The Effects of a Maternal Preparation Program on Mother–Infant Pairs: A Pilot Study

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Key Words: mother child relations • occupational therapy services • role, occupational

This quasi-experimental pilot study examined the association of a maternal preparation program with women's competence in maternal care behaviors, self-perceived adaptation to the maternal role, and satisfaction with the maternal preparation received in conjunction with obstetric and delivery care. Sixteen subjects participated in the program. A cost-benefit questionnaire was completed by the program participants to examine whether the availability of such a maternal preparation program would influence future selections of a hospital for delivery. Our Occupational Therapy Maternal Role Preparation Program was provided to the subjects in four sessions. The program included material on physiological changes in the new mother, orchestration of activities of daily living, infant development and individual differences, and the mother–infant relationship. Results were statistically significant only for the factor of the mothers' satisfaction with their obstetric care and preparation for the maternal role, in favor of the treatment group. In addition, all 8 members of the treatment group reported that they thought the program was helpful and would recommend it to other mothers.

Prevention of chronic disabilities and maintenance of a state of wellness are becoming increasingly important in American society. This is illustrated in part by the need for supportive services for parents during pregnancy and during the infant's first few months of life. Parents are seeking more information on how they can improve the quality of life of their child, enhance their child's development, and nurture a positive relationship between themselves and their child.

This pilot study had several purposes. The first was to determine if a maternal preparation program that addressed the biopsychosocial needs of the mother–infant relationship would be associated with observed maternal competence in maternal care behaviors. The program was designed from theoretical concepts described by Brazelton (1976) and Ayres (1979) and was based on the occupational behavior perspective (Burke, Clark, Hamilton-Dodd, & Kawamoto, 1987; Kielhofner & Burke, 1980; Reilly, 1969, 1974). (See Burke et al. for a detailed description of the theoretical basis of the program design.) The second purpose of the study was to determine whether participation would be associated with self-perceived adaptation to the maternal role. The third purpose was to determine whether participation in the program would be associated with greater satisfaction with the maternal role preparation received in conjunction with obstetric care.

Review of the Literature

The art of mothering is largely a learned process (Brazelton, 1976; de Chateau, 1979; McFarland &
support.

Children model adult behavior, as evidenced in the children's game of playing house. Most young women in the Western world have never substantively participated in caring for children before the birth of their own infant (Brazelton, 1983). The young women of today are being prepared for independent career roles, but not for their roles as mothers.

Maternal competence in caring for an infant's needs and adaptation to the maternal role may be influenced by many factors, such as mother-infant bonding, mother-infant interaction, maternal perception of the infant, infant temperament, and social support.

Mother-infant bonding, which is believed to occur in the early perinatal period, may be a key factor in helping a mother to develop the sensitivity and understanding necessary to properly care for her infant. Bonding is believed to influence the development of confidence and of a caretaking routine (Barrett, Leiderman, Grobstein, & Klaus, 1970). In a study by Kennell, Trause, and Klaus (1975), mother-infant bonding, enhanced by extra contact immediately after birth, appeared to sensitize the mother to her infant's needs and behavioral cues.

Maternal competence and adaptation also appear to be associated with the mother's ability to interact with her infant. Reciprocal interaction between the mother and her infant is based on mutual feedback (Brazelton, 1980). Competent mothering may be reflected in a mother's ability to adapt her behavior to meet her infant's needs, thereby increasing responsive interaction between them (Lozoff, Brittenham, Trause, Kennell, & Klaus, 1977). As a mother provides successfully for her baby's needs, she enjoys her baby's increasing responsiveness, gains a sense of her own competence (Bromwich, 1976), and frees herself from strained interaction.

Maternal perception of the infant, a third factor that is related to maternal competence, may be influenced by a number of societal and internal beliefs about an infant's needs. How a mother perceives her infant will influence her interaction with, and the environment she provides for, her infant. A mother must be able to accurately read her infant's cues to be able to provide the appropriate stimulation for the infant (McCormick, Shapiro, & Starfield, 1982). Inaccurate perceptions may lead to a self-fulfilling prophecy or may place a child at risk because the input provided is mismatched with the infant's sensorimotor readiness (McCormick et al., 1982; Palisin, 1981). For example, a mother may perceive her healthy baby as impaired and therefore limit the baby's exposure to vigorous activity. Activity deprivation, in turn, may ultimately impede the child's development.

A fourth factor, the infant's temperament and the degree to which it is compatible with that of the mother, may also influence a mother's ability to care for her infant and to adapt to her new role. An infant's disposition is inborn. The skill that is required to care for an infant varies according to the child's temperament. The mother of an infant with a difficult temperament will require greater skill to successfully meet the infant's needs (Brazelton, 1980). Irritable infants have been observed to take a longer period to calm (Crockenburg & Smith, 1982). A mother with a difficult infant may require more assistance and support to develop the skills that will enable her to read and react to her child's behavioral cues.

Lastly, social support may promote the acquisition of maternal competence and adaptation to the maternal role by easing the demands on the mother and by providing encouragement. Such support has been found to be particularly important for families under stress and when the infant has a difficult temperament (Crockenburg, 1981). In a study by Bates, Olson, Pettit, and Bayles (1982), satisfaction with postpartum adjustment was found to be related to adequate social support.

Programs for the enhancement of infant development and the acquisition of parenting skills are being instituted by various professionals and researchers. Whitte and Casey (1982) found that a pediatric intervention program had a positive influence on the mother-infant relationship with respect to cooperation, sensitivity, and the appropriateness of play. In a study by Myers (1982), parents who had received training in the use of the Brazelton scale (Brazelton, 1973) scored higher on knowledge of infant development than did the control group, and the fathers in the treatment group participated more in caretaking tasks than did the fathers in the control group. The mothers in the treatment group reported feeling more sure of themselves, whereas none of the mothers in the control group felt this way. In a similar study, Dickie and Gerber (1980) found that in a parent training program, the treatment group responded more appropriately to their infants' cues and were better able to anticipate their infants' needs. In addition, the treatment group demonstrated better responsiveness to their infants and more frequent verbal and nonverbal contingent responses.

Although parenting programs appear to have been successful in fostering parent-child interactions, none of the programs that we reviewed covered comprehensive preparation for the maternal role. We believed that occupational therapists drawing on the occupational behavior perspective could provide such a program. The occupational behavior perspec-
tive focuses on role performance, role transitions, adaptation, and the orchestration of daily activity to support productive and satisfying living. Primarily preventive in nature, the Occupational Therapy Maternal Role Preparation Program that we developed focused on broad quality-of-life issues (e.g., a sense of competence, increased confidence and self-esteem) as well as on specific topics necessary to the maternal role (e.g., techniques for breast-feeding, infant handling, and infant care routines).

Persons who are prepared for new roles are more likely to make smooth transitions into them. Women are at risk of experiencing crises in their role transition into motherhood due to a number of social and economic factors (Majewski, 1986). The decrease in social support systems, such as the decline of the extended family, the increased pressure to make economic contributions to the family, and the lack of parental training programs, makes it increasingly important to aid new mothers in assuming their new roles (Brazelton & Als, 1979). The maternal preparation program was designed to enable new mothers to manage stress, orchestrate daily routines, conserve energy, and execute better maternal care.

Overall, the literature showed that no disciplines are preparing mothers broadly for the maternal role and that the occupational behavior perspective would be useful as a framework for developing a comprehensive maternal preparation program. Additionally, some of the factors that contribute to maternal competence and adaptation were identified: adequate mother-infant bonding, sensitive mother-infant interaction, realistic maternal perception of the infant, understanding of the variations in infant temperament, and availability of social support systems. These factors were addressed in our maternal preparation program.

Subjects

The original sample for the study consisted of 22 mothers and their infants recruited from monthly maternity teas held at the Inter-Community Medical Center in Covina, California. These mothers were assigned randomly to the control group or the experimental group. However, 6 subjects were eliminated because either they declined to continue in the study or they or their baby did not meet the selection criteria. To meet the criteria, each mother had to (a) be a primipara, (b) be approved for the program by her obstetrician and pediatrician, (c) be at least 18 years of age and not more than 35 years of age, (d) have had no major complications during pregnancy or delivery, (e) plan to be the primary caretaker of her infant for the first 2 months after delivery, and (f) speak English as her primary language. The baby had to (a) be born between the beginning of the 38th week and the end of the 41st week of gestation (full-term), (b) have scored higher than 7 on the Apgar scale 5 min after birth, (c) have weighed more than 2,500 g at birth, and (d) be free of identifiable mental or physical anomalies at birth or during the course of the project (as determined by the infant's pediatrician).

The experimental group consisted of 7 primiparas and 1 multipara. The multipara was accepted as a subject in this study because she gave her first infant up for adoption at birth; therefore, she had not enacted the mothering role. The experimental-group mothers ranged in age from 18 years to 33 years, with a mean age of 25.75 years (SD = 5.18). Two of the mothers had had cesarean sections. There were four male and four female healthy, full-term infants. The control group consisted of 8 primiparas. The mothers ranged in age from 26 years to 33 years, with a mean age of 28 years (SD = 2.51). Two of the mothers had had cesarean sections. There were two female and six male healthy, full-term infants. However, one infant was hospitalized for 1 week for jaundice.

Method

Instruments

A quasi-experimental posttest-only control group and pretest-posttest control group design (Campbell & Stanley, 1965) was employed. On one instrument to assess treatment effectiveness, the mothers were pretested and posttested, but on the others only a posttest was given. The subjects in this study were assessed on the following instruments: the System for Rating Maternal Care Behaviors (Ainsworth, 1973), to assess observed maternal competence; the Postpartum Self-Evaluation Questionnaire (Lederman, Weingarten, & Lederman, 1981) and the Prenatal and Postnatal Questionnaire (Sheehan, 1981), to assess self-perceived adaptation to the maternal role; and the Satisfaction With a Maternal Preparation Program Received in Conjunction With Obstetric Care Questionnaire (Kawamoto, 1983) and the Cost-Benefit Questionnaire (Kawamoto, 1983), to assess maternal satisfaction with the maternal role preparation provided with obstetric care and the program's costs and benefits.

The System for Rating Maternal Care Behaviors consists of seven general maternal care subscales, or categories, which are further divided into a total of 22 specifically defined behaviors designed to assess maternal role behaviors during the infant's first 3 months of life. The seven categories are (a) General Attitude of Mother Toward Baby and Her Role, (b) Feeding, (c) Availability and Interaction, (d) Physical Contact, (e) Response to Crying, (f) Social Contact, and (g) Facilitation of Sensorimotor Development. The 22 specifically defined behaviors are rated on a scale
from 1 to 9, in which higher scores indicate greater competence.

Ainsworth (1973) reported that the average reliability for all 22 variables was $r = .80$. Intercorrelations among the scales were reported as high, which suggests that not all the scales may be necessary to evaluate the mothers (Ainsworth & Bell, 1969). Ainsworth (1973) believed, however, that the use of all the scales might provide pertinent information on the attributes of more competent mothers and their mothering practices, but he acknowledged that further work on scale validity is needed. When we computed the internal consistency for the data obtained from the subjects in this study, $\alpha = .93$.

A total score on the scale was used as the measure of overall observed maternal competence in maternal care behaviors, and the total on each of the subscales was used to determine if any of the domains were influenced by the program. One of the behaviors under the Feeding category did not apply (babies in the sample were not taking solid foods). The mothers and their infants were observed in their homes for 1½ to 2 hr, when the infants were between 5 and 9 weeks of age. Prior to this study, the evaluator practiced administering the instrument with another rater until at least 90% agreement was achieved. During the actual study, although attempts were made to keep the evaluator unaware of group assignments, most of the mothers revealed the group to which they had been assigned (experimental or control) during the observation session.

The Postpartum Self-Evaluation Questionnaire consists of eight subscales containing 81 questions that were presumed to be a measure of self-perceived maternal adaptation. The items on the scale were rated from very much so (1) to not at all (4). A ninth subscale, which is a combination of Subscales 7 and 8, is also a part of the questionnaire. The eight subscales are (a) the Quality of Relationship With the Husband, (b) the Mother’s Perception of the Father’s Participation in Child Care, (c) the Mother’s Gratification From Her Labor and Delivery Experience, (d) the Mother’s Satisfaction With Her Life Situation and Circumstances, (e) the Mother’s Confidence in Her Ability to Cope With the Tasks of Motherhood, (f) the Mother’s Satisfaction With Motherhood and Infant Care, (g) Support for the Maternal Role From Parents, and (h) Support for the Maternal Role From Friends and Other Family Members.

The internal consistency reliability of the eight subscales reported by Lederman et al. (1981) ranged from .73 to .90. Lower subscale intercorrelation coefficients, compared to internal consistency reliability coefficients, indicated that the subscales provide unique information and that separate subscales are justified, with one exception. High correlation was found between Subscales 7 and 8, which is why the authors indicated that those scales could be combined into a ninth subscale. The overall coefficient alpha estimate we obtained for our data for this scale was .66.

The Prenatal and Postnatal Questionnaire is a 10-item Likert scale developed as a measure of maternal perception of adjustment (or adaptation) in the prenatal and postnatal period. Its author (Sheehan) considers the scale to measure whether a woman perceives pregnancy and motherhood as a crisis in her life, how well she feels she is able to adapt and cope with pregnancy, and her situational supports. No reliability or validity has been reported for the instrument. When we analyzed the pretest and posttest internal consistency of data we gathered on this scale, we obtained coefficient alpha estimates of .27 and .52, respectively.

The Satisfaction with a Maternal Preparation Program Received in Conjunction with Obstetric Care Questionnaire is a 24-item Likert scale developed for this study to measure the degree to which the mothers were satisfied with the content and process of the maternal preparation program they received in conjunction with their obstetric care. Content validity of the instrument was established by expert review with the procedures described by Benson and Clark (1982). The coefficient alpha estimate we obtained for the reliability of this questionnaire was .96. Total scores on this instrument ranged from 24 to 120, with higher scores indicating greater satisfaction.

The Cost–Benefit Questionnaire also was constructed for this study to detect the extent to which the mothers who received the maternal preparation program believed the availability of such a program would influence their future selection of a facility for maternity care. Additionally, some questions addressed the extent to which respondents believed the program would be of greater benefit to new versus experienced mothers. Consisting of thirteen 5-point Likert scale items and two dichotomous (yes–no) items, the scale was designed to assess the extent to which mothers’ satisfaction with the maternal preparation program might effect the occupancy of hospital beds in the future. Items on this instrument were not presumed to be measuring a single trait and therefore were treated separately in the data analysis.

**Procedure**

The four-session maternal preparation program, offered individually to the 8 mothers in the experimental group, began within 1 month before the birth of the infant and was completed when the infant was approximately 2 to 3 weeks of age. The first session was conducted in the subject’s home, the second ses-
sion while she was hospitalized, and the final two sessions after she and her baby returned home. Each session lasted approximately 1 1/2 to 2 hours, and subjects could contact their program implementer by phone between sessions if they had any questions about the topics covered in the program or about related concerns. Subjects in the control group did not receive any programming beyond routine care, but were told that when the study was completed they would be invited to enrichment sessions on infant development. The hospital staff continued to provide routine care throughout the study for both the experimental group and the control group.

The overall purpose of the maternal preparation program was to help ease the new mother’s transition into motherhood and to give her an opportunity to observe and practice maternal skills. The program implementers (three registered occupational therapists) also acted as an additional social support system for the new mother during this role transition period. The program included material on physiological changes that typically occur in the new mother, management of activities of daily living associated with the maternal role, infant development and individual differences, and the mother–infant relationship.

**Physiological changes in the new mother.** Knowledge of the physical changes that occur after birth is likely to contribute to the new mother’s physical recovery and emotional adjustment. The intent of the maternal preparation program was to allow the mother to anticipate the events that characterize the puerperium period and to engage in rational planning, thereby reducing the likelihood of crisis or undue stress. The women in the experimental group were informed about major postpartum issues, including fatigue, physical adjustment to fatigue, weight loss and physical exercise after childbirth, and postpartum blues.

Before delivery, the mother received assistance on how to organize her customary round of activities for the postpartum period to ensure that she allowed sufficient time for rest. Strategies were developed for dealing with the physiological changes that occur just before the due date. Such strategies included rearranging the home setting to make efficient child care easier, arranging for housekeeping or other support systems, discussing alternatives to a diaper supply, preparing and freezing meals to sustain the family through the first 2 puerperium weeks, and arranging furniture and the environment to ensure energy conservation.

For those subjects concerned about weight loss and the recovery of muscle tone, an exercise plan was developed, subject to physician approval. Ways to improve strength and increase muscle tone and overall body fitness were discussed, and exercises for the shoulders, arms, abdomen, hips, thighs, and back were presented.

The potential psychological effects of the hormonal changes that occur after birth were fully explained. The differences in hormonal changes among breast-feeding and bottle-feeding mothers were also discussed. (This information was included so the mothers could anticipate hormonal changes. The choice of breast-feeding or bottle-feeding was determined by the mother, her spouse, and the attending physician.)

Sandberg (1978) stated that approximately two thirds of new mothers will experience some degree of postpartum blues. In the maternal preparation program, the participants learned that the postpartum blues syndrome is characterized by emotional instability occurring up to 2 weeks after delivery, mild depression, despondency, and uncontrollable weeping (Sandberg). They also learned that the basis for the baby blues is unknown. The knowledge that this is a normal occurrence may help the mother better manage the condition.

**Management of activities of daily living.** Activities of daily living consist of feeding, meal preparation, housecleaning, personal hygiene, dressing, and the organizational abilities that enable a workable flow from one activity to the next. Despite their commonplace nature, competence in these activities is basic to a person’s sense of independence and coping (Malick & Sherry, 1978).

The puerperium period is characterized by many physical and emotional changes as well as new task demands. The experimental subjects were taught simplification techniques for the performance of activities of daily living as well as time management techniques and organizational strategies. Energy conservation, proper body mechanics, daily routine planning, and suggestions for achieving ample rest were also discussed.

**Infant development and the mother–infant relationship.** Awareness of infant development, especially the changes that occur in the infant’s sensory systems, can help a mother provide appropriate stimulation for her newborn. Mothers who understand the capabilities of their infants may be more sensitive to their infants’ cues. For example, knowledge of reflexes such as rooting and sucking can help a mother in feeding her infant and understanding infant food intake.

Through infant stimulation and play activities, a mother interacts with her infant. This interaction can help to establish a bond between the mother and infant. A mother’s understanding of and sensitivity toward the capabilities of her infant may help to increase the quality of the interaction between them, assist her with the acquisition of maternal caretaking...
Table 1
Means and Standard Deviations for the Experimental and Control Groups

<table>
<thead>
<tr>
<th>Scale</th>
<th>Experimental (n = 8)</th>
<th></th>
<th>Control (n = 8)</th>
<th></th>
<th>Combined (N = 16)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X</td>
<td>SD</td>
<td>X</td>
<td>SD</td>
<td>X</td>
<td>SD</td>
</tr>
<tr>
<td>SRMCSB General attitude of mother toward baby and her role</td>
<td>29.875</td>
<td>4.734</td>
<td>30.500</td>
<td>2.777</td>
<td>30.187</td>
<td>3.763</td>
</tr>
<tr>
<td>Feeding</td>
<td>22.000</td>
<td>2.507</td>
<td>22.125</td>
<td>2.642</td>
<td>20.062</td>
<td>2.489</td>
</tr>
<tr>
<td>Availability and interaction</td>
<td>30.875</td>
<td>4.016</td>
<td>30.000</td>
<td>2.619</td>
<td>30.457</td>
<td>3.306</td>
</tr>
<tr>
<td>Physical contact</td>
<td>14.750</td>
<td>2.252</td>
<td>14.875</td>
<td>1.553</td>
<td>14.812</td>
<td>1.870</td>
</tr>
<tr>
<td>Response to crying</td>
<td>7.875</td>
<td>0.991</td>
<td>7.500</td>
<td>1.069</td>
<td>7.687</td>
<td>1.014</td>
</tr>
<tr>
<td>Social contact</td>
<td>29.875</td>
<td>5.194</td>
<td>29.125</td>
<td>2.748</td>
<td>29.500</td>
<td>4.033</td>
</tr>
<tr>
<td>Total</td>
<td>157.875</td>
<td>22.363</td>
<td>156.000</td>
<td>12.961</td>
<td>156.937</td>
<td>18.277</td>
</tr>
<tr>
<td>Father's participation</td>
<td>15.375</td>
<td>3.249</td>
<td>14.250</td>
<td>2.493</td>
<td>14.812</td>
<td>2.857</td>
</tr>
<tr>
<td>Life circumstances</td>
<td>24.500</td>
<td>8.142</td>
<td>17.250</td>
<td>4.528</td>
<td>20.875</td>
<td>7.384</td>
</tr>
<tr>
<td>Confidence in motherhood tasks</td>
<td>25.500</td>
<td>6.459</td>
<td>24.000</td>
<td>5.099</td>
<td>24.750</td>
<td>5.675</td>
</tr>
<tr>
<td>Satisfaction with motherhood</td>
<td>16.875</td>
<td>2.588</td>
<td>17.875</td>
<td>4.518</td>
<td>17.375</td>
<td>3.594</td>
</tr>
<tr>
<td>Support from parents</td>
<td>6.500</td>
<td>0.756</td>
<td>6.500</td>
<td>0.756</td>
<td>6.500</td>
<td>0.750</td>
</tr>
<tr>
<td>Support from friends</td>
<td>8.625</td>
<td>2.200</td>
<td>7.875</td>
<td>1.642</td>
<td>8.250</td>
<td>1.915</td>
</tr>
<tr>
<td>Support from parents and friends</td>
<td>15.125</td>
<td>2.900</td>
<td>14.250</td>
<td>2.315</td>
<td>14.687</td>
<td>2.575</td>
</tr>
<tr>
<td>Total</td>
<td>126.375</td>
<td>20.277</td>
<td>114.375</td>
<td>13.362</td>
<td>120.375</td>
<td>17.682</td>
</tr>
<tr>
<td>Prenatal Questionnaire</td>
<td>40.375</td>
<td>7.222</td>
<td>38.375</td>
<td>7.399</td>
<td>39.375</td>
<td>8.324</td>
</tr>
<tr>
<td>Postnatal Questionnaire</td>
<td>39.250</td>
<td>4.027</td>
<td>37.125</td>
<td>4.016</td>
<td>38.187</td>
<td>4.037</td>
</tr>
<tr>
<td>SMPO</td>
<td>101.375</td>
<td>10.809</td>
<td>79.785</td>
<td>10.316</td>
<td>90.625</td>
<td>15.081</td>
</tr>
</tbody>
</table>


Results

The small sample size, the use of ordinal scales, and skewed distributions necessitated the use of nonparametric analyses. Table 1 presents the descriptive data for the experimental and control groups on all of the instruments except the Cost-Benefit Questionnaire, for which a summed score is not obtainable. A series of one-tailed Mann Whitney U tests with alpha set at .05 revealed no significant differences between the groups on the Postpartum Self-Evaluation Questionnaire total and on subscale scores. Furthermore, when the Wilcoxon signed rank tests were performed separately for the experimental and control groups' Prenatal and Postnatal Questionnaire scores, results revealed that neither of the groups changed significantly. These findings suggest that the experimental and control groups did not differ in perceived adaptation to the maternal role.

Again with a series of one-tailed Mann Whitney U tests with alpha set at .05 there were no significant differences between the groups on the Postpartum Self-Evaluation Questionnaire total and on subscale scores. Furthermore, when the Wilcoxon signed rank tests were performed separately for the experimental and control groups' Prenatal and Postnatal Questionnaire scores, results revealed that neither of the groups changed significantly. These findings suggest that the experimental and control groups did not differ in perceived adaptation to the maternal role.

When a Mann Whitney U test was performed on the satisfaction with maternal preparation total scores, the experimental group was found to have been statistically significantly more satisfied with their preparation for the maternal role than the control group was (p = .0016). Furthermore, the experimental group's responses to the Cost-Benefit Questionnaire suggested that the majority of those mothers who received the maternal preparation program thought that offering such a program was a "good idea," especially
in the postnatal period (see Table 2). In addition, more mothers were dissatisfied with routine care during the perinatal than during the prenatal or postnatal periods. Eighty-eight percent of the mothers indicated that they believed maternal preparation programs were necessary for new mothers, and 63% endorsed the position that insurance plans should cover such programs. Finally, on the questions with dichotomous answers, 100% believed that the maternity preparation program was helpful and would recommend it to other mothers.

Discussion

The results of this pilot study must be interpreted cautiously, because the small sample size may have compromised the randomization process. The subjects could not be pretested on instruments that assessed observed maternal behavior before their infant was born, which necessitated a randomized posttest design. Although statistical analyses indicated that the experimental and control groups were initially equivalent in maternal age and sex of baby, and on scores on the Prenatal Questionnaire, the two groups may have differed on other characteristics. The fact that the experimental group showed larger standard deviations on the System for Rating Maternal Care Behaviors and the Postpartum Self-Evaluation Questionnaire suggests that the experimental group was probably more heterogeneous in traits related to maternal adaptation and competence than the control group. Future studies should use larger samples to ensure adequate randomization.

In the present study, we did not find the maternal preparation program to be associated with greater observed maternal competence. One explanation for this finding is that the program was not offered for a sufficient duration. Another explanation is that the program did not provide enough training in explicit maternal skills. However, it also is possible that a positive change did occur, but that the System for Rating Maternal Care Behaviors was not sufficiently sensitive to detect it. Because intercorrelations on the seven rating subscales were high, they may all be assessing the same trait. Had we been able to employ an instrument that was capable of measuring more precisely a number of dimensions of maternal competence, a treatment effect may have been detected.

The mothers who received the maternal preparation program did not report smoother perceived adaptation to the maternal role than did those who did not receive the program. Yet, the experimental-group mothers did report being more satisfied with the maternal preparation they received in conjunction with their obstetric care than did the control-group mothers. These somewhat contradictory findings are difficult to interpret. One explanation might be that without the maternal preparation program, the experimental-group mothers would have done significantly poorer on the outcome measures than did the control-group mothers. This interpretation would be tenable if the groups had not been entirely comparable initially. For example, the experimental-group mothers may have been in greater need of maternal preparation than the control-group mothers.

The research team members who had contact with the mothers from both groups felt that the experimental-group mothers were characterized by more risk factors than were the control-group mothers. These factors included pregnancy in adolescence, somewhat lower socioeconomic status, cultural differences between husband and wife, health status of the infant, and marital problems. Future studies could control for the influence of educational level, marital status, ethnicity, and the variables that might influence outcomes. However, it should be noted that diff-

Table 2
Numbers and Percentages* of the Experimental Group (n = 8) on the Cost-Benefit Questionnaire

<table>
<thead>
<tr>
<th>Item</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prenatal program good idea</td>
<td>—</td>
<td>—</td>
<td>2 (25)</td>
<td>3 (38)</td>
<td>3 (38)</td>
</tr>
<tr>
<td>Perinatal program good idea</td>
<td>—</td>
<td>—</td>
<td>1 (13)</td>
<td>4 (50)</td>
<td>3 (38)</td>
</tr>
<tr>
<td>Postnatal program good idea</td>
<td>—</td>
<td>—</td>
<td>1 (13)</td>
<td>1 (13)</td>
<td>6 (75)</td>
</tr>
<tr>
<td>Satisfied routine prenatal care</td>
<td>1 (13)</td>
<td>2 (25)</td>
<td>2 (25)</td>
<td>3 (38)</td>
<td>—</td>
</tr>
<tr>
<td>Satisfied routine perinatal care</td>
<td>2 (25)</td>
<td>3 (38)</td>
<td>2 (25)</td>
<td>1 (12)</td>
<td>—</td>
</tr>
<tr>
<td>Satisfied routine postnatal care</td>
<td>2 (25)</td>
<td>1 (13)</td>
<td>5 (63)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Chose hospital with maternal preparation</td>
<td>—</td>
<td>2 (25)</td>
<td>2 (25)</td>
<td>1 (13)</td>
<td>3 (38)</td>
</tr>
<tr>
<td>Maternal preparation program useful</td>
<td>—</td>
<td>—</td>
<td>2 (25)</td>
<td>6 (75)</td>
<td>—</td>
</tr>
<tr>
<td>Maternal preparation program not needed for second child</td>
<td>2 (25)</td>
<td>5 (63)</td>
<td>1 (13)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Chose Inter-Community Medical Center</td>
<td>1 (13)</td>
<td>—</td>
<td>2 (25)</td>
<td>4 (50)</td>
<td>1 (13)</td>
</tr>
<tr>
<td>Maternal preparation unnecessary</td>
<td>7 (88)</td>
<td>1 (13)</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Insurance plans</td>
<td>—</td>
<td>—</td>
<td>3 (38)</td>
<td>5 (38)</td>
<td>2 (25)</td>
</tr>
</tbody>
</table>

* Percentages are indicated in parentheses.
ferences of this kind between the groups were not detected in scores on the Postpartum Self-Evaluation Questionnaire measures that tapped these factors. An explanation for this discrepancy might be that the mothers did not rate the scales in accordance with their true feelings. This explanation seems plausible considering that the therapists who provided the maternal preparation program considered rapport to be one of the most critical elements for program effectiveness. Only after rapport was developed over the course of several sessions did the mothers divulge their concerns and fears. In view of how guarded and reticent the mothers appeared to have been, one must question the validity of the self-report instruments on maternal adaptation.

However, the possibility that a Hawthorne effect accounted for the significant differences must be considered. In the present design, the control-group mothers received routine care and follow-up classes on infant development after the study was concluded. Admittedly, the effects of attention were not adequately controlled. Thus, the experimental-group mothers may have been more satisfied with their obstetric care simply because they were pleased to have been singled out to participate in the experimental group. We recommend that a future study include a third comparative group that receives an irrelevant intervention entailing as much attention as the experimental condition.

Despite some limitations, this study did provide important data. The mothers were satisfied with the maternal preparation program; many claimed that the availability of such a program would influence their choice of hospital for maternity care in the future and that they would recommend the program to other mothers. This study should be replicated on larger samples, with various risk groups, and with tighter designs.

Acknowledgment

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References


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