

Changes in Women's Physical Health During the First Postpartum Year

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Objective: To examine changes in women's physical health during the first postpartum year.

Design: Participants completed surveys at 1, 3, 6, 9, and 12 months post partum.

Participants and Setting: Four hundred thirty-six first-time mothers who gave birth at one of two St Paul, Minn, hospitals during a 12-month period and who met the criteria for the study.

Main Outcome Measures: Physical symptoms and number of illness days experienced within the previous 2 weeks.

Results: Physical problems seen at a higher prevalence at 1 month post partum included breast symptoms, vaginal discomfort, fatigue, hemorrhoids, poor appetite, constipa-

tion, increased sweating, acne, hand numbness or tingling, dizziness, hot flashes, and illness days. Several of these disorders—hemorrhoids, dizziness, fatigue, and constipation—persisted beyond 1 month and were joined by other “late” problems, including respiratory symptoms, sexual concerns, and hair loss. Women who returned to the work force noted more symptoms of respiratory infections, and women with vaginal deliveries had a higher prevalence of hemorrhoids, vaginal discomfort, pain with intercourse, difficulty reaching orgasm, sinus problems, and acne.

Conclusions: Recovery from childbirth often requires more than the 6 weeks traditionally allotted, and postpartum health appears to be affected by delivery type and work status.

(*Arch Fam Med.* 1993;2:277-283)

THE POSTPARTUM period or puerperium has traditionally been described as the time after delivery that is required for the reproductive organs to return to their nonpregnant state, a process that has been thought to require about 6 weeks.^{1,2} In practice, this is often viewed as a relatively uneventful course that requires little assistance from health care providers, as demonstrated by the single postpartum visit typically recommended several weeks after delivery. Additional nurse or physician contacts made during this period are often for the purpose of monitoring the infant's rather than the mother's well-being.

A closer look at the postpartum period reveals that, for many women, recovery from childbirth is not always so simple. The majority of women probably contend with several minor to moderate discomforts for weeks, and some face more

serious problems that may limit important daily functions for some time. Two separate studies of postpartum women found that more than half expressed concerns about emotional tension, fatigue, sexual function, and relationships with their husbands at 4 weeks post partum. Additional symptoms were reported by a substantial number of women, including breast soreness (40% to 48%), discomfort from stitches (37% to 53%), lochia (35% to 40%), constipation (32% to 50%), and hemorrhoids (28% to 48%).^{3,4}

More serious physical problems that may affect mothers after their discharge from the hospital include thyroiditis (4.9% to

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SUBJECTS AND METHODS

STUDY PARTICIPANTS

Participants included women who were delivered of their first child at one of two St Paul, Minn, hospitals from January 1, 1989, through December 31, 1989, and who met the following inclusion criteria: married, primiparous, having no other children in the household, and either currently employed or employed at some time during pregnancy. Hospital 1 was located in a suburban community and served a primarily white, middle- to upper-income population, while hospital 2 was situated in the inner city and served a diverse cultural and socioeconomic group. A full-time nurse at each hospital visited primiparas who gave birth during this period to determine their eligibility for the study and their willingness to participate; the eligibility status of 68 primiparas remains unknown because they were discharged before being seen by the nurse.

Of 4463 deliveries during the study period, 557 English-speaking women were found to qualify for the study, and of these, 34 (6.1%) refused to participate, leaving 523 participants. To control for race and other variables that might affect outcome, 31 additional women were subsequently dropped from the study: nine nonwhites (thus excluding all nonwhites), four women who were delivered of twins, 16 who became pregnant again during the course of the study, and two who were participating in another similar study. The number of women in each of these excluded groups was thought to be too small to allow meaningful analysis of the contri-

bution of such factors to outcomes. Of the remaining 492 participants, 56 (11.4%) did not complete all of the five phases of this longitudinal study, leaving 436 women for analysis.

PROCEDURE

All women who qualified for the study and initially agreed to participate completed a brief enrollment form within a couple days after delivery of their newborn, usually during their hospital stay. Participating mothers were subsequently mailed questionnaires approximately 1 week before the expected completion times of 1, 3, 6, 9, and 12 months post partum. Women who did not return their questionnaires within 2 weeks were recontacted, up to three or four times if necessary.

QUESTIONNAIRES

The initial form requested information about the participant's age, delivery date, hospital site, delivery type (vaginal or cesarean section), level of education, annual family income, race, general health before pregnancy (scored on a scale of 1 [poor] to 5 [excellent]), number of physician visits, and number of days of reduced activity due to illness during the year before pregnancy. These demographic and baseline health measures were used to compare the following paired groups of women: women from hospital 1 vs hospital 2, women who underwent cesarean section vs vaginal delivery, and women who dropped out of the study vs those who remained in the study.

The follow-up questionnaires contained several measures that were repeated from 1 to 12 months post partum.

10%),^{5,6} mastitis or breast abscess (1% to 9% of lactating women),⁷ carpal tunnel syndrome (approximately 3%),⁸ late postpartum hemorrhage,⁹ de Quervain's tenosynovitis,¹⁰ and urinary incontinence.

Furthermore, many postpartum problems do not resolve within the 6-week period traditionally allotted for postpartum recovery. A study that surveyed 72 first-time biological mothers, 108 adoptive mothers, and 133 controls 6 weeks after delivery or adoption (or for controls, 6 weeks after a routine Papanicolaou smear) found that biological mothers had more breast complaints (15.3% vs 4.6% and 4.5% for biological mothers, adoptive mothers, and controls, respectively), genitourinary symptoms (56.9% vs 25.9% and 40.6%), and fatigue (36.1% vs 25.9% and 17.3%).¹¹ These findings suggest that many of the postpartum problems experienced by mothers as long as several weeks after delivery are due to the physical process of childbirth as opposed to the demands of caring for an infant.

Even by 6 months post partum, some women do not feel completely recovered from childbirth. In the study by Tulman and Fawcett¹² of 96 mothers of healthy, full-

term infants 6 months after delivery, 25% of women said they did not feel physically recovered from childbirth and reported problems with fatigue, lack of sleep, difficulty losing weight, increased responsibilities, and emotional lability. Prolonged labor and cesarean deliveries were the most frequently cited hindrances to recovery.¹²

Other problems that may affect mothers for months after delivery include thyroiditis and sexual difficulties. Sexual concerns in particular were quite common. Two studies found that a majority of women surveyed at 3 and 4 months post partum still complained of dyspareunia (usually related to recent episiotomies)^{13,14}; for some women, this problem continued for 1 year or longer.¹⁴ This may at least partially explain the persistent reductions in sexual activity reported by many women at 1 year post partum.^{14,15}

This discussion of postpartum health focuses primarily on physical rather than mental disorders because, comparatively speaking, women's postpartum physical problems and their change over time have been all but ignored. This study was conducted to determine the frequencies of several physical symptoms at five intervals

Physical Symptoms

Women were asked to designate which of 76 symptoms or physical problems they had experienced within the previous 2 weeks, and responses were scored as 0 (absent) or 1 (present). These problems represented several organ systems of the body, including the musculoskeletal system, cardiovascular and respiratory systems, gastrointestinal and genitourinary systems, endocrine glands, and skin, hair, breasts, head, eyes, ears, nose, and throat. Miscellaneous symptoms included fever, undesirable changes in weight, and fatigue. These questions about physical symptoms had been previously tested in a pilot study on postpartum health.¹¹

Illness Days

Women were asked to indicate how many days within the previous 2 weeks they had reduced their activities because of health problems or low energy, and how many days within the same period they had felt sick but continued their activities as usual. These two answers were summed to create the number of "illness days."

Breast-feeding

Women were asked to indicate whether they were breast-feeding, and responses were scored as 1 (yes) or 2 (no).

Work Status

Participants were asked whether they had returned to the work force, were on leave, or were unemployed, and responses were scored as 1, 0, and 0, respectively.

ANALYSIS

Analyses that were conducted included the following:

1. Analysis of covariance across time was performed for illness days, using the hospital and delivery type (vaginal and cesarean section) as covariates.

2. Logit models and χ^2 tests for four-way tables were used to examine differences in physical symptoms by time, hospital, and delivery type. Pairwise comparisons between different times were made with a type I error probability of .01 for each comparison, yielding at least one type I error at $P \leq .10$ by the Bonferroni method. Four-way tables were also used to investigate the relationship of hand numbness to breast-feeding (using feeding method, time, and hospital as independent variables), as well as the relationship of respiratory symptoms to current work at a job outside the home (using job status, time, and hospital as independent variables).

3. χ^2 tests were conducted to detect differences in cesarean section rates between the two hospitals and differences in breast symptoms between the 269 mothers who were nursing and the 167 who were not at 1 month post partum.

4. Student's *t* tests were performed to compare the 436 women who completed all phases of the study and the 56 who did not, the 301 women from hospital 1 and the 135 from hospital 2, and the 78 women who underwent cesarean section delivery and the 358 who underwent vaginal delivery. These intergroup comparisons were made regarding age, level of education, annual family income, general health status before pregnancy, number of physician visits, and number of days of reduced activity due to illness during the year before pregnancy.

during the first postpartum year, and the relationship of symptoms to delivery type.

RESULTS

Demographic and general health characteristics of the participants are shown in **Table 1**. There were no significant differences in these characteristics between women from the two hospitals, or between women who underwent cesarean and vaginal deliveries. However, when the 436 women who completed all phases of the study were compared with the 56 women who were disqualified after failing to complete one or more questionnaires, the participants were found to be slightly older (mean, 28.2 vs 26.3 years; *t*, 3.0; $P < .01$), and to have a higher level of education (mean, 5.3 vs 4.9; *t*, 3.37; $P < .01$, where 5 indicated some post-high school education and 6, a 4-year college degree) and family income (mean, \$40 000 vs \$35 000; *t*, 2.91; $P < .01$). These differences, while statistically significant, are not large. There were no reported differences between these two groups on delivery type (cesarean section or vaginal delivery), perceived general

health, number of physician visits, or number of days of reduced activity due to illness in the year before pregnancy. The mean (\pm SD) return times for the questionnaires at 1, 3, 6, 9, and 12 months post partum, respectively, were as follows: 27.7 \pm 14.4 days, 90.0 \pm 10.1 days, 181.0 \pm 11.8 days, 273.4 \pm 17.5 days, and 365.8 \pm 13.7 days.

PROBLEMS AT 1 MONTH POST PARTUM

Several symptoms were found to be more prevalent at 1 month post partum than at subsequent times, as shown in **Figures 1 and 2**. At 1 month, nearly half of the women still complained of breast problems, which consisted of breast discomfort, infection, and nipple irritation. Furthermore, breast symptoms were more common for the 269 (61.7%) women who were breast-feeding than for those who were not. Breast discomfort was reported by 45% of breast-feeding women compared with 28% of non-breast-feeding women at 1 month post partum (χ^2 , 14.1; $P < .001$), and nipple irritation by 40% of breast-feeding vs 6% of non-breast-feeding mothers (χ^2 , 71.1; $P < .001$). Although breast symptoms were significantly reduced by

Table 1. Characteristics of Study Participants (n=436)*

Age, y	28.2±4.0
Family income†	5.0±1.7
Education‡	5.3±0.8
General health before pregnancy§	4.3±0.7
Reduced activity days in the year before pregnancy	4.3±4.9
No. of physician visits in the year before pregnancy	2.8±4.0
Cesarean section, No. (%)	78 (17.9)

*Data are expressed as mean±SD, except where noted.

†Annual family income was scored on a scale of 1 to 8, where 1 indicates <\$10 000; 2, \$10 000 to \$19 999; 3, \$20 000 to 29 999; 4, \$30 000 to \$39 999; 5, \$40 000 to \$49 999; 6, \$50 000 to \$59 999; 7, \$60 000 to \$69 999; and 8, ≥\$70 000.

‡Highest level of education was scored on a scale of 1 to 7, where 1 indicates sixth grade or less; 2, seventh to ninth grade; 3, 10th to 11th grade; 4, high school diploma; 5, some post-high school education; 6, 4-year college degree; and 7, master's degree or more.

§Perceived general health before pregnancy was scored on a scale of 1 to 5, where 1 indicates poor; 3, good; and 5, excellent.

the third month, the frequency of symptoms at this time was more than twice that of the 6-month and 9-month periods.

Other problems that were increased at 1 month post partum included fatigue, hemorrhoids, poor appetite, constipation, increased sweating, acne, hand numbness or tingling, dizziness, and hot flashes. The presence of hand numbness was not found to be associated with breastfeeding. Perhaps related to the occurrence of these early symptoms, mothers' reported illness days were also greatest in the early postpartum period, with an average of 3.9, 1.6, 1.9, 1.7, and 1.7 illness days over a 2-week period at 1, 3, 6, 9, and 12 months post partum, respectively ($P<.01$).

Several early-onset symptoms persisted beyond the 1-month interval. Using later frequencies as baselines, breast symptoms, hemorrhoids, fatigue, and dizziness continued at higher rates for at least 3 months, and constipation and vaginal discomfort for 9 months.

PROBLEMS APPEARING IN THE LATER POSTPARTUM PERIOD

Three groups of problems had their peak frequencies after the first postpartum month: respiratory symptoms, sexual symptoms, and hair loss (**Figure 3**). Symptoms commonly associated with respiratory infections—rhinorrhea, cold, cough, sinus trouble, earache or infection, pneumonia, respiratory influenza, bronchitis, tonsillitis, laryngitis, and other sore throats—were also seen to increase at 3 months post partum, as shown in Figure 3. In fact, the percentage of women with at least one respiratory symptom rose from 25% at 1 month to 42% at 3 months post partum, and remained greater than 40% for the rest of the year. Furthermore, these symptoms were found to be more frequent for women who returned to

the work force than for those who remained at home. From 3 to 12 months post partum, 46% to 50% of women who had returned to the work force and 27% to 39% of women who stayed at home noted respiratory symptoms.

The group of symptoms related specifically to sexual activity—discomfort with intercourse, decreased desire, and difficulty reaching orgasm—peaked at 3 months post partum, with 40% of women having at least one of these three complaints. Even 1 year after delivery, one fifth of women continued to have problems related to sexual function.

The incidence of hair loss gradually increased from 2% at 1 month post partum to 20% at 6 months, and then declined over the next 6 months.

EFFECT OF DELIVERY TYPE ON POSTPARTUM PROBLEMS

Of the problems observed, several were found to be related to delivery type, as noted in **Table 2**. The prevalence of hemorrhoids, acne, vaginal discomfort, discomfort with intercourse, difficulty reaching orgasm, and sinus problems were reported to be higher for women with vaginal deliveries than for those with cesarean sections. These differences are all significant at $P<.01$, except for sinus problems, which are only significant at $P<.05$ and may therefore be due to random variability. These differences by delivery type were seen to continue through 6 months for vaginal discomfort, discomfort with intercourse, and sinus trouble, and through 12 months for hemorrhoids, acne, and difficulty reaching orgasm.

EFFECT OF HOSPITAL ON POSTPARTUM SYMPTOMS

The hospital at which the women delivered had a significant relationship ($P<.05$) to certain postpartum outcomes, as determined by analysis of covariance (with hos-

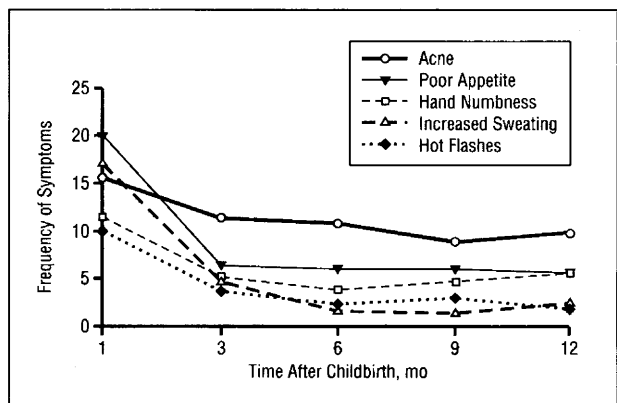


Figure 1. Symptoms that occurred with the highest frequency at 1 month post partum and with baseline frequencies thereafter. Significant differences across time ($P<.01$) were determined by four-way tables using logit models and χ^2 tests, and showed the frequencies at 1 month to be greater than at subsequent times for each symptom except acne, where the 1-month frequency was greater than the 9-month and 12-month frequencies.

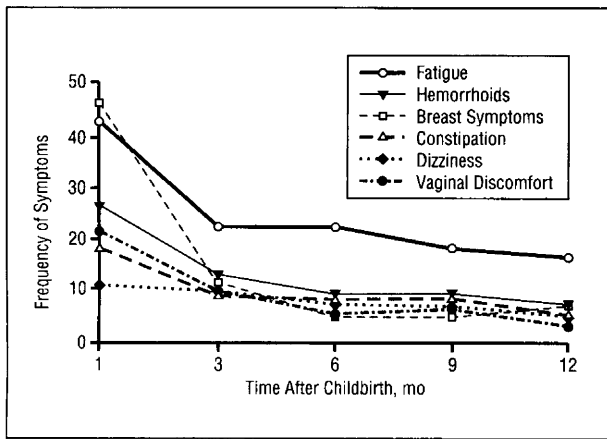


Figure 2. Symptoms that occurred with a high frequency at 1 month post partum, and remained somewhat elevated for 3 or more months. Significant differences across time ($P < .01$) were determined by four-way tables using logit models and χ^2 tests, and were as follows: for breast symptoms, 1 vs 3, 6, 9, and 12 months, and 3 vs 6 and 9 months; for fatigue, 1 vs 3, 6, 9, and 12 months, and 3 vs 12 months; for hemorrhoids, 1 vs 3, 6, 9, and 12 months, and 3 vs 12 months; for vaginal discomfort, 1 vs 3, 6, 9, and 12 months, 3 vs 6 and 12 months, and 6 and 9 vs 12 months; for constipation, 1 vs 3, 6, 9, and 12 months, and 3, 6, and 9 months vs 12 months; and for dizziness, 1 and 3 vs 12 months.

pital and delivery type as covariates). Women who had delivered at hospital 1 complained more of poor appetite, acne, discomfort with intercourse, and respiratory symptoms, while women affiliated with hospital 2 had more problems with nipple irritation (this finding might be explained by the higher percentage of breast-feeding women at hospital 2).

COMMENT

The results of this study provide important information about the variety of postpartum symptoms experienced by new mothers, the duration of symptoms, and the relationship of symptoms to delivery type and work status. Several of our findings confirm those of previous studies. At 1 month after delivery of their newborn, many women complain about breast and vaginal discomfort, hemorrhoids, and constipation^{3,4}; complaints about fatigue and sexual symptoms may persist for several months after delivery¹²⁻¹⁵; and symptoms of carpal tunnel syndrome—hand numbness or tingling—occur in a minority of women.^{8,16}

Several of our findings also provide information not commonly noted in the postpartum literature. In addition to symptoms of breast or perineum, hemorrhoids, constipation, hand numbness, and fatigue, other problems that appeared with increased frequency in the early postpartum period were poor appetite, increased sweating, acne, dizziness, and hot flashes. Furthermore, when 9-month or 12-month frequencies were used as a baseline (this may not be a true baseline, but it is the best we have here), frequencies of several symptoms remained elevated beyond the 1-month interval: hemorrhoids, fatigue, breast symptoms, and dizziness (up to 3 months),

and constipation and vaginal discomfort (up to 9 months). The physiologic basis of these problems is not completely understood; however, it is likely that some—eg, vaginal discomfort and hemorrhoids—were due to the physical process of childbirth, and others such as breast discomfort, acne, and hot flashes were related to hormonal changes following delivery. Furthermore, some of the observed postpartum problems may be aggravated, if not caused, by the stresses of caring for a newborn.

Although some investigators believe that carpal tunnel syndrome in the postpartum period was seen primarily in lactating women,^{16,17} this study showed no relationship between hand numbness—a symptom commonly seen in carpal tunnel syndrome—and breast-feeding.

Additional new findings include the appearance of “late” symptoms such as women’s sexual concerns. It is likely that the increase in sexual symptoms from 1 to 3 months was related to an increase in sexual activity, and consequently an increased perception of problems that may have been present at 1 month. Sexual symptoms appeared to be greatest at 3 months; however, they continued to produce concern for nearly 20% of women even at 1 year post partum. We do not have data about symptoms before pregnancy, so the true baseline of sexual symptoms for these women is unknown. However, it is possible that many women do not return to prepregnancy levels of sexual experience even by 1 year after the birth of a newborn, but rather establish new sexual baselines in keeping with their additional responsibilities.

Also increasing from 1 to 3 months were mothers’ respiratory symptoms. The higher prevalence of these symptoms among women who were back in the work force could be due to several factors, including direct exposure from work colleagues, increased susceptibility to infection sec-

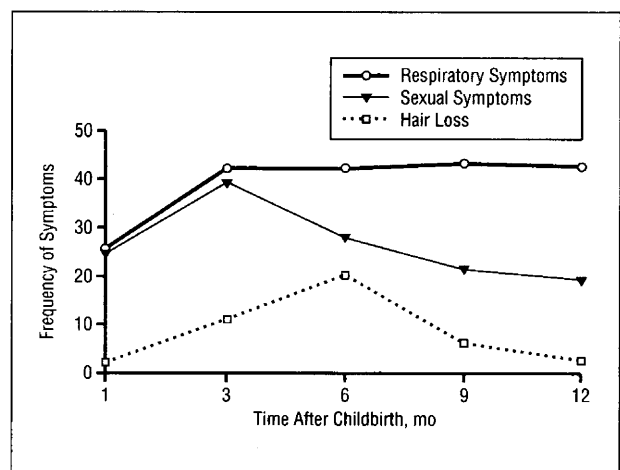


Figure 3. Symptoms that increased in frequency after the first postpartum month. Significant differences across time ($P < .01$) were determined by four-way tables using logit models and χ^2 tests, and were as follows: for respiratory symptoms, 1 vs 3, 6, 9, and 12 months; for sexual symptoms, 3 vs 1, 6, 9, and 12 months, and 6 vs 12 months; and for hair loss, 6 vs 1, 3, 9, and 12 months, 12 vs 3, 6, and 9 months, and 1 vs 3 and 9 months.

Table 2. Frequencies of Symptoms by Delivery Type (n=436)

Symptom	Delivery Type*	Frequency (%)					Significance by Delivery Type†
		1 mo	3 mo	6 mo	9 mo	12 mo	
Hemorrhoids	Vaginal	105 (29.3)	53 (14.8)	40 (11.2)	37 (10.3)	28 (7.8)	P<.01
	Cesarean	11 (14.1)	7 (9.0)	3 (3.8)	5 (6.4)	1 (1.3)	
Acne	Vaginal	60 (16.8)	48 (13.4)	47 (13.1)	36 (10.1)	40 (11.2)	P<.01
	Cesarean	9 (11.5)	5 (6.4)	4 (5.1)	5 (6.4)	3 (3.8)	
Vaginal discomfort	Vaginal	88 (24.6)	43 (12.0)	21 (5.9)	20 (5.6)	10 (2.8)	P<.01
	Cesarean	4 (5.1)	4 (5.1)	3 (3.8)	6 (7.7)	3 (3.8)	
Discomfort with intercourse	Vaginal	35 (9.8)	84 (23.5)	35 (9.8)	21 (5.9)	14 (3.9)	P<.01
	Cesarean	6 (7.7)	9 (11.5)	4 (5.1)	4 (5.1)	1 (1.3)	
Sinus trouble	Vaginal	19 (5.3)	23 (6.4)	38 (10.6)	35 (9.8)	35 (9.8)	P<.05
	Cesarean	1 (1.3)	2 (2.6)	2 (2.6)	8 (10.3)	6 (7.7)	

*Three hundred fifty-eight women had vaginal deliveries and 78 had cesarean deliveries.

†Significance by delivery type was determined by analysis of covariance across time, using hospital and delivery type as covariates.

ondary to work stress, or infants' exposure to infections at their day-care sites. More than 40% of the mothers continued to suffer with symptoms of respiratory infection at each survey point for the remainder of the year. The seemingly high rate of respiratory symptoms from 3 to 12 months post partum could be explained in a few ways. The initial rate of symptoms may have been low because of protective antibodies related to pregnancy, or the higher rate of symptoms seen from 3 to 12 months may have represented either a prolonged increase that reverted to "normal" sometime after 12 months, or a new baseline of symptoms typical for working mothers of young children.

Perhaps less debilitating but nonetheless annoying is the loss of hair seen by some women in the postpartum period. This symptom, reported by one fifth of participants, has been called "postpartum telogen effluvium," and occurs when a stress such as childbirth causes the hair to enter the resting stage prematurely, resulting in an excessive shedding of normal club hairs. Previous research has shown that this shedding usually begins about 2 to 4 months after delivery, and continues for an average of 2 to 5 months, and up to 1 year or longer in some.¹⁸ These data are consistent with our findings, which show an increase in hair loss at 3 months, and a peak in reported hair loss at 6 months post partum.

It is generally understood that women who have cesarean sections are at greater risk of several infectious, hemorrhagic, or surgical complications^{19,21}; however, the symptoms associated with vaginal deliveries described herein are perhaps less frequently acknowledged. The higher frequency of hemorrhoids seen in women who gave birth vaginally was likely due to increased perineal pressure around the time of delivery. Interestingly, the difference in rate of hemorrhoids between women with vaginal and cesarean deliveries appeared to persist throughout the entire first year.

Postpartum vaginal discomfort, discomfort with intercourse, and difficulty reaching orgasm were also found

more frequently in women who gave birth vaginally, and these differences continued through at least the first 6 months of the survey period. Although this was not specifically investigated, it is very possible that the reported vaginal symptoms were related to episiotomies and other perineal trauma, as previous investigations have found that perineal discomfort may be prolonged by spontaneous vaginal tears, repair breakdowns, mediolateral episiotomies, and use of forceps.^{22,23}

It should be noted that these results do not provide a complete quantitative comparison of morbidity following cesarean or vaginal deliveries. For example, these data do not capture information about cesarean wound discomfort or other aspects of postoperative recovery during the first few weeks after a cesarean delivery. Certainly, recovery from a cesarean section is a demanding process; however, it appears that women with both forms of delivery have unique recovery needs.

Several of our findings are not easily explained, eg, the greater frequency of acne and sinus problems seen with vaginal deliveries or the differences between hospitals in the prevalence of poor appetite, acne, discomfort with intercourse, and respiratory symptoms. Even though no obvious demographic differences were seen between the two hospital populations (likely because the inclusion criteria selected a very unique group of women), it is possible that the differences in symptoms between sites were related to population differences that were not studied herein. Also, this study was observational and the data analysis was exploratory; therefore, difficulty in explaining some of our findings may have been due to random variability and require further investigation.

Future research should address other issues as well. For example, although this study had the strength of a prospective, longitudinal design, it would be helpful for future postpartum studies to include health measures from before pregnancy and after the first postpartum year so

that the baseline and follow-up health status could be known. Also, it would be useful to know the effects of return to work or delivery type on other aspects of health, such as mental well-being. Finally, because this study investigated only a select group of women (married, recently employed white mothers from two Upper Midwest metropolitan hospitals), these results cannot be generalized to other groups of women. Therefore, future postpartum studies should investigate other groups of women to determine whether postpartum problems are similar among groups.

Our results indicate that, for this group of women, the first few postpartum weeks were characterized by a constellation of symptoms representing several organ systems, including the breast, skin, and gynecologic, respiratory, endocrine, gastrointestinal, and musculoskeletal systems. Although many of these problems appeared to resolve by the third postpartum month, several persisted up to and beyond this time, giving support to the idea that recovery from childbirth often requires more than 6 weeks. The wide range in recovery time among new mothers should be considered by women as they plan their postpartum activities, by health care providers who advise women about postpartum health care, and by employers and legislators who influence duration of maternity leave. As we increase our awareness of women's postpartum concerns, we will be in a better position to help mothers and their families through this important time of transition.

Accepted for publication November 18, 1992.

This study was supported by grants RF 87038-ALLOC 48 from the Rockefeller Foundation, New York, NY, and MRF-53-90 from the Minnesota Medical Foundation, Minneapolis.

The authors thank Mary Kelly for collecting data for this study.

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- Cunningham FG, MacDonald PC, Gant NF. *Williams Obstetrics*. 18th ed. East Norwalk, Conn: Appleton & Lange; 1989:245-256.
- Stedman's Medical Dictionary*. 25th ed. Baltimore, Md: Williams & Wilkins; 1990:1290.
- Gruis M. Beyond maternity: postpartum concerns of mothers. *MCN Am J Matern Child Nurs*. 1977;2:182-188.
- Harrison MJ, Hicks SA. Postpartum concerns of mothers and their sources of help. *Can J Public Health*. 1983;74:325-328.
- Gerstein HC. How common is postpartum thyroiditis? a methodological overview of the literature. *Arch Intern Med*. 1990;150:1397-1400.
- Lowe TW, Cunningham FG. Pregnancy and thyroid disease. *Clin Obstet Gynecol*. 1991;34:72-81.
- Bertrand H, Rosenblood LK. Stripping out pus in lactational mastitis: a means of preventing breast abscess. *Can Med Assoc J*. 1991;145:299-306.
- Gould JS, Wissinger HA. Carpal tunnel syndrome in pregnancy. *South Med J*. 1978;71:144-145.
- Lee CY, Madrazo B, Drukker BH. Ultrasonic evaluation of the postpartum uterus in the management of postpartum bleeding. *Obstet Gynecol*. 1981;58:227-232.
- Nygaard IE, Saltzman CL, Whitehouse MB, Hankin FM. Hand problems in pregnancy. *Am Fam Physician*. 1989;39:123-126.
- Gjerdingen DK, Froberg DG. The fourth stage of labor: the health of birth mothers and adoptive mothers at six weeks postpartum. *Fam Med*. 1991;23:29-35.
- Tulman L, Fawcett J. Recovery from childbirth: looking back 6 months after delivery. *Health Care Women Int*. 1991;12:341-350.
- Reading AE, Sledmere CM, Cox DN, Campbell S. How women view postepi-siotomy pain. *BMJ*. 1982;284:243-246.
- Fischman SH, Rankin EA, Soeken KL, Lenz ER. Changes in sexual relationships in postpartum couples. *J Obstet Gynecol Neonatal Nurs*. January/February 1986: 58-63.
- Robson KM, Brant HA, Kumar R. Maternal sexuality during first pregnancy and after childbirth. *Br J Obstet Gynaecol*. 1981;88:882-889.
- Wand JS. The natural history of carpal tunnel syndrome in lactation. *J R Soc Med*. 1989;82:349-350.
- Snell NJC, Coysh HL, Snell BJ. Carpal tunnel syndrome presenting in the puerperium. *Practitioner*. 1980;224:191-193.
- Kligman AM. Pathologic dynamics of human hair loss. *Arch Dermatol*. 1961; 83:175-198.
- Danforth DN. Cesarean section. *JAMA*. 1985;253:811-818.
- Miller JM. Maternal and neonatal morbidity and mortality in cesarean section. *Obstet Gynecol Clin North Am*. 1988;15:629-638.
- Rogers RE. Complications at cesarean section. *Obstet Gynecol Clin North Am*. 1988;15:673-684.
- Abraham S, Child A, Ferry J, Vizzard J, Mira M. Recovery after childbirth: a preliminary prospective study. *Med J Aust*. 1990;152:9-12.
- Reamy KJ, White SE. Sexuality in the puerperium: a review. *Arch Sex Behav*. 1987;16:165-186.