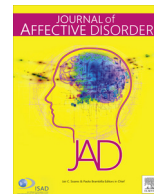




ELSEVIER

Contents lists available at ScienceDirect

## Journal of Affective Disorders

journal homepage: [www.elsevier.com/locate/jad](http://www.elsevier.com/locate/jad)

Research paper

## Lifetime costs of perinatal anxiety and depression

Annette Bauer<sup>a,\*</sup>, Martin Knapp<sup>a</sup>, Michael Parsonage<sup>b</sup><sup>a</sup> Personal Social Services Research Unit, London School of Economics and Political Science, Houghton Street, London WC2A 2AE, UK<sup>b</sup> Centre for Mental Health, London, UK

## ARTICLE INFO

## Article history:

Received 8 September 2015

Received in revised form

25 November 2015

Accepted 7 December 2015

Available online 15 December 2015

## Keywords:

Perinatal depression

Perinatal anxiety

Child

Costs

Economic impact

Lifetime

Decision modelling

## ABSTRACT

**Background:** Anxiety and depression are common among women during pregnancy and the year after birth. The consequences, both for the women themselves and for their children, can be considerable and last for many years. This study focuses on the economic consequences, aiming to estimate the total costs and health-related quality of life losses over the lifetime of mothers and their children.

**Method:** A pathway or decision modelling approach was employed, based on data from previous studies. Systematic and pragmatic literature reviews were conducted to identify evidence of impacts of perinatal anxiety and depression on mothers and their children.

**Results:** The present value of total lifetime costs of perinatal depression (anxiety) was £75,728 (£34,811) per woman with condition. If prevalence estimates were applied the respective cost of perinatal anxiety and depression combined was about £8500 per woman giving birth; for the United Kingdom, the aggregated costs were £6.6 billion. The majority of the costs related to adverse impacts on children and almost a fifth were borne by the public sector.

**Limitations:** The method was exploratory in nature, based on a diverse range of literature and encountered important data gaps.

**Conclusions:** Findings suggest the need to allocate more resources to support women with perinatal mental illness. More research is required to understand the type of interventions that can reduce long-term negative effects for both mothers and offspring.

© 2015 Elsevier B.V. All rights reserved.

## 1. Introduction

The World Health Organization recognises perinatal mental health as a major public health issue; at least one in ten women has a serious mental health problem during pregnancy or in the year after birth (WHO, 2008; 2014). The impact on mothers can be considerable during the perinatal period because of new emotional, social, financial and physical challenges. Additionally, the pre- and postnatal periods have significant impacts on future physical, mental and cognitive development of offspring: children of mothers with perinatal mental illness are exposed to higher risks of low birth-weight, reduced child growth, intellectual, behavioural and socio-emotional problems (Hay et al., 2010; Surkan et al., 2011; Conroy et al., 2012; Kingston and Tough, 2014; Pearson et al., 2013a, 2013b; O'Donnell et al., 2014).

**Abbreviations:** ALSPAC, Avon Longitudinal Study of Parents and Children; ED, Education; HRQoL, Health-related quality of life; HSC, Health and social care; OOP, Out-of-pocket expenditure; NHS, National Health Service; *p*, probability; PL, Productivity loss; pp, percentage points; PTB, Pre-term birth; RD, Risk difference; UC, Unpaid care; UK, United Kingdom; wks, weeks; yr, years

\* Corresponding author.

E-mail address: [a.bauer@lse.ac.uk](mailto:a.bauer@lse.ac.uk) (A. Bauer).

We focus on perinatal depression and anxiety, the most prevalent conditions during the perinatal period. Despite their high prevalence they are often overlooked by health professionals: the likelihood of women seeking help or being identified is below 50% even in well-funded health systems (Vesga-López et al., 2008; Ko et al., 2012; Howard et al., 2014). Of those who are clinically detected, only 10–15% get effective treatment (Woolhouse et al., 2009; Goodman and Tyer-Viola, 2010; Gavin et al., 2015). The impacts of perinatal mental illness on mothers and children are many; here we focus on the wide-ranging and intergenerational economic consequences.

## 2. Methods

In summary, our approach was to consider the life-course from the perspective of both mother and child. We used decision-analytic modelling to determine incremental costs associated with adverse effects, discounted to present value at time of birth. Modelling helps to utilise data from many sources, attaching costs and outcomes to events that happen with estimated probabilities. Our modelling reflected the additional risks of adverse child developments for offspring exposed to perinatal depression and anxiety, and their

associated public sector costs, health-related quality of life and productivity losses. Data were taken from previous studies following a literature review. We extracted effect sizes of child development problems and transformed them into additional risk differences applied to different ages. Costs of adverse effects of perinatal depression and anxiety were calculated from a societal perspective, including costs to government and individuals.

## 2.1. Literature review

Systematic searches were conducted to identify studies measuring the impact of perinatal anxiety and depression for mothers and children, including adverse birth and child development outcomes, health-related quality of life, loss of life (infanticide and suicide), productivity, unpaid care, victim costs of crime and public service use. Searches were performed on PsycINFO, CINAHL, Global Health, SocINDEX, Social Care Online, covering the period January 2000–May 2014.

Additional pragmatic searches were carried out to fill evidence gaps, including searches on Google, Google Scholar and national websites. Websites included those of the National Collaboration for Women's and Children's Health, the National Collaborating Centre for Mental Health and the Avon Longitudinal Study of Parents and Children. We also checked bibliographies of relevant articles identified in the systematic searches.

Our searches focused mainly on UK evidence but considered studies from other high-income countries. Studies that did not apply appropriate statistical analysis (such as adjusting for history of mental illness and other perinatal risk factors) were excluded.

Information retrieved from studies included: effect sizes, service use patterns, costs, health utilities, prevalence and natural course of conditions. For studies measuring the effect of perinatal anxiety or depression on child outcomes, we removed those not using quantifiable, standardised measures or measuring only intermediate outcomes without evidence of economic consequences; the latter could only be decided based on our knowledge about economic studies of outcomes, so this process was iterative with the search for economic studies.

## 2.2. Path/decision modelling

Based on the evidence on adverse effects of perinatal anxiety and depression we developed four models reflecting impacts of the two conditions on mothers and their offspring.

First, from published prevalence figures at different stages during pregnancy and after birth we derived mean probabilities for mothers developing antenatal and postnatal anxiety or depression. From general remission rates for depression and anxiety we estimated annual probabilities for mothers continuing to have the condition after the first year. We assumed (conservatively) that all mothers had recovered from their initial episode within ten years.

To avoid double-counting the impact of co-occurring perinatal depression and anxiety on mothers, we derived a probability of developing antenatal anxiety without co-morbid depression based on prevalence for ante- and postnatal anxiety and the scale of co-existence between perinatal anxiety and depression. This meant that some costs which related to comorbid perinatal anxiety and depression were captured under the costs of perinatal depression. This step was not necessary for the impact on children because studies were available that measured the impact of each of the two conditions separately from each other.

Since our aim was to estimate the present value of lifetime costs, we discounted costs and HRQoL after the first year postpartum to the time of birth at an annual rate of 3.5% measured in real terms. Earnings were assumed to increase at 2% a year over and above the general rate of inflation. Cost data were adjusted

where necessary to 2012/13 prices.

### 2.2.1. Measuring the impact on mothers

We measured impacts on mothers based on data on derived additional (annual) risk of developing ante- or postnatal depression or anxiety and continuing to have symptoms after the perinatal period, multiplied by public sector costs, HRQoL impairments and productivity losses. We distinguished between costs during the perinatal period and in subsequent years. Based on data from longitudinal studies identified during the searches and national averages we assumed mean age for women at childbirth of 32 years, mean remaining life expectancy of 44 years and retirement from employment at 65.

Costs of additional health and social care were taken from studies measuring additional service use and costs for women with perinatal depression or anxiety or individuals with remitted and non-remitted depression or anxiety in the general adult population. For studies which measured service use patterns but not costs, we took unit costs from Curtis (2013) and NHS Reference costs (DH, 2013).

Unless the incremental health disutility values had been already evaluated by controlled trials, HRQoL impairments were calculated by taking the difference between health utility values for individuals with the relevant conditions and mean quality of life in the general female population (Ara and Brazie, 2011). Health disutility was applied to years in ill-health and multiplied by a willingness-to-pay value. We assumed a willingness-to-pay value of £25,000 for a health-related quality-adjusted life year, reflecting the mid-point of the £20,000–£30,000 range used by National Institute of Health and Care Excellence (Appleby et al., 2007). We estimated costs attached to an increased risk of suicide during the subsequent years based on national suicide statistics for depression in the general population and costs of life lost (Harker, 2011; ONS, 2014). For a whole life lost through suicide or infanticide, we applied the 'value of a prevented fatality', estimated at £1,722,000 per case, which is used in UK government policy analysis (DH, 2010).

We calculated productivity losses for mothers based on probabilities that women would be in full- or part-time employment after giving birth, multiplied by reduced working days for someone with concurrent or remitted depression or anxiety (ONS, 2005, 2013a; DWP, 2010; Plaisier et al., 2010). We applied lost work days for concurrent depression or anxiety to the annual probabilities of mothers to have depression or anxiety linked to the initial perinatal condition; we applied lost work days for remitted depression or anxiety to the probabilities of mothers not having any further episodes linked to the perinatal condition. To value annual changes in productivity following a human capital approach we applied mean weekly wage rates to time away from work from national statistics (ONS, 2013b).

### 2.2.2. Measuring the impact on children

We identified birth and child outcomes for which there was evidence of adverse effects linked to perinatal anxiety or depression such as pre-term birth, infant death, emotional, intellectual and conduct problems. Effects measured at different ages were transformed into annual additional risks measured in percentage points, reflecting an incremental perspective in which only the additional impact associated with a condition was assessed.

For each link between maternal perinatal anxiety or depression and adverse birth or child outcomes we extracted information on effect sizes from studies identified in our search. If there was more than one relevant previous study we used the most conservative effect size. From the relative effect sizes (odds ratios, relative risks) and baseline risks in published studies that measured the negative impact on children we calculated absolute risk reductions as the difference in observed risk for an outcome occurring in the

Download English Version:

<https://daneshyari.com/en/article/6230602>

Download Persian Version:

<https://daneshyari.com/article/6230602>

[Daneshyari.com](https://daneshyari.com)