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Research report

Predictors of psychological distress among postnatal mothers in rural Nepal: A cross-sectional community-based study

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ABSTRACT

Background: Perinatal common mental disorders are a major cause of disability among women and have consequences for children's growth and development. We aimed to identify factors associated with psychological distress, a proxy for common mental disorders, among mothers in rural Dhanusha, Nepal.
Methods: We used data from 9078 mothers who were screened for distress using the 12-item General Health Questionnaire (GHQ-12) around six weeks after delivery. We assessed the association between GHQ-12 score and socioeconomic, gender-based, cultural and reproductive health factors using a hierarchical analytical framework and multilevel linear regression models.
Results: Using a threshold GHQ-12 score of ≥ 6 to indicate caseness, the prevalence of distress was 9.8% (886/9078). Factors that predicted distress were severe food insecurity (β 2.21 (95% confidence interval 1.43, 3.40)), having a multiple birth (2.28 (1.27, 4.10)), caesarean section (1.70 (0.29, 2.24)), perinatal health problems (1.58 (1.23, 2.02)), no schooling (1.37 (1.08, 1.73)), fewer assets (1.33 (1.10, 1.60)), five or more children (1.33 (1.09, 1.61)), poor or no antenatal care (1.31 (1.15, 1.48) $p < 0.001$), having never had a son (1.31 (1.14, 1.49)), not staying in the parental home in the postnatal period (1.15 (1.02, 1.30)), having a husband with no schooling (1.17 (0.96, 1.43)) and lower maternal age (0.99 (0.97, 1.00)).
Limitations: The study was cross-sectional and we were therefore unable to infer causality. Because data were not collected for some established predictors, including infant death, domestic violence and history of mental illness, we could not assess their associations with distress.
Conclusions: Socioeconomic disadvantage, gender inequality and poor reproductive health predict distress among mothers in Dhanusha. Maternal and child health programmes, as well as poverty-alleviation and educational interventions, may be beneficial for maternal mental health.
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1. Introduction

Perinatal common mental disorders (PCMDs) are a major cause of disability for women and are also associated with underweight, stunting and impaired social and cognitive development in children born to mothers suffering from these disorders (Parsons et al., 2012; Surkan et al., 2011). High rates of PCMDs have been reported in community-based studies in South Asia, with estimates ranging from 12% (95% confidence interval 11, 12) to 60% (53, 66) (Nagpal et al., 2008; Prost et al., 2012). Important predictors of PCMDs in the region include infant death (Gausia et al., 2009b; Patel et al., 2002; Prost et al., 2012), socioeconomic disadvantage (Chandran et al., 2002; Ho-Yen et al., 2007; Prost et al., 2012), poor social and family support (Gausia et al., 2009a,b; Rahman et al., 2003), domestic violence, and son preference (Ali et al., 2009; Nasreen et al., 2011; Patel et al., 2002). Studies in Nepal have estimated that the prevalence of common mental disorders in the postnatal period is in the range of 3–12%, although they involved small samples in predominantly urban areas (Ho-Yen et al., 2006; Nepal et al., 1999; Regmi et al., 2002). Among mothers, a history of depression, having a husband with alcohol problems, being in a polygamous relationship, stressful life events, multiparity and smoking were associated with postnatal depression (Ho-Yen et al., 2007). One study from Nepal reported a prevalence of common mental disorders of 50% during pregnancy, but the scale used had not been validated in Nepali and the study was conducted in tertiary care (Shakya et al., 2008). The prevalence and predictors of PCMDs have not been investigated in women living in rural Nepal, where rates of neonatal

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mortality are higher than urban areas, 74% of women deliver at home, and 76% access antenatal care (Central Bureau of Statistics, 2011). Provision of mental health services in rural areas is minimal and involves NGO programmes with limited coverage. In this study we investigate PCMDs in a rural area in the Terai (plains) region of Nepal to identify factors associated with psychological distress, a proxy for PCMDs, among mothers.

2. Methods

2.1. Setting

Data for the study were drawn from a large cluster-randomised controlled trial (cRCT) conducted in 60 rural clusters in Dhanusha district in the central Terai region of Nepal. The unit of clustering was the village development committee – the lowest administrative unit in Nepal. The trial protocol has been published and analyses for the main outcomes are being finalised (Shrestha et al., 2011). The trial evaluated two community-based interventions—participatory women's groups focused on maternal and newborn health, and a sepsis management intervention involving training community health workers to treat neonates with sepsis, through a factorial design. For both interventions the primary outcome was neonatal mortality. Additional outcomes included maternal mortality and postnatal psychological distress.

The estimated population of Dhanusha is 754,777, and the 60 clusters had an average population of 6898. Most of the district population is Hindu (90.1%), but there is a relatively large Muslim population (8.4%) (Central Bureau of Statistics, 2008). The four largest caste/ethnic groups in Dhanusha are Yadav (17.6%), Muslim (8.5%), Kewat (6.2%) and Teli (5.0%) (Central Bureau of Statistics, 2001). Most of the population is Madheshi, meaning that they are of plains (Terai) ethnicity, and only a minority is Pahadi (from the hill region). Socioeconomic status and rates of education tend to be lower among Madheshis than Pahadis in the district. Most people live in extended families, and married women live with their husbands' families. Dhanusha is relatively underserved by health facilities: there is approximately one doctor per 23,000 population and one public zonal hospital in Janakpur municipality to serve Dhanusha and five other districts (Shrestha, 2011). Five primary healthcare centres, nine health posts and 88 sub-health posts provide access to public healthcare in rural areas, but a significant proportion of the population consult private doctors (Shrestha, 2011). There are currently no public mental health facilities in Dhanusha, although private psychiatrists hold monthly clinics in Janakpur, the district municipality.

2.2. Participants and assessment

During the Dhanusha cRCT, data were collected for mothers residing in intervention and control clusters who delivered between 13th April 2008 and 13th April 2011, however data collection for postnatal distress did not begin until 15th November 2009. In this study we therefore only included data from interviews conducted after this date and until the end of the trial. Deliveries were fully sampled in smaller clusters where fewer than ten deliveries occurred in a single month. In larger clusters, ten women per month were randomly sampled. We excluded mothers temporarily residing in the study clusters to avoid including those who lived outside Dhanusha. We only included data associated with the firstborn infant of a multiple birth, or the first birth during the postnatal distress data collection period if mothers had delivered more than once. There is no consistent definition of the postnatal period in the psychiatric literature, so we adopted a working definition including the first 12 months after delivery, in line with several studies (Miller, 2002; O'Hara, 1988; Rojas et al., 2007). We therefore excluded data associated with mothers who were interviewed after this period.

Women were identified through local informants responsible for identifying all births, and maternal and neonatal deaths, in the study clusters (Shrestha et al., 2011). Interviewers confirmed these events and carried out a structured interview with mothers around six weeks after delivery to collect data on socioeconomic status, perinatal practices, nutrition and health, as well as psychological distress. Data on distress were only collected for livebirths, and not for deliveries associated with a neonatal death or stillbirth. We used the 12-item General Health Questionnaire (GHQ-12) to measure distress. This screening tool has been used to measure common mental disorders, including PCMDs, in a variety of cultural settings (Kuruvilla et al., 1999; Navarro et al., 2007; Patel et al., 2008). The GHQ-12 was validated using a Likert scale in Nepal (Koirala et al., 1999), however to facilitate screening in a largely illiterate population we used a dichotomous scoring approach, which had been validated in a primary care setting in India (Patel et al., 2008). Each of the GHQ-12 items was scored 1 or 0 and a maximum score of 12 was obtainable for each participant. We selected potential risk factors on the basis of previous literature, and using data collected during a qualitative study conducted in the same population (to be published), but were constrained to the factors measured in the Dhanusha cRCT. The following potential predictors of postnatal psychological distress were selected:

Social and economic factors: maternal age; caste; ethnicity; asset score (based on the first component of a principal components analysis of variables including land ownership, possession of a mobile phone, television, motor cycle and toilet); maternal education; husband's education; religion; and food security measured using the House and Food Insecurity Access Scale (Coates et al., 2007).

Gender-based and cultural factors: age at marriage; having never had a son; ate a restricted diet (excluding carbohydrate constituents) in the first six to seven days after childbirth; and main home during the early postnatal period.

Reproductive health factors: parity; past use of temporary family planning methods; serious perinatal health problems (including heavy vaginal bleeding during and before delivery, severe vaginal bleeding after delivery, fits or convulsions during the perinatal period, obstructed labour, retained placenta, high fever, and swollen face, hands and feet); multiple births (i.e. delivery of twins or triplets); level of antenatal care received; non-institutional delivery; caesarean section; short birth spacing (delivered a baby within approximately 33 months of a previous delivery) (World Health Organisation, 2005); and a history of miscarriage, stillbirth, or infant death with previous pregnancies.

2.3. Ethical issues

The Dhanusha cRCT received ethical approval from the Nepal Health Research Council and the ethics committee of the Institute of Child Health and Great Ormond Street Hospital for Children, UK. We sought verbal, as opposed to written, informed consent from participants because most of them were illiterate. Women with a GHQ-12 score ≥ 6 were provided with information about a monthly NGO-funded mental health clinic in Janakpur.

2.4. Data analysis

Although we analysed the GHQ-12 data as a continuous outcome, we selected a threshold score of ≥ 6 to report prevalence of distress, based on the optimum score identified by a study conducted among primary care attenders in Goa (sensitivity 73%, specificity of 90%) (Patel et al., 2008). The intracluster correlation

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