

# Attitude of Primiparous Mothers Towards Exclusive Breastfeeding: Application of Indirect Measurement

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## Research

**Keywords:** Attitude, Behavioral beliefs, Evaluation of behavioral outcomes, Exclusive breastfeeding

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## Abstract

**Background:** Exclusive breastfeeding is a very important principle in ensuring the health of infants. Its benefits for the infant, mother, family, and community are emphasized by all experts. The aim of this study was to investigate the attitudes of mothers toward exclusive breastfeeding and its related factors.

**Methods:** This descriptive-analytical study performed on 420 women referred to comprehensive health services centers in Tehran. The samples were selected through multistage sampling. The data were collected by a questionnaire consisting of two sections: behavioral beliefs and evaluation of behavioral outcomes and were analyzed by t-test and ANOVA using SPSS 16.

**Results:** There was a significant relationship between attitude, behavioral beliefs, and evaluation of behavioral outcomes in mothers with their age, job, place of delivery and hospitalization of infants. There was also a significant relationship between mothers' attitudes and behavioral beliefs with their husband's education and the status of infants ( $P < 0.05$ ), but there was no significant relationship between attitude, behavioral beliefs, and evaluation of behavioral outcomes with other variables ( $P > 0.05$ ). Findings showed that most mothers' beliefs about the outcomes of exclusive nutrition (increased emotional bond between the mother and the infant, growth and strength of infant's bones and teeth, and infant's immunity to diseases such as diarrhea) were significant ( $P < 0.05$ ).

**Conclusion:** When designing interventions, efforts should be made to create and maintain a positive attitude toward exclusive breastfeeding through the promotion of behavioral beliefs and evaluation of behavioral outcomes.

## Introduction

Exclusive breastfeeding means feeding the infant exclusively with breast milk and without the intake of liquid and solid foods, except vitamins, minerals, and medicines. Continued exclusive breastfeeding can be achieved if the infant is only breastfed at least 6–8 times per day for the first 4–6 months after birth [1]. Breastfeeding is one of the most important ways to improve the health of infants in various communities. According to the UNICEF's findings, more than 3,000 infants die each day from infectious diseases due to bottle feeding, and 1.5 million infants die each year due to non-breastfeeding. In the late 1990s, mothers became more aware of the benefits of breastfeeding and they often chose to breastfeed their baby. But the impact of some factors has led to showing wrong breastfeeding behaviors, immediately stopping breastfeeding, and starting providing nutritional support to their infant, which gives rise to irreparable physical, psychological, and socio-economic harm to the infant and ultimately to society [2]. There is no doubt that breast milk is the best food for infants under six months of age. It is also a preventive agent in pediatric infectious diseases, allergies, adolescent diabetes, and obesity. In addition, it is beneficial to maternal health in terms of delay in fertility, protection against ovarian and breast cancer, and helping to restore pelvic organs to pre-pregnancy conditions. One of the goals of the

World Health Organization (WHO) for feeding infants is to have at least 50% of infants exclusively breastfed by 2025 [3].

It is recommended that breastfeeding practices be strengthened and intensified in developing countries to relatively reduce infant mortality rates. However, only 42.6% of infants are exclusively breastfed during the first hours of birth and 9.54% during the first 6 months of life [4]. Although most mothers start breastfeeding immediately after delivery, unfortunately, this decreases during the first months after delivery. In addition to having positive effects on the mother and the infant, exclusive breastfeeding has also obvious effects on the family and community economy due to the non-consumption of powdered milk [5].

Studies show that the pattern of exclusive breastfeeding in the first 6 months of life varies in different parts of the world. In China, 80% of infants are exclusively breastfed for the first six months of life [6]. In the United States, 35% of mothers exclusively breastfed their infants up to the age of 6 months in 2000, but this figure reached 50% in 2010 [7]. According to the latest report of Multiple Indicator Demographic and Health Survey (IrMIDHS) in 2011, exclusive breastfeeding in the country was 53.13% (47.79% in the urban areas and 62.76% in the rural areas). The highest and lowest percentages of exclusive breastfeeding were also reported in Guilan (85/65) and Yazd (33/11), respectively. In Tehran province, 49.93% of infants were also exclusively breastfed up to 6 months [8]. In recent years, many efforts have been made to promote exclusive breastfeeding. Although in most cases, breastfeeding begins at birth, continued breastfeeding, particularly exclusive breastfeeding, is overlooked in some cases. Therefore, it is important to identify the factors affecting breastfeeding [2]. Breastfeeding behavior is influenced by various physiological and psychological factors in mothers. It should be noted that physiological factors are difficult to change and in some cases impossible, so the design of interventions should be based on psychological and motivational factors in order to promote the above-mentioned behavior [9].

Although breastfeeding education programs have been implemented for many years and its importance has been emphasized as well, different statistics on the duration of breastfeeding raise the question of what is the attitude of newly delivered mothers and what are the factors associated with their attitude [10].

Attitudes are determined by one's beliefs about the consequences of behavior and the outcomes of behavior (behavioral beliefs) that arise from the evaluation of the outcomes or consequences of those behaviors. Therefore, a person who has strong beliefs about the positive and valuable outcomes of performing a behavior will have a positive attitude toward the behavior. On the contrary, a person who has strong beliefs about the negative outcomes of behavior will have a negative attitude toward it. Attitudes are acquired through the relationship of one person's world with another person, a physical body, a behavior, or a policy. Although many definitions of attitude have been proposed, most scholars agree that one's attitude examines his or her assessment of the subject [11]. Attitudes are measured both directly and indirectly. The indirect measurement prioritized when the goal is to design more accurate and appropriate interventions. Behavioral beliefs and evaluation of behavioral outcomes are two factors

shaping attitudes that in indirect measurement, attitude is a result of the advantages of these two constructs. Behavioral beliefs are the belief that behavior is associated with (positive or negative) traits or specific outcomes. The evaluation of behavioral outcomes refers to the value dependent on a behavioral outcome or attribute [12]. The purpose of this study was, indirect measurement of the attitudes of primiparous mothers toward exclusive breastfeeding.

## Methods

This descriptive-analytical (cross-sectional) study was performed on 420 women referred to comprehensive health services centers in Tehran who were selected through multistage sampling. four comprehensive health centers were selected from each of the categories. Then, at each comprehensive health service center, samples were selected from the numbers associated with household health records using systematic random sampling.

Inclusion criteria included having a health record, primiparity, having an infant under 2 months of age, and not breastfeeding, and exclusion criteria were incomplete completion of the questionnaire. Based on the previous study [13] and considering an estimation error of 0.05,  $p = 0.5$ , 95% confidence factor ( $Z = 1.96$ ), and 10% sample loss, the sample size was calculated as 402 participants. Data were collected using a two-part questionnaire. Part one: Mothers' demographic characteristics including age, education, job status, delivery status, breastfeeding status, and so on. Part two: Questions of attitude including behavioral beliefs and evaluation of behavioral outcomes. Given that the questionnaire used a 5-point Likert scale (strongly agree, agree, no idea, disagree, strongly disagree), questions and options that should have the most points were reversed. Therefore, in the attitude questions (behavioral beliefs and evaluation of behavioral outcomes), the questionnaire was scored in the form of completely agree with score 5, agree with score 4, no idea with score 3, disagree with score 2, and strongly disagree with score 1, except for the eighth, ninth, and tenth questions in which the completely disagree option would have been given more points.

Content validity was used to determine the validity of the questionnaire. In this method, the questionnaire was prepared according to valid sources and books and other approved questionnaires in this field, and after the approval of the research team, family health experts, and pediatricians, the necessary corrections were made based on their views and with the coordination of experts. Reliability was also assessed using a test-retest method. The questionnaire was completed by a number of mothers and after two weeks the questionnaires were again given to the same subjects. Data were entered into SPSS16 and analyzed statistically. The Cronbach's alpha coefficient was used to determine the reliability of the instrument's internal consistency. The correlation between test-retest questions was 0.76 and the Cronbach's alpha coefficient was  $\alpha = 0.80$ , which is acceptable and confirmed. The ethical considerations of the study included obtaining ethical codes and permits from relevant organizations, voluntary participation of women in the study, the confidentiality of information from the individuals and the health system, and the use of coding rather than writing the first name and the last name in the questionnaire.

Questionnaires were completed within one month and the data were entered into SPSS 16. Data were then analyzed using descriptive statistics, T-test, and ANOVA.

## Results

According to the results, most mothers were in the age group of 25–40 years with a mean of 54.8% and a standard deviation of  $29.66 \pm 3.09$ . 104 were employed and 316 were housewives. Also, most of them had a high school diploma and education level less than a high school diploma (52.4%). Most mothers completely agreed that breastfeeding caused: less infant disease such as diarrhea (65.2%), growth and strength of the bones and teeth of the infant (71.4%), increased emotional bond between the mother and the infant (73.3%), completeness of breast milk for the infant (70.5%), fitness (60%), cost-effectiveness for the family (65.2%) and prevention of childhood obesity (53.3%). The majority of mothers also agreed to give their infant water (37.4%), powdered milk (42.6%) and sugar water (39.3%) before the age of six months (See Table 1).

Table 1  
Frequency of mothers' responses to questions about behavioral beliefs on exclusive breastfeeding

Questions	Strongly agree	Agree	No idea	Disagree	Strongly disagree
	(%) N	(%) N	(%) N	(%) N	(%) N
If I only breastfeed my infant up to the age of six months, he/she is less likely to get diarrhea.	(65.2) 274	(23.6) 99	(9.5) 40	(1.4) 6	(0.2) 1
I believe that using my own milk alone for up to 6 months is effective in growing and strengthening the bones and teeth of my baby.	(71.6) 300	(23.9) 100	(2.9) 12	(1.2) 5	(0.5) 2
If I just give my baby my own milk by the end of the 6 months, it can increase the emotional bond between me and my baby.	(73.3) 308	(24.8) 104	(0.7) 3	(1) 4	(0.2) 1
I believe breast milk is a complete food for my infant up to 6 months of age.	(70.5) 296	(20.7) 87	(3.8) 16	(4.8) 20	(0.2) 1
Exclusive breastfeeding can improve my fitness.	(60) 252	(25.7) 108	(12.4) 52	(1.7) 7	(0.2) 1
Exclusive breastfeeding will prevent my baby from obesity in later years.	(53.3) 224	(21.7) 91	(23.8) 100	(1.2) 5	(0) 0
I believe that exclusive breastfeeding is affordable and does not impose a cost on my family.	(65.2) 274	(30.5) 128	(2.4) 10	(1.9) 8	(0) 0
If I don't give water to my baby before 6 months, my baby will be thirsty.	(24) 101	(37.4) 157	(20.7) 87	(12.6) 53	(5.2) 22
If I give my infant powdered milk or sugar water, besides my own milk, my husband can help me feed my baby.	(15.5) 65	(42.6) 179	(10.7) 45	(26) 109	(5.2) 22
Babies like sugar water better than breast milk.	(21) 88	(39.3) 165	(29.3) 123	(5.2) 22	(5.2) 22

The results showed that infant's immunity to diseases (91.2%), bones and teeth strength of the infant (93.8%), fitness (85.7%), emotional bond between the mother and the infant (73.3%), and completeness of breast milk for the infant (70.5%) were of the utmost importance to the mothers (See Table 2).

Table 2  
Frequency of mothers' responses to questions about evaluation of behavioral outcomes of exclusive breastfeeding

Questions	Strongly agree	Agree	No idea	Disagree	Strongly disagree
	(%) N	(%) N	(%) N	(%) N	(%) N
It is important for me that my baby be safe against diseases.	(91.4) 383	(7.2) 30	(0.2) 1	(1.0) 4	(0.2) 1
For me, the strength of my baby's bones and teeth is important.	(93.8) 394	(6) 25	(0) 0	(0.2) 1	(0) 0
My emotional bond with my baby is of great importance to me.	(93.6) 393	(6.2) 26	(0.2) 1	(0) 0	(0) 0
It is important for my baby to get the full nutrition.	(93.3) 392	(6.7) 28	(0) 0	(0) 0	(0) 0
It is important for me to have a fit body.	(85.7) 360	(13.3) 56	(0.7) 3	(0.2) 1	(0) 0
The proper weight of my baby in later years is important to me.	(85) 357	(14) 59	(0.2) 1	(0.7) 3	(0) 0
The cost of feeding my infant (with powdered milk or breast milk) matters to me.	(58.8) 247	(27.9) 117	(7.6) 32	(5.2) 22	(0.5) 2
It is important for me to quench the thirst of my baby before the age of 6 months.	237(56.4)	(33.6) 141	(4.3) 18	(5.7) 24	(0) 0
Getting help from my husband while breastfeeding is important to me.	(66.4) 279	(26.4) 111	(5.2) 22	(1.9) 8	(0) 0
It is important to me that my baby enjoy the food taste i prepare.	(61.4) 258	(32.6) 137	(2.4) 10	(3.1) 13	(0.5) 2

The findings also showed that there was a significant difference between the mean scores of behavioral beliefs, evaluation of behavioral outcomes, and attitude in mothers with their age and job ( $P$ -value  $< 0.05$ ). Also, there was a significant difference between the attitude of mothers and the evaluation of their behavioral outcomes with their husband's jobs ( $P$ -value  $< 0.05$ ). However, no significant difference was found between the mean behavioral beliefs of mothers and their husband's jobs ( $P$ -value  $> 0.05$ ). Independent t-test showed no significant difference between mothers' income with their behavioral beliefs, evaluation of their behavioral outcomes, and their attitude ( $P$ -value  $> 0.05$ ). According to the findings, there was a significant difference between mothers' education and the mean scores of mothers' behavioral beliefs and their attitude toward exclusive breastfeeding ( $P$ -value  $< 0.05$ ), but no significant difference was observed between the evaluation of mothers' behavioral outcomes and their education ( $P$ -value  $> 0.05$ ). However, the test showed a significant difference between the mean scores of behavioral

beliefs, evaluation of behavioral outcomes, and attitudes in mothers with their husbands' education (P-value < 0.05) (See Table 3).

Table 3

Comparison of Mean and Standard Deviation of Behavioral Beliefs, Evaluation of Behavioral Outcome and Attitude of the Mothers based on demographic variable

Variables	Subgroup	Behavioral beliefs	Evaluation of Behavioral Outcome	Attitude
		Mean(SD)	Mean(SD)	Mean(SD)
Age	15–25 years old	41.39 (5.26)	38.01 (2)	59.81 (8.66)
	26–40 years old	43.21 (4.39)	38.49 (1.74)	63.11 (6.95)
		P-value <0.001	P-value = 0.008	P-value <0.001
Mother's education	Lower than diploma & Diploma	41.42 (4.82)	38.23 (1.79)	60.16 (7.75)
	Academic	43.45 (4.73)	38.32 (1.97)	63.22 (7.83)
		P-value <0.001	P-value = 0.62	P-value <0.001
Husband's education	Lower than diploma & Diploma	41.68 (5.11)	38.10 (1.86)	60.29 (8.03)
	Academic	43.07 (4.57)	38.44 (1.88)	62.92 (7.62)
		P-value = 0.004	P-value = 0.07	P-value = 0.001
Mother's job	House keeper	41.84 (4.86)	38.15 (1.86)	60.73 (8.04)
	Employed	44.04(4.60)	38.63(1.88)	64.32 (6.95)
		P-value <0.001	P-value = 0.02	P-value <0.001
Husband's job	Worker	41.56 (4.72)	37.87 (2.14)	59.40 (8.19)
	Employed	42.98 (4.29)	38.47(1.92)	62.86 (7.09)
	Self-employment	42.11 (5.38)	38.23 (1.72)	61.24 (8.39)
		P-value = 0.08	P-value = 0.04	P-value = 0.009
Income	Middle & Lower	42.27 (5.08)	38.15 (1.94)	61.25 (8.26)
	Good	42.56 (4.57)	38.45 (1.77)	62.19 (7.38)
		P-value = 0.55	P-value = 0.12	P-value = 0.24

T-test showed no significant difference between the mean scores of behavioral beliefs, evaluation of behavioral outcomes, and attitude in mothers with the gender of infants, type of delivery, and infant-friendly hospital ( $P$ -value  $> 0.05$ ). But according to this test, there was a significant difference between the infants' hospitalization with the mean scores of behavioral beliefs, evaluation of behavioral outcomes and attitude in mothers, and between the status of infants with the mean scores of behavioral beliefs and attitude of mothers ( $P$ -value  $< 0.05$ ). (See Table 4).

Table 4

Comparison of Mean and Standard Deviation of Behavioral Beliefs, Evaluation of Behavioral Outcome and Attitude of the Mothers based on Information of delivery

Variables	Subgroup	Behavioral beliefs	Evaluation of Behavioral Outcome	Attitude
		Mean(SD)	Mean(SD)	Mean(SD)
Infant gender	Female	42.34 (4.86)	38.36 (1.79)	61.67 (7.95)
	Male	42.44 (4.92)	38.19 (1.96)	61.57 (7.92)
		P-value = 0.83	P-value = 0.36	P-value = 0.89
Type of delivery	NVD	42.36 (4.84)	38.35 (2.09)	61.80 (8.30)
	CS	42.40 (4.92)	38.23 (1.76)	61.54 (7.75)
		P-value = 0.94	P-value = 0.56	P-value = 0.75
Infant status	mature	42.56 (4.75)	38.31 (1.85)	61.87 (7.66)
	immature	40.10 (6.04)	37.76 (2.18)	58.26 (10.50)
		P-value = 0.009	P-value = 0.13	P-value = 0.02
Place of delivery	Governmental hospital	41.98 (4.88)	38.19 (1.91)	61.05 (8.09)
	private hospital	42.95 (4.84)	38.38 (1.83)	62.40 (7.65)
		P-value = 0.04	P-value = 0.31	P-value = 0.09
Infant hospitalized	No	42.59 (4.70)	38.35 (1.85)	62.01 (7.51)
	Yes	40.79 (5.94)	37.62 (1.99)	58.54 (10.22)
		P-value = 0.02	P-value = 0.01	P-value = 0.005
Baby friendly hospital	No	42.96 (4.62)	38.33 (2.05)	62.49 (7.57)
	Yes	42.29 (4.93)	38.26 (1.85)	61.48 (7.98)

## Discussion

The present study was a descriptive-analytical study investigated the attitudes of mothers toward exclusive breastfeeding. Good nutrition for the growth and development of infants is breast milk. The World Health Organization (WHO) recommends exclusive breastfeeding for infants up to 6 months of age [14]. In the present study, most mothers believed that exclusive breastfeeding up to 6 months of age would increase the emotional relationship between the mother and her infant, the growth and strength of infant's bones and teeth, and the infant's immunity to diseases such as diarrhea. However, some believed in giving powdered milk, water, and sugar water along with breast milk. Therefore, believing in the positive outcome of exclusive breastfeeding, mothers had a favorable attitude toward breastfeeding their infants. Also, according to the findings, the infant's immunity against diseases, the strength of the bones and teeth of the infant, the fitness, the emotional bond between the mother and her infant, and the completeness of breast milk for the infant were of the utmost importance to the mothers under study. Based on this finding, it can be concluded that the outcome of exclusive breastfeeding is of great importance to mothers and can play an important role in influencing the development of favorable attitude and subsequent exclusive breastfeeding. These results are in line with the results of the study of Tengku Ismail et al [15]. Considering the fact that some mothers believed in giving powdered milk, water, and sugar water to their infants and since in the definition of exclusive breastfeeding, it is stated that infant should only be breastfed up to 6 months, in order for changing the behavior of feeding the infant with powdered milk, water, and sugar water before six months of age, it is necessary to design appropriate educational interventions to avoiding the mother feeding her infant with foods other than her own milk, in addition to feeding their infant with breast milk.

In this study, there was a significant relationship between behavioral beliefs, evaluation of behavioral outcomes, and attitude in mothers with their age and job and the hospitalization of infants and also between their husband's education with their behavioral beliefs and attitude. This means that older mothers were employed, their infants were not hospitalized, their husbands were educated, had a stronger belief in positive and valuable outcomes of exclusive breastfeeding, and had a positive attitude in this regard. However, despite the strong beliefs and attitudes of educated and working mothers, they may not be able to breastfeed their infant, in practice, due to environmental problems such as cases in which kindergarten is far from mothers' workplace. These findings are in line with the findings of the study by Saeid et al. in terms of the relationship of mothers' attitudes toward exclusive breastfeeding with their age [16]. Attitudes are determined by one's beliefs about the consequences of behavior and the outcomes of behavior (behavioral beliefs) that arise from the evaluation of the outcomes or consequences of those behaviors. Therefore, a person who has strong beliefs about the positive and valuable outcomes of performing a behavior will have a positive attitude toward the behavior. On the contrary, a person who has strong beliefs about the negative outcomes of behavior will have a negative attitude toward it [11]. In this

study, there was no statistical relationship between income and any of the constructs of behavioral beliefs, evaluation of behavioral outcomes, and attitude. This result is inconsistent with the study of Mohammed et al. in which a significant relationship was found between mothers' attitudes toward breastfeeding and their income [17]. Other results of this study showed that there was a significant relationship between the evaluation of behavioral outcomes and attitude in mothers with their husband's jobs and a significant relationship between mothers' behavioral beliefs and attitudes with their education. The outcomes and consequences of exclusive breastfeeding were more valuable to mothers whose husbands were employed and they had a more favorable attitude in this regard as compared to mothers whose husbands were workers, and mothers whose education was higher had a stronger belief about and a positive attitude toward exclusive breastfeeding. It can be said that the promotion of maternal education has led to more information and knowledge about the benefits of exclusive nutrition and increased maternal desire for it. In the study of Amin et al., there was also a relationship between mothers' attitudes and their education level [18]. Other results of this study showed that there was a significant relationship between mothers' behavioral beliefs and attitudes with the status of infants (full-term / preterm). This association was more significant in infants who were born full-term. This result is consistent with the study by Shosha et al., in which a positive and strong relationship was found between mothers' attitude and full-term infants [19]. A study by Tan in Malaysia found that mothers with full-term infants were twice as likely to have exclusive breastfeeding as compared with those with preterm infants [20]. It seems that mothers who give birth to preterm infants, compared with those who give birth to full-term infants, believe that feeding a preterm infant with their own milk cannot meet the nutritional needs of their preterm infant and may not have a positive impact on their physical condition. Therefore, educating mothers with preterm infants may have a positive impact on their beliefs about and attitudes toward exclusive breastfeeding. Other results of this study showed a significant relationship between mothers' behavioral beliefs and place of delivery (public hospital/private hospital). Exclusive breastfeeding was more common in mothers who gave birth at a private hospital than in mothers who gave birth at a public hospital. This may indicate that in a private hospital, nurses were more likely to provide guidance and support to mothers and to give them adequate information about the health benefits of exclusive breastfeeding for the mother and the infant than in a public hospital, and this can be a strong reinforcement of mothers' beliefs toward exclusive nutrition.

## Strength And Limitations

By involving participants from most of the districts in the Tehran region, this study may provide the regional and sub-regional picture of Exclusive breastfeeding. However, our findings may not be generalized to other women across the country. Another limitation is that Exclusive breastfeeding is dependent on a number of factors, and it was not possible to investigate all of them in the present study.

## Conclusion

According to the results obtained, it can be stated that the outcome of exclusive nutrition is of great value and importance to mothers under study and underlying variables such as age, mothers' job, and husband's education as well as other variables such as the status of infants, and place of delivery and hospitalization of infants may have a major impact on behavioral beliefs, evaluation of behavioral outcomes, and attitudes. Therefore, it is necessary to consider these variables in breastfeeding educational interventions to enhance behavioral beliefs, evaluation of behavioral outcomes, and attitudes in mothers in order to achieve the global goal of exclusive breastfeeding.

## Abbreviations

UNICEF; United Nations Children's Fund, WHO; World Health Organization, IrMIDHS;Iran's Multiple Indicator Demographic and Health Survey, ANOVA; Analysis of variance.

## Declarations

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### Authors' contributions

S.R, M.GH, A. P contributed to the design of the study. S.R performed the statistical analysis and S.R, M.GH, F. T, A. P drafted the manuscript. S.R, M.GH, F. T participated in the coordination of data collection. S.R, M.GH, A. P edited the final draft of the manuscript and approved the final manuscript.

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### Availability of data and materials

The datasets analyzed for the current study are available from the corresponding author on reasonable request.

### Ethics approval and consent to participate

This research is based on the code of ethics in research of IR.SBMU.PHNS.REC.1396.117 of Shahid Beheshti University of Medical Sciences.

### Consent for publication

Not applicable.

### Competing interests

The authors declare that they have no competing interests.

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