study, designed to collect information from before birth through to adulthood.

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The study participants were recruited annually (from 2006 to 2011) from three public maternity hospitals: Logan hospital (Queensland), Gold Coast hospital (Queensland); and the Tweed Hospital (New South Wales). The EFHL cohort methodology has been described in full elsewhere [20]. Baseline surveys were completed on or shortly after the routine 24 week antenatal visit. Pregnant women aged less than 16 years or those unable to provide informed consent were excluded.

This present study utilises the baseline data from women that were recruited during 2007 to 2011. Participants from the 2006 pilot phase were not included as psychological distress was not collected using the same instrument as the other cohort waves. Responses from 2,743 Australian pregnant women are included in this analysis.

2.2. Description of the variables

Psychological distress: The dependent variable is self-reported psychological wellbeing as measured by the Kessler 6 (K6), a six-item instrument. Each item asks respondents how frequently they experienced symptoms of psychological distress during the past 30 days [21, 22] with a 5-point scale ranging from 'none of the time' (value = 0) to 'all of the time' (value= 4). The sum of the response scores can range from 0 to 24. Scores of 13-24 indicate high psychological distress, 8-12 moderate distress and 0-7 as low/normal levels of distress. Using a chi-squared test on the data these three levels of psychological distress were found to be statistically significantly different from each other and were thus used for analysis [23]. The K6 has become a well-accepted instrument for measuring serious mental illness in the general population and has good predictive ability for screening for depression, anxiety and acute distress such as an acute grief reaction [21, 22].

Social support: Four measures of social support were identified through the following set of variables:

- Living with a partner, a dichotomous variable to indicate whether the participant is living with her partner or de facto.

- Living with parents, a dichotomous variable to indicate whether the participant is living with parents / in-laws or lives independently.

- Social network, if the participant "can get help from friends and neighbours" when needed; on a 5-point Likert scale ranging from 1 'strongly agree' to 5 'strongly disagree'; and

- Area satisfaction, how satisfied the participant is with the area she lives in on a 5-point Likert scale ranging from 1 'very satisfied' to 5 'very dissatisfied'.

Covariates: Various socio-demographic characteristics were examined in the current analysis (Table 1). These include age, education, household income, and employment status. The education level was categorised as completion of 'primary school or other', 'high school', 'trade certificate, and 'university'. The household income is also a categorical variable and is as follows: income between $0-$39,999, income between $40,000 to $79,999 and income ≥$80,000. The employment variable defines employed as any individual who is employed full-time, full-time and currently on (maternity) leave, part-time or casual, part-time on leave, seasonal employment, or self-employed.

Health-related characteristics were smoking status, alcohol consumption and whether the pregnant woman had a known medical condition. Household composition characteristics such as the number of children living in the household and home ownership were also included. Home ownership status is defined as owned outright, or through mortgage or loan.

2.3. Statistical analysis

The data were analysed using STATA® 12. Univariate analyses were used to describe the variables of interest. An ordered logistic regression model was constructed to examine the associations of the four forms of social support with psychological distress in pregnant women while controlling for socio-demographics.

Predicted probabilities were calculated from the ordered logistic regression model to further examine associations with forms of social support and levels of psychological distress controlling for socio-demographics. Predicted probabilities can, for example, provide the probability of being in a low level of psychological distress for pregnant women living with their partner, holding all other covariates at their means. This probability can be compared to that of being in a low level of psychological distress for pregnant women not living with their partner in order to obtain the marginal change. Predicted probabilities are obtained for each value of the categorical variables (i.e. living with parents or in-laws, area satisfaction and social networks).

3. Results

3.1. Participants characteristics

The sample with complete data on the four forms of social support used for analysis was 2,691 (out of 2,743 total respondents). The demographic characteristics of the sample are presented in Table 1.

Table 1. Descriptive statistics of the variables used in the ordered logit regression

Description		N=2,691	
Dependent variables			
Kessler 6 score of the pregnant woman			
High psychological distress	Score 13-24	156	(5.70%)
Moderate distress	Score 8-12	408	(15.16%)

Low/normal level of distress	Score 0-7	2,127	(79.04%)
Independent variables			
Lives with partner/spouse	=1 if partnered, 0 otherwise	2,444	(90.82%)
Lives with parents or in-laws	=1 if yes, 0 otherwise	366	(13.60%)
Social network	Categorical variable		
Strongly agree		724	(26.90%)
Agree		1,083	(40.25%)
Neither agree nor disagree		643	(23.89%)
Disagree		185	(6.87%)
Strongly disagree		56	(2.08%)
Satisfaction with the community	Categorical variable		
Very satisfied		1,212	(45.04%)
Fairly satisfied		1,119	(41.58%)
Neither satisfied nor dissatisfied		265	(9.85%)
Fairly dissatisfied		72	(2.68%)
Very dissatisfied		23	(0.85%)
Additional covariates			
Stage of pregnancy, mean (SD)	Number of weeks	35.53	(3.59)
Age of the mother, mean (SD)	Years	29.01	(5.99)
Household income			
Income between $0 - $39,999		476	(17.69%)
Income between $40,000-$79,999		1,037	(38.54%)
Income $\geqslant$$80,000		709	(26.35%)
Missing		469	(17.43%)
Employment status	=1 if employed, 0 otherwise	1,360	(50.54%)
Education level	Categorical variable		
Completed primary school and other		560	(20.81%)
Completed high school		820	(30.47%)
Completed trade certificate		781	(29.02%)
University degree		530	(19.70%)
Number of children aged $\leqslant$16 living in the household			
No children aged$\leqslant$16		1,006	(37.38)
1-3 children aged $\leqslant$16		1,579	(58.68%)
4+ children aged $\leqslant$16		106	(3.94%)

Number of children aged >16 living in the household			
No children aged>16		2,585	(96.06%)
1-3 children aged >16		103	(3.83%)
4+ children aged >16		3	(0.11%)
Housing status	=1 if owned, 0 otherwise	1,088	(40.43%)
Medical condition	=1 if yes, 0 otherwise	624	(23.19%)
Smoking status (cigarettes) during pregnancy	= 1 if yes, 0 otherwise	662	(24.60%)
Drinking status (alcohol)	= 1 if yes, 0 otherwise	1,188	(44.15%)
Location			
Gold Coast	=1 if Gold Coast, 0 otherwise	866	(32.18%)
Logan	=1 if Logan, 0 otherwise	1,277	(47.45%)
Tweed Heads	=1 if Tweed Heads, 0 otherwise	548	(20.36%)

The mean length of pregnancy was 35 weeks and the mean age of the pregnant women 29 years. Half of the pregnant women were employed (50.5%) and most completed high school or had a trade certificate (79.2%). Approximately 47.5% of the sample was recruited from the Logan hospital (QLD), 32.2% from the Gold Coast hospital (QLD), and 20.4% from the Tweed Heads hospital (NSW).

Low to normal levels of psychological distress were identified in 79.0% of the sample; 15.2% had moderate distress and nearly 5.7% had high psychological distress. Most pregnant women were living with their partner (90.8%) and approximately 13.6% of pregnant women were living with their parents or in-laws. Further, 67.2% of pregnant women reported they could find help from friends (agree or strongly agree) and 86.6% were satisfied with the area they lived in (fairly satisfied or very satisfied).

3.2. Relationship between social support and psychological distress during pregnancy

The odds of high psychological distress (compared to the combined low and moderate categories) were statistically significantly greater for pregnant women living with their parents or in-laws (OR = 1.50; 95% CI [1.16; 1.96]; Table 2). The odds of a higher level of psychological distress (compared to the combined low and moderate categories) were 0.77 lower for a one unit increase in social network score (OR = 0.77 [0.70; 0.85]); the odds were similar for a one unit increase in area satisfaction (OR = 0.77 [0.69; 0.87]). There was no statistically significant association between living with a partner and the level of psychological distress of the pregnant woman.

3.3. Predicted probabilities for levels of psychological distress during pregnancy

The predicted probabilities for having low/normal distress, moderate distress or high psychological distress for different values of each of the four measures of social support are provided in Table 2. Living with a partner is likely to increase the probability of having low/normal level of distress from 79% to 81% (compared to pregnant women who do not live with a partner). Accordingly, the probability of having moderate or high distress decreases if the pregnant woman lives with her partner.

Results also indicated living with parents or in-laws is likely to increase the probability of having moderate distress by 35.7% (from 0.14 to 0.19) and the probability of having high distress by 40% (from 0.05 to 0.07) compared to not living with parents or in-laws.

The probability of low/normal distress is likely to increase by 0.04 on average for each increment on the 5-point Likert scale. For example, the probability of low/normal distress would increase from 0.81 to 0.85 when the response to the social network item changes from 'agree' to 'strongly agree'. The probability of moderate distress, however, is likely to decrease by 0.03 on average for each extra increment of the social network scale.

Finally, results show the average change of area satisfaction is 0.04 for low/normal distress. This means the probability for low/normal distress would increase on average by 0.04 for each increment on the 5-point area satisfaction

scale. The probability of moderate distress is likely to decrease, on average, by 0.03 for each extra increment of area satisfaction.

4. Discussion

The purpose of this study was to explore associations between forms of social support and levels of psychological distress in pregnant women. To this end, data from a sample of 2,743 pregnant women over the period 2007-2010 were analysed. Overall, our analyses reveal important differences between four forms of social support and the association with psychological distress. Results show support from peers and friends has a positive effect on psychological distress during pregnancy. This finding is consistent with existing literature and can be explained by the active coping assistance pregnant women may receive from significant others or from women experiencing similar events [24].

There are some interesting facets to the results. First, results regarding the impact of living with a partner are not intuitive. Living with a partner (in a healthy, functioning relationship) was expected to be a source of strong support during pregnancy (i.e. the coefficient would be statistically significant); however, "living with a partner" was only statistically significant if "income" was excluded from the analysis. It is possible that whilst living with a partner is important for reducing the psychological distress of pregnant women, the support provided beyond financial security may be less than that provided by other social support networks. It is also possible that financial security will be less distinct and more likely to be excluded from the subjective assessment of emotional wellbeing. This result suggests that financial assistance programmes that can assist single, pregnant women become self-supporting would help reduce levels of psychological distress. These programmes could be provided through easier access to small loans, temporary cash assistance, or coverage of hidden costs for attending medical services before and after the birth of the child (e.g. transport cost). Conversely, it is possible that some women living with their partner may be in a conflictive relationship [25]. Whilst it is not possible with this dataset to identify positive from negative life partner relationships this would be a valuable consideration in future research.

Second, it appears that a pregnant woman cohabitating with parents or in-laws is an indicator for higher psychological distress in this population. It is possible that cohabitating with parents or in-laws are inadequate or unsupportive relationships that create stress and anxiety for the pregnant woman. Equally, it is also possible that pregnant women with higher psychological distress would choose to live with their parents or in-laws to obtain increased social, emotional and financial support. This could be the case for young pregnant women or those who are unemployed. Further analysis of the data has shown women living with their parents or in-laws are on average younger, and unemployed women are more likely to live with their parents or in-laws compared to employed women.

These two points suggest it is important for health care professionals to understand each woman's individual context. The results in this paper also suggest health professionals could incorporate an assessment of these psychosocial makers when interviewing women early in the antenatal periods to

screen for depression and related disorders. The type of psychosocial factors identified (i.e. whether pregnant women are in a healthy, functioning versus conflictive relationship) is likely to influence the care pathway with more interventions needed to support those women experiencing multiple psychosocial factors. This is also important to identify whether follow-up care is required for the woman and the infant post-birth.

This paper is not without limitations. While the EFHL study uses a large sample of Australian pregnant women, data are cross-sectional in nature, which means no conclusion can be drawn about causality. Further, the study population represents a predominantly lower-income group of women from a concentrated geographic area. Data for a more nationally representative group may further assist in understanding depression in the perinatal population as well as identify key psychosocial factors affecting pregnant women from a greater diversity of backgrounds.

In conclusion, this study demonstrates that in the context of pregnancy, not all forms of social support necessarily play a positive role. These results have implications for health professionals and potential for preventive intervention. Strategies aiming to build social support networks for women during pregnancy have the potential to provide a significant benefit. Further, primary and maternity care services should ensure the woman's individual social environment is well-understood and consider referrals to other services if required. Finally, primary and maternity care services should promote a family-centred approach and encourage members of the pregnant woman's support network to gain an understanding of the impact of pregnancy on emotional wellbeing.

5. Acknowledgment

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