

# Early postnatal hospital discharge: the consequences of reducing length of stay for women and newborns\*

ALTA PÓS-PARTO PRECOCE: AS CONSEQUÊNCIAS DA REDUÇÃO DO TEMPO DE HOSPITALIZAÇÃO PARA MULHERES E RECÉM-NASCIDOS

ALTA POSTPARTO PRECOZ: LAS CONSECUENCIAS DE LA REDUCCIÓN DEL TIEMPO DE HOSPITALIZACIÓN PARA MUJERES Y RECIÉN NACIDOS

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## ABSTRACT

The objective of this study is to examine the literature and identify most salient outcomes of early postnatal discharge for women, newborns and the health system. An electronic search strategy was designed including the following sources: Web of Science, Scopus, ProQuest and PubMed/MEDLINE, using the following terms: (early AND discharge) OR (length AND stay) AND (postpartum OR postnatal) AND (effect\* OR result OR outcome). Content analysis was used to identify and summarise the findings and methods of the research papers. The evidence available is not enough to either reject or support the practice of early postnatal discharge; different studies have reported different outcomes for women and newborns. The need of systematic clinical research is discussed.

## DESCRIPTORS

Patient discharge  
Postpartum period  
Women. Infant, newborn  
Outcome assessment

## RESUMO

O objetivo deste estudo é examinar a literatura e identificar os resultados mais relevantes da alta precoce pós-parto para as mulheres, recém-nascidos e o sistema de saúde. Uma estratégia de busca eletrônica foi projetada, incluindo as seguintes fontes: Web of Science, Scopus, ProQuest e PubMed/MEDLINE utilizando-se os seguintes termos: (precoce e alta hospitalar), ou (duração e permanência) e (pós-parto ou pós-natal) e (efeito de resultado ou \* ou resultado). A análise de conteúdo foi utilizada para identificar e sintetizar os resultados e os métodos dos trabalhos de investigação. A evidência disponível não é suficiente para rejeitar ou apoiar a prática da alta precoce no pós-parto porque os estudos apresentaram resultados diferentes para as mulheres e os recém-nascidos. A necessidade de realizar estudos clínicos, de forma sistemática, é discutida.

## DESCRITORES

Alta do paciente  
Período pós-parto  
Mulheres  
Recém-nascido  
Avaliação de resultados

## RESUMEN

Este estudio objetivó examinar la literatura e identificar los resultados más relevantes del alta precoz postparto para las mujeres, recién nacidos y el sistema de salud. Una estrategia de búsqueda electrónica fue proyectada, incluyendo las siguientes fuentes: Web of Science, Scopus, ProQuest y PubMed/MEDLINE utilizando los siguientes términos: (precoz y alta hospitalaria), o (duración y permanencia) y (postparto o postnatal) y (efecto de resultado o resultado). El análisis de contenido fue utilizado para identificar y sintetizar los resultados y los métodos de los trabajos de investigación. La evidencia disponible no es suficiente para rechazar o apoyar la práctica del alta precoz en el postparto porque los estudios presentaron resultados diferentes para las mujeres y los recién nacidos. La necesidad de realizar estudios clínicos, de forma sistemática, es discutida.

## DESCRIPTORES

Alta del paciente  
Periodo de posparto  
Mujeres  
Recién nacido  
Evaluación de resultado

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## INTRODUCTION

Postnatal hospital stay has two main objectives; the first, to identify any complication for both mother and newborn and the second, to provide the necessary support to the new mother for her return home<sup>(1)</sup>. During the last 60 years there has been a worldwide tendency to reduce the length of time women stay in the hospital after giving birth. In 1992, the American Academy of Pediatrics and the American College of Obstetricians and Gynecologists defined early postnatal discharge (ED) as a stay of less than 48hrs for women who had vaginal deliveries and less than 96hrs those who had cesarean sections<sup>(2)</sup>. The two main reasons for this change in the service provided are to improve women's satisfaction during this period and to reduce the cost to the health system<sup>(3)</sup>.

Despite the efforts of several researchers around the world systematically assessing and evaluating the effects of this new service on women and newborns<sup>(1,4-9)</sup>, there is still uncertainty about what the pros and cons of the shorter hospital postnatal stay are. In the context of a pioneer Chilean project which aims to develop an innovative modality of childbirth, including a reduction in the length of postnatal stay, we aimed to review the literature available and to examine the advantages and disadvantages of early postnatal discharge for both the healthy mother and child and the consequent repercussions for the health system which should be considered when proposing a reduction in the length of stay after childbirth.

## METHOD

A search strategy was designed to identify publications which described outcomes of early postnatal discharge for both healthy women and newborns and the health services. The search strategy included electronic searches of the fol-

lowing sources: Web of Science, Scopus, ProQuest and PubMed/MEDLINE. The following terms were used: (early AND discharge) OR (length AND stay) AND (postpartum OR postnatal) AND (effect\* OR result OR outcome). All languages were included; using articles from 2000 to 2010. The search was conducted from January to March 2010. Articles were included if they described the effects of early postnatal discharge on healthy women and newborns and health system implications. All types of research methodology were considered eligible. Literature review articles were excluded, however their references were assessed. All titles available were first evaluated for relevance by one author (PB); in a second step, article abstracts were scrutinized to assess suitability for inclusion, according to the aim of this review. Included articles were studied for relevance and content. Data was extracted under the following headings: research identification (authors, year of publication, country of study sample, and study population), research methods and the principal findings. The data for analysis were the study methods, findings and conclusions. Following a content analysis method, the authors analyzed these data to identify the consistent and most salient codes, explanations and relationships throughout the studies.

## RESULTS

A total of 340 citations were retrieved, and 289 articles were removed after title scanning. Fifty one abstracts were read and, after assessment, 36 full articles were subjected to detailed assessment. Twenty one of these 36 were removed because of lack of relevance or due to not being first author articles. This review finally included 15 articles for full data extraction and analysis. All the included studies used quantitative methods; five out of the 15 were randomized controlled trials. All the studies included low risk pregnant women and/or their healthy child for analysis purposes. Detailed descriptions are given in Table 1.

**Table 1** - Summary of the studies which described outcomes of a short postpartum hospital stay

Author	Sample and Study location	Year	Purpose	Methodology	Main results
Boulvain <sup>(4)</sup>	459 low risk pregnant Swiss women	2004	To compare a reduced hospital stay supplemented with home visits with hospital-based postnatal care	Quantitative, randomized controlled trial, correlation	No significant differences in total duration of breastfeeding, maternal morbidity and infant readmission
Brown <sup>(14)</sup>	Recent mothers in Victoria – Australia (1994, 1998 and 2000)	2004	To assess the impact of a shorter stay on breastfeeding and maternal wellbeing	Quantitative, questionnaire, multivariate	Breastfeeding initiation was not significantly associated with the length of stay. Women who left the hospital within 48hrs were more likely to be depressed at 5-6 months postpartum than women who left after 5 days
Danielsen <sup>(12)</sup>	Healthy newborn Californian population (1992-1995)	2000	To assess the impact of discharge on the day of birth (very early discharge) on the risk of neonatal morbidity	Quantitative, medical records, correlation	There was no significant difference in the prevalence of jaundice between VED and ED newborns. VED children were more likely to be readmitted with jaundice and dehydration

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Author	Sample and Study location	Year	Purpose	Methodology	Main results
Gözüm <sup>(15)</sup>	112 recent Turkish mothers	2005	To determine the women's problems after an early postnatal discharge	Quantitative, structured interview, descriptive	The most salient problems experienced for early discharged women were fatigue, constipation, insomnia and breast problems. Nearly 42% of the women used health services due to their problems
Gupta <sup>(16)</sup>	1134 healthy Indian newborns	2006	To assess the frequency and causes of rehospitalization following ED	Quantitative, multivariate	In ED newborns the conditions likely to result in rehospitalization were jaundice, dehydration and feeding problems
Heck <sup>(17)</sup>	10,519 recent Californian mothers	2003	To examine the association between length of postpartum stay and breastfeeding cessation	Quantitative, survey, correlation	The length of stay (less than 1 night and more than 3 nights) was a significant predictor of breastfeeding cessation
Jackson <sup>(10)</sup>	7,021 American newborns from low risk pregnancies	2000	To study the frequency, time of identification and types of problems of the newborns in order to evaluate the feasibility of ED	Quantitative, datasheet, prospective	8% of the infants delivered from low-risk pregnancies developed medical problems. The majority of newborn complications were identified between 5 and 24hrs postnatal
Madden <sup>(18)</sup>	20,366 American mother-child pairs	2003	To evaluate the effects of a ED program on breastfeeding rates	Quantitative, medical records, correlation	The length of stay had no effect on breastfeeding
Malkin <sup>(13)</sup>	Records of American newborns (1989-1990)	2000	To assess the risk of newborn mortality associated to ED (less than 24hrs)	Quantitative, medical records, regression	There was a significant positive association between ED and newborn mortality
McKeever <sup>(5)</sup>	101 Canadian mother-newborn pairs	2002	To compare the effects of routine hospital care and discharge with the effects of routine hospital care plus ED and domicile care support	Quantitative, randomized controlled trial, correlation	ED women presented significant higher rates of breastfeeding. Most of the women were satisfied with their care
Petrou <sup>(6)</sup>	459 Swiss pregnant women without complications	2004	To compare the cost effectiveness of ED and home midwifery support with a traditional postnatal hospital stay	Quantitative, randomized controlled trial, correlation	No significant difference between the groups in clinical and psychosocial outcomes. The proposed service was significantly cheaper
Saiz-Bueno <sup>(11)</sup>	430 Spanish pregnant women	2005	To evaluate the advantages and disadvantages of an ED program with domiciliary follow-up compared with traditional postpartum care	Quantitative, randomized controlled trial, correlation	No significant differences in maternal and neonatal pathology. Breastfeeding was higher at 3 months for the ED group. Most of the women were satisfied with the ED care
Waldenström <sup>(19)</sup>	3,293 Swedish pregnant women	2004	To investigate the association between length of stay and duration of breastfeeding and breastfeeding problems	Quantitative, questionnaire, multivariate	Early discharged women were more satisfied with the initiation of breastfeeding. There was no association between length of stay and breastfeeding problems or duration
Wall <sup>(11)</sup>	1442 American newborns	2003	To examine the impact of ED on newborn metabolic screening	Quantitative, medical records, descriptive	Newborn metabolic screening was not affected by the length of stay
Winterburn <sup>(7)</sup>	255 British Pregnant women	2000	To examine the effects of length of stay on breastfeeding rates at one month postpartum	Quantitative, randomized controlled trial, correlation	No significant difference on breastfeeding rates between early and late discharge

### The effects of ED on infants

One of the major concerns about the ED program concerns the safety of newborns. Almost 50% of the included articles reported findings regarding this topic. A prospective observational study<sup>(10)</sup> which aimed to identify and characterize the main problems of neonates, noted that only 8% of the newborns delivered from low-risk pregnan-

cies developed a medical problem. The most common problems were tachypnea, temperature instability and cyanotic episodes. The majority of these problems (68%) were identified between 5 and 24hrs postpartum, 26% between 24 and 48hrs and only 6% after 48hrs. In terms of the effect of the length of stay on the newborn metabolic screening, research conducted in USA showed that the ED program does not affect the screening<sup>(11)</sup>.

Although there is no conclusive evidence that proves infants discharged early have an increased risk of morbidity<sup>(1)</sup>, in 2000 a medical records analysis suggested that children who were discharged on the day of birth are more likely to be re-hospitalized with jaundice ( $p=0.01$ ), however no difference was described in the prevalence of jaundice; also dehydration was higher in ED newborns ( $p=0.01$ ) compared with those who were discharged later<sup>(12)</sup>. Furthermore, one study<sup>(4)</sup> noted that infants who were discharged early were more likely to be readmitted during the first six months postnatal compared with newborns discharged later ( $p=0.004$ ), nevertheless, the rate of neonate rehospitalization during the first month postpartum was not significantly different among the groups. A retrospective study, which included the medical records of American infants<sup>(13)</sup>, found a significant positive association between a postpartum discharge within 24hrs and newborn mortality at 28 days of birth (OR 3.65, 95% CI 1.56, 8.54). However, the authors did not mention whether or not the infants received follow-up care after discharge.

One study in India<sup>(16)</sup>, with 861 early discharged infants, showed that 8.3% of them needed to be readmitted, with the three most common conditions being jaundice, dehydration or feeding difficulties, however no significant difference was found when comparing with those discharged later.

### **The effects of ED on breastfeeding**

Breastfeeding has been recognized as a key factor to ensure the health and nutrition for newborns<sup>(20)</sup>, therefore the potential impact of the ED program on this was studied in 60% of the included articles. In a randomized controlled trial undertaken in Switzerland, which aimed to compare a reduced hospital stay supplemented with home visits and hospital-based postnatal care<sup>(4)</sup>, no significant difference between the groups was found when assessing breastfeeding initiation and duration. These results concur with the medical record analysis carried out in the USA<sup>(18)</sup>. In terms of satisfaction with breastfeeding initiation one study<sup>(19)</sup> noted that women discharged early were significantly more satisfied ( $p=0.05$ ). In an experimental study which compared the effects of routine hospital care with an ED program including home-based follow-up care, in a Canadian population<sup>(5)</sup>, the group discharged early presented higher rates of exclusive breastfeeding compared with the routine discharged group over the 12 days of postnatal follow-up ( $p=0.01$ ); similar results were reported in a Spanish study<sup>(1)</sup>, adding that women discharged early had significantly higher rates of breastfeeding at 3 months postpartum ( $p=0.001$ ). In a randomized controlled trial which aimed to examine the effects of postnatal stay on rates of breastfeeding at 1 month<sup>(7)</sup>, there was no significant difference between the early and late discharge groups.

A study conducted in Australia<sup>(14)</sup>, which assessed the impact of ED on recent mothers at three time points, concluded that there was no association between the length of postpartum stay and breastfeeding initiation; this concurred with a Swedish study, where no association was

found between early discharge and problems with breastfeeding and duration<sup>(19)</sup>. Conversely, one study<sup>(17)</sup> with 10,519 American women found that there was an association between time of discharge and breastfeeding cessation; women who were discharged within the first day and after 3 or more days were more likely to stop breastfeeding (relative risk 1.11 and 1.30, respectively), however the reasons remained unclear.

### **The effects of ED on new mothers**

Another focus of concern regarding the results of an ED program is women's health; 7 out of the 15 included publications investigated this aspect. One study<sup>(15)</sup> evidenced the four most prevalent problems for women after ED: almost 90% reported fatigue, 80% insomnia, 71% mentioned breast problems (pain, engorged breast and tenderness) and 61% constipation. Of the women with problems, 42% attended health services seeking help. However, regarding hospital readmission, there was no difference between those discharged earlier or later<sup>(1,4)</sup>. Additionally, women who were discharged within 48hrs after delivery were significantly more likely to be depressed at 5-6 months postpartum<sup>(14)</sup>. This finding does not concur with the results reported by two European randomized controlled trials, where no significant differences were found between early discharged and late discharged women<sup>(1,4)</sup>.

A Spanish study<sup>(1)</sup> concluded that women who were discharged early were more satisfied with the service than those who were in the traditional stay program (90% vs. 61% respectively). Similar results were reported by 97% of the ED Canadian women with home-based follow-up care, who were satisfied with the service and identified as benefits the comfort and privacy of being at home sooner and the return to normal family routines. However, 60% considered a longer stay necessary for primiparous mothers who felt unprepared and afraid to return home<sup>(5)</sup>.

### **The effects of ED on the health system**

The consequences of the ED policy for the health system were described by a few articles. One of the most relevant issues for health management is the cost associated with this shorter length of postnatal stay. During a randomized controlled trial which compared standard discharge with early discharge plus home-based follow-up, the costs of the new, shorter hospitalization were significantly lower without compromising the clinical outcomes of the woman and newborn<sup>(6)</sup>. Similar findings were described when a new early discharge program (less than 24hrs) with domiciliary follow-up was tested in a Spanish population; in this study the costs were reduced by up to 20%<sup>(1)</sup>.

## **DISCUSSION**

This literature review shows that the evidence available is insufficient to either reject or support the practice of early

postnatal discharge. Similar findings have been reported in previous reviews<sup>(3,21-22)</sup>. While consensus has not been reached, a review of the Britain National Institute for Health and Clinical Excellence guidelines, suggested that the ideal postnatal management should incorporate an early discharge policy with very well established community follow-up care<sup>(23)</sup>. One difficulty when synthesizing the available research was that early postnatal discharge has not been consensually practiced. Although the American Academy of Pediatrics in 1992 defined early postnatal discharge as a stay of less than 48hrs for vaginal deliveries and less than 96hrs for caesarean sections<sup>(2)</sup>, different definitions were found throughout the included studies, some authors considered ED specifically as the first 24hrs after delivery, others were more diverse, including stays as long as 48hrs. Secondly, in terms of care policies after discharge, the studies showed different follow-up services, with some dyads receiving programmed domicile-based care and some hospital-based care, while some studies did not describe the type of service available; this might have some effects when comparing the postnatal outcomes. Future research should

attempt to describe the effects of the early postnatal discharge policy on different follow-up settings, both domicile and hospital-based. This could help to understand whether the outcomes currently associated with ED could be controlled when professional support is offered after discharge. Regarding clinical implications, it seems necessary to state what would be considered early discharge and how the dyad will be supported after leaving the hospital. It is also believed that all pediatricians, nurse-midwives and obstetricians should continue working in a collaborative way in order to evaluate when the woman and newborn dyad can be discharged early, in order to avoid any undesirable outcome, always taking into consideration the perspectives of the women and their preferences.

## CONCLUSION

The evidence available is not enough to either reject or support the practice of early postnatal discharge; different studies have reported different outcomes for women and newborns. The need of systematic clinical research is discussed.

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