

**Impact of Using a Mirror in the Second Stage of Labor on Childbirth Duration and  
Experience: A Randomized Controlled Trial**

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## **STUDY PROTOCOL AND STATISTICAL ANALYSIS PLAN**

### **1. Title of the Study**

Impact of Using a Mirror in the Second Stage of Labor on Childbirth Duration and Experience:  
A Randomized Controlled Trial

### **2. Background and Rationale**

Childbirth is a critical period for maternal health. The second stage of labor, from full cervical dilation to birth, is particularly demanding. Recent studies suggest that visual biofeedback (e.g., using a labor mirror) may improve maternal control, reduce fear, and shorten labor. However, there is limited empirical evidence from randomized controlled trials, especially in the Turkish context.

### **3. Study Objectives and Hypotheses**

#### **Aims:**

- To assess the impact of labor mirror use on the duration of the second stage of labor.
- To evaluate the effect of labor mirror use on maternal birth experience.

#### **Hypotheses:**

**H<sub>0</sub>-1:** There is no difference in second-stage labor duration between the mirror and control groups.

**H<sub>1</sub>-1:** There is a significant difference in second-stage labor duration between the groups.

**H<sub>0</sub>-2:** There is no difference in Childbirth Experience Questionnaire (CEQ) scores between the mirror and control groups.

**H<sub>1</sub>-2:** There is a significant difference in CEQ scores between the groups.

### **4. Study Design**

Randomized controlled, non-blinded, parallel-group design.

### **5. Study Setting and Timeline**

**Site:** Kocaeli Darica Farabi Training and Research Hospital, Turkey

**Study Period:** February 2023 – July 2024

## 6. Participants

### **Inclusion Criteria:**

- Aged  $\geq 18$  years
- Gestational week 38–42
- Low-risk, healthy singleton pregnancy
- Literate in Turkish

### **Exclusion Criteria:**

- Preterm labor, epidural, fetal complications, meconium-stained fluid
- Assisted deliveries (e.g., forceps, vacuum)
- Withdrawal from mirror use or complications in second stage

## 7. Sample Size and Randomization

Using G\*Power (v3.1.9.2) based on Palompon et al. (2011), effect size=1.93, power=0.99,  $\alpha=0.05$ :

Total: 122 participants (61 per group)

Random Allocation Software was used.

## 8. Interventions

**Intervention Group:** Participants were informed and consented. A perineal mirror was fixed to the delivery bed during the second stage of labor, allowing women to visualize fetal descent.

**Control Group:** Received standard care with no mirror.

### **Outcome Measures**

#### **Primary Outcome:**

Duration of second stage of labor (in minutes)

#### **Secondary Outcome:**

Maternal childbirth experience using the Childbirth Experience Questionnaire (CEQ)

## 10. Data Collection Tools

Personal Information Form

CEQ (validated Turkish version)

Opinion Form on Labor Mirror Use

## **11. Statistical Analysis Plan**

Descriptive statistics (mean, SD, frequencies)

Shapiro-Wilk test for normality

Mann-Whitney U test for group comparisons

Pearson Chi-Square for categorical variables

p-value <0.05 considered statistically significant

Software: IBM SPSS Statistics v20

## **12. Ethical Considerations**

**Approval:** Kocaeli Derince Training and Research Hospital Ethics Committee (2023-13)

Written informed consent obtained

Data anonymized

Compliance with Declaration of Helsinki

## **13. Data Sharing Statement**

Data is available from the corresponding author upon reasonable request.

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