

التخصص: ماجستير الإدارة الصحية

العنوان

تقييم معرفة وممارسات الممرضين فيما يتعلق بالوقاية من سقوط المرضى البالغين في مستشفى خاص
بالمملكة العربية السعودية

اسم الطالب

خالد المصطفى

الرقم الأكاديمي

253002008

المشرف

د. الفيصل عبد الحميد محمد حسن

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أهدي هذا العمل إلى والديّ الكريمين تقديرًا لدعمهما المستمر، وإلى زوجتي
تقديرًا لوقوفها إلى جانبي طوال فترة إعداد هذا البحث.

كما أقدم خالص الامتنان للجنة الحكم الكريمة ولأساتذتي الأفاضل على ما
بذلوه من توجيهٍ علمي، ولزملائي على تعاونهم البناء. وإلى كل من أسهم في
إنجاز هذا العمل، أعبر عن شكري وتقديري.

أخص بجزيل الشكر أستاذي الكريم الدكتور الفيصل عبد الحميد محمد حسن
على ما بذله من جهود و إرشادات طيلة فترة إعداد هذا البحث.

المستخلص:

الخلفية: سقوط المرضى هو من أكثر الأحداث السلبية شيوعا وقابلية للوقاية في الرعاية الحادة. الممرضون هم الدفاع الأمامي ضد السقوط، ومع ذلك تصف الأدلة الدولية مرارا "فجوة معرفة-ممارسة" حيث لا تترجم المعرفة النظرية السليمة بشكل متنسق إلى الممارسة بجانب المرضى. لا تزال الأدلة من قطاع المستشفيات الخاصة في السعودية، الذي يتوسع بسرعة تحت رؤية 2030، نادرة.

الهدف: تقييم مستوى المعرفة والممارسة المبلغ عنها ذاتيا فيما يتعلق بالوقاية من سقوط المرضى البالغين بين الممرضين في مستشفى الدكتور سليمان فقيه - الرياض، وفحص العلاقة بين المعرفة والممارسة.

الطرق: تم استخدام تصميم كمي وصفي ومقطعي. تم توزيع استبيان منظم وذاتي المدار يضم مقياس معرفة مكون من 20 عنصرا ومقياس ممارسة ليكبرت مكون من 10 نقاط وخمس نقاط، مع قسم ديموغرافي، إلكترونيا على جميع الممرضات المسجلات المؤهلات (نهج إجمالي السكان/التعداد). أكمل المسح ما مجموعه 173 ممرضا يقدمون رعاية مباشرة للمرضى عبر الوحدات السريرية. تم تحليل البيانات باستخدام الإحصاءات الوصفية، وارتباط بيرسون وسبيرمان، وتحليل النوافين الأحادي الاتجاه، واختبارات t المستقلة للعينات. تم تقييم الاتساق الداخلي مع ألفا كرونباخ لمقياس الممارسة ومعامل كودر-رينتشاردسون 20 (KR-20) لمقياس المعرفة الثنائية، كما تم فحص متانة العلاقة بين المعرفة والممارسة من خلال تحليل الحساسية.

النتائج: كان متوسط درجة المعرفة 17.76 من 20 (88.8%؛ SD = 1.40)، حيث صنف 93.6% من الممرضين على أنهم يمتلكون مستوى معرفة عاليا، رغم أن مقياس المعرفة أظهر اتساقا داخليا منخفضا (KR-20 = 0.271)، مما يعكس تأثير سقف واضح. كما كانت الممارسة المبلغ عنها ذاتيا مرتفعة، حيث حصل على متوسط درجة 4.80 من 5 (المتوسط الإجمالي 48.0 من 50؛ SD = 3.83) وموثوقية ممتازة في المقياس (α كرونباخ = 0.888). تم العثور على ارتباط إيجابي ضعيف ولكن ذو دلالة إحصائية بين المعرفة والممارسة ($r = 0.184$ ، $p = 0.015$)؛ ومع ذلك، لم يكن هذا الارتباط قويا، حيث اختفى عندما أزيل عنصران أقل توافقا ($r = 0.055$ ، $p = 0.48$). لذا تعتبر الفرضية الأولى مدعومة بشكل مؤقت فقط. لم تختلف المعرفة بشكل كبير حسب الفئة العمرية ($F = 1.04$ ، $p = 0.376$) أو وحدة التمريض ($t = 0.27$ ، $p = 0.786$) لكنها اختلفت بشكل كبير حسب المستوى التعليمي ($F =$

6.83، $p = 0.001$)، حيث حصل حاملو الدبلوم على درجات أقل من حاملي الدرجات العلمية؛ تم دعم الفرضية 2، التي أعيد صياغتها كاختبار للفروق الديموغرافية، جزئياً. أضعف عناصر المعرفة كانت تتعلق بأقوى متنبئ منفرد بالسقوط (37.6% صحيح) وملاءمة القيود (59.0% صحيح).

الخلاصة: أظهر الممرضون في موقع الدراسة معرفة عالية والتزاماً عالياً بأنفسهم بممارسات الوقاية من السقوط، مع وجود فجوة ضيقة بين المعرفة والممارسة. ونظراً لأن كلا المقياسين اقتريا من سقف سقفيهما، كان ارتباط المعرفة بالتطبيق ضعيفاً وهشاً، وكان المستوى التعليمي هو الخاصية الديموغرافية الوحيدة المرتبطة بشكل كبير بالمعرفة. تشير النتائج إلى أن التوعية المستهدفة حول العجز المحددين (تصنيف المخاطر والرعاية الخالية من القيود) ودعم الموظفين المحضرين للدبلوم، إلى جانب مراقبة الممارسة الموضوعية بدلاً من الإبلاغ الذاتي عن الممارسة، سيكون أكثر قيمة من إعادة التدريب الشاملة. يجب تفسير النتائج في ضوء تصميم التقرير الذاتي، وعينة الموقع الواحد، وتأثيرات السقف، وموثوقية المعرفة المنخفضة.

الكلمات المفتاحية: الوقاية من السقوط؛ سلامة المرضى؛ المعرفة التمريضية؛ ممارسة التمريض؛ المملكة العربية السعودية؛ مستشفى خاص.

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Chapter One

Introduction:

Patient falls are categorized by the World Health Organization (WHO) as one of the most frequent and preventable adverse events, or “never events”, in healthcare. Globally, fall rates in acute-care settings range from three to five falls per 1,000 patient-days. These incidents are not only physical accidents; they represent a systemic failure in safety protocols, leading to fractures, intracranial hemorrhage and a psychological fear of falling that hinders patient recovery. Given that nurses provide continuous bedside care, they are the primary defenders and barriers against falls, and their knowledge and practice are decisive determinants of whether a patient remains safe.

The 2030 vision of Saudi Arabia for healthcare transformation has placed unprecedented emphasis on patient safety and quality of care. While the Ministry of Health (MOH) provides overarching guidelines, the private healthcare sector, which accounts for a growing share of hospital beds in cities such as Riyadh and Jeddah, is facing many challenges. These include a highly diverse nursing workforce, varying educational backgrounds, and the challenge of maintaining high patient satisfaction together with clinical safety. This study assesses nurses’ knowledge and self-reported practice regarding adult patient fall prevention in a private facility.

The problem of studying:

Despite the implementation of the International Patient Safety Goals (formerly IPSG 6, “Reduce the risk of patient harm resulting from falls”), adult patient falls remain a persistent issue in private Saudi hospitals. The central problem addressed by this study is a suspected knowledge–practice gap: nurses may possess the theoretical knowledge required to identify fall risks, yet the clinical execution of prevention strategies may be inconsistent. Recent internal audits in Saudi private facilities indicate that falls often occur because risk assessments were not updated following a medication change, or because environmental hazards such as cluttered floors were overlooked during busy shifts (ALqrishah et al.,

2024). The study contrasts the hopeful reality—where 100% of high-risk patients are identified early and all prescribed interventions are active—with the current reality of inconsistent execution.

The importance of the study:

a) Scientific Importance

- Contribution to local literature: most Saudi studies focus on government tertiary centers; this study provides rare data on the private sector.
- Theoretical application: it examines the knowledge–practice relationship within the specific cultural and organizational context of Saudi private healthcare.

b) Practical Importance

- Hospital management: provides senior nursing management with evidence to justify investment in safety equipment such as smart beds and sensor mats.
- CBAHI compliance: assists the hospital in meeting the standards of the Saudi Central Board for Accreditation of Healthcare Institutions for fall management.
- Nurse education: identifies specific knowledge deficits (for example, medication-induced falls) so that targeted training can be designed.

Study objectives:

The overall aim is to assess the level of knowledge and self-reported practice regarding adult patient fall prevention among nurses in a private hospital in Saudi Arabia.

Specific Objectives

- To evaluate nurses' theoretical knowledge of intrinsic and extrinsic fall-risk factors.
- To measure the level of adherence to standard fall-prevention practices (assessment, intervention, documentation).
- To determine whether demographic variables (age, gender, nursing unit and educational level) are associated with knowledge and practice scores.

Study Questions:

- How frequent are the reported fall-prevention practices (for example, environmental checks and patient education) among the nursing staff?
- Is there a statistically significant correlation between a nurse's level of knowledge and their actual practice score?
- Are there differences in knowledge and practice based on the nurse's department (for example, ICU versus medical–surgical)?

Study Hypotheses:

- H1: There is a significant positive correlation ($p < 0.05$) between nurses' knowledge levels and their practice scores.
- H2: Nurses' knowledge and practice scores differ significantly according to their demographic characteristics (age, educational level and nursing unit).

The scientific theory used to prepare the research:

The study is grounded in the Knowledge–Practice–Outcome framework, which holds that knowledge is a key determinant of practice, which in turn shapes patient outcomes.

Although this framework derives from the broader Knowledge–Attitude–Practice (KAP) tradition, the present study operationalizes only the knowledge and practice components; attitudes were not measured. It is complemented by Reason's Swiss Cheese Model of organizational accidents, which conceptualizes a fall as the alignment of "holes" across successive layers of defense. These frameworks are developed in detail in Chapter Two.

Chapter Two

Previous Studies

Introduction:

This chapter reviews the empirical and theoretical literature that frames the present study. It summarizes three directly relevant Saudi studies, analyses their convergence and divergence, identifies the research gap, and sets out the theoretical premises adopted here.

Previous studies:

First study — Innab (2022)

- Objective: to investigate nurses' perceptions of the most significant fall-risk factors and the prevention strategies they find most effective.
- Methodology: a quantitative descriptive study of 288 nurses in acute-care units using a modified Fall Prevention Survey.
- Key results: “patient confusion” and “history of falls” were identified as the top risk factors, while environmental modifications were often neglected due to high workload and equipment shortages.
- Relevance: informs the questionnaire items on barriers to practice, especially organizational constraints.

Second study — Alrimali, Al-Sadi & Al-Zahrani (2023)

- Objective: to assess knowledge, attitudes and self-reported practices among registered nurses regarding fall prevention and to identify influencing demographic factors.
- Methodology: a descriptive cross-sectional design sampling 412 registered nurses across multiple regions of Saudi Arabia using a validated KAP scale.
- Key results: while 84.5% of nurses possessed a “high” level of theoretical knowledge, only 62% demonstrated “high” compliance in actual practice; years of experience correlated significantly with practice ($p < 0.05$).

- **Relevance:** serves as a primary local benchmark, confirming the existence of a knowledge–practice gap that the present study explores within a private hospital.

Third study — ALqrishah, Al-Hazmi & Mohamed (2024)

- **Objective:** to compare the implementation of fall-prevention protocols between public (MOH) and private healthcare sectors.
- **Methodology:** a comparative quantitative study of 350 nurses (175 government, 175 private) using the Hospital Survey on Patient Safety Culture (HSOPSC).
- **Key results:** private hospitals scored higher on managerial support for safety but lower on staffing levels; incident reporting was more consistent in private facilities due to accreditation requirements (CBAHI).
- **Relevance:** provides a comparative framework that justifies focusing on the private sector, where the safety culture differs from the government sector.

Analysis of Previous Studies:

The three studies are highly consistent regarding the existence of a knowledge–practice gap. Alrimali et al. (2023) and Innab (2022) both found that nurses often hold high theoretical knowledge (frequently exceeding 80%) yet fail to translate it into consistent bedside practice. All three attribute the gap to systemic and organizational issues—workload (Innab, 2022) and staffing levels (ALqrishah et al., 2024)—rather than to a lack of individual competence. A minor divergence is that private hospitals may sustain stronger reporting cultures because accreditation is tied to their operating license.

Comparison of the three benchmark studies

Criterion	Similarity	Difference
Research design	All three use a quantitative, cross-sectional KAP design.	ALqrishah et al. (2024) adds a comparative public–private element; the others are purely descriptive.
Study setting	All localized to the Saudi healthcare system.	Settings vary from multi-region (Alrimali) to acute-care (Innab) to public–private (ALqrishah).
Sampling	All used non-probability sampling of registered nurses.	Sample sizes differ: 412, 288 and 350 respectively.
Instrument	All used structured questionnaires.	KAP scale vs. Fall Prevention Survey vs. HSOPSC.

Note. Adapted from the reviewed studies.

Why the Results Differed

- Sector environment: private hospitals operate under different managerial pressures, with accreditation tied to their business license, whereas public hospitals emphasize volume and resource management.
- Instrument: the studies measured different constructs—competency, perception and safety culture—so their specific findings vary.
- Sample characteristics: workforce diversity means that “years of experience in the KSA” often predicts practice more strongly than total experience, because local reporting systems require specific orientation.

Research Gap:

While the knowledge–practice gap is well documented in Saudi government tertiary centers and in multi-region samples, there is little single-site evidence from the private sector, and even less that pairs an objective knowledge test with a reliability-tested practice scale and formally tests the knowledge–practice correlation. The present study addresses this gap by quantifying both constructs in one private hospital and statistically examining their relationship.

Theoretical framework:

The Knowledge–Practice–Outcome Model

This model holds that nurses’ knowledge is a key determinant of practice, which ultimately affects patient outcomes. Training, experience and the work environment shape knowledge, while organizational support, policies and monitoring shape the translation of knowledge into practice (Tzeng & Yin, 2018). Understanding these relationships is essential for designing effective interventions.

The Swiss Cheese Model (Reason, 2000)

Reason’s model conceptualizes a fall as the alignment of “holes” across successive layers of defense—for example, a latent condition (a gap in nursing knowledge) combining with an active failure (a failure to lock bed wheels). The model reframes falls as system failures

rather than individual errors, directing attention to organizational as well as individual factors.

Chapter Three

Study Methodology

Introduction:

This chapter describes the research design, setting, population and sample, the study tool and its validity and reliability, the statistical analysis plan, and the ethical procedures and limits that governed the study.

Methodology and research methods:

- Study design: a descriptive cross-sectional quantitative design, appropriate for assessing nurses' current knowledge and practice at a single point in time.
- Study setting: Dr. Soliman Fakeeh Hospital – Riyadh (DSFH-R), Saudi Arabia.
- Study duration: six months (second and third quarters of 2026).
- Sampling method: a total-population (census) approach in which all eligible nurses were invited to participate. Because participation was voluntary and self-selected, the realized sample is best described as a census-based convenience sample rather than a probability sample.

Research Community: (Population and Sample)

The target population comprised all registered nurses providing direct patient care across the clinical units of DSFH-R (total nursing staff approximately 280). Because fall prevention is a core nursing safety competency assessed hospital-wide, nurses were not restricted to a single unit type. Using a standard cross-sectional sample-size formula with a 95% confidence level, a 5% margin of error and an expected response rate of 80%, the required sample was estimated at 165–175 nurses. A final sample of 173 nurses completed the questionnaire, satisfying this requirement.

Inclusion Criteria

- Registered nurses providing direct patient care at DSFH-R.
- At least six months of experience at DSFH-R.
- Willing to participate and provide informed consent.
- Floated nursing care providers from non-adult care units.

Exclusion Criteria

- Nursing interns or students.
- Nurses on probation or administrative leave during the study period.

Study Tool:

Data were collected using a structured, self-administered questionnaire distributed electronically through a secure, hospital-approved platform. The instrument comprised three sections: (1) a 20-item knowledge scale (multiple-choice and true/false) covering fall-risk factors, assessment intervals and prevention interventions; (2) a 10-item practice scale rated on a five-point Likert scale (1 = never, 5 = always) measuring the self-reported frequency of core practices; and (3) a demographic section (role, unit, age, education and gender). The full instrument is reproduced in the Appendix.

Validity and Reliability:

Content validity was established by adapting items from validated instruments used in the reviewed Saudi literature and reviewing them with subject-matter experts. Internal consistency was assessed separately for each scale in the present sample. The practice scale returned a Cronbach's alpha of 0.888, indicating good-to-excellent reliability. The dichotomous knowledge scale was assessed with the Kuder–Richardson 20 (KR-20) coefficient, which returned a low value of 0.271; as discussed in Chapter Four, this low coefficient is a mathematical consequence of the pronounced ceiling effect and the resulting low item variance rather than of poor item wording, and it is treated as a limitation of the knowledge score.

Statistical Analysis Methods:

Data were analyzed using SPSS version 26 (equivalent open-source computation was used to prepare the figures in this report). The analysis combined descriptive and inferential statistics:

- Descriptive statistics: knowledge and practice scores expressed as means $\pm$ standard deviations and categorized into high, moderate and low levels using pre-defined cut-off points.

- Inferential statistics: Pearson and Spearman correlation to test H1; one-way ANOVA and independent-samples t-tests to compare subgroups (H2).
- Robustness checks: a sensitivity analysis re-ran the knowledge–practice correlation after removing two lower-consensus knowledge items, to test whether the H1 result depended on contestable scoring.
- Significance level: $p < 0.05$. Because several subgroup comparisons were performed, a Bonferroni-adjusted threshold was also considered when interpreting the demographic tests to reduce the risk of Type I error.
- Data handling: missing data addressed by listwise deletion; results summarized in tables and charts.

Ethical Considerations:

The study proceeded only after Institutional Review Board (IRB) approval (approval number is: FIRB-25-0188). Participation was voluntary; informed consent was obtained before questionnaire distribution; and participants retained the right to withdraw at any time without repercussion. Responses were collected anonymously or with coded identifiers, and data were stored in password-protected files accessible only to the research team.

Research Limits:

- Human field: registered nurses at a single private hospital (DSFH-R) in Riyadh; sample of 173.
- Spatial domain: Riyadh, Saudi Arabia.
- Time domain: data collected during the second and third quarters of 2026.

Methodological Limitations

- Self-report design: practice was self-reported and is therefore vulnerable to social-desirability bias, which tends to inflate reported adherence; the true knowledge–practice gap may be wider than these data suggest.
- Ceiling effect and reliability: both scales approached their maximum, producing restricted variance that attenuated correlations and depressed the knowledge-scale KR-20 (0.271).
- Sampling: the census-based convenience design and single-site setting limit generalizability and preclude causal inference.
- Unmeasured variables: nurses' years of clinical experience and tenure in the KSA were not captured, so age served only as an imperfect proxy; attitudes and organizational barriers were also not measured.

- Heterogeneous unit composition: the sample spanned multiple unit types (including maternity, NICU and pediatric units), so not all respondents routinely manage adult fall-risk patients; this is acknowledged when interpreting practice scores.

Chapter Four

Findings and recommendations

Introduction:

This chapter presents the results of the field survey completed by 173 registered nurses at Dr. Soliman Fakeeh Hospital – Riyadh. It first describes the demographic profile of the sample, then reports knowledge and practice findings at both the item and the composite level, tests the study hypotheses, and closes with a discussion, conclusions and evidence-based recommendations. All percentages are based on 173 valid responses unless otherwise stated.

Data analysis:

Demographic Profile of Respondents

The sample was predominantly female (90.2%) and concentrated in the 30–39 age band (68.8%). Most respondents held a bachelor's degree (82.1%) and worked as staff nurses (87.3%). Respondents were distributed across a range of units, with the largest groups in maternity/LDR/nursery (20.2%), outpatient (17.9%) and NICU (15.0%). Table 1 summarizes the demographic characteristics.

Table 1. Demographic characteristics of the respondents (n = 173)

Variable	Category	n	%
Gender	Female	156	90.2
	Male	17	9.8
Age (years)	20–29	22	12.7
Education	30–39	119	68.8
	40–49	27	15.6
	50–59	5	2.9
	Diploma	25	14.5
	Bachelor's degree	142	82.1

Variable	Category	n	%
Role	Master's degree	6	3.5
	Staff nurse	151	87.3
	Charge nurse	16	9.3
	Nurse manager / educator	6	3.5

Note. Percentages may not sum to 100 due to rounding.

Figure 5. Demographic Profile of Respondents (n=173)

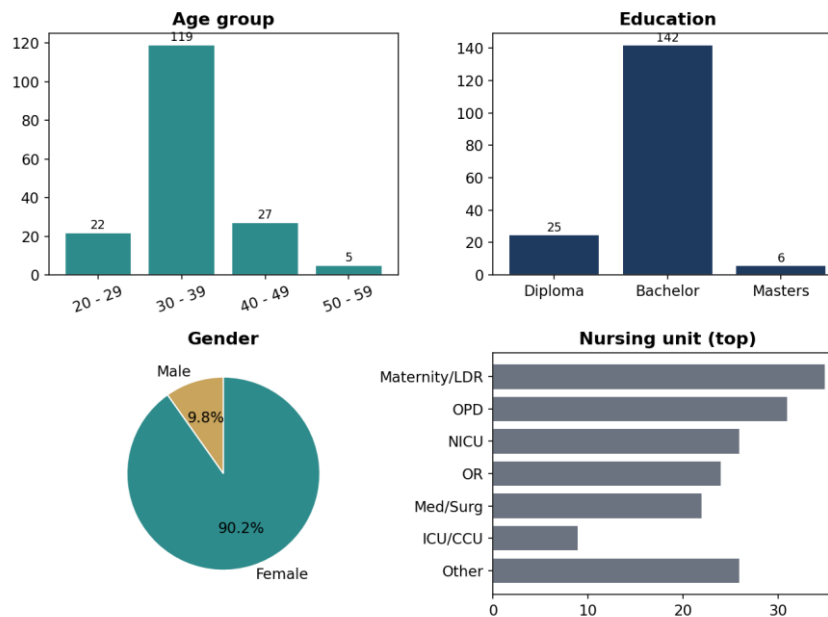


Figure 5. Demographic profile of respondents (n = 173).

Knowledge Findings:

Overall knowledge was high. The mean knowledge score was 17.76 out of 20 (88.8%; SD = 1.40; range 14–20; median 18). Using pre-defined cut-offs (high $\geq 80\%$, moderate 60–79%, low $< 60\%$), 162 nurses (93.6%) were classified as having high knowledge, 11 (6.4%) moderate, and none low (Table 3, Figure 1). Scores were strongly clustered near the maximum—34.1% of nurses scored 19 or 20—producing a marked ceiling effect. This low variance depressed the internal-consistency coefficient of the knowledge scale (KR-20 = 0.271); the low value reflects the restricted range rather than defective items and is treated here as a measurement limitation.

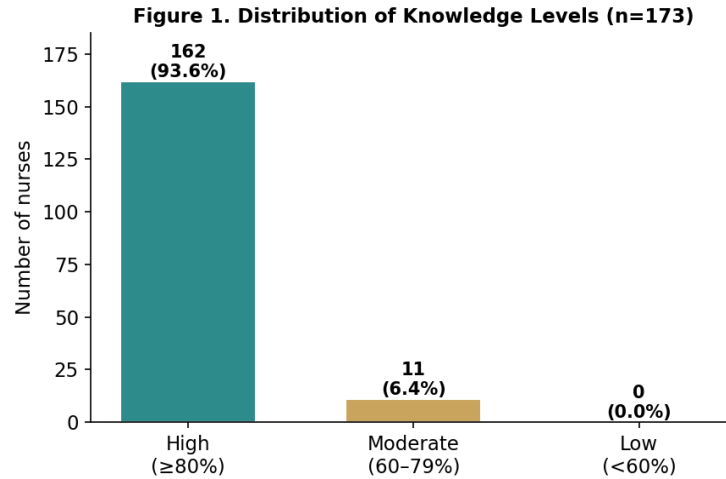


Figure 1. Distribution of knowledge levels (n = 173).

At the item level, however, several specific deficits emerged (Table 2, Figure 2). The weakest item was Q1, which asked for the single strongest predictor of falls: only 37.6% selected “previous falls”, with an equal proportion choosing “age > 65”. Only 59.0% correctly recognized that routine restraint use is not recommended for fall prevention (Q14), and 64.7% correctly answered the repositioning item (Q18). It should be noted that Q1 and Q18 are lower-consensus items in the wider literature—the strongest single predictor of falls is genuinely debated, and repositioning is more directly associated with pressure-injury than with fall prevention—so the apparent “deficits” on these two items partly reflect legitimate clinical disagreement. Knowledge of the optional-education (Q9, 75.1%) and night-lighting (Q12, 86.7%) items was also comparatively lower. By contrast, items on mobility assessment, call-bell placement and family involvement reached 100% correct.

Table 2. Correct-response rates for the 20 knowledge items

Item	Content (correct answer)	Correct	% correct
Q1	Strongest predictor of falls	65	37.6
Q2	Interval to reassess fall risk	167	96.5
Q3	Assess mobility before ambulation	173	100.0
Q4	Medication review is important	170	98.3
Q5	Environmental hazards identified	170	98.3
Q6	Bed low + brakes reduces risk	171	98.8

Item	Content (correct answer)	Correct	% correct
Q7	Call bell within reach	173	100.0
Q8	Hourly rounding is effective	170	98.3
Q9	Patient education is NOT optional	130	75.1
Q10	Proper footwear reduces risk	170	98.3
Q11	History of falls increases risk	163	94.2
Q12	Night lights ARE necessary	150	86.7
Q13	Family involvement improves safety	173	100.0
Q14	Restraints NOT recommended	102	59.0
Q15	Bed alarms alert staff	161	93.1
Q16	PT consult for high-risk	164	94.8
Q17	Documentation required	166	96.0
Q18	Repositioning can reduce risk	112	64.7
Q19	Educate all, not only high-risk	154	89.0
Q20	MDT communication enhances prevention	169	97.7

Note. $n = 173$ for every item; "Correct" = number answering the item correctly.

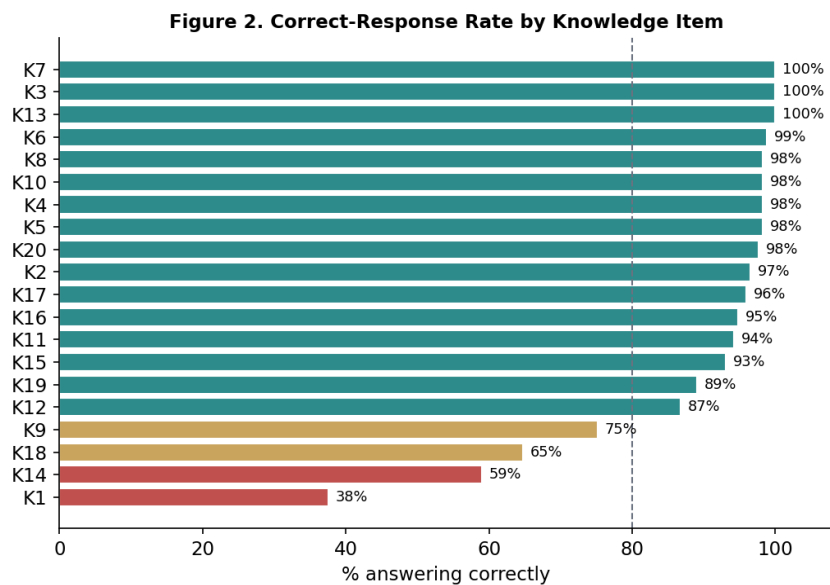


Figure 2. Correct-response rate by knowledge item (dashed line = 80% threshold).

Table 3. Distribution of nurses by overall knowledge level

Knowledge level	n	%
High ($\geq 80\%$)	162	93.6
Moderate (60–79%)	11	6.4
Low ($< 60\%$)	0	0.0
Total	173	100.0

Practice Findings:

Self-reported practice was uniformly high. The mean item score across the ten practice items was 4.80 out of 5 (SD = 0.38), and the mean total practice score was 48.0 out of 50 (SD = 3.83). Using a cut-off of a mean item score ≥ 4 for “high” practice, 166 nurses (96.0%) reported high adherence, 6 (3.5%) moderate and 1 (0.6%) low. The highest-rated practices were patient and family education (4.9) and multidisciplinary collaboration (4.9); the lowest, though still high, were reassessment with condition changes, hourly rounding and night-lighting checks (each 4.7) (Table 4, Figure 3). The practice scale demonstrated good-to-excellent internal consistency (Cronbach’s $\alpha = 0.888$).

Table 4. Mean self-reported frequency of the 10 fall-prevention practices

Item	Practice	Mean (1–5)	Rank
Q21	Performing fall risk assessment	4.8	1
Q22	Reassessment with condition changes	4.7	2
Q23	Proper bed positioning	4.8	3
Q24	Call-bell availability	4.8	4
Q25	Frequent rounding	4.7	5
Q26	Floor condition / hazard removal	4.8	6
Q27	Night lighting	4.7	7
Q28	Patient and family education	4.9	8
Q29	Documentation and reporting	4.8	9
Q30	Multidisciplinary collaboration	4.9	10

Note. 1 = never, 5 = always; n = 173. Overall mean = 4.80; Cronbach's α = 0.888.

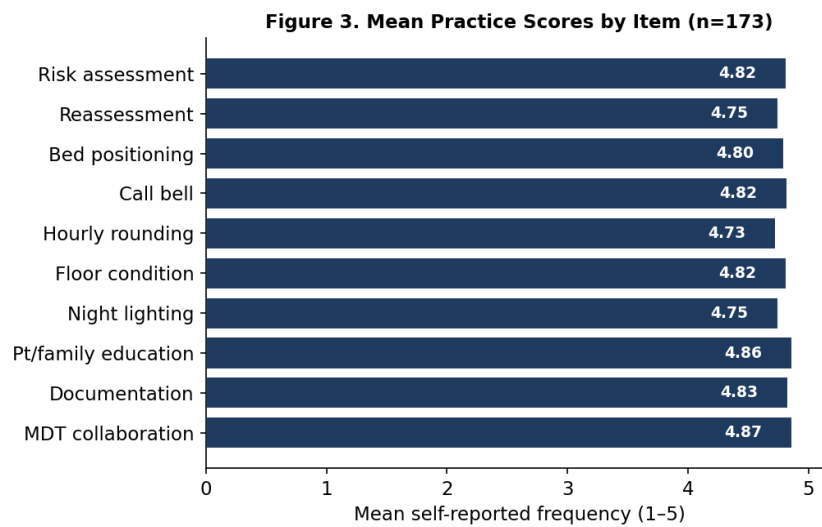


Figure 3. Mean practice scores by item (n = 173).

Results – Hypothesis Testing:

H1: Knowledge–Practice Correlation

A Pearson correlation between knowledge scores and mean practice scores was statistically significant but weak ($r = 0.184$, $p = 0.015$, $n = 173$); the non-parametric Spearman correlation was consistent ($\rho = 0.169$, $p = 0.026$). Taken at face value this supports H1, but the association explains only about 3–4% of the variance in practice (Figure 4) and is not robust. A sensitivity analysis that removed the two lower-consensus items (Q1 and Q18) reduced the correlation to $r = 0.055$ ($p = 0.48$), i.e. to a non-significant, negligible level. In other words, the significant H1 result depended almost entirely on two contestable items and on scores that were already near their ceiling. H1 is therefore regarded as only tentatively supported: knowledge and self-reported practice are, at most, weakly and unreliably associated in this sample, and other factors—organizational and attitudinal—evidently play a far larger role than knowledge alone.

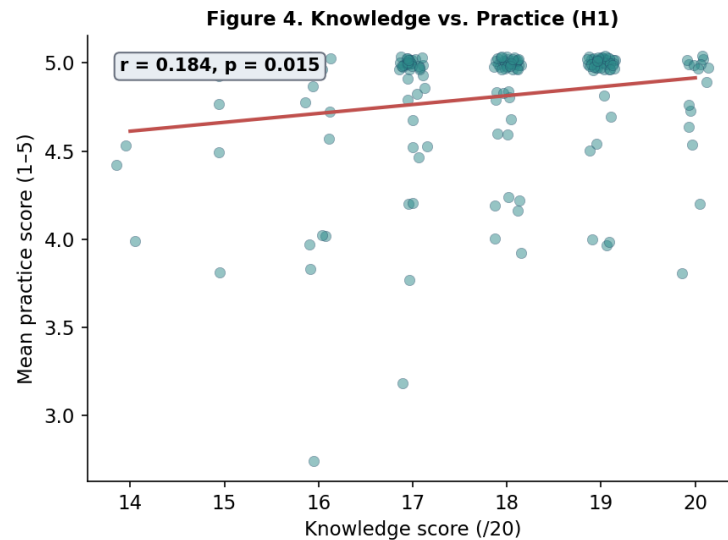


Figure 4. Relationship between knowledge and practice (H1).

H2: Demographic Differences in Knowledge and Practice

H2 was tested as a set of subgroup comparisons. Knowledge did not differ significantly across age groups (one-way ANOVA $F = 1.04$, $p = 0.376$) or between higher-acuity units (medical–surgical / ICU) and other units ($t = 0.27$, $p = 0.786$). However, knowledge differed significantly by educational level (one-way ANOVA $F = 6.83$, $p = 0.001$), with diploma-holders scoring lower (mean 16.84/20) than bachelor- (17.92) and master-prepared nurses (18.00); this difference survives a Bonferroni-adjusted threshold. Practice scores did not differ significantly by education ($F = 0.48$, $p = 0.622$). H2 is therefore partially supported: educational level is significantly associated with knowledge, whereas age and unit are not, and no demographic variable is associated with self-reported practice. The absence of age and unit effects should be read cautiously, because the ceiling effect in knowledge scores limits the ability to detect subgroup differences, and because nurses’ actual years of experience—a stronger theoretical predictor than age—were not captured by the instrument.

Table 5. Summary of hypothesis testing

H	Statement	Test result	Decision
H1	Positive knowledge–practice correlation	$r = 0.184$, $p = 0.015$; not robust (18-item $r = 0.055$, $p = 0.48$)	Tentatively supported
H2	Scores differ by demographic characteristics	Education $F = 6.83$, $p = 0.001$; Age $F = 1.04$, $p = 0.376$; Unit $t = 0.27$, $p = 0.786$	Partially supported

Table 6. Knowledge scores across demographic subgroups

Subgroup	n	Mean knowledge /20	SD
Age 20–29	22	17.36	1.43
Age 30–39	119	17.83	1.43
Age 40–49	27	17.89	1.28
Age 50–59	5	17.20	0.84
Diploma	25	16.84	–
Bachelor's	142	17.92	–
Master's	6	18.00	–
Med-Surg / ICU units	57	17.81	–
Other units	116	17.74	–

Note. Knowledge differed significantly by educational level (ANOVA $F = 6.83$, $p = 0.001$), diploma-holders scoring lower than degree-holders; differences by age and unit were non-significant.

Discussion:

The findings partly confirm and partly challenge the wider Saudi literature. Consistent with Alrimali et al. (2023), nurses at DSFH-R demonstrated very high theoretical knowledge (88.8%). However, whereas prior studies documented a wide knowledge–practice gap—for example, 84.5% high knowledge but only 62% high practice—the present study found high self-reported practice (96.0% high) and therefore only a narrow gap. Two interpretations are plausible. First, the private, accredited setting (CBAHI) may sustain stronger practice, echoing ALqrishah et al. (2024), who linked accreditation to more consistent safety behavior. Second, and more cautiously, self-reported practice is vulnerable to social-desirability bias and tends to overstate real behavior; the true gap may be wider than these self-reports suggest.

The weak and non-robust knowledge–practice correlation is itself the most important analytical finding. Because knowledge already sits near its ceiling ($KR-20 = 0.271$) and the significant association disappears once two contestable items are removed, the data provide little dependable evidence that raising knowledge would change practice at this site. The

more defensible subgroup finding is that diploma-prepared nurses scored significantly lower on knowledge than degree-prepared nurses ($p = 0.001$), identifying a specific group for targeted support. The actionable item-level signals are the genuine deficits—restraint-free care (Q14) and, more tentatively, risk stratification (Q1)—rather than the overall scores, which are uniformly high. The excellent reliability of the practice scale ($\alpha = 0.888$) strengthens confidence in the practice findings, even as the self-report method limits their behavioral validity.

Conclusion:

Nurses at the study site possess a high level of knowledge and report a high level of adherence to fall-prevention practices, with only a narrow knowledge–practice gap. Because both scales approached their ceiling, the knowledge–practice association was weak and did not survive a sensitivity analysis, so Hypothesis 1 is only tentatively supported. Hypothesis 2 is partially supported: educational level was significantly associated with knowledge, whereas age and unit were not, and no demographic variable predicted self-reported practice. The results suggest that the priority for this hospital is not broad retraining but precise, deficit-targeted education—particularly on restraint-free fall prevention and for diploma-prepared staff—combined with organizational reinforcement and objective (rather than self-reported) practice monitoring. These conclusions must be read alongside the study’s self-report design, single-site sample, ceiling effects and low knowledge-scale reliability.

Recommendations:

For Nurse Education

- Deliver short, targeted micro-learning on the genuine deficits identified—restraint-free fall prevention and the distinction between the strongest predictor of falls and general risk markers.
- Provide additional support to diploma-prepared nurses, who scored significantly lower on knowledge, for example through mentoring or bridging modules, rather than repeating general content for all staff.

For Hospital Management

- Complement self-report with objective audits (chart review, direct observation, incident-report triangulation) to detect any real gap that self-reports may conceal.

- Sustain the accreditation-linked safety culture and invest in enabling equipment (bed/chair alarms, adequate night lighting) so that high intentions are matched by resources.

For Future Research

- Capture years of clinical experience and tenure in the KSA directly, add an attitudes component, and use objective practice measures so that the knowledge–attitude–practice relationship can be tested in full.
- Use a more difficult, better-discriminating knowledge instrument to overcome the ceiling effect, and extend the design to multiple private hospitals linked to actual fall-incident rates to establish outcome relevance.

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Arabic References

All sources cited in this study were published in English; no Arabic-language references were used.

Appendices

Appendix A: The Research Questionnaire

Section 1 – Knowledge (20 items)

1. Which factor is the strongest predictor of falls in adult hospitalized patients? (A) Age > 65 (B) Previous falls (C) Vision impairment (D) New medication
2. Recommended interval to reassess fall risk? (A) Admission only (B) Every 24 hours (C) Every shift (D) At discharge
3. Always assess patient mobility before ambulation. (True/False)
4. Medication review is important in fall prevention. (True/False)
5. Environmental hazards include wet floors, clutter, poor lighting. (True/False)
6. Bed in lowest position with brakes on reduces fall risk. (True/False)
7. Call bell should be within reach of the patient. (True/False)
8. Hourly rounding is an effective prevention strategy. (True/False)
9. Patient education on fall prevention is optional. (True/False)
10. Proper footwear reduces fall risk. (True/False)
11. History of prior falls increases risk. (True/False)
12. Night lights are unnecessary for fall prevention. (True/False)
13. Family involvement can improve patient safety. (True/False)
14. Use of restraints is recommended to prevent falls. (True/False)
15. Bed alarm systems alert staff to patient movement. (True/False)
16. Physical therapy consultation is important for high-risk patients. (True/False)
17. Documentation of falls is required for all incidents. (True/False)
18. Frequent patient repositioning can reduce fall risk. (True/False)
19. Nurses should only educate high-risk patients. (True/False)
20. Multi-disciplinary communication enhances fall prevention. (True/False)

Section 2 – Practice (10 items, 5-point Likert: 1 = never ... 5 = always)

1. Perform fall risk assessment on admission.
2. Reassess fall risk at least every shift or with condition changes.
3. Ensure bed in lowest position with brakes engaged.
4. Keep call bell within reach and educate patient on its use.
5. Perform hourly rounding.
6. Keep floors dry and free of obstacles.
7. Ensure adequate lighting at night.
8. Educate patients and families about fall prevention.
9. Report and document all falls and near misses.
10. Collaborate with physical therapy or other staff for high-risk patients.

Section 3 – Demographics

Role; nursing unit; age band; educational level; gender (optional: first name, last name, ID).

Appendix B: Abstract (repeated)

Background: Patient falls are among the most frequent and preventable adverse events in acute care. Nurses are the front-line defense against falls, yet international evidence repeatedly describes a “knowledge–practice gap” in which sound theoretical knowledge is not consistently translated into bedside practice. Evidence from the private hospital sector in Saudi Arabia, which is expanding rapidly under Vision 2030, remains scarce.

Aim: To assess the level of knowledge and self-reported practice regarding adult patient fall prevention among nurses at Dr. Soliman Fakeeh Hospital – Riyadh (DSFH-R), and to examine the relationship between knowledge and practice.

Methods: A descriptive, cross-sectional quantitative design was used. A structured, self-administered questionnaire comprising a 20-item knowledge scale and a 10-item, five-point Likert practice scale, together with a demographic section, was distributed electronically to all eligible registered nurses (a total-population/census approach). A total of 173 nurses providing direct patient care across clinical units completed the survey. Data were analyzed with descriptive statistics, Pearson and Spearman correlation, one-way ANOVA and independent-samples t-tests. Internal consistency was assessed with Cronbach’s alpha for the practice scale and the Kuder–Richardson 20 (KR-20) coefficient for the dichotomous knowledge scale, and the robustness of the knowledge–practice correlation was examined with a sensitivity analysis.

Results: The mean knowledge score was 17.76 out of 20 (88.8%; SD = 1.40), with 93.6% of nurses classified as having a high level of knowledge, although the knowledge scale showed low internal consistency (KR-20 = 0.271), reflecting a pronounced ceiling effect. Self-reported practice was also high, with a mean item score of 4.80 out of 5 (mean total 48.0 out of 50; SD = 3.83) and excellent scale reliability (Cronbach’s α = 0.888). A statistically significant but weak positive correlation was found between knowledge and practice ($r = 0.184$, $p = 0.015$); however, this association was not robust, disappearing when two lower-consensus items were removed ($r = 0.055$, $p = 0.48$). Hypothesis 1 is therefore regarded as only tentatively supported. Knowledge did not differ significantly by age group ($F = 1.04$, $p = 0.376$) or nursing unit ($t = 0.27$, $p = 0.786$) but did differ significantly by educational level ($F = 6.83$, $p = 0.001$), with diploma-holders scoring lower than degree-holders; Hypothesis 2, reframed as a test of demographic differences, was thus partially

supported. The weakest knowledge items concerned the single strongest predictor of falls (37.6% correct) and the appropriateness of restraints (59.0% correct).

Conclusion: Nurses at the study site demonstrated high knowledge and high self-reported adherence to fall-prevention practices, with only a narrow knowledge–practice gap.

Because both scales approached their ceiling, the knowledge–practice association was weak and fragile, and educational level was the only demographic characteristic significantly related to knowledge. The findings indicate that targeted education on specific deficits (risk stratification and restraint-free care) and support for diploma-prepared staff, combined with objective rather than self-reported practice monitoring, would be more valuable than broad retraining. Results should be interpreted in light of the self-report design, single-site sample, ceiling effects and the low knowledge-scale reliability.

Keywords: fall prevention; patient safety; nursing knowledge; nursing practice; Saudi Arabia; private hospital.

Midocean University

Faculty of Management

Department/Specialization: Master's in
Healthcare Administration



Title

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Student Name

Khaled El Mostafa

Academic Number

253002008

Supervised by

Dr. Alfaisal Abdul Hamid Mohammed Hassan

Academic Year

2026