Knowledge of Pelvic Floor Problems: A Study of Third Trimester, Primiparous Women

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Declaration of Potential Conflicts of Interest

P. O'Brien is a member of the council of the Royal College of Obstetrics & Gynaecology.

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Abstract

Introduction and Hypothesis: Pelvic floor problems in women (urinary incontinence, faecal incontinence, uterovaginal prolapse) are common, and have an adverse effect on quality of life. We hypothesised that there is low knowledge of these problems amongst primiparous women in their third trimester of pregnancy.

Methods: We conducted a cross-sectional study in antenatal clinics of three hospitals in London, United Kingdom, 2011 to 2013. Primiparous women, aged ≥18 years and in the third trimester of pregnancy, answered questions on pelvic floor problems. Knowledge scores were calculated based on the proportion of questions answered correctly.

Results: 249 women completed the question set. The average knowledge score, across all domains, was low at 45% (confidence intervals included below). Scores were lowest for the less common problems of faecal incontinence (35%) and prolapse (36%). The score for urinary incontinence was higher at 63%, but low when questions explored more detailed levels of knowledge (41%). Knowledge scores were positively-associated with both education to tertiary level, and books as the information source on pregnancy and delivery. Only 35% of women cited antenatal classes as a source.

Conclusions: Knowledge surrounding pelvic floor problems is low amongst third-trimester, primiparous women in this London-based population. Adequate knowledge of these problems is important in women being able to make informed choices about their antenatal care and to seek help if problems arise. The data suggest scope for healthcare professionals to raise these issues early during pregnancy, and to help women to access accurate sources of information.

Keywords

Knowledge, pelvic floor, incontinence, prolapse, primiparous.

Brief Summary

This cross-sectional study found that knowledge surrounding pelvic floor problems was low amongst primiparous women in their third trimester of pregnancy.

Abbreviations

US: United States

UK: United Kingdom

UCL: University College London

NHS: National Health Service

IMD: Index of multiple deprivation

CI: Confidence interval

Introduction

Pelvic floor problems amongst women are now recognised as an issue of significance. Prevalence of urinary incontinence, faecal incontinence and uterovaginal prolapse have been reported as 5% (6 months post-partum, experienced once or more per day)[1]; 4% (persisting 6 years post-partum) [2]; and 3.6% (of severity requiring surgery)[3], respectively. Symptoms have been found to have an adverse affect on women's quality of life[4,5,6,7]. Aetiological factors include pregnancy and delivery[8,9,10,11] and certain potential protective measures have been identified, including pelvic floor exercises and restricted weight gain[12,13,14,15]. There is recognition, too, of the fact that adequate knowledge of these problems is important in women being able to make informed choices about their antenatal care, including engagement in potential protective measures, and seeking help if problems arise[16,17,18,19].

Two studies[20,21] have quantitatively assessed knowledge levels amongst peri-partum women. Both were conducted in the United States (US) and surveyed women after delivery. These studies found that many women were not provided with information on pelvic floor problems before delivery, and felt ill-prepared to deal with these issues.

Our study sought to quantify knowledge of pelvic floor problems amongst women in a London-based population. We included only primiparous women in order to exclude knowledge gained through experience, and only those in the third trimester (the point by which one would expect women to have had access to information on these problems). We hypothesized that knowledge levels would be low. We also sought to identify factors associated with higher knowledge levels, and the information sources used by women, this with a view to informing potential strategies to address knowledge shortfalls.

Materials and Methods

The study was undertaken from May 2011 to December 2013 at antenatal clinics of three centres in London, United Kingdom (UK):

(1) The Royal Free London NHS Trust (the Royal Free), a hospital funded by the national

health service (NHS) (at which care is free at the point of use), and a campus of University College London (UCL) Medical School.

(2) The North Middlesex University Hospital Trust (the North Middlesex), also an NHS-funded hospital and campus of UCL Medical School.

(3) The Harley Street Centre for Women, a clinic of The Portland Hospital for Women and Children (the Portland Hospital) which is owned and operated by the private healthcare company, HCA International, and at which care is directly paid for by individuals (or their insurance company) using the service.

Women attending these clinics, who fulfilled the criteria of being primiparous, in the third trimester and aged 18 years or above, were invited to complete a set of 21 questions. These were self-administered. The questions were designed to elicit respondents' knowledge on the subjects of urinary incontinence, faecal incontinence and prolapse, including how they relate to pregnancy and childbirth. The question set is presented in Supporting Information S1. Examples of questions (to which answers were Agree/ Disagree/ Don't Know), included: "Being pregnant or giving birth may lead to urine leakage"; "Certain exercises can be done to reduce development of urine leakage"; "Pelvic organ prolapse is more common in thin women than in overweight women"; and "Leakage of stool only occurs in older women". Within the urinary incontinence section of the question set, certain questions were structured to distinguish detailed from superficial knowledge: "Whether exercises are done before birth, or instead after birth, does not affect how well they work"; and "If urine leakage happens related to pregnancy or birth, it is short-term in duration". Further questions explored the information sources that respondents had used in preparing for pregnancy and delivery and elicited demographic characteristics. In formulating the questions, we made reference to those developed in previous relevant research[20, 21,22], and were assisted by academic psychology at UCL. The question set was made available in four languages (English, Turkish, Somalian and Arabic). All women who agreed to participate signed a consent form after reviewing an information sheet and having had an opportunity to ask questions.

Knowledge scores were calculated by allocating 1 point for each question answered correctly, and 0 points for each question answered incorrectly or to which the respondent did not know

the answer. Scores were calculated for each of the domains of urinary incontinence, faecal incontinence and uterovaginal prolapse individually, and in aggregate across all domains (resulting in a composite score for each woman).

The following demographic factors were assessed:

- Educational score: Calculated for each respondent based on level of formal education: Degree (3 points), A-levels (school exams in England, typically taken aged 17 to 18) or diploma (2 points), and GCSEs (school exams in England, typically taken aged 14 to 16) (1 point).
- Index of multiple deprivation (IMD): Ascertained for each respondent based on her residential postcode. IMD is an index, compiled by the UK's Department for Communities and Local Government, measured for small geographical areas in England, which allows relative comparison of deprivation of geographical areas based on seven distinct dimensions including income, employment, health deprivation and disability, education skills and training, barriers to housing and services, crime and living environment[23].
- Maternal age
- Percentage of life spent in the UK
- Ethnicity

Statistical Analysis

Characteristics of participating women were summarised as a frequency for categorical data, mean ± standard deviation for continuous variables, and median (quartiles) for the percentage of life lived in the UK. Multivariable linear regression was used to estimate the associations between knowledge levels, background characteristics and knowledge sources used. Further details of the statistical methods used are summarised in Supporting Information S2.

Ethical Approval

The study was approved by the UK Health Research Authority framework (Oxfordshire Research Ethics Committee C, 25/03/2011), and by research and development committees at the individual centres.

Results

249 women completed the question set, over a total of 72 clinics: 211 from the two NHS-funded hospitals and 38 from the privately-funded hospital. Table 1 summarises the demographics of respondents by centre. Mean gestational age was 33 ± 5 weeks. Based on data from the first 20 clinics (the proportion at which percentage participation was recorded), an average of 15% of clinic attendees were eligible to participate, and of those, an average of 95% agreed to participate.

The average composite knowledge score (aggregated across all domains and all centres), was 45% out of a maximum of 100% (95% confidence interval (CI) 42-48%). Scores were lowest in the domains of faecal incontinence: 35% (95% CI 32-39%), and uterovaginal prolapse: 36% (95% CI 33-40%), and highest in the domain of urinary incontinence: 63% (60-66%). However, when the urinary incontinence score was calculated across the discriminating questions (which were structured to distinguish detailed from superficial knowledge), the score for urinary incontinence was comparable to the other domains at 41% (95% CI 36-47)%.

There was a positive association between knowledge scores and education to tertiary level, in that knowledge scores decreased by 18% (95% CI -29% to -7%) when education was to mid-secondary school versus to tertiary/ degree level (Table 3). There was no significant association between knowledge scores and any of maternal age, proportion of life spent in the UK, ethnicity or deprivation index (Tables 3 and 4).

The most commonly cited information sources on pregnancy and delivery used by participants were internet and books (84% and 82% of participants, respectively) (Table 5). Only 35% cited antenatal classes as a source of information. Books were the only information source with a significant positive association with knowledge scores (scores increasing by +10% if books were cited as a source) (95% CI 2-18%).

There was a small, statistically significant difference between knowledge scores at one of the centres (The North Middlesex) versus the other two centres (the Portland and the Royal Free) (Table 2, P= 0.02).

Discussion

In this cross-sectional study of primiparous women in the third-trimester of pregnancy, as hypothesized, knowledge of pelvic floor problems was found to be low. This finding of poor knowledge levels is consistent with the results of previous US-based studies. However, our study refined the approach used in those previous studies, by confining participation to antenatal women only, based on the premise that it is antenatally-gained rather than postnatally-gained knowledge that can optimise women's ability to make informed choices on these matters.

Of all of the demographic factors investigated, only formal education to tertiary level was found to have a statistically significant positive association with knowledge scores. When sources of knowledge were explored, books were the only information source that had a statistically significant positive-association with knowledge scores. There was no significant association between knowledge scores and any of doctors, midwives or antenatal classes as sources. Only 35% of women cited antenatal classes as a source of information on pelvic floor problems.

There was no association between knowledge scores and maternal age, proportion of life spent in the UK or ethnicity.

There was a statistically significant difference ($p = 0.02$) between knowledge scores at one of the centres (the North Middlesex, mean knowledge score 39%) versus the other two centres (Royal Free and Portland, mean knowledge scores 48% and 47%, respectively). The authors do not feel that there is a difference in the extent to which information on pelvic floor problems is provided to women at the different centres. The latter view is consistent with the observation made in the paragraph above regarding lack of association between knowledge scores and doctors or midwives as the source of knowledge. It is interesting to note that

Index of Multiple Deprivation is significantly higher (indicating more deprivation) ($p < 0.00001$), at the North Middlesex versus at the other two centres (Table 1). If the analysis is controlled for differences in IMD and education of participants by centre, the difference in knowledge between centres is reduced such that it is no longer statistically significant ($p = 0.44$), although a residual difference does remain. We have not demonstrated a direct association between knowledge scores and IMD (Table 3).

A central tenet of modern medical care is informed choice by patients. The low knowledge levels identified in this study suggest that, with respect to pelvic floor problems, women are not well-positioned to make informed choices about relevant aspects of their antenatal care, including engagement in potential protective measures, nor to seek help if problems do arise. The low scores suggest scope for education on pelvic floor problems. The data point to potential specific areas for improvement. One such example is the lack of positive association between knowledge levels and the most popular information source – the internet - suggesting room for improvement of online content. This is in contrast to the positive association with books as the source. Another example is the data illustrating the infrequency with which antenatal classes are cited by women as information sources, and lack of positive association of knowledge scores with any of antenatal classes, doctors and midwives. These data suggest scope for healthcare professionals to raise these issues early in pregnancy, and to help women to access accurate sources of information.

The main limitation of this study is the small size of some of the subpopulations identified, specifically women using some of less popular knowledge sources. This limits the statistical precision of some subgroup analyses. However this is an observational study in which the investigators could not control the use of particular knowledge sources, and the proportion of women citing particular sources is an important finding.

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205 **Supporting Information**

206 Additional Supporting Information may be found in the online version of this article:

207 S1: Excerpts from Study Question Set.

208 S2: Statistical Methods.

209 S3: Students and Administrators who Assisted With Data Gathering

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