

**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:

H₀₋₁: There is no difference in second-stage labor duration between the mirror and control groups.

H₁₋₁: There is a significant difference in second-stage labor duration between the groups.

H₀₋₂: There is no difference in Childbirth Experience Questionnaire (CEQ) scores between the mirror and control groups.

H₁₋₂: 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 ≥ 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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