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A Study on effect of a Health Education Intervention Program about Breast Cancer and Breast Self-Examination among Nursing Professionals

Mahadevaiah A D[1], Kishore G[2], Khodadadi F[1]

[1]Department of Pharmacy Practice, PES University- Faculty of Pharmaceutical Sciences, 50 Feet Road, Hanumanthnagar, Bengaluru- 560050, Karnataka, India

[2]Department of Pharmacy Practice, Visveswarapura Institute of Pharmaceutical Sciences, 22nd Cross Rd, Siddanna Layout, Banashankari Stage II, Bengaluru- 560070, Karnataka, India

[3]PES University- Faculty of Pharmaceutical Sciences, 50 Feet Road, Hanumanthnagar, Bengaluru-560050, Karnataka, India

Abstract

Breast cancer (BC) normally shows a slow development rate, which means that successful treatment is easily achievable if the cancer is detected in its early stages. The purpose of this research was to investigate the health beliefs of nursing faculty about breast cancer and breast self-examination (BSE) and to enhance their knowledge of the same. A 60-minute, health educational study was performed for 541 nurses, age 16 to 60 years, from January to July 2019. A self-administered questionnaire was used before the intervention and immediately after the intervention. An average of 48.25% of the participants had knowledge of the signs, symptoms and risk factors of breast cancer. 42.7% participants were "too busy" to seek medical help. Only 17.2% of the respondents knew about the method of breast self-examination (BSE) in pre intervention evaluation. Out of 36 items, 35 of them witnessed a significant increase in nursing student's knowledge and attitude regarding BSE and breast cancer after the intervention. The study subjects' awareness had increased after post intervention, which exhibits that the training plan, was successful. It is a necessity for female healthcare professionals, who are expected to be informed and responsible health care professionals, to increase their awareness in regard to breast cancer and techniques of Breast Self-Examination and also to ensure that they provide worthy examples for others to follow.

Keywords: Breast Cancer; Breast Self-Examination; Health Education Intervention Program; Impact.

Introduction:

Breast cancer is considered the most prevalent cancer among women in both developed and emerging nations (Momenimovahed Z, Salehiniya H., 2019). It is one of the world's most notorious pathological problem and a primary mainspring of mortality among women (World health organization. Preventive cancer). In the U.S alone, the rate of breast cancer is 1 to 8, which is perceived to be the second most fatal cause of death among women (Gazanfari*et al*., 2006).

In India cancer is one of the primary reasons (9%) of overall deaths (WHO., 2019). According to the cancer statistics, reported from the national cancer registry program, India, the predicted

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number of patients diagnosed with cancer in India is 1,392,179 in 2020, and the 5 most widespread target organs are breast, lung, mouth, cervix uteri, and tongue. The vast number of patients diagnosed with cancer was determined to be at the locally advanced stage for breast with (57.0%) compared to other type of cancers (Mathur *et al.,* 2020).
Breast cancer is believed to be the most distinguishable form of cancer compared to other types, since it occurs in a visible organ and is easily curable if detected in an early stage (Tasci A, Usta YY., 2010). The rate of survival increased to 85% with early detection, whereas, late detection decreased the survival rate to 56% (Hallal., 1982).

According to American cancer society, breast self-examination is one of the most practical ways for screening breast cancer (Chalmers *et al.,* 2003). Compared to two other techniques [Clinical Breast Examination (CBE) & mammography], there are many advantages for BSE from an economical and human viewpoint, since performing BSE is cost effective and is available everywhere (Tunin*et al.,*2010). Executing non-stop BSE causes a decline rate of 3.1% in breast cancer cases with interfacing axillary lymph (Kaliyaperumal., 2004).

Nurses and midwives working in health care teams throughout the entire world are continuously in touch with patients and play a significant role in women's education on breast cancer (Kumar *et al.,* 2009). Along with their own health care; they see themselves responsible for ill and healthy individuals as well, because of their educational and sympathetic roles. Performing BSE as well as educating all the females to perform and practice BSE is considered a part of their responsibility, which is hugely crucial for early diagnosis of cancer (McCready *et al*., 2005; Karayurt*et al*., 2008; Moshfegi, Mohammadbeigi., 2010; Yousuf *et al.,* 2010).

Therefore, it is of paramount significance that midwives and nurses need to be knowledgeable and capable in BSE for minimizing the mortality of breast cancer. Moreover, the mindset among midwives and nurses regarding the great value of performing BSE will make a distinct difference in training, encouraging and supporting women to perform BSE on a regular basis (Avdal*et al.,* 2014). However, according to several studies, it was found out that midwives and nurses' effort was inadequate in performing this application (McCready *et al.,* 2005; Memis*et al.,* 2009; Akpinar*et al.,* 2011).

At the moment, there is a limited data regarding BSE awareness and practice among nursing students, and whether their tuition is adequate to impart precise information, positive behavior, and BSE expertise. Thus, the time seems convenient to examine nurses' levels of knowledge, attitudes, practices regarding BSE and breast cancer and assess the effect of health education intervention program about BC and BSE.

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Materials and method:

Instrumentation:

A questionnaire was used in the study which was specially designed and validated. It had questions to assess women's knowledge, attitude and practice of breast cancer and BSE: on knowledge of symptoms, risk factors, behaviour in association to breast changes, the foreseen delay when it came to contacting the doctor, barriers to seeking medical help and knowledge of breast screening (Breast Self-Examination BSE). The demographic characteristics of the participants were also collected.

Study Procedure:

A community-based study was performed from January 2019 to July 2019 on 541 participants, who had no history of breast cancer. The study group consisted of a majority of students and few teaching and non-teaching staff of a nursing college in Bengaluru. Participants were informed, in coordination with the college representative with information regarding dates, timings and venue of the seminar. The first phase was the pre-intervention phase. Contributors who agreed to participate in the research were recruited according to inclusion and exclusion criteria. The specially designed and validated questionnaires were administered to the participants to obtain base line data and some required face to face explanation or interview. The questionnaire took approximately 10 to 20 minutes to finish. The participants self-completed the questionnaire in English or Kannada. Following the first phase, the participants were required to attend the intervention phase.

During the intervention period, all the participants were required to take part in an educational session spanning an hour and ending with an open discussion. The session mainly focused on an orientation regarding the magnitude and impact of breast cancer, its signs and symptoms and risk factors for breast cancer. It also included information regarding the standard frequency of BSE and other BC screening tools. During the session, the participants were also taught the correct techniques to perform BSE and reminded to seek medical help when any change in their breast was noticed. Learning methods used, were lectures and an intellectual discussion using adapted training material, power point presentation, leaflets and audio-visual aids. After the lecture, an illustration and a practice session on BSE was provided using a breast model. Small pocket size booklets (Handouts) with information on BC and with the instructions on the BSE practice were given to participants. All the latest proofs and suggestions on practice were collected and put together. The power point lecture and BSE session were developed with the help of a breast oncologist and surgeon. This was followed by a post intervention phase which was carried out on the same day soon after the discussion and the participants were administered post-intervention questionnaire.

Statistical analysis:

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The statistical package for social sciences (IBM SPSS statistics 20) was utilized for analyzing data. Descriptive statistics (i.e., frequencies, percentages, mean, and standard deviation) were utilized in order to express the demographic characteristics, understanding, attitude and practice of the breast screening (BSE) and breast cancer in the study subjects.

Results:

The study participants consisted of a group of nurses (16 to 60 years old) who consented to participate in the study. The majority of the participants, 93.9%, were nursing students, Of these, 60.8% were 21 to 25 years and the mean age of the participants was 23.41 ± 5.063 years. In the present study, all of the participants' profession was preceded by their graduation with the minimum qualification in general nursing and midwifery 18.9% who are followed by three fourth of the participants who enrolled in BSc of nursing 70.4%, and finally very few females had obtained post-graduation qualification 10.7%. Only 5% of participants were working as nurses and 0.9% of them who were academicians. In addition, 4.4% of the participants were married, 13.7% of them had children, 2.2% of married females and 0.2% of unmarried females utilized contraceptives [Table 01].

Table no. 01, Demographic details of the subjects

SL.No.	Age group in years	Number	%
1.	16-20	148	27.4
2.	21-25	337	62.3
3.	26-30	34	6.3
4.	31-35	8	1.5
5.	36-40	4	0.7
6.	41-45	4	0.7
7.	46-50	1	0.2
8.	56-60	5	0.9
Education			
9.	BSc Nursing	381	70.4
10.	General Nursing and Midwifery	102	18.9
11.	Msc. Nursing	58	10.7
	Occupation		

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12.	Academician	5	0.11
13.	Nurse	27	5.0
14.	Student	508	93.9
Marital status			
15.	Married	24	4.4
16.	Unmarried	517	95.6
Number of children			
17.	One child	50	9.2
18.	Two children	11	2.0
19.	Three children	9	1.7
20.	Four children	2	0.4
21.	Five children	2	0.4
22.	No child	467	86.3
Contraceptives			
23.	Used	15	2.8
24.	Not used	526	97.2

The number of correct answers had gone up in the post-intervention phase in all the questions and has demonstrated significant variation for all the items at 95% CI and level of significance 0.05, except for one of the questions, which was regarding the confidence of the participants when checking their breast. [Table 02].

Table no. 02: Participants' knowledge, attitudes, practice and importance of breast cancer and breast self-examination

	Pre-intervention	**Post-intervention**
Assessment of knowledge about breast cancer symptoms	**Correct Response N (%)**	**Correct Response N (%)**
Do you believe pulling in of your nipple can be considered as a sign of breast cancer?	294 (54.3%)	428 (79.1%)
Can pain in one of your breasts or armpits be a sign of breast cancer?	158 (29.2%)	232 (42.9%)
Can puckering or dimpling of your breast skin be a sign of breast cancer?	286 (52.9%)	276 (51.0%)
Do you believe discharging liquid or bleeding from your nipple could be a sign of breast cancer?	272 (50.3%)	465 (86.0%)

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Can a lump or thickening in your breast be considered as a sign of breast cancer?	271 (50.1%)	287 (53.0%)
Can a nipple rash fall into the category of breast cancer?	231 (42.7%)	465 (86.0%)
Is redness of your breast skin in your opinion a sign of breast cancer?	237 (50.0%)	468 (86.5%)
Assessment of knowledge about risk factors of breast cancer	**Correct Response N (%)**	**Correct Response N (%)**
Utilizing HRT (Hormone Replacement Therapy)	172 (31.8%)	442 (81.7%)
Drinking more than 1 unit of alcohol per day	281 (51.9%)	296 (54.7%)
Smoking (Active and passive)	86 (15.9%)	389 (71.9%)
Being overweight (BMI over 25)	130 (24.0%)	446 (82.4%)
Having a family background of breast cancer among first-degree relatives	147 (27.2%)	363 (67.1%)
Early menstrual period	158 (29.2%)	277 (51.2%)
Exercising less than 30 minutes with moderate physical activity (five times a week)	321 (59.3%)	269 (49.7%)
Radiation therapy	294 (54.3%)	439 (81.1%)
Assessment of knowledge about BSE and attitude in relation to breast changes	**Number (%)**	
Correct frequency (once a month) of breast checking (reported by participants)	120 (22.2%)	184 (34.0%)
Have confidence in checking the breasts	98 (18.1%)	286 (52.9%)
Standard frequency of BSE (regularly every month)	120 (22.2)	184 (34%)
Women themselves can perform BSE	44 (8.1%)	464 (85.8%)

As presented in table 3, before training, most of the participants were hesitant to contact a doctor immediately when facing breast changes 87.8%. The most important barriers to seek medical help were lack of time for visiting the doctor 42.7% followed by language and culture barrier between patients and doctors 17.4% [Table 03]. It was ascertained that 37% of candidates had prior knowledge about breast cancer symptoms. It was detected that the participants knew what BSE was through various sources, 40% mentioning that the health professionals were their most important sources of information, 32.7% from their family or friends, 12.2% from communication tools or media [Table 03]. A significant improvement in the participants' knowledge of the risk factors of breast cancer was obtained after intervention. It is interesting to note that before the intervention 59.3% of the participants were aware that not being physically active is a risk factor, but only (15.9) knew smoking was also a risk factor of breast cancer [Table 02].

Annals of R.S.C.B., ISSN:1583-6258, Vol. 25, Issue 4, 2021, Pages. 129 - 141
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Table no.3: Assessment of obstacles for seeking medical care and attitude in relation to breast changes.

If you realize there were some changes in your breast, How soon will you react and visit a doctor:	**Number (%)**
If you stumble upon any alteration in your breast, will you visit a doctor right away?	66 (12.2%)
Perceived obstacles for seeking medical assistance	**Number (%)**
Too ashamed of going and seeing the doctor	45 (8.3%)
Terrified of going and seeing the doctor	37 (6.8%)
Too occupied to make time to visit the doctor	231 (42.7%)
Too insecure to discuss my symptom with the doctor	73 (13.5%)
Cultural and language barriers between patients and doctors	94 (17.4%)
Source of information regarding BSE	
Media	82 (15.2%)
Health center	216 (39.9%)
Friends and family	177 (32.7%)
Internet/Lectures	61 (12.2%)

Discussion:

In the current study, a lack of prior awareness about recurrent breast checking and insufficient knowledge of breast cancer risk factors presented as an issue of concern among the participants. Preventing apprehensions of this phenomenon will be of assistance in preventing breast cancer and can have an improved effect on the general health of the study population [Table 02]. Luckily, the positive effects of the intervention on nursing student's awareness regarding breast cancer are an important takeaway from this research.

Obviously, there was significant increase in the post-intervention knowledge of the various risk factors of breast cancer. [Table 02]. The findings are consistent with Shadia A. Yousuf, who claimed that there was an astounding improvement in the participants' knowledge of the risk factors of breast cancer after a similar workshop conducted in Saudi Arabia (Yousaf., 2010). Interestingly, not being physically active (59.3%) was the most popular risk factor mentioned by the participants, but the most unknown risk factor was smoking 15.9% [Table 02].

There was an improvement in the women's knowledge from pre-program to post-program as more than half of the women reported correct answers after the intervention given regarding signs and symptoms of breast cancer [Table 02]. In a similar study conducted by Elsabour MA *et al*., it was claimed that in the post program phase, that there was an improvement in some areas of knowledge such as definition, methods for prevention or decreasing the risk of breast cancer,

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Received 05 March 2021; Accepted 01 April 2021.

necessity of self-examination, and knowing the dangerous signs and symptoms in the studied group (Elsabour*et al.,* 2013). This outcome is also supported by the study by Alkhasawneh M et al., which exhibited that nursing students' knowledge of signs and symptoms of breast cancer such as, breast lump, nipple retraction, breast pain, and breast skin change, bloody nipple discharge, improved after intervention (Alkhasawaneh*et al.,* 2009). Most of the participants of the present study were aware of warning signs of pulling in of the nipple and dimpling more than any other BC signs [Table 02].

The participants were also examined regarding their knowledge about BSE Method and timing [Table 04, Graph 01], Knowledge about BSE was very low among the students before intervention and there was about 34.5% to 85.3% increase in the knowledge post-intervention. This was in line with Nuh CP *et al* who reported that a great number of nurses had certain misperception in the awareness of breast cancer and breast cancer screening (Nuh *et al.,* 2002). Also M. Panczyk *et al.,* concluded in a study, that only about 1 in 3 of nurses had carried out BSE in a totally correct manner, which demonstrates the need of continuous education in this matter, which has significant meaning for nurses and also for the women who are both guided and treated by them (Panczyk*et al.,* 2018). More than half of the present study participants had no knowledge of the correct technique and timing of BSE and only half 57.1% of all the participants knew that the best position for BSE was the supine position [Table 04].

Table no. 04: Assessment of knowledge BSE – method and timing

Q1-BSE is recommended to be done monthly	**Correct N (%)**	**Incorrect N (%)**	**No Answer N (%)**
Pre-intervention	***193 (35.7)**	102 (18.9)	242 (45.4)
Post-intervention	***491 (90.8)**	28 (5.2)	22 (4.1)
Q2-Suitable time to do BSE is 7th day after the start of menstruation	**Correct N (%)**	**Incorrect N (%)**	**No Answer N (%)**
Pre-intervention	***167 (30.9)**	192 (35.5)	182 (33.6)
Post-intervention	***431 (79.7)**	18 (3.3)	92 (17.0)
Q3-BSE could be done in front of the mirror	**Correct N (%)**	**Incorrect N (%)**	**No Answer N (%)**
Pre-intervention	***197 (36.4)**	149 (27.5)	195 (36.0)
Post-intervention	***448 (82.8)**	34 (6.3)	59 (10.9)
Q4-Axilla should be examined while doing BSE	**Correct N (%)**	**Incorrect N (%)**	**No Answer N (%)**
Pre-intervention	***153 (28.3)**	**191 (35.3)**	**197 (36.4)**
Post-intervention	***482 (89.1)**	29 (5.4)	30 (5.5)
Q5-Breast lump is an early warning sign for breast cancer	**Correct N (%)**	**Incorrect N (%)**	**No Answer N (%)**
Pre-intervention	***133 (24.6)**	75 (13.9)	333 (61.6)

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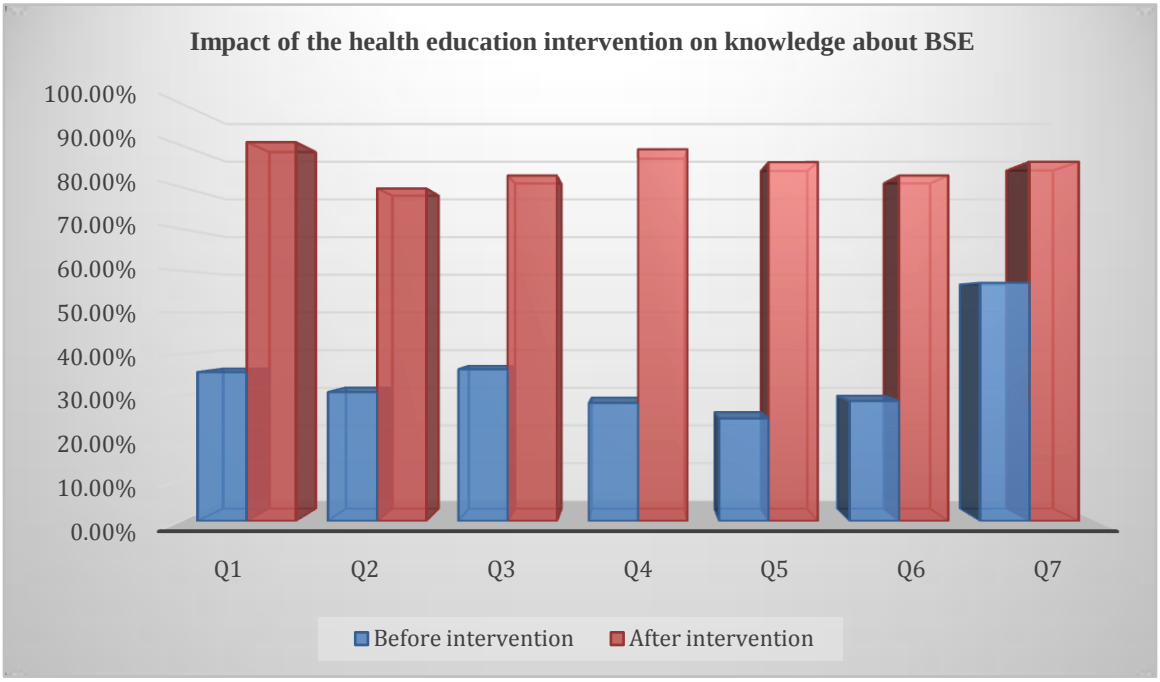
Post-intervention	***465 (86.0)**	40 (7.4)	36 (6.7)
Q6-BSE could be done while taking bath	**Correct N (%)**	**Incorrect N (%)**	**No Answer N (%)**
Pre-intervention	***156 (28.8)**	196 (36.2)	189 (34.9)
Post-intervention	***448 (82.8)**	69 (12.8)	24 (4.4)
Q7-BSE could be done in the supine position	**Correct N (%)**	**Incorrect N (%)**	**No Answer N (%)**
Pre-intervention	***309 (57.1)**	110 (20.3)	122 (22.6)
Post-intervention	***446 (86.1)**	45 (8.3)	30 (5.5)

***Correct Response**

Graph no.1: Impact of the health education intervention on knowledge about BSE



Nde FP *et al*, in their study reported that approximately 6 in 10 of the respondents were in accord that detecting breast cancer by themselves is possible (Nde*et al.*, 2015). However, in our study, the participants initially thought that BSE should be done by family members 70.1% or a doctor 21.8%, but the truth of the matter is that they can easily do the test by themselves, and this important point should be mentioned because it speeds up the BC diagnosis and conveys the importance of BSE but unfortunately only 8% of them were aware this fact [Table 02]. Regarding the courage and level of confidence among women, our finding demonstrated that only 18.1% of the participants were confident enough to check their breasts [Table 02]. The researcher believes that the awareness of participants is a worthy breakthrough in the post test intervention is likely to enhance their actual confidence.

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As mentioned before, early detection of cancer is extremely crucial. That's why it is important to identify barriers to attitude in seeking medical help. In the present survey, half of the participants were hesitant to see a doctor if they noticed any change to their breast. The most common reported barriers were, "Too busy" 42.7%, "Not feeling confident talking about my symptoms" 13.5% and 15.1% reported other barriers in pre intervention [Table 03]. This was in line with a study done by Lauver D*et al,* who mentioned that 23% of contributors sought medical attention after 3 months, and 3.6% were held back more than a year (Lauyer*et al.,* 1955).

In the present study, the most remarkable source of information about BSE were health centers 40%, friends and family 32.7%, media 15.2%, Internet and lectures 12.2% [Table 03]. On the other hand, the majority of respondents became aware about BSE through lectures was the outcome of the research done among young Arabian nursing students[1]. Due to the fact that all of the participants were nursing students, upgrading their knowledge level can be created through the university curriculum and cancer campaigns which should be organized in hospitals with the aim of enhancing the level of the knowledge of nurses who interact more with patients and help nursing students with implementation of educational programs for the community.[2] It's worth mentioning that, 541 women were chosen in order to participate in our study. These numbers compared to many studies not only represent a greater sample population, but also provide more thorough and detailed information about the obstacles and the current misconception among Indian people due to their basic knowledge.

Some limitations need to be addressed, when interpreting the results; first of all, a number of participating subjects 87.8% were identified at the age group of 16-25 years. Another limitation which cannot be ignored is that the information received may be biased during the data-gathering process via our questionnaires or in even some more traditional obstacles where problems have roots in the culture of the people, as women in our society may be too shy to answer the questions or even provide inaccurate answers.

In conclusion, a few recommendations for addressing the issues and providing health related guidelines from our study were: Periodic evaluation of the knowledge of the females regarding BC and BSE and detecting the weak spots and providing awareness and practical training of BSE.

Our study finally recommends that more hours regarding awareness and prevention of breast cancer and BSE and correct techniques should be added to healthcare related university curricula in nursing courses in Bengaluru. This will enable healthcare professionals gain the required knowledge and confidence they need to alternate the morbidity and mortality caused by breast cancer.

Conclusion:

Our study emphasizes the need to have student nurses get more familiar with BSE as part of their education. Designing and implementation of an educational program with the aim of amending

and enhancing nurses' competence in BSE, thus helping them enable themselves to train females is needed.

BSE is an important tool for women in developing countries where the majority of people cannot afford to get mammograms or CBE as these require the services of medical professionals and are expensive. Nurses having the knowledge and comfort level to impart the knowledge about BSE to the people in their jurisdiction will be an important part of helping to get women to perform BSE and detect breast abnormalities early.

Nursing students and practicing professionals have an important role as a part of the healthcare team in promoting safe breast care. They can play an educational role by being aware of the management of breast problems and encouraging women they come across, to become familiar with what is normal, offering written and verbal information, and informing women of the breast screening programs.

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Conflict of interest:
The authorsdeclare that they have no conflict of interest.

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