

Using Roy's Model to Evaluate the Care Given to Postpartum Women Following Caesarean Delivery

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Abstract

Background: To evaluate the care given using Roy's Adaptation Model. **Materials and Methods:** A pretest-posttest experimental model with a control group. Study population comprised postpartum women ($N = 134$; 65 in the experimental group, 69 in the control group) who had caesarean full-term delivery in a Turkish maternity hospital between September 2009 and February 2011. Data were collected from the experimental group during seven home visits and from the control group at the end of the 6th week postpartum. **Results:** Percentage, chi-square, arithmetic mean, standard deviation, and the McNamer test were used to evaluate data establishing 36 nursing diagnoses: *Physiological* requirements (22), *Self* requirements (7), *Role Function* requirements (4), and *Interdependence Mode* requirements (3). It was determined that the care given during the postpartum period using Roy's Adaptation Model resolved or prevented the majority of postpartum problems. The difference between most diagnoses was found to be statistically significant ($p < 0.05$; $p < 0.001$) during the last week of data collection. **Conclusion:** The care given in the postpartum period using Roy's Adaptation Model resolved or prevented postpartum problems.

Keywords

Postpartum Period, Roy's Adaptation Model, Nursing Care

1. Introduction

A healthy fertility period is extremely important in a woman's life and positively affects not only the woman's own health, but also the health of her family and the rest of society. The delivery method primarily preferred in

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terms of maternal and infant health is vaginal delivery [1]. However, when vaginal delivery is considered to be dangerous for the mother and/or the foetus, a caesarean operation becomes obligatory [2]-[4]. There have also been more recent social reasons contributing to a significant increase in the caesarean delivery rate [5].

In the majority of developed countries, 15% - 25% of births are caesarean deliveries [2]. By contrast, a significant increase in the caesarean delivery rate in Turkey has been reported, indicating that caesarean delivery rate increased from 6.9% in 1993 to 14.0% in 1998, 21.2% in 2003 and 36.7% in 2008 [6].

Caesarean delivery is an operation that carries risks for both the mother and the foetus. In caesarean deliveries the maternal mortality rate is higher, medical intervention is greater and the duration of hospital stay and the healing period are longer. Later mobilisation, higher rate of risks for development of infection, delay in mother-baby interactivity and lactation, a longer period of transition to oral feeding and having a surgical procedure are all unwanted effects of caesarean section. These effects might increase the mother's anxiety and fear, and negatively affect her health [7] [8].

The postpartum period is a critical period in terms of maternal health. It is a difficult period when the mother has to undertake new roles and responsibilities in addition to adapting to her physiological changes [7]. The first week of the postpartum period, especially the first 24 hours, is a physiological and psychological transition period when postpartum complications are at their highest level. Studies have concluded that mothers indulge in "navel-gazing" for at least 24 hours due to the physiological and psychological changes they are experiencing, and that their motivation levels to learn are at their lowest [9]-[11]. As understood from these studies, it is vital to also continue the care given at the hospital to a woman giving birth at home. Therefore, in the literature reports have emphasized that when nurses or midwives follow-up the care of postpartum women at home during this postpartum period there are beneficial results [11]-[16].

The majority of the problems encountered during the postpartum period can be prevented or reduced by effective nursing/midwifery care and training. Seemingly simple problems can be recovered by timely intervention before they become complicated, such complications can affect both the mother and child's life for many years. Various studies have shown that during the postpartum period mothers and infants who are monitored and cared for at home after early discharge have lower rates of returning to hospital and hospitalization due to health problems [12] [15] [17]-[19]. Extensive, standardised and qualified nursing care and training given to the mother during the postpartum period enables conscious self-care, competency in motherhood and care and development of herself and her infant, as well as positive health behaviours and health status.

Midwives and nurses are the closest people to the mother during the postpartum period. It is therefore important for them to consider the social and psychological requirements of the family, as well as that of the mother and the newborn in the postpartum period. In order for these requirements to be understood, the mother should be closely followed during the postpartum period.

Roy explains behavioral responses in four adaptive modes. These are the *physiological*, the *self-concept*, the *role function* and the *interdependence adaptive* modes. The physiological mode is related to the physical responses displayed by a person towards the stimulants arising from their environment. The self-concept mode is the combination of an individual's beliefs and feelings about themselves in a specific period. Within the role function mode, Roy defines the concept of role as when "a person displays the behaviours expected by society due to his/her position in society, in order to maintain his/her position (mother, student, etc.)" or "a person knows how to act when he/she passes from one position to another". The interdependence mode includes the relations of the individual with privileged people and support systems [20].

Numerous studies in the literature have been conducted in various fields using Roy's Adaptation Model [21] [22]. As a result, it has been determined that Roy's Adaptation Model is very useful and facilitates adaptation. In Turkey, while there are studies that have used Roy's Model, there are no regarding postpartum women who have had caesarean delivery. From this point of view, this study was conducted in order to evaluate the effectiveness of the care provided using Roy's Adaptation Model through home visits to postpartum women who had had caesarean delivery.

Hypothesis: The care given to postpartum women who had caesarean delivery using Roy's Adaptation Model reduces or prevents the frequency of postpartum problems.

2. Materials and Method

2.1. Study Design

The study was conducted as a quasi-experimental model with a control group among postpartum women

following caesarean delivery in the maternity hospital in a city in Eastern Turkey between September 2009 and February 2011. Study data were collected initially in the hospital and then in the homes of the postpartum women.

2.2. Setting and Samples

The study population consisted of postpartum women who had had caesarean full-term delivery at the study hospital between the dates stated and who resided in the city center.

The minimum sample size was calculated via power analysis and determined to be 84. In this study, the representative power of the sample population was found to be 0.90 with 0.95 confidence interval at $\alpha = 0.05$ level [23]. However, considering the possibility that some postpartum women might withdraw from the study for a variety of reasons, the sample size was increased by 60% to 134 (65 for the experimental group, 69 for the control group). The sample group for the study was selected using the non-probability random sampling method from the population stated above. The control group was included in the study at first and then continued with the experimental group.

Inclusion criteria for the sample group: Mothers aged 15 - 49 years old, mothers or their infants with no illnesses or disabilities, mothers with no loss of sense related to vision or hearing; mothers open to communication and cooperation.

2.3. Data Collection

The data were collected using face-to-face interviews conducted by the researchers. The Personal Information Form and Postpartum Follow-up Form designed by the researchers were used to collect data. The Personal Information Form was completed by all postpartum women approximately 24 hours after their caesarean section. The Postpartum Follow-up Form used in establishing the nursing diagnoses was administered in the homes of the postpartum women after they had been discharged. This form was given to the postpartum women in the experimental group during seven home visits in total (first week twice a week, then once a week), twice in the first week after delivery and once in the 2nd, 3rd, 4th, 5th and 6th weeks. The form was administered for those in the control group only once at the end of the 6th week.

2.4. Data Collection Tools

Personal Information Form. This form was prepared by the researchers and comprised 10 questions to determine the socio-demographic characteristics of the postpartum women.

Postpartum Follow-Up Form. This form developed by the researchers based on Roy's Adaptation Model in line with the related literature and is a form including the subsystems Adaptive Modes [22] [24]-[32]. Adaptive Modes have four subparts: the physiological mode, the self-concept mode, the role function mode and the interdependence mode. Expert opinion was sought during development of this form. In order to test the comprehensibility of the Postpartum Follow-up Form, a pilot test was performed on seven postpartum women. Following the pilot test, necessary corrections were made in designing the final shape of the form. Those who were in the pilot test were not included in the sample group.

2.5. Nursing Intervention

In the nursing care given to postpartum women, suitable nursing diagnoses approved by NANDA were made, depending on the individual. The first nursing intervention focused on the determined nursing diagnoses was applied in the homes of the postpartum women using the care plan form containing these preprepared nursing diagnoses. Nursing process was used in nursing interventions and the Postpartum Follow-up Form was used in evaluating the intervention results. If the determined problem had resolved, a *problem is resolved* evaluation was made; if not, a *problem is ongoing* evaluation was made.

A total of seven home visits were made to the postpartum women in the experimental group twice in the first week after delivery and once in the 2nd (between 8 - 14 days), 3rd (between 15 - 21 days), 4th (between 22 - 28 days), 5th (between 29 - 35 days) and 6th (between 36 - 42 days) weeks. Existing diagnoses and possible new diagnoses were evaluated by the Postpartum Follow-up Form. During each visit the diagnoses determined at the previous visit were evaluated regarding their resolution. Necessary interventions were maintained for the con-

tinuing diagnoses. Nursing interventions focusing on newly occurring diagnoses and possible new diagnoses were made as required and these were evaluated during the following visit. At the end of each visit an appointment was made for the next visit. In addition, the telephone numbers of the researchers were given to the postpartum women so that they could contact them at any time. Care results were evaluated after the postpartum period ended.

The home visit was made to the postpartum women in the control group at the end of the 6th week of postpartum, the existing diagnoses were evaluated after the necessary data was collected and nursing interventions oriented to the diagnoses were performed.

2.6. Data Analysis

Coding and evaluation of the data were performed using the SPSS 11.0 software program. In the data evaluation the percentage, arithmetic mean and standard deviation, Chi-square and McNamer tests were used. The confidence interval was 95% and a $p < 0.05$ was considered statistically significant.

2.7. Ethical Considerations

Before commencing the study, written permission was obtained from the hospital in which the study would be conducted. In addition, the study was submitted to the Clinical Research Ethics Committee within the body of Provincial Directorate of Health of Erzurum and approval was obtained. In order to protect the rights of the postpartum women participating in the study, the purpose and the duration of the study and the procedures to be conducted during the study were explained to them before collecting study data. All women were informed that they could withdraw from the study at any time.

2.8. Limitations of the Study

The limitations of this study include the non-probability sampling method used, pretest nursing diagnoses in the control group were not established, and no home visit was made to the postpartum women in the control group during the postpartum period. Considering that not making any intervention for the problems of the postpartum women in the control group would be unethical, a home visit was made to the control group just once at the end of the postpartum period.

3. Results

As shown in **Table 1**, 47.7% of the postpartum women in the experimental group were aged 18 - 23 years, 46.2% were secondary school graduates, 67.7% were unemployed and 75.4% were on social security. In the control group, 36.3% of the postpartum women were aged 24 - 29 years, 33.3% were secondary school graduates and the majority (66.7%) were unemployed. The difference between the experimental and control groups was not statistically significant and the groups had similar characteristics in terms of variables ($p > 0.05$, **Table 1**). All the pregnant women in the experimental and control groups were operated on under general anesthesia for their caesarean section.

Considering the comparison of the diagnoses of the postpartum women in the experimental group in the first and the last interviews (**Table 2**), while there was no significant difference between diagnoses of *constipation*, *functional incontinence* and *stress incontinence* ($p > 0.05$), the difference between other diagnoses was found to be statistically significant ($p < 0.001$, $p < 0.05$).

In terms of the *physiological* requirements (**Table 3**), in the 7th week of postpartum, the following diagnoses were determined in the women in the control group: the *risk of infecting and transmitting infection* 10.1%; *ineffective breastfeeding* 15.9%; *imbalanced nutrition: more than the body's requirement* 17.4%; *disturbed sleep pattern* 62.3%; *fatigue* was 73.9%; *change in comfort (pain in the abdomen)* 14.5%; *change in comfort (breast pain)* 55.1%; *impaired skin integrity* 10.1%; and *deterioration impaired physical mobility* 14.5%.

In terms of the *self-concept* requirements (**Table 3**), in the 7th week postpartum the following diagnoses were determined in the control group: *loneliness* 8.7%; *situational low self-esteem* 20.3%; *knowledge deficit (nutrition)* 15.9%; *knowledge deficit (hygiene)* 23.2%; *knowledge deficit (breastfeeding)* 15.9%; *knowledge deficit (family planning)* 84.1%; and *disturbed body image* 20.3%.

In terms of the *role function* requirements (**Table 3**), in the 7th week of postpartum, the following diagnoses

Table 1. Comparison of demographics characteristics confined women in experimental and control groups.

Characteristics	Experimental Groups (n = 65)		Control Groups (n = 69)		Total (n = 134)		Test and p value
	n	%	n	%	n	%	
Age group (year)							
18 - 23 age	31	47.7	23	33.3	54	40.3	$X^2 = 4.27$
24 - 29 age	23	35.4	25	36.3	48	35.8	df = 2
≥30 age	11	16.9	21	30.4	32	23.9	$p > 0.05$
Education level							
Primary school	4	6.2	5	7.2	9	6.7	$X^2 = 2.88$
Secondary school	30	46.2	23	33.3	53	39.6	df = 3
High school	15	23.1	20	29.0	35	26.1	$p > 0.05$
University	16	24.6	21	30.4	37	27.6	
Employment condition							
Employed	21	32.3	23	33.3	44	32.8	$X^2 = 0.01$ df = 1
Unemployed	44	67.7	46	66.7	90	67.2	$p > 0.05$
Income*							
Low	14	21.5	8	11.6	22	16.4	$X^2 = 3.77$
Middle	50	76.9	57	82.6	107	79.9	df = 2
High	1	1.5	4	5.8	5	3.7	$p > 0.05$
Social security							
Yes	49	75.4	54	78.3	103	76.9	$X^2 = 0.15$ df = 1
No	16	24.6	15	21.7	31	23.1	$p > 0.05$
Gravidity							
Primigravida	35	53.8	38	55.1	73	54.5	$X^2 = 0.02$ df = 1
Multigravida	30	46.2	31	44.9	61	45.5	$p > 0.05$
Want pregnancy status							
Wanted	65	100.0	68	98.6	133	99.3	$X^2 = 0.94$ df = 1
Unwanted	-	-	1	1.4	1	0.7	$p > 0.05$
Married years							
1 year	26	40.0	16	23.2	42	31.3	$X^2 = 6.87$
2 years	26	40.0	30	43.5	56	41.8	df = 4
3 years	8	12.3	9	13.0	17	12.7	$p > 0.05$
≥4 years	5	7.7	14	20.3	9	14.2	
Receiving support for domestic work							
Receiving support	39	60.0	49	71.0	88	65.7	$X^2 = 1.80$ df = 1
Not receiving support	26	40.0	20	29.0	46	34.3	$p > 0.05$
Receiving support for baby care							
Receiving support	40	61.5	49	71.0	89	66.4	$X^2 = 1.34$ df = 1
Not receiving support	25	38.5	20	29.0	45	33.6	$p > 0.05$
Duration of stay in hospital							
2 days	32	49.2	31	44.9	63	47.0	$X^2 = 0.24$ df = 1
3 days	33	50.8	38	55.1	71	53.0	$p > 0.05$
Type of Anesthesia							
General	65	100.0	69	100.0	134	100.0	
Local	-	-	-	-	-	-	

*Income is validated according to the Confined Women' own statements.

Table 2. The comparison of NANDA nursing diagnoses of the experimental group determined in the first and the last interviews.

Requirements	NURSING DIAGNOSIS	First Meetings				Last Meetings				<i>p</i> *
		Yes		No		Yes		No		
		n	%	n	%	n	%	n	%	
PHYSIOLOGICAL	Risk for infection	65	100	-	-	-	-	65	100	<i>p</i> < 0.001
	Risk for transmitting infection	37	56.9	28	43.1	-	-	65	100	<i>p</i> < 0.001
	Ineffective breast feeding	36	55.4	29	44.6	-	-	65	100	<i>p</i> < 0.001
	Interruption of breast-feeding	-	-	65	100	-	-	65	100	Test not done
	Imbalanced nutrition: less than body requirement	32	49.2	33	50.8	-	-	65	100	<i>p</i> < 0.001
	Imbalanced nutrition: more than body requirement	33	50.8	32	49.2	-	-	65	100	<i>p</i> < 0.001
	Self-care deficit (Bathing)	31	47.7	34	52.3	-	-	65	100	<i>p</i> < 0.001
	Self-care deficit (Hygiene)	25	38.5	40	61.5	-	-	65	100	<i>p</i> < 0.001
	Disturbed sleep pattern	51	78.5	14	21.5	4	6.2	61	93.8	<i>p</i> < 0.001
	Fatigue	40	61.5	25	38.5	2	3.1	63	96.9	<i>p</i> < 0.001
	Changes in comfort-Pain (Abdomen)	65	100	-	-	3	4.6	62	95.4	<i>p</i> < 0.001
	Changes in comfort-Pain (Breast)	11	16.9	54	83.1	2	3.1	63	94.9	<i>p</i> < 0.05
	Constipation	5	7.7	60	92.3	1	1.5	64	98.5	<i>p</i> > 0.05
	Urinary retention	7	10.8	58	89.2	-	-	65	100	<i>p</i> < 0.05
	Functional Incontinence(Urinary)	2	3.1	63	96.9	-	-	65	100	<i>p</i> > 0.05
	Stress incontinence (Urinary)	2	3.1	63	96.9	-	-	65	100	<i>p</i> > 0.05
	Ineffective therapeutic regimen management	-	-	65	100	-	-	65	100	Test not done
	Deficient fluid volume	65	100	-	-	-	-	65	100	<i>p</i> < 0.001
	Impaired skin integrity	65	100	-	-	-	-	65	100	<i>p</i> < 0.001
	Ineffective health maintenance	32	49.2	33	50.8	-	-	65	100	<i>p</i> < 0.001
Impaired physical mobility	65	100	-	-	-	-	65	100	<i>p</i> < 0.001	
SELF-CONCEPT	Loneliness	21	32.3	44	67.7	-	-	65	100	<i>p</i> < 0.001
	Situational low self-esteem	11	16.9	54	83.1	1	1.5	64	98.5	<i>p</i> < 0.001
	Knowledge deficit (Nutrition)	38	58.5	27	41.5	-	-	65	100	<i>p</i> < 0.001
	Knowledge deficit (Hygiene)	25	38.5	40	61.5	-	-	65	100	<i>p</i> < 0.001
	Knowledge deficit (Breast feeding)	45	69.2	20	30.8	-	-	65	100	<i>p</i> < 0.001
	Knowledge deficit (Family planning)	-	-	65	100	-	-	65	100	Test not done
	Disturbed body image	-	-	65	100	10	15.4	55	84.6	<i>p</i> < 0.001
ROLE-FUNCTION	Caregiver role strain	39	60	26	40	3	4.6	62	95.4	<i>p</i> < 0.001
	Risk for ineffective parenthood	9	13.8	56	86.2	-	-	65	100	<i>p</i> < 0.001
	Impaired home maintenance	21	32.3	44	67.7	-	-	65	100	<i>p</i> < 0.001
	Social isolation	21	32.3	44	67.7	-	-	65	100	<i>p</i> < 0.001
Interdependence Mode	Change the role of parental	23	35.4	42	64.6	-	-	65	100	<i>p</i> < 0.001
	Interruption family processes	20	30.8	45	69.2	-	-	65	100	<i>p</i> < 0.001
	Conflict the role of parental	-	-	65	100	-	-	65	100	Test not done

*McNemar.

were determined in the control group: *caregiver role strain* 13.0%; *impaired home maintenance* 26.1%; *social isolation* 8.7%.

In terms of *interdependence mode* requirements, in the 7th week of postpartum, for 5.8% of the postpartum women in the control group diagnosis of *change in the family process* was determined.

Comparison of the diagnoses determined in the last interview for those in the experimental group and the control group (Table 4) showed the difference between the diagnoses of *disturbed body image* ($p > 0.05$), *caregiver role strain* ($p > 0.05$), and *interruption of the family processes* were not statistically significant; the difference between other diagnoses was statistically significant ($p < 0.001$, $p < 0.05$).

Table 3. The distribution of the NANDA nursing diagnoses of the control group established at the end of the 6th week (n = 69).

Requirements	NURSING DIAGNOSIS	Second Meetings			
		Yes		No	
		n	%	n	%
PHYSIOLOGICAL	Risk for infection	7	10.1	62	89.9
	Risk for transmitting infection	7	10.1	62	89.9
	Ineffective breast feeding	11	15.9	58	84.1
	Interruption of breast-feeding	58	84.1	11	15.9
	Imbalanced nutrition: more than body requirement	12	17.4	57	82.6
	Disturbed sleep pattern	43	62.3	26	37.7
	Fatigue	51	73.9	18	26.1
	Changes in comfort-Pain (Abdomen)	10	14.5	59	85.5
	Changes in comfort-Pain (Breast)	38	55.1	31	44.9
	Impaired skin integrity	7	10.1	62	89.9
	Ineffective health maintenance	12	17.4	57	82.6
	Impaired physical mobility	10	14.5	59	85.5
SELF-CONCEPT	Loneliness	6	8.7	63	91.3
	Risk for situational low self-esteem	14	20.3	55	79.7
	Knowledge deficit (Nutrition)	11	15.9	58	84.1
	Knowledge deficit (Hygiene)	16	23.2	53	76.8
	Knowledge deficit (Breast feeding)	11	15.9	58	84.1
	Knowledge deficit (Family planning)	58	84.1	11	15.9
ROLE-FUNCTION	Disturbed body image	14	20.3	55	79.7
	Caregiver role strain	9	13.0	60	87.0
	Impaired home maintenance	18	26.1	51	73.9
Interdependence Mode	Social isolation	6	8.7	63	91.3
	Interruption family processes	4	5.8	65	94.2

Table 4. The comparison of NANDA nursing diagnoses of the experimental group and the control group determined in the last interview.

Requirements	NURSING DIAGNOSIS	Experimental Group				Control Group				<i>p</i> *
		Yes		No		Yes		No		
		n	%	n	%	n	%	n	%	
PHYSIOLOGICAL	Risk for infection	-	-	65	100	7	10.1	62	89.9	<i>p</i> < 0.001
	Risk for transmitting infection	-	-	65	100	7	10.1	62	89.9	<i>p</i> < 0.001
	Ineffective breast feeding	-	-	65	100	11	15.9	58	84.1	<i>p</i> < 0.001
	Interruption of breast-feeding	-	-	65	100	58	84.1	11	15.9	<i>p</i> < 0.001
	Imbalanced nutrition: less than body requirement	-	-	65	100	-	-	-	-	Test not done
	Imbalanced nutrition: more than body requirement	-	-	65	100	12	17.4	57	82.6	<i>p</i> < 0.001
	Self-care deficit (Bathing)	-	-	65	100	-	-	-	-	Test not done
	Self-care deficit (Hygiene)	-	-	65	100	-	-	-	-	Test not done
	Disturbed sleep pattern	4	6.2	61	93.8	43	62.3	26	37.7	<i>p</i> < 0.001
	Fatigue	2	3.1	63	96.9	51	73.9	18	26.1	<i>p</i> < 0.001
	Changes in comfort-Pain (Abdomen)	3	4.6	62	95.4	10	14.5	59	85.5	<i>p</i> < 0.05
	Changes in comfort-Pain (Breast)	2	3.1	63	94.9	38	55.1	31	44.9	<i>p</i> < 0.001
	Constipation	1	1.5	64	98.5	-	-	-	-	Test not done
	Urinary retention	-	-	65	100	-	-	-	-	Test not done
	Functional Incontinence(Urinary)	-	-	65	100	-	-	-	-	Test not done
	Stress incontinence (Urinary)	-	-	65	100	-	-	-	-	Test not done
	Ineffective therapeutic regimen management	-	-	65	100	-	-	-	-	Test not done
	Deficient fluid volume	-	-	65	100	-	-	-	-	Test not done
	Impaired skin integrity	-	-	65	100	7	10.1	62	89.9	<i>p</i> < 0.001
	Ineffective health maintenance	-	-	65	100	12	17.4	57	82.6	<i>p</i> < 0.001
Impaired physical mobility	-	-	65	100	10	14.5	59	85.5	<i>p</i> < 0.001	
SELF-CONCEPT	Loneliness	-	-	65	100	6	8.7	63	91.3	<i>p</i> < 0.05
	Situational low self-esteem	1	1.5	64	98.5	14	20.3	55	79.7	<i>p</i> < 0.001
	Knowledge deficit (Nutrition)	-	-	65	100	11	15.9	58	84.1	<i>p</i> < 0.001
	Knowledge deficit (Hygiene)	-	-	65	100	16	23.2	53	76.8	<i>p</i> < 0.001
	Knowledge deficit (Breast feeding)	-	-	65	100	11	15.9	58	84.1	<i>p</i> < 0.001
	Knowledge deficit (Family planning)	-	-	65	100	58	84.1	11	15.9	<i>p</i> < 0.001
	Disturbed body image	10	15.4	55	84.6	14	20.3	55	79.7	<i>p</i> > 0.05
ROLE-FUNCTION	Caregiver role strain	3	4.6	62	95.4	9	13.0	60	87.0	<i>p</i> > 0.05
	Risk for ineffective parenthood	-	-	65	100	-	-	-	-	Test not done
	Impaired home maintenance	-	-	65	100	18	26.1	51	73.9	<i>p</i> < 0.001
	Social isolation	-	-	65	100	6	8.7	63	91.3	<i>p</i> < 0.05
Interdependence Mode	Change the role of parental	-	-	65	100	-	-	-	-	Test not done
	Interruption family processes	-	-	65	100	4	5.8	65	94.2	<i>p</i> > 0.05
	Conflict the role of parental	-	-	65	100	-	-	-	-	Test not done

*Chi-square.

4. Discussion

This study was conducted to evaluate the effectiveness of the care given to postpartum women following caesarean delivery using Roy's Adaptation Model and the results are discussed in relation to literature. Diagnoses that could not be resolved are discussed in the following.

4.1. Discussion of Nursing Diagnoses for Physiological Requirements

In the Experimental Group, for 6 weeks numerous nursing diagnoses were established for physiological requirements. Among these diagnoses, *disturbed sleep pattern*, *fatigue*, *changes in comfort-pain (abdomen, breast)*, and *constipation* could not be resolved, despite all suitable interventions being made during all postpartum visits. When the diagnoses determined at the first and the last interviews were compared, the difference between all other diagnoses—with the exception of *constipation* ($p > 0.05$), *functional incontinence* ($p > 0.05$) and *stress incontinence* ($p > 0.05$)—was statistically significant ($p < 0.05$).

In the Control Group, in the evaluation made in the 7th week the following diagnoses were established: *risk of infection and transmitting infection*, *ineffective breast feeding*, *interruption of breast feeding*, *imbalanced nutrition: more than the body's requirement*, *disturbed sleep pattern*, *fatigue*, *changes in comfort-pain (abdomen, breast)*, *impaired skin integrity*, *insufficiency ineffective health maintenance* and *impaired physical mobility*.

When the diagnoses of the postpartum women in the experimental and control groups determined during the last interview for physiological requirements were compared, the difference between most diagnoses was statistically significant ($p < 0.05$). The fact that the majority of the nursing diagnoses for physiological requirements were resolved shows the effectiveness of the care given according to Roy's Adaptation Model. The reason for the diagnosis of *disturbed sleep pattern*, one of the diagnoses that could not be resolved, was associated with the high number of visits and the postpartum women not receiving sufficient support for their daily housework and infant care. Similarly, in Nazik's (2009) study, one of the diagnoses that could not be resolved was *disorder in the sleep routine*. Some other studies have also determined that women in the postpartum period had sleep disorders [18] [33]-[35].

The *fatigue* diagnosis is also considered as not resolved due to the lack of people to help the postpartum women in their domestic responsibilities and infant care. Again, this was also the case in Nazik's (2009) study, and Rychnovsky and Hunter's (2009) study concluded that sleep disorders in postpartum women in the postpartum period increased their fatigue [33] [36]. Similarly, in the studies of Gungor *et al.* (2004), Guner (2007) and Doganer (2005), fatigue was one of the problems experienced by postpartum women [18] [34] [35].

The fact that *changes in comfort-pain (abdomen)* diagnosis could not be resolved is considered to be due to the longer recovery process of postpartum women following caesarean delivery, compared to those who had a vaginal delivery. In Nazik's (2009) study the reason for resolution of the *change in comfort (perineum)* diagnosis might be associated with different delivery methods [33]. In the study conducted by Gungor *et al.* (2004) to evaluate the problems of postpartum women who had had caesarean delivery, abdominal strain, pain and gas complaints were observed [18].

The reason why changes in *comfort-pain (Breast)* could not be resolved is considered related to the fact that postpartum women who had undergone a surgical operation failed to take the correct position for breastfeeding, which ultimately causes problems in the breasts as a complication. In Nazik's (2009) study, the diagnosis of *change in comfort (breast)* was remedied; once again this may be due to the differences in the delivery methods [33]. Similar to the study result, Gungor *et al.* (2004) found that "*difficulty in breastfeeding and breast problems*" was one of the physical problems identified [18].

It was determined that the *constipation* diagnosis decreased as the time after surgery increased. This diagnosis could not be resolved in one of the postpartum woman; however, she had had continuous constipation even before pregnancy and thus this lack of resolution might be associated with the related condition. In Doganer's (2005) study, it was also found that postpartum women had constipation in the postpartum period [34].

4.2. Discussion of Diagnoses for Self-Concept Requirements

In the *experimental group*, the following diagnoses for self-concept requirements were established: *loneliness*, *situational low self-esteem*, *knowledge deficit (nutrition)*, *knowledge deficit (hygiene)*, *knowledge deficit (breastfeeding)*, *knowledge deficit (family planning)*, and *disturbed body image*. Of these diagnoses, *situational*

low self-esteem and *disturbed body image* diagnoses could not be resolved. When the diagnoses determined in the first and the last interviews were compared, the difference between all other diagnoses (with the exception of *knowledge deficit-family planning*) was statistically significant ($p < 0.05$).

In the **control group**, the following diagnoses were established in the evaluation carried out in the 7th week: *loneliness*, *situational low self-esteem*, *knowledge deficit (nutrition)*, *knowledge deficit (hygiene)*, *knowledge deficit (breastfeeding)*, *knowledge deficit (family planning)*, and *disturbed body image*.

When the diagnoses of the postpartum women in the experimental and control groups determined during the last interview in terms of self-concept requirements were compared, the difference between all other diagnoses (with the exception of *disturbed body image*) was statistically significant ($p < 0.05$). The fact that the majority of the nursing diagnoses for self-concept requirements were resolved shows the effectiveness of the care given according to Roy's Adaptation Model.

One of the diagnoses that could not be recovered, *situational low self-esteem*, is considered to be due to hormonal fluctuations, physical and social changes, mood changes after birth, social isolation, fatigue, failure in adapting to the motherhood role and lack of people to help the postpartum women in their domestic responsibilities and infant care. Failure in providing the postpartum women with the required support postpartum in this period might adversely affect their physical and mental health. Similarly, in the study by Najman *et al.* (2000), reported women experiencing low self-esteem during the postpartum period [37].

The reason behind why the *disturbed body image* diagnosis could not be resolved is considered to be due to reasons such as having been undergone a surgical operation, not being able to quickly lose the weight gained during pregnancy and the change in the interest of the husband from his wife to the baby. In the studies conducted by Gungor *et al.* (2004) and Doganer (2005), postpartum women also stated that they experienced negative body image [18] [34].

4.3. Discussion of Diagnoses for Role Function Requirements

In the **experimental group**, the following diagnoses were established for role function requirements: *caregiver role strain*, *risk of ineffective parenthood*, *impaired home maintenance* and *social isolation*. Of these diagnoses, the *risk of ineffective parenthood*, *impaired home maintenance* and *social isolation* were resolved. The diagnosis of *caregiver role strain* could not be resolved, despite all the suitable interventions made during all postpartum visits. When the diagnoses determined in the first and last interviews were compared, the difference for all diagnoses was statistically significant ($p < 0.001$).

In the **control group**, the following diagnoses for role function requirements were established: *caregiver role strain*, *caregiver role strain* and *social isolation*.

When the diagnoses of postpartum women in the experimental and control groups determined in the last interview in terms of role function requirements were compared, the difference between all diagnoses was statistically significant ($p < 0.05$). The fact that the majority of the diagnoses determined in terms of role function requirements were resolved shows the effectiveness of the care given according to Roy's Adaptation Model.

The fact that caregiver role strain diagnosis could not be resolved is considered to be due to the lack of people to help the postpartum women in their domestic responsibilities and infant care. Studies conducted by Gungor *et al.* (2004), Guner (2007) and Doganer (2005) support this finding that postpartum women had difficulty caring for themselves and their babies [18] [34] [35]. In their study, Logsdon and Koniak-Griffin (2005) indicated that providing the mothers with sufficient support in the postpartum period, when both physical and psychological changes are intensely experienced, would positively affect their physical and mental health [38].

4.4. Discussion of Diagnoses for Interdependence Requirements

In the **experimental group**, the following diagnoses for interdependence requirements were established: *change the role of parental*, *interruption family processes* and *conflict in the parental role*. When the diagnoses identified in the first and last interviews were compared, the difference between the majority of diagnoses was statistically significant ($p < 0.001$).

In the **control group**, for interdependence requirements, the diagnosis of *interruption family processes* was established.

When the diagnoses of postpartum women in the experimental and control groups determined in the last interview in terms of interdependence requirements were compared, the difference between diagnosis of *interruption*

family processes was statistically significant ($p < 0.05$). The fact that all the diagnoses for interdependence requirements were resolved shows that the care given according to Roy's Adaptation Model was efficient. As a result of the care given to the postpartum women in the postpartum period based on Roy's Adaptation Model, fewer problems were experienced. This result shows that the hypothesis of "**The care given using Roy's Adaptation Model to postpartum women who had had caesarean delivery reduces or prevents the frequency of postpartum problems**" is verified. Similarly, in the studies conducted by Kiliç (2011), Nazik (2009) and Koç (2005) using the model, the care given during the postpartum period also decreased/prevented the postpartum complications [33] [39] [40]. The mentioned studies produced similar results, since they provided model-based care. In the studies using the models it was observed that the care results were more effective and systematic. Furthermore, in the studies of De la Rosa *et al.* (2009) and Wager *et al.* (2004), it was found that postpartum home visits positively affected maternal and infant health [41] [42]. However, although the results in these studies were positive, they had solved fewer problems and were less systematic.

5. Conclusion and Recommendations

In this study, for 6 weeks of the postpartum period a total of seven interviews were conducted with the postpartum women in the experimental group and 36 nursing diagnoses were established in total. *Physiological* requirements comprised 22 of these diagnoses, 7 included *Self-concept* requirements, 4 included *Role Function* requirements and three included *Interdependence Mode* requirements. The majority of the established diagnoses were resolved with the care provided.

In the study, two interviews were conducted with the postpartum women in the control group and 23 nursing diagnoses were established in total. *Physiological* requirements comprised 12 of these diagnoses, 7 included *Self-concept* requirements, 3 included *Role Function* requirements and one included *Interdependence Mode* requirements.

As a result of the care provided, when diagnoses of the postpartum women in the experimental and control groups determined in the last week of postpartum were compared, the difference between most diagnoses was statistically significant ($p < 0.05$). This result shows that the group receiving care had fewer problems.

As a result of the care provided using Roy's Adaptation Model, the majority of the postpartum problems were reduced.

As a result of the care provided using Roy's Adaptation Model, the majority of the nursing diagnoses determined in the postpartum period were resolved after care.

It was determined that Roy's Adaptation Model was an effective care model for postpartum women who had had caesarean delivery.

6. Further Research Recommendations

In order to eliminate/prevent problems that might develop in the postpartum period and to increase the adaptation to postpartum, the following can be recommended:

Nursing care should be given to postpartum women who have had caesarean delivery by using Roy's Adaptation Model;

The care should be given to postpartum women who have had caesarean delivery should be provided using different nursing models and the care results should be compared;

Future studies should be conducted in different geographical regions and in a larger sample group in order for Roy's Adaptation Model to be used as a standard during the postpartum period.

Contributions

Study design: SEA, TP; data collection and analysis: SEA; and manuscript preparation: SEA, TP.

Conflict of Interest

None.

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