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## Review of the Link Between Health Literacy Levels and Breastfeeding Self-Efficacy Perceptions of Pregnant Women in Age Groups with Risk and No Risk<sup>1,2</sup>

### *Riskli Yaş Grubunda Olan ve Olmayan Gebelerin Sağlık Okuryazarlık Düzeyleri ve Emzirme Öz-Yeterlilik Algıları Arasındaki İlişkinin İncelenmesi*

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#### ABSTRACT

**Introduction:** In the context of pregnancy, maternal age, health literacy, and breastfeeding self-efficacy constitute critical determinants of both maternal and neonatal health.

**Aim:** This study was performed as a descriptive and correlational analysis to assess the health literacy levels and breastfeeding self-efficacy of pregnant women in risk and non-risk age groups. It aims to identify influencing factors and examine the relationship between these variables.

**Methods:** The study was conducted in the obstetrics outpatient clinic of a training and research hospital from January to May 2023. The study population comprised third-trimester pregnant women who visited the gynecology outpatient clinic.

**Results:** A total of 165 pregnant women participated in the study: 55 in the adolescent group (first group) who were 18 years old or above, 55 in the normal age group (second group), and 55 in the advanced age group (third group), consisting of women aged 35 years and older. Data was collected using the Sociodemographic Information Form, the Prenatal Breastfeeding Self-Efficacy Scale and the Turkish Health Literacy Scale. According to age groups, the mean total scores on the Prenatal Breastfeeding Self-Efficacy Scale were  $70.69 \pm 13.76$  for the adolescent pregnant group,  $75.80 \pm 12.56$  for the normal age pregnant group and  $81.15 \pm 12.01$  for the advanced age pregnant group. The mean Turkish Health Literacy Scale scores across the groups were adequate as follows: adolescent group  $34.53 \pm 8.19$ , normal age group  $38.26 \pm 8.01$ , and advanced age group  $35.45 \pm 9.07$ . It was found that as the Turkish Health Literacy Scale total score increased among pregnant women in the adolescent, adult, and advanced age groups, their Prenatal Breastfeeding Self-Efficacy Scale scores also increased.

**Conclusion:** It was determined that age during pregnancy significantly influenced breastfeeding self-efficacy, with higher self-efficacy observed in the advanced age group. It was found that there was a positive correlation between health literacy levels and breastfeeding self-efficacy perceptions among pregnant women.

**Keywords:** Breast feeding; health literacy; pregnancy.

#### ÖZ

**Giriş:** Gebelik döneminde kadınların yaş özellikleri, sağlık okuryazarlığı ve emzirme öz-yeterliliği hem anne hem de bebek sağlığı açısından önemli belirleyiciler arasında yer almaktadır.

**Amaç:** Bu çalışma, riskli ve riskli olmayan yaş gruplarındaki gebelerin sağlık okuryazarlığı düzeyleri ile emzirme öz-yeterliliklerini belirlemek, bu değişkenleri etkileyen faktörleri ortaya koymak ve aralarındaki ilişkiyi incelemek amacıyla tanımlayıcı ve korelasyonel bir araştırma olarak yürütülmüştür.

**Yöntem:** Araştırma, Ocak – Mayıs 2023 tarihleri arasında bir eğitim ve araştırma hastanesinin kadın hastalıkları ve doğum polikliniğinde gerçekleştirilmiştir. Araştırmanın evrenini, kadın hastalıkları ve doğum polikliniğine başvuran üçüncü trimesterdeki gebeler oluşturmıştır. Veriler Sosyodemografik Bilgi Formu, Prenatal Emzirme Öz-Yeterlilik Ölçeği ve Türkiye Sağlık Okuryazarlığı Ölçeği kullanılarak toplanmıştır.

**Bulgular:** Araştırmaya toplam 165 gebe katılmıştır: 18 yaş ve altındaki adolesan gebelerden oluşan birinci grupta 55 kişi, normal yaş grubunda (ikinci grup) 55 kişi ve 35 yaş ve üzerindeki gebelerden oluşan ileri yaş grubunda (üçüncü grup) 55 kişi yer almıştır. Yaş gruplarına göre Prenatal Emzirme Öz-Yeterlilik Ölçeği toplam puan ortalamaları; adolesan gebelerde  $70,69 \pm 13,76$ , normal yaş grubunda  $75,80 \pm 12,56$  ve ileri yaş grubunda  $81,15 \pm 12,01$  olarak bulunmuştur. Türkiye Sağlık Okuryazarlığı Ölçeği puan ortalamalarının ise tüm gruplarda yeterli düzeyde olduğu belirlenmiştir: adolesan grupta  $34,53 \pm 8,19$ , normal yaş grubunda  $38,26 \pm 8,01$  ve ileri yaş grubunda  $35,45 \pm 9,07$ . Araştırmada, adolesan, normal ve ileri yaş gruplarındaki gebe kadınlarda Türkiye Sağlık Okuryazarlığı Ölçeği toplam puanı arttıkça, Prenatal Emzirme Öz-Yeterlilik Ölçeği puanlarının da arttığı belirlenmiştir.

**Sonuç:** Gebelikte yaşı en emzirme öz-yeterliliği üzerinde anlamlı bir etkisinin olduğu ve ileri yaş grubundaki gebelerde öz-yeterliliğin daha yüksek olduğu belirlenmiştir. Ayrıca gebelerin sağlık okuryazarlığı düzeyleri ile emzirme öz-yeterlilik algıları arasında pozitif yönlü bir ilişki olduğu saptanmıştır.

**Anahtar kelimeler:** Emzirme; gebelik; sağlık okuryazarlığı.



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## Introduction

The World Health Organization (WHO, 2024) and the United Nations Population Fund (UNFPA, 2015) jointly define adolescence as the period between the ages of 10 and 19, acknowledging that this range may vary based on individual, gender, and societal factors. Adolescent pregnancies are defined as pregnancies occurring between the ages of 10 and 19 years, whether officially or unofficially, within the category of high-risk pregnancies (Karakaya Suzan & Çınar, 2021). In addition to pregnancies occurring at an early age, pregnancies at an advanced age are also categorized as high-risk. Pregnancies at the age of 35 and above are classified as advanced age pregnancies, while those at the age of 40 and above are classified as very advanced age pregnancies (Hadiwinata, Djuwantono & Suardi, 2025). Globally, 21 million girls aged 15 to 19 become mothers each year, and an additional two million girls over the age of 15 give birth (Kassa, Arowojolu, Odukogbe & Yalew, 2018). The age at which women give birth can significantly impact the health of both the mother and the baby (Türkiye Nüfus ve Sağlık Araştırması [TNSA], 2018). While early motherhood can adversely affect maternal and child health in various ways, later motherhood introduces additional risk factors such as gestational diabetes, preterm birth, and developmental delays (Maheshwari, Khalid, Patel, Alghareeb & Hussain, 2022). Additionally, the age at which a woman delivers can influence both breastfeeding behavior and attitudes toward breastfeeding (Altun & Öcalan, 2025; Gurgan, Gomeksiz & Yakar, 2025). Breastfeeding is a highly dynamic, instinctive behavior that encompasses both the physiological and emotional processes of the mother (Rollins et al., 2016). This instinctive behavior is influenced by factors related to the mother, the infant, the mother-infant interaction, and the environment. Since expectant mothers make decisions and preparations for breastfeeding during the prenatal period, high levels of self-efficacy during this time positively influence breastfeeding outcomes and contribute to a healthier postnatal period (Nelson, Perrine & Scanlon, 2018). The ability of pregnant women to enhance self-efficacy and develop problem-solving skills during the prenatal period is influenced by their health literacy levels, which encompass their capacity to obtain, comprehend, utilize, and apply fundamental information related to general health issues (Kilfolye, Vitko, O'Connor & Bailey, 2016). Therefore, it is crucial to enhance literacy levels, self-management skills, and self-efficacy during the prenatal period to establish a healthy foundation for both the child and the mother. All counseling services for pregnant women should prioritize those in risky age groups during the prenatal period. Interventions should focus on enhancing their literacy levels and boosting their self-efficacy for breastfeeding (McQueen, Dennis, Stremmler & Norman, 2011; Öztürk, Ergün & Özyazıcıoğlu, 2020; Piro & Ahmed, 2020; Kaya Şenol & Çaksak Pekyigit, 2021).

This study was performed as a descriptive and correlational analysis to assess the health literacy levels and breastfeeding self-efficacy of pregnant women in risk and non-risk age groups. It aims to identify influencing factors and examine the relationship between these variables.

## Aim

This study was designed as a descriptive and correlational study to determine the health literacy levels and breastfeeding self-efficacy

of pregnant women in and out of the risky age group and the factors affecting them and to determine the correlation between them.

## Research Questions

1. What are the health literacy levels of pregnant women in and out of the risky age group?
2. Do the sociodemographic and obstetric characteristics of pregnant women in and out of the risky age group affect their health literacy levels?
3. What are the levels of prenatal breastfeeding self-efficacy among pregnant women in and out of the risky age group?
4. Do the sociodemographic and obstetric characteristics of pregnant women in and out of the risky age group affect their prenatal breastfeeding self-efficacy levels?
5. Is there a relationship between health literacy levels and prenatal breastfeeding self-efficacy among pregnant women in and out of the risky age group?

## Methods

### Study Design

This study was designed as a descriptive and correlational study to determine the health literacy levels and breastfeeding self-efficacy of pregnant women in and out of the risky age group and the factors affecting them and to determine the correlation between them.

### Study Setting and Relevant Context

The study was conducted with pregnant women who came to the gynaecology and obstetrics polyclinic of a training and research hospital for non-stress test measurement.

### Study Sample

The research was conducted in the obstetrics outpatient clinic of a training and research hospital from January 2023 to May 2023. The study population comprised third-trimester pregnant women who visited the gynecology outpatient clinic. The use of Analysis of Variance (ANOVA) was planned for the sample selection in this study. The effect size was considered as a medium effect size. Accordingly, when the study was conducted with 53 pregnant women in the adolescent group (first group, aged 18 years), 53 pregnant women in the normal age group (second group), and 53 pregnant women in the advanced maternal age group (third group, aged 35 years and above), the statistical power of the study was calculated as 80.4% with a 0.5 (medium) effect size and a 0.05 significance level. Based on this calculation and considering data losses, 55 pregnant women were included in each group, and the study was completed with a total of 165 participants. The power analysis was performed using the G\*Power software package. Following the acquisition of informed consent from participants who agreed to take part in the study, researchers conducted face-to-face interviews to complete the pre-prepared questionnaire forms.

### Study Measurement

In the data collection phase, a sociodemographic information form, developed based on existing literature, was utilized (Aydın & Aba, 2019; Gözüyeşil, Tar & Ünal, 2020; Semerci, Karkin, Bolsoy & Sezer,

2023). The study employed the Prenatal Breastfeeding Self-Efficacy Scale (PBSES), which was validated and reliability-tested in Turkish by Hazar and Akça (2018), and the Turkish Health Literacy Scale (TSOY-32), which was validated and reliability-tested in Turkish by Okyay and Abacıgil (2016). Permission to use both scales was granted.

### Data Collection Tools

**Sociodemographic Information Form:** The questionnaire, developed based on existing literature, comprised inquiries regarding the sociodemographic characteristics of the pregnant woman, such as age, occupation, and income status. It also covered her obstetric history, including the number of pregnancies and births, gestational age, whether the pregnancy was planned, prior education on breastfeeding, her attitude towards breastfeeding, and sources of health-related information. The sociodemographic information form includes 20 questions in total (Aydın & Aba, 2019; Gözüyeşil et al., 2020; Semerci et al., 2023).

**The Prenatal Breastfeeding Self-Efficacy Scale:** The scale consists of 19 items in its Turkish adaptation. The minimum score is 20 and the maximum score is 100, there is no cut-off point. The scale is divided into four subscales: wishes, information gathering, breastfeeding in front of other people, and skills. The overall internal consistency reliability coefficient of the scale was found to be 0.86 (Hazar & Akça, 2018). In this study, the Cronbach's alpha coefficient calculated for the scale was 0.89.

**Turkish Health Literacy Scale:** The scale consists of eight components organized under two dimensions (treatment and services; disease prevention/health promotion) and four processes (accessing health-related information, comprehending health-related information, evaluating health-related information, and using or applying health-related information). It consists of 32 items in total. Items are evaluated as follows: 1: very easy, 2: easy, 3: difficult, 4: very difficult, 5: no idea. The total score is standardized using a formula to fall within the range of 0 to 50. The calculated scores are evaluated in four categories; 0 - 25: insufficient, 25 - 33: problematic-limited, 33 - 42: sufficient, 42 - 50: excellent). The overall internal consistency coefficient of the scale was calculated as 0.92 (Okyay & Abacıgil, 2016). In this study, the Cronbach's alpha coefficient calculated for the scale was found to be 0.96.

### Data Analysis

Statistical analyses were conducted using the IBM SPSS Statistics 27 software package. Parametric tests were applied for normally distributed data (independent samples t-test for two groups and ANOVA for three or more groups), while non-parametric tests

(Mann-Whitney U and Kruskal-Wallis H) were used for non-normally distributed data. Associations between categorical variables were analyzed using the Pearson chi-square test. Correlations between continuous variables were assessed using Pearson or Spearman correlation coefficients, depending on data distribution.

### Ethical Approval

Ethics committee approval (research code 2022-1045, dated 21.09.2022), institutional permission (E-50687469-799, dated 22.12.2022), and authorization for the use of the scale were obtained for the study. Written consent was obtained from participants who agreed to participate in the study, and written permission for the data collection tools used in the study was obtained from the respective authors via email. The research was conducted in accordance with the Helsinki Declaration of Human Rights.

## Results

### Findings Related to Descriptive and Obstetric Characteristics of Pregnant Women

The mean ages of the groups were as follows:  $18.80 \pm 0.404$  years in the adolescent pregnant group,  $27.18 \pm 3.367$  years in the normal age pregnant group, and  $37.33 \pm 2.152$  years in the advanced age pregnant group. In our study, which analyzed data across three different age groups, the mean age of the pregnant women was calculated to be  $27.77 \pm 7.94$  years. It was found that 67.3% of the pregnant women in the adolescent age group and 47.3% in the normal age group were experiencing their first pregnancy. In contrast, 50.9% of the pregnant women in the advanced age group had undergone three or more pregnancies. It was found that pregnant women in both the adolescent and normal age groups predominantly had no prior breastfeeding experience, whereas those in the advanced age group generally had previous breastfeeding experience. Among pregnant women in the adolescent age group, 14.6% were classified as having inadequate health literacy, 43.6% were categorized as problematic or limited, 18.2% had adequate health literacy, and 23.6% exhibited excellent health literacy. Among pregnant women in the normal age group, 3.6% were classified as having inadequate health literacy, 38.2% were categorized as problematic or limited, 25.5% had adequate health literacy, and 32.7% exhibited excellent health literacy. Among pregnant women in the advanced age group, 12.7% were classified as having inadequate health literacy, 30.9% were categorized as problematic or limited, 34.6% had adequate health literacy, and 21.8% exhibited excellent health literacy. There was no statistically significant difference in TSOY-32 levels across the different age groups ( $p > 0.05$ ) (Table 1).

**Table 1: Distribution of Findings on Health Literacy Levels Among Pregnant Women by Age Groups (n = 165)**

| Age groups                    | Adolescent <sup>1</sup> (n = 55) |      | Normal Age <sup>2</sup> (n = 55) |      | Advanced Age <sup>3</sup> (n = 55) |      | Statistical analysis                |
|-------------------------------|----------------------------------|------|----------------------------------|------|------------------------------------|------|-------------------------------------|
| Variable                      | n                                | %    | n                                | %    | n                                  | %    |                                     |
| <b>Health Literacy Levels</b> |                                  |      |                                  |      |                                    |      |                                     |
| Insufficient                  | 8                                | 14.6 | 2                                | 3.6  | 7                                  | 12.7 | r <sup>†</sup> = 9.120<br>p = 0.167 |
| Problematic-limited           | 24                               | 43.6 | 21                               | 38.2 | 17                                 | 30.9 |                                     |
| Sufficient                    | 10                               | 18.2 | 14                               | 25.5 | 19                                 | 34.6 |                                     |
| Excellent                     | 13                               | 23.6 | 18                               | 32.7 | 12                                 | 21.8 |                                     |

<sup>1</sup>: Pearson Chi-Square

**Table 2: Distribution of Findings on TSOY-32 and PBSES Total Scores by Age Group Among Pregnant Women (n = 165)**

| Age groups<br>Scale Sub-dimension | Adolescent <sup>1</sup> (n = 55) | Normal Age <sup>2</sup> (n = 55) | Advanced Age <sup>3</sup> (n = 55) | Statistical<br>analysis                               |
|-----------------------------------|----------------------------------|----------------------------------|------------------------------------|-------------------------------------------------------|
|                                   | Median<br>[IQR]                  | Median<br>[IQR]                  | Median<br>[IQR]                    |                                                       |
| TSOY- 32 Total                    | 32.7<br>[13.5]                   | 40.1<br>[14.1]                   | 35.5<br>[12.5]                     | $k^{\dagger} = 6.038$<br>$p = 0.049^{*}$<br>[1-2]     |
| PBSES – Total                     | 74.0<br>[19.0]                   | 75.0<br>[18.0]                   | 82.0<br>[15.0]                     | $k^{\dagger} = 16.677$<br>$p < 0.001^{**}$<br>[1.2-3] |

IQR; Inter Quantile Range,  $k^{\dagger}$ :Kruskal-Wallis;  $*p < 0.05$ ;  $**p < 0.001$ ; TSOY-32: Turkish Health Literacy Scale; PBSES: Prenatal Breastfeeding Self-Efficacy Scale

### Findings on TSOY-32 and PBSES Scores Among Pregnant Women

A statistically significant difference was observed in the TSOY-32 total scores among different age groups ( $\chi^2 = 6.038$ ;  $p = 0.049$ ). Pregnant women in the normal age group exhibited significantly higher TSOY-32 total scores compared to those in the adolescent age group. A significant difference was observed in PBSES scores across age groups ( $\chi^2 = 16.677$ ;  $p < 0.001$ ). It was determined that the PBSES scores of pregnant women in the advanced age group were significantly higher than those of pregnant women in the adolescent and normal age groups (Table 2).

### Findings Concerning the Comparison of TSOY-32 and PBSES Scores Based on Various Descriptive and Obstetric Characteristics of Pregnant Women

A significant difference was found in TSOY-32 total scores based on educational level in pregnant women in the adolescent age group ( $Z = -2.071$ ;  $p = 0.038$ ). It was found that the TSOY-32 total scores of high school graduates were significantly higher than those of primary school graduates. A significant difference was found in TSOY-32 total scores of pregnant women in the normal age group based on their educational level ( $\chi^2 = 15.793$ ;  $p < 0.001$ ). It was identified that the TSOY-32 total scores of pregnant women with high school and bachelor's degree/above were significantly higher than those of pregnant women with primary education. A significant difference was found in TSOY-32 total scores of pregnant women in the normal age group based on their income levels ( $\chi^2 = 8.345$ ;  $p = 0.015$ ). It was found that the total TSOY-32 scores of individuals whose income equaled or exceeded their expenditure were significantly higher than those whose income fell short of their expenditure. A significant difference was found in TSOY-32 total scores of pregnant women in the normal age group depending on the frequency of book reading ( $\chi^2 = 9.201$ ;  $p = 0.010$ ). It was determined that the TSOY-32 total scores of those who read books occasionally and frequently were significantly higher than those who never read books. A significant relationship was observed between the TSOY-32 total scores of pregnant adolescents and the baby's gender ( $\chi^2 = 11.074$ ;  $p = 0.004$ ). It was determined that the TSOY-32 total scores were significantly higher for those whose baby's gender was female compared to those whose baby's gender was male or unknown (Table 3). A significant difference was found in PBSES scores based on educational level in pregnant women in the adolescent age group ( $Z = -2.610$ ;  $p = 0.009$ ). It was identified

that the PBSES scores of high school graduates were significantly higher than those of primary school graduates. A significant difference was found in the PBSES scores of pregnant women in the advanced age group based on educational level ( $\chi^2 = 5.997$ ;  $p = 0.049$ ). It was found that those who had a bachelor's degree/above had significantly higher PBSES scores than those who had a high school diploma. A significant difference was found in the PBSES scores of pregnant women in the advanced age group based on their breastfeeding experience ( $Z = -2.685$ ;  $p = 0.007$ ). It was identified that those with breastfeeding experience had significantly higher PBSES scores than those without breastfeeding experience.

### Findings on the Correlation Between the Total and Subscale Scores of the PBSES and TSOY-32 in Pregnant Women

It was found that as the TSOY-32 total score increased among pregnant women in the adolescent, adult, and advanced age groups, their PBSES scores also increased.

## Discussion

### Discussion of the Findings Related to the Descriptive and Obstetric Characteristics of Pregnant Women

In our study, 43.6% of pregnant women in the adolescent age group had problematic-limited and 18.2% had adequate health literacy, 38.2% of pregnant women in the normal age group had problematic-limited and 25.4% had adequate health literacy, and 30.9% of pregnant women in the advanced age group had problematic-limited and 34.6% had adequate health literacy. In a study conducted in Iran, it was found that 18.3% of the pregnant women had inadequate, 45.2% had problematic-limited and 36.5% had adequate health literacy (Pirdehghan, Eslahchi, Esna-Ashari & Borzouei, 2020). In a study conducted in the USA in which the health literacy level of pregnant women was examined, it was found that 22% of pregnant women had inadequate, 50% had problematic-limited and 28% had adequate health literacy level (Poorman, Gazmararian, Elon, & Parker, 2014). The literature is in parallel with our study (Table 1).

### Discussion of Findings on TSOY-32 and PBSES Scores Among Pregnant Women

In terms of age groups, the mean TSOY-32 total scores were determined as  $34.53 \pm 8.19$  in the adolescent,  $38.26 \pm 8.01$  in the normal and  $35.45 \pm 9.07$  in the advanced age group, respectively (Table 2). In a study examining health literacy and health practices among pregnant women, the mean score was reported as 36.08

**Table 3: Finding Concerning the Comparison of TSOY-32 Scale Scores of Pregnant Women Across Age Groups and Various Descriptive and Obstetric Characteristics**

| Age groups                                  | Adolescent <sup>1</sup> (n = 55) |                                | Normal Age <sup>2</sup> (n = 55) |                                    | Advanced Age <sup>3</sup> (n = 55) |                        |
|---------------------------------------------|----------------------------------|--------------------------------|----------------------------------|------------------------------------|------------------------------------|------------------------|
|                                             | TSOY-32                          |                                | TSOY-32                          |                                    | TSOY-32                            |                        |
| Variable                                    | n                                |                                | n                                |                                    | n                                  |                        |
| <b>Education level</b>                      |                                  |                                |                                  |                                    |                                    |                        |
| Primary Education <sup>(1)</sup>            | 21                               | Median 29.4 IQR [9.4]          | 9                                | Median 27.1 IQR [3.8]              | 13                                 | Mean 34.07 SD±9.64     |
| High School <sup>(2)</sup>                  | 34                               | Median 35.5 IQR [14.9]         | 20                               | Median 40.9 IQR [12.7]             | 16                                 | Mean 36.52 SD ±6.69    |
| Bachelor's/above <sup>(3)</sup>             | -                                | -                              | 26                               | Median 41.5 IQR [15.2]             | 26                                 | Mean 35.47 SD ±10.22   |
| <b>Statistical analysis*</b>                |                                  | $z^{tt} = -2.071$              |                                  | $k^{\ddagger} = 15.793$            |                                    | $f^{\S} = 0.255$       |
| <b>Difference</b>                           |                                  | <b>p = 0.038*</b>              |                                  | <b>p &lt; 0.001**</b><br>[1 - 2.3] |                                    | p = 0.776              |
| <b>Income level</b>                         |                                  |                                |                                  |                                    |                                    |                        |
| Income less than expenditure <sup>(1)</sup> | 13                               | Median 29.4 IQR [13.4]         | 7                                | Median 29.6 IQR [6.9]              | 12                                 | Mean 36.59 SD ±10.80   |
| Income equal to expenditure <sup>(2)</sup>  | 36                               | Median 32.4 IQR [12.5]         | 43                               | Median 41.2 IQR [14.1]             | 35                                 | Mean 34.61 SD ±8.72    |
| Income more than expenditure <sup>(3)</sup> | 6                                | Median 45.3 IQR [18.6]         | 5                                | Median 42.2 IQR [16.7]             | 8                                  | Mean 37.34 SD ±8.52    |
| <b>Statistical analysis*</b>                |                                  | $k^{\ddagger} = 4.351$         |                                  | $k^{\ddagger} = 8.345$             |                                    | $f^{\S} = 0.408$       |
| <b>Difference</b>                           |                                  | p = 0.114                      |                                  | <b>p = 0.015*</b><br>[1 - 2.3]     |                                    | p = 0.667              |
| <b>Frequency of book reading</b>            |                                  |                                |                                  |                                    |                                    |                        |
| Never <sup>(1)</sup>                        | 5                                | Median 27.8 IQR [5.9]          | 9                                | Median 31.1 IQR [5.8]              | 6                                  | Median 30.1 IQR [23.3] |
| Occasionally <sup>(2)</sup>                 | 45                               | Median 33.3 IQR [13.3]         | 37                               | Median 41.2 IQR [12.3]             | 35                                 | Median 35.5 IQR [10.9] |
| Frequently <sup>(3)</sup>                   | 5                                | Median 44.3 IQR [20.1]         | 9                                | Median 37.4 IQR [19.0]             | 14                                 | Median 37.0 IQR [11.1] |
| <b>Statistical analysis*</b>                |                                  | $k^{\ddagger} = 5.259$         |                                  | $k^{\ddagger} = 9.201$             |                                    | $k^{\ddagger} = 0.888$ |
| <b>Difference</b>                           |                                  | p = 0.072                      |                                  | <b>p = 0.010**</b><br>[1 - 2.3]    |                                    | p = 0.642              |
| <b>Sex of the baby</b>                      |                                  |                                |                                  |                                    |                                    |                        |
| Girl <sup>(1)</sup>                         | 19                               | Median 40.6 IQR [12.1]         | 27                               | Median 35.6 IQR [14.2]             | 17                                 | Mean 36.53 SD ±8.86    |
| Boy <sup>(2)</sup>                          | 17                               | Median 31.1 IQR [9.0]          | 25                               | Median 41.4 IQR [14.6]             | 23                                 | Mean 35.89 SD ±8.55    |
| Unknown <sup>(3)</sup>                      | 19                               | Median 27.9 IQR [7.9]          | 3                                | -                                  | 15                                 | Mean 33.53 SD ±10.34   |
| <b>Statistical analysis*</b>                |                                  | $k^{\ddagger} = 11.074$        |                                  | $z^{tt} = -0.247$                  |                                    | $t^{ll} = 0.227$       |
| <b>Difference</b>                           |                                  | <b>p = 0.004*</b><br>[1 - 2.3] |                                  | p = 0.805                          |                                    | p = 0.822              |

SD: Standard Deviation ; IQR; Inter Quantile Range  $f^{\S}$ = One-way ANOVA Test;  $t^{ll}$ = Independent Sample-t" test;  $k^{\ddagger}$ :Kruskal-Wallis;  $z^{tt}$ =Mann-Whitney U test TSOY-32: Turkish Health Literacy Scale; \* $p < 0.05$ ; \*\* $p < 0.001$

± 9.68 similar (Şirin Gök, Küçük & Kanbur, 2023). In our study, the mean TSOY-32 scores for pregnant women in the adult age group were significantly higher compared to those in the adolescent age group (Table 2). Similarly, a study conducted in Afghanistan on pregnancy outcomes and health literacy found that pregnant women under 20 years of age had significantly lower health literacy levels compared to their older counterparts (Rostamzadeh, Ezadi, Hosseini & Hussein, 2022). Another study examining factors related to pregnancy and health literacy aligns with the findings of our study (Yee et al., 2017).

#### Discussion of the Findings Concerning the Comparison of TSOY-32 and PBSES Scores Based on Various Descriptive and Obstetric Characteristics of Pregnant Women

In our study, it was found that TSOY-32 scores increased in all three groups as the level of education increased (Table 3). Numerous studies in the literature support this finding (Dadipoor, Ramezankhani, Alavi

& Moradabadi, 2017; Charoghchian Khorasani, Peyman & Esmaily, 2018; Değerli & Tüfekçi, 2018).

It was found that the total TSOY-32 scores increased with higher income levels among pregnant women in the normal age group (Table 3). Another study shows that there is a positive relationship between income level and health literacy (Akça, Gökyıldız & Akbaş, 2020). Since individuals with higher income levels are in a better position to access quality health services, the observed and anticipated results align with each other. Therefore, our study's findings are consistent with the existing literature. It was observed that as the educational level of pregnant women in the adolescent and advanced age groups increased their scores on the PBSES also improved (Table 4). Although our research results align with the existing literature, it may be stated that increasing education and awareness among pregnant women is a key factor in determining breastfeeding self-efficacy. Numerous studies support this finding (Tokat & Okumuş, 2013; Yalçınöz Baysal, Türkoğlu & Küçüköğlu 2014; Wu, Ho, Han & Chen, 2018).

**Table 4: Findings Concerning The Comparison of PBSES Scores Of Pregnant Women Based on Their Age Groups, Descriptive and Obstetric Characteristics (n = 165).**

| Age groups                       | Adolescent <sup>1</sup> (n = 55)           |                        | Normal Age <sup>2</sup> (n = 55)           |                        | Advanced Age <sup>3</sup> (n = 55)         |                                   |
|----------------------------------|--------------------------------------------|------------------------|--------------------------------------------|------------------------|--------------------------------------------|-----------------------------------|
|                                  | Prenatal breastfeeding self-efficacy scale |                        | Prenatal breastfeeding self-efficacy scale |                        | Prenatal breastfeeding self-efficacy scale |                                   |
| Variable                         | n                                          |                        | n                                          |                        | n                                          |                                   |
| <b>Education level</b>           |                                            |                        |                                            |                        |                                            |                                   |
| Primary Education <sup>(1)</sup> | 21                                         | Median 69.0 IQR [24.0] | 9                                          | Mean 68.22 STD ± 10.51 | 13                                         | Median 80.0 IQR [13.5]            |
| High School <sup>(2)</sup>       | 34                                         | Median 77.0 IQR [18.0] | 20                                         | Mean 77.70 STD ± 11.91 | 16                                         | Median 78.5 IQR [19.3]            |
| Bachelor's/above <sup>(3)</sup>  | -                                          |                        | 26                                         | Mean 76.96 STD ± 13.13 | 26                                         | Median 84.0 IQR [17.3]            |
| <b>Statistical analysis*</b>     |                                            | $z^{††} = -2.610$      |                                            | $f^{\S} = 2.056$       |                                            | $k^{\ddagger} = 5.997$            |
| <b>Difference</b>                |                                            | <b>p = 0.009*</b>      |                                            | p = 0.138              |                                            | <b>p = 0.049*</b><br><b>[2-3]</b> |
| <b>Breastfeeding experience</b>  |                                            |                        |                                            |                        |                                            |                                   |
| Yes                              | 14                                         | Median 69.0 IQR [23.5] | 27                                         | Mean 76.22 STD ± 12.81 | 44                                         | Median 84.5 IQR [13.8]            |
| No                               | 41                                         | Median 74.0 IQR [14.0] | 28                                         | Mean 75.39 STD ± 12.53 | 11                                         | Median 76.0 IQR [16.0]            |
| <b>Statistical analysis*</b>     |                                            | $z^{††} = -0.483$      |                                            | $t^{  } = 0.243$       |                                            | $z^{††} = -2.685$                 |
|                                  |                                            | p = 0.629              |                                            | p = 0.809              |                                            | <b>p = 0.007*</b>                 |

SD: Standard Deviation; IQR; Inter Quantile Range;  $z^{††}$ =Mann-Whitney U test;  $f^{\S}$ = One-way ANOVA Test;  $k^{\ddagger}$ :Kruskal-Wallis test;  $t^{||}$ = Independent Sample-t test; \***p < 0.05**

**Table 5: Distribution of Findings Regarding The Correlation Between The Total And Subscale Scores of The PBSES and TSOY- 32, Categorized By The Age Groups of The Pregnant Women (n = 165)**

| Correlation*<br>Variable    |               | PBSES                             |                                     |                                    |
|-----------------------------|---------------|-----------------------------------|-------------------------------------|------------------------------------|
|                             |               | Adolescent <sup>1</sup><br>(n=55) | Normal Age <sup>2</sup><br>(n = 55) | Advanced Age <sup>3</sup> (n = 55) |
| <b>TSOY-32 Total</b>        | $r^{\dagger}$ | 0.337                             | 0.416                               | 0.411                              |
| <b>TSOY-32 Sub scale</b>    | $p^{\dagger}$ | <b>0.012</b>                      | <b>0.002</b>                        | <b>0.002</b>                       |
| <b>Horizontal Sub Scale</b> |               |                                   |                                     |                                    |
| Treatment and service       | $r^{\dagger}$ | 0.349                             | 0.429                               | 0.400                              |
|                             | $p^{\dagger}$ | <b>0.009</b>                      | <b>0.001</b>                        | <b>0.002</b>                       |
| Disease prevention          | $r^{\dagger}$ | 0.313                             | 0.387                               | 0.403                              |
|                             | $p^{\dagger}$ | <b>0.020</b>                      | <b>0.004</b>                        | <b>0.002</b>                       |
| <b>Vertical Sub Scale</b>   |               |                                   |                                     |                                    |
| Access                      | $r^{\dagger}$ | 0.410                             | 0.365                               | 0.374                              |
|                             | $p^{\dagger}$ | <b>0.002*</b>                     | <b>0.006*</b>                       | <b>0.005*</b>                      |
| Understanding               | $r^{\dagger}$ | 0.292                             | 0.443                               | 0.411                              |
|                             | $p^{\dagger}$ | <b>0.031*</b>                     | <b>&lt;0.001**</b>                  | <b>0.002*</b>                      |
| Evaluation                  | $r^{\dagger}$ | 0.317                             | 0.924                               | 0.350                              |
|                             | $p^{\dagger}$ | <b>0.018*</b>                     | <b>&lt;0.001**</b>                  | <b>0.009*</b>                      |
| Usage                       | $r^{\dagger}$ | 0.348                             | 0.905                               | 0.428                              |
|                             | $p^{\dagger}$ | <b>0.009*</b>                     | <b>&lt;0.001**</b>                  | <b>0.001*</b>                      |

$r^{\dagger}$ :Pearson correlation coefficient;  $p^{\dagger}$ : Spearman correlation coefficient; \***p< 0.05**; \*\***p< 0.001**; TSOY-32: Turkish Health Literacy Scale; PBSES: Prenatal Breastfeeding Self-Efficacy Scale

In our study, pregnant women in the advanced age group who had breastfeeding experience had higher PBSES scores compared to those without such experience (Table 4). The literature also indicates that self-efficacy improves with increased breastfeeding experience (Zhu, Chan, Zhou, Ye & He, 2014; Hankel, Kunseler & Oosterman, 2019; Ngo, Chou, Gau & Liu, 2019; Li et al., 2021; Tsaras et al., 2021). According to Bandura's self-efficacy theory, the perception of efficacy is influenced by both direct and indirect experiences, making it expected that breastfeeding experience would be a factor that enhances breastfeeding self-efficacy (Bandura, 1995). Our research

findings are consistent with the literature.

#### Discussion of the Findings on the Correlation Between the Total and Subscale Scores of the PBSES and TSOY-32 in Pregnant Women

In our study, a significant positive correlation was found between TSOY-32 and PBSES scores in adolescent, normal and advanced age group pregnant women (Table 5). In a study conducted with 160 mothers in Iran to examine the determinants of health literacy and breastfeeding self-efficacy, a significant positive relationship was

found between the two scales (Salarvand, Ghazvineh, Mousivand, Ahmadi Gharaei, & Bitaraf, 2023). A study involving 185 pregnant women, which examined the relationship between breastfeeding self-efficacy and health literacy, reached a similar conclusion (Charoghchian Khorasani, Peyman & Esmaily, 2017). In another study exploring the relationship between breastfeeding self-efficacy and health literacy, a significant positive correlation was found between the scores on the two scales (Aydın & Aba, 2019). The findings of our study align with the literature. It can be said that increasing the health literacy levels of pregnant women is a factor that enhances their breastfeeding self-efficacy.

### Limitations

The study is limited to pregnant women attending the gynaecology and obstetrics outpatient clinic of a university hospital. The results of the study can be generalised for pregnant women who received services in the hospital. Participation in the study was difficult due to the high number of items of the scales used. The answers given to the scales used are limited to the person's own declaration.

### Conclusion

In our study, which examined results across three different age groups, the TSOY-32 scores of pregnant women were generally adequate. However, the mean scores within each group exhibited significantly problematic or limited levels. It was found that the PBSES scores of pregnant women in the advanced age group were significantly higher than those of pregnant women in the adolescent and adult age groups, highlighting the impact of breastfeeding experience on self-efficacy. It was concluded that health literacy and breastfeeding self-efficacy concepts positively influence each other, and that improving literacy can enhance self-efficacy. It was concluded that the mean scores were lower among the high-risk groups, particularly in the adolescent pregnant group, which should be prioritized in education and counseling services. It was concluded that to increase breastfeeding rates and achieve global nutrition targets, education and counseling services should begin during the prenatal period and prioritize vulnerable groups.

**Ethical Considerations:** Ethical approval was obtained from the Ankara Yıldırım Beyazıt University Health Sciences Ethics Committee for this study (Date: 21.09.2022 and No: 2022-1045).

**Author Contribution:** Study Idea (Concept) and Design – AAK; Data Collection / Literature Review – AAK, SŞ; Analysis and Interpretation of Data – AAK, SŞ; Preparation of the Article – AAK, SŞ; Approval of the Final Version to be Published – AAK.

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