

## CLINICAL PAPER

# How do women's health physiotherapists manage pelvic girdle pain in pregnancy? A UK-wide survey

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### Abstract

Pelvic girdle pain (PGP) affects approximately 20% of pregnant women, and can have major physical and psychological effects. However, there is a lack of good-quality evidence to support and direct physiotherapy intervention. At present, there is little information regarding the details of current physiotherapy management in the UK. The aims of this study were to identify current practice with regard to PGP in terms of preventative measures, management, and especially, the most commonly used treatment modalities. These were compared with previous practice with a view to directing future research, and service development and redesign. The usage of groups and the wider context, including triage and referral, were also examined. In April 2012, an invitation to complete an electronic questionnaire was posted in the Pelvic, Obstetric and Gynaecological Physiotherapy professional network (PN) area of the interactive section of the Chartered Society of Physiotherapy (CSP) website (iCSP), and this drew 102 responses. A literature search and critique of the evidence was conducted in order to inform the questionnaire and the study. The results of the survey showed that education was “always” given by just over 95% of respondents, while more than 70% “never” used acupuncture, hydrotherapy or manipulations. Only 17% reported having a service for preventing PGP, and just under 40% used groups. Only 14.6% of respondents reported any form of patient self-referral. The use of mobilizations “often” appears to have risen, while the use of belts “often” has decreased, although the reasons for this are unknown. The use of groups was found to be statistically associated with triage and the National Health Service. The study generated a large quantity of data and raised many questions. Because of low respondent numbers and the sampling method employed, the results cannot be generalized. Suggestions for future research are made, and it is recommended that priority is given to those interventions that are most frequently used in clinical practice, i.e. advice, maternity belts, mobilizations and stability exercises.

*Keywords:* pelvic girdle pain, physiotherapy, pregnancy, prevention, survey.

### Introduction

#### *Background*

Pelvic girdle pain (PGP) is not a new condition: as Desmond (2006) reported, it was first described by F. G. Snelling in 1870. Pregnancy-related PGP is defined by Pelvic, Obstetric and

Gynaecological Physiotherapy (POGP) as pain, instability and dysfunction of the lumbosacral, sacroiliac and symphysis pubis joints (POGP 2015). It is a common condition of pregnancy.

Mantle *et al.* (1977) were among the first to attempt to quantify the problem by analysing the results of a questionnaire completed by 180 women on a maternity ward. A prevalence rate of 48% was reported for back and pelvic pain in pregnancy, and one-third of the respondents

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described their pain as severe. A well-conducted prospective study by Albert *et al.* (2002) of 2269 pregnant women found that 20.1% had developed PGP by 33 weeks' gestation. In this research, women who reported pain in their pelvic joints and lower back were examined to confirm the diagnosis. Spontaneous postnatal recovery was reported in many cases. Albert *et al.* (2002) classified women with PGP into categories. Some 62.5% of women examined 1 month postnatally were free of pain. Two years after birth, 8.6% of the participants still had pain, and all of them were in the pelvic girdle syndrome category, with pain in all three joints.

Jain *et al.* (2006) described pain as the most common symptom of symphysis pubis dysfunction. This can have a major effect on an individual's quality of life and ability to perform normal activities of daily living. Shepherd & Fry (1996) described difficulties with childcare, relationships, depression and isolation. Having to take sick leave was not only seen as a problem for the women themselves and their families, but also as an issue for society as a whole.

Pelvic girdle pain remains a complex, multifaceted condition, but our understanding of its aetiology has increased to some extent in recent years. Albert *et al.* (2006) conducted examinations of 2269 women over 1 year, and asked them to complete structured questionnaires. After regression analysis, the main risk factors for PGP were shown to be previous low back pain (LBP) or trauma to the pelvis. Some characteristics that had previously been thought to be correlated with PGP were shown not to be, including: the number of pregnancies; time between pregnancies; smoking; use of contraception; epidural anaesthesia; ethnicity; hormonally induced pregnancy; previous stillbirth; foetal weight; full-time working; and the age of the mother.

Kanakaris *et al.* (2011) showed that a history of back or pelvic pain before pregnancy was correlated with developing PGP, as was work involving strenuous twisting or bending. Bastiaenen *et al.* (2006) examined the important role of psychosocial issues when women were experiencing discomfort, and demonstrated that anxiety increased pain levels. The hormone relaxin was previously thought to be at a higher level in pregnant women with PGP than in those who were not; however, Hansen *et al.* (1996) showed that the concentration of serum relaxin was not correlated with symptoms of PGP in pregnant women. Damen *et al.* (2001) reported

a correlation between asymmetric laxity of the sacroiliac joints and PGP.

Stuge (2012) eloquently described the assessment, treatment and implementation of the European guidelines for the diagnosis and treatment of PGP (Vleeming *et al.* 2008). These suggest that the deep supportive muscles that provide a self-bracing mechanism for the pelvic girdle joints may be less effective in pregnancy. This could result in less-efficient load transference, and more shearing forces on joints and pelvic ligaments. Pelvic, Obstetric and Gynaecological Physiotherapy recommends that "[f]or best practice, the physiotherapist will perform a detailed physical examination" (POGP 2015, p. 8).

A wide range of treatments have been reported. The European guidelines (Vleeming *et al.* 2008), which are based on a highly reliable and well-conducted review, grouped studies together for consideration, but because of a lack of homogeneity, a meta-analysis was not possible. Six studies of moderate to high bias were included for exercise treatment. The overall results could only suggest that exercise may help to reduce PGP pain. Individual treatment was recommended over group treatment. The provision of advice in order to reduce fear and anxiety was also advocated.

A review by Pennick & Young (2007) included only eight studies (with a total of 1305 participants), all of which had a moderate to high risk of bias, except one that focused on water gymnastics (Kihlstrand *et al.* 1999), which was low risk. Overall, these authors stated that sitting pelvic tilting exercises and water gymnastics are treatments that produce statistically significant results in terms of reducing pain and the amount of sick leave taken.

A more recent systematic review by Eggen *et al.* (2012) examined 22 studies of moderate methodological quality. These involved a combination approach ( $n=7$ ), exercise ( $n=9$ ), manual therapy ( $n=5$ ) and the use of a material support ( $n=1$ ). This review updated previous publications and included some new studies. Overall, Eggen *et al.* (2012) concluded that advice and education are important. They stated that stabilizing exercises can reduce pain and disability during pregnancy, but that there is only limited evidence to recommend manual therapy or the wearing of supports. Higher-quality studies were recommended.

A literature search for articles on the prevention of PGP (i.e. reducing its prevalence and severity) revealed only four studies, and all involved group treatment.

Östgaard *et al.* (1994) compared 407 pregnant women in three groups: control, back education and individual back education. This study suggested that education about body posture may have an effect on pain prevention. Mantle *et al.* (1977) found that women who attended a routine antenatal class between the fifth and eighth months of pregnancy reported less backache. Haugland *et al.* (2006) studied the effects of an education group on pregnant women with PGP. The participants received a mixture of advice, exercises, ergonomics and pain management. The interventions were highly regarded and well used by the group. Outcomes were measured, but only after birth.

More recently, Eggen *et al.* (2012) published a well-conducted randomized controlled trial (RCT) involving 257 women. The active participants attended a group once a week for supervised exercises and ergonomic advice, and continued their treatment with a home exercise programme. Their outcomes were compared with participants receiving standard care. The results showed no statically significant differences between the groups for pain or self-reported prevalence.

There have been two previous surveys of PGP. Desmond (2006) conducted a systematic sample survey into the treatment of PGP by women's health physiotherapists. Using a written questionnaire, this author gathered data from 35 women's health physiotherapists on how frequently nine treatments were used. The survey did not consider the use of groups, preventative treatment or triage. However, it does provide some basis for comparison with the present survey. Bishop *et al.* (2015) conducted a cross-sectional UK survey by random sampling to investigate the management of pregnancy-related LBP. Four hundred and ninety-nine physiotherapists provided written information on how they would manage a patient vignette. Extra questions were asked about the use of acupuncture.

The White Paper entitled *Equity and Excellence: Liberating the NHS* (DH 2010) discussed possible changes to the UK National Health Service (NHS), with high-quality services being expected to be delivered for less money. Service transformations are occurring. Physiotherapists have to review services and implement changes, but have little evidence to assist them. The Chartered Society of Physiotherapy (CSP) has been promoting new ways of working; for example, self-referral of patients (CSP 2016). The extent to which these are used for pregnant women with PGP is not known. A new survey

could investigate current management strategies including these new ways of working. It is not known if the use of groups by physiotherapists is correlated with the use of any treatments or other variables. Most treatments require investigations of their effectiveness, and a new survey could highlight the most frequently used approaches, indicating priorities for research. Changes in practice since the previous survey in 2006 could also be identified.

### *Study aims*

The primary aims of the present study were to:

- (1) establish which treatments are currently being used by women's health physiotherapists to treat PGP in pregnant women;
- (2) establish the use of groups and preventative services; and
- (3) compare treatment use with a previous survey.

A secondary aim was to:

- (4) identify whether there is a relationship between the use of groups and the treatments employed.

## **Participants and methods**

### *Literature review*

To inform the present study, a comprehensive search of the literature was conducted using the MEDLINE, CINAHL and Cochrane Library online databases. Eighty-seven papers were retrieved, and these were critiqued, as per Greenhalgh (2010). This process assisted in identifying the treatments to ask questions about, and gave more than the nine discussed in the previous survey by Desmond (2006). A higher number of studies were found on the treatment for PGP after birth than during pregnancy. It is unknown if this relates to ethical issues preventing consent to do primary research on pregnant women, who are a high-risk group.

### *Data collection and participants*

An electronic self-administered questionnaire was selected as the most appropriate data collection tool for this study because it was less costly to distribute than a paper version. Furthermore, the data could be downloaded in comma-separated variables format, and then processed using the Predictive Analytics SoftWare [formerly and now again the Statistical Package for the Social Sciences (SPSS)], Version 18.0 (SPSS Inc., Chicago, IL, USA), without the need for manual input.

The target population consisted of women's health physiotherapists in the UK, and several organizations were contacted for help with gaining access to a sample. Some databases could not be accessed and some were costly. The interactive section of the CSP website (iCSP: [www.csp.org.uk/icsp](http://www.csp.org.uk/icsp)) had 3456 members registered on its POGP network, and this was selected as the best source of potential participants who would be treating this condition. Invitations to take part in surveys can be posted on this site for free.

### *Sampling*

For this survey, the most representative possible sample of the population was sought, i.e. one with as little selection bias as possible. Such a representative sample may allow inferences to be made about the whole population. Unfortunately, probability sampling, which aims to select participants by chance (randomly or systematically), was not possible. The database keepers were unable to conduct this form of sampling, and access to the whole database was not possible for ethical reasons. Convenience sampling, which is a type of non-probability sampling, was the only form of sampling that was possible in practice. This is an easy way to obtain a sample, but it has bias because of the self-selection of the participants, which will be a source of error. Only the keenest physiotherapists may respond, and their choice of treatments might differ from that of the non-respondents.

This study involved 3456 potential participants who registered on the POGP section of the iCSP network. Raosoft, an online sample size calculator ([www.raosoft.com/samplesize.html](http://www.raosoft.com/samplesize.html)), was used to calculate that, assuming a 5% margin of error, a 95% confidence level and a 50% response distribution, 346 participants would be required. If less than this number were to have taken part, this might have been a source of error.

### *Questionnaire*

A list of potential questions based on the research question, literature search and previous survey (Desmond 2006) was developed. Possible treatments that were being used in clinical practice were informed by the literature search and postings on iCSP. The context in which services were provided (e.g. individually or in groups) and how patients accessed these services were also investigated to give an overview of the whole management of patients. The structured questionnaire was designed to include closed questions in the main in order to

give mostly quantitative data that would allow calculation of descriptive and correlational statistics. Some open questions were set when new information was sought. Desmond (2006) used four categories as a rating scale (ordinal), which were labelled "never", "sometimes", "often" and "always". These were reported to have been appropriate and well completed. Using the same rating scale for the present survey allowed the results to be compared.

Bristol Online Surveys (BOS: [www.online-surveys.ac.uk](http://www.online-surveys.ac.uk)) was selected for the present questionnaire since it allows results to be download in comma-separated variables format for import directly into SPSS and was free to use. The BOS questionnaire was built up in modular form, question by question, with careful attention to structure (see "Appendix 1"). The first page introduced the study and invited participation. Information on participant consent, data protection and withdrawal was given, beneath which a button triggered entry to the questionnaire.

The BOS questionnaire was tested with 12 physiotherapists to check for ease of completion and correct functioning. No data from this test was used in the study, and testers were asked not to complete the questionnaire again because this would have caused bias as a result of repeat testing of the subjects. Good feedback was received about the clarity and ease of completion, and the time to complete being correct at 15 min. The answers given by the 12 test subjects appeared to indicate that the questions were measuring what was intended, with some modification in the question about heel raise.

### *Ethical considerations*

This study was successful in gaining ethical approval from Teesside University, Middlesbrough, UK. The participant information told potential participants that completing the survey implied consent, and that, once completed, responses could not be withdrawn because of the anonymous nature of the survey.

### *Statistical analysis*

This study employed a non-experimental design, non-probability sampling and a single group of subjects. Therefore, descriptive (i.e. mean, frequency and range) and correlation statistics were used. Correlation statistics were employed to establish whether there was an association between the answers given to the "Do you use groups?" question and various others in the survey. Pearson's  $\chi^2$  test (Field 2009, p. 688) was

used initially to establish whether there were associations between variables. Fisher's exact test (Field 2009, p. 690) was employed where values were too small. Where an association with use of groups was apparent, Spearman's rank correlation coefficient (Field 2009, p. 179) was used. This is a non-parametric test that determines the magnitude and direction of the correlation of ordinal data, and establishes statistical significance (*P*-value).

### Procedure

Permission was given to post the invitation to take part in the study on the POGP section of iCSP. The BOS questionnaire was set to active, and data were collected for the 1-month duration of the survey (April 2012). The data were then downloaded into SPSS and analysed.

## Results

### Participants

All 102 participants in the present study were female. The length of their experience of treating PGP in pregnancy varied greatly (range = 0.33–30 years; mean ± standard deviation = 10.40 ± 7.0). The response rate was 29.5% (*n* = 102). There were no missing data.

Fifty per cent of participants described their current job as being a specialist women's health physiotherapist working in outpatient and inpatient settings. Of the remainder, 29.4% were specialist women's health physiotherapists who only dealt with outpatients, and 20.6% were outpatient physiotherapists who treated PGP. The participants were asked which healthcare system they mostly treated PGP patients within, and were instructed to complete the questionnaire only for this main area of work. The majority (82.4%) reported that they treated patients within the NHS, while the remainder (17.6%) did so privately.

Most of the respondents reported that they were clinical grade band 7 physiotherapists (52.0%). This was followed by band 6 (33.3%), then band 8 (10.8%), and band 5 was the least-reported clinical grade (3.9%). The most frequently reported level of qualification was a degree (54.9%), followed by a diploma (26.5%) and then a Master's degree (16.7%), and the least-reported qualification was a doctorate (2.0%).

Most of the respondents (85.3%) were members of a professional network (PN); only a small minority (14.7%) were not. With 66 members, POGP was the most popular PN.

### Referrals, triage and first contact

General practitioner referrals (26.6%) were most commonly reported, followed closely by those made by midwives (24.6%) and hospital doctors (24.3%). Patient self-referral was reported least (14.6%). Other forms of referral (9.9%) were not expanded upon further.

An individual assessment was reported by 68.6% of participants to be what happened with patients at the initial contact. Nine per cent reported seeing all patients in a group first, and 27.5% performed triage as an initial action. The most common form of triage performed was in paper form, as reported by nearly 40% of participants, with telephone triage coming second (20%).

### Assessment and treatment

The results showed that 84.3% and 87.3% of respondents reported aiming to assess all patients for pelvic symmetry and stability, respectively.

Information was requested on the use of 23 treatments on a "never"/"sometimes"/"often"/"always" scale, with one response allowed per treatment. The percentages of responses for each rating were calculated (Table 1).

The most frequent "never" responses were for ultrasound (92.2%), manipulations (75.5%), acupuncture (70.6%), hydrotherapy (70.6%), heel raise in shoe (57.8%) and transcutaneous electrical nerve stimulation (TENS) (52.9%).

There were some treatments that high percentages of women's health physiotherapists reported using "always". The most frequent were: education about PGP (95.1%); advice on symmetrical posture and movement (80.4%); pelvic floor muscle (PFM) exercises (PFMEs) (79.4%); postural re-education (72.5%); and advice on pacing activities (69.9%). Next were use of a pillow between the legs when sleeping (66.7%), and advice on positions for labour (52.9%). There is a common theme between popular, "always" used treatments: all but one involve advice-giving. At 79.4%, PFMEs were the most frequently reported exercise in the "always" category.

Some 77.5% of participants reported that they did not use any other treatments than those listed in the previous question. An open question allowed for other answers, including: Kinesio taping/strapping (*n* = 6); breathing/relaxation (*n* = 3); myofascial trigger point release (*n* = 2); self-bracing exercises (*n* = 2); Bowen technique (*n* = 1); the use of slide sheet (*n* = 1); referral to occupational therapy (*n* = 1); and the use of heat/ice (*n* = 1).

**Table 1.** Frequency of use of treatments

Treatment	Treatment rating by respondents (%)			
	Never	Sometimes	Often	Always
Transcutaneous electrical nerve stimulation	52.9	45.1	2.0	0.0
Hydrotherapy	70.6	24.5	3.9	1.0
Pelvic tilting exercises	2.9	19.6	45.1	32.4
Pelvic floor muscle exercises	0.0	4.9	15.7	79.4
Muscle energy techniques	8.8	30.4	56.9	3.9
Mobilizations	9.8	40.2	48.0	2.0
Acupuncture	70.6	20.6	8.8	0.0
Tubigrip	16.7	49.0	28.4	5.9
Maternity belts	2.0	56.9	39.2	2.0
Walking aids	2.9	82.4	13.7	1.0
General core stability exercises	5.9	17.6	37.3	39.2
Patient-specific core stability exercises	1.0	10.8	56.9	31.4
Gym ball	9.8	44.1	38.2	7.8
Manipulations	75.5	17.6	6.9	0.0
Trigger-point massage	17.6	44.1	37.3	1.0
Advice on symmetrical posture and movement	0.0	2.9	16.7	80.4
Use of pillow between legs when sleeping	0.0	8.8	24.5	66.7
Heel raise inside shoe	57.8	30.4	8.8	2.9
Advice on positions for labour	3.9	16.7	26.5	52.9
Education on the condition of pelvic girdle pain	0.0	2.0	2.9	95.1
Ultrasound	92.2	7.8	0.0	0.0
Advice on pacing activities	1.0	8.8	20.6	69.6
Postural re-education	0.0	2.9	24.5	72.5

### Groups

When asked if groups were used during treatment (not just as first option), 60.8% and 39.2% of participants replied “no” and “yes”, respectively. Those who did use groups were asked several further questions. Being able to attend for individual treatment, if required, after a group was reported by 85% of participants. Pending periods varied from 2 weeks after the class to 6 weeks postnatally.

Forty participants stated that they used groups, and they were asked which treatments all patients received as a part of this. Many scored high percentages, with postural re-education being the most common (Table 2).

The “other” response to this question allowed for free-text answers, which included: “The only

**Table 2.** Treatments which all patients receive as part of a group

Treatment	Number	Percentage
Pelvic stability exercises	36	90.0
Pelvic tilting exercises	26	65.0
Education on the condition of pelvic girdle pain	36	90.0
Postural re-education	37	92.5
Pelvic floor muscle exercises	35	87.5
Advice on symmetrical posture and movement	36	90.0
Use of pillow between legs when sleeping	34	85.0
Advice on positions for labour	30	75.0
Advice on pacing activities	35	87.5
Other	18	45.0

group run is for women who have already been assessed individually and deemed appropriate for a 6-week stability class.” Another participant replied with “water-based exercises and relaxation in a hydrotherapy pool”. Four respondents stated that “maternity belts are discussed”, and one mentioned that “belts are supplied, if appropriate”. There were many different individual responses in which other treatments or advice were discussed as part of the group, including “ball exercises, pain relief for labour and use of stability muscles on movements”.

The 40 respondents who used groups were asked, “Is it possible to receive any individualized treatments as part of the group?” Multiple-choice answers to this question were possible. Individual assessment was reported by 20%, individual advice by 70%, maternity belts/Tubigrip by 75% and crutches by 72.5%. Other answers could be given in a free-text section, and 16 different responses were provided including:

- “At the end of a group advice, Tubigrip or crutches could be provided.”
- “Individual treatments given at the end of a group [are] only appropriate if [a patient is] in severe pain or really struggling.”
- “If an individual assessment is needed, it should be booked in as 1:1.”
- “I do not feel you can adequately assess someone in a group setting.”
- “I ‘treat’ individually.”

### Prevention

Most participants (83.3%) responded that they had no service for preventing pregnant women from developing PGP, but 16.7% did. The most frequent response to the question of which group of women the preventative service was open to was, “All pregnant women”, rather than a targeted group. “Antenatal classes”, where advice is given on prevention, and “educating midwives on early referral” were described as important.

### Outcome measures and guidelines

Less than half of the participants (44.1%) reported using outcome measures for PGP. The 45 respondents who reported doing so were asked which these were. Multiple answers could be given. The Pelvic Girdle Questionnaire (PGQ), a validated outcome measure, was reported to be the most popular by 35.6% of participants ( $n=16$ ), while 20% ( $n=9$ ) used their own design. Other outcome measures used included: visual analogue scales ( $n=8$ ); the Measure Yourself Medical Outcome Profile, Version 2 ( $n=3$ ); the EuroQol – Five Dimensions – Five Levels ( $n=2$ ); and the Pregnancy Mobility Index ( $n=1$ ).

A high proportion of the participants (94.1%) reported using guidelines. The POGP (2015) guidelines were by far the most popular (87.3%), followed by the European guidelines (Vleeming *et al.* 2008) (46.1%), those of the Pelvic Partnership (30.4%) and those of some respondents’ own trusts (11.8%). Nearly 10% of participants stated that they design and use their own guidelines.

### Referral rate and self-reported effectiveness

Changes in referral rates were reported by 60.8% of the participants, with 52% stating that these were rising and 5.9% describing these as falling. Out of a choice of four possible answers (i.e. “very”, “reasonably”, “slightly” and “not at all”), the majority of respondents (64.7%) reported that they were “reasonably” effective in treating PGP, and 32.4% stated that they were “very” effective. Only 2.9% reported that they were “slightly” effective, and none stated that they were “not at all” effective.

**Table 3.** National Health Service and private healthcare by use of groups

Which healthcare system?	Use groups? [ $n$ (%)]		
	Yes	No	Total
National Health Service	39 (38.2%)	45 (44.1%)	84 (82.4%)
Private	1 (1%)	17 (16.7%)	18 (17.6%)

### Secondary aim and correlational statistics

Correlation statistics were used to establish whether there was an association between the answers given to the “Do you use groups?” question and various others in the survey. The question about the use of groups was cross-tabulated against the healthcare system (Table 3). Pearson’s  $\chi^2$  test gave a result of  $P=0.001$  (two-sided asymptotic), and no cells had an expected count of less than five. Therefore, there is a highly significant association between the NHS and the use of groups.

This process of cross-tabulation was repeated for all of the questions. The use of groups was found to be highly significantly associated with the use of triage ( $P=0.001$ , two-sided), and Fisher’s exact test also gave a result of  $P=0.001$  (two-sided exact), and no cells had an expected count less than five. There was also a highly significant association between use of groups, and not aiming to assess all patients for pelvic symmetry or stability. Pearson’s  $\chi^2$  test gave a result of  $P=0.000$  (two-sided asymptotic), and Fisher’s exact test returned values of  $P=0.000$  (two-sided exact) and  $P=0.001$ , respectively.

The question about treatments (Table 1) had many subsections, and requested frequency ratings (“never”, “sometimes”, “often” and “always”) for 23 different ones. Fisher’s exact test was run to determine whether there were associations between treatments and the use of groups. Only the significant associations that were found are shown in Table 4.

Pelvic floor muscle exercises and heel raise both have a fair (Fink 1995) degree of positive association with use of groups, and good significance. Pelvic tilting had a weak positive association, although it still had good significance.

**Table 4.** Treatments most significantly associated with use of groups

Treatment	Fisher’s $P$ -value	Spearman’s rho	Spearman’s $P$ -value
Pelvic tilting exercises	0.018	-0.237	0.017
Pelvic floor muscle exercises	0.020	-0.266	0.007
Mobilizations	0.017	0.253	0.010
Heel raise inside shoe	0.015	-0.284	0.004

Mobilizations have a fair degree of negative association with the use of groups, and good significance.

## Discussion

As stated above, all 102 participants in the present study were female. About 50% of the respondents reported having  $\geq 10$  years of clinical experience of treating PGP, and therefore, they were deemed to be appropriate for the purposes of this survey. Although 100% of participants had experience of treating PGP in pregnancy, 20.6% described their job role as that of an outpatient physiotherapist rather than one specializing in women's health. It would be interesting to monitor exactly who is treating PGP over time. Some 32.4% and 64.7% of the physiotherapists reported being very or reasonably effective in treating PGP, respectively. However, this is a very simple self-reporting measure of effectiveness that will have bias. The PGQ (Stuge *et al.* 2011) was the most frequently used outcome measure.

Despite campaigns to increase patient self-referral, this was reported by only 14.6% of physiotherapists; however, 27.5% stated that they used triage immediately after referral. These rates were not measured in the previous survey (Desmond 2006), but now provide a baseline for monitoring future changes.

The respondents were asked to categorize their usage of treatments as "never", "sometimes", "often" or "always". An open question was also asked about any other possible therapies. Rather than actual use being investigated, the physiotherapists were self-reporting, so this may have been a source of bias. Although this survey gives a measure of the usage of treatments, it does not investigate the clinicians' reasons for selecting these. For example, the question of whether the choice of treatments was based on clinical skills, research or service pressures remains unanswered.

The largest percentage score for an "always" category was education about the condition of PGP (95.1%). This survey demonstrates that nearly all physiotherapists report educating each of their patients about PGP and giving them advice, thus following recommendations from the European guidelines (Vleeming *et al.* 2008) and Bastiaenen (2006). Giving advice can reduce fear and anxiety, and in turn, alleviate pain. Bishop *et al.* (2015) stated that physiotherapists reported using packages of care including several

treatments and advice components to manage a patient vignette, with the most common advice being about posture (98%) and work (88%). However, the survey designs were different, and therefore, are not directly comparable.

In the present study, 31.4% and 56.9% of respondents reported "always" and "often" using patient-specific core exercises with pregnant women (Table 1). The exercises that were most often reported as used "always" were PFMEs (79.4%). Pelvic tilting was reported as used "always" and "often" by 32.4% and 45% of respondents, respectively. All of these exercises target stability muscles. Suputtitada *et al.* (2002) reported that pelvic tilting in sitting makes a statistically significant contribution ( $P < 0.05$ ) to the reduction of PGP. Eggen *et al.* (2012) suggested that stabilizing exercises during pregnancy can reduce pain and disability. Lee (2004) described the integrated model of function, including force closure, where these deep, local muscle systems provide stiffening or compression to the pelvic joints in preparation for loading. If the force closure is reduced or these muscles do not come in early to anticipate the movement, then shearing forces may affect the joints, resulting in dysfunction and/or pain. Vleeming *et al.* (2008) suggested that exercises to improve the strength of the stability muscles could be helpful. Kanakaris *et al.* (2011) concluded that risk factors for PGP included previous back or pelvic problems. Lee (2004) described how an injury heals with repair by fibrous tissue. This means that those with a previous injury may begin pregnancy with altered biomechanics and reduced stability strength.

Vleeming *et al.* (2008) considered five studies of exercise in pregnancy. None of these found any risk of harm to either the mother or baby. It appears that stability exercises are a safe treatment option for pregnant women, but the effectiveness of this approach has not been fully established. Given the role of stability muscles in joint support, the aetiology of PGP and the high usage of these exercises reported in the present study, this area should be seen as a priority for future research.

Lee (2004) discussed the theory behind using sacroiliac belts and taping. These have been reported to increase force closure, and it has been suggested that both can be useful when standing upright and until the stability muscles can regain their strength. Damen *et al.* (2002) employed Doppler ultrasonography to show that using a belt increased stiffening at the sacroiliac joints, but this study was of patients who were



not pregnant. Although the efficacy of sacroiliac belts has not yet been established, nearly 40% of experienced physiotherapists in the present survey reported using these “often”. Desmond (2006) reported an “often” usage rate of 62.8% for this type of supportive device. It appears that the use of belts is decreasing. Pelvic, Obstetric and Gynaecological Physiotherapy guidance states that maternity belts should only be used if necessary, and after an individual assessment (POGP 2015). Belts are often provided free of charge in the NHS. Given the high rate of usage of belts and the possible link to increasing the stability of pelvic joints, this area should also be seen as a priority for research.

Kihlstrand *et al.* (1999) published the only available study of water-based exercises for PGP in pregnancy. This high-quality research involved 329 pregnant women who were randomized to either an exercise-in-water or a control group. The intervention was of good quality, consisting of 20, 1-h exercise sessions. Kihlstrand *et al.* (1999) reported that water gymnastics reduced the number of sick leave days in pregnant women. It is unclear from the study exactly what these exercises involved. It is not known if the water-based exercises were intended to increase stability. Water has the advantage of providing buoyancy and joint support to the body, which is especially helpful to pregnant women when exercising.

The previous study by Desmond (2006) did not investigate exercise in water. However, in the present survey, hydrotherapy was reported as “never” and “sometimes” being used by 70.6% and 24.5% of respondents, respectively. One participant stated that their group work was conducted in a swimming pool. The reason for the small percentage of use of this treatment, which has been shown to be effective in a good-quality study (Kihlstrand *et al.* 1999), is not known. It would be useful to conduct a survey in order to investigate the barriers to physiotherapists using this form of treatment. It may be that access to a pool is limited, the temperature too hot or that other professionals (e.g. midwives) are running these exercise classes. Exercise in water has been recommended by Pennick & Young (2007) and Vleeming *et al.* (2008). More studies are required to discover which water-based exercises are the most effective, and whether exercising in water from early pregnancy could reduce the prevalence and severity of PGP.

Manual therapies, including mobilizations, manipulations and muscle energy techniques, can be

used to treat PGP in pregnancy, but these require an individual approach to assessment and treatment. Manual therapies are used when there is an asymmetry or dysfunction that requires correction (Lee 2004). There appears to have been a large increase in the use of mobilizations, which were reported to be employed “often”. In the present survey, mobilizations were reportedly used “often” and “sometimes” by 48% and 40.2% of respondents, respectively. In the earlier study, Desmond (2006) reported that mobilizations were used “often” and “sometimes” by 11.4% and 42.9% of the participants, respectively, although her sampling methods differed from the present survey. The reason for this increase is unknown, but it is possible that better education is now available or physiotherapists may have found that these achieve good outcomes. Muscle energy techniques were used “often” by 56.9% of the participants. Some 70.6% of respondents reported “never” using manipulations. Vleeming *et al.* (2008) reported that there was no robust evidence for the use of mobilizations or manipulations, and that further studies were required. Eggen *et al.* (2012) also recommended further studies. Research is needed to discover whether, as suggested by Albert *et al.* (2002), certain subgroups of patients with PGP may benefit from different approaches to manual treatment, and also whether effective screening can select those who would receive most benefit. If so, physiotherapists’ training needs could then be established.

The Association of Chartered Physiotherapists in Women’s Health (ACPWH, now POGP) guidelines discuss the use of TENS for pain control in pregnancy (ACPWH 2012). In the present survey, TENS was reported to be “never” and “sometimes” used by 52.9% and 45.1% of respondents, respectively. Furthermore, POGP (2015) recommends it as a safe treatment for pain control in pregnancy, but only if the pain persists after trying other treatments first. It is not known why over 50% of participants never use this form of treatment. However, it does require patients to buy or hire their own TENS machines, except when these can be loaned out by physiotherapists. The lack of equipment may also be a barrier.

Acupuncture was one of the treatments most commonly reported as “never” being used (70.6%). Elden *et al.* (2005) stated that acupuncture reduced pain more than stabilizing exercises. However, their study had bias because acupuncture was performed on an individual basis while

stability exercises were conducted in a group situation. Elden *et al.* (2008) randomized 115 pregnant women with PGP into two groups: the active group received 8 weeks of acupuncture and the control group underwent non-penetrating sham acupuncture. No significant difference between the two groups was seen after treatment for pain and quality of life, and this suggests that there was a placebo effect. Vleeming *et al.* (2008) concluded that there is a lack of high-quality studies of acupuncture, and Desmond (2006) did not record the use of this form of treatment. Acupuncture requires specialist training and multiple treatment sessions, and these factors may be a barrier to women's health physiotherapists using it. Bishop *et al.* (2015) found that 75% of their respondents had trained in the use of acupuncture, but only 24% were using it for pregnancy-related LBP. Good-quality studies into the use of acupuncture are required to establish its effectiveness and safety in pregnancy.

### Prevention

A high percentage of participants (83.3%) reported that they had no service for preventing PGP. The previous survey by Desmond (2006) had not measured this variable. Of the 16.7% who did have such an amenity, over half delivered it in group form. These services mainly appeared to be open to all pregnant women and not directed at those who were most likely to develop PGP, i.e. those with previous back and pelvic problems, including previous PGP.

Östgaard *et al.* (1994) suggested that education about body posture may have an effect on the prevention of pain. However, Eggen *et al.* (2012) did not find that group treatment for pregnant women involving exercises and ergonomic advice reduced the prevalence or severity of PGP. A new study into whether PGP can be prevented is a research priority, particularly given the rise in referral rates suggested by the present survey. Delivering individual preventative stability exercise programmes to those women who are at greatest risk could be investigated. Further research could investigate what constitutes the best education and advice to give to women to help them manage PGP and reduce anxiety. Damen *et al.* (2001) demonstrated a correlation between asymmetric laxity of the sacroiliac joints and PGP. It is unknown whether encouraging more symmetrical postures from early pregnancy (e.g. not sitting sideways on a sofa or crossing legs), especially when maintaining them for a prolonged time, would be beneficial.

### Groups

The present survey found that 39.2% of respondents used groups. Since previous studies have not collected this data, it is unknown whether groups are now more widely used than before.

The use of the wording "treating" in groups appears to have been somewhat controversial, in that some participants suggested that they never "treat" in groups, although they do use groups. The language around groups requires more investigation, and may have affected answers in the present survey. Physiotherapists may be using a wide range of groups, ranging from an educational talk to conducting exercises over several weeks. The number of group sessions per patient was not investigated. However, it can be seen that triage is being used to screen patients who have been referred with PGP, and to allocate some to a group session and others to individual treatment.

It is not known what screening questions are being asked or how effective this screening is. Although rarer, major pathology does exist in younger women, and assumptions cannot be made that all back and pelvic pain in pregnancy is PGP. The present survey shows that 84.3% and 87.3% of physiotherapists report aiming to assess all their patients for pelvic symmetry and pelvic stability, respectively. However, this means that some patients with PGP are not being individually assessed. Pelvic, Obstetric and Gynaecological Physiotherapy recommends an individual assessment and does not comment on the use of groups (POGP 2015), and Vleeming *et al.* (2008) favoured individual over group treatments. The use of groups without individual assessment appears not to be supported by current guidelines. Tudor *et al.* (2014) demonstrated that those attending 6 weeks of group sessions were clinically significantly improved compared to those receiving only one session (individually or in a group). In this four-armed pilot RCT, those attending the group were individually assessed with validated tests beforehand.

Groups are almost exclusively a feature of NHS working practice. A few respondents stated that their groups were only for women who had already been individually assessed, and others mentioned that individual assessment could be arranged after the group. Falconer & Horsley (2015) outlined the driving forces behind and current challenges in delivering a high-quality, timely service within the NHS. They described a service redesign with the aim of sharing their

experiences to assist other physiotherapists in similar circumstances. Women with PGP were able to self-refer to a one-off group session for advice on self-management. Each participant had a brief individual triage before the group. At 80%, patient satisfaction with the group was high, and only 24% required an individual session at a later date. Group use and the varying content of such sessions is a high-priority area for research. Given that information to reduce worry is recommended by Vleeming *et al.* (2008) as effective, the use of educational groups for all women in early pregnancy is also a priority for research.

Statistical analysis of the present survey showed that the use of groups was strongly associated with the NHS and doing triage. The use of groups was also strongly correlated with not aiming to assess all patients for pelvic symmetry and stability. Out of all the treatments that were analysed in this survey, three showed a positive correlation with using groups that reached a significance level of 5% ( $P=0.05$ ): pelvic tilting, PFMEs and use of a heel raise. These approaches are all more likely to be used by physiotherapists who treat in groups, although heel raising in shoes to correct pelvic asymmetry was seldom used. One treatment, mobilizations, showed a significant negative correlation with using groups that reached a significance level of 5% ( $P=0.05$ ). Pelvic floor muscle exercises and pelvic tilting are commonly utilized within groups, but mobilizations require individual treatment. It may be that physiotherapists using groups have less time for individual treatments, and therefore, use mobilizations less, but if so, the reasons for this are unknown.

Ninety per cent of respondents stated that the content of their groups consists mainly of education about PGP, postural re-education, and advice about symmetrical posture, movement and pacing. Furthermore, 90% of participants stated that all patients in their groups received stability exercises. However, Lee (2004, p. 181) suggested that, when restoring force closure and motor control, "the exercise programme is specific to the patients' needs and not generic". The use of stability exercise in groups is a priority for research.

Fifty-two per cent of participants in the present study reported that there had been an increase in referral rates in the previous 2 years, and that the average rise had been 49.6%. This information is self-reported, and a further study involving data collection would be needed to reliably investigate this phenomenon and the reasons for it.

### *Limitations of the study*

The sample size required for the present study was calculated to be 346. The number of completed questionnaires was 102, giving a response rate of 29.5%. This is less than one-third of the required number. A higher response rate would have given a more representative sample of the population (Punch 2003). It is likely that there was selection bias with regard to the participants, with those interested in the subject being more likely to take part. It may be that there are other characteristics of the participants that differ from non-participants.

This survey contained mainly closed questions, which yielded data for analysis, and some open questions, which revealed new information. While these questions were appropriate, the survey has delivered a vast amount of material. On reflection, it might have been better for the study to have had fewer aims and more-focused questions. However, this wide survey has produced some interesting results that have generated many questions, and these may inform future studies.

Convenience sampling, which was the only type possible for practical reasons, has selection bias. The use of random sampling would have reduced this, since all possible participants from the population would have had an equal chance of being selected. This would have resulted in a more representative sample (Punch 2003), from which results could have been generalized to the wider population and inferences made. However, the present survey can only be viewed as representative of the participants, and its results cannot be reliably generalized to the wider population of physiotherapists treating PGP in pregnancy. This is a major limitation of the study.

### *Implications for future practice*

Most treatments currently being used to treat PGP in pregnancy require research into their effectiveness. The treatments that are used most frequently in clinical practice, as shown by this survey, could be given priority for research. These include advice, maternity belts, mobilizations and stability exercises. The reasons for physiotherapists selecting treatments are also an area for further research. Well-designed studies into the prevention of PGP in early pregnancy are required, as well as research into the use of groups. Future surveys could monitor preventative approaches and group usage. Advice to reduce worry and so reduce pain is provided by most physiotherapists, but its use by other healthcare professionals could be examined.

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# Appendix 1

## Bristol Online Surveys questionnaire

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How do Women's Health Physiotherapists treat pregnant women with PGP?



### Data Protection statement

All data collected in this survey will be held anonymously and securely. No personal data is asked for or retained.

Cookies, personal data stored by your Web browser, are not used in this survey.

The next page is the questionnaire which is made up of 20 questions all on one page. When you click on continue at the end of the questionnaire you will reach a Thank-you page and your data will have been entered.

### Questionnaire

#### The Questions

1. Which gender are you?

- Male
- Female

2. How many years experience have you in treating PGP in pregnant women?

3. Which best describes your **current** job role?

- Outpatient physiotherapist treating PGP patients
- Specialist Women's health physiotherapist - outpatients only
- Specialist Women's health physiotherapist - in and outpatients

4. In which health care system do you mainly treat PGP patients? Please complete this questionnaire for your **main** area of work only.

- NHS
- Private (private practice / private hospital / other)

5. Which physiotherapy grade are you?

- 5
- 6
- 7
- 8

6. Please give your highest level of qualification

- Diploma
- Degree
- Masters
- Doctorate

7. Are you a member of a special interest group or professional network?

- Yes
- No

Please state which

8. Who refers patients to you?  
(select all that apply)

- Self referrals
- Midwives
- GPs
- Hospital doctors
- Other

9. What happens **first** to patients who are referred to you?

- All seen individually
- All seen in groups
- Triaged to different pathways (please give details below)

Please list approximate percentages allocated to:  
Group treatment  
Individual treatment  
Telephone advice  
Any other

10. Do you do triage?

- Yes
- No

What type of triage do you do? (select all that apply)

- Paper
- Telephone
- Electronic
- Group
- Other (please specify):

11. Do you aim to assess all patients with PGP for pelvic symmetry?

- Yes
- No

12. Do you aim to assess all patients with PGP for pelvic stability?

- Yes
- No

13. How often do you use the following assessment or treatment techniques on pregnant PGP patients?

	Never	Sometimes	Often	Always
a. TENS	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Hydrotherapy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. assessing pelvic symmetry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. assessing pelvic stability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Pelvic tilting exercises	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. Pelvic floor exercises	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. Muscle energy techniques	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h. Mobilisations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i. Acupuncture	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
j. Tubigrip	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
k. Maternity belts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
l. Walking aids	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
m. General core stability exercises	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
n. Patient specific core stability exercises	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
o. Gym ball	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
p. Manipulations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
q. Trigger point massage	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
r. Advice on symmetrical posture and movement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
s. Use of pillow between legs when sleeping	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
t. Heel raise inside shoe	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
u. Advice on positions for labour	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
v. Education on condition of PGP	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
w. Ultrasound	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
x. Advice on pacing activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
y. postural re-education	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

14. Do you use any other treatments different to those in question 13?

- Yes
- No

Please state what these treatments are.

15. Do you treat patients in groups?

- Yes
- No

a. What happens to patients after attending the group? (select all that apply)

- discharged
- pending
- can attend for individual treatment
- can attend for more group treatment
- Other (please specify):

b. Which treatments do all patients receive as part of the group? (select all that apply)

- pelvic stability exs
- pelvic tilting
- education on PGP condition
- postural re-education
- pelvic floor exs
- advice on symmetrical posture and movement
- use of pillow between legs when sleeping
- advice on positions for labour
- advice on pacing activities
- Other (please specify):

c. Is it possible to receive any individualised treatments as part of the group? (select all that apply)

- Individual Assessment?
- Individual Advice?
- Maternity belts or tubigrip?
- Crutches?
- Other (please specify):

16. Do you have a service for preventing pregnant women from developing PGP?

- Yes
- No

a. Is your service for prevention open to (select all that apply)

- All pregnant women?
- First time pregnant women?
- Women who have had PGP before?
- Early pregnancy?
- Other (please specify):

b. What form does your prevention intervention take? (select all that apply)

- Individual treatments
- Group treatment
- Telephone advice
- Leaflet giving
- Other (please specify):

17. Do you use outcome measures for patients with PGP?

- Yes
- No

Which outcome measure? (select all that apply)

- Pelvic girdle questionnaire (Stuge 2011)
- Own design
- Other (please specify):

18. Do you follow any PGP guidelines?

- Yes
- No

Which guidelines do you use? (select all that apply)

- ACPWH
- Pelvic Partnership
- European
- Trust
- Own
- Other (please specify):

19. Has your referral rate changed in the last 2 years?

- Yes
- No

How has it changed?  
Has it risen or fallen?  
By what percentage?

20. How effective do you think you are in treating pregnant women with PGP?

- Very
- Reasonably
- Slightly
- Not at all

End of Questionnaire

Thank you for taking the time to complete this questionnaire - Your data has now been entered into the survey, your help is very much appreciated.