

Short Communication

Attitudes towards breastfeeding – the Iowa Infant Feeding Attitude Scale in Chinese mothers living in China and Australia

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This study aimed to translate and validate a Chinese (simplified) version of the Iowa Infant Feeding Attitude Scale (IIFAS) and compare the infant feeding attitudes of Chinese mothers living in Perth Australia and in Chengdu P.R. China. A survey was undertaken on 200 Chinese mothers living in Perth and 1620 mothers living in Chengdu. The simplified Chinese version of IIFAS had a moderate level of internal consistency with a Cronbach's alpha of 0.69 for mothers in Australia and 0.55 for mothers in China. The mean IIFAS scores in both country groups lay in the range of 'neutral breastfeeding attitudes'. Higher IIFAS scores were significantly associated with the likelihood of both breastfeeding initiation (OR: 3.85; CI: 2.49-5.96; $p < 0.001$) and longer (≥ 8 months) breastfeeding duration (OR: 2.52; CI: 1.87-3.40; $p < 0.001$). Chinese mothers in Perth (mean IIFAS score = 60.0 ± 6.3) tended to have more positive attitudes towards breastfeeding than mothers in Chengdu (mean IIFAS score = 57.7 ± 5.1 , $p < 0.001$), and had a longer duration of 'any breastfeeding' (10.0 ± 6.2 months in Perth compared to 7.4 ± 4.3 months in Chengdu, $p < 0.001$). In conclusion, higher scores on the IIFAS in simplified Chinese are associated with breastfeeding initiation and duration in Chinese populations.

Key Words: breastfeeding, Iowa Infant Feeding Attitude Scale, attitudes, infant feeding, migrants

INTRODUCTION

Breastfeeding is the optimal way of providing the best nutrition for the healthy growth and development of infants.^{1,2} In China, only a small portion of Chinese mothers are still exclusively breastfeeding their infants at six months.³ A cohort study undertaken in Zhejiang Province, PR China reported the 'exclusive breastfeeding' rates by sixth months were 0.2%, 0.5% and 7.2% in city, suburb and rural areas respectively.⁴ In Australia, Chinese-speaking women were reported to have a lower initiation of breastfeeding compared with other ethnic groups.⁵ A survey on the initiation and duration of breastfeeding in Chinese mothers in Perth, Western Australia revealed that less than 7% of Chinese mothers were still fully breastfeeding at 6 months.⁶ The Iowa Infant Feeding Attitude Scale (IIFAS) developed by De la Mora *et al.* is a measure of attitudes towards infant feeding.⁷ There have been no studies of infant feeding attitudes among Chinese in mainland China and overseas Chinese mothers published in English. The aim of this study was to translate and validate a Chinese version of IIFAS (simplified Chinese), and to compare the infant feeding attitudes and practices in Chinese mothers in China and Australia.

METHODS

Participants were asked to respond to all 17 IIFAS items with a five-point scale that ranged from 'strongly disagree' to 'strongly agree' for each item. Approximately half

of the items that were worded in manner favourable to formula feeding were reverse scored. Total attitude scores range from 17 to 85 with higher scores reflecting attitudes more positive towards breastfeeding.⁷ The IIFAS was translated into Chinese by three bilingual translators and subsequently back-translated. The translated IIFAS was pre-tested with 10 Chinese women who were breastfeeding to evaluate the readability of each item. (Copies of the translated IIFAS are available from the authors).

A survey was undertaken on 200 Chinese mothers living in Perth Australia and 1620 mothers living in Chengdu Sichuan Province, PR China, with a response rate of 94.8% and 77.1% respectively. The participants were mothers with children under 5 years old, recruited from kindergartens and social groups in Perth and from 14 kindergartens in Chengdu. The study was approved by the Curtin University Human Research Ethics Committee.

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Data were analysed using IBM Statistical Package for Social Sciences (SPSS) Version 20.0. Descriptive statistics were calculated for variables of interest. Independent samples t-test was used to compare means between groups. Chi-square test was used to test associations between categorical variables. One-way analysis of variance (ANOVA) was carried out to assess association between IIFAS scores and socio-demographic factors. To facilitate the analysis, we define 'longer breastfeeding' as 8 months or more. The IIFAS score was categorized into quartiles. Binary logistic regression was applied to explore the association of the IIFAS score levels with breastfeeding duration. Cronbach's alpha was used to assess internal consistency of IIFAS items.⁸ Internal reliability was acceptable if Cronbach's alpha was greater than 0.6.⁹ *P*-values <0.05 were considered statistically significant.

RESULTS

There was no significant difference in marital status between the two countries. The average age of Chinese mothers in Perth (33.5±5.0 years) was slightly older than the mothers in Chengdu (31.3±4.3 years, *p*<0.001). The majority of Australia mothers (76%) had a university degree compared to 44.3% in China. Australia mothers also had higher economic status compared to Chinese mothers and only 18.5% of Perth mothers had full-time work compared to 62.3% in China.

Most Chinese mothers had initiated breastfeeding, in Australia (93.6%) and in China (82.9%). There was no difference between the mean 'exclusive breastfeeding' duration in Australia (3.9±2.7 months) and in China (3.7±2.7 months). The Australia mothers had longer 'any

breastfeeding' duration (10.0±6.2 months) compared to China (7.4±4.3 months, *p*<0.001).

The mean IIFAS scores in both groups lay in the range of 'neutral breastfeeding attitudes'. The responses to each IIFAS item were compared between mothers in Australia and in China (Table 1), with Chinese mothers in Perth having more positive attitudes towards breastfeeding (*p*<0.001). Australia mothers had higher scores in 8 items and the highest mean difference appears on the item "women should not breastfeed in public places such as restaurants" (*p*<0.001).

Infant Feeding attitudes and demographic factors

There were no significant differences in infant feeding attitudes by marital or working status. Higher educational attainment was significantly associated with mother's positive attitude towards breastfeeding (*p*<0.001) in both countries. In China, mothers aged between 30-33 years old were more likely to have higher IIFAS scores (*p*<0.05). Higher economic status was showed to be associated with higher IIFAS scores among Chinese-Australian mothers.

Infant feeding attitudes and feeding practices

The simplified Chinese version of IIFAS had moderate internal consistency with a Cronbach's alpha of 0.58 in the combined sample (mothers in China and in Australia), 0.69 for mothers in Australia and 0.55 for mothers in China. Analysis of subgroup differences in reliability revealed strengthened reliability in university educated mothers ($\alpha = 0.63$) and in higher household economic mothers in China ($\alpha = 0.62$).

Table 1. Item-response comparisons between Chinese mothers in Australia and in China

Scale Item	Australia (n=200) mean±SD	China (n=1620) mean±SD	Mean difference	2-sided <i>p</i> -value
1. The benefits of breastfeeding last only as long as the baby is breast-fed [†]	3.2±1.1	3.1±1.0	0.79	0.296
2. Formula feeding is more convenient than breastfeeding [†]	3.4±1.1	3.5±0.9	-0.15	0.040
3. Breastfeeding increase mother infant bonding	4.4±0.7	4.2±0.8	0.21	<0.001
4. Breast milk is lacking in iron [†]	3.5±0.8	3.6±0.8	-0.11	0.057
5. Formula fed babies are more likely to be overfed than breastfed babies	3.1±0.9	2.8±0.9	0.34	<0.001
6. Formula feeding is the better choice if the mother plans to go back to work [†]	2.3±0.9	2.3±0.7	0.02	0.674
7. Mothers who formula feed miss one of the great joys of motherhood	3.0±1.1	3.1±1.0	-0.07	0.393
8. Women should not breastfeed in public places such as restaurants [†]	3.5±1.1	3.0±1.0	0.50	<0.001
9. Breastfed babies are healthier than formula fed babies	3.8±1.0	3.7±0.9	0.09	0.217
10. Breastfed babies are more likely to be overfed than formula fed babies [†]	3.4±0.7	3.2±0.8	0.14	0.010
11. Fathers feel left out if a mother breast-feeds [†]	3.8±0.7	3.8±0.7	-0.01	0.837
12. Breast milk is the ideal food for babies	4.5±0.7	4.2±0.7	0.29	<0.001
13. Breast milk is more easily digested than formula	4.3±0.8	4.0±0.8	0.31	<0.001
14. Formula is as healthy for an infant as breast milk [†]	3.0±0.9	3.1±0.8	-0.05	0.454
15. Breastfeeding is more convenient than formula	3.9±0.9	3.9±0.8	0.02	0.676
16. Breast milk is cheaper than formula	4.0±1.0	3.6±1.0	0.38	<0.001
17. A mother who occasionally drinks alcohol should not breastfeed her baby [†]	2.7±1.0	2.4±0.9	0.30	<0.001
Mean IIFAS score	60.0±6.3	57.7±5.1	2.29	<0.001

[†]Reverse scored items

The predictive validity of the simplified Chinese version of IIFAS is reflected in the finding that mothers with higher attitude scores were more likely to initiate breastfeeding ($p < 0.001$) and to have longer breastfeeding duration ($p < 0.001$). Compared to women who had a IIFAS mean score of less than 55, mothers who had a IIFAS mean score of over 61 were almost 4 times more likely to breastfeed (OR = 3.85, 95% CI: 2.49-5.96; $p < 0.001$). In addition, mothers who had a IIFAS mean score over 61 were two and half times as likely (OR = 2.52, 95% CI 1.87-3.40; $p < 0.001$) to have a breastfeeding duration of at least 8 months or longer than those who had a IIFAS mean score of less than 55.

DISCUSSION

This is the first study to report on the use of a simplified Chinese version of IIFAS to describe infant feeding attitudes in Chinese mothers in mainland China and Australia. The internal reliability of the simplified Chinese version of IIFAS in this study was good for a self-administered questionnaire for mothers in Australia ($\alpha = 0.69$) and university educated ($\alpha = 0.63$) or high-household-income mothers ($\alpha = 0.62$) in China. This is comparable to the original IIFAS Cronbach's alpha of 0.68 in the sample of breastfeeding women and more robust than for the Romanian version of IIFAS.^{7,10} These findings may show a lack of infant feeding information among lesser educated and/or low-household-income Chinese mothers in China.

The mean item-responses show an inconsistency between the item "formula fed babies are more likely to be overfed than breast-fed babies" and the item "breastfed babies are more likely to be overfed than formula fed babies". It is more significant in mothers in China with the mean score of the former item of 2.8 ± 0.9 and the latter of 3.2 ± 0.8 (Table 1). This might be explained by the common Chinese culture belief that "gaining weight and being fat means affluence".¹¹ In Chinese culture, there is no concept of being "overfed". Compared to mothers in China, there was less inconsistency between this pair of items in the responses of mothers in Australia. This might be explained by the better infant feeding information that mothers in Australia received.

The low mean scores of the item "formula feeding is the better choice if the mother plans to go back to work" (2.3 ± 0.9 in Australia and 2.3 ± 0.7 in China) may reflect a lack of support for breastfeeding mothers in the workplace (Table 3). Also the item of "a mother who occasionally drinks alcohol should not breastfeed her baby" was negative to breastfeeding with a mean score of 2.7 ± 0.8 in Australia and 2.4 ± 0.9 in China (Table 1). Thus future projects promoting breastfeeding in Chinese women should include information on the "overfeeding" infants, breastfeeding and drinking alcohol and on providing more support for mothers in the workplace.

Conclusion

This is the first use of a simplified Chinese version of IIFAS to describe and compare the infant feeding attitudes in Chinese migrant mothers and also in Chinese mothers in their homeland. The IIFAS in simplified Chi-

nese is a reliable and valid instrument to measure the infant feeding attitudes in these populations.

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AUTHOR DISCLOSURES

The authors declare that they have no financial or other conflicts of interest to declare.

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以 IOWA 嬰兒餵養態度問卷評估居住在中國及澳洲的華人母親其母乳餵養態度

本研究的目的是翻譯和驗證簡體中文版的 Iowa 嬰兒餵養態度問卷(IIFAS)，并比較生活在澳洲珀斯和中國成都的華人母親的嬰兒餵養態度。本研究調查了 200 名生活在珀斯的華人母親和 1620 名成都的母親。簡體中文版的 IIFAS 問卷具有中等水平的內部一致性，在澳洲母親中的 Cronbach's alpha 值為 0.69，在中國母親中的 alpha 值為 0.55。兩組調查對象的 IIFAS 評分平均值都處於“中立的母乳餵養態度”。IIFAS 評分高的母親有更大的可能性會進行母乳餵養(OR: 3.85; CI: 2.49-5.96; $p < 0.001$)和更長時間的(大於 8 個月)母乳餵養(OR: 2.52; CI: 1.87-3.40; $p < 0.001$)。珀斯的華人母親(IIFAS 平均分數 = 60.0 ± 6.3)比起成都的母親(IIFAS 平均分數 = 57.7 ± 5.1, $p < 0.001$)，對母乳餵養有更積極的態度，也有著更長的母乳餵養時間(珀斯 10.0 ± 6.2 個月，而成都 7.4 ± 4.3 個月， $p < 0.001$)。由此得出結論，更高的簡體中文版 IIFAS 評分與華人是否進行母乳餵養及母乳餵養時間有關。

關鍵詞：母乳哺餵、Iowa 嬰兒餵養態度問卷、態度、嬰兒餵養、移民