

Public Knowledge and Awareness about Parkinson's Disease in Eastern Province, Saudi Arabia

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Abstract

Objective: The goal of our study was to assess the level of knowledge and awareness of PD among the residents of Eastern Province in Saudi Arabia. We also examined the effect of healthcare profession, acquaintanceship (with a PD patient) and educational level upon the knowledge of PD.

Material and Methods: This was a cross-sectional observational study, performed in the period between September 2018 and April 2019 by distributing the Knowledge of Parkinson's Disease Questionnaire (KPDQ) among the general population as well as the health care providers employed at King Fahad Hospital in the University and family center at Imam Abdulrahman Bin Faisal University in Dammam, Saudi Arabia. The questionnaire contained demographic details about the subjects and evaluated symptom recognition capacity and general knowledge pertaining to PD.

Results: The questionnaire was administered to 1,133 members of the public, out of which 999 responses were included in the analysis. Tremor was the most commonly recognized symptom (86.8% in healthcare providers, 80.2% in the general population); motor symptoms were better recognized than non-motor symptoms among all the groups. A few common misperceptions were also discovered among the different cohorts.

Conclusion: We discovered significant knowledge gaps with regards to PD in the population of Eastern Province with different educational levels as well as among healthcare professionals. We therefore recommend the implementation of actions at the community level alongside enhancing the awareness of PD among healthcare professionals.

Keywords: Parkinson's Disease; Health-Care Providers; Acquainted; Unacquainted

Introduction

Awareness of Parkinson's disease (PD), which is a disabling neurological condition (usually occurring in the elderly), is essential for early diagnosis and management. However, a wide gap in the knowledge of PD influences the behavior of the general public towards it [1]. The prevalence of PD in Saudi Arabia is estimated to be 27 per 10000. As the world population is aging [2], the frequency of diseases

associated old age, PD for instance, is also increasing [3]. A defect in the general knowledge regarding the disease can lead to delay in seeking care and diagnosis and, in turn, initiation of treatment that can lead to better outcomes [4].

There were a limited number of studies conducted pertaining to knowledge and awareness of PD, and these revealed a marked misperception about the disease and inadequate knowledge on the global scale [5,6]. The current study utilizes a translated version of a validated questionnaire, Knowledge of Parkinson's Disease Questionnaire (KPDQ), in order to assess the knowledge and awareness about PD in different population cohorts [1].

Purpose of the Study

The purpose of this study was to examine the knowledge and awareness about the symptoms of PD and to find misperceptions existing about the disease. We believe that this study may guide future allocation of resources for any public awareness programs as well as future studies about the same subject.

Methodology

This is a cross-sectional, observational study, conducted in the period between September 2018 and April 2019 by distributing a questionnaire (KPDQ) manually among the general population and the healthcare providers (certified professionals employed at the healthcare facility) at King Fahad Hospital in the University and the family center at Imam Abdulrahman Bin Faisal University in Dammam, Saudi Arabia. Participants had to be above 18 years of age and residents of Eastern Province. People with mental illness (as reported by self or an acquaintance), post-graduate medical trainees, physicians and neurologists were excluded. Additionally, an online version of the questionnaire was circulated through Google form across social media platforms among general the population and the healthcare providers in Eastern Province, Saudi Arabia.

This study was approved by the Institutional Review Board at Imam Abdulrahman Bin Faisal University, reference number IRB-UGS-2018-01-225.

The Knowledge of Parkinson's Disease Questionnaire (KPDQ) is a validated questionnaire in English and was used previously in other studies (appendix A). It has 3 parts: part 1 records demographic details (age, nationality, sex, job, health status, educational level), part 2 tests the recognition of PD symptoms (4 motors symptoms [MS], 10 non-motor symptoms [NMS]) in form of tick a box and part 3 covers the various aspects of PD, including diagnosis, etiology, epidemiology, treatment and psychosocial impact, in form of true or false. After obtaining permission from the editor of the journal that published this questionnaire to be used in our study, the questionnaire was translated scientifically into Arabic (appendix B) by experts with the help of forward and backward translation methods. This Arabic version of the questionnaire was tested for its validity and reliability with the assistance of a statistician. The data acquired from filled forms were recorded using Microsoft Excel and were later exported for analysis to the SPSS (Statistical Package for the Social Sciences) software.

A pilot study was conducted, involving 35 participants who were selected randomly. The data were then analyzed by SPSS using a reliability test that showed an overall Cronbach's alpha score of 0.751. The test showed acceptable reliability of the questionnaire.

Sample size: 999 people were divided into healthcare provider and general public cohorts. Each of these groups were further subdivided into acquainted (knowing a PD patient) and non-acquainted groups. The questionnaire responses were compared between these groups. The same subjects were further regrouped according to their educational status, and the responses were compared again, among different educational levels.

All the collected data were entered into SPSS version 25. The respondents were divided according to their demographics, education status and profession. Chi square test was used for comparison between different values.

Results

The questionnaires were distributed among 1133 visitors of King Fahad University Hospital, the University of Imam Abdulrahman Bin Faisal and social media platforms. 134 responders (11.82%) were excluded since they failed to meet the inclusion criteria or due to incomplete forms. A total of 999 subjects (334 were healthcare providers and 665 were general public) were thus included (See table 1).

Clinical characteristics	Healthcare providers (n = 334)	General public (n = 665)	P-value
Age (years)	25.02 ± 8.87	33.8 ± 12.36	< 0.001*
Gender			
Male %	50.6 (169)	56.5 (376)	0.075
Female %	49.4 (165)	43.5 (289)	
Nationality			
Saudi %	98.8 (330)	94.7 (630)	0.002*
Non-Saudi %	1.2 (4)	5.3 (35)	
Educational level			
Intermediate %	0.0 (0)	2.3 (15)	< 0.001*
High school %	41.9 (140)	26.5 (176)	
Bachelors %	55.1 (184)	64.5 (426)	
Higher education %	3.0 (10)	6.8 (45)	

Table 1: Demographic characteristics of participants.

*: Indicates significant, between-group differences ($P < 0.05$).

The effect of gender and age was analyzed by using t-test, which showed that females had a superior knowledge compared to males (mean 4.436 ± 2.541 , P-value 0.025) in recognition of MS and NMS. Responders in the age group 55-60 had the highest correct response rates concerning the recognition of MS and NMS.

Healthcare providers vs general public cohorts

Recognition of PD symptoms (Table 2)

Mean numbers of symptoms correctly recognized					
Symptoms	Healthcare providers (n = 334)		General public (n = 665)		P-value
	Acquainted ^(a) (n = 29)	Unacquainted (n = 305)	Acquainted ^(a) (n = 70)	Unacquainted (n = 595)	
Motor symptoms (max4)	(61.2%) 2.448 ± 1.1828	(61.23%) 2.449 ± 1.1491	(56.8%) 2.271 ± 1.238	(49.52%) 1.981 ± 1.1953	< 0.001*
Non-motor symptoms (max10)	(24.8%) 2.482 ± 1.454	(25.2%) 2.521 ± 2.201	(21.1%) 2.114 ± 2.203	(18.01%) 1.801 ± 2.109	< 0.001*
Total symptoms (max14)	(35.2%) 4.931 ± 1.980	(35.5%) 4.970 ± 2.690	(31.3%) 4.385 ± 2.915	(27.02%) 3.783 ± 2.736	< 0.001*

Table 2: Healthcare providers vs general public.

Part 1 of the KPDQ - recognition of PD symptoms (mean scores),

^(a): They have family member or friend with Parkinson's Disease.

*: Indicates significant between-group differences ($P < 0.05$).

The healthcare provider group recognized MS better than the general public. The unacquainted general public scored least in PD symptom recognition. Regarding NMS, all cohorts (including healthcare providers) had significantly low scores. Tremor was the most recognized symptom (86.8% of healthcare providers, 80.2% general public, P-value < 0.001) (Figure 1).

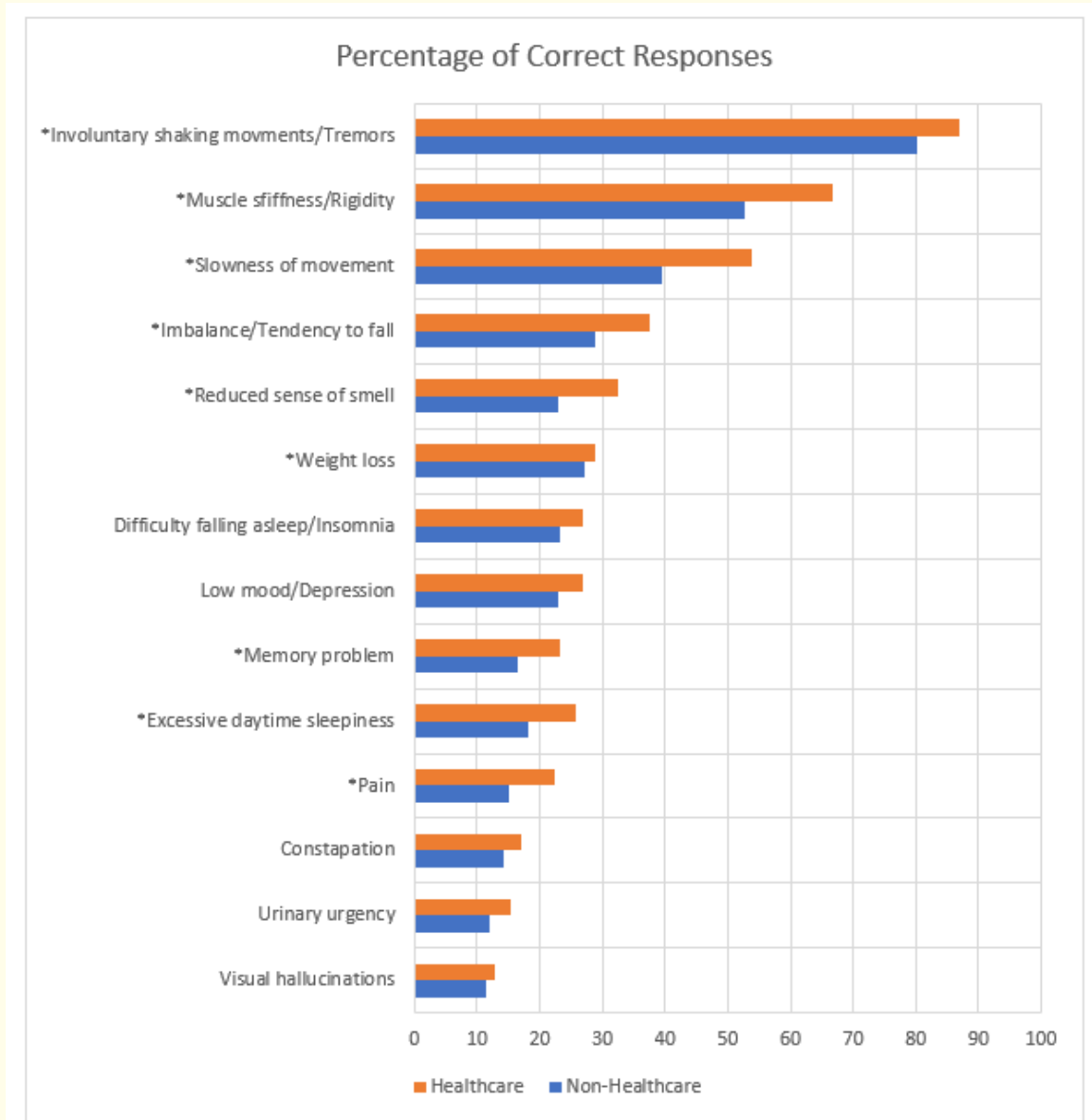


Figure 1: Part 1 of the KPDQ - recognition of PD symptom; motor symptoms are listed first, followed by non-motor symptoms in descending order of frequency in the higher education group; chi square analysis was performed; *: Denotes significant between-group differences.

General knowledge about PD (Table 3)

Statement	Correct answer	Percentage answered correctly				P-value
		Healthcare providers (n = 334)		General public (n = 666)		
		Acquainted (n = 29)	Unacquainted (n = 305)	Acquainted (n = 70)	Unacquainted (n = 596)	
1. Parkinson's disease and Alzheimer's disease are different names for the same disease.	False	79.3 (23)	90.2 (275)	85.7 (60)	86.4 (514)	0.211
2. Parkinson's disease is a degenerative disease of the brain (associated with the loss of brain cells).	True	65.5 (19)	61.6 (188)	60.0 (42)	62.4 (371)	0.957
3. In Parkinson's disease, the level of a chemical (neurotransmitter) in the brain called dopamine is reduced.	True	65.5 (19)	78.4 (239)	78.6 (55)	66.4 (395)	0.001*
4. All patients with Parkinson's disease experience tremor (involuntary shaking movements).	False	27.6 (8)	22.6 (69)	20.0 (14)	18.5 (110)	0.364
5. Parkinson's disease is more common in older persons.	True	65.5 (19)	71.1 (217)	71.4 (50)	70.8 (421)	0.936
6. Parkinson's disease can also affect young adults.	True	72.4 (21)	80.0 (244)	75.7 (53)	80.0 (476)	0.649
7. Parkinson's disease usually affects multiple members of the same family.	False	62.1 (18)	52.8 (161)	68.6 (48)	57.3 (341)	0.096
8. There are new treatments that can cure Parkinson's disease.	False	41.4 (12)	55.1 (168)	44.3 (31)	43.9 (261)	0.012*
9. There are treatments that can improve the symptoms of Parkinson's disease.	True	93.1 (27)	94.1 (287)	84.3 (59)	80.5 (479)	<0.001*
10. Patients with Parkinson's disease often feel socially isolated.	True	75.9 (22)	69.8 (213)	60.0 (42)	66.4 (395)	0.287

Table 3: Healthcare providers vs general public.

Part 2 of the KPDQ - rates of true-false statements answered correctly.

Chi square analyses were performed.

*: Indicates significant between-group differences ($P < 0.05$).

The best recognized facts about PD were (1) understanding of the difference between Alzheimer's and PD (statement 1) and (2) the symptomatic response to treatment in PD (statement 9), though the later was better recognized by healthcare providers compared to the general public.

The most common misperception for the study population (including healthcare providers) was regarding statement 4 (All patients with PD experience tremor).

More than half of general public and healthcare providers acquainted with PD patients thought that new treatments can cure PD (statement 8).

Educational-status cohorts

PD symptom recognition (Table 4)

Symptoms	Mean number of symptoms correctly recognized				P-value
	Intermediate education (n = 15)	High school education (n = 316)	Bachelors education (n = 613)	Higher education (n = 55)	
Motor symptoms (maximum = 4)	(36.5%) 1.46 ± 1.19	(52%) 2.09 ± 1.6	(55%) 2.20 ± 1.21	(55.7%) 2.03 ± 1.29	0.067
Non-motor symptoms (maximum = 10)	(36.5%) 0.47 ± 0.64	(20.2%) 2.02 ± 1.96	(21.6%) 2.16 ± 2.27	(16.4%) 1.64 ± 1.83	0.008*
Total symptoms (maximum = 14)	(13.8%) 1.93 ± 1.53	(29.3%) 4.11 ± 2.59	(31.2%) 4.37 ± 2.85	(27.6%) 3.87 ± 2.75	0.004*

Table 4: Educational level groups.

Part 1 of the KPDQ - recognition of PD symptoms (mean score).

ANOVA testing were performed*indicate significant between-group differences ($P < 0.05$).

All of the responders were divided into four cohorts.

In general, the PD symptom recognition was low in all the cohorts, with the MS being recognized more among all participants. Among all the cohorts, the bachelor's educated individuals recognized most of the MS and NMS, while lesser education resulted in lesser mean of symptom recognition.

Among all the symptoms evaluated, tremors were the best recognized symptoms for all the educational cohorts (Figure 2).

General knowledge about PD (Table 5)

The common misperceptions concerned the (degenerative and familial) nature of the PD; however, responders with higher education levels scored significantly better compared to those with lower education status. The other misperceptions among all the educational groups were that the tremor is a universal symptom in PD and that PD is curable.

Responders with higher education levels (bachelors and higher education) had better scores for the statements 3, 9 and 10.

Discussion

The study showed that there is a wide gap in the knowledge of the general public in Eastern Province in the understanding of PD symptoms and general awareness of the disease. NMS were least recognized. Interestingly, healthcare professionals also revealed misunderstandings and lack of knowledge; however, they scored better than their counterparts. The factors related to better understanding of the disease were female sex, acquaintance with a PD patient (among the general public), healthcare profession, and bachelor's degree or higher education.

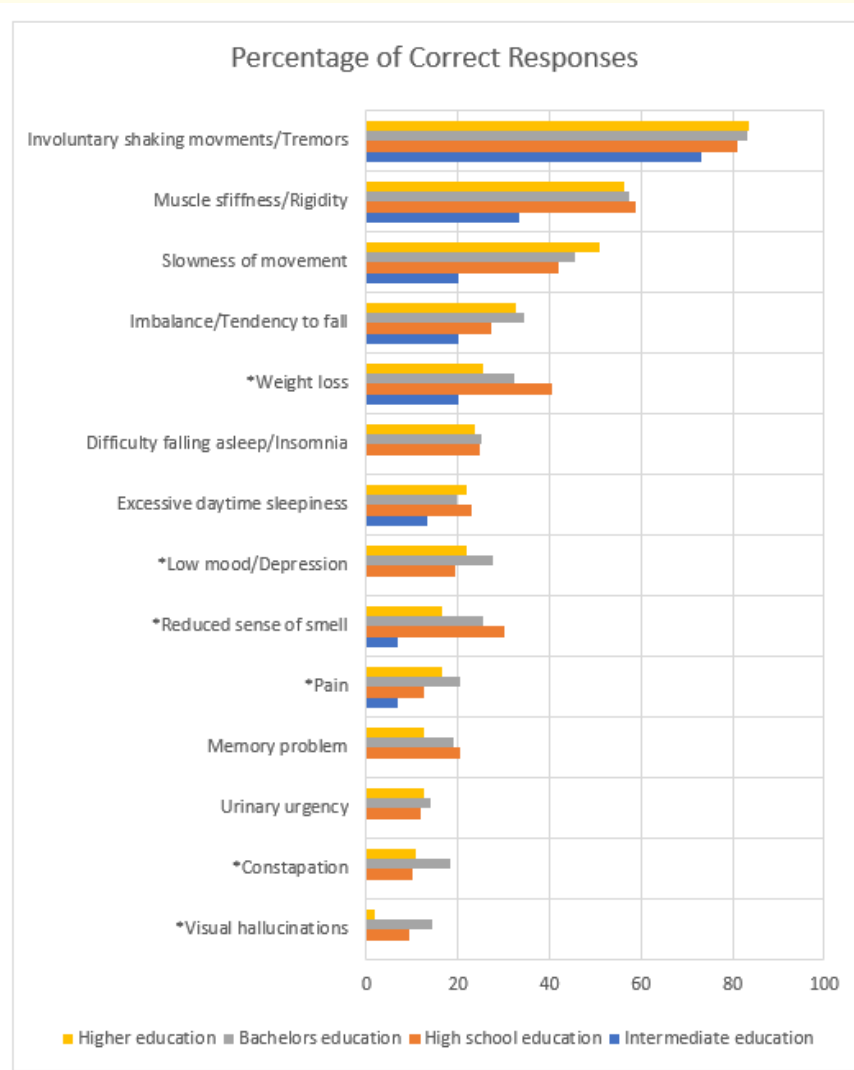


Figure 2: Part 1 of the KPDQ - recognition of PD symptom; motor symptoms are listed first, followed by non-motor symptoms in descending order of frequency in the higher education group; chi square analysis was performed; *: Denotes significant between-group differences.

When the same responders were re-grouped according to their educational status, it was revealed that better education resulted in better symptom recognition; however, some of the misperceptions persisted.

The high recognition of the MS compared with the NMS was probably due to the non-specificity of the NMS and thus can be attributed to aging or other comorbidities [7]. Visual hallucination showed the least correct response among both groups.

Among the common misperceptions about PD was that all patients with PD experience tremors, which is not true. Even the participants in the healthcare-related group showed similar perceptions. This could be due to the fact that tremor is an obvious sign of the disease

Statement	Correct answer	Percentage answered correctly				P value
		Intermediate education (n = 15)	High school education (n = 316)	Bachelors education (n = 613)	Higher education (n = 55)	
1. Parkinson's disease and Alzheimer's disease are different names for the same disease.	False	73.3 (11)	84.2 (266)	88.4 (542)	96.4 (53)	0.017*
2. Parkinson's disease is a degenerative disease of the brain (associated with loss of brain cells).	True	46.7 (7)	64.6 (204)	61.5 (377)	58.2 (32)	0.427
3. In Parkinson's disease, the level of a chemical (neurotransmitter) in the brain called dopamine is reduced.	True	46.7 (7)	65.2 (206)	74.2 (455)	72.7 (40)	0.006*
4. All patients with Parkinson's disease experience tremor (involuntary shaking movements).	False	40.0 (6)	19.6 (62)	19.6 (120)	23.6 (13)	0.233
5. Parkinson's disease is more common in older persons.	True	53.3 (8)	68.7 (217)	71.8 (440)	76.4 (42)	0.260
6. Parkinson's disease can also affect young adults.	True	80.0 (12)	82.9 (262)	78.5 (481)	70.9 (39)	0.161
7. Parkinson's disease usually affects multiple members of the same family.	False	53.3 (8)	56.6 (179)	58.1 (356)	45.4 (25)	0.338
8. There are new treatments that can cure Parkinson's disease.	False	20.0 (3)	47.5 (150)	48.1 (295)	43.6 (24)	0.175
9. There are treatments that can improve the symptoms of Parkinson's disease.	True	53.3 (8)	83.9 (265)	86.8 (532)	85.5 (47)	0.003*
10. Patients with Parkinson's disease often feel socially isolated.	True	53.3 (8)	61.1 (193)	71.5 (438)	60.0 (33)	0.005*

Table 5: Educational level groups.

Part 2 of the KPDQ - rates of true-false statements answered correctly.

*: Indicates significant between-group differences ($P < 0.05$).

Chi square analyses were performed.

and affects most of the patients [8]. We also believe the Arabic name of PD, which means shakiness, could also be a reason for this misconception.

Another misconception is about the cure of PD, with many of the participants thinking that there is a cure for PD despite the level of educational or healthcare profession.

We also found the lack of proper understanding regarding the degenerative nature of the disease and its genetic tendencies.

To the best of our knowledge, there are a limited number of similar published studies performed in different parts of the world [1,5,6,9-12].

One of them was performed by the European PD association where more than 5000 people were surveyed. They observed a huge defect in the general public knowledge. Another study in Singapore showed that 85% of the public had no knowledge of the disease [1].

The results showed that female responders had superior knowledge than the male responders. AH Tan., *et al.* also had the same observation. People within the age group 55 - 60 showed the highest correct response in recognition of the MS and NMS, while AH Tan., *et al.* observed that people within the age group of 51 - 65 had the highest mean score in MS recognition [1].

Among the general public, acquaintance with a PD patient had significant change in the knowledge about PD, as shown by AH Tan., *et al.* They found higher knowledge association with the relation to PD [1].

Limitations of the Study

- We could not include primary educated individuals in the study due to their limited access to social media and illiteracy.
- Contrary to our expectations, general public acquainted with PD patients had a better response to statement 3 (79.6%) than the healthcare group (both acquainted and unacquainted).
- We believe that this is probably due to response bias (extreme responding), given the structure of the questionnaire.
- People with the bachelor's education showed a better knowledge of the disease compared to the higher education group. This could be due to the fact that most of the healthcare providers were in the bachelor's education group.

Application and Recommendation

Actions have to be taken in order to increase the awareness and knowledge regarding PD across all population groups, specially targeting people with lower education levels and focusing on clearing the misperceptions. This may facilitate help-seeking behavior, reduce stigmas and help caregivers engage more with the management of PD in their relatives.

Conclusion

We observed a poor knowledge and misperception about PD in Eastern Province in Saudi Arabia, which is similar to the findings obtained from different parts of the world. Educational status and healthcare profession resulted in a better understanding; however, symptom recognition remained low, and a few misconceptions persisted in all cohorts.

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This study did not require any funding.

Disclosure of Conflict of Interest

The authors disclose no conflict of interest.

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