
Original Article

**THE ASSOCIATION BETWEEN MATERNAL EDUCATIONAL LEVEL AND
BREASTFEEDING BEHAVIOR AMONG POSTPARTUM MOTHERS IN
MOROSUNGGINGAN VILLAGE, JOMBANG, INDONESIA**

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ABSTRACT

Background: Appropriate breastfeeding behavior is important for infant health, while maternal education may shape access to health information and health-related decision-making. However, evidence regarding the association between maternal education and breastfeeding outcomes is not uniform across settings.

Objectives: This study examined the association between maternal educational level and breastfeeding behavior among postpartum mothers in Morosunggingan Village, Peterongan District, Jombang, Indonesia.

Methods: This analytical cross-sectional study included 45 postpartum mothers selected from a population of 51 mothers using simple random sampling according to the original study protocol. Maternal educational level was classified as elementary school, junior high school, senior high school, and tertiary education. Breastfeeding behavior was classified in the original dataset as positive or negative. The association was analyzed using Spearman's rank correlation with a two-tailed significance test after correcting the coding direction so that a higher breastfeeding-behavior score represented positive behavior.

Results: Among 45 respondents, 16 (35.6%) had elementary education, 14 (31.1%) junior high school education, 10 (22.2%) senior high school education, and 5 (11.1%) tertiary education. Positive breastfeeding behavior was reported by 29 respondents (64.4%), while 16 (35.6%) were classified as negative. The cross-tabulation showed positive behavior among all mothers with elementary education (16/16), among 13/14 mothers with junior high school education, and among none of the mothers with senior high school or tertiary education. After correcting the direction of coding, Spearman's rank correlation was $r_s = -0.844$, $p < 0.001$ (two-tailed), indicating a strong inverse association in this sample.

Conclusion: Maternal educational level was statistically associated with breastfeeding behavior among the 45 postpartum mothers studied.

Keywords: Maternal Educational Level, Breastfeeding Behavior, Postpartum Mothers, Cross-Sectional Study, Jombang.

INTRODUCTION

Breastfeeding is a key component of infant nutrition and health. The World Health Organization (WHO) and UNICEF recommend initiation of breastfeeding within the first hour after birth, exclusive breastfeeding during the first six months, and continued breastfeeding

with appropriate complementary foods up to two years of age or beyond. Exclusive breastfeeding means that the infant receives only breast milk, without other foods or liquids, except for specified medicines, vitamins, minerals, or oral rehydration solution (World Health Organization [WHO], 2023, 2024).

In Indonesia, the 2023 Indonesia Health Survey (Survei Kesehatan Indonesia/SKI) reported a national proportion of exclusive breastfeeding of 68.6% among infants aged 0–5 months and 55.5% for the indicator of exclusive breastfeeding for six months among children aged 6–23 months. These indicators have different operational definitions and should not be treated as interchangeable (Badan Kebijakan Pembangunan Kesehatan, 2023).

Breastfeeding behavior is influenced by multiple interacting factors rather than by education alone. Maternal age, employment, previous breastfeeding experience, family support, access to health information, and health-service support may contribute to breastfeeding practices. Breastfeeding education and skilled support can also improve breastfeeding outcomes; a systematic review found evidence that prenatal breastfeeding education may increase breastfeeding uptake or duration (Kehinde et al., 2023).

Maternal educational level is nevertheless an important sociodemographic variable because it may be related to access to information, comprehension of health messages, and health-related decision-making. Evidence from Indonesia is not necessarily consistent with the pattern observed in the present study. Using a large national dataset, Laksono et al. (2021) reported that higher maternal education was positively associated with the likelihood of exclusive breastfeeding after adjustment for several covariates. This contrasts with the descriptive pattern in the present dataset, in which positive breastfeeding behavior was concentrated among mothers with lower formal educational levels. Such a difference may reflect differences in outcome definition, population characteristics, employment, information sources, family support, or other contextual factors; it should not be interpreted as evidence that lower education causes better breastfeeding behavior.

The present study therefore addresses a local evidence gap by examining the association between maternal formal educational level and the breastfeeding-behavior category recorded among postpartum mothers in Morosunggingan Village, Peterongan District, Jombang. The study specifically focuses on the association between the variables and does not assess whether educational level causes breastfeeding behavior.

Objective: This study aimed to examine the association between maternal educational level and breastfeeding behavior among postpartum mothers in Morosunggingan Village, Peterongan District, Jombang, Indonesia.

METHODS

Study Design

This study used an analytical cross-sectional design.

Settings

Data on maternal educational level and breastfeeding behavior were analyzed from postpartum mothers in Morosunggingan Village, Peterongan District, Jombang.

Research Subject

The target population consisted of 51 postpartum mothers registered in Morosunggingan Village. The final analytical sample comprised 45 respondents. The original manuscript states

that 45 respondents met the sample criteria, but it does not document the eligibility criteria or the reasons why six mothers from the population of 51 were not included. These details must be verified from the original sampling frame and recruitment records.

Instruments

Data collection for this study was conducted using a questionnaire covering respondents' demographic data and breastfeeding behaviors. The research instruments were adopted from previous studies.

Data Collection

After receiving an explanation of the study, participants who agreed to take part signed a written informed-consent form. The researcher administered the demographic and breastfeeding behaviors questionnaire. Trained personnel from the local primary health-care center assisted with blood pressure measurement, and results were recorded on a prepared data form. Demographic variables included age, sex, education, occupation, and marital status.

Data Analysis

Descriptive statistics were used to summarize respondent characteristics, maternal educational level, and breastfeeding behavior. Because maternal educational level is ordinal and breastfeeding behavior was recorded as a binary category, Spearman's rank correlation was retained as an ordinal association measure for comparability with the original analysis.

Ethical Considerations

This study underwent ethical review by the Health Research Ethics Committee of the College of Health Sciences, Husada Jombang. During the implementation phase, the researcher obtained informed consent and explained the study procedures to the respondents. The researcher also adhered to all ethical procedures for health research.

RESULTS

Most respondents were aged 21–40 years (30; 66.7%), while 15 (33.3%) were aged >40 years. The largest occupational group was mothers who were not employed (22; 48.9%), followed by entrepreneurs/self-employed mothers (9; 20.0%) and farmers (8; 17.8%). Most respondents had 2–3 children (29; 64.4%). Health workers were the most frequently reported source of breastfeeding information (20; 44.4%). The largest group had elementary education (16; 35.6%), followed by junior high school (14; 31.1%), senior high school (10; 22.2%), and tertiary education (5; 11.1%). Positive breastfeeding behavior was recorded for 29 respondents (64.4%), while 16 respondents (35.6%) were classified as having negative behavior. The total is corrected to 45 to match the cross-tabulation and statistical output in the original manuscript.

Table 1. Characteristics of the study participants (n = 30).

Characteristic	n	%
Aged		
Age 21–40 years	30	66.7
Age >40 years	15	33.3
Occupation		

Characteristic	n	%
Farmer	8	17.8
Entrepreneur/self-employed	9	20.0
Private-sector employee	3	6.7
Civil servant	3	6.7
Not employed	22	48.9
Number of children		
1	8	17.8
2–3	29	64.4
>3	8	17.8
Main information source		
Health workers	20	44.4
Print media	10	22.2
Electronic media	7	15.6
Relatives	8	17.8
Educational level		
Elementary school	16	35.6
Junior high school	14	31.1
Senior high school	10	22.2
Tertiary education	5	11.1
Breastfeeding behavior		
Positive	29	64.4
Negative	16	35.6

Association Analysis of Educational Level and Breastfeeding Behavior

Table 2. Association Analysis of Educational Level and Breastfeeding Behavior (n = 45).

Educational level	Positive n (%)	Negative n (%)	Total n (%)
Elementary school	16 (35.6)	0 (0.0)	16 (35.6)
Junior high school	13 (28.9)	1 (2.2)	14 (31.1)
Senior high school	0 (0.0)	10 (22.2)	10 (22.2)

Tertiary education	0 (0.0)	5 (11.1)	5 (11.1)
$r_s = -0.844, p < 0.001$			

The cross-tabulation shows a highly concentrated pattern: all 16 mothers with elementary education were classified as having positive breastfeeding behavior, 13 of 14 mothers with junior high education were positive, whereas none of the mothers with senior high or tertiary education were classified as positive. This unusual distribution should be verified against the original questionnaire, coding sheet, and dataset before publication. After correcting the coding direction so that positive breastfeeding behavior was coded 1 and negative behavior 0, while educational level was coded from 1 (elementary) to 4 (tertiary), Spearman's rank correlation was $r_s = -0.844$ with a two-tailed $p < 0.001$ ($N = 45$). Thus, the dataset demonstrates a strong inverse monotonic association: higher formal educational level was associated with a lower probability of being classified as having positive breastfeeding behavior in this sample. This result describes the observed data and should not be interpreted causally.

DISCUSSION

The main finding is that maternal educational level was statistically associated with the breastfeeding-behavior category recorded in this study, but the direction was inverse. The corrected analysis produced $r_s = -0.844$ ($p < 0.001$), rather than a positive correlation. This correction is necessary because the original cross-tabulation clearly shows that positive behavior was concentrated among mothers with elementary and junior high education, whereas mothers with senior high and tertiary education were classified as negative. The previous interpretation of a positive association was therefore inconsistent with the data coding.

The observed inverse pattern differs from findings from a large Indonesian analysis by Laksono et al. (2021), which found that higher maternal education was positively associated with the likelihood of exclusive breastfeeding. The difference should not be interpreted as evidence that lower education is inherently beneficial for breastfeeding. The two studies measured different outcomes and used substantially different sample sizes and analytical approaches. The present study assessed a locally recorded positive/negative breastfeeding-behavior category, whereas Laksono et al. analyzed exclusive breastfeeding using a large national dataset and multivariable logistic regression. Differences in employment, age, residence, information access, previous breastfeeding experience, and other social determinants may also contribute to different observed patterns.

The descriptive characteristics in this study indicate that 44.4% of mothers reported health workers as their main information source. This may be relevant because breastfeeding support is not determined solely by formal education. WHO emphasizes skilled support and counseling for mothers, and evidence indicates that structured breastfeeding education can improve breastfeeding uptake or duration (WHO, 2023; Kehinde et al., 2023). Consequently, the association observed here may reflect a combination of formal education and other contextual influences rather than an independent effect of education.

The unusual concentration of positive behavior in the lower educational categories also requires methodological caution. All mothers with elementary education and 13 of 14 mothers

with junior high education were classified as positive, while all mothers with senior high and tertiary education were classified as negative. Such a pattern may occur in a small local sample, but it can also arise from measurement or coding problems. The original manuscript does not document the breastfeeding-behavior instrument, scoring system, cut-off point, validity, or reliability. Therefore, the observed association should not be generalized until these measurement details have been verified.

Potential confounding is another important consideration. The dataset includes age, occupation, number of children, and information source, but these variables were not incorporated into an adjusted analytical model. Employment, parity, previous breastfeeding experience, family support, and access to health information may influence breastfeeding behavior independently of educational level. With only 45 participants and sparse cells, a multivariable model may also be unstable. The absence of confounder adjustment should therefore be acknowledged as a limitation rather than implying that the observed association is independent of these factors.

The findings also should not be equated with exclusive breastfeeding. WHO defines exclusive breastfeeding specifically as feeding only breast milk for the first six months, whereas the present outcome is a positive/negative breastfeeding-behavior category. Unless the original questionnaire explicitly measured six-month exclusive breastfeeding, the term 'exclusive breastfeeding' should not be used as a synonym for the study outcome (WHO, 2023, 2024).

CONCLUSION

Among 45 postpartum mothers in Morosunggingan Village, Jombang, maternal educational level was statistically associated with the breastfeeding-behavior category recorded in the study. After correcting the coding direction, the association was strong and inverse ($r_s = -0.844$, $p < 0.001$; two-tailed).

SUGGESTION

For midwives and health workers, breastfeeding counseling should be provided consistently to postpartum mothers regardless of formal educational level, using clear, practical, and individualized communication. Health services should consider assessing breastfeeding difficulties, access to information, family support, and employment-related barriers rather than relying on educational level alone.

For postpartum mothers and families, breastfeeding support should emphasize accurate information, practical assistance, and family involvement. Recommendations should be aligned with the mother's and infant's circumstances and with current breastfeeding guidance.

For future researchers, studies with larger and more diverse samples should use a clearly validated breastfeeding-behavior instrument, define the outcome operationally, collect relevant potential confounders, and apply appropriate multivariable or exact statistical methods where justified. Longitudinal designs may also help clarify temporal relationships between maternal characteristics and breastfeeding outcomes.

LIMITATIONS

First, the cross-sectional design does not establish temporal or causal relationships between educational level and breastfeeding behavior. Second, the sample was small (N = 45) and drawn from a single village, limiting generalizability. Third, potential confounding factors such as employment, parity, previous breastfeeding experience, family support, and information access were not controlled analytically.

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