Commonwealth Department of Health and Aged Care
National Continence Management Strategy
Innovative Grants Program

Pelvic floor education for new mothers: timing the message for best effect

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Executive Summary

There is substantial evidence to support pelvic floor muscle exercises as a treatment for incontinence (Kegel 1948; Bo 1995; Sleep 1987; Sampselle et al. 1996; Morkved & Bo 1996; Dougherty et al. 1989). It is also well established that childbirth is a major risk factor for developing incontinence due to trauma to the pelvic floor muscles. Therefore, it is vital women receive education on pelvic floor muscle rehabilitation during the postnatal period.

Postnatal physiotherapy education classes have been traditionally carried out on the inpatient maternity wards during the first three days postpartum. Due to poor attendance at these classes and questions arising as to the ability of new mothers to absorb information at this time, it was hypothesized that this was not the most effective time for an education session. Two hypotheses were formed

1) Learning priorities of new mothers during the acute inpatient stay do not favor physiotherapy education priorities such as rehabilitation of pelvic floor muscles, abdominal muscles, back care and posture education.
2) Women will be able to comprehend and retain more pelvic floor information after six weeks postpartum compared to their acute inpatient counterparts.

In addition to these hypotheses' clinical outcomes and compliance to exercise programs were measured. Due to the nature of the hypotheses', two separate samples were recruited to two separate studies, referred to as Study A learning priorities and Study B comprehension and retention of learning.

Study A included a 33 item questionnaire, which subjects were asked to complete at day three postpartum (in the maternity ward) and again at eight weeks postpartum (at home). Frequency statistics and dependent sample t-tests were used to analyze the priority of each learning topic and how these priorities changed over the eight-week test period.

Study B included subjects recruited from the maternity wards (day three postpartum) and Maternal and Child Health Centers (greater than six weeks postpartum). Both samples were tested for baseline knowledge (pre-test). Each group received an education class from a physiotherapist and was then tested for comprehension of pelvic floor information after the class (post-test). Two months after their respective classes, each subject was tested again (follow-up) to assess retention of learning in addition to questions on incontinence symptoms and compliance to the exercise program.

Results indicated physiotherapy education topics ranked highly among the maternal care topics, but when combined with infant care topics, were overall of lower priority. There was no difference in the importance of pelvic floor muscle education at three days compared with eight weeks postpartum. Thus, it can be inferred that the ability of new mothers to learn about the pelvic floor muscles should not be influenced by the timing of their postnatal education, as their desire to learn this information remains unchanged.

Study B results showed significant within session and retention of learning in both the acute and outpatient sample. There was no significant difference in comprehension test results between samples at any of the three test times. This indicates new mothers can absorb and retain pelvic floor information regardless of the timing of the education session. There was no significant difference between samples at follow-up testing with regard to reported incontinence, however, when tested for compliance to the exercise regime, the acute sample were significantly more compliant.

Project Management Outline

The project management team consisted of:

Nicole Tweddle	Senior Physiotherapist, Ballarat Health Services.
Heather Deane	Womens' Health Physiotherapist, Ballarat Health Services
Zoe McLachlan	Chief Physiotherapist, Mercy Hospital for Women
Margaret Sherburn	Lecturer (Women's Health) University of Melbourne
Ian Story	Senior Lecturer, School of Physiotherapy, University of Melbourne
Wendy Hubbard	Director of Allied Health, Ballarat Health Services.

Heather, Zoe and Margaret have been invaluable in their guidance on clinical aspects of this study. Wendy has advised on project methods and general research protocol. Ian has advised on project methods and completed all the statistical analysis for the results. I have met both individually and together with my advisors and would like to acknowledge their important contribution to this study.

Statement of Income and Expenditure as at 28th February 2002

INCOME

NCMS Grant	$6050.00
NCMS Grant	$2876.00
NCMS Payment due to Ballarat Health Services on delivery of final report 28/02/02	($ 980.03)
Total Income	**$9906.03**

EXPENDITURE

Stationary	$ 32.63
Model Pelvis	$ 525.00
Printing/photocopying	$ 300.00
Postage	$ 90.00
Gift Vouchers (incentive for survey return)	$ 60.00
Salaries:	
Primary Investigator	$7898.40
Consultant Fees	$1000.00
Total Expenditure	**$9906.03**

(All figures do not include GST)

Introduction

The etiology of stress urinary incontinence (SUI) is not fully understood, but trauma to the pelvic floor during childbirth has been suggested as a major risk factor (Handa et al, 1996; Volleys 1988; Morkved & Bo 1996; Chiarelli & Cockburn, 1999; Persson et al, 2000). Certainly, a relationship between the severity of SUI and the number of times a woman has given birth (parity) has been supported in the literature (Volleys 1988; Sommer et al, 1990). Chiarelli et al (1999) reported a significant association between leaking urine and parity in the young and mid-aged group. Potential explanations include the possibility of reduced awareness, and decreased ability to contract the pelvic floor muscles.

Persson & Rydhstroem (2000) studied risk factors associated with the development of SUI. They found presence of diabetes mellitus, increased body mass index, increased age at first delivery, higher parity, higher birth weight, and use of epidural analgesia were associated with later incontinence surgery. The authors concluded "vaginal delivery, notably the first, is strongly associated with later surgery for stress incontinence, but the association is modified by maternal conditions and interventions during delivery" (p 440).

The prevalence of stress urinary incontinence in women has been reported in numerous studies, with inconsistent results (Chiarelli et al 1999; Thakar & Stanton 2000; Sleep et al 1987; Volleys 1988.) This may be attributed to inconsistencies in defining clinically significant SUI combined with the variety and questionable reliability and/or validity of numerous measurement tools used in assessment. These included self-report, palpation of the pelvic floor muscles, urethral closing pressures, and pad tests with standardized bladder volume.

In a study of 1000 women following normal vaginal deliveries, Sleep et al (1984) reported that 19% of women suffered involuntary loss of urine at three months postpartum. Chiarelli et al (1999) found that 12.8% of young women (aged 18-23) 36.1% of mid-aged (45-50) and 35% of older (70-75) women report leaking urine as a problem. Thakar & Stanton (2000) found that 20.2% of women over the age of 40 experienced urinary incontinence. Volleys (1988) studied

the incidence of SUI in a large sample of post natal women, concluding that the incidence of SUI increased with parity, being 42%, 48%, 53% and 56% after one, two, three and four pregnancies respectively.

A number of studies have established a positive association between pelvic floor exercises and continence, although the degree of reported success varies between studies (Kegel 1948; Bo 1995; Sleep 1987; Samselle et al. 1996; Morkved & Bo 1996; Dougherty et al. 1989). As early as 1948, Kegel emphasized the value of pelvic floor muscle exercise in restoring function of this muscle after childbirth. In a review of the literature, Bo (1995) found studies reported success rates of between 17% and 84% using a wide variety of outcome measures that included self report, urethral closing pressures, and pad tests with standardized bladder volume. The variation in results can be attributed to the strength of intervention in each study. Reported success was higher in those studies with stronger intervention.

In a randomized controlled trial in 1998, Sampselle et al. aimed to test the effect of pelvic floor muscle exercise on incontinence symptoms and pelvic muscle strength in primiparas during a 12 month post partum period. Women were randomized into a treatment group, which received standardized instruction on pelvic floor muscle exercise, or a control group which received routine care with no systematic pelvic floor muscle exercise program. The authors found that practice of pelvic floor exercises during pregnancy resulted in significantly less self-reported incontinence in late pregnancy and was said to benefit continence status up to six months post partum.

Similarly, in a systematic review of 24 randomized controlled trials, Berghman et al (1998) concluded that there was Level 1 evidence supporting efficacy of pelvic floor exercises in the treatment of stress urinary incontinence, but there was uncertainty about the most effective pelvic floor muscle exercise program. Studies showed variation in exercise prescription i.e., number of repetitions per day, length of hold and intensity. Further studies are needed to clarify the rationale for exercise prescription in pelvic floor muscle rehabilitation.

At Ballarat Health Services, current practice includes physiotherapists delivering education to increase awareness and teach pelvic floor muscle exercise as part of routine postnatal education. Traditionally this education has occurred in a hospital ward setting during the first few days post delivery. A review of the program (2000) found that only 23% of mothers attend the postnatal education. It is possible that the poor attendance rate was due to decreasing length of stay in hospital and that new mothers have an overwhelming number of demands in the days immediately following delivery.

The efficacy of the postnatal classes has come into question in recent times due not only to poor attendance, but also the clients' ability to comprehend and retain new information at this time. An overwhelming amount of information is given to new mothers during their inpatient stay. It is reasonable to expect that fatigue, poor concentration, increased distractions, overwhelming emotions and time restrictions may provide barriers to learning.

Learning priorities of new mothers need to be considered, as this may provide insight into the most appropriate topics for education during their acute stay. The relatively short inpatient stay now commonly seen on maternity wards, highlights the need to evaluate immediate teaching interventions in relation to other priorities. Davis et al. (1988) illustrated the need to systematically prioritize the components of the information transfer process. The potential for new mothers to meaningfully absorb large amounts of information is limited, thereby highlighting the need to restrict less relevant information during the initial hospital stay.

Beger and Cook (1998) studied the learning priorities of 236 postnatal women. Their results indicated that infant feeding, cord care and postpartum complications were rated the highest learning priority. Similarly, Davis et al. (1988) examined the learning priorities of 117 mothers in the first three days postpartum. The authors concluded that infant illnesses, postpartum complications and baby feeding issues were the highest priority for postpartum women. There is little recent research into if/how these learning priorities change over time.

Unfortunately, the learning priority studies mentioned above did not include those items typically covered as part of physiotherapy education. As a result, there is no indication in the

literature regarding the importance of topics such as pelvic floor muscle exercises, abdominal exercises or back care and posture, nor how these learning priorities may change over time. In the studies by Beger & Cook 1998, and Davis et al. 1988, 'shape-up exercises' was the only term used to cover postnatal exercises of all forms, which could infer weight loss and body toning rather than therapeutic exercise. This learning topic rated amongst the lowest priority in both studies. There is a need for further research to clarify in detail the learning priorities of specific physiotherapy education topics.

Anecdotal evidence suggests physiotherapy education topics such as pelvic floor muscle education, are not a high learning priority for postpartum women during the acute hospital stay, as there is a perceived need for education on infant care topics such as feeding and cord care. Consequently, education on physiotherapy specific topics at this time may not be effective, as new mothers may neither be willing nor able to absorb this information. It is hypothesized that maternal care topics including physiotherapy education will become a higher learning priority after the acute hospital inpatient stay.

Maternal physical and emotional health problems were surveyed six to seven months postpartum in a study by Brown and Lumley (1998). The authors found the most common problems at this time were tiredness and backache, with involuntary bladder and bowel loss also high on the list. The results of this study illustrate maternal care topics as a high priority during this postpartum period.

In a study by Morkved & Bo (1996) the effectiveness of teaching postnatal pelvic floor exercises was examined. In a series of matched pairs, the effect of group (5-10 people) pelvic floor training, 45min session once a week for eight weeks, was compared with a control group receiving standard written postnatal instructions, which included encouragement to perform daily contractions of the pelvic floor muscles. Results indicated that improvement in pelvic floor muscle strength was significantly greater ($p<0.01$) in the training group than in the control group. In this study, the control group reported performance of pelvic floor muscle exercises twice a week or more during the trial period. Consequently, there was a small but significant improvement in muscle strength even in the control group. Considering the majority of

postnatal education in public hospitals takes the form of a once off education session (ie. similar to the control group) Morkved and Bo's results cast some doubt on the relative efficacy of postnatal pelvic floor muscle exercise as taught in hospitals today.

There is an abundance of evidence that pelvic floor muscle exercise is effective (Kegel 1948; Bo 1995; Sleep 1987; Sampselle et al. 1996; Morkved & Bo 1996, Dougherty et al.1989; Berghmans et al.1998; Mason et al. 2001). However, there is a lack of consistent evidence for the specifics of postnatal pelvic floor muscle education and training. There is no evidence to suggest the most appropriate time for postnatal education and researchers cannot agree on the most effective exercise prescription. This has lead to wide variation in post-natal class content and timing of education sessions.

Another model of intervention has been piloted at Ballarat Health Services, delivering postnatal education >6 weeks post delivery, away from the hospital environment. These sessions were delivered in the Maternal and Child Health Centers as a component of a 'New Mother's Group'. Informal feedback from the participants indicated that the women were more receptive to maternal care topics at this time, however this model of education delivery had only been trialled on a limited and ad hoc basis.

There is a need to evaluate, in a structured manner, the way in which education is delivered to new mothers. Furthermore, there is a need to test assumptions surrounding learning priorities in a sample of new mothers and how these change over time. It is anticipated that this information may lead to improved learning retention and application among the client group and subsequently enhance compliance to a pelvic floor muscle exercise program.

It is hypothesized that new mothers will be able to absorb information about the pelvic floor more effectively at >6 weeks postpartum due to the increased learning priority of maternal care topics at this time. This will be demonstrated through improved patient learning and comprehension of pelvic floor muscle information. A two-month follow up study will allow collection of data relating to retention of learning, compliance to the exercise program, and any symptoms of incontinence which the women may have experienced.

Method

The aims and procedures for the study were approved by the combined Ballarat Health Services and St John of God Hospital Ethics Committee.

Setting

The study was conducted in the Ballarat Health Services maternity ward and at Ballarat and District Maternal and Child Health Centers. Patient education included a postnatal class from a physiotherapist in a group education session.

Subjects

Subjects were recruited from Ballarat Base Hospital at day 3 postpartum, and Ballarat and District Maternal and Child Health Centers at >6 weeks postpartum. Data was collected between February and August 2001. All subjects gave written consent as per the Helsinki agreement before entering the study (n =200).

To be included in the study, subjects were required to be English-speaking, having undergone any form of vaginal delivery or cesarean section. This formed a sample of convenience. Subjects were excluded if they delivered stillborn or unhealthy babies on compassionate grounds. 200 women meeting the study criteria were included in the study.

Instrument

Outcomes were measured with two questionnaires.

Study A – Learning Priorities

A 33-item questionnaire (see Appendix 1) was adapted and used in this study based on research previously cited (Davis et al 1988; Beger & Cook 1998). The questionnaire contained four sections a) demographic characteristics; b) 13 maternal care topics; c) 15 infant care topics; d) five barriers to learning. Each topic was rated on a five-point ordinal scale from very important (1) to not at all important (5).

Study B – Comprehension and Retention of Learning

A 12 point multiple-choice questionnaire (see Appendix 2) was used to assess learning and comprehension. Questions related to pelvic floor muscle anatomy, function, exercise prescription, and the effects of childbirth. Subjects were asked to tick the correct box(s).

Procedure

Subjects were recruited to either Study A learning priorities (n=100) or Study B comprehension and retention of learning (n=100), thus forming two distinct samples in two parallel studies. The studies ran consecutively, the first one hundred women being recruited to Study A, the second to Study B. Every admission to the maternity ward, and all new mothers at the Maternal & Child Health Centers were approached regarding the study to reduce possible selection bias. All women consented to participate and were included in the study. The purpose of the study and its voluntary nature were explained and informed consent was gained. All subjects were provided with an information sheet outlining the research project.

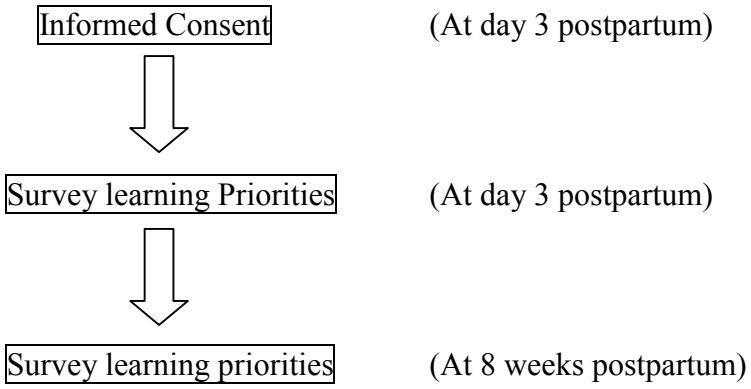
Study A – Learning Priorities

Subjects were approached by the investigator during their inpatient stay (Time 1).

The investigator did not identify herself as a physiotherapist in an attempt to reduce bias towards physiotherapy topics. Subjects' were asked to fill out the 33-item questionnaire, which was later collected by the investigator.

In order to monitor the change in learning priorities over time, the same questionnaire was posted to the subjects at eight weeks postnatal (Time 2). Each subject was provided with a reply paid envelope to encourage survey return. See Method Chart 1.

Method Chart 1 (Study A)



Study B – Comprehension and Retention of Learning

During the acute inpatient stay (Time 1), subjects were recruited by maternity ward staff to attend the physiotherapy postnatal class. Before beginning the class, the purpose of the study and its voluntary nature was explained and informed consent gained.

Prior to the education class, each subject was asked to complete the multiple-choice questionnaire (pre-test). This provided an indication of baseline knowledge of pelvic floor anatomy, function and exercise.

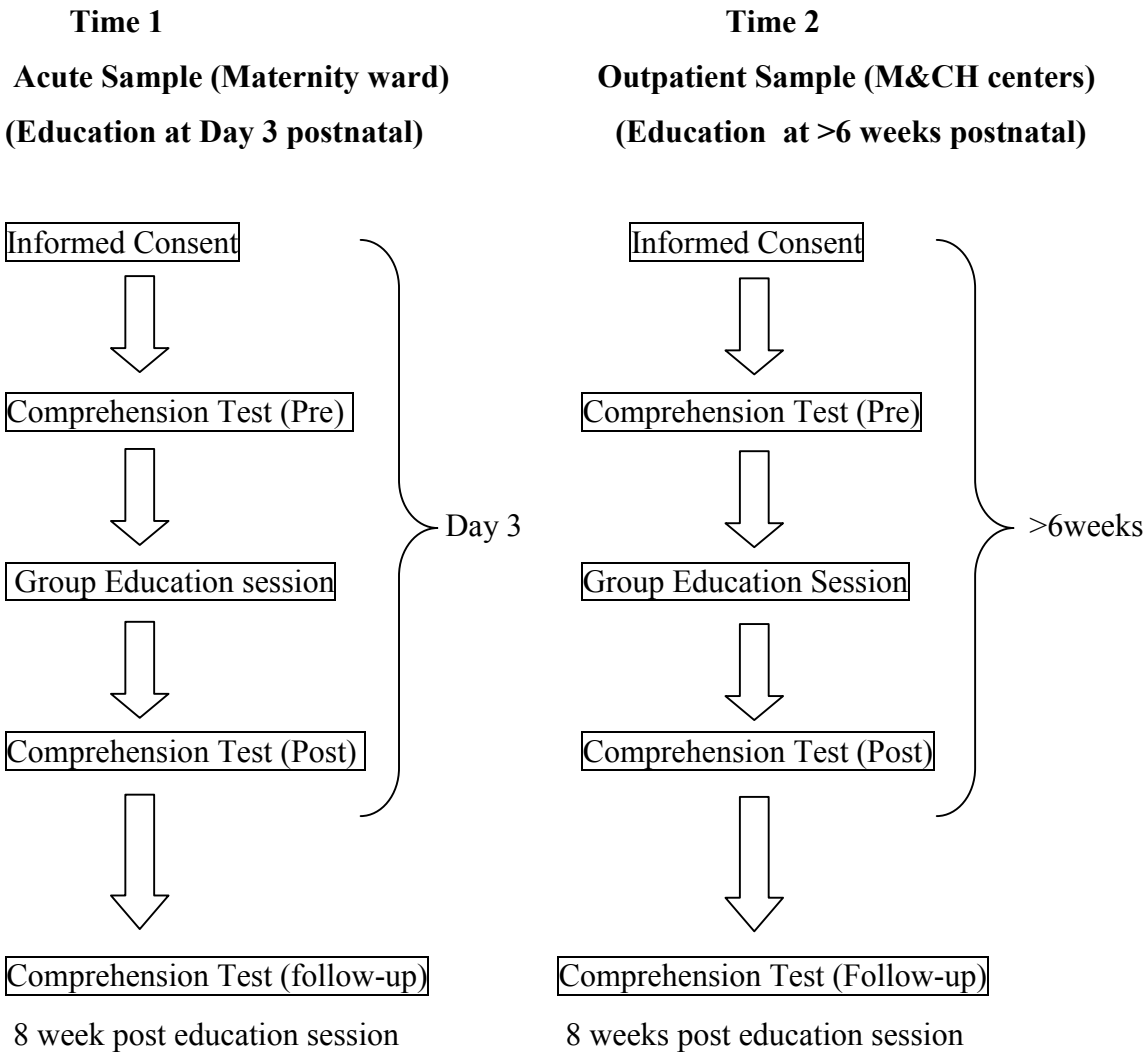
All postnatal physiotherapy education classes were given by the same physiotherapist, and class content was standardized to reduce variation in the pelvic floor muscle education component. These classes covered educational topics such as pelvic floor muscle exercises, abdominal muscle exercises, back care, posture, rest, safe lifting, and return to sport/work. All classes included an active exercise component, which was prescribed according to individual ability. Immediately after the conclusion of the class, subjects were asked to complete the multiple-choice questionnaire again (post-test). This allowed the investigator to monitor within session learning.

Retention of learning was assessed by a follow-up postal questionnaire eight weeks after the original education session (follow-up). This included the 12 point multiple-choice

questionnaire, questions relating to compliance to the exercise regime, and self-report of urinary or faecal incontinence.

An identical methodology was running parallel to the acute sample within the Maternal & Child Health Centers (Time 2). These subjects were all >6 weeks postpartum at pre/post-test times and received the physiotherapy postnatal education class through the "New Mother's Group". Follow-up questionnaires were also posted to each subject eight weeks later.
Subjects were excluded from the Maternal & Child Health sample if they had participated in the acute inpatient postnatal classes. See Method Chart 2.

Method Chart 2 (Study B)



Data Analysis

Study A – Learning Priorities

Descriptive statistics of the demographic variables and each of the learning topics at both Times 1 and 2 were calculated. The score given to each learning topic was used to establish the most important learning needs within each of the broad areas of maternal care, infant care and barriers to learning at both Times 1 and 2. Difference between participants' responses at Time 1 and 2 was analyzed using a dependent sample t-test. Alpha was set at 0.01.

Study B – Comprehension and Retention of Learning

Within session learning (difference between pre and post test) was measured at both Time 1 and 2. Differences between pre and post-test scores was measured using dependent sample t-tests. Change between post-test and follow up scores was also analyzed using dependent sample t-tests (alpha = 0.01). Within and between subject effects were analyzed using a two-way ANOVA.

Results

Study A- Learning Priorities

Subjects (n=100) in Study A had a mean age of 28.53 years (S.D 5.64) ranging from 17 to 42 years, and mean birthweight of 3310.36 grams (S.D 659.45). Demographic data relating to type of delivery, birthing interventions, parity and education levels can be found in Table 1.

Survey return for Time 2 results was 66%. n=66 for all tests involving Time 2 results.

Table 1 Demographics

Birth	**Frequency %**	**Parity**	**Frequency %**
Vaginal	63	Primipara	50
C-section	37	Multipara	50
Interventions		**Education**	
Nil	66	< Year 12	51
Tear	22	Completed year 12	30
Episiotomy	2	Tafe/diploma	5
Vaccuum	4	≥ Bachelor degree	14
Forceps	3		
Episi + forceps	2		
Episi + vacuum	1		

37% of births were by C-section, the remaining 63% were vaginal deliveries. The majority of these vaginal deliveries did not require interventions (66%) such as episiotomy, forceps or vacuum (Table 1). The proportion of primipara compared to multipara was evenly distributed.

Approximately half of the subjects in Study A did not complete their high school education. 14% of subjects had completed a higher degree at university.

Table 2 includes frequency statistics of learning priorities and displays the order of importance for each topic at Time 1 and Time 2, ie frequency of 'Very Important' being selected.
During the inpatient stay (Time 1) the five most important learning topics were feeding (89%), breast & nipple care (75%), settling (70%), infant safety (67.7%) and pelvic floor exercises (65%). At Time 2 (8 weeks post birth), frequency of reporting 'Very Important' for the learning topics was highest for feeding (74.2%), childhood illnesses (72.2%), immunization (71.2%) settling (70.8%) and childhood development (66%).

At both Times 1 and 2, infant care topics were the highest priority.

Table 2 Learning Priorities. % Frequency of 'Very Important = 1' At Time 1(Day 3 postpartum) & Time 2(week 8 postpartum)

Learning Priority	**Time 1 %**	**Time 2 %**
Feeding	89	74
Breast & nipple care	**75**	**47**
Settling	70	70
Infant safety	67	62
***Pelvic Floor Exercises**	**65**	**63**
Immunization	61	71
Well baby care	59	47
***Abdominal exercises**	**54**	**50**
Cord Care	52	22
Childhood illnesses	52	72
Stitches/care of perineum	**44**	**18**
Bathing/Dressing	44	22
Child development	41	66
Newborn Jaundice	41	21
***Back care/Posture**	**40**	**54**
Sterilizing dummies/bottles	39	36
After birth pains	**37**	**16**
Nappy changing	37	22
Medications	**36**	**28**
Infant elimination patterns	34	35
Post partum fatigue	**33**	**36**
Vaginal Discharge	**33**	**22**
Contraception	**29**	**40**
Mood changes	**26**	**28**
Constipation	**24**	**15**
Teething	22	40
Introduction of solids	21	45
Return to sex	**11**	**18**

* = Physiotherapy education topic
Bold type= Maternal Care Topic
n=100

Paired sample t-tests indicated statistically significant changes in learning priorities over time (Table 3). The topics which decreased significantly in priority between Time 1 and 2 (alpha = 0.01) included after birth pains, breast and nipple care, vaginal discharge, stitches/care of perineum, constipation, bathing/dressing, cord care, nappy changing, and newborn jaundice. In contrast, those which increased in priority between Time 1 and 2 included contraception, return to sex, introduction of solids, child development, teething, and childhood illnesses.

It is important to note that the physiotherapy topics, pelvic floor exercises, abdominal exercises and back care/posture, did not reach statistical significance for change over time. The relative ranking of importance of pelvic floor muscle education remained relatively unchanged, dropping from 5th to 6th most important topic between Time 1 and 2.

Table 3 Change in Learning Priorities Paired Sample t-tests

Maternal Care Topic	Time 1 Mean (SD)	Time 2 Mean (SD)	Sig. (2 tailed)
After birth pains	2.00 (0.93)	2.79 (1.41)	<0.001*
Breast & Nipple care	1.33 (0.75)	1.94 (1.15)	<0.001*
Vaginal Discharge	1.98 (0.87)	2.52 (1.32)	<0.001*
Contraception	2.74 (1.3)	2.05 (1.07)	<0.001*
Pelvic Floor Exercises	1.53 (0.86)	1.47 (0.73)	0.583
Post Partum Fatigue	1.90 (0.84	1.92 (0.96)	0.915
Stitches/care of the perineum	2.26 (1.44)	2.91 (1.45)	<0.001*
Abdominal exercises	1.70 (0.93)	1.74 (0.95)	0.704
Return to Sex	2.79 (1.06)	2.30 (0.96)	<0.001*
Back care/Posture	1.80 (0.86)	1.62 (0.86)	0.122

Medications	2.25 (1.24)	2.29 (1.11)	0.756
Constipation	2.11 (0.86)	2.86 (1.26)	<0.001*
Feeding	1.14 (0.43)	1.33 (0.69)	0.027
Settling	1.37 (0.6)	1.40 (0.72)	0.780
Bathing/dressing	1.82 (0.88)	2.55 (1.25)	<0.001*
Cord Care	1.79 (0.89)	3.05 (1.57)	<0.001*
Nappy Changing	2.00 (0.99)	2.76 (1.38)	<0.001*
Sterilizing dummies/bottles	2.25 (1.25)	2.22 (1.24)	0.850
Introduction of Solids	2.83 (1.27)	1.88 (1.03)	<0.001*
Child Development	2.33 (1.29)	1.41 (0.66)	<0.001*
Teething	2.71 (1.25)	2.00 (1.12)	<0.001*
Immunization	1.73 (1.06)	1.45 (0.84)	0.033
Childhood illnesses	2.06 (1.24)	1.32 (0.56)	<0.001*
Infant elimination patterns	2.21 (1.11)	1.88 (0.87)	0.034
Newborn Jaundice	2.08 (1.06)	2.85 (1.51)	<0.001*
Well baby care	1.70 (0.93)	1.76 (0.89)	0.631
Infant Safety	1.71 (1.07)	1.48 (0.71)	0.062

* Statistically significant at alpha = 0.01

Table 4 indicates frequency statistics for the barriers to learning. At Time 1, maternal fatigue (39%) and increased distractions (21%) were reported as the main barriers. However, at Time 2 time restrictions (50%) had significantly increased its impact on mothers as had increased distractions (31.8%)

Table 4 Barriers to Learning % Frequency of 'Large Impact = 1'

Barrier to Learning	**Time 1 (acute)**	**Time 2 (8 weeks)**
Fatigue	**39**	28.8
Time Restrictions	18.2	**50**
Increased distractions	**21**	**31.8**
Poor concentration	11	12.1
Emotionally Overwhelmed	18	13.6
TOTAL	107.2	136.3

Table 5 illustrates the change in barriers to learning between Time 1 and 2. Paired sample t-tests showed that 'time restrictions' was the only barrier to learning that reached statistical significance, increasing in its impact at Time 2.

Table 5 Change in Barriers to Learning

Barrier to Learning	**Time 1 Mean (SD)**	**Time 2 Mean (SD)**	**Sig. (2-tailed)**
Fatigue	1.86 (0.96)	2.02 (0.97)	0.254
Time restrictions	2.38 (1.03)	1.71 (0.86)	<0.001*
Increased distractions	2.12 (0.90)	1.92 (0.86)	0.184
Poor concentration	2.53 (1.07)	2.67 (1.03)	0.401
Emotionally overwhelmed	2.58 (1.20)	2.79 (1.22)	0.215

* statistically significant alpha = 0.01

The correlation between subject's education levels and their reporting of physiotherapy learning priorities was poor (Table 6). However, correlation's reached statistical significance between the physiotherapy learning priorities (pelvic floor exercises, abdominal exercises and back care/posture) across both Time 1 and 2.

Table 6 Education vs Physiotherapy learning priorities Time 1.
Spearman's rho nonparametric correlation's

		Educat.	1 PFE	1 Abdom	1 Back	2 PFE	2 Abdom	2 Back
Educat.	Rho	1.00	0.12	0.06	-0.07	0.10	0.21	0.02
	p value	.	0.22	0.49	0.46	0.41	0.08	0.87
1 PFE	Rho	0.12	1.00	0.59	0.33	0.34	0.17	0.20
	p value	0.22	.	<0.01*	<0.01*	<0.01*	0.16	0.11
1 Abdom	Rho	0.06	0.59	1.00	0.42	0.18	0.33	0.37
	p value	0.49	<0.01*	.	<0.01*	0.14	<0.01*	<0.01*
1 Back	Rho	-0.07	0.33	0.42	1.00	0.24	0.17	0.38
	p value	0.46	<0.01*	<0.01*	.	0.05	0.18	<0.01*
2 PFE	Rho	0.10	0.34	0.18	0.24	1.00	0.32	0.29
	p value	0.41	<0.01*	0.14	0.05	.	0.01*	0.01*
2 Abdom	Rho	0.21	0.17	0.32	0.16	0.31	1.00	0.40
	p value	0.08	0.16	<0.01	0.18	0.01*	.	<0.01*
2 Back	Rho	0.02	0.20	0.37	0.35	0.29	0.40	1.00
	p value	0.87	0.10	<0.01*	<0.01*	0.01*	<0.01*	.

* statistically significant at alpha = 0.01
PFE = Pelvic floor exercises Abdom = Abdominal exercises Back = Back care and posture

There was no significant difference in the importance of the physiotherapy topics for primipara and multipara (Table 7).

Table 7 Parity vs Physiotherapy Learning Priorities (t-tests)

Learning Priority	Primi	Multi	Sig. (2-tailed)
1 Pelvic Floor Exercises	1.46 (0.84)	1.64 (0.96)	0.32
1 Abdominal Exercises	1.63 (0.93)	1.72 (0.93)	0.64
1 Back care / Posture	1.76 (0.82)	1.90 (0.93)	0.427
2 Pelvic Floor Exercises	1.44 (0.73)	1.50 (0.73)	0.76
2 Abdominal Exercises	1.67 (0.93)	1.83 (0.99)	0.48
2 Back care / Posture	1.69 (0.95)	1.53 (0.73)	0.45

Study B – Comprehension and Retention of Learning

Demographic data for subjects in Study B showed a mean age of 28.53 years (4.5), ranging from 19 to 40 years. The mean birthweight was 3406.6 grams (508.7). Other sample demographics such as type of delivery, birthing interventions, parity, and education are illustrated in Table 8.

Table 8 Demographics

Interventions	Frequency %	Birth	Frequency %
Nil	46	Vaginal	71
Tear	25	C-section	28
Episiotomy	6	**Parity**	
Vacuum	7	Primi	80
Forceps	8	Multi	20
Episi + forceps	3	**Education**	
Forceps & vacuum	1	< Year 12	26
Tear + vacuum	1	Completed year 12	33
Episi & vacuum	1	Tafe/diploma	14
Episi/tear/forc/vac	2	≥Bachelor degree	27

Demographic data (Table 9) shows 36% of subjects experienced involuntary bladder or bowel loss before or during their pregnancy. Only one of these subjects received continence physiotherapy treatment. This subject was excluded from further comprehension testing as it was thought she may have increased knowledge of pelvic floor muscle function.

76% of subjects attended prenatal classes (Table 9). There was no significant difference between the pre test scores of subjects who attended these classes and those who did not. For subjects who attended prenatal classes, 21% of these involved a physiotherapist. There was no statistically significant difference between pre test scores for those attending prenatal classes with or without physiotherapy involvement.

Table 9 Demographics

	% Yes	% No
Pre/peri-natal incontinence	36	64
Previous continence physiotherapy	1	99
Attendance at prenatal classes	76	24
Physiotherapist involvement in prenatal classes	21	79

n=100

Follow-up surveys were returned by 78% of subjects. Sample size for all tests (not including demographics) was n=78.

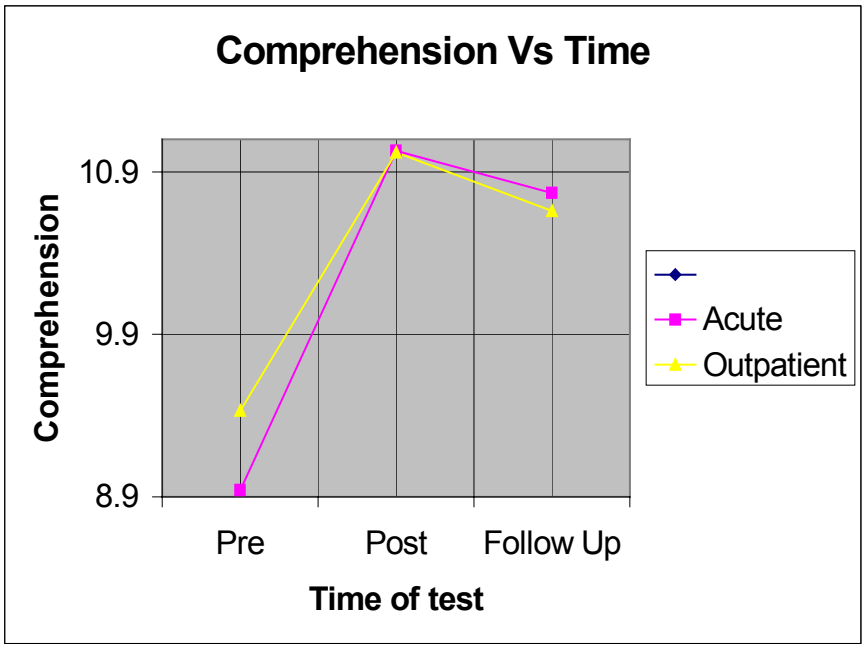
Independent sample t-tests were carried out to test for variance of demographic variables between the acute and outpatient samples. There was no statistically significant difference between groups when tested for birthing interventions ($p=0.42$), maternal age ($p=0.83$), birthweight ($p=0.18$), or education levels ($p=0.8$). However, there was a significant difference between the two groups when tested for incontinence at pre-test and parity. The acute sample reported significantly higher incidence of incontinence at pre-test than the outpatient group ($p<0.01$). In addition, the acute sample included significantly more multipara than the outpatient group ($p<0.01$).

Descriptive statistics illustrate the mean comprehension test scores for pre, post and follow-up in both sample groups (Table 10). A two way ANOVA was used to study within and between subjects effects. Results showed significant change in knowledge over time in both the acute sample [F = 37.1, df 2,60, p=<0.001] and the outpatient sample [F=33.6, df2,92, p=<0.001]. Test scores can be seen in the comprehension vs time graph.

Between subjects effects were also studied using the two way ANOVA to analyse the difference between the acute and outpatient sample test scores. There was no statistically significant difference in within session or retention of learning between the two sample groups [F=0.262, df1,76, p=0.61].

Table 10 Within Session and Retention of learning MCQ Scores. Maximum = 12 (see appendix 2)

Time of comprehension test	Acute Sample Mean	Outpatient sample Mean
Pre	8.94 ±1.90	9.43±1.60
Post	11.03 ±0.95	11.02±1.17
Follow Up	10.77 ±1.02	10.66 ±1.03



Comprehension test scores were analyzed according to subjects' education levels (Table 11). t-tests for equality of means between the groups was assessed, showing no significant difference between the acute and outpatient sample (p= 0.802). Mean comprehension test scores can be seen for each educational level. There was no statistically significant difference in test scores between education levels at each test time (p=0.34). Thus indicating the comprehension of pelvic floor information was not dependent on previous education levels.

Table 11 Education levels & Comprehension Test results

Test	Education	Mean
Pre	<Year 12	8.67±2.17
	Completed Year 12	9.28±1.57
Day 3	Tafe/Diploma	8.58±2.07
	Bachelor degree/higher	9.96±0.98
Post	<Year 12	10.78±1.22
	Completed Year 12	11.20±0.76
Day 3	Tafe/Diploma	11.08±1.31
	Bachelor Degree/higher	11.00±1.17
Follow Up	<Year 12	10.78±1.11
	Completed Year 12	10.60±0.87
8 weeks	Tafe/Diploma	10.58±1.16
	Bachelor Degree/higher	10.83±1.07

Tests for correlation between compliance to the exercise program, post-test score and follow up scores were analyzed. There was no correlation (p= 0.85, p=0.18) between compliance to the exercises and test scores as can be seen in Table 12. However, there was significant correlation (p=0.007) between the post-test and follow-up scores, indicating significant retention of learning in both sample groups.

Table 12 Pearsons tests of correlation
Compliance vs Post test scores vs Follow up scores (MCQ scores)

		Compliance	Post-test	Follow up
Compliance	Correlation	1.00	0.21	-0.15
	p value	.	0.85	0.18
Post- test	Correlation	0.02	1.000	0.30
	p value	0.85	.	<`0.01*
Follow up	Correlation	-0.15	0.30	1.000
	p value	0.18	<0.01*	.

* significant at alpha = 0.01 level

Frequency statistics of compliance to pelvic floor muscle exercise shows 41% of subjects performed the exercises once per day (Table 13). It is difficult to draw conclusions between education level and corresponding compliance to exercise due to small numbers of subjects in each category.

Table 13 Education vs Compliance crosstabulation

		Compliance to exercise program						Total
Education Level		**3/4day**	**2/day**	**1/day**	**1/wk**	**1/mth**	**Never**	
< Year 12	Count	4	2	8	2	1	1	18
	% within education	22.2%	11.1%	44.4%	11.1%	5.6%	5.6%	100%
Yr 12	Count	1	11	7	3	2	1	25
	% within education	4.0%	44%	28%	12%	8%	4%	100%
Tafe	Count	3	3	3	1	2		12
	% within education	25%	25%	25%	8.3%	16.7%	--	100%
Bach Deg	Count	2	1	14	3	3		23
	% within education	8.7%	4.3%	60.9%	13%	13%	--	100%
Total	Count	10	17	32	9	8	2	78
	% within education	12.8%	21.8%	41%	11.5%	10.3%	2.6%	100%

When comparing compliance to the exercise regime between samples, there was a statistically significant difference (p=0.003). Independent samples t-test illustrated subjects in the acute sample (n=31) reported performance of pelvic floor exercises more often than those in the outpatient sample (n=47) with a mean of 2.42 (1.18) compared to 3.26 (1.15). Lower scores indicate better compliance i.e 1 = 3-4 per day, 6 = never.

Self-report of incontinence (involuntary bladder or bowel loss) were reported at both pre-test and follow up (Table 14). Cross tabulation was used to analyze the relationship between during/pre-pregnancy incontinence and incontinence at follow-up testing. The majority of subjects (46) had not experienced incontinence at either test time. 14 subjects developed symptoms between the test periods and five subjects reported symptoms at pre-test but no incontinence at follow up. The remaining 13 subjects reported incontinence at both test times.

Table 14 Cross tabulation. Incontinence at pre-test and follow-up test.

Symptoms		**Incontinence before or during pregnancy**		
		Yes n (%)	No n (%)	Total n (%)
Incontinence at follow up	Yes n (%)	13 (17)	14 (18)	27 (35)
	No n (%)	5 (6)	46 (59)	51 (65)
	Total n (%)	18 (23)	60 (77)	78 (100)

As can be seen in Table 14, the incidence of incontinence after childbirth was 18%. When combined with subjects reporting both pre-existing symptoms and symptoms at follow-up, the prevalence of reported incontinence is 35%.

The reporting of incontinence at follow-up was compared between the acute and outpatient groups using independent sample t-tests. Results indicate there was no significant difference between groups in reported incontinence at follow-up testing. ($p=0.579$)

Discussion

STUDY A

Learning needs of new mothers was monitored in a broad cross-section of women in the Ballarat region. This study illustrated the priority of physiotherapy education topics for postpartum women do not change over time.

Demographic data shows even distribution of primi and multipara thus lending the results of this part of the study to all mothers. Education levels of those in the sample showed that 81% of subjects did not progress beyond high school education. It was hypothesized that this may have influenced the results of the study in that less educated women may not be as aware of their individual learning needs. However, analysis through spearmans rho nonparametric correlations illustrated there was no correlation between subjects education levels and their rating of the physiotherapy learning topics (Table 6).

Due to the inherent difficulties in subject retention in a sample of new mothers, there was a 34% drop-out rate in survey return, thereby decreasing sample size to 66 at Time 2. This may have influenced outcomes and should therefore be kept in mind when drawing conclusions from the results of this study.

At both Time 1 and 2, it can be seen that overall, infant care topics were the highest learning priorities for new mothers (Table 2). During the inpatient stay, the most important learning needs include feeding, breast & nipple care, settling and infant safety. This is only modified slightly at eight weeks postpartum in that childhood illnesses and immunization join feeding and settling as the top four priorities.

The measurement tool used in this part of the study was one adapted from the Davis-Bruckner-MacMullen postpartum questionnaire. This questionnaire has been used in numerous studies and has provided an opportunity to compare and strengthen findings across studies. All studies have identified high priority learning needs, of which feeding is usually the highest (Birk, 1996;

Brooten et al, 1989; Davis et al 1988) Currently, agreement exists across these studies on the importance of infant care topics such as infant illness, cord care, and infant feeding. In this study, the three most important infant care topics were feeding, settling and infant safety (at Time 1), and at Time 2, feeding, childhood illnesses and immunization. There is agreement in all studies that infant feeding is the most important learning priority for new mothers. Variations in results for the subsequent learning priorities in this study may be attributed to the different number and type of topic listed in our adapted questionnaire due to the addition of three physiotherapy topics.

It is difficult to comprehensively compare the results of this study with previous ones, as they do not include the physiotherapy learning topics, and recent studies do not monitor change in these results over time. 'Shape-up exercises' was the only term used to describe any form of exercise and was ranked the 27th most important learning priority (Davis et al, 1988).

The physiotherapy education priorities rate highly among the maternal care topics, but when analyzed in conjunction with the infant care topics, their relative importance is put into perspective. Pelvic floor & abdominal exercises, and back care/posture are a high priority in maternal care topics for new mothers at both times. Pelvic floor muscle exercises were the second highest maternal care learning priority at Time 1 and became the most important priority at Time 2. When combined with the infant care topics, pelvic floor exercises are ranked fifth, abdominal exercises ranked eighth, and back care/posture ranked fifteeth in order of importance at Time 1. At Time 2, the rankings change to sixth, ninth and eighth respectively. Due to the limited amount of new information a person can absorb at one time, the information transfer of pelvic floor muscle education may not be effective. New mothers' seem to be more interested in infant care topics and may reach saturation point before these maternal care topics can be absorbed.

The infant care topics were the higher priority of the two broad categories of infant and maternal care. Mothers' instinct is to take care of baby and as a result, infant care topics are of much greater importance than those relating to the mother's health and well-being. This factor

does not change over time and thus provides a constant barrier to learning for the maternal care topics, and in this case, pelvic floor muscle education.

Barriers to learning are numerous in this sample group, of which five were chosen for analysis of their impact on subjects' ability to learn. Results at Time 1 showed fatigue and increased distractions were the major barriers to learning at this time. These results, although perhaps not surprising in the maternity ward environment, may offer some guidance as to ways in which staff could assist in optimizing the learning process by ensuring adequate rest periods and limiting the number of distractions on the ward, particularly during education sessions. Once new mothers had returned home, time restrictions had replaced fatigue as the main barrier to learning (Time 2). This barrier had an even larger impact on learning on the multipara subjects due to increased demands of subsequent children on their mothers' time.

When the impact of barriers to learning was analyzed over time, it was illustrated time restrictions were the only barrier that significantly changed in its influence over the test period. All other barriers to learning remained relatively unchanged in their influence over time. Importantly, when the total percentage of women recording 1= Large impact for any of the five barriers is summed together, it can be inferred that these barriers to learning have a greater influence at eight weeks postpartum compared to day three postpartum.

In a study of maternal health after childbirth by Brown and Lumley (1998), topics such as fatigue, backache and urinary incontinence remained a health problem at six to seven months postpartum. Based on these results, it may be inferred that learning priorities for these maternal care topics may continue to increase in importance after two months postpartum as recorded in this study.

Analysis of change over time was also carried out through paired sample t-tests on the priority of the education topics (Table 3), of which the physiotherapy topics were of interest to this study. Those topics which significantly increased in importance over time i.e return to sex, teething, introduction of solids and contraception, can be explained through increased relevance to mothers at two months postpartum. Similarly, topics which decreased in importance i.e after

birth pains, cord care, vaginal discharge, newborn jaundice etc. can be explained through decreased relevance of the topic at the time of follow-up.

Physiotherapy learning topics remain equally as important to new mothers throughout the eight-week postpartum period, as illustrated in statistical analysis for change over time. Thus, it can be inferred that the ability of new mothers to learn about pelvic floor muscle exercises is not influenced by the timing of their postnatal education, as their desire to learn this information remains unchanged.

STUDY B

This study aimed to analyze the effect of timing of physiotherapy postnatal education on a woman's ability to learn and retain new information. Results illustrated there was no significant difference between the acute and outpatient sample groups when comprehension test results were compared at each test time.

The mean age of subjects in this sample was identical to Study A, 28.53 years. Education levels were relatively evenly distributed and not significantly different between the acute and outpatient sample. Due to the nature of this study, education levels may have significant influence over the comprehension test results, therefore it was important to have a range of educational experience in the sample to ensure the effect of this variable could be monitored.

There was a significant drop-out rate for subjects in this part of the study. 22% of subjects did not return their two month follow-up surveys, thus decreasing the strength of results in this study. Gift incentives were offered to encourage survey return in addition to reply paid envelopes, however due to inherent difficulties with this sample group, drop-out rates remained high.

Demographic data for this sample showed significant differences between groups, in particular, parity and incontinence symptoms at pre-test. The acute sample included significantly more multipara (19) compared with the outpatient sample (1). This is primarily due to the education

groups in Maternal and Child Health Centers being predominantly for first time mothers. As a result of the increased proportion of multipara's in the acute sample, there was a corresponding increase in the amount of reported incontinence at pre-test.

The difference in demographics of the two samples should not influence the comprehension test results of this study as parity should not affect learning performance. Some may argue that motivation to learn about continence (i.e pelvic floor muscle education) may be increased among women who have pre-existing symptoms and therefore results would be expected to show increased learning in the acute sample. The results of the comprehension tests however, show there was no difference in learning between the groups.

It may also be assumed that the increased proportion of multipara's in the acute sample would have lead to an increase in baseline knowledge in this group due to previous exposure to these education topics. However, the acute sample performance at pre-test (i.e baseline knowledge) although not statistically significant, was in fact marginally less than the outpatient sample.

Analysis of multiple choice questionnaire results (comprehension tests) illustrated both groups achieved significant within session and retention of learning (Table 10). In fact, the mean post-test scores were essentially identical (11.03 and 11.02), suggesting both groups had the same capacity to comprehend pelvic floor muscle information during the postnatal class. Considering the maximum attainable score on the questionnaire was 12, this is an excellent result and has important clinical significance as it illustrates the effectiveness of the information transfer process.

Retention of learning was also significant in that there was correlation between the post-test and follow-up scores as illustrated in Table 12. These results suggest that postnatal physiotherapy classes are an effective tool in educating new mothers' both initially and in the longer term.

Further analysis of the ANOVA results concluded that there was no significant difference between the groups at any of the test times. This does not support the initial hypothesis of the study, as it was expected the outpatient sample would learn and retain more information than

the acute inpatient sample. When considered in relation to the results of Study A, it follows that there would be no difference between groups as there is also no difference in desire to learn physiotherapy education topics at either time.

Interestingly, there was no statistically significant difference in test scores when analyzed against subjects' education levels. Those subjects who did not complete secondary school learnt the same amount within sessions and retained this knowledge as did those subjects with a higher degree. It was hypothesized that subjects with a higher degree may have an increased ability to learn and retain new information, simply because they may have more highly developed learning skills. This was not found to be the case in this study. This indicates the language used by the therapist in the education class is suitable for the full range of education levels found in our community, illustrated by good comprehension of information in a cross-section of postpartum women.

The authors hypothesized that increased comprehension of pelvic floor information would lead to increased compliance to a pelvic floor exercise program. However, results in Table 12 indicate there was no correlation between post-test or follow-up scores and compliance. This may be explained as increased education and knowledge of pelvic floor muscle information does not necessarily effect subjects' motivation, which is undoubtedly an important factor in attaining compliance.

There was a statistically significant difference ($p=0.003$) between the acute and outpatient sample when tested for equality of means with regard to compliance to the exercise regime. The acute sample was more compliant than the outpatient sample. This may be accounted for when the incontinence symptoms at pre-test are taken into consideration. Perhaps subjects' motivation to exercise was higher in the acute sample as this group had significantly greater incontinence symptoms initially. Perhaps the larger proportion of multipara mothers influenced compliance as these women may recognize the need for pelvic floor muscle exercises more readily than first time mothers.

The Health Belief Model, developed by Rosenstock (1966) is a useful tool when attempting to explain factors which influence compliance. It is one of the main models that has been developed to explain and predict compliance with various preventative health-related behaviors such as prophylactic dental care and breast self examination. It hypothesizes that behavior depends on two main variables 1) the value placed by an individual on a particular goal and 2) the individuals estimate of the likelihood that a given action will achieve that goal (Dolman & Chase, 1996). This model can be directly translated to this study, 1) the desire to avoid urinary incontinence and 2) the belief that pelvic floor exercises will prevent urinary incontinence Taking this model into consideration, the results of this study suggest that merely educating women regarding aspects of the pelvic floor muscles may not be enough to influence compliance to the exercise regime. Therefore based on this model, more time should be spent in physiotherapy postnatal classes aimed at enhancing compliance to the exercises, i.e establishing desire to avoid urinary incontinence and installing the belief that these exercises are effective.

Increased compliance to the exercise regime has been illustrated through increased intervention by the therapist and/or the program (Morkved & Bo 1996). The study by Morkved and Bo (1996) illustrated programs with increased intervention lead to improved compliance and a subsequent decrease in prevalence of incontinence. Low reported compliance in this study may be associated with the minimal intervention of the current program.

Due to the greater compliance to exercise reported in the acute sample, it might also be expected that the acute sample would have less incontinence symptoms at follow-up. However, results illustrated there was no difference in reported incontinence symptoms between the two sample groups at this time. This result strengthens the finding that pelvic floor exercises can be used as a treatment to decrease the incidence of incontinence, as the acute sample had significantly more reported symptoms at pre-test and therefore has improved continence status more that the outpatient group.

Conclusion

Postnatal physiotherapy classes are an effective tool in educating new mothers' about the pelvic floor muscles during both the acute inpatient stay and at greater than 6 weeks postpartum. Results for Study B illustrated significant within session learning in both sample groups and this knowledge was retained at two-month follow-up testing. There was no significant difference between the acute and outpatient sample when comprehension test results were compared, suggesting new mothers learn and retain an equal amount of information independent of the timing of their education class. These results are supported by results in Study A in that learning needs with regard to the physiotherapy education topics do not change over time.

The acute sample were significantly more compliant to the exercise regime when compared to the outpatient sample. This may be associated with, but cannot be entirely attributed to the timing of the education session, as demographic data was significantly different between samples with regard to previous incontinence symptoms and parity, which may have effected subjects' compliance.

As a result, it may be concluded that postnatal physiotherapy classes should be undertaken during the acute inpatient stay, as this will allow new mothers to be informed about the pelvic floor muscles at the earliest opportunity. However, due to the poor attendance rate at these inpatient classes, other strategies are required to ensure the majority of postpartum women receive education. This may be achieved through increased resources to recruit mothers to these classes.

In addition, this study has illustrated equally that women learn and retain information after six weeks postpartum. Therefore, the Maternal & Child Health Center classes may provide the opportunity for a greater proportion of new mothers to receive this important health information.

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Appendix 1

The following is a list of topics for which you may receive education from the maternity staff. Please rate how important you think the following topics are for you to learn about **NOW.**

Please rate the importance of each topic by circling a number from 1-5 (very important to not at all important)

Maternal Care	**Very Important**	**Somewhat Important**	**Neutral**	**Not Very Important**	**Not at all Important**
After birth Pains	1	2	3	4	5
Breast & Nipple Care	1	2	3	4	5
Vaginal Discharge (lochia)	1	2	3	4	5
Contraception	1	2	3	4	5
Pelvic Floor exercises	1	2	3	4	5
Post partum Fatigue	1	2	3	4	5
Stitches/care of the perineum	1	2	3	4	5
Abdominal exercises	1	2	3	4	5
Return to sex	1	2	3	4	5
Back care/Posture	1	2	3	4	5
Medications	1	2	3	4	5
Mood changes	1	2	3	4	5
Constipation	1	2	3	4	5

Infant Care	Very Important	Somewhat Important	Neutral	Not Very Important	Not at all Impotant
Feeding	1	2	3	4	5
Settling	1	2	3	4	5
Bathing/dressing	1	2	3	4	5
Cord care	1	2	3	4	5
Nappy Changing	1	2	3	4	5
Sterilising dummies/bottles	1	2	3	4	5
Introduction of solids	1	2	3	4	5
Child Development	1	2	3	4	5
Teething	1	2	3	4	5
Immunization	1	2	3	4	5
Childhood illnesses	1	2	3	4	5
Infant elimination patterns	1	2	3	4	5
Newborn jaundice	1	2	3	4	5
Well baby care	1	2	3	4	5
Infant safety	1	2	3	4	5
Other (please specify)	1	2	3	4	5

How much do the following factors impact on your ability to absorb new information at this present moment?

Influencing Factor	Large Impact	Some Impact	Neutral	Not a significant impact	No impact at all
Fatigue	1	2	3	4	5
Time restrictions	1	2	3	4	5
Increased distractions	1	2	3	4	5
Poor concentration	1	2	3	4	5
Emotionally overwhelmed	1	2	3	4	5

Appendix 2

The following is a multiple-choice questionnaire about different aspects of the pelvic floor muscles and their function. We ask you to follow the instructions for each question as you may be asked to tick one or two correct answers. This test is designed so that the Physiotherapist can get an indication of how effective their education is.

For Q1 and Q2, please choose ONE correct answer.

1) Where in the body is the pelvic floor muscle situated?

- ☐ Under the tummy muscles
- ☐ Within the buttock muscles
- ☐ Internally, between the pubic bone and the tail bone
- ☐ In the groin, where it squeezes your legs together

2) When you contract your pelvic floor muscle, you should feel:

- ☐ Your legs squeeze together
- ☐ Gentle lift inside & squeeze around vagina and anus
- ☐ Tummy pulling in
- ☐ Bottom cheeks clench together

In Q3 & Q4, please choose TWO correct answers

3) The Pelvic Floor has been weakened/affected by:

- ☐ Caesarian scar
- ☐ Weight of baby and uterus during pregnancy
- ☐ Epidural
- ☐ Breast feeding
- ☐ Vaginal delivery of baby's head
- ☐ Using pain medication during labour

4) The function of the Pelvic Floor is to:

- ☐ Support the bladder, uterus & bowel
- ☐ Assist uterus to return to normal size after delivery
- ☐ Keep your tummy flat & trim
- ☐ Maintain control of urine and bowel motions
- ☐ Hold pelvic bones together
- ☐ Support the lower back

For Q5-Q10, please choose ONE correct answer.

5) Women need to exercise their pelvic floor muscles to:

- ☐ Reduce their chance of leaking urine
- ☐ Get pre-pregnancy figure back
- ☐ Reduce their chance of falling pregnant again
- ☐ Lose weight

6) How long should you hold a contraction for?

- ☐ First day 2 seconds, adding 2 seconds every day
- ☐ 10 seconds
- ☐ 30seconds
- ☐ As long as you can, making sure you can feel a release when you let go.

7) How many contractions should you do in a row?

- ☐ 100 repetitions
- ☐ 3 repetitions
- ☐ Start with 3 repetitions & increase as your muscle strengthens
- ☐ Start with 10 repetitions adding 2 extra each day.

8) How many pelvic floor exercise sessions should you do each day?

☐ One ☐ Two

☐ Four ☐ Eight

9) Women should exercise their pelvic floor muscles

☐ Only during pregnancy

☐ For the rest of their lives

☐ After delivery until baby is three months old

☐ After delivery until baby is 3 years old

10) If a woman develops leakage of urine following birth of her baby she should:

☐ Ignore it – it will go away

☐ Pad up and accept it as a part of motherhood

☐ Do pelvic floor exercises.

☐ Start jogging/aerobics/sport.

For Q11 Please tick ONE OR MORE boxes

11) If you were to seek assistance with continence, who would **YOU** see?

☐ GP ☐ Maternal & Child Health nurse

☐ Continence clinic ☐ Maternity ward staff

☐ Physiotherapist ☐ Plumber

Appendix 3

Sample Demographics

Date: …….. Maternal Age:……..

ID Code:……. Age of baby in weeks:…….

Type of delivery:…….. Hospital:…….

Episiotomy/tear/forceps/vacuum? ……

Birthweight:……..

Other Children? (Please circle) Yes No

Age of children: …..……..

……..……

Highest education level completed:……

Have you experienced any involuntary urine of bowel loss before/during this pregnancy?
……

Have you received Physiotherapy treatment for involuntary urine or bowel loss before?
……

Did you attend prenatal classes? Yes No

Did you have a physiotherapist teach you about the pelvic floor muscles at these classes? (please circle)

Yes No

Your Postal Address: (**Do not include your name)**
…….
…….
…….
……..

Appendix 4

Consent Form

I, …….. of, ……
Hereby give consent to participate as a subject in the following research study which is being conducted by Ballarat Health Services, Physiotherapy Department.

Project Title:
Pelvic Floor Education for New Mothers: Timing the Message for Best effect.

Primary Investigator: Nicole Tweddle

I understand that the study involves measurement of my learning priorities on two occasions through my completion of a survey.
AND/OR
Completion of a multiple-choice questionnaire prior to and after a physiotherapy postnatal class, and a follow up survey two months later.

I acknowledge that:

1. I have received an adequate explanation of the possible risks and inconveniences that may arise from participation in this study.

2. I have received a copy and read fully the written information concerning the study, and any questions have been answered to my satisfaction.

3. I understand that all the information I provide will be identified by code only.

4. I understand that the information I provide will be kept on secured premises and will be available to the study investigator only except at my request or on my authorisation.

5. I understand that I am free to withdraw my consent at any time during the study and that the information which has been collected will not be used in this case.

Name of Participant (block letters)……..

Signature…… Date……

Name of Investigator (block letters)…….

Signature…… Date ……...