Attitudes of High School and Vocational School Students Toward Breastfeeding in Taiwan

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ABSTRACT

Infant feeding decisions depend on breastfeeding attitudes. This study examined the high school and the vocational school students' attitudes toward breastfeeding. The descriptive cross-section survey was applied. A stratified random sample of 1,319 male and female students was carried out. The results revealed that female students were more positive than male students in breastfeeding attitudes. Of the female students, 34.7% ($n = 458$) reported that they will plan to breastfeed, and 29% ($n = 382$) male students indicated that they will encourage breastfeeding. Moreover, two-thirds (60.7%, $n = 801$) of the participants favored the inclusion of breastfeeding information in the school curriculum. Findings from this study suggest that breastfeeding information needs to be addressed earlier among adolescent students to increase positive breastfeeding attitudes.

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Despite breastfeeding being well recognized as the optimal feeding method to nourish infants, most Taiwanese women do not follow this practice for an ideal duration. The 2010 Taiwanese Department of Health's goal was for the continued breastfeeding rate at 1 month to be 64%. In addition, the Department of Health encourages women to breastfeed exclusively until 6 months postpartum and continue to breastfeed (to any degree) until 2 years (Bureau of Health Promotion, Department of Health, Taiwan, 2007). Recent breastfeeding rates in Taiwan show that the rates of exclusive breastfeeding are 68.6% at 1 month postpartum, 52.9% at 4 months, and

45.6% at 6 months (Bureau of Health Promotion, Department of Health, Taiwan, 2013). Therefore, new strategies are required to promote breastfeeding and to increase exclusive breastfeeding and prolong the duration of breastfeeding, closer to ideal levels in Taiwan.

Breastfeeding decision and duration are positively associated with paternal attitudes toward in-

Recent breastfeeding rates in Taiwan show that the rates of exclusive breastfeeding are 68.6% at 1 month postpartum, 52.9% at 4 months, and 45.6% at 6 months.

Infant feeding decisions depend on breastfeeding attitudes, which are formed early on in adolescence and eventually influence its practice.

Infant feeding (De La Mora & Russell, 1999; Ho & McGrath, 2010b; Scott, Binns, Oddy, & Graham, 2006). Maternal intentions and attitudes are both predictors of infant feeding behaviors and continued breastfeeding (DiGirolamo, Thompson, Martorell, Fein, & Grummer-Strawn, 2005; Shaker, Scott, & Reid, 2004). Moreover, breastfeeding attitudes are better predictors of infant feeding methods than are sociodemographic factors (Dungy, Losch, & Russell, 1994). Lots of attention has been placed on prenatal breastfeeding promotion to improve breastfeeding attitudes, but it seems that it is too late to influence people's decision toward breastfeeding. It is acceptable to believe that the sooner the importance of breastfeeding is internalized, the more favorable the individual's perception regarding breastfeeding will be. Actually, the breastfeeding decision is often made before the pregnancy (Ray & Estok, 1984). Infant feeding decisions depend on breastfeeding attitudes, which are formed early on in adolescence and eventually influence its practice (Goulet, Lampron, Marcil, & Ross, 2003; Martens, 2001). More importantly, female adolescents between the ages of 12 and 17 years already have an opinion regarding infant feeding (Guthrie & Kan, 1977). Several studies have been conducted to assess the attitudes of adolescents toward breastfeeding in different countries. In Hong Kong, Tarrant and Dodgson (2007) recruited 15,000 university students to assess the relationship between their infant feeding attitudes, breastfeeding exposures, and future infant feeding intentions. Participants who intended to breastfeed were more likely to have positive attitudes or know someone who had breastfed. In Northern Ireland, Greene, Stewart-Knox, and Wright (2003) assessed the feeding preferences and attitudes of teenagers aged 14–18 years, ($N = 419$) toward breastfeeding. The attitudes toward breastfeeding were positively influenced by prior exposure ($p = .024$). Females were more positive than males with regard to breastfeeding promotion ($p = .003$). In the United States, Forrester, Wheelock, and Warren (1997) assessed the attitudes of 346 high school and 244 college students in Alabama and found that embarrassment was perceived as a major barrier to breastfeeding and less than half thought breastfeeding should be done publicly.

Marrone, Vogeltanz-Holm, and Holm (2008) examined university undergraduate women and men's breastfeeding attitudes. Data were obtained from 111 women and 50 men. Results indicated that positive breastfeeding attitudes were a significant predictor of intention to breastfeed among women and men. There was a significant relationship between positive attitudes toward breastfeeding and exposure to breastfeeding. There were 598 college students surveyed by Spear (2007) to examine the attitudes and experiences of male and female participants toward breastfeeding. Most (67.8%) students found public breastfeeding to be unacceptable and 77.7% of students indicated that breastfeeding is an intimate behavior that should be kept private.

Several factors may have effects on the initiation and duration of breastfeeding. Researches have shown that adolescents' infant feeding decisions depend on attitudes toward breastfeeding. They also have reservations and misconceptions about breastfeeding. The school system plays an important role in health promotion. To promote the advantages of breastfeeding through education, schools can allow the students, boys and girls, to have an opportunity to receive information about breastfeeding to clarify the doubt toward breastfeeding. Promoting positive attitudes toward breastfeeding during adolescence may help to create a future in which breastfeeding becomes the first choice by parents for every infant. This is especially important for high school students, who are in the important stages of becoming mature adults and making choices about their behavior. Therefore, we need to understand the attitudes of young people and develop health promotion strategies for adolescents before they initiate pregnancies. To date, there are no studies examining attitudes toward breastfeeding in a high school and vocational school population in Taiwan. The purpose of this study was to examine high school and vocational school students' attitudes toward breastfeeding by using a validated instrument, the Iowa Infant Feeding Attitude Scale (IIFAS), and sociodemographic variables associated with breastfeeding.

METHODS

Subjects and Procedures

In Taiwan, high schools and vocational schools offer 3-year degrees. They offer education from grades 10 to 12. Usually, students from ages 15 to 17 years study in this section. However, a vocational school, providing vocational education, is a school in which

students are taught the skills needed to perform a particular job. The proportional stratified random sampling was applied. Data collection took place between February 2011 and September 2011 from 20 high schools and 17 vocational schools in Taiwan. One class from each school was chosen after obtaining permission to conduct the study from the principal of each school. School officials approved the survey questionnaires, which were distributed to class teachers. Students who responded to the survey and completed the breastfeeding attitude questionnaire numbered 1,319 from the 1,520 questionnaires sent out to participants. This represented an 87% response rate. The participants in 37 classes were invited to participate in this study on a voluntary basis using informed verbal consent. An information sheet about the study and its goal was provided to participants. They were not required to provide their names and all data were collected anonymously.

Measures

The IIFAS was applied to measure adolescents' attitudes toward breastfeeding. The IIFAS was designed to assess an individual's attitudes toward infant feeding practices. The scale is composed of 17 items with a 5-point Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Total attitude scores range from 17 to 85, with higher scores reflecting a more positive attitude toward breastfeeding and lower scores reflecting a more positive attitude toward formula feeding. Total scores are grouped into three categories: (a) positive to breastfeeding (70–85), (b) neutral (49–69), and (c) positive to formula feeding (17–48). The IIFAS has been tested with various populations, such as postpartum women, health visitors, fathers, pregnant women, and university students. The psychometric data from reliability studies indicated that the IIFAS of Cronbach's α ranges from .79 in Northern Ireland (Sittlington, Stewart-Knox, Wright, Bradbury, & Scott, 2007) to .86 in the United States (De La Mora & Russell, 1999) and .89 in Scotland (Dungy et al., 2008). The IIFAS shows that it is predictive of the choice of infant feeding methods as measured by behavioral intention, and it is also predictive of the actual feeding behavior as measured by the duration of breastfeeding. In a separate study, Ho and McGrath (2010a) translated the English version of the IIFAS to a Chinese version and found that the Cronbach's α coefficient for the Chinese version was .74 in the postpartum women. This study is the first to use the IIFAS in the adolescent population in Taiwan.

Sociodemographic Measures

Various demographic data were also collected, including gender, grade level, and type of school. Data were also collected on women's future plans to breastfeed (yes, no, uncertain), men's future plans to encourage breastfeeding (yes, no, uncertain), informal breastfeeding education during the school years (yes, no), whether participants know someone who had breastfed (yes, no), whether participants have ever seen breastfeeding on TV (yes, no), and whether school provides breastfeeding information in the curriculum (yes, no).

Data Analysis

The statistical analyses were performed using the Statistical Package for the Social Sciences (SPSS Version 17). Statistical procedures were completed at a significance level of 5%. Statistical procedures involved students' independent *t* test and univariate analysis of variance. Descriptive statistics were used to analyze the demographic data. The mean and standard deviation (*SD*) were calculated for attitude scores. The Cronbach's α test was conducted to determine internal reliability for the IIFAS.

RESULTS

Characteristics of Participants

There were 1,520 students invited to participate in this study; 1,319 participated, which represents an 87% response rate. The demographic characteristics of the participants are presented in Table 1. Women ($n = 807$) comprised 61.2% of the sample, and men ($n = 510$) comprised 38.7% of the sample. There were 41.8% of students in the 11th grade, and 57.7% of the students were high school students. There were 34.7% ($n = 458$) of females who reported that they would plan to breastfeed in the future, and 29% ($n = 382$) of males indicated that they would encourage breastfeeding in the future. There were 22.1% ($n = 291$) of the participants who reported receiving informal breastfeeding education during their school years. Informal education means having heard about the benefits of breastfeeding in class. Most (70.8%, $n = 934$) of the participants knew someone who had breastfed, and 67.9% ($n = 896$) of the participants indicated that they had seen breastfeeding on TV. Two-thirds (60.7%, $n = 801$) of the participants agreed that breastfeeding information should be incorporated into curriculum at the high school level.

TABLE 1
Demographic Characteristics of Participants

Characteristics	<i>N</i> = 1319 ^a	%
Sex		
Male	510	38.7
Female	807	61.2
Grade ^b		
10th grade	415	31.5
11th grade	551	41.8
12th grade	351	26.6
School type		
High school	761	57.7
Vocational school	556	42.2
Women's future plans to breastfeed		
Yes	458	34.7
No	59	4.5
Uncertain	289	21.9
Men's future plans to encourage breastfeeding		
Yes	382	29.0
No	15	1.1
Uncertain	114	8.6
Do you receive informal breastfeeding education in school?		
Yes	291	22.1
No	1024	77.6
Do you know someone who had breastfed?		
Yes	934	70.8
No	378	28.7
Have you ever seen breastfeeding on TV?		
Yes	896	67.9
No	419	31.8
Do you agree school provides breastfeeding information in the curriculum?		
Yes	935	70.9
No	288	21.8

^aColumns where the numbers do not add up to the specific *N* reflect missing values for this column.

^bHigh school and vocational school offers 3-year degrees.

Infant Feeding Attitudes

Participants' attitudes toward infant feeding are shown in Table 2. The average score on the IIFAS for the overall sample was 56.75 (*SD* = 6.68), indicating overall neutral attitudes. The average score for women was 57.11 (*SD* = 6.48), and it was 56.19 (*SD* = 6.97) for men on this measure. Overall, female students were more positive in their breastfeeding attitudes than male students. The Cronbach's α reliability estimate was 0.67.

Some selected demographic factors were found to have an influence on the students' breastfeeding attitudes. The relationship between the demographic factors and their IIFAS scores was examined. Student's independent *t* test revealed female

TABLE 2
Students' Attitudes Toward Infant Feeding (*N* = 1319)

Item	Mean $\pm$ <i>SD</i>
1. The nutritional benefits of breastmilk last only until the baby is weaned from breastmilk.	3.15 $\pm$ 1.17
2. Formula feeding is more convenient than breastfeeding.	2.83 $\pm$ 1.06
3. Breastfeeding increases mother–infant bonding.	4.17 $\pm$ 0.84
4. Breastmilk is lacking in iron.	3.48 $\pm$ 0.80
5. Formula-fed babies are more likely to be overfed than are breastfed babies.	3.24 $\pm$ 0.93
6. Formula feeding is the better choice if a mother plans to work outside the home.	2.62 $\pm$ 0.91
7. Mothers who formula feed miss one of the great joys of motherhood.	3.32 $\pm$ 1.03
8. Women should not breastfeed in public places such as restaurants.	3.27 $\pm$ 1.20
9. Babies fed breastmilk are healthier than babies who are fed formula.	4.03 $\pm$ 0.92
10. Breastfed babies are more likely to be overfed than formula-fed babies.	3.37 $\pm$ 0.85
11. Fathers feel left out if a mother breastfeeds.	3.75 $\pm$ 0.95
12. Breastmilk is the ideal food for babies.	4.00 $\pm$ 0.81
13. Breastmilk is more easily digested than formula.	3.81 $\pm$ 0.84
14. Formula is as healthy for an infant as breastmilk.	3.52 $\pm$ 0.88
15. Breastfeeding is more convenient than formula feeding.	3.03 $\pm$ 0.98
16. Breastmilk is less expensive than formula.	3.57 $\pm$ 1.05
17. A mother who drinks alcohol once a week should not breastfeed her baby.	2.18 $\pm$ 0.97

students were more positive in their attitudes toward breastfeeding than male students ($t = -2.43$, $p = .015$). Also, participants who received informal breastfeeding education, participants who knew someone who had breastfed, participants who had seen breastfeeding on TV, and those who agreed that breastfeeding information should be incorporated into curriculum had significantly higher breastfeeding attitudes ($p < .05$). Moreover, planning to breastfeed and encouraging breastfeeding were positively associated with breastfeeding attitudes ($p < .05$). No significant correlations were found between the breastfeeding attitudes and other demographic variables such as grade and school type (Table 3).

DISCUSSIONS

Attitudes have been found to be important determinants of breastfeeding behavior. Also, there is a significant relationship between the positive attitudes

TABLE 3
Differences in Demographic Factors and Scores on the
Iowa Infant Feeding Attitude Scale (IIFAS)

Demographic Factors	Number	IIFAS Mean Score (SD)	p Value
The one-way analysis of variance			
Grade			
10th grade	415	56.27 (6.45)	.152
11th grade	551	56.83 (6.94)	—
12th grade	351	57.2 (6.54)	—
Women's future plans to breastfeed			
Yes	458	59.10 (6.87)	.000
No	59	52.93 (4.99)	—
Uncertain	289	54.81 (4.72)	—
Men's future plans to encourage breastfeeding			
Yes	382	57.62 (7.06)	.000
No	15	49.40 (7.47)	—
Uncertain	114	52.36 (4.08)	—
<i>t</i> test			
Sex			
Male	510	56.19 (6.97)	.015
Female	807	57.11 (6.48)	—
School type			
High school	761	56.96 (6.48)	.203
Vocational school	555	56.48 (6.96)	—
Receive informal breastfeeding education in school			
Yes	291	57.52 (7.02)	.029
No	1,024	56.55 (6.58)	—
Know someone who had breastfed			
Yes	934	57.16 (6.86)	.001
No	378	55.81 (6.14)	—
Have ever seen breastfeeding on TV			
Yes	896	57.57 (6.70)	.000
No	419	55.01 (6.32)	—
School provides breastfeeding information in the curriculum			
Yes	935	57.49 (6.77)	.000
No	288	55.06 (5.98)	—

toward breastfeeding and exposure to breastfeeding (Ho & McGrath, 2011; Losch, Dungy, Russell, & Dusdieker, 1995; Marrone et al., 2008). This study aimed to further understand the breastfeeding attitudes among adolescents by gathering survey data from high school and vocational school men and women. The findings of this study reveal that students have generally neutral attitudes toward breastfeeding. The neutral attitudes may indicate that the students are undecided in their attitudes toward breastfeeding. Moreover, results from the current study were consistent with the previous studies that

women would demonstrate more positive attitudes than men about breastfeeding (Goulet et al., 2003; Greene et al., 2003; Juliff, Downie, & Rapley, 2007; Kang, Song, & Im, 2005). The more positive attitudes in female students may be attributed to gender identity. Males traditionally bring vocational and personal identity, whereas females tend to focus more on interpersonal relationships (Kaplan, 2000). The effect of verbal persuasion and vicarious experience through social modeling on interpersonal relationships may serve to influence attitudes toward breastfeeding in female students (Juliff et al., 2007). However, both partners usually discuss the decision of the infant feeding method, but men have been mostly excluded from breastfeeding programs in Taiwan. Positive breastfeeding attitudes obtained from school education may help adolescents, families, and communities become more supportive of breastfeeding (Martens, 2001). Male students should be included in breastfeeding education programs because it is possible that support from men could increase the likelihood of breastfeeding behaviors. The attitudes factor is important to infant feeding decisions (Kong & Lee, 2004). These attitudes are formed long before pregnancy, and most parents have made the breastfeeding decision well before they have children (Losch et al., 1995; Ray & Estok, 1984). Social marketing or public health education campaigns aimed at modifying societal perceptions of what are considered normal infant feeding methods have been identified to increase breastfeeding rates (Wolf, 2003). In order for breastfeeding to be recognized as the norm, more efforts must be directed toward educating school-aged children and adolescents in breastfeeding promotion programs and by using the media effectively to target younger school-aged children (Forrester et al., 1997; Goulet et al., 2003).

The media, including radio and television, should be used as an approach to promote breastfeeding because of their impact on the attitudes, beliefs, and perceptions of the younger population. Considering the fact that the younger population spends much of their time watching television, much more advertising could be done to reach them. The data of this study showed that more than half the students had seen breastfeeding on television. High IIFAS scores were associated with students receiving breastfeeding information from television. Attitudes toward breastfeeding were positively influenced by the media promotion campaign. Taiwan Public Television Service

Foundation should promote breastfeeding programs on the educational channels, at no additional cost, to reach the homes of the viewing public. Adolescents will develop positive attitudes toward breastfeeding when actively targeted by media and when exposed to breastfeeding information in the classroom (Friel, Hudson, Banoub, & Ross, 1989; Juliff et al., 2007).

Consistent with previous studies (Forrester et al., 1997; Greene et al., 2003; Juliff et al., 2007; Spear, 2007), there were statistically significant positive relationships between the participants' attitudes toward breastfeeding and informal breastfeeding education in school. Also, it was surprising to find that two-thirds (60.7%, $n = 801$) of the participants agreed that breastfeeding information should be incorporated into the curriculum at the high school level. The findings revealed that most participants admitted that they were not taught about breastfeeding during their school years. Even so, it is exciting to find that almost all of the participants viewed breastfeeding in a positive light. Most of the participants in this study supported the inclusion of breastfeeding information in high school. Moreover, 34.7% ($n = 458$) of the female students planned to breastfeed in the future, and 29% ($n = 382$) of male participants reported that they would encourage the mother of their children to breastfeed. However, many adolescents have not yet made a firm decision about infant feeding methods (Greenwood & Littlejohn, 2002; Leffler, 2000). Thus, health promotion and health education emphasizing breastfeeding information should be provided for high school students to promote a positive attitude toward breastfeeding in potential future parents.

The findings of this study are consistent with previous studies that have shown that prior exposure to breastfeeding was significantly associated with more positive attitudes toward breastfeeding (Goulet et al., 2003; Leffler, 2000; Tarrant & Dodgson, 2007). Our results show that participants who knew someone who had breastfed were likely to report a positive breastfeeding attitude. These results suggest that being exposed to breastfeeding among family and friends is associated with positive breastfeeding attitudes.

STUDY LIMITATIONS

Limitations of this study were that participants may have inaccurately recalled their experiences during their school years and their responses may have been influenced by prejudices toward breastfeeding. Furthermore, the study would have been strengthened by inclusion of some open-ended questions to combine with the present questionnaire. Despite the existing limitations, this study provides valuable information relevant to breastfeeding attitudes as well as baseline information to further investigate the impact of attitudinal barriers, perceptions, and misconceptions of breastfeeding and to develop interventions directed toward younger adolescents.

CONCLUSIONS

This is the first study conducted in Taiwan to assess the attitudes of high school students and vocational school students toward breastfeeding. The findings in this study indicate that there are significant gender differences in breastfeeding attitudes. Female students have slightly more positive attitudes compared to male students. Moreover, two-thirds of the participants favored the inclusion of breastfeeding information in the school curriculum. The results provide information to health-care professionals including school nurses, who play a major role on the planning of effective breastfeeding promotion programs. Also, gender differences in breastfeeding attitudes need to be considered when developing an educational intervention program. In addition, infant feeding decisions are made before women become pregnant, and men have a significant impact on their partners' infant feeding method. The school system plays an important role in health promotion and should expose all students to the advantages of breastfeeding by including breastfeeding information early in health classes. Students who are more comfortable with breastfeeding might develop more positive attitudes toward breastfeeding in their formative years. Future infant feeding campaigns should be directed toward younger adolescents to increase public acceptance of breastfeeding as the natural feeding method to significantly improve the breastfeeding rates and prolong the breastfeeding duration.

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