Original Research

Self-efficacy of community pharmacists and associated factors in counselling to support self-medication in Japan: A cross-sectional study

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Abstract

Background: In 2016, the Ministry of Health, Labour and Welfare established the Health Support Pharmacy Certification System. The certification requirements include a track record of counseling regarding the use of over-the-counter drugs (OTC). Therefore, pharmacists must increase their self-efficacy for counseling. Objectives: To determine pharmacists' self-efficacy for OTC counseling and related factors. **Methods:** A web-based survey was conducted. Multivariate analysis was conducted to test the relationship among the mean scores of self-efficacy for OTC counselling for 25 symptoms, pharmacist attributes, years of work, psychosocial factor, job satisfaction, and level of trust from the community and patients. **Results:** We received responses from 250 people. The overall self-efficacy was 5.8 (SD= 2.4) but varied depending on the symptoms. Self-efficacy was relatively high for allergic symptoms (6.9), cold/influenza (6.9), and constipation (7.1), but relatively low for contraceptive drugs (3.8), palpitation/shortness of breath (4.6), and abnormal taste/smell (4.2). In bivariate analysis, items related to self-efficacy included "age" (Spearman correlation= 0.276, P<0.001), "academic background" (-0.208, P=0.001), "number of years of work" (0.267, P<0.001), "level of trust from the community" (0.155, P=0.014), "level of trust from patients" (0.271, P<0.001), "job satisfaction" (0.236, P<0.001), "role clarity" (0.181, P=0.004), and "positive challenge at work" (0.271, P<0.001). Multivariate analysis indicated that the number of years of work (Standardizing Coefficient: 0.22), trust from patients (0.13), and positive challenge at work (0.25) had a positive effect on self-efficacy. **Conclusions:** Years of work, recognition that they are trusted by patients, and positive challenge at work were important for the counseling self-efficacy of pharmacists. These results provide implications for pharmacy management and lifelong education strategies to promote self-efficacy in pharmacist counseling.

Keywords: Community pharmacy; Self-efficacy; Over-the-counter drugs; Counseling

INTRODUCTION

In Japan, where the birthrate is declining and the population is aging, optimizing the annual national medical expenses of about $516 billion (FY2018) to maintain the universal health insurance system under social security has become an issue.[1] The "Japan Revitalization Strategy - JAPAN is BACK" initiative decided upon by the Cabinet Office in June 2013 clearly indicated that "One of the ways to optimize medical expenses is to promote self-medication, and through this the use of pharmacies and pharmacists will be promoted in order to make available advice related to proper use of over-the-counter (OTC) drugs and drugs requiring special supervision and health-related consultation, provide information and promote self-medication."[2,3] An OTC drug "a drug that has no significant effect on the human body in terms of its efficacy and effect, and is intended to be used by the consumer by their own choice based on information provided by pharmacists and other medical and pharmaceutical personnel."[2] (Pharmaceutical and Medical Devices Act, Article 4 Paragraph 5 Item 4).

Customers can purchase OTC drugs from pharmacists, pharmacists in retail stores, or registered merchants without a doctor's prescription. These can also be purchased over the Internet, except for some categories of drugs. Contrarily, drugs requiring special supervision refer to those that have just been converted from an ethical drug to an OTC drug. While these are new as OTC drugs, they must be handled with great care. Pharmacists are obliged to provide face-to-face guidance and information at the time of purchase by customers so that these can be used safely. Such medicines cannot be purchased online. In this way, OTC drugs differ from ethical drugs dispensed by pharmacists based on prescriptions, so appropriate involvement of pharmacists is essential for their proper use.[2]

The "Japan Revitalization Strategy Revision 2014 - Challenge for the Future -" revised in June 2014, stipulated the "transition from ethical drugs to OTC drugs (expansion of switch OTC)."[4] Switch OTC refers to a drug in which the ethical drug component has been converted into an OTC component. Reports suggest that certain medical cost reduction has been achieved by promoting the switching of categories.[5]

In 2015, the Ministry of Health, Labour and Welfare announced the "Pharmacy Vision for Patients," and in 2016, the "Health Support Pharmacy Certification System" was started to provide

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pharmacies with a health support function that meets the needs of patients. The certification requirements include functions to support self-medication, such as advice on the safe and proper use of medicines and consultation on the maintenance and promotion of health.[6]

A study of factors that influence a customer's desire to consult a pharmacist when purchasing an OTC (consultation intention) reveals that "feeling that the content of the advice was useful" has the greatest impact.[7] In addition, reports suggest that there is a positive correlation between OTC purchases by customers, the use of pharmacists as information providers, and consultations at pharmacies as information channels. Furthermore, OTC purchasers who place importance on individuality of information have a stronger tendency to consult pharmacists and pharmacies.[8] Therefore, pharmacists play a crucial role in the informed choice of buyers by providing personalized information and advice on the efficacy and safety of OTC. However, many pharmacists find it difficult to engage consumers in dialogue.[9] Specifically, pharmacists themselves must increase their self-efficacy for counseling to respond to consumers with various characteristics such as those who specify a drug brand without consultation regarding their symptoms and those who are indifferent to drug safety.

Self-efficacy is defined as the "Degree of confidence in an individual's ability to perform actions."[10] It comprises a person's expectation that a given action will lead to a certain result (outcome expectation), as well as the conviction that they can themselves perform the action necessary for the result (efficacy expectation).[11]

A study conducted in Norway suggests that there may be a link between psychosocial factors and pharmacist self-efficacy for counseling when selling OTCs.[12] However, there are no studies in Japan that have clarified the level of self-efficacy of pharmacists for counseling at the time of OTC sales and the factors related to self-efficacy. Clarifying that the psychosocial factors in the workplace are related to the improvement of pharmacists' self-efficacy during counseling would be useful for the operation of pharmacies, which can contribute to the self-care of community residents and the construction and practice of concrete strategies for pharmacist education.

Therefore, the purpose of this study is to determine the self-efficacy of pharmacists and related factors for counseling that deals with various symptoms.

METHODS

Study design

This was a web-based observational study.

Subjects

The selection criteria included the following: pharmacists who are currently working at Japanese pharmacies or drug stores and have experience selling OTC drugs, and who agreed to respond to the survey. Pharmacists working in hospitals or clinics were excluded.

Estimation of sample size

Population: The necessary sample size based on 180,000 pharmacists (the number of pharmacists working in pharmacies in Japan) at a confidence level of 95% with a margin of error of 10%, and response probability of 0.5, was estimated to be 98 subjects.

$$n = 1.96*\sqrt{0.5\ (1-0.5)}\ /\ 0.1^2$$

Thus, a minimum sample size of 100 subjects was ensured.

Survey method

Nextit Research Institute (https://www.nextit.co.jp/), which specializes in web surveys, was informed of the conditions for selecting pharmacists, the required sample size, and survey items, and was requested to recruit respondents and implement the Web-based survey. The collected data was provided to the authors as a DB (Excel file) that does not include personal information. The survey period was from September 2020 to October 30, 2020.

Survey items

The survey items included respondent attributes (gender, age, academic background and years of work), self-efficacy for OTC counseling, level of trust (from the community and patients), job satisfaction and psychosocial factors. Regarding self-efficacy for OTC counseling, 25 types of symptoms were set, and respondents were asked to respond based on a 11-point Likert scale ranging from 0 (Very difficult) to 10 (No problem) to the question "How do you usually feel about responding to counseling or providing advice when you are consulted by a customer regarding the following symptoms, illnesses and needs?" Concerning the level of trust (from the community and patients), respondents were asked to respond based on a 5-point Likert scale ranging from 0 (Completely disagree) to 5 (Strongly agree) to the questions "My pharmacy is trusted by the community (hereinafter, level of trust from community)" and "I am usually trusted by patients (hereinafter, level of trust from patients)." Regarding job satisfaction, the respondents were asked to score themselves out of 10 points to the question "Out of 10 points, what score would indicate your level of satisfaction with your job as a pharmacist (hereinafter, job satisfaction)?"

The psychosocial factors were measured using a Japanese survey form that was back translated with the help of English language experts, with the consent of the lead author of the paper[12] and based on the scale used in the paper. Specifically, the respondents were asked to provide responses ranging from 1 (never) to 5 (always) (never, very seldom, seldom, sometimes, often, very often, always) to the questions regarding "Quantitative job demands" (4 items), "Role clarity" (3 items), "Role conflict" (3 items) and "Positive challenge at work" (3 items) from the QPS Nordic (the General Nordic questionnaire for psychological and social factors at work)[13] which is a questionnaire form developed for measuring psychosocial factors. The QPS-Nordic has demonstrated reliability and validity. The questions under "Quantitative job demands" included four items: "Is your work irregular so that the work

piles up?" "Do you have to work overtime?" "Is it necessary to work at a rapid pace?" and "Do you have too much to do?" Questions under "Role clarity" included three items: "Have clear, planned goals and objectives been defined for your job?" "Do you know what your responsibilities are?" and "Do you know exactly what is expected of you at work?" There were three items under "Role conflict": "Do you have to do things that you feel should be done differently?" "Are you given assignments without the adequate resources to complete them?" and "Do you receive incompatible requests from two or more people?" Lastly, the questions for "Positive challenge at work" included "Are your skills and knowledge useful in your work?" "Is your work challenging in a positive way?" and "Do you consider your work meaningful?"

Statistical methods

The self-efficacy assessment was converted into scores following an 11-point Likert scale ranging from 0 (Very difficult) to 10 (No problem), and the mean score across 25 symptoms was regarded as the "Self-efficacy (Overall)." For psychosocial factors, the responses to "Quantitative job demands" (4 items), "Role clarity" (3 items), "Role conflict" (3 items) and "Positive challenge at work" (3 items) were converted into scores and the mean score for each factor were regarded as "factor scores." The confidence level of each factor was checked by calculating Cronbach's α.

Bivariate correlation analysis was conducted to determine the relationship among self-efficacy (Overall), patient attributes (gender, age, academic background, years of work), level of trust from community and patients, job satisfaction, and psychosocial factors. The results were presented as Spearman's ρ then verified. We also checked the correlation between psychosocial factors.

Finally, this study attempted to extract factors influencing self-efficacy by multivariate analysis. Linear regression analysis (stepwise method) was conducted in which the dependent variable was self-efficacy (overall) and the independent variables were respondent attributes, level of trust (from the community and patients), job satisfaction, and psychosocial factors. At that time, items related to self-efficacy (overall) in the bivariate correlation analysis were included as independent variables. Analysis was conducted using SPSS for Windows version 25.0 and the significance level was 5%.

Ethical considerations

This study was deemed not to require research ethics review at the pre-screening of research ethics review applications within the author's institution for the following reasons:

No handling of personal information.

No handling of data and materials collected from the human body.

The study used a web-based questionnaire and involved no bodily stress or invasiveness.

Providing responses was up to the subject and the contents of questions were not expected to cause psychological distress to the subject.

We paid close attention to information security so that information from the web-based questionnaire would remain confidential. Furthermore, the survey contractor and researchers assumed responsibility for the protection of privacy and human rights, as well as storage and disposal of information (including data on information used for the study).

RESULTS

Respondent characteristics

We received responses from 250 pharmacists. Among them, 56% were male, the mean age was 43.1 (SD=10.3) years old, 68% of respondents completed 4-year pharmacy education at the university level, and the mean number of years of work was 14.3 (SD=8.1) years (Table 1).

Table 1. Characteristics of the participants in the study (n=250)		Total	%
Sex			
	Male	140	56
	Female	110	44
Age (yr)			
	20-29	23	9
	30-39	79	32
	40-49	77	31
	50-59	51	20
	60-69	20	8
Education			
	4-year pharmacy graduate	169	67.8
	6-year pharmacy graduate	50	20
	Master of pharmacy	28	11
	Doctor of pharmacy	1	0.4
	Other	2	0.8
Years of work in pharmacy			
	5 yr	209	84
	5 yr	41	16

Self-efficacy in counseling on different symptoms

The overall self-efficacy was 5.8 (SD=2.4). Self-efficacy according to symptoms was high for allergic symptoms (6.9), cold/influenza (6.9), and constipation (7.1), but low for contraceptive drugs (3.8), palpitation/shortness of breath (4.6), and abnormal taste/smell (4.2). Significant differences were observed for five symptoms (urinary incontinence, smoking cessation, skin health, nutrition and self-test kits) when the cut-off value for the number of years worked was set to five years (Table 2).

Table 2. The score for self-efficacy in counseling in providing pharmaceutical advice for different symptoms/needs from customers using the pharmacy (n=250)

Symptoms/needs	≤5yr (n=41)	>5yr (n=209)	Total (SD)
Allergy	7.0 (1.8)	6.8 (2.3)	6.9 (2.2)
cold/influenza	6.9 (1.6)	6.9 (2.3)	6.9 (2.2)
Headache	6.9 (1.8)	6.8 (2.0)	6.8 (2.0)
Abdominal pain	5.7 (1.9)	5.9 (2.1)	5.9 (2.1)
Cough	6.7 (1.5)	6.5 (2.1)	6.6 (2.0)
Contraceptive	3.8 (2.6)	3.8 (3.1)	3.8 (3.0)
Child fever	5.3 (2.2)	5.7 (2.5)	5.6 (2.4)
Indigestion	6.2 (1.8)	6.8 (1.9)	6.7 (1.9)
Urinary incontinence	4.0 (2.1)	4.9 (2.4)*	4.7 (2.4)
Smoking cessation	5.5 (2.3)	6.7 (2.5)**	6.5 (2.5)
Constipation	7.1 (1.7)	7.1 (1.8)	7.1 (1.7)
Myalgia	6.3 (2.2)	6.9 (1.9)	6.8 (2.0)
Skin Health	5.1 (2.0)	6.2 (2.1)**	6.0 (2.1)
Dietary supplement	4.9 (1.8)	5.6 (2.2)	5.5 (2.2)
Wound	6.0 (1.9)	6.1 (2.1)	6.1 (2.1)
Urination pain	4.6 (2.0)	5.2 (2.3)	5.1 (2.2)
Nutrition	5.0 (2.2)	6.2 (2.0)***	6.0 (2.1)
Sleep	5.2 (2.1)	5.8 (2.5)	5.7 (2.4)
Skin disease	5.4 (1.9)	6.0 (2.1)	5.9 (2.1)
Fatigue	5.8 (1.7)	6.2 (2.0)	6.1 (1.9)
Self-test kit	3.6 (2.6)	4.6 (2.5)*	4.5 (2.6)
Palpitations, shortness of breath	4.0 (1.7)	4.5 (2.3)	4.4 (2.2)
Abnormal taste and smell	3.8 (1.9)	4.3 (2.4)	4.2 (2.4)
Fever	6.4 (2.0)	6.5 (2.1)	6.5 (2.1)
Washed-out feeling	5.5 (2.0)	5.5 (2.1)	5.5 (2.1)

* P<0.05, **P<0.01, ***P<0.001

Level of trust (from the community and patients)

Concerning the level of trust from the community, when asked regarding their level of agreement with the statement "My pharmacy is trusted by the community," 10% responded "Strongly agree," 60% responded "Agree," 26% answered "Neither," 4% answered "Disagree" and 0% answered "Completely disagree." Concerning the level of trust from patients, 6% answered "Strongly agree," 58% answered "Agree," 33% answered "Neither," 3% answered "Disagree" and 0% answered "Completely disagree."

Job satisfaction of pharmacists

The mean score for the question "Out of 10 points, what score would indicate your level of satisfaction with your job as a pharmacist (hereinafter, job satisfaction)?" was 6.8 points (SD=1.5).

Psychosocial factors

The mean psychosocial factor scores (based on a 5-point Likert scale) were 3.3 (SD=1.0) for Quantitative job demands, 3.7 (SD=1.0) for Role clarity, 3.0 (SD=1.0) for Role conflict, and 3.7 (SD= 0.9) for Positive challenge at work (Table 3). Cronbach's α fluctuated between 0.75 and 0.89, indicating that the question items for each factor had acceptable internal consistency (Table 3).

Bivariate correlations

Upon conducting bivariate analysis, items deemed related to self-efficacy (overall) included "age" (Spearman correlation= 0.276, P<0.001), "academic background" (-0.208, P=0.001), "years of work" (0.267, P<0.001), "level of trust from the community" (0.155, P=0.014), "level of trust from patients" (0.271, P<0.001), "job satisfaction" (0.236, P<0.001), "role clarity" (0.181, P=0.004) and "Positive challenge at work" (0.271, P<0.001).

Table 3. Outline of psychosocial scales and items		Mean score	SD	Cronbach's α
Scales	**Items included**	**Mean score**	**SD**	**Cronbach's α**
Quantitative job demands (4 items)	Is your work irregular so that the work piles up?	3.3	1.0	0.89
	Do you have to work overtime?			
	Is it necessary to work at a rapid pace?			
	Do you have too much to do?			
Role clarity (3 items)	Have clear, planned goals and objectives been defined for your job?	3.7	1.0	0.75
	Do you know your responsibilities are?			
	Do you know exactly what is expected of you at work?			
Role conflict (3 items)	Do you have to do things that you feel should be done differently?	3.0	1.0	0.75
	Are you given assignment without adequate resources to complete them?			
	Do you receive incompatible requests from 2 or more people?			
Positive challenge at work (3 items)	Are your skills and knowledge useful in your work?	3.7	0.9	0.85
	Is your work challenging in a positive way?			
	Do you consider your work meaningful?			

Table 4. Multiple regression analysis with the overall self-efficacy in counseling								
	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8
Quantitative job demands	0.01							
Role clarity	0.02	0.02						
Role conflict	0.03	0.03	0.04					
Positive challenge at work	0.23**	0.23**	0.24***	0.24***	0.26***	0.26***	0.26***	0.25***
Years of work in pharmacy	0.11	0.11	0.12	0.12	0.12	0.12	0.14	0.22***
Level of trust from the community	0.05	0.05	0.05	0.05	0.05			
Level of trust from Patients	0.07	0.07	0.07	0.08	0.10	0.12	0.12*	0.13*
Job satisfaction	0.06	0.06	0.06	0.05				
Age	0.12	0.12	0.12	0.11	0.11	0.11	0.12	
Educational background	-0.07	-0.07	-0.06	-0.06	-0.06	-0.05		
Adjusted R²	0.15	0.16	0.16	0.16	0.16	0.17	0.17	0.16

All table items are standardized regression coefficients (β) except for the Adjusted R^2 values
F value: 17.2 (p<0.001) (Step 8) *P<0.05 **P<0.01 ***P<0.001

Multiple regression analysis

Multivariate analysis extracted the following factors influencing self-efficacy (overall): Positive challenge at work (standardizing coefficient: 0.25), years of work (0.22) and level of trust from patients (0.13) (Table 4).

DISCUSSION

In this study, the pharmacist's overall self-efficacy for counseling for 25 symptoms was shown to be moderate, at 5.8 out of 11 points. In addition, years of work under pharmacist's attributes, Positive challenge at work under psychosocial factors, and level of trust from patients were found to be important factors influencing self-efficacy for counseling.

Self-efficacy (overall) for counseling

Although it is not possible to make a simple comparison owing to the different types of symptoms included in the surveys, the overall self-efficacy measured in this study was 5.8 points, which was slightly lower than the 7.2 obtained in a previous study conducted in Norway.[12] In addition, there were variations in self-efficacy depending on the symptoms. For example, pharmacists' self-efficacy for counseling was higher than average for constipation, allergies, colds, headaches, dyspepsia, cough and fever. The reason for this is that pharmacists frequently counsel customers with these symptoms, and it is easy to recommend multiple types of OTC. However, self-efficacy for counseling was low for contraceptives, palpitation/ shortness of breath, self-test kits and urinary incontinence. The reason for this is the lack of knowledge and experience for counseling due to the small number or unavailability of OTC drugs for these symptoms.

Looking at the relationship between years of work and self-efficacy, self-efficacy for counseling was significantly higher in pharmacists with more than five years of work experience than pharmacists with less than five years of work in the areas of urinary incontinence, smoking cessation, skin health, nutrition and self-test kits. This result suggests that these areas require a wealth of knowledge and work experience to accommodate customers with diverse health backgrounds who are aging.

The results of the bivariate correlation analysis suggested a negative correlation between academic background and self-efficacy. This result needs to be considered carefully. In Japan, a partial amendment bill to the School Education Law and Pharmaceutical Affairs Law was passed in 2004, and pharmacy education was extended from four to six years from 2006. Therefore, by the time of the 2021 survey, few pharmacists have completed the six-year system, and the number of years of work experience were as short as nine years after graduation. Sixty-eight percent (68%) of the pharmacists surveyed had graduated from a four-year system and had been working for a long time, which may have affected the results. With the shift to a six-year system, self-medication education has been incorporated into the core curriculum. Therefore, if the percentage of pharmacists who have completed the six-year system increases in the future, the results may change if a similar survey is conducted.

Upon comparing the mean scores of the psychosocial factors in this study with those of previous study,[12] Quantitative job demands were at the same level (3.3 vs 3.3), Role clarity (3.7 vs 4.3) and Positive challenge at work (3.7 vs 4.1) were slightly lower and role conflict was slightly higher (3.0 vs 2.3). In the bivariate correlation analysis, Role clarity and Positive challenge at work were found to be associated with self-efficacy. Bray and Brawley explain that Role clarity has a positive correlation with self-efficacy and is a clear predictor of job performance,[14] supporting the results of this study.

Multivariate analysis suggested that self-efficacy was influenced by years of work, trust from patients and the psychosocial factor "Positive challenge at work". Looking at the correlation between psychosocial factors, there were positive correlations between Positive challenge at work and Role clarity, Positive challenge at work and Quantitative job demands (correlation coefficients: 0.577 and 0.218, respectively). There were also positive correlations between the level of trust from patients

and job satisfaction, level of trust from patients and role clarity (correlation coefficients: 0.466 and 0.297, respectively). Furthermore, there was a negative correlation between job satisfaction and Role conflict (correlation coefficient: -0.284). Guirguis and Chewning have shown that role conflicts and Quantitative job demands have a negative impact on the work life of pharmacists,[15] partially supporting the results of this study. Therefore, regarding the operation of pharmacies, it is necessary to eliminate role conflicts, clarify the role of pharmacists, and manage pharmacies to achieve appropriate work allocation.

When pharmacists recommend OTC, there are cases where these do not follow the recommendations of best practices.[16] Furthermore, pharmacists have learning needs related to evidence based practice (EBP).[17] Pharmacists also need to be aware of the value of counseling regarding OTC use as it plays an important role in encouraging consultation.[18] Therefore, it is crucial to develop a training program for pharmacists to acquire practical counseling skills, foster an organizational culture that challenges new tasks, and create an environment where customers can easily talk to pharmacists.[19]

The observation variables that make up feeling Positive challenge at work, which is a psychosocial factor that affects self-efficacy, include questions such as "the skills and knowledge that I have acquired are useful for my work," and "I feel that my work is meaningful and rewarding." If the pharmacist can actively communicate with the customer and respond to the customer's needs by increasing their self-efficacy for counseling, the customer will be grateful, which will also lead to greater job satisfaction for the pharmacist.

Limitations

Since this survey was conducted online, it is possible that pharmacists who are unfamiliar with web-based surveys were excluded. If the degree of self-efficacy for counseling and work, amount of work, and degree of satisfaction with work differ significantly between non-respondents and respondents, selection bias may occur. In addition, this study was a cross-sectional design; therefore, it is difficult to establish a clear causal relationship. Furthermore, we could not demonstrate whether the reported self-efficacy is reflected in actual professional performance. However, a study comparing electronic keypad responses with paper and pencil questionnaires reported a high correlation between the two.[20] Additionally, respondents recruited by the web research company were distributed all over the country, and a web interface has been constructed so that respondents can respond easily. Furthermore, since multivariate analysis was performed using responses with good accuracy that exceeded the required sample size, it is judged that the findings obtained from this study reflect a general trend.

We will continue to confirm whether psychosocial factors in the workplace can be predictors of self-efficacy for counseling and continue research on the relationship between self-efficacy and work performance.

CONCLUSION

Self-efficacy for counseling was high for symptoms that pharmacists frequently provide counseling about and they are more likely to recommend various OTC drugs and foods for. In addition, years of work under pharmacist attributes, Positive challenge at work under psychosocial factors, and the level of trust from patients were pivotal factors affecting the self-efficacy of counseling. These results provide implications for pharmacy management and lifelong education strategies to promote self-efficacy in pharmacist counseling. In future, it will be necessary to clarify the effect of self-efficacy on actual behaviors and the resulting outcome of the patient.

AUTHOR'S CONTRIBUTIONS

RY analyzed the data and wrote the manuscript. MS assisted with data organization. MO conceptualized, conducted research, managed the project and supervised the manuscript.

COMPETING INTERESTS

The authors have no conflicts of interest to declare.

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