

Original Article

Status of Patients' Satisfaction with Hospital Food Services Among Patients Admitted in Tertiary Level Hospitals in Dhaka City

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Received: 15 July 2025; Revised: 26 April 2026; Accepted: 17 May 2026; Published: 24 August 2026

Abstract: Food service in hospitals is the primary source of nutrition, and the diet provided during a hospital stay is a crucial part of patient management. Food service management in hospitals plays a vital role in providing dietary meals to meet patients' nutritional needs. The quality of hospital food service is also a key factor in measuring patient satisfaction. We aimed to determine the level of patient satisfaction regarding hospital food services and identify factors associated with patient satisfaction in relation to food services. This cross-sectional study was conducted at the Kurmitola General Hospital and Border Guard Hospital, Dhaka, including adult patients admitted to selected tertiary-level hospitals. The study enrolled adult male and female patients admitted to hospitals with over 300 beds, excluding those with stays of under three nights, critical illness, communication impairment, tube feeding, or who were healthcare personnel. Data were collected using a modified Hospital Food Experience Questionnaire (HFEQ), and patient satisfaction was measured using a 5-point Likert scale ranging from 1 to 5, with total scores from 14 to 70 indicating increasing levels of satisfaction. Among 347 participants of the study, the mean age was 39.81 years. 51% of the respondents were unsatisfied with the hospital food services. Among the factors influencing satisfaction, occupation and education were statistically significant with $p < 0.001$ and $p = 0.031$. Key areas of dissatisfaction included the absence of drinking water facilities after meals, poor hand-washing facilities, and inadequate use of protective gear by food service staff. The findings highlighted the need for improvements in these areas.

Keywords: Dhaka, food service, hospital food, hospital food experience, Likert scale, patient satisfaction, tertiary care hospital

1. INTRODUCTION

Hospital food service management, including meal preparation and distribution, is among the most intricate and multifaceted operations in the healthcare and hospitality sectors, playing an essential role in patients' health and well-being. [1-3]. Adequate nutritional intake is a fundamental healthcare responsibility and increasingly recognized as a basic human right [4]. According to the World Health Organization (WHO), investing in patient nutrition can be lifesaving [5]. However,

malnutrition remains widespread, affecting approximately 40% of hospitalized patients, whose nutritional status can be compromised by poor food services [6-10].

The primary objective of hospital dietary services is to provide safe, hygienic, and nutritionally balanced meals tailored to patients' specific caloric and medical needs. Adequate food intake is essential for healing, while poor nutrition can lead to complications such as muscle loss, weakened immunity, infections, and increased mortality.

In Bangladesh, most hospital food services are still operated through traditional systems, where tasks such as diet chart preparation, meal ordering, record keeping, inventory management, and coordination between dietitians, kitchen staff, and wards are handled through paper-based records, verbal communication, or handwritten lists, rather than using digital tools or hospital information systems. In simpler terms, the workflow depends on human input and manual documentation, which may lead to inefficiencies, errors, and difficulties in monitoring food quality, hygiene, and patient satisfaction. Despite ongoing modernization efforts, many hospitals continue to depend on conventional, paper-based methods. In contrast, developed and several developing countries like the United Kingdom, Germany, Canada, and Australia have successfully implemented Hospital Data and Information Management Systems (HDIMS), integrating automated meal planning, dietary tracking, and inventory management [11]. Similarly, emerging economies like India and Malaysia are gradually adopting these systems to optimize dietary services [12].

Assessing the satisfaction of patients with hospital food services is essential as it reflects the quality of care and impacts recovery, nutrition, and overall patient well-being. Dissatisfaction may lead to poor intake, malnutrition, and prolonged hospital stays, while regular evaluation helps identify service gaps, improve nutrition management, and enhance holistic patient care. While most research has focused on medical care [13], nursing, and physician services, patient satisfaction also encompasses elements like food services, communication, and social environment [14,15]. To measure patient satisfaction with food services, the Hospital Food Experience Questionnaire (HFEQ) [16] is often used. The study is important to be conducted in Dhaka because, as the capital and healthcare hub of Bangladesh, it hosts a large number of tertiary hospitals where evaluating patient satisfaction with hospital meal services can provide insights to improve nutrition management and service quality for a diverse inpatient population. We aimed to describe the socio-demographic characteristics of respondents, to determine the level of patient satisfaction regarding hospital food services and to identify factors associated with patient satisfaction in relation to food services.

2. MATERIALS AND METHODS

This cross-sectional study was conducted in two public hospitals in Dhaka, Kurmitola General Hospital and Border Guard Hospital, from January 1 to December 31, 2024. The study followed a multi-stage sampling approach. Initially, eight tertiary-level hospitals in Dhaka were identified from the official list provided by the Directorate General of Health Services (DGHS). Among these, two Unani hospitals were excluded due to differences in patient population and service structure. From the remaining six hospitals, two public tertiary hospitals Kurmitola General Hospital and Border Guard Hospital were selected through computerized random sampling to ensure representativeness of tertiary-level healthcare facilities in Dhaka.

Within each selected hospital, four wards (Medicine, Surgery, Gynaecology, and ENT) were purposively chosen to capture a diverse range of inpatients with varying clinical conditions. Data collection was conducted in each ward at three-day intervals. To minimize selection bias, systematic

random sampling was employed at the ward level, where every alternate eligible inpatient was selected beginning from the first occupied bed.

The study population comprised adult male and female inpatients admitted to hospitals with over 300 beds, ensuring inclusion of institutions with established dietary service facilities. The inclusion criteria were: (1) adult inpatients (≥ 18 years), and (2) admitted for at least three nights. The exclusion criteria included: (1) critically ill or non-communicative patients, (2) patients on tube feeding, and (3) healthcare personnel admitted to the same hospitals.

Although the calculated sample size was 404, the final sample was 347 participants due to constraints.

The HFEQ was selected because it is one of the few food-specific, psychometrically validated tools for hospitals, demonstrating strong internal reliability, convergent validity, and crucially, predictive validity for actual meal intake (including a short form, HFEQ-sv) [16,17]. Unlike general patient-experience instruments (e.g., HCAHPS), which do not assess foodservice, the HFEQ directly measures patients' meal quality perceptions and food-experience drivers relevant to nutrition care [18,14]. Evidence from multi-hospital studies further shows HFEQ scores relate to intake patterns across different foodservice models, supporting its use for both evaluation and service improvement [19]. Therefore, HFEQ was preferred over generic satisfaction scales or non-validated checklists because it links perceptions to measurable outcomes (intake/plate waste) and provides actionable targets for hospital foodservice quality [16,17,19,20].

Data were collected through face-to-face interviews using a modified Hospital Food Experience Questionnaire (HFEQ). The questionnaire included two parts: Part 1 covered socio-demographic information, while Part 2 comprised two subscales, meal service and service approach. Patient satisfaction was measured using a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree). Total scores ranged between 14 and 70, with higher numbers indicating greater satisfaction. A mean score below 46 was considered dissatisfied, and 46 or above indicated satisfaction. The corrected data were analyzed by IBM SPSS version 26. Descriptive data were analyzed by descriptive statistics (mean, standard deviation, percentage) and presented using frequency tables and illustrations. The chi-square test was employed to assess the association between dependent and independent variables. Statistical significance was set at 95% confidence interval.

3. RESULTS AND DISCUSSIONS

3.1. Socio-demographic characteristics of respondents

Table 1. Distribution of respondents' socio-demographic features (n=347)

Age Category	Frequency (n)	Percentage (%)
≤ 40 years	182	52.4
> 40 year	165	47.6
Mean $\pm$ SD: 39.81 $\pm$ 13.49 years		
Minimum age: 19 years		
Maximum age: 68 years		
Gender		
Male	182	52.4
Female	165	47.6
Level of Education		
Illiterate	13	3.7
Primary	56	16.1

...continue Table 1

Secondary	150	43.2
Higher Education	128	36.9
Occupation		
Government employee	82	23.6
Student	86	24.8
Day labourer	21	6.1
Housewife	125	36
Others	33	9.5
Annual Family Income (Taka)		
≤240,000	196	56.5
240,001-360,000	99	28.5
>360,000	52	15.0
Average income: 264,048 taka (SD± 7,980,69)		

Table 1 elaborates that among 347 respondents, the proportion of respondents ≤40 years or female (52.4%) was slightly higher, the majority were housewives (36%) and almost half of the population completed secondary education (43.2%).

In our cohort of 347 patients, the proportion of respondents who were ≤40 years or female was slightly higher; most were housewives, and nearly half had completed secondary education. This relatively young, predominantly female/home-based, and moderately educated profile likely shapes foodservice expectations, favouring familiar, palatable meals and clear menu communication, and should be considered when interpreting satisfaction scores and planning service improvements.

3.2. Level of patients' satisfaction with regular hospital food services

Patients were asked to rate their level of agreement on 14 food service questions, and the mean score determined whether they were satisfied or dissatisfied.

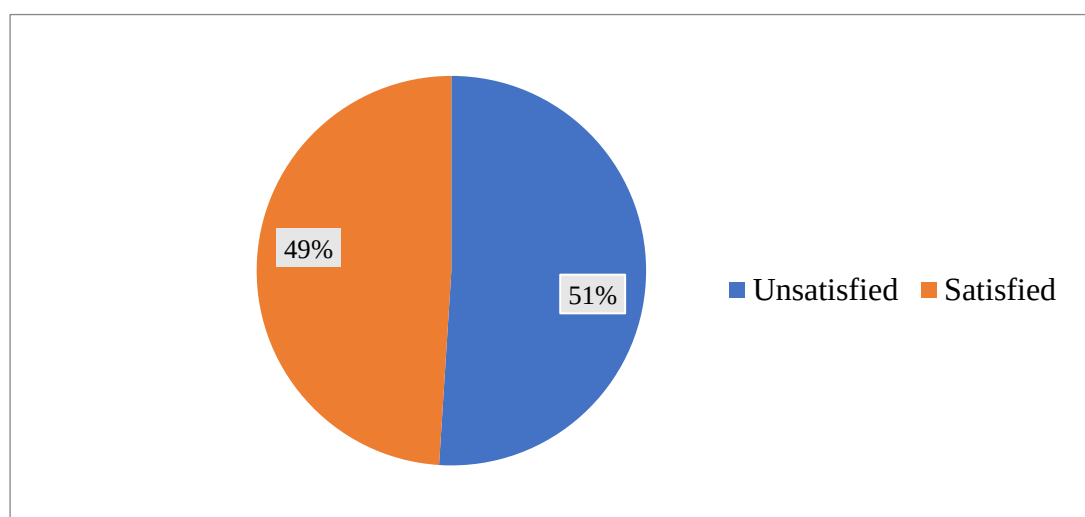


Figure 1. Distribution of respondents by status of satisfaction (n=347)

This study assessed patient satisfaction with hospital food services in tertiary hospitals in Dhaka. Overall, patient satisfaction with meal services in this study was only moderate, with many respondents expressing concerns not about the food itself, but about supporting aspects of care such as availability of drinking water, hygiene practices, ward cleanliness, and handwashing facilities after meals. Consequently, only about half of the participants can be considered satisfied overall (49%), a

proportion that is markedly lower than satisfaction rates reported from Saudi Arabia (78.8%), East Malaysia (53.3%), and Egypt (64.2%) [21-23]. This gap likely reflects the context of overcrowded, resource-constrained public tertiary hospitals in Dhaka, where limited budgets per meal, high patient loads, and infrastructural constraints make it difficult to consistently ensure environmental hygiene, infection-prevention measures, and comfort-related amenities, even when the basic characteristics of the food (such as taste, portion, and temperature) are reasonably acceptable. Thus, the lower satisfaction level in Dhaka should be interpreted within these systemic and contextual limitations rather than as a simple reflection of food quality alone.

Table 2. Distribution of responses of the respondent on meal service (subscale-1) (n=347)

Statement	Strongly dissatisfied (1)	Dissatisfied (2)	Neutral (3)	Satisfied (4)	Strongly satisfied (5)
Taste of food	29 (8.4%)	58 (16.7%)	93 (26.8%)	74 (21.3%)	93 (26.8%)
Amount /portion size of food	0	53 (15.3%)	109 (31.4%)	93 (26.8%)	92 (26.5%)
Temperature of food	22 (6.3%)	43 (12.4%)	104 (30.0%)	70 (20.2%)	108 (31.1%)
Availability of drinking Water after food	157 (45.2%)	29 (8.4%)	46 (13.3%)	63 (18.2%)	52 (15.0%)
Frequency of meals	6 (1.7%)	18 (5.2%)	108 (31.1%)	124 (35.7%)	91 (26.2%)
Verities of food	0	70 (20.2%)	94 (27.1%)	94 (27.1%)	89 (25.6%)
Food is well-cooked	26 (7.5%)	33 (9.5%)	120 (34.6%)	75 (21.6%)	93 (26.8%)

One of the most alarming discoveries was the dissatisfaction regarding water availability during meals, as many respondents felt that water was not provided in adequate amounts. This indicates a substantial deficiency in fundamental patient care, as access to drinking water is crucial for hydration and digestion. In particular, in overcrowded, resource-constrained public hospitals in Dhaka, access to drinking water may be limited by an inadequate number of safe water points on the wards, irregular refilling of water containers, reliance on family members to bring water, and concerns about microbiological safety of tap water. For inpatients, many of whom are febrile, on diuretics or nephrotoxic drugs, or have diarrhoeal or renal conditions, suboptimal hydration can exacerbate hypotension, acute kidney injury, constipation, and delayed wound healing, and may also reduce patients' willingness or ability to consume solid food, thereby worsening overall nutritional status. Impaired digestion related to poor fluid intake (e.g., bloating, dyspepsia, constipation) can further compromise appetite and tolerance of therapeutic diets, undermining the intended clinical benefits of hospital meals.

These findings align with previous work from acute medical wards in the United Kingdom particularly a multicentre prospective audit conducted across five hospitals in London and the South East of England (including University Hospital Lewisham, Royal Sussex County Hospital in Brighton, Princess Royal Hospital in Haywards Heath, and Eastbourne District General Hospital), which similarly showed that a substantial proportion of bedbound patients either had no water at the bedside or could not reach it, despite being able to drink independently [24], indicating that inadequate bedside hydration is a systemic issue observed both in Dhaka and in UK hospital settings.

Table 3. Distribution of responses of the respondent on meal service and serving approach (subscale-2) (n=347)

Statement		Strongly dissatisfied (1)	Dissatisfied (2)	Neutral (3)	Satisfied (4)	Strongly satisfied (5)
Regularity of meal time	of	16 (4.6%)	30 (8.6%)	93 (26.8%)	89 (25.6%)	119 (34.3%)
Behavior of staff		12 (3.5%)	34 (9.8%)	79 (22.8%)	126 (36.3%)	96 (27.7%)
Use of cap/gloves by staff	of	31 (8.9%)	146 (42.1%)	116 (33.4%)	49 (14.1%)	5 (1.4%)
Cleanliness of ward	of	28 (8.1%)	165(47.6%)	86 (24.8%)	64 (18.4%)	4 (1.2%)
Cleanliness of utensils	of	9 (2.6%)	40 (11.5%)	146 (42.1%)	101 (29.1%)	51 (14.7%)
Cleanliness of delivery staffs	of	15 (4.3%)	23 (6.6%)	130 (37.5%)	96 (27.7%)	83 (23.9%)
Hand wash facility after meal	after	121(34.6%)	58 (16.7%)	107 (30.8%)	60 (17.3%)	1(0.3%)

Likewise, hygiene facilities following meals emerged as another significant concern, with over one-third of participants reporting dissatisfaction with handwashing opportunities, and almost half expressing dissatisfaction with ward cleanliness and the hygiene practices of food delivery staff. Similar findings have been reported in other settings, where sanitation and visible staff hygiene (e.g., use of gloves, head coverings, and clean uniforms) are key determinants of patients' perceptions of food safety and overall foodservice quality [14,20,25]. Inadequate environmental and hand hygiene around mealtimes has also been highlighted in infection-prevention guidance as a potential contributor to healthcare-associated infections, particularly in nutritionally vulnerable inpatients (Centers for Disease Control and Prevention) [26]. Thus, the dissatisfaction observed in our study suggests not only a service-quality issue but also a potential patient-safety risk, underscoring the need for stricter monitoring of cleaning routines, consistent use of personal protective equipment by food handlers, and reliable provision of handwashing facilities after meals.

Despite these concerns, several aspects of hospital food services were evaluated more positively. Respondents frequently reported satisfaction with the regularity of mealtimes and the serving temperature of food, which is consistent with studies showing that punctual meal delivery and appropriate food temperature are core contributors to a positive mealtime experience [27,28]. A notable proportion of patients were also satisfied with the taste of food, aligning with findings from Sahin et al. (2006) in Turkey and Abdelhafez et al. (2012) in Saudi Arabia, where basic palatability and familiarity of hospital meals were viewed favourably even when other dimensions, such as menu variety or environment, were criticized [29,21]. Recent work indicates that reliable timing, acceptable taste, and supportive staff interactions can partly buffer dissatisfaction in other domains [28,20]. Taken together, our results suggest that while core meal attributes (timing, temperature, basic taste) are functioning at a reasonable level, deficits in hygiene infrastructure and visible infection-control practices remain prominent sources of dissatisfaction and should be prioritized in the efforts to improve quality in Dhaka's public tertiary hospitals.

3.3. Factors associated with the patient's satisfaction level

Table 4. Association between Sociodemographic factors and Satisfaction with food service among respondents (n=347)

Factor	Satisfaction Status		Total	Test Statistics
	Unsatisfied	Satisfied		
Educational status				
Illiterate	7 (53.8%)	6 (46.2%)	13 (100%)	$\chi^2(df)=8.882 (3)$ p=0.031
Primary	34 (60.7%)	22 (39.3%)	56 (100%)	
Secondary	63 (42.0%)	87 (58.0%)	150 (100%)	
Graduated	73 (57.0%)	55 (43.0%)	128 (100%)	
Total	177 (51.0%)	170 (49.0%)	347 (100%)	
Occupation				
Govt employee	47 (57.3%)	35 (42.7%)	82 (100%)	$\chi^2(df)=26.887(4);$ p<0.001
Student	59 (68.6%)	27 (31.4%)	86 (100%)	
Day labour	09 (42.9%)	12 (57.1%)	21 (100%)	
Homemaker	43 (34.4%)	82 (65.6%)	125 (100%)	
Others	19 (57.6%)	14 (42.4%)	33 (100%)	
Total	177 (51.0%)	170 (49.0%)	347 (100%)	
Sex				
Male	116 (63.7%)	66 (36.3%)	182 (100%)	$\chi^2(df)=24.811(1);$ p<0.001
Female	61 (37.0%)	104 (63.0%)	165 (100%)	
Total	177 (51.0%)	170 (49.0%)	347 (100%)	
Age				
≤40 years	92 (50.55%)	90 (49.45%)	182 (100%)	$\chi^2(df)=0.032 (1);$ p=0.857
>40 years	85 (51.52%)	80 (48.48%)	165 (100%)	
Total	177 (51.0%)	170 (49.0%)	347 (100%)	
Income				
≤240000Tk	100 (51.0%)	96 (49.0%)	196 (100.00%)	$\chi^2(df)=0.027 (2)$ p=0.986
240001Tk-360000Tk	50 (50.5%)	49 (49.5%)	99 (100.00%)	
>360000Tk	27 (51.9%)	25 (48.1%)	52 (100.00%)	
Total	177 (51.0%)	170 (49.0%)	347 (100%)	

Table 4 elaborates on the association between sociodemographic factors and the level of food satisfaction. In the association of educational status and satisfaction level, the chi-square value was 8.882 and the p-value was 0.031. Since the p-value was less than 0.05, we can therefore reject the null hypothesis. This means there was significant association between the educational status of respondents and satisfaction on food service at 95% confidence interval. Additionally, it shows the association between occupation and satisfaction level having a chi square value of 26.887 with a p value < 0.001; since this p value is less than 0.05, we reject the null hypothesis and conclude that there was a statistically significant association between occupation and satisfaction with hospital food services at the 95% confidence level, indicating that satisfaction levels differ across occupational groups. The table also lists that among the 182 male respondents 63.7% were not satisfied and 36.3% were satisfied on food service. Among 165 female respondents 37.09% were not satisfied and 63.0% were satisfied. Here, the chi-square value was 24.81 and p value 0.000. As the p-value is less than 0.05, we can reject the null hypothesis and conclude that there was a statistically significant relationship between sex and satisfaction with hospital food services at the 95% confidence level, indicating that satisfaction levels differed between male and female respondents.

Among the 182 respondents aged ≤40 years, 50.5% were not satisfied and 49.5% were satisfied with the food service, while among the 165 respondents aged >40 years, 51.5% were not satisfied and

48.5% were satisfied. The chi-square value was 0.032 with a p value of 0.857; since this p value is greater than 0.05, we fail to reject the null hypothesis and conclude that there is no statistically significant association between age group and satisfaction with hospital food services at the 95% confidence level, indicating that satisfaction levels are essentially similar across age categories. In addition, among respondents with income $\leq$ 240000 Tk, 51.0% were not satisfied and 49.0% were satisfied with the food service; among those earning 240012–360000 Tk, 50.5% were not satisfied and 49.5% were satisfied; and among those with income $>$ 360000 Tk, 51.9% were not satisfied and 48.1% were satisfied. Here, the chi-square value was 0.027 with 2 degrees of freedom and the p value is 0.986. Since the p-value is greater than 0.05, we fail to reject the null hypothesis and conclude that there is no statistically significant association between income and satisfaction with hospital food services at the 95% confidence level, indicating that satisfaction levels are similar across income groups.

The association analysis revealed that variables such as occupation, educational status and sex were significantly related to patient satisfaction with hospital food services. In contrast, age or household income had no significant association with satisfaction with hospital food services, indicating that, within this cohort, socio-demographic differences in satisfaction were driven more by sex, education and occupation than by age or economic status. This suggests that hospital food services are influenced by multiple factors, including food quality, hygiene, service, and infrastructure. Improving patient satisfaction, therefore, requires a comprehensive approach that addresses these aspects, including better hygiene, safe food handling, and access to basic amenities such as clean drinking water.

In this study, education showed a significant association with satisfaction, with patients who had completed secondary education more often satisfied than those with only primary schooling or higher education. Similar patterns have been reported in tertiary hospitals in Nepal, where satisfaction differed across education groups despite generally high overall satisfaction [30]. A recent systematic review of patient satisfaction determinants in Asian countries identified education, income and other socio-economic markers as key “patient-related determinants,” indicating that satisfaction is shaped not only by service quality but also by patients’ expectations and health literacy [31]. Global reviews also show that education is a recurrent, though sometimes inconsistent, determinant of satisfaction, with more educated patients often reporting lower satisfaction because they have higher expectations, more prior experience with other hospitals, and a greater tendency to notice gaps in communication or service detail [32,33]. In the present Dhaka context, secondary-educated patients may be satisfied when basic standards of food quality and hygiene are met, while graduates, who are more likely to compare public hospital services with private facilities or international standards, may judge the same foodservice more critically. This interpretation is consistent with findings from Chinese tertiary hospitals, where education level significantly influenced satisfaction, and lower-educated patients tended to have lower expectations and therefore higher reported satisfaction [34]. Overall, these data suggest that educational influences both expectations and the ability to evaluate hospital food services, which helps explain why satisfaction varies significantly by educational level in our sample.

Altogether, these findings suggest a heterogeneous pattern of determinants, in which factors such as sex, education, and occupation demonstrated clear associations with satisfaction, whereas age and income showed no significant relationship. The absence of an income effect is consistent with several

reviews and Asian studies where subjective expectations and prior experience, rather than formal economic status, were more prominent drivers of satisfaction [31,32,34]. In the present context of public tertiary hospitals, food is provided free of charge or at low cost and menus are relatively standardized across wards, which may attenuate perceived differences between income groups. Similarly, the lack of a significant association with age suggests that concerns about taste, hygiene, and service organization are shared across younger and older adults, despite older inpatients being at higher nutritional risk and potentially more vulnerable to poor food and fluid intake [3,7,8]. By contrast, sex, educational attainment and occupation likely shape expectations, health literacy and day-to-day exposure to household food work, which may explain why female respondents, housewives and those with secondary education showed different satisfaction patterns in our sample [15,29,30]. These results suggest that targeted quality-improvement efforts may need to prioritise communication and service design for specific socio-demographic groups, while system-level changes in food quality and hygiene are required to benefit all patients, regardless of age or income.

4. CONCLUSION

Demographic factors like occupation, educational status and sex may greatly influence satisfaction. These findings emphasize the need for improvements in hospital meal service, particularly in ensuring hygiene facilities and drinking water supply.

Funding: The authors received no specific funding for this study

Acknowledgement: None

Conflict of Interest: The authors declare no conflict of interest

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