

# Impact of Patient Safety Culture on Job Satisfaction and Intention to Leave Among Healthcare Workers: Evidence from Middle East Context

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**Background:** The association between patient safety culture and staff outcomes remains unclear to date. This study aimed to identify the relationship between patient safety culture/job satisfaction and intention to leave among healthcare workers.

**Methods:** A cross-sectional study was conducted using an online survey. Multinomial logistic regression analysis was used to investigate the association between the safety culture dimensions and the outcomes in terms of job satisfaction and intention to leave.

**Results:** Majority were females (77.2%); age between (20–30) years were (66.1%). 1–5 years work experience was reported by (98.2%); nurses accounted for (75.7%). (62.1%) reported very good patient safety grade. (78.3%) of respondents had no intention to leave; (84.3%) reported they like their job, (70.5%) stated that working in this hospital is like being part of a large family. However, (38%) said the hospital is not a good place to work, and morale in their clinical area is low. The overall composite scores were highest for “teamwork within hospital units (81.4)”, and “organizational learning (79.4)”, while lowest for “communication openness (37)”, “staffing (26.5)”, and “non-punitive response to error (22.1)”. Females were two times more likely to leave their jobs compared to males (AOR: 2.36, 95% CI: 1.24–3.46); intention to leave was 3.35 (95% CI = 2.19–5.09). As for job satisfaction, ages between 31–40 years tend to like their job two times more than other age groups (AOR: 1.90, 95% CI = 1.02–3.55). The safety culture domains “staffing” and “hospital management support for patient safety” were linked to a higher odds ratio for job satisfaction.

**Conclusion:** Aside from gender and age, the dimensions of safety culture, including staffing, hospital management support, hospital handover, and transition, may have a significant impact on job satisfaction and intention to leave among healthcare workers.

**Keywords:** patient safety culture, staff outcomes, job satisfaction, intention to leave, healthcare workers

## Plain Language Summary

This study focuses on assessing the relationship between patient safety culture with job satisfaction and intention to leave the job among healthcare workers. More than half of the participants were females (77.2%), age group 20–30 years (66%), and having a nursing background (76%). Majority of the participants had responded they had no intention to leave their job; they like their job, and stated that working in this hospital is like being part of a large family. Female participants had reported more intention to leave their job compared with males. Few factors affect healthcare workers intent to leave their job ie sex, age, and factors related to patient safety culture.

## Introduction

Patient Safety Culture (PSC) is one of the key quality indicators in a healthcare organization. Patient safety means preventing harm to patients.<sup>1</sup> PSC is a concept defined as “the product of individual and group values, attitudes, perceptions, competencies, and patterns of behavior that determine the commitment to, and the style and proficiency of, an organization’s health and safety management”<sup>2</sup> The required elements for building PSC in an organization were described as (i) environmental structure (ii) employee perception, and (iii) individual behavior. PSC is primarily based on the individual commitment. Studies had reported job satisfaction as an important factor affecting patient safety culture.<sup>3,4</sup>

Studies have shown the effect of PSC on staff outcomes, including adverse event reporting, medication error reporting, and staff injury rates.<sup>5–7</sup> The turnover intention or intention to leave has been described as employee’s perception of job dissatisfaction and planning to leave the job or look for other job opportunities. The intention to leave is considered a proxy for actual turnover behavior among healthcare workers.<sup>8,9</sup> Several factors, including work pressure, psychological issues, low pay, and a lack of career opportunities, have been reported to influence intent to leave.<sup>10–14</sup> The rate of physician and nurse turnover in the healthcare system is increasing. According to Degen et al physicians have high turnover and inter-departmental change. Similarly, nursing staff turnover and job satisfaction have received considerable attention.<sup>15</sup>

Given that service quality and patient safety are heavily reliant on the healthcare workforce, it is essential to explore factors that may influence staff turnover.<sup>16</sup> Healthcare worker shortage stems mainly from high turnover. This issue has been reported primarily, but not exclusively, among nurses.<sup>17</sup> As a result, healthcare organizations face reduced organizational productivity, performance and efficiency.<sup>15</sup> Additionally, higher costs are incurred in the areas of separation costs, recruitment and training. The reported adverse consequences of physician turnover are patient dissatisfaction, financial loss, and organizational instability.<sup>18</sup>

Employee turnover can also lead to organizational loss of experience and knowledge, higher workloads, and lower team morale, causing more staff to leave.<sup>15</sup> When continuity of care is compromised, adverse events and prolonged length of stay are often reported in hospitals as a consequence.<sup>19,20</sup>

The perception of patient safety culture, job satisfaction and intention to leave have been studied extensively in the healthcare industry. However, few studies have examined the relationship between PSC, job satisfaction, and intention to leave. One study found a negative correlation between patient safety domains, such as “teamwork, safety climate, working conditions and safe behavior”, and intention to leave.<sup>21</sup> Further, healthcare worker job satisfaction has been positively associated with PSC.<sup>4,22</sup> However, the impact of PSC on job satisfaction remains unclear. Therefore, the aim of this study was to address the gap in the literature by exploring the influence of patient safety culture measures on healthcare workers’ (i) job satisfaction and (ii) intention to leave, along with predictors in a tertiary care hospital.

## Methods

### Study Design, Settings, and Participants

An electronic self-report survey available in two languages (Arabic and English) was emailed to all healthcare workers (clinical and non-clinical), including doctors, nurses, therapists, technicians, and other health professionals working in a tertiary care hospital. This hospital is a governmental tertiary care center, with a capacity of 1000 beds and more than 65 departments. A list of all healthcare workers was provided by the employee relation office. An email introducing the study and providing informed consent was sent to all the healthcare workers (male/female, full-time, and directly involved in patient care).

### Data Collection Tools

Two well-known, validated patient safety culture surveys were utilized in this study: AHRQ’s “The Hospital Survey on Patient Safety”<sup>23</sup> and “Safety Attitudes Survey”. The hospital’s patient safety culture, as perceived by healthcare workers, was assessed using “Hospital Survey on Patient Safety Culture”. This instrument consists of twelve dimensions of patient safety with a total of 42 items.<sup>24</sup> Each dimension consists of 3/4 items. In addition, we focused on two employee outcomes, namely “job satisfaction” and “intention to leave”. Twelve dimensions of safety culture were measured,

including (1) Teamwork within units, (2) Supervisor/manager expectations and actions promoting patient safety, (3) Organizational learning, (4) Management support for patient safety, (5) Overall perceptions of patient safety, (6) Feedback and communication about error, (7) Communication openness, (8) Frequency of events reported, (9) Teamwork across units, (10) Staffing, (11) Handover & transitions, and (12) Non Punitive response to errors. Responses to all items in the twelve dimensions were rated as agree or disagree on a five-point Likert scale. Agreement response answers included options; (“strongly disagree”, “disagree”, “neutral”, “agree”, to “strongly agree”). Frequency response answers included options (“never”, “rarely”, “sometimes”, “most of the times” to “always”). In addition, the tool contains two individual items on patient safety outcomes; patient safety grade and number of events reported, which were assessed as single item outcomes. The patient safety grade responses included, (“excellent”, “very good”, “acceptable”, “poor and failing”). The number of events was measured on a categorical scale with responses that can be grouped into six categories. Some items in the tool were worded negatively.

Questions pertaining to job satisfaction were taken from the Job Satisfaction domain of the Survey Attitudes Survey,<sup>25</sup> a well-known and widely used validated tool adapted for use in various clinical settings to assess caregivers’ attitudes towards PSC. The job satisfaction domain consists of five items. The questions assess respondents’ preferences for how much they like their job; co-workers; work environment; overall perceived morale in the clinical area; and perceived pride in working in the hospital. Responses were collected on an agreement scale (“strongly disagree”, “disagree”, “neutral”, “agree”, to “strongly agree”). The second outcome, intention to leave, was assessed by a single question, “Have you ever thought about leaving the hospital?” Response options for this item included (“never”, “rarely”, “sometimes”, “most of the time” and “always”).

## Scoring of Responses

All item responses, measured on a Likert scale, were coded with scores from 1–5. For example, the lowest score of 1 corresponded to strongly disagree, 2= disagree, 3= neutral, 4 =agree, and 5=strongly agree. For the response options “Never, Rarely, Sometimes, Most of the time and Always”, points were assigned in a similar fashion, so that never =1, while always= 5. Negatively worded items were reverse scored/coded to ensure that the scores assigned to negatively worded statements were consistent and adequately reflected the meaning of terms, such as “agree” or “disagree”, to respondents. The lowest score of one was assigned to “strongly agree”, while the highest score of 5 was assigned to “strongly disagree”.

The total number of responses for each composite item was recorded, and the overall percentage scores for positive, negative and neutral response rates were presented. Positive % responses were calculated from the sum of strongly agree and agree responses. Negative % responses were calculated from the sum of strongly disagree and disagree responses. The total score for each response parameter (negative, neutral, positive) per patient safety culture dimension was calculated by adding the total score for each response and dividing the sum by the total number of items in each dimension. The higher the percentage of positive responses, the more positive staff attitudes toward patient safety in their work environment. Moreover, data were collected on the demographic characteristics of healthcare staff, job position, and length of service at the hospital and in a particular specialty or department and level of direct patient contact have been collected.

## Ethical Considerations

Ethical approval for this study was obtained by King Abdullah International Medical Research Center Institutional Review Board (IRB) (number SP15/117). All ethical considerations including confidentiality and privacy of the respondents’ personal information and getting the informed consent were displayed at the beginning of the electronic survey as an introductory paragraph explaining the study objectives.

## Statistical Analysis

All data were analyzed using SPSS version 22 (IBM Corp., Armonk, NY, USA). Categorical variables were presented as frequencies / percentages. The continuous variables were reported as means and standard deviation. The chi-square test was used to explore the association between the safety culture domains and job satisfaction and intention to leave.

Logistic regression was used to determine the association between patient safety culture domains, job satisfaction and intention to leave. P-value <0.05 and 95% confidence interval were used to indicate statistical significance.

## Results

### Study Sample Characteristics

Out of 1500 hospital employees, 800 subjects responded to the survey, but 137 of these responses (17%) were excluded from the final analysis due to not fulfilling the AHRQ inclusion criteria, resulting in 663/800 (82.8%) valid responses. The majority of respondents were female (77.2%); over half of them aged between 20–30 years old (66.1%); 87.6% hold a bachelor's degree. Nearly all respondents (98.2%) had been working within the study hospital for a period between 1–5 years and had been working within the hospital unit for the same period. Most of the respondents (85%) worked between 40–59 hours per week. Nurses constitute the majority of respondents (75.7%). Most of the participants (82%) reported

**Table I** Socio-Demographic and Occupation Related Characteristics, and Patient Safety Grades Reported by Healthcare Workers

Characteristics	n (%) n=663
<b>Gender</b>	
Female	513(77.4)
Male	150 (22.6)
<b>Age (years)</b>	
20–30	438(66.1)
31–40	189(28.5)
>41	36(5.4)
<b>Nationality</b>	
Saudi	135(20.4)
No-Saudi	528(79.6)
<b>Education</b>	
Diploma Degree	21(3.2)
Bachelor's degree	581(87.6)
Master's degree	46(6.9)
PhD and Equivalent	15(2.3)
<b>Employment experience within hospitals (years)</b>	
1–5	642(98.2)
>5	12(1.8)
<b>Work duration in current unit (years)</b>	
1–5	642(98.2)
>5	12(1.8)
<b>Weekly duration spent in hospital (hours)</b>	

(Continued)

**Table 1** (Continued).

Characteristics	n (%) n=663
20–39	57(8.7)
40–59	557(85.2)
≥ 60	40(6.1)
<b>Position in hospital</b>	
Physician	15(2.3)
Nurse	502(75.7)
Other	146(22)
<b>Duration spent in current position (years)</b>	
1–5	402(61.5)
6 –10	213(32.6)
≥11	39(6.0)
<b>Direct patient contact</b> yes	534(81.7)
<b>Patient Safety Grades</b>	
Excellent / Very good	412(62.1)
Acceptable	226(34.1)
Poor/Failing	25(3.8)
<b>Number of events reported</b>	
No events	382(57.8)
1 to 5 event reports	226(34.2)
>5 event reported	53(8.0)

their work required direct contact with patients. About two-thirds (62.1%) of the respondents graded the hospital patient safety as very good (62.1%), and over the half of the study participants (58%) stated that no adverse events have been reported compared with (34%) stated they had reported 1 to 5 adverse events (Table 1).

## Patient Safety Culture Assessment

The overall composite scores were highest among the following safety culture dimensions: Organizational Learning (79.4) and Teamwork within Hospital Units (81.4). The Positive Response Rate (PRR) in these two dimensions exceeded the cut-off value of 75% as described by AHRQ. The overall composite scores for “communication openness”, “staffing” and “non-punitive response to error” had the lowest scores among all 12 safety culture dimensions (36.9, 26.5, and 22.1), respectively. The particular items in which respondents scored very low included “Staff are afraid to ask questions when something does not seem right”, “We are given feedback about changes put into place based on event reports”, “Staff are worried that mistakes they make are kept in their personnel file” and “Staff in this unit work longer hours than is best for patient care”. In general, low overall composite scores for; “teamwork across hospital units (49.5)”, “handoffs and transitions (39.7)” and “hospital management support for patient safety (56.6)” were summarized in Table 2. The dimension: handovers and transitions scored below (50).

**Table 2** Distribution of Positive Responses and Mean Scores for Safety Culture Composites/Items

Composites and Survey Items	Positive Response %	Mean Scores (Standard Deviation)
<b>Supervisor/manager expectations and actions promoting safety</b>	60.13	3.22(0.51)
My supervisor/manager says a good word when he/she sees a job done according to established patient safety procedures.	70.9	3.72(0.87)
My supervisor/manager seriously considers staff suggestions for improving patient safety.	70.5	3.74(0.86)
Whenever pressure builds up, my supervisor/manager wants us to work faster, even if it means taking shortcuts.	48.3	2.73(0.92)
My supervisor/manager overlooks patient safety problems that happen over and over.	50.8	2.69(1.03)
<b>Organizational Learning – Continuous improvement</b>	79.6	3.89(0.59)
We are actively doing things to improve patient safety.	92.2	4.26(0.72)
Mistakes have led to positive changes here.	68.2	3.63(0.83)
After we make changes to improve patient safety, we evaluate their effectiveness.	78.3	3.79(0.74)
<b>Teamwork Within Hospital Units</b>	81.43	3.96(0.68)
People support one another in this unit.	82.1	3.99(0.89)
When a lot of work needs to be done quickly, we work together as a team to get the work done.	85	4.06(0.85)
In this unit, people treat each other with respect.	85.8	4.05(0.79)
When one area in this unit gets really busy, others help out.	72.8	3.74(0.95)
<b>Communication Openness</b>	36.9	3(0.58)
Staff will freely speak up if they see something that may negatively affect patient care.	48.5	3.47(1.07)
Staff feel free to question the decisions or actions of those with more authority.	23.5	2.81(1.06)
Staff are afraid to ask questions when something does not seem right.	38.7	2.72(0.99)
<b>Feedback and Communication About Errors</b>	56.96	3.63(0.83)
We are given feedback about changes put into place based on event reports.	39.8	3.26(1.00)
We are informed about errors that happen in this unit.	61.3	3.72(1.06)
In this unit, we discuss ways to prevent errors from happening again.	69.8	3.92(0.98)
<b>Non-punitive Response to Error</b>	22.1	3.34(0.73)
Staff feel like their mistakes are held against them.	25.5	3.29(0.99)
When an event is reported, it feels like the person is being written up, not the problem.	28	3.16(0.96)
Staff worry that mistakes they make are kept in their personnel file.	12.8	3.57(0.86)
<b>Staffing</b>	26.5	3.24(0.61)
We have enough staff to handle the workload.	39.7	2.86(1.14)
Staff in this unit work longer hours than is best for patient care.	14.6	3.64(0.97)
We use more agency/temporary staff than is best for patient care.	35.4	3.01(1.01)
We work in “crisis mode” trying to do too much, too quickly.	16.2	3.47(0.87)
<b>Teamwork Across Hospital Units</b>	49.5	3.25(0.39)
There is good cooperation among hospital units that need to work together.	50.5	3.34(0.86)
Hospital units work well together to provide the best care for patients.	73.4	3.76(0.81)
Hospital units do not coordinate well with each other.	29	3.16(1.03)
It is often unpleasant to work with staff from other hospital units.	45	2.73(0.86)

(Continued)

**Table 2** (Continued).

Composites and Survey Items	Positive Response %	Mean Scores (Standard Deviation)
<b>Hospital Handoffs &amp; Transitions</b>	39.7	2.82(0.63)
Things “fall between the cracks” when transferring patients from one unit to another.	28.4	2.99(0.86)
Important patient care information is often lost during shift changes.	55.9	2.53(0.85)
Problems often occur in the exchange of information across hospital units.	31.2	2.98(0.84)
Shift changes are problematic for patients in this hospital.	43.1	2.73(0.86)
<b>Hospital Management Support for Patient Safety</b>	56.6	3.50(0.51)
Hospital management provides a work climate that promotes patient safety.	68	3.62(0.86)
The actions of hospital management show that patient safety is a top priority.	70.5	3.75(0.83)
Hospital management seems interested in-patient safety only after an adverse event happens.	31.3	3.11(0.99)
<b>Overall perception of safety</b>	39.3	3.89(0.46)
Patient safety is never sacrificed to get more work done.	77.7	3.86(0.87)
Our procedures and systems are good at preventing errors from happening.	11.3	3.62(0.86)
It is just by chance that more serious mistakes do not happen around here.	24.4	3.24(0.98)
We have patient safety problems in this unit.	43.8	2.81(0.99)
<b>Frequency of events reported</b>	59.3	3.61(1.02)
When a mistake is made, but (caught and corrected before affecting the patient), how often is this reported?	59.1	3.61(1.10)
When a mistake is made, but has (no potential to harm the patient), how often is this reported?	55.4	3.51(1.12)
When a mistake is made that (could harm the patient, but did not), how often is this reported?	63.3	3.72(1.12)

**Table 3** Staff Outcomes Measures, Intention to Leave and Job Satisfaction Level

Staff Outcomes Measures	n (%)	n (%)
<b>Intention to Leave</b>	No/Sometimes	Most of the times/Always
Have you ever thought about leaving the hospital?	519(78.3)	144(21.7)
<b>Job satisfaction</b>	Dissatisfied*	Satisfied**
I like my job	104(15.7)	559(84.3)
Working in this hospital is like being part of a large family	195(29.5)	465(70.5)
This hospital is a good place to work	249(38.1)	405(61.9)
I am proud to work in this hospital	208(31.8)	446(68.2)
Moral in this clinical area is high	255(39.7)	388(60.3)

**Notes:** \*Dissatisfied (strongly disagree/ disagree). \*\*Satisfied (strongly agree/ agree).

## Staff Outcomes Measures: Intention to Leave and Job Satisfaction

The Outcomes measures in terms of intention to leave and job satisfaction level have been displayed in Table 3. More than two-thirds (78.3%) of the healthcare workers reported they had no intention to leave. As for the job satisfaction, about three-thirds (84.3%) reported that they like their job, and about three-fifths (70.5%) stated that working in this hospital is like being part of a large family. However, about (38%) think this hospital is not a good place to work, and moral in this clinical area is not high.



**Table 4** Predictors of Healthcare Workers' Intention to Leave

Variables	Univariate		Multivariate	
	OR (95% CI)	p	AOR (95% CI)	p
Gender				
Male	1		1	
Female	2.07 (1.24–3.46)	0.005	2.36 (1.25–4.47)	0.008
Staff position				
Nurse	1		1	
Physician	0.29 (0.04–2.27)	0.240	0.23 (0.02–2.31)	0.210
Others	1.82 (1.19–2.79)	0.006	1.38 (0.75–2.57)	0.302
Patient safety grade				
Excellent / Very good	1		1	
Acceptable	1.99 (1.35–2.94)	0.001	1.39 (0.84–2.31)	0.199
Poor/Failing	6.55 (2.85–15.05)	<0.001	1.82 (0.62–5.36)	0.279
Number of events reported				
No events	1		1	
1 to 5 event reports	1.51 (1.02–2.24)	0.040	1.38 (0.85–2.23)	0.190
>5 event reported	1.57 (0.81–3.05)	0.181	1.81 (0.83–3.96)	0.135
Safety culture dimensions (Unit-Level)				
Supervisor/manager expectations and actions promoting safety	0.47 (0.32–0.67)	<0.001	0.52 (0.31–0.87)	0.013
Organizational Learning —Continuous improvement	0.44 (0.33–0.60)	<0.001	1.38 (0.81–2.33)	0.237
Teamwork Within Hospital Units	0.44 (0.34–0.58)	<0.001	0.66 (0.43–1.01)	0.055
Communication Openness	0.64 (0.46–0.88)	0.006	1.01 (0.66–1.54)	0.972
Feedback and Communication About Error	0.62 (0.49–0.78)	<0.001	1.08 (0.76–1.55)	0.663
Non-punitive Response to Error	1.53 (1.18–1.98)	0.001	1.17 (0.83–1.66)	0.365
Staffing	0.55 (0.41–0.76)	<0.001	0.62 (0.39–0.97)	0.036
Safety culture dimensions (Hospital-wide)				
Teamwork Across Hospital Units	1.32 (0.83–2.09)	0.248	1.72 (0.95–3.12)	0.076
Hospital Handoffs & Transitions	3.21 (2.32–4.45)	<0.001	3.35 (2.19–5.09)	<0.001
Hospital Management Support for Patient Safety	0.39 (0.27–0.58)	<0.001	0.52 (0.32–0.84)	0.007
Overall perception of safety	0.72 (0.48–1.08)	0.113	1.23 (0.72–2.09)	0.450
Frequency of events reported	0.78 (0.65–0.93)	0.007	0.88 (0.69–1.12)	0.288

## Factors Associated with Staff Outcomes of Intention to Leave and Job Satisfaction

The predictor of intention to leave and job satisfaction are summarized in Table 4. Female were two times more likely to leave their job compared to male respondents (AOR: 2.36, 95% CI: 1.24–3.46). The PSC composites that were significantly associated with lower odds of intention to leave the job were: supervisor/manager expectations and actions promoting safety, teamwork within hospital units, staffing, and hospital management support for patient safety. The study results showed that intention to leave were 3.35 times (95% CI = 2.19–5.09) more likely for every unit increase in hospital hand-offs and transitions. Logistic regression analysis showed that respondents aged between 31–40 years tend to like their job two times more than other age groups (AOR: 1.90, 95% CI = 1.02–3.55). The other domains associated with an increased odds ratio for liking the job by healthcare workers were staffing domain and hospital management support for patient safety.

Table 5 shows the factors associated with job satisfaction. The respondents who have been working in the hospital for more than 11 years were about six times more likely to think that working here is like being part of a large family. Other composites that were associated with higher odds of thinking that being part of a large family were: supervisor/manager expectations and actions promoting safety, teamwork within hospital units, and hospital management support for patient safety. The odds of thinking this hospital is a good place to work at and feeling proud of working here are two times higher for males than females. For those who spent over 11 years in current position are more likely to think this hospital is a good place to work. Also, feeling proud of working in this hospital was increased by 4.87 times (95% CI = 1.37–



**Table 5** Predictors of Healthcare Workers' Job Satisfaction

Job Satisfaction Measures													
Variables	Q1. I like My Job				Q2. Working in This Hospital is Like Being Part of a Large Family								
	Univariate		Multivariate		Univariate		Multivariate						
	OR (95% CI)	P	AOR (95% CI)	P	OR (95% CI)	p	AOR (95% CI)	p					
Gender													
Male	1.89 (1.06–3.38)	0.032	1.73 (0.86–3.49)	0.127	1.65 (1.08–2.54)	0.022	1.51 (0.86–2.64)	0.149					
Female	I		I		I		I						
Age													
20–30	I		I		I		I						
31–40	1.67 (1.01–2.77)	0.047	1.90 (1.02–3.55)	0.044	1.11 (0.77–1.62)	0.576	1.06 (0.66–1.72)	0.809					
>41	2.42 (0.72–8.09)	0.151	1.77 (0.36–8.83)	0.486	1.84 (0.79–4.32)	0.158	1.08 (0.34–3.41)	0.903					
Nationality													
Saudi	I		I		I		I						
Non-Saudi	1.56 (0.96–2.52)	0.072	1.09 (0.55–2.19)	0.798	1.15 (0.76–1.73)	0.510	0.71 (0.39–1.32)	0.279					
Duration spent in current position (years)													
1–5	I		I		I		I						
6–10	1.19 (0.75–1.89)	0.449	0.94 (0.53–1.64)	0.817	1.00 (0.70–1.44)	0.982	0.93 (0.59–1.48)	0.769					
≥11	3.77 (0.89–16.00)	0.072	3.23 (0.43–24.28)	0.255	3.89 (1.35–11.17)	0.012	5.59 (1.24–25.21)	0.025					
Patient Safety Grade													
Excellent / Very good	7.31 (3.11–17.17)	<0.001	1.71 (0.55–5.33)	0.357	7.13 (3.04–16.72)	<0.001	0.89 (0.30–2.68)	0.849					
Acceptable	2.57 (1.09–5.99)	0.029	0.99 (0.35–2.79)	0.977	2.33 (0.99–5.49)	0.054	0.57 (0.20–1.63)	0.295					
Poor/Failing	I		I		I		I						
Number of events reported													
No events	I		I		I		I						
1 to 5 event reports	0.79 (0.51–1.23)	0.297	1.06 (0.61–1.83)	0.849	0.59 (0.41–0.83)	0.003	0.76 (0.48–1.19)	0.225					
>5 event reported	1.37 (0.56–3.36)	0.487	1.54 (0.56–4.24)	0.407	1.34 (0.66–2.71)	0.413	1.65 (0.72–3.76)	0.237					

(Continued)

Table 5 (Continued).

Safety culture dimensions (Unit Level)												
Supervisor/manager expectations and actions promoting safety.	2.82 (1.85–4.29)	<0.001	1.66 (0.93–2.95)	0.088	3.19 (2.21–4.60)	<0.001	2.14 (1.29–3.53)	0.003				
Organizational Learning —Continuous improvement	3.58 (2.52–5.09)	<0.001	1.32 (0.75–2.33)	0.344	3.41 (2.47–4.72)	<0.001	0.85 (0.51–1.43)	0.544				
Teamwork Within Hospital Units	2.88 (2.14–3.89)	<0.001	1.49 (0.92–2.41)	0.103	3.61 (2.69–4.86)	<0.001	2.11 (1.37–3.25)	0.001				
Communication Openness	1.85 (1.29–2.65)	0.001	1.12 (0.69–1.84)	0.647	1.95 (1.44–2.62)	<0.001	1.06 (0.70–1.61)	0.774				
Feedback and Communication About Error	1.92 (1.49–2.47)	<0.001	0.96 (0.65–1.43)	0.838	2.16 (1.74–2.68)	<0.001	1.27 (0.90–1.77)	0.171				
Non-punitive Response to Error	0.72 (0.54–0.96)	0.024	1.06 (0.72–1.55)	0.768	0.59 (0.46–0.75)	<0.001	0.78 (0.56–1.07)	0.120				
Staffing	2.42 (1.69–3.47)	<0.001	1.85 (1.11–3.09)	0.019	1.88 (1.41–2.50)	<0.001	1.31 (0.86–1.99)	0.203				
Safety culture dimensions (Hospital-wide)												
Teamwork Across Hospital Units	1.74 (1.02–2.96)	0.043	0.96 (0.49–1.84)	0.892	1.58 (1.03–2.43)	0.036	0.91 (0.52–1.59)	0.733				
Hospital Handoffs & Transitions	0.58 (0.42–0.81)	0.001	0.65 (0.41–1.02)	0.059	0.57 (0.43–0.74)	<0.001	0.60 (0.41–0.88)	0.010				
Hospital Management Support for Patient Safety	3.67 (2.39–5.61)	<0.001	2.13 (1.27–3.57)	0.004	4.28 (2.89–6.32)	<0.001	3.36 (2.09–5.39)	<0.001				
Overall perception of safety	2.36 (1.49–3.75)	<0.001	1.05 (0.58–1.91)	0.871	1.93 (1.33–2.81)	0.001	1.06 (0.64–1.76)	0.818				
Frequency of events reported	1.30 (1.07–1.59)	0.010	1.06 (0.81–1.39)	0.684	1.21 (1.03–1.43)	0.020	0.97 (0.77–1.23)	0.795				
Job Satisfaction												
Variables	Q3. This Hospital is a Good Place to Work.				Q4. I am Proud to Work at this Hospital.				Q5. Morale in This Clinical Area is High.			
	Univariate		Multivariate		Univariate		Multivariate		Univariate		Multivariate	
	OR (95% CI)	p	AOR (95% CI)	p	OR (95% CI)	p	AOR (95% CI)	p	OR (95% CI)	p	AOR (95% CI)	p
Gender												
Male	1.95 (1.30–2.92)	0.001	2.07 (1.21–3.53)	0.008	2.03 (1.31–3.14)	0.001	2.44 (1.13–4.56)	0.005	0.88 (0.61–1.29)	0.524	0.82 (0.48–1.38)	0.453
Female	I		I		I		I		I		I	
Age v												
20–30	I		I		I		I		I		I	
31–40	1.20 (0.84–1.72)	0.314	1.26 (0.79–2.03)	0.336	1.13 (0.78–1.64)	0.510	1.02 (0.61–1.72)	0.941	1.11 (0.78–1.59)	0.567	1.22 (0.75–2.00)	0.426
>41	1.26 (0.61–2.59)	0.538	0.69 (0.24–1.98)	0.487	1.74 (0.77–3.91)	0.182	0.57 (0.18–1.81)	0.339	0.79 (0.39–1.59)	0.512	0.59 (0.22–1.59)	0.296
Nationality												
Saudi	I		I		I		I		I		I	
Non-Saudi	1.37 (0.93–2.01)	0.112	0.97 (0.54–1.75)	0.923	1.60 (1.08–2.38)	0.018	1.25 (0.65–2.37)	0.505	1.60 (1.09–2.36)	0.018	1.05 (0.57–1.93)	0.868

Duration spent in current position (years)												
1–5	I		I		I		I		I		I	
6–10	1.17 (0.83–1.65)	0.385	1.04 (0.66–1.62)	0.880	1.32 (0.92–1.89)	0.137	1.24 (0.76–2.03)	0.397	1.18 (0.84–1.67)	0.347	1.06 (0.67–1.68)	0.795
≥11	3.09 (1.33–7.18)	0.009	4.87 (1.37–17.34)	0.015	6.29 (1.89–20.81)	0.003	19.37 (3.04–123.27)	0.002	0.86 (0.43–1.70)	0.659	1.91 (0.33–2.49)	0.851
Patient Safety Grade												
Excellent / Very good	11.39 (4.17–31.12)	<0.001	1.75 (0.52–5.85)	0.366	23.01 (7.64–69.34)	<0.001	4.65 (1.20–18.02)	0.026	15.75 (5.28–46.98)	<0.001	2.74 (0.73–10.28)	0.136
Acceptable	3.19 (1.16–8.79)	0.025	0.79 (0.24–2.59)	0.699	4.61 (1.53–13.92)	0.007	1.22 (0.32–4.60)	0.771	3.29 (1.09–9.92)	0.034	0.95 (0.26–3.49)	0.936
Poor/Failing	I		I		I		I		I		I	
Number of events reported												
No events	I		I		I		I		I		I	
1 to 5 event reports	0.69 (0.49–0.97)	0.032	0.93 (0.59–1.44)	0.736	0.64 (0.45–0.90)	0.011	0.84 (0.52–1.38)	0.501	0.79 (0.56–1.11)	0.167	1.19 (0.75–1.89)	0.449
>5 event reported	1.51 (0.79–2.88)	0.214	2.11 (0.97–4.59)	0.061	1.24 (0.64–2.40)	0.533	1.53 (0.65–3.60)	0.327	0.60 (0.34–1.07)	0.084	0.55 (0.27–1.15)	0.113
Safety culture dimensions (Unit Level)												
Supervisor/manager expectations and actions promoting safety	2.56 (1.82–3.58)	<0.001	1.95 (1.20–3.17)	0.007	3.03 (2.11–4.33)	<0.001	2.00 (1.16–3.46)	0.012	2.98 (2.09–4.25)	<0.001	1.66 (1.02–2.68)	0.040
Organizational Learning -Continuous improvement	3.73 (2.68–5.19)	<0.001	0.94 (0.57–1.58)	0.825	3.71 (2.66–5.19)	<0.001	0.64 (0.36–1.12)	0.116	5.38 (3.71–7.79)	<0.001	1.20 (0.71–2.02)	0.490
Teamwork Within Hospital Units	3.21 (2.42–4.27)	<0.001	1.61 (1.05–2.47)	0.029	3.71 (2.75–5.01)	<0.001	1.92 (1.19–3.06)	0.007	6.14 (4.29–8.79)	<0.001	2.94 (1.84–4.68)	<0.001
Communication Openness	1.87 (1.41–2.49)	<0.001	0.99 (0.66–1.47)	0.945	2.51 (1.84–3.42)	<0.001	1.33 (0.85–2.07)	0.217	2.13 (1.59–2.85)	<0.001	0.92 (0.61–1.38)	0.690
Feedback and Communication About Error	2.14 (1.73–2.64)	<0.001	1.21 (0.87–1.67)	0.261	2.54 (2.03–3.19)	<0.001	1.28 (0.89–1.83)	0.186	2.71 (2.15–3.39)	<0.001	1.43 (1.03–1.99)	0.033
Non-punitive Response to Error	0.64 (0.51–0.80)	<0.001	0.88 (0.65–1.19)	0.405	0.61 (0.48–0.77)	<0.001	1.88 (0.62–1.24)	0.465	0.50 (0.39–0.63)	<0.001	0.77 (0.56–1.06)	0.110
Staffing	2.07 (1.57–2.72)	<0.001	1.62 (1.08–2.42)	0.019	2.35 (1.76–3.14)	<0.001	1.91 (1.21–3.01)	0.005	2.08 (1.57–2.74)	<0.001	1.39 (0.91–2.13)	0.123
Safety culture dimensions (Hospital-wide)												
Teamwork Across Hospital Units	1.53 (1.02–2.28)	0.040	1.07 (0.61–1.87)	0.812	1.46 (0.96–2.22)	0.077	0.87 (0.47–1.60)	0.647	1.53 (1.02–2.30)	0.039	0.86 (0.48–1.55)	0.621
Hospital Handoffs & Transitions	0.41 (0.31–0.54)	<0.001	0.36 (0.24–0.53)	<0.001	0.42 (0.32–0.56)	<0.001	0.39 (0.25–0.61)	<0.001	0.50 (0.38–0.66)	<0.001	0.75 (0.51–1.09)	0.136
Hospital Management Support for Patient Safety	4.24 (2.89–6.20)	<0.001	3.02 (1.89–4.82)	<0.001	4.97 (3.33–7.43)	<0.001	3.79 (2.29–6.28)	<0.001	3.55 (2.46–5.14)	<0.001	2.64 (1.63–4.27)	<0.001
Overall perception of safety	1.88 (1.32–2.67)	0.001	1.09 (0.66–1.77)	0.765	1.86 (1.28–2.68)	0.001	1.00 (0.58–1.74)	0.995	1.46 (1.03–2.07)	0.035	0.55 (0.33–0.92)	0.023
Frequency of events reported	1.27 (1.09–1.48)	0.003	0.97 (0.77–1.21)	0.781	1.35 (1.15–1.59)	<0.001	1.03 (0.79–1.33)	0.814	1.40 (1.19–1.65)	<0.001	1.09 (0.87–1.38)	0.426

17.34) for older healthcare workers more than others. There were other composites associated with higher odds of job satisfaction domains which were: supervisor/manager expectations and actions promoting safety, teamwork within hospital units, staffing, and hospital management support for patient safety, unlike hospital handoffs and transitions domain which are associated with a lower odds ratio of job satisfaction domains.

## Discussion

This paper aimed to address the gap in the literature by exploring the influence of PSC measures on staff outcomes in terms of employee's job satisfaction and intention to leave in healthcare settings. Healthcare workers are the foundation of the healthcare organization. It is necessary to understand the relationship that may influence healthcare workers turnover given the global challenge of healthcare workers shortage and the resulting impact on healthcare system and delivery of health services. It has been reported that job satisfaction is linked to the intention to leave, staff turnover, absenteeism, and perceived stress.<sup>26</sup>

## Patient Safety Culture

The current study identifies PSC areas of strength like organizational learning and continuous improvement (79.4%), and teamwork within hospital units (81.4%). However, some areas in need of improvement that received the lowest rating were "communication openness; 36.9%", "staffing; 26.5%", and "non-punitive response to error; 22%". In particular, "lack of coordination between hospital units", "things falling between cracks during transitions and handovers" and "hospital management shows interest in patient safety only after the occurrence of adverse events" were items that had a negative impact on the overall rating of the three dimensions. Although organizational learning has been studied from different aspects in the past years, it has not been clearly defined. Most researchers define organizational learning as a process that grows over time and is associated with acquired knowledge and improved performance. Managers are responsible for developing systems and processes to sustain learning activities and incorporating them into daily performance to improve the learning process.<sup>27</sup> The findings of the current study show that the organizational learning domain received one of the highest scores (79.4) and exceeded the cut-off score of 75%, indicating that the measure was positive. Most respondents agreed that unified staff actively take action to improve patient safety and evaluate its effectiveness. The findings are consistent with previous studies, in which organizational learning was cited as the most positively rated composite.<sup>28,29</sup> However, a more recent study in Saudi Arabia reported lower scores on organizational learning/continuous improvement (65%), compared to the current study.<sup>30</sup>

Teamwork within units can be defined as the staff understanding of the efficiency of collaboration and support between unit members.<sup>24</sup> One of the strengths of the current findings is teamwork within hospital units; the PRR (81.4%) was the highest among other domains. The findings are consistent with other studies on teamwork within hospital units. Studies conducted in Saudi Arabia concluded that the item "teamwork within hospital units" was positively rated (more than 70%) by healthcare workers.<sup>30,31</sup> Consistent with our findings, with respect to the element "teamwork within the unit", supportive staff, teamwork environment, and a mutual respect were rated significantly high with more than 80% positive ratings. In contrast, the element "when one area in this unit gets really busy, others help out" was reported as low (7.1%) compared to the current results (72%).<sup>30</sup> Other studies have reported that teamwork within units, mutual support among employees, the ability to work as a team under pressure, and mutual respect were the strongest domains in PSC.<sup>28,29,32,33</sup>

The climate of teamwork and safe behavior domains received a high score of 73.8%; a value very close to the concept of positive safety climate for patient safety.<sup>21</sup> This finding is important because studies on climate and safety culture indicate that teamwork developed through effective communication can be reflected in mutual collaboration among professionals, leading to positive outcomes such as job satisfaction and efficiency in activities.<sup>34</sup>

A non-punitive response to errors means that healthcare workers understand that their errors will be dealt with, and consequently, will not be used against them or recorded in their personnel file.<sup>23</sup> The composite score for non-punitive response to errors had the lowest score of all 12 dimensions of safety culture (22.1%), indicating that these aspects of PSC require the most improvement efforts. Studies conducted in Saudi Arabia have shown similar results to the current study. The non-punitive response to error was 22%, while under-reporting of events over the past 12 months was 43%. In

addition, staffing (22%), and teamwork across hospital units (27%) were cited as aspects that needed improvement.<sup>30,31</sup> Furthermore, studies have shown that non-punitive response to errors, in addition to staffing, were considered the weak areas of PSC, while other items and the overall PSC score were described as neutral. The item of non-punitive response to error has shown the weakest association with the outcome variable of measuring perceptions of patient safety.<sup>33,35</sup> Another study found similar findings, with the lowest positive mean score (19.5%) for a non-punitive response to an error.<sup>28</sup> Staffing is a significant predictor of PSC. As can be seen from the results, staffing is one of the composites with the lowest value, receiving only one positive value (26.5%). A significant challenge for the hospital today is providing a robust and capable workforce.<sup>29</sup> A workforce shortage can cause employees to suffer from stress and lack of sleep. This finding leads to a drop in performance due to a shortage in the workforce. Therefore, errors may occur, affecting quality and performance.<sup>36</sup> Our results suggest that more positive staffing ratings increases the likelihood of positive perceptions of job satisfaction and decreases the likelihood that an employee will leave his or her job. Numerous studies found very low positive scores for the staffing dimension. The staffing dimension suggests that the number of employees getting the job done is very low and that work schedules are adequate to provide excellent patient care. Staffing is one of the factors studied that have not been shown to be predictors of patient safety.<sup>31</sup> This may be due to a lack of equipment and facilities that meet achievable standards, an inadequate time structure, a heavy workload, and hospital staff shortage. It is interesting to note that all items within the composites measuring staffing and non-punitive responses to errors were rated as areas in need of improvement in the participating hospitals.<sup>33</sup> Staffing levels indicate that there are not enough staff to handle the workload and that work hours are appropriate to provide the best possible care to patients.<sup>28,30,35</sup>

Openness of communication was one of the areas in need of improvement, with a low score of only 26.5% positive responses. Because openness of communication is highly correlated with feedback and communication about errors, it could help eliminate threats to patient safety. Communication problems have been identified as major contributing factors to adverse events.<sup>7</sup> In line with our findings, there are many studies that have identified very low scores for communication openness.<sup>28,31,35</sup> A published systematic review showed that openness in communication had the lowest positive score (29.7%) and the highest positives score (68%).<sup>35</sup>

The composite of hand-offs and transitions in the hospital refers to staff perceptions of the importance of hand-offs within hospital departments, as most information about patient care is transferred during shift changes.<sup>23</sup> One study showed that hospital hand-offs and transitions were viewed positively by only 14.2%, which is similar to our findings.<sup>30</sup> The lowest scores were found for the dimensions of hand-offs and transitions in the hospital (49.7%), staffing (36.8%), and non-punitive response to errors (24.3%).<sup>33,37</sup> The highest positives responses for the hospital hand-offs and transitions domain were (69%), while the lowest positive response was (0).<sup>32</sup>

As the results of current study indicate, focusing on specific cultural composites when planning and training healthcare workers is essential to improving certain types of patient hand-offs and transactions. For example, in large hospitals or complex medical systems, it is increasingly challenging to plan proper hand-offs. In the current study, hospital hand-offs and transitions play a significant role in job dissatisfaction and employee's intent to leave. Over half of the respondents stated that "Important patient care information is often lost during shift changes." As for overall perception of safety, only 10% agreed that procedures and systems do a good job of preventing errors. A previous study conducted at the United States Department of Health and Human Services asserted that a strong communication culture only partially ensures the effective sharing and transmission of patient information.<sup>38</sup>

The current findings show that scores for lack of proper communication were high. Less than half of the healthcare workers said they were afraid to ask questions when something did not seem right to them. The findings also concur with a study that demonstrated that work-related contacts with supervisors have significant direct effects on healthcare workers' turnover intentions.<sup>39</sup>

## Staff Outcomes: Job Satisfaction

In the current study, job satisfaction was reported by 84%, meaning employees liked their jobs. Healthcare workers who had more than 11 years of work experience indicated that working here was like belonging to a large family. Other composites that were associated with a higher likelihood of feeling like part of a large family were: Supervisor/manager expectations and actions to promote safety, teamwork within hospital units, and hospital management support for patient

safety. Predictors of job satisfaction were described as internal and external. The external factors such as pay, working hours and working conditions are listed as key factors in job dissatisfaction. The internal factors (eg recognition of accomplishments) lead to high job satisfaction.<sup>40</sup> Researchers have found that job dissatisfaction decreases with higher levels of education.<sup>41,42</sup>

## Staff Outcomes: Intention to Leave

The current study found that more than two-thirds (78.3%) of respondents said they had no intention of leaving. The PSC composites that were significantly associated with lower intention to leave were: Supervisor/manager expectations and actions to promote safety, teamwork within hospital units, staffing, and hospital management support for patient safety. The study results showed that the odds of leaving the workplace were 3.35 higher when the number of hand-offs and transitions in the hospital increased by one unit. Few studies have examined the relationship between PSC, job satisfaction, and intention to leave the hospital. A study conducted in Saudi Arabia found that a transformational leadership style increased nurses' job satisfaction and intention to stay in the profession.<sup>37</sup> A study found a negative relationship between patient safety domains such as "safety climate, teamwork, safe behavior and the variables of time in the facility, time in the institution" and intention to leave the profession. This finding suggests that there is a negative correlation between the time spent working in the facility and the institution, and the intention to leave the profession, and scores in these domains.<sup>21</sup>

Of all participants, 21.7% intended to leave their jobs. Among the study participants who had the intention to leave, the percentage is lower than some earlier reports: (55.2%) among doctors,<sup>43</sup> (47%) among general practitioners,<sup>44</sup> (42.3%) among primary care physicians.<sup>45</sup> The factors associated with this high turnover intention among general practitioners were lower income level, lower job, and heavy workload.<sup>44</sup> Workload and stress were also found among nurses and doctors.<sup>17,44</sup> In the current study, female healthcare workers, and the 31–40 age group indicated they were more likely to leave their jobs. A similar age group was reported as a predictor of intention to leave the workplace in a study in the region. Other reported factors included low job satisfaction, working more than 40 hours per week, and conflict with supervisors.<sup>43</sup> However, job dissatisfaction has been reported to be a key factor in turnover.<sup>46–48</sup>

Findings at the bivariate and multi-variate levels suggest several areas of improvement within the composites that may increase job satisfaction and perception of patient safety and decrease intention to leave. Studies conducted among nurses have examined the relationship between job satisfaction and quality of patient care. Job satisfaction predicts intention to stay or leave an organization.<sup>49–51</sup> Hospital hand-offs and transitions play a leading role in high healthcare staff turnover and low job satisfaction. Studies have reported several factors associated with nurses' intention to stay, such as work environment,<sup>52–54</sup> and working in a public hospital.<sup>55</sup>

Job satisfaction is a key predictor of employee turnover. The relationship has been extensively studied among nurses and described as inversely related to intention to quit.<sup>49,56,57</sup> Factors such as job satisfaction, job security, pay, work hours, and work stress play a critical role in employee turnover.<sup>58</sup> However, job satisfaction is one of the most important predictors<sup>59</sup>, and the likelihood of leaving the job is higher among dissatisfied employees.<sup>60,61</sup> Studies have summarized the inverse relationship between job satisfaction and turnover intentions.<sup>48,59,62,63</sup>

Staff turnover is one of the key factors leading to shortages in the healthcare workforce. The relationship between job satisfaction and turnover has been well studied among nurses.<sup>15</sup> The turnover rate decreases as job satisfaction increases.<sup>64</sup> Turnover intention or intention to leave is a prominent predictor of actual turnover.<sup>43</sup> Stress has been reported to have a significant impact on turnover;<sup>65</sup> and to have a negative relationship with job satisfaction<sup>41</sup> and a strong relationship with intention to leave.<sup>66,67</sup> A systematic review conducted in Saudi Arabia had reported factors affecting PSC; situational, local working conditions, organizational, external, and general factors.<sup>68</sup>

## Strengths and Limitations

Among the strengths first, the sample size was sufficient to draw the conclusions and increased the statistical power.

Second, because this study included all healthcare workers, it provides a more comprehensive picture of the staff working in a tertiary care hospital. Third, we investigated two outcomes associated with PSC: intention to leave and job satisfaction. Finally, because the responses were anonymous, we anticipate they were not biased. The current study had several limitations. The recall bias could not be excluded due to self-reporting. We have not analyzed the possible

influence of the types of professions on intention to leave and job satisfaction. We were unable to analyze the difference between respondents and those who refrained from participation due to a lack of data. Lastly, results cannot be generalized since the participants were enrolled from one hospital only.

## Conclusion

The patient safety culture scores were highest in “organizational learning” and “teamwork”. However, low scores were observed in the domains of “openness in communication”, “staffing”, “non-punitive response to error”, and “handoffs and transitions” domains, which warrant improvement. Only a few healthcare workers had expressed a desire to leave their jobs. The study findings support the notion that, in addition to age and gender, the dimensions of safety culture, including the staffing, hospital management support, hospital handover, and transition, can have a significant impact on job satisfaction and intention to leave among healthcare workers. The dimensions of patient safety culture mentioned above are closely related to healthcare workers’ job satisfaction, intention to leave, and can play a significant role in developing administrative policies and interventions to improve staff outcomes.

## Data Sharing Statement

The dataset supporting the conclusions of this article are not available publicly due to the institutional rules and regulations, but are available from the first author on a reasonable request.

## Ethics Approval and Consent to Participate

The ethical approval was obtained by King Abdullah International Medical Research Center (KAIMRC) Institutional Review Board (IRB) with approval number (number SP15/117). All participants were adequately informed of the aims, methods, and risks of the study as well as of voluntary participation and confidentiality of the responses at the introduction of the survey. The responses were anonymous and participants’ confidentiality was maintained.

## Consent for Publication

This is not applicable, as participants’ personal details were not recorded.

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## Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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## Disclosure

The authors declare no conflicts of interest.

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