Short Communication

Japanese mothers' breastfeeding knowledge and attitudes assessed by the Iowa Infant Feeding Attitudes Scale

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This study describes Japanese mothers' knowledge and attitudes towards breastfeeding using the Iowa Infant Feeding Attitudes Scale (IIFAS). A cross-sectional survey of 1,612 mothers was conducted in Japan in 2007. The participants were recruited at the free health checks conducted for infants at 18 months of age. The survey was self-administered using the Japanese version of the IIFAS. Descriptive statistics were used to summarise sample characteristics and IIFAS score followed by multiple logistic regression to identify association between total IIFAS score and breastfeeding duration. While the IIFAS showed that the majority recognized some benefits of breastfeeding, their overall knowledge and attitudes towards breastfeeding were neutral and more positive towards the use of infant formula. It is important to provide accurate prenatal education that focuses on methods and long-term benefits of infant feeding to mothers, family and health professionals.

Key Words: infant feeding practices, Iowa Infant Feeding Attitudes Scale, breastfeeding duration, perinatal education, Japanese mothers

INTRODUCTION

Breastfeeding knowledge and attitudes of mothers is an important factor that influences breastfeeding duration. WHO has documented the many benefits of breastfeeding particularly exclusive breastfeeding (starting from birth to the first six months of life) and then continuing until 2 years of age or longer with complementary foods.[1] Despite the range of health benefits for mothers and infants many countries have not still met this recommendation. However, several studies suggested that one way to mitigate this issue would be through focusing on breastfeeding knowledge and attitudes as this factor is modifiable.[1]

The Iowa Infant Feeding Attitudes Scale (IIFAS) is a valid and reliable measure that evaluates breastfeeding knowledge and attitudes in cross-cultural settings.[2-4] There are no reported studies of breastfeeding knowledge and attitudes of mothers using the IIFAS from Japan, which may be different from other cultures. The aim of this study is to describe the infant feeding practices, knowledge and attitudes of Japanese mothers' using the IIFAS. For the purpose of our study, the WHO definitions of breastfeeding were used as follows. [5]

- 'Exclusive breastfeeding': Women give only breastmilk to infants. It precludes the used of any other liquids or solids since delivery, other than specific medications.
- 'Full breastfeeding': Women give breastmilk as the main nourishment for infants and are also allowed giving water, water-based drinks, fruits juice, and oral rehydration solution. However, it precludes the used of formula and solids.
- 'Any breastfeeding': Women who give some breastmilk to their infants and may also give infant formula to infants with or without solids. [6]

MATERIALS AND METHODS

A cross-sectional study was undertaken in 2007 in Himeji City, Japan. Mothers were randomly recruited when the Himeji City Health Department sent an invitation letter for the routine 18 months infants' health examination to parents. If mothers were willing to participate in the study, they returned the enclosed questionnaire on the day of the examination. Inclusion criteria were Japanese born mothers at 18 months post birth, aged from 16 to 45 years with a good health status, and who volunteered to participate.

The questionnaire was self-administered and included questions about mothers' knowledge and attitudes towards breastfeeding assessed by the IIFAS. All 17 items are related to the health and nutritional benefits, the cost

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and the convenience with a five-point scale that ranged from 1 = strongly disagree to 5 = strongly agree. Total scores could range from 17 (lowest - reflecting positive formula feeding attitudes) to 85 the highest (indicating attitudes that favour breastfeeding).[7] Scores between 49 and 69 were considered to reflect neutral attitudes towards infant feeding methods.[7] Questions about maternal demographics were also included. The IIFAS was translated into Japanese and back-translation, and finally each question was checked to ensure cultural and literal appropriateness using focus groups and a pilot study (Copies of the translated IIFAS are available from the authors).

The Statistical Package for Social Sciences, Version 18.0 (SPSS for Windows, SPSS Inc., Chicago, IL, USA), was used to analyse the data. Descriptive statistics and cross-tabulations were employed to summarise the characteristics of the sample and each item in the IIFAS followed by multiple logistic regression to identify an association between IIFAS total score and breastfeeding duration. Cronbach's alpha level was used to identify internal consistency of this scale.[8] Statistical significance was set at 0.05 level for all tests ($p<0.05$).

Ethics approval for our study was obtained from the Human Research Ethics Committees of Curtin University and Himeji City. Prior to the study commencing, all mothers were given an explanation of the study. Informed consent was implied on return of the questionnaire and the confidentiality of the data was assured.

Table 1. Characteristics of the sample (n=1,612)

		n	%
Mother's age	<25	67	4.2
	25-29	351	21.8
	30-34	722	44.8
	35+	411	25.5
	No response	61	3.8
Parity	Primipara	708	44.0
	Multipara	899	55.7
	No response	5	0.3
Occupation	Self-employed	29	1.8
	Professional work	91	5.8
	Non-professional work	302	18.6
	House duty	1145	71.0
	Student	6	0.4
	No response	39	2.4
Marital status	Married	1525	94.6
	Not married	59	3.7
	No response	28	1.7
Partner/husband's occupation	Self-employed	178	11.0
	Professional work	352	21.8
	Non-professional work	956	59.3
	House duty	4	0.2
	Student	2	0.1
	No response	120	7.4
Delivery methods	Vaginal	1370	85.0
	Caesarean section	240	14.9
	No response	2	0.1
Smoking during breastfeeding	Yes	171	10.6
	No	1390	86.2
	Yes, but quitting during breastfeeding	21	1.3
	No response	30	1.9
Alcohol intake during breastfeeding	Yes	228	14.1
	No	1374	85.2
	No response	10	0.6
Gender of the youngest child	Male	788	48.9
	Female	793	49.2
	No response	31	1.9
Birth weight of infants	<2500g	135	8.4
	≥2500g	1368	84.9
	No response	109	6.8
Annual family income (yen)	Below 2,500,000	219	13.6
	2,500,001-4,500,000	609	37.8
	4,500,001-6,500,000	413	25.6
	6,500,001-10,000,000	226	14.0
	Above 10,000,001	27	1.7
	No response	118	7.3

Note: Mean age ± SD = 32.2 ± 4.5

RESULTS

In total, 2,345 mothers were eligible to participate and 1,623 completed the questionnaire (Response rate: 69.2%). For the final analysis, 1,612 questionnaires were used, due to missing data. Table 1 shows the socio-demographic characteristics. The mean age of the mothers was 32.2 (range from 18 to 44), and 56% of them were multiparous. Almost all of them were married (96.3%) and their husbands had regular jobs (99.9%). The majority of mothers were housewives (72.8%) and approximately 15% delivered by Caesarean section. A minority of mothers (12%), were smokers and 1.3% quit during breastfeeding.

Table 2 shows the mothers' knowledge and attitudes towards breastfeeding using IIFAS in Japan. The majority (94.8%) stated that breastmilk was less expensive than infant formula. Of the mothers, 84.9% answered that breastfeeding promoted mother-child bonding and they (89.8%) also thought that breastmilk was the ideal food for infants. Over 70% agreed that formula was a better choice for working mothers. Nearly 65% disagreed that breastfeeding was more convenient than infant formula. In a reverse question, 30% still agreed that formula feeding was more convenient than breastfeeding. More than half of the mothers (55.4%) disagreed that mothers who use infant formula lack one of the joys of motherhood and 56% that breastfeeding makes the father feel left out. Of the mothers, 35% considered that breastfed infants were healthier than formula fed ones. While 44% disagreed that breastfeeding was not acceptable in public places, approximately 55% either agreed or were neutral on this question. The average score of the IIFAS (mean ± standard deviation) was 54.2 ± 4.9. The alpha level of Cronbach that indicates the reliability of the IIFAS in our study was 0.46.

A multivariate binary logistic regression with backward stepwise (LR) was undertaken with the duration of 'any breastfeeding' as the dependent variable. The results shows that 'any breastfeeding' to six months postpartum or more was more likely among mothers who had a higher score of the IIFAS (adjusted OR = 1.05, 95% CI = 1.02-1.08).

DISCUSSION

This is the first demonstration of the use of breastfeeding knowledge and attitudes towards breastfeeding applying the IIFAS among Japanese mothers. While they had some knowledge of breastfeeding, their overall knowledge and attitudes about breastfeeding were more positive towards the use of infant formula. More than half of the mothers in our study stated that infant formula was as healthy for infants as breastmilk and that infant formula was almost the same nutritionally as breastmilk and would not harm their infants. However, the components of breastmilk vary with the stage of lactogenesis and infants' age in months and infants' nutritional needs as they grow older.[9] In order to increase breastfeeding duration, it is important for mothers to understand the differences between breastmilk and infant formula, and the reasons why breastmilk is the most recommendable food for infants. Despite the Japanese government's launch of the promotion project 'Healthy Family 21' in 2001, the target goal has not been achieved. Japanese mothers lack not only breastfeeding knowledge but also they may have to deal with breastfeeding difficulties, for instance, without adequate support from husbands and/or health professionals. Prenatal education to mothers and fathers on breastfeeding should be developed.

Further highlight of our study was that breastfeeding outcomes would be affected by cultural beliefs. Cronbach's alpha level of the reliability of the IIFAS in our study was 0.46 which is moderate for internal reliability.[10] Cultural beliefs are involved in the process of decision-making on infant feeding methods. Cronbach's alpha level in this study is slightly lower than in studies from other countries reflecting the fact that the IIFAS did

Table 2. Mothers' knowledge and attitudes towards breastfeeding using the IIFAS in Japan (n = 1,612)

Item	Agree (%)	Neutral (%)	Disagree (%)
1. The nutritional benefit of breastmilk last only until the baby is weaned from breastmilk	42.3	27.9	29.8
2. Formula feeding is more convenient than breastfeeding	30.6	26.2	43.2
3. Breastfeeding increases mother-infant bonding	84.9	12.1	3.0
4. Breastmilk is lacking in iron	28.7	41.0	30.3
5. Formula-fed babies are more likely to be overfed than breastfed babies	42.1	37.6	20.3
6. Formula feeding is the better choice if mother plans to work outside the home	72.7	19.9	7.9
7. Mothers who formula feed miss one of the joys of motherhood	22.4	22.2	55.4
8. Women should not breastfeed in public places such as restaurants	33.4	22.9	43.8
9. Breast fed babies are healthier than formula fed babies	35.1	36.3	28.6
10. Breast fed babies are more likely to be overfed than formula fed babies	11.3	46.9	41.8
11. Father feels left out if mother breast feeds	15.2	28.9	56.0
12. Breastmilk is the ideal food for infants	89.8	8.6	1.6
13. Breastmilk is more easily digested than formula	62.6	33.8	3.6
14. Formula is as healthy for an infant as breastmilk	58.1	31.0	10.9
15. Breastfeeding is more convenient than formula feeding	9.4	26.5	64.1
16. Breastfeeding is less expensive than formula	94.8	3.6	1.6
17. A mother who occasionally drinks alcohol should not breastfeed her baby	63.3	24.1	12.6

Note: The items 1, 2, 4, 6, 8, 10, 11, 14, and 17 were reversed when calculating the score
† Disagree includes 'strongly disagree' and 'disagree'
‡ Agree includes 'strongly agree' and 'agree'

not contain any specific items related to breastfeeding in Japan.[11-13] Nevertheless, our study showed that the total IIFAS scores of Japanese mothers were related to breastfeeding duration. The overall score and the results of individual items suggested there is room for improvement in breastfeeding education and promotion in Japan.

When interpreting and assessing the applicability of our results, several limitations need to be considered. Firstly, as all participants were at 18 months postpartum, there may have been some recall bias. Secondly, as this study is the cross-sectional in design, a cohort study with a larger sample would be necessary to verify our results. However the large sample size and the relationship between IIFAS score and breastfeeding duration make us confident that the IIFAS score is a useful tool for understanding of infant feeding practices in Japan.

Conclusion

Our study provided important information on breastfeeding knowledge and attitudes amongst Japanese mothers using the IIFAS. A cross-sectional survey was used to understand the context of the study. Our study showed that the Japanese mothers were less enthusiastic about breastfeeding suggesting that they strongly relied on infant formula, although they acknowledged the benefits of breastfeeding. Breastfeeding education to mothers is important. Society development to increase understanding of what breastfeeding mothers are experiencing is essential. Further studies are necessary to clarify problems related to breastfeeding outcomes based on our study.

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AUTHOR DISCLOSURES

There are no conflicts of interest (political, personal, religious, ideological, academic, intellectual, commercial, or any other interest) and funding disclosure to be declared by the authors.

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以 IOWA 嬰兒餵養態度問卷評估日本母親母乳哺餵知識和態度

本研究透過 Iowa 嬰兒餵養態度問卷(IIFAS)描述日本母親的母乳哺餵知識和態度。2007 年，在日本對 1612 名母親進行一個橫斷面調查。受訪者是參加產後 18 週的免費健康檢查時召募的。調查採用日語版的 IIFAS，以自填的方式進行。描述性統計用於總結樣本特徵和 IIFAS 分數，隨後採用多元迴歸分析來找出 IIFAS 總分和母乳餵養時間的關係。儘管 IIFAS 分數表明大多數日本母親認識到母乳餵養的一些好處，但她們對於母乳哺餵總體的知識和態度是中性的，並更傾向於使用嬰兒配方奶。向母親、家庭和健康專業人士提供準確的，針對嬰兒餵養方法和長期好處的產前教育非常重要。

關鍵詞：嬰兒餵養實踐、Iowa 嬰兒餵養態度問卷、母乳哺餵時間、產前教育、日本母親