

## Differences in the Perceived Understanding of Common Breastfeeding Misconceptions among Adults Pursuing an Undergraduate College Degree

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### Abstract

**Background:** To assess differences in perceived understanding of common misconceptions and misunderstandings about breastfeeding and breast milk use/safety among a sample of college students. **Methods:** A convenience sample of 776 students, mean age of 23.01(5.54) years, from one public university in the southern United States completed the 68-item online questionnaire that contained a breastfeeding knowledge/understanding scale created specifically for this study. **Results:** The sample had a mean general breastfeeding knowledge scale score of 175.58 (23.46) indicating a relatively low level of knowledge and understanding of breastfeeding and lactation. Students who were either older than 22 years of age, married, female, Caucasian, were not breastfed as children, or had previous experience with breastfeeding a child had significantly higher mean knowledge scores related to common breastfeeding and breast milk misconceptions. **Conclusion:** This sample of college students had a relatively low level of breastfeeding knowledge and understanding of common breastfeeding misconceptions. Traditional college-age undergraduates (18-21) who are more likely to be unmarried would benefit from having some exposure to education about breastfeeding and lactation. Young, influential groups of people who could perpetuate a strong, sustainable, and supportive culture around breastfeeding for future generations should be the focus of efforts to improve breastfeeding rates.

**Keywords:** Breastfeeding, college students, lactation, breastfeeding misconceptions, breastfeeding understanding

### 1. Introduction

Despite the number of consistent professional recommendations for women to breastfeed their babies exclusively for the first six months of life then with complimentary foods through one year of age (American Public Health Association, 2007; United States Breastfeeding Committee, 2015; Lessen & Kavanagh, 2015), the actual number of women who follow these recommendations does not reflect current health promotion efforts (Centers for Disease Control and Prevention, 2020). The answers to why women in the United States are not consistently breastfeeding to the recommendations and set national goals may lie in the major misconceptions that surround this infant feeding method. Most of these misconceptions are associated with skewed perceptions of breastmilk safety when mom or baby is ill (Eram, 2017) and misunderstanding of normal breastfeeding processes. An example of this includes the misinterpretation that breastfeeding is supposed to hurt (Koura, 2019; United Nations Children's Fund, 2019). This type of negative connotation may deter women from attempting to breastfeed due to nervousness or fear of pain and discomfort (Sriraman & Kellams, 2016).

Multiple studies have been conducted in the southern region of the United States (i.e., Mississippi, Missouri, Tennessee, and Texas) to assess college students' knowledge and attitudes towards breastfeeding (Chang, Valliant, & Bomba, 2012; Heathman, Douglas, & Camel, 2019; Jefferson, 2017; Kavanagh, Lou, Nicklas, Habibi, & Murphy, 2012). The studies used previously validated attitude questionnaires or pieced together knowledge scales from previously published literature to find that college students had mixed feelings about breastfeeding and a generally "good" level knowledge of breastfeeding. These studies failed to include items to assess knowledge or understanding of common misconceptions about breastfeeding and breastmilk. Assessing the understanding of common breastfeeding misunderstandings among college students may provide a helpful insight for public health and health education professionals to create education programs for college-age adults about breastfeeding and infant feeding, as this group may be preparing for parenthood in the near future.

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The aim of this study is to assess differences in the perceived understanding of concepts related to common misconceptions and misunderstandings about breastfeeding and breast milk use/safety, among adult college students at one public university in the southern United States.

## 2. Methods

### 2.1 Study Design

A breastfeeding knowledge and understanding scale was created for this cross-sectional study that was distributed via an online-based survey platform. The survey assessed participants' general understanding and knowledge about concepts directly related to breastfeeding and human lactation. A demographics section assessed age, marital status, gender, race, ethnicity, international status, if the participant was breastfed as a child, and, if applicable, they had ever breastfed a child.

The knowledge and understanding scale portion of the survey assessed general understanding of five areas, or factors, related to breastfeeding: I) the benefits for the infant, II) common misconceptions about breastfeeding, III) the physical act of breastfeeding, IV) common misunderstandings about breastmilk safety and V) short-term maternal benefits. The scale consisted of 50 Likert-type questions, with answer choices of “*strongly disagree*, *disagree*, *undecided*, *agree*, and *strongly agree*.” Seventeen items were reverse coded to reflect, “*strongly disagree*” as 5 decreasing in 1-unit increments to “*strongly agree*” as 1. The remaining 33 items were coded as 1 for “*strongly disagree*” increasing in 1-unit increments to 5 for “*strongly agree*.” The overall scale had a possible range of 50 to 250. Higher scores indicated a greater amount of knowledge and understanding about breastfeeding and vice versa. The scale had a Cronbach's alpha score of  $\alpha = .944$  indicating strong internal consistency. Factor II contained 16 items related to common misconceptions about breastfeeding with a possible factor score range of 16 to 80. Factor IV contained 6 items related to common misconceptions about breast milk and safe use thereof with a possible factor score range of 6 to 30. The survey also contained several additional questions not relevant to this analysis.

### 2.2 Participants

From February to April 2019, 776 undergraduate and graduate students were recruited at a public university in Louisiana to complete the study survey. Participants qualified for the study if there were at least 18 years of age. No additional study exclusions were made.

### 2.3 Procedure

This study was approved by the LSU AgCenter Institutional Review Board prior to survey distribution. To gain access to large groups of students at one time, the investigator emailed course instructors with the study details and requested 10 to 15 minutes of class time to distribute the survey to students present that day. At each class attended, a shortened web address for the survey was projected on the screen in the classroom while a research assistant explained the details of the study. The assistant remained in the classroom for the duration of the 10 to 15 minutes to address questions or issues with accessing the survey platform. The survey was formatted for compatibility with a laptop or smartphone. Since the survey was web-based, and to help reduce participant burden, the informed consent was displayed on the landing page of the survey link; no paper-based consent forms were used in this study. Interested persons who wanted to complete the survey could click “*I Agree*” to move to the first page of survey items. If a person clicked “*I Disagree*,” they were exited from the survey automatically. On average, participants took anywhere from 8-15 minutes to complete the survey. There was no incentive or extra credit given to participants for completion of the survey.

Independent samples t-tests and one-way ANOVAs (with Tukey post-hoc tests) were run in SPSS® Statistics, version 24, to assess differences in standardized mean factor scores for Factors II and IV by the demographic variables of the sample. Significance level was set at  $\alpha < .05$  for all analyses.

## 3. Results

### 3.1 Sample Demographics

The sample had a mean age of 23.01(5.54) years, with a range of 18 to 40 years. Participants were majority female (74.7%), not married (80.0%), non-Hispanic (90.0%), white (74.0%), and breastfed as children (64.3%). The students had a mean (SD) general breastfeeding knowledge scale score of 175.58 (23.46) with a range of 82 to 238 indicating a relatively low level of knowledge and understanding of breastfeeding and lactation. The mean factor scores of the entire sample for factors II and IV were 61.28(10.20) and 19.45(4.45), respectively.

### 3.2 Differences in responses across the demographics

Standardized scores for factors II and IV were calculated for ease of comparison across the demographic variables.

This was completed by dividing the total factor score for each participant by the number of questions in the factor. Standardized scores had a possible range of 1 to 5 for both factors. The standardized mean factor scores of the entire sample for factors II and IV were 3.61(.59) and 3.24(.73), respectively.

Significantly higher mean scores for understanding of items related to Factor II (common misconceptions) were recorded by those participants that were either 22 years of age or older ( $p < .001$ ), married ( $p < .001$ ), white ( $p < .001$ ), female ( $p < .001$ ), born in the United States ( $p = .005$ ), had previous experience breastfeeding a child ( $p < .001$ ), or were not breastfed as a child ( $p < .001$ ). Similar results were found for mean scores of items in factor IV (misconceptions about breast milk) revealing higher mean scores among those either 22 years of age or older ( $p < .001$ ), married ( $p < .001$ ), white ( $p < .001$ ), female ( $p < .001$ ), had previous experience breastfeeding a child ( $p < .001$ ), or were not breastfed as a child ( $p = .001$ ). Differences in mean scores for factors II and IV for all demographic items are displayed in Table 1.

**Table 1.** Differences in standardized factor mean scores by selected demographics.

Demographic	n (%)	Factor II Mean (SD)	p-value	Factor IV Mean (SD)	p-value
Age			<.001*		<.001*
18-19	233 (30.0%)	3.34 (.42)		2.89 (.48)	
20-21	239 (30.8%)	3.43 (.44)		2.97 (.51)	
22+	304 (39.2%)	3.95 (.63)		3.71 (.78)	
Marital Status			<.001*		<.001*
Not Married	623 (82.0%)	3.45 (.48)		3.01 (.55)	
Married	136 (18.0%)	4.29 (.51)		4.20 (.59)	
Race			<.001*		<.001*
White	579 (74.6%)	3.67 (.60)		3.32 (.75)	
Black	88 (11.3%)	3.43 (.51)		2.89 (.57)	
Asian	47 (6.1%)	3.23 (.48)		2.69 (.50)	
Other	62 (8.0%)	3.53 (.51)		3.16 (.67)	
Hispanic			.317		.291
No	699 (90.0%)	3.61 (.51)		3.25 (.74)	
Yes	77 (10.0%)	3.54 (.50)		3.15 (.60)	
Gender			<.001*		<.001*
Female	580 (74.7%)	3.72 (.59)		3.34 (.59)	
Male	184 (23.7%)	3.28 (.43)		2.91 (.49)	
Other	12 (1.6%)	3.27 (.64)		3.15 (.39)	
International			.005*		.473
No	695 (90.3%)	3.63 (.58)		3.25 (.74)	
Yes	74 (9.7%)	3.43 (.60)		3.18 (.62)	
Ever Breastfed			<.001*		<.001*
No	463 (78.8%)	3.46 (.48)		3.02 (.55)	
Yes	124 (21.2%)	4.41 (.46)		4.36 (.49)	
Breastfed as a Child			<.001*		.001*
No	177 (23.0%)	3.72 (.62)		3.32 (.81)	
Yes	495 (64.3%)	3.62 (.49)		3.26 (.72)	
Do not Know	97 (12.7%)	3.36 (.46)		2.99 (.52)	

\*Significant at an alpha level of  $\leq .05$

#### 4. Discussion

Participants of this study had a mean breastfeeding knowledge scale score of 175.58 with a range of 82 to 238. The maximum possible score on the scale was 250, so this mean score indicates a relatively low level of knowledge and understanding of breastfeeding and lactation. The mean factor score for the items in factor II, common misconceptions about breastfeeding, was 61.28 and indicates low to adequate knowledge when compared to the maximum possible score of 80. The mean factor score for factor IV, misconceptions about breastmilk safety, was 19.45 and indicates low to adequate knowledge when compared to the maximum possible score of 30. This is the first scale of its kind to measure breastfeeding knowledge and understanding in the current format.

The results of this study cannot be directly compared to other studies, but when looking at assessment of breastfeeding knowledge among other samples of adult college students, this current sample was, on average, scoring around the midpoint (“low”) on the scale when other studies found higher than midpoint scores to reflect “sufficient” to “good” knowledge (Brahmbhatt et al., 2016; Ebrahim et al., 2011;

Hamade et al., 2014; Kavanagh et al., 2012; Lou et al., 2014; Mohamad, Saddki, Azman, & Ab Aziz, 2019; Payghan & Kadam, 2012). The current scale had more items (50) than the other recent studies, so a mean score of 50% is not considered sufficient knowledge compared to studies using scales with 12 or 16 items; a clear lack of knowledge about many more areas is expressed in this sample using the current scale.

This study found significantly higher scores on the items in factor II among participants who were either 22 years of age or older, married, white, female, born in the United States, had previous experience breastfeeding a child, or were not breastfed as a child. Similarly, significantly higher scores were found for factor IV among the same demographic groups, except for being born in the US. These results are similar to other studies that assessed breastfeeding knowledge in some way among adult college students with regard to higher scores among those of older age (Hamade et al., 2014; Lou et al., 2014), female (Chang et al., 2012; Kavanagh et al., 2012; Payghan & Kadam, 2012), married (Ebrahim et al., 2011), being born in the US (Chang et al., 2012), and Caucasian race (Jefferson, 2017) in the samples. Two previous studies had found no difference in breastfeeding knowledge by race (Chang et al., 2012; Heathman et al., 2019). There were also conflicting results regarding significant differences in score among students who were breastfed as children or not. Previous studies resulted in significantly higher scores among students who were breastfed as children (Chang et al., 2012; Hamze, Mao, & Reifsnider, 2019; Kavanagh et al., 2012) where the current sample of breastfed students had significantly lower knowledge than those who were not breastfed. There are no previous studies that examined differences in breastfeeding knowledge among adult college students by previous experience with breastfeeding a child. The results of this study may be influenced by the fact that the sample had many white students, female students, those over the age of 22, students born in the United States, and those who were breastfed as children. Small significant differences may be the result of a relatively small number of students in sample being married and who had experience with breastfeeding a child.

Future research in assessment of breastfeeding knowledge and understanding should aim to validate and assess reliability of the survey scale among a larger, more diverse sample of adults. A valid and reliable measure of this concept would aid in the evaluation of breastfeeding education or promotion programs aimed at increasing overall knowledge and correcting misunderstanding of common breastfeeding misconceptions. An exploratory factor analysis of the scale indicated it to be a valid measure of breastfeeding knowledge and understanding among this sample of adult college students but was not found to be reliable when tested a second time in a subset of study participants. The author of the current study agrees with the suggestions of investigators of similar breastfeeding knowledge studies, conducted previously among college students in the US, to increase the diversity of samples and to expand participant recruitment to include a representative sample of adult college students nationwide (Heathman et al., 2019; Kavanagh et al., 2012).

#### **4.1 Limitations**

There were several limitations to this study. First, the study had a relatively small sample of students, who were majority white (74.0%) and female (74.7%), at one university in the southern United States. Second, the results may not generalize to all students at this university, college students in the state, and all college students 18 to 40 across the United States. Analyses according to race and ethnicity are limited and may not truly represent that of the population of this University. Lastly, answer choices were self-reported leaving the possibility of participants providing socially acceptable answers.

#### **5. Conclusions**

This sample of adults in college had a relatively low level of breastfeeding knowledge and understanding of common breastfeeding misconceptions. Those students who were either older than 22 years of age, married, female, Caucasian, were not breastfed as children, or had previous experience with breastfeeding a child had significantly higher mean factor scores for understanding of common breastfeeding and breastmilk misconceptions. It is clear more traditional college-age undergraduates (18-21) who are more likely to be unmarried would benefit from having some exposure to education about breastfeeding and lactation. Creating or utilizing education tools that appeal to a diverse group of college students may help to improve the level of knowledge and understanding of breastfeeding among a subset of the adult population that may become parents in the future.

Efforts to help improve breastfeeding initiation and duration rates in the US, per the *Healthy People* (US Department of Health and Human Services, 2020) goals for the nation, should be aimed at young, influential groups of people to perpetuate a strong, sustainable, and supportive culture around breastfeeding for future generations.

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## 8. Conflict of Interest

The author declares no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

## 9. References

- American Public Health Association. (2007). *A call to action on breastfeeding: a fundamental public health issue*. [Online] Available: <https://www.apha.org/policies-and-advocacy/public-health-policy-statements/policy-database/2014/07/29/13/23/a-call-to-action-on-breastfeeding-a-fundamental-public-health-issue>
- Brahmbhatt, K. R., Chandana, G., Vishwanath, J., Raman, R., Jayaram, S., Mallya, S., . . . Shetty, S. (2016). Knowledge of breastfeeding among female college students: institution based cross-sectional study. *International Journal Of Community Medicine And Public Health*, 3(6), 1579-1583. doi: 10.18203/2394-6060.IJCMPH20161632
- Centers for Disease Control and Prevention (2020). *Breastfeeding Report Card 2020*. [Online] Available: <https://www.cdc.gov/breastfeeding/pdf/2009BreastfeedingReportCard.pdf>
- Chang, Y., Valliant, M., & Bomba, A. K. (2012). Gender differences in knowledge and attitude regarding breastfeeding. *International Journal of Consumer Studies*, 36(3), 342-351. doi: 10.1111/J.1470-6431.2010.00994
- Ebrahim, B., Al-Enezi, H., Al-Turki, M., Al-Turki, A., Al-Rabah, F., Hammoud, M. S., & Al-Taiar, A. (2011). Knowledge, misconceptions, and future intentions towards breastfeeding among female university students in Kuwait. *Journal of Human Lactation*, 27(4), 358-366. doi:10.1177/0890334411411163
- Eram, U. (2017). A review article: myths, beliefs and malpractices relating to breastfeeding and complementary feeding practices. *International journal of pharmaceutical science invention*, 6, 14-16. [Online] Available: [http://ijpsi.org/Papers/Vol6\(1\)/C06011416.pdf](http://ijpsi.org/Papers/Vol6(1)/C06011416.pdf)
- Hamade, H., Naja, F., Keyrouz, S., Hwalla, N., Karam, J., Al-Rustom, L., & Nasreddine, L. (2014). Breastfeeding knowledge, attitude, perceived behavior, and intention among female undergraduate university students in the Middle East: the case of Lebanon and Syria. *Food and Nutrition Bulletin*, 35(2), 179-190. doi:10.1177/156482651403500204
- Hamze, L., Mao, J., & Reifsnider, E. (2019). Knowledge and attitudes towards breastfeeding practices: A cross-sectional survey of postnatal mothers in China. *Midwifery*, 74, 68-75. doi:10.1016/j.midw.2019.03.009
- Heathman, L., Douglas, C. C., & Camel, S. P. (2019). Relationship among Breastfeeding Exposure, Knowledge, and Attitudes in Collegiate Males Residing in East Texas. *Journal of Human Lactation*, 35(4), 782-789. doi:10.1177/0890334418817516
- Jefferson, U. T. (2017). Breastfeeding exposure, attitudes, and intentions of African American and Caucasian college students. *Journal of Human Lactation*, 33(1), 149-156. doi:10.1177/0890334416679384
- Kavanagh, K. F., Lou, Z., Nicklas, J. C., Habibi, M. F., & Murphy, L. T. (2012). Breastfeeding knowledge, attitudes, prior exposure, and intent among undergraduate students. *Journal of Human Lactation*, 28(4), 556-564. doi:10.1177/0890334412446798
- Koura, H. (2019). Myths about breastfeeding. *Al-Azhar Assiut Medical Journal*, 17(2), 109. Retrieved from <http://www.azmj.eg.net/text.asp?2019/17/2/109/269755>
- Lessen R & Kavanagh, K. (2015). Position of the academy of nutrition and dietetics: promoting and supporting breastfeeding. *Journal of the Academy of Nutrition and Dietetics*, 115(3), 444-449. doi:10.1016/j.jand.2014.12.014
- Lou, Z., Zeng, G., Orme, J. G., Huang, L., Liu, F., Pang, X., & Kavanagh, K. F. (2014). Breastfeeding knowledge, attitudes, and intention in a sample of undergraduate students in mainland China. *Journal of Human Lactation*, 30(3), 331-339. doi:10.1177/0890334414526058
- Mohamad, N., Saddki, N., Azman, K. N. K., & Ab Aziz, I. D. (2019). Knowledge, Attitude, Exposure, and Future Intentions toward Exclusive Breastfeeding among Universiti Sains Malaysia Final Year Medical and Dental Students. *Korean journal of family medicine*, 40(4), 261. doi:10.4082/kjfm.18.0021

- Payghan, B. S., & Kadam, S. S. (2012). Knowledge and attitude of college students about breastfeeding. *Int J Health Sci Res*, 2(8), 47-56. Retrieved from <https://www.ijhsr.org>
- Sriraman, N. K., & Kellams, A. (2016). Breastfeeding: What are the barriers? Why women struggle to achieve their goals. *Journal of Women's Health*, 25(7), 714-722. doi:10.1089/jwh.2014.5059
- United Nations Children's Fund (UNICEF). (2019). Busted: 14 myths about breastfeeding. [Online] Available:<https://www.unicef.org/parenting/food-nutrition/14-myths-about-breastfeeding>
- United States Breastfeeding Committee. (2015). *Statement of Exclusive Breastfeeding*. [Online] Available:<http://www.usbreastfeeding.org/d/do/710>
- US Department of Health and Human Services.(2020). *Healthy People 2030*. [Online] Available:<http://www.healthypeople.gov>