

## CLINICAL PAPER

# Physiotherapy service provision and its effectiveness after obstetric anal sphincter injuries

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### Abstract

There is limited evidence of the effectiveness of physiotherapy after obstetric anal sphincter injuries (OASIS). The primary objective of this study was to determine if there is a role for physiotherapy intervention after OASIS. A follow-up postal questionnaire was sent out 1–2 years post-partum to 100 women who had sustained OASIS in 2010. The questionnaire included the short form of the Pelvic Floor Distress Inventory (PFDI-20). The patients had previously been screened by a physiotherapist by telephone at 6 weeks post-partum to identify any who were symptomatic. Those women who reported symptoms received a course of physiotherapy. The postal questionnaire achieved a response rate of 60%. Women who reported symptoms at the 6-week telephone call and attended their physiotherapy appointments were significantly less symptomatic in terms of their scores on the PFDI-20 than those who did not attend ( $P=0.005$ ). Women who reported no symptoms at the 6-week telephone call and were not later referred from the perineal clinic had low PFDI-20 scores at 1–2 years post-partum. A course of physiotherapy appears to benefit women who report symptoms of pelvic floor dysfunction (PFD) after OASIS. Further investigation is recommended in order to establish why women do not attend physiotherapy even though they are experiencing PFD.

*Keywords:* incontinence, obstetric anal sphincter injuries, pelvic floor dysfunction, physiotherapy, service provision.

### Introduction

There is currently a lack of research into the role of physiotherapy in the treatment of obstetric anal sphincter injuries (OASIS). However, the Royal College of Obstetricians and Gynaecologists (RCOG) recommends the following best-practice guideline: “All women should be offered physiotherapy and pelvic floor exercises for 6–12 weeks after obstetric anal sphincter repair” (RCOG 2007, p. 5).

It is not clear from this guideline how such a physiotherapy service should be structured, and this has meant that the physiotherapy follow-up and management of women who have experi-

enced OASIS appears to have been “developed on an *ad hoc* basis” (Johnson & Rochester 2008, p. 26). In some centres, women are routinely referred to physiotherapy after OASIS (Sander *et al.* 1999; Head 2007; Johnson & Rochester 2008), while in others, there appear to be no referrals to physiotherapy (De Leeuw 2001; Bagade & Mackenzie 2010).

As part of the physiotherapy service in Cork University Maternity Hospital, Wilton, Cork, Ireland, where the present study was conducted, all women who sustain OASIS are routinely seen on the postnatal ward, where they are given advice on bladder and bowel care, and education about pelvic floor muscle exercises (PFMEs). Women are advised that they will be followed up by telephone call and asked a series of questions relating to pelvic floor dysfunction (PFD). A

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**Box 1.** Screening questions for the 6-week telephone call

- (1) Have you difficulty controlling your bladder?
- (2) Have you difficulty controlling the urge to pass urine?
- (3) Do you find your bladder leaks before you can make it to the toilet?
- (4) Have you difficulty controlling wind?
- (5) Have you difficulty controlling the urge to pass a bowel motion?
- (6) Do you find your back passage leaks before you can make it to the toilet or you have soiling of your underwear?
- (7) Have you pain the in the pelvic region?
- (8) Do you find sexual intercourse painful?

physiotherapist then calls the woman 6 weeks after the OASIS, asking a series of eight questions relating to bladder and bowel function, and pain (Box 1).

Women are classified as symptomatic if they answer “yes” to any of the screening questions, and are then offered a physiotherapy out-patient appointment within 6 weeks of the telephone call. Because 6 weeks is relatively early in the postnatal period, women are advised to contact the department should they become symptomatic. The physiotherapy intervention is individualized and based on the findings of the initial assessment. Patients typically undergo vaginal and rectal examinations in order to assess whether they are suffering from PFD. If a woman presents with low PFM tone, she is normally taught PFMEs with the potential for biofeedback if required. Muscle stimulation is considered if a patient has no or very weak PFM contractions. If a woman presents with high PFM tone, then treatment typically consists of diaphragmatic breathing and trigger point release with biofeedback. Scar massage is used with patients with superficial dyspareunia.

Women are treated until their symptoms resolve or there is a plateau in these signs, in which case they are referred to a gynaecologist for onward referral. If a woman does not attend her appointment, a letter is sent advising her to reschedule. If the woman does not contact the department within 2 weeks, she is discharged from physiotherapy.

Women who answer “no” to all questions are classified as non-symptomatic and are discharged from the physiotherapy service.

The gynaecology team also give all patients an appointment for the perineal clinic approximately 6–9 months post-partum. This involves

anal manometry and endo-anal ultrasound, and a discussion takes place about the mode of any future deliveries. If a woman is found to be symptomatic at this clinic, she can be referred to physiotherapy again.

Neither telephone screening of women who have sustained OASIS nor only offering appointments to women who are experiencing PFD have been reported in the literature. However, Johnson & Rochester (2008) concluded that it would be of benefit to know whether telephone follow-ups are comparable to attendance at a physiotherapy appointment since women with young babies may find it difficult to go to the hospital.

The objectives of the present study were to determine if physiotherapy intervention for symptomatic women after OASIS is effective, and whether telephone screening 6 weeks after OASIS and only offering appointments to women who are experiencing PFD is an efficient method of delivering a physiotherapy service.

### **Participants and methods**

The present study was conducted in Cork University Maternity Hospital, a large teaching maternity hospital in Southern Ireland, where approximately 9000 births take place a year. One hundred and two women were identified as having sustained OASIS between 1 January and 31 December 2010. Two of these patients were excluded because their postnatal care was transferred to another hospital. This left a total of 100 women who were included in the study. If women self-reported inflammatory bowel disease (e.g. Crohn syndrome or ulcerative colitis), secondary sphincter repairs or previous bowel/bladder surgery by ticking a box in a preliminary questionnaire, they were also excluded.

As part of the usual physiotherapy service, the 100 women who had sustained OASIS in 2010 were screened by a physiotherapist (F.H.) by telephone at 6 weeks post-partum (Box 1). Three telephone calls required the use of an interpreter (two participants were Polish and one was Lithuanian). All participants were then posted an information sheet (“Appendix 1”) and a questionnaire (“Appendix 2”) 1–2 years later. The women were invited to contact the researcher should they require assistance with completing the survey.

The questionnaire consisted of the short form of the Pelvic Floor Distress Inventory (PFDI-20). This includes 20 questions about a broad range of pelvic floor symptoms, and is a measure

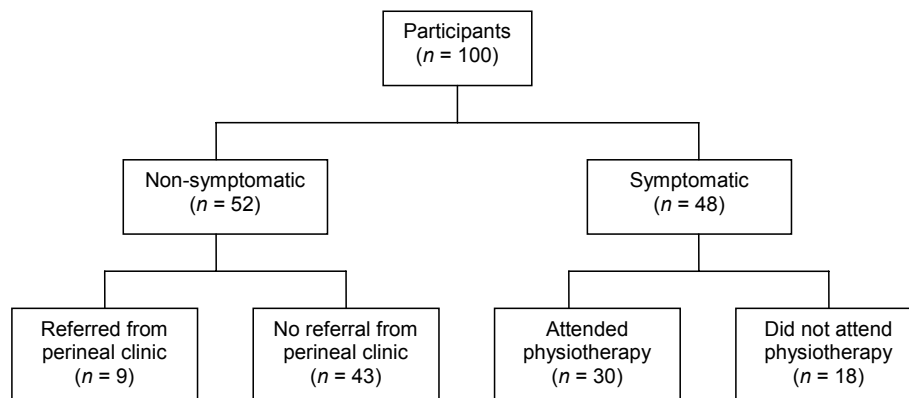


Figure 1. Data from telephone screening and physiotherapy follow-up.

of the effect that these symptoms have on the quality of life (QOL) of women (Barber *et al.* 2005). Each question is answered on a five-point scale from 0 to 4. Six questions address pelvic organ prolapse symptoms, which are combined to give a score out of 100 (Pelvic Organ Prolapse Distress Inventory). Eight questions relate to anorectal symptoms, combining to give a score out of 100 (Colorectal Anal Distress Inventory). Six questions address urinary symptoms, combining to give a score out of 100 (Urinary Distress Inventory). These three scores are reported in terms of a percentage and are combined to give a total score out of 300 (Barber *et al.* 2005).

The psychometric properties of the full version of the Pelvic Floor Distress Inventory have been well-established (Barber *et al.* 2001). The PFDI-20 has been found to correlate highly with the longer questionnaire, and its test–retest reliability is good to excellent (Barber *et al.* 2005).

The participants were asked to rate dyspareunia on an 11-point scale from 0 to 10 that has previously been used in this population (Andrews *et al.* 2008).

The women were asked if they were pregnant, and if they answered “yes”, had their symptoms been exacerbated because of this; or if they had delivered another baby since 2010, and if they answered “yes”, did they think that their symptoms were exacerbated after this? They were invited to leave a contact telephone number at the end of the questionnaire should they require a physiotherapist to speak to them about any of their symptoms.

If any participants had not responded within a month of the questionnaire being posted, the researcher (F.H.) telephoned them and asked whether they would still like to participate in the study. A follow-up questionnaire was sent if consent was obtained.

The Clinical Research Ethics Committee of the Cork Teaching Hospitals granted ethical approval for the research.

The data were analysed using the PASW Statistics Version 18 (formerly SPSS Statistics) predictive analytics software package (IBM Corporation, Armonk, NY, USA). Student’s *t*-test and the Mann–Whitney *U*-test were used to assess the differences between the study groups: those who were symptomatic at 6 weeks and those who were non-symptomatic; those who attended physiotherapy and those who did not; and those who had been referred from a perineal clinic and those who had not.

## Results

A total of 8712 women gave birth in the study hospital between 1 January and 31 December 2010. Some 6345 of these births were vaginal, 102 of which resulted in OASIS (1.6% of all vaginal births). The ethnicities of the women who suffered OASIS were as follows: 97 (95%) were Caucasian, three were African (3%) and two were Asian (2%). Thirty-nine women (38%) had a 3A tear, 25 (24.5%) had a 3B tear, five (5%) had a 3C tear and seven (6.9%) had a fourth-degree tear. Twenty-six (25%) were simply classified as having a third-degree tear with no further differentiation.

### Routine physiotherapy follow-up

Of the 100 women who were screened by telephone at 6 weeks after OASIS, approximately half (52%,  $n=52$ ) reported no symptoms and were discharged from the service. Forty-eight per cent ( $n=48$ ) requested an appointment with a physiotherapist (Fig. 1). Some 56.3% ( $n=27$ ) of the women who asked for an appointment reported bladder or bowel control symptoms, while 20.8% ( $n=10$ ) only mentioned pain and 22.9% ( $n=11$ ) described a combination of both. On average, the physiotherapy appointment

**Table 1.** Comparison of demographics between those participants who reported symptoms at the 6-week telephone call and those who did not

Variable	Participant group		P-value
	Non-symptomatic (n=52)	Symptomatic (n=48)	
Age (years)	30.7	30.8	0.556
Birth weight (g)	3613	3844	0.139
Second stage of labour (min)	80	96	0.165
Delivery:			
failed vacuum with forceps (n)	9 (17%)	21 (44%)	0.004*
forceps (n)	9 (19%)	2 (19%)	0.035*
vacuum (n)	12 (19%)	9 (17%)	0.389
no instrument (n)	22 (42%)	16 (33%)	0.237
Primiparity (n)	41 (79%)	42 (88%)	0.338

\*Statistically significant ( $P < 0.05$ ).

took place  $38.7 \pm 21$  days after the telephone screening. Of the 52% of participants who did not report any symptoms at the 6-week telephone call, nine (17%) of them were later referred following their perineal clinic appointment at approximately 6 months post-partum (Fig. 1). Of those who reported symptoms, 62.5% ( $n=30$ ) attended physiotherapy compared to 37.5% ( $n=18$ ) who did not attend.

There was no statistical difference between those who were symptomatic at the 6-week telephone call and those who were not in terms of age ( $P=0.556$ ), primiparity ( $P=0.338$ ), birth weight ( $P=0.139$ ) and the length of the second stage of labour ( $P=0.165$ ) (Table 1).

The women who had undergone a failed vacuum with forceps delivery were statistically more likely to be symptomatic at 6 weeks after OASIS ( $P=0.004$ ); however, women who had had a forceps delivery without vacuum were statically less likely to be symptomatic at 6 weeks.

#### Postal questionnaire at 1–2 years after OASIS

*Response rate.* The overall response rate to the

questionnaire was 60% (60/100). Some 56.7% ( $n=34$ ) of respondents had previously reported symptoms at the 6-week screening while 43.3% ( $n=26$ ) had not. No exclusions as a result of self-reported pre-existing bladder/bowel conditions or surgery were necessary. The questionnaires of two of the three women who had required an interpreter for the 6-week telephone call were returned by the postal service undelivered because they had moved without leaving any follow-on postal address. The third lady did not respond.

*Demographics of the respondents.* The average age of the women who responded was 30.9 years (range=16–42 years). The average parity was 1.2 (range=1–3). There was no statistically significant difference between those participants who responded and those who did not in terms of age ( $P=0.704$ ), the length of the second stage of labour ( $P=0.502$ ), primiparity ( $P=0.260$ ), birth weight ( $P=0.375$ ) and the use of forceps ( $P=0.269$ ). Therefore, the women who responded were comparable to those who did not (Table 2).

**Table 2.** Comparison of demographics between those participants who responded to the questionnaire and those who did not

Variable	Participant group		P-value
	Responded (n=60)	Did not respond (n=40)	
Age (years)	30.9	30.5	0.704
Birth weight (g)	3771.3	3653.2	0.375
Second stage of labour (min)	82.7	93.5	0.502
Delivery:			
failed vacuum with forceps (n)	19 (32%)	11 (28%)	0.414
forceps (n)	7 (12%)	4 (10%)	0.533
vacuum (n)	10 (17%)	11 (28%)	0.146
no instrument (n)	24 (40%)	14 (35%)	0.386
Primiparity (n)	49 (81.7%)	31 (77.5%)	0.260

**Table 3.** Comparison of the Pelvic Floor Distress Inventory – Short Form (PFDI-20) scores of those participants in the 6-week screening who were symptomatic and those who were not at 1–2 years post-partum: (POPDI) Pelvic Organ Prolapse Distress Inventory; (CRADI) Colorectal Anal Distress Inventory; and (UDI) Urinary Distress Inventory

PFDI-20 subscale	Participant group		P-value
	Non-symptomatic	Symptomatic	
POPDI	6.2%	13.0%	0.044*
CRADI	14.5%	25.3%	0.043*
UDI	15.7%	25.5%	0.075
Overall score (out of 300)	36.6	61.6	0.022*
Dyspareunia	1.5	2.3	0.318

\*Statistically significant ( $P < 0.05$ ).

### Pelvic floor dysfunction

No new symptomatic women emerged as a result of the postal survey: all those who were symptomatic had previously been identified during the telephone call or at the perineal clinic. At 1–2 years after OASIS, the participants who had reported symptoms during the 6-week telephone screening had statistically significantly higher bowel, pelvic organ prolapse and total PFDI-20 scores compared to those who had reported no symptoms. There was no significant difference in the bladder or dyspareunia scores (Table 3).

The symptomatic group from the 6-week telephone call was subdivided into those who had attended their physiotherapy appointment and those who had not. There were statistically significantly higher bladder ( $P = 0.014$ ) and total PFDI-20 ( $P = 0.005$ ) scores in the group who had not attended their physiotherapy appointment compared to those who had (Table 4). The bowel, pelvic organ prolapse and dyspareunia scores trended towards but did not reach statistical significance (Table 4).

The non-symptomatic group from the 6-week telephone call was subdivided into those who

had been referred to physiotherapy following their perineal clinic appointment at 6 months post-partum and those who had not. The overall PFDI-20 score was statistically significantly higher ( $P = 0.027$ ) in the women who had been referred to physiotherapy compared to those who had not. The pelvic organ prolapse score trended towards but did not reach statistical significance. There were no statistically significant differences in the bowel, bladder or dyspareunia scores (Table 5).

### Subsequent pregnancies and deliveries

A minority (12%,  $n = 7$ ) of the participants were pregnant at the time of the questionnaire and over half of these women (57%,  $n = 4/7$ ) reported that their symptoms had deteriorated because of this pregnancy. Likewise, a minority (17%,  $n = 10$ ) had had another baby since their OASIS and just under half of these women (40%,  $n = 4/10$ ) reported that their symptoms were exacerbated after the delivery.

Ten women (17%) expressed a wish to speak to a physiotherapist, seven of whom had previously not attended their physiotherapy appointment.

**Table 4.** Comparison of the Pelvic Floor Distress Inventory – Short Form (PFDI-20) scores of those participants who reported symptoms and attended their physiotherapy appointment and those who did not attend (DNA) (for definitions of the PFDI-20 subscales, see the legend to Table 3)

PFDI-20 subscale	Participant group		P-value
	Symptomatic (attended)	Symptomatic (DNA)	
POPDI	7.8%	24.0%	0.059
CRADI	20.7%	34.3%	0.067
UDI	17.4%	41.0%	0.014*
Overall score (out of 300)	45.8	95.5	0.005*
Dyspareunia	1.60	3.27	0.096

\*Statistically significant ( $P < 0.05$ ).

**Table 5.** Comparison of the Pelvic Floor Distress Inventory – Short Form (PFDI-20) scores of those participants in the 6-week screening who reported no symptoms and were later referred from the perineal clinic, and those who were not (for definitions of the PFDI-20 subscales, see the legend to Table 3)

PFDI-20 subscale	Participant group		P-value
	Non-symptomatic (no referral)	Non-symptomatic (referred)	
POPDI	2.0%	17.3%	0.057
CRADI	10.8%	25.0%	0.127
UDI	10.3%	29.2%	0.232
Overall score (out of 300)	23.1	72.4	0.027*
Dyspareunia	1.00	2.86	0.228

\*Statistically significant ( $P < 0.05$ ).

### Range of symptoms reported on the questionnaire

From the total of 60 questionnaires returned, the average bowel score was 21% (range=0–82%), the average bladder score was 21% (range=0–100), the average pelvic organ prolapse score was 10% (range=0–100) and the average total score out of 300 was 53 (range=0–247).

The most frequently reported bowel complaints were incontinence of gas (52%,  $n=31$ ), followed by faecal urgency (45%,  $n=27$ ), incontinence of loose stool (23%,  $n=14$ ) and incontinence of solid stool (15%,  $n=9$ ). The overall presence of colorectal complaints ranged from 12% to 52% (Table 4).

The prevalence of urinary symptoms ranged from 17% to 42%. Stress and urge urinary incontinence were reported in 42% (25/60) and 33% (20/60) of the responses, respectively (Table 6).

The prevalence of pelvic organ prolapse symptoms ranged from 3% to 25%.

### Discussion

Physiotherapy is recommended after OASIS (RCOG 2007). The results of the present study appear to suggest that women who are symptomatic after OASIS may benefit from a course of physiotherapy. Women who reported symptoms at the 6-week telephone screening and received a

**Table 6.** Pelvic Floor Distress Inventory – Short Form (PFDI-20) scores: (95% CI) 95% confidence interval (for definitions of the PFDI-20 subscales, see the legend to Table 3)

PFDI-20 subscale	Number	Percentage	95% CI (%)
<i>CRADI</i>			
Strained bowel motion	22	37	24–49
Incomplete bowel emptying	25	42	29–55
Solid stool incontinence	9	15	6–25
Loose stool incontinence	14	23	12–34
Flatus incontinence	31	52	39–65
Pain when passing stool	23	38	25–51
Faecal urgency	27	45	32–58
Rectal mucosal prolapse	7	12	3–20
<i>UDI</i>			
Frequent urination	23	38	26–51
Urge urinary incontinence	20	33	21–46
Stress urinary incontinence	25	42	29–55
Small urine leakage	23	38	26–51
Emptying bladder with difficulty	10	17	7–26
Abdominal or genital pain	19	32	20–44
<i>POPDI</i>			
Abdominal pain	15	25	14–36
Pelvic heaviness/dullness	13	22	11–32
Vaginal bulge	7	12	3–20
Reduce vagina to defecate	10	17	7–26
Incomplete bladder emptying	11	18	8–28
Reduce vagina to urinate	2	3	1–8

course of physiotherapy had statistically significantly lower bladder and overall PFDI-20 scores at 1–2 years post-partum compared to those who were symptomatic but did not attend their physiotherapy appointment. The bowel, prolapse and dyspareunia scores trended towards being significantly lower, but did not reach a statistically significant difference. This may be partly because of the small number of participants. The present study is the first to assess whether there is a benefit to referring symptomatic women to physiotherapy after OASIS and the results are positive; however, a larger study with a bigger cohort is recommended in order to confirm this.

Just under half of the participants were found to be symptomatic at the 6-week telephone screening. All these women were given a physiotherapy appointment, but there was a large non-attendance rate (37.5%), which was over double that described by Head (2007), who reported 17%. This is a cause for concern because it is clear from the postal questionnaire that these women remained symptomatic at 1–2 years after OASIS. It was not evident why the symptomatic new mothers in this study did not attend their physiotherapy appointment. Bugg *et al.* (2005) reported a similar issue and suggested that the reason was that their symptoms did not affect the women's QOL. In the present study, the overall PFDI-20 scores were much higher than the normative scores reported by Lowder *et al.* (2010). The PFDI-20 is a measure of the degree of bother and distress caused by pelvic floor symptoms (Barber *et al.* 2005), and the high PFDI-20 scores in this patient group indicate that women do not attend because their symptoms have resolved or are not affecting their QOL, as previously suggested (Bugg *et al.* 2005; Johnson & Rochester 2008). In a study of why women do not complete physiotherapy for PFD, Lennard (2009) found that difficulty in attending the appointment was the most prevalent reason. Johnson & Rochester (2008) suggested the development of a community follow-up service since women with young children may find it difficult to attend a hospital appointment. The cost-effectiveness of such an intervention should be assessed, and further research into why women do not attend their hospital appointments when they are experiencing PFD is recommended.

The majority of the respondents in the present study who now indicated on the questionnaire that they wished to speak to a physiotherapist

about treatment had previously not attended their appointment. This might suggest that some women are not ready for physiotherapy intervention in the early postnatal period, but if so, the reasons for this are not clear.

The lack of research into the role of physiotherapy in the treatment of OASIS means that it is possible that women are not aware that there may be a benefit to a course of physiotherapy. A larger study may address this gap in the evidence.

The process of not offering physiotherapy to women who were non-symptomatic at the telephone screening appears valid in the short term because participants who reported that they were non-symptomatic and were not later referred from the perineal clinic remained relatively asymptomatic at 1–2 years post-partum. Their average PFDI-20 scores were lower than the normative scores reported by Lowder *et al.* (2010). The contact with the physiotherapist on the postnatal ward may be sufficient for such patients, and therefore, offering these women an individual out-patient physiotherapy appointment may not be necessary.

It would be informative to follow up these women at 5–10 years post-partum in order to assess whether they have become symptomatic with time, as suggested by Mous *et al.* (2008), or after subsequent childbirth, as proposed by Fornell *et al.* (2005). In the present study, almost half of those who were pregnant at the time of the questionnaire and just under half of those who had had another child reported an increase in symptoms during or after that pregnancy. Considering that the average PFDI-20 score of these non-symptomatic women remained low despite this, these findings may suggest that it is the women who are symptomatic at 6 weeks after OASIS who deteriorate on subsequent pregnancies and/or deliveries. Further research involving greater numbers of participants is required to determine if this is the case. Research in order to establish whether women who are non-symptomatic after OASIS would benefit from a course of prophylactic physiotherapy to prevent PFD in the longer term is also necessary. Longer periods of follow-up are also recommended for future research.

The results of the present study show that telephone screening at 6 weeks post-partum alone is not sufficient to identify all women who are experiencing PFD after OASIS. A small number of participants who were discharged after the 6-week telephone call because they

reported no symptoms were later referred to physiotherapy from the perineal clinic at 6 months post-partum. This small group of women could have potentially benefited from earlier identification and physiotherapy intervention. It is not clear whether the lack of detection was a result of the timing of the telephone call or to the conversation itself. Some women might not have been aware of the symptoms of PFD at 6 weeks post-partum since they could have been preoccupied with the challenges of caring for a newborn baby or may not have returned to full activity, such as aerobic exercise. It is also possible that women might not want to divulge sensitive information over the telephone. In a study by Davis *et al.* (2003), only 10% of women reported PFD during a direct interview by a pelvic floor physician compared with 62% on the symptom questionnaire. The significant discrepancy was deemed to be a result of social taboo and preconceived ideas of what might be expected after delivery, and the above authors recommended questionnaires for postnatal screening. However, such an approach can also have drawbacks, such as high administrative demands and low response rates, which are known to be poor in the postnatal population (Bugg *et al.* 2005; Head 2007).

The optimum time and method to assess potential PFD after OASIS is not clear. In the hospital in which the present study took place, the perineal clinic identified those women who were missed at the 6-week telephone screening. It cannot be determined whether this was because a direct interview took place at the appointment or because it occurred at a later time.

### **Limitations**

A suitable validated questionnaire was not found for use at the 6-week telephone screening that asked women about their pelvic floor symptoms. This could account for the small number of participants who were not identified as having PFD at the 6-week telephone call. The development of such a tool would help to standardize postnatal screenings and could also minimize the number of symptomatic women remaining undetected. Due & Ottensen (2009) recently developed a validated screening questionnaire for use in this clinical population. However, it was validated in a Danish population, and therefore, a similar instrument needs to be developed and validated in English.

The severity of the women's symptoms was not assessed at the 6-week telephone screening,

and therefore, the results of the present study may be biased. It is not clear if the women who did not attend their physiotherapy appointment were more symptomatic than those who did.

Just over one-quarter of the respondents to the questionnaire had had a subsequent delivery or were pregnant at the time of responding. This may have affected the results as well.

The present study included only 100 participants. Further research with a larger cohort is required in order to assess the effectiveness of physiotherapy interventions after OASIS.

### **Conclusions**

There appears to be a role for physiotherapy treatment for women who are symptomatic after OASIS; however, further study with a larger cohort is recommended.

The screening process of not offering outpatient physiotherapy to non-symptomatic women appears valid since these participants remained non-symptomatic at 1–2 years post-partum. However, telephone screening alone is not sufficient to identify all women who are experiencing PFD after OASIS. Further research is recommended in order to determine the optimum time and method to assess for women for PFD after OASIS.

Further research is also recommended so as to establish why women do not attend the appointments offered to them even though they are experiencing symptoms that affect their QOL.

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*Fiona Healy (née O'Connor) is a senior physiotherapist specializing in women's health at Cork University Maternity Hospital. She is also in private practice at Pilates Physiotherapy Cork. Fiona began her career working in musculoskeletal physiotherapy after graduating from University College Dublin in 2005. Over the past 5 years, she has further specialized in the management of musculoskeletal disorders in pregnancy and the postnatal phase, providing individual treatments as well as running Pilates classes. Fiona also treats a range of conditions related to PFD. This study was completed as part of her MSc in Evidence-Based Therapy Practice at University College Cork. Fiona had previously completed the postgraduate certificate in Continence for Physiotherapists at Bradford University.*

*After qualifying with a BSc from University College Dublin in 1997, Liz Barry worked for 2 years in University Hospitals Birmingham, a large British tertiary referral centre. She then travelled abroad, working in New Zealand and Australia, before taking up a post at Cork University Maternity Hospital (CUMH) in 2002. Liz has gained a wide range of clinical experience, mainly in the area of musculoskeletal physiotherapy. Since 2005, she has been a deputy physiotherapy manager in the CUMH physiotherapy service with responsibility for services at the hospital. Liz completed a postgraduate diploma in healthcare management in 2007. She has been a co-author of a number of peer-reviewed articles, and has presented posters at the Irish Society of Chartered Physiotherapists conference.*

*Suzanne O'Sullivan graduated from University College Dublin in 1992, and then trained at the Mater Misericordiae University Hospital and the National Maternity Hospital (NMH) in Dublin before moving to the Rosie Hospital in Cambridge, where she started her specialist registrar training. She returned to the NMH in 1998 for 2 years of clinical research into female incontinence and PFD. Suzanne completed her specialist training in the UK, gaining further experience in urogynaecology. She was appointed as a consultant at the Royal Bournemouth and Poole NHS Trusts in 2002, where she developed the urogynaecology unit as well as running the high-risk antenatal service for Bournemouth. Suzanne has worked in Cork maternity services since 2006.*

## Appendix 1

### Patient Information Leaflet

Dear participant,

You are invited to participate in a physiotherapy project for the Master's Degree of Fiona O'Connor, physiotherapist in Cork University Maternity Hospital (CUMH). The project is aiming to assess the physiotherapy service for women who have sustained third- or fourth-degree tears in CUMH.

For this project, you will be asked to complete a questionnaire asking you about a series of pelvic-floor-related symptoms. As a woman who has experienced a third- or a fourth-degree tear in CUMH in 2010, your experiences are very valuable for this project. The results of this study will help us in establishing the most appropriate physiotherapy follow-up of women who have sustained third- or fourth-degree tears.

Although the results of this study may be published, no information that could identify you will be included. You will be assured of complete confidentiality. The information you provide for this project will have your name removed. Your consent is being given voluntarily. You may refuse to participate in the study. No service of any kind, to which you are otherwise entitled, will be lost or jeopardized if you choose not to participate in the study. If you have any questions about the project, you can contact Fiona O'Connor (researcher).

The project has been approved by the University College Cork and the Division of Obstetrics and Gynaecology in CUMH.

If you agree to participate in this study, please complete the consent form and the questionnaire included, and return in the stamped addressed envelope provided.

Kind regards,

\_\_\_\_\_  
**Thank you for your assistance.**

## Appendix 2

### Questionnaire

**Please answer all the following 20 questions by circling either "yes" or "no". If you answer yes, please indicate how much it affects your life by circling one of the options provided. Please consider your symptoms in relation to the last month.**

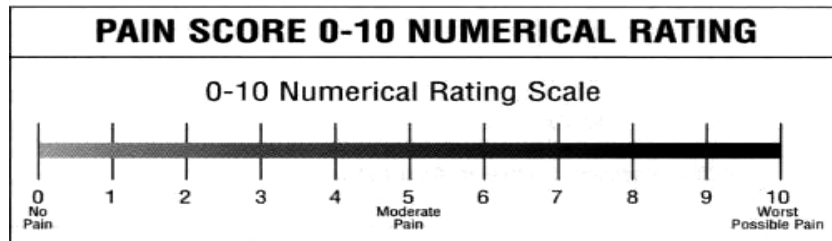
1.      Feel you need to strain too hard to have a bowel movement?  
       No        Yes        If yes, how much does it bother you?  
   Not at all        Somewhat        Moderately        Quite a bit
2.      Feel you have not completely emptied your bowels at the end of a bowel movement?  
                   No        Yes        If yes, how much does it bother you?  
   Not at all        Somewhat        Moderately        Quite a bit
3.      Usually lose stool beyond your control if your stool is well formed?  
                   No        Yes        If yes, how much does it bother you?  
   Not at all        Somewhat        Moderately        Quite a bit
4.      Usually lose stool beyond your control if your stool is loose?  
                   No        Yes        If yes, how much does it bother you?  
   Not at all        Somewhat        Moderately        Quite a bit

- |     |  |    |     |                                      |            |          |            |             |
|-----|--|----|-----|--------------------------------------|------------|----------|------------|-------------|
| 5.  | Usually lose gas from the rectum beyond your control?  | No | Yes | If yes, how much does it bother you? | Not at all | Somewhat | Moderately | Quite a bit |
| 6.  | Usually have pain when you pass your stool?  | No | Yes | If yes, how much does it bother you? | Not at all | Somewhat | Moderately | Quite a bit |
| 7.  | Experience a strong sense of urgency and have to rush to the bathroom to have a bowel movement?                                  | No | Yes | If yes, how much does it bother you? | Not at all | Somewhat | Moderately | Quite a bit |
| 8.  | Does part of your bowel ever bulge outside the rectum during or after a bowel movement?  | No | Yes | If yes, how much does it bother you? | Not at all | Somewhat | Moderately | Quite a bit |
| 9.  | Usually experience frequent urination?   | No | Yes | If yes, how much does it bother you? | Not at all | Somewhat | Moderately | Quite a bit |
| 10. | Usually experience urine leakage associated with a feeling of urgency, i.e. a strong sensation of needing to go to the bathroom? | No | Yes | If yes, how much does it bother you? | Not at all | Somewhat | Moderately | Quite a bit |
| 11. | Usually experience urine leakage with coughing, laughing or sneezing?  | No | Yes | If yes, how much does it bother you? | Not at all | Somewhat | Moderately | Quite a bit |
| 12. | Usually experience small amounts of urine leakage (small drops of urine)?  | No | Yes | If yes, how much does it bother you? | Not at all | Somewhat | Moderately | Quite a bit |
| 13. | Usually experience difficulty emptying your bladder?   | No | Yes | If yes, how much does it bother you? | Not at all | Somewhat | Moderately | Quite a bit |
| 14. | Usually experience <i>pain or discomfort</i> in the lower abdomen or genital region?   | No | Yes | If yes, how much does it bother you? | Not at all | Somewhat | Moderately | Quite a bit |
| 15. | Usually experience <i>pressure</i> in the lower abdomen?   | No | Yes | If yes, how much does it bother you? | Not at all | Somewhat | Moderately | Quite a bit |
| 16. | Usually experience <i>heaviness or dullness</i> in the pelvic area?  | No | Yes | If yes, how much does it bother you? | Not at all | Somewhat | Moderately | Quite a bit |
| 17. | Usually have a bulge or something falling out that you can see or feel in your vaginal area?                                     | No | Yes | If yes, how much does it bother you? | Not at all | Somewhat | Moderately | Quite a bit |
| 18. | Ever have to push on the vagina or around the rectum to have or complete a bowel movement?                                       | No | Yes | If yes, how much does it bother you? | Not at all | Somewhat | Moderately | Quite a bit |

19. Usually experience a feeling of incomplete bladder emptying?  
 No Yes If yes, how much does it bother you?  
 Not at all Somewhat Moderately Quite a bit
20. Ever have to push up on a bulge in the vaginal area with your fingers to start or complete urination?  
 No Yes If yes, how much does it bother you?  
 Not at all Somewhat Moderately Quite a bit

The next two questions are related to pain. Please rate along the pain score.

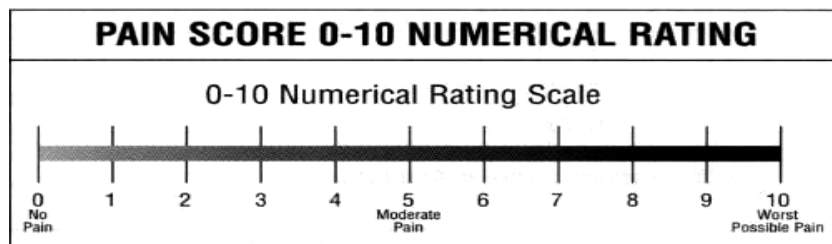
21. The level of pain you experience in your perineum (the perineum is the area between your vagina and your back passage).



How much does it bother you?

Not at all Somewhat Moderately Quite a bit

22. Do you experience pain during sexual intercourse?



How much does it bother you?

Not at all Somewhat Moderately Quite a bit

23. If you answered yes to any of the above 22 questions, are these symptoms related to your third- or fourth-degree tear in 2010?

No Yes

If no, please explain.....

24. Are you currently pregnant?

No Yes

If yes and you have answered yes to any of the symptoms above, are they a new onset in this pregnancy? .....

25. Have you had another baby since your third- or fourth-degree tear in 2010?

No Yes

If yes and you answered yes to any of the above symptoms, have they worsened after this delivery? .....

If you wish to discuss any of these symptoms with a physiotherapist, please provide us with a contact number and a physiotherapist will be happy to call you. ....

**Thank you for taking the time to complete this questionnaire.**

**Please return to CUMH in the stamped addressed envelope provided.**